1925.

NEW ZEALAND

DEPARTMENT OF HEALTH.

ANNUAL REPORT OF DIRECTOR-GENERAL OF HEALTH.

Presented in pursuance of Section 76 of the Hospitals and Charitable Institutions Act, 1909.

HON. SIR MAUI POMARE, K.B.E., C.M.G., MINISTER OF HEALTH.

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The Acting Director-General of Health to the Hon. the Minister of Health, Wellington.

In the absence of the Director-General of Health I have the honour to lay before you the annual report of the Department for the year 1924-25.

PART I.—GENERAL SURVEY.

SECTION 1.—GENERAL.

Public Health.

The period under review has been marked by wider and more intensive activities, due in part to a strengthened personnel and in part to a growing interest displayed by the public in preventive medicine in general and the promotion of maternal welfare in particular.

Vital Statistics. — So far as vital statistics are concerned, 1924 was a wonderful year. The crude (actual) death-rate was 8·29 per 1,000 of mean population; the infant-mortality rate was 40·2 per 1,000 births; the tuberculosis death-rate was 5·67 per 10,000 of mean population. These all constitute record figures so far as New Zealand is concerned, and compare more than favourably with corresponding rates for other countries.

The low birth-rate (21·7 per 1,000 of mean population) and continued high rate of still-births (30·5 per 1,000 live births) are disquieting features of the returns. There is no doubt that our population is best replenished and our empty spaces best filled by our own natural increase: the new-born infant, in other words, is our best immigrant.

The maternal-mortality rate (5·00 per 1,000 births) is almost as high as in 1923, despite the very active campaign for its reduction embarked upon during the year. This is not wholly unexpected, as the measures initiated have as yet hardly had time to exert their influence. On the other hand, the mortality rate of infants under one month shows a gratifying and suggestive decline. As stated in previous reports, this first-month mortality has been relatively obstinate in responding to the measures which have proved so successful at later ages. The mortality rate of infants under one month for the year under review is only 24 per 1,000 births. It is hoped this decline indicates that the intensive measures of late years for safeguarding the lives of mothers and infants are at last being crowned with a certain measure of success.

Tuberculosis.—The death-rate from tuberculosis (5·67 per 10,000 of mean population) is the lowest so far recorded in the Dominion. It has been estimated, however, that there are at the present time in New Zealand approximately 5,500 persons of all ages suffering from pulmonary tuberculosis in some stage or other. It is evident, therefore, that much remains to be done in combatting this all-too-prevalent disease. With earlier admission to sanatorium, the further provision of special wards in our hospitals for incurable cases, and the closer supervision of cases and contacts in their own homes we can confidently look forward to better results.

As a definitely forward step in its campaign against pulmonary tuberculosis the Department recently arranged for the Medical Superintendents of the two North Island sanatoria to visit near-by towns at regular intervals for the purpose of consulting with any medical practitioner desirous of obtaining a specialist's opinion upon any case. In the same way the Waipiata Sanatorium Committee has arranged for its Medical Officer to visit Timaru, Ashburton, Invercargill, and other towns for a similar purpose.

Acute Poliomyelitis.—A notable feature in the epidemic history of the Dominion was the outbreak of acute poliomyelitis, which had its origin in Petone in the declining stages of the year. It is not proposed to comment further on this outbreak, which is fully dealt with in the report of the Director, Division of Public Hygiene, except to express the indebtedness of the Department to the public for the manner in which they observed the precautionary measures introduced, and to the medical profession and the Press for their loyal support during a particularly onerous and trying period.

In order to ensure that the measures adopted for the prevention of paralysis and the alleviation of deformities were adequate the Department appointed Dr. W. S. Robertson, the Orthopædic Specialist at Wellington Hospital, to report and advise upon the facilities available for the treatment of these cases in different hospitals throughout the Dominion. It is hoped that this step will prove of considerable value in eliminating the after-effects of this dread disease.

Recognizing the need for quiet continuous investigation into the nature and mode of origin and spread of anterior poliomyelitis, the Government set aside a sum of £2,000 to enable a year's research work to be carried out at the Otago Medical School. Professor Hercus and Dr. Hector, late Pathologist of the Wellington Hospital, have been entrusted with this special investigation, and their reports will be awaited with extreme interest.

Attached as an appendix to this report will be found a statement by Dr. Lynch, of Wellington Hospital, on the pathological and bacteriological features of cases investigated by him on behalf of the Department.

Cancer.—This disease looms large as a cause of death in New Zealand. The cancer death-rate (9·59 per 10,000 living persons) was higher than in the preceding year, the disease causing 1,245 deaths in 1924, as compared with 1,115 in 1923. While the extended use of X-rays and radium should prove of value in combatting this disease, the importance of early recognition and early surgical treatment cannot be overstressed. The Department continues, by the circulation of suitable leaflets and through the aid of the Press, to give wide publicity as to signs and symptoms of the early stages of the disease.

Venereal Diseases.—The clinics in the four main centres have now been handed over to the Hospital Boards, but otherwise continue to operate just as they did when under the control of the

Department. It is considered that the Hospital Boards should assume responsibility for all measures of diagnosis and treatment of patients afflicted with venereal diseases just as in the case of patients suffering from other diseases.

For the purpose of enabling better control of ignorant and careless people suffering from venereal diseases these conditions have been declared infectious diseases within the meaning of the Health Act, 1920. Regulations have been prepared which aim at enabling the Department to exercise closer supervision over sufferers from these diseases. It is hoped these regulations will shortly be in operation.

Leprosy.—Arrangements have been completed whereby the leper station at Quail Island, Lyttelton, is to be closed, and the lepers are to be transferred to Makogai, Fiji. The object of this proceeding is to allow these unfortunate individuals to be treated under more pleasant conditions and in a more congenial climate than is the case at present.

Maternal Welfare.—Our comparatively unfavourable position in regard to maternal-mortality rates created considerable public uneasiness, culminating early in the year in the Kelvin Commission of Inquiry. It was realized that in this regard all was not well, and the Department since then has been straining every nerve to provide a remedy. With this object in view the inspecting staff of the Department was strengthened by the appointment of additional specially qualified medical officers and nurse inspectors, and the Private Hospitals and Midwives Regulations were revised and brought up to date. An integral part of the maternal-welfare compaign is the scheme recently brought into force whereunder ante-natal clinics are provided throughout New Zealand to which expectant mothers can go for advice and treatment. Great things are hoped of this, both as regards mother and infant. It is obvious that by prompt attention many illnesses in pregnancy will be eliminated and many tragedies at birth prevented.

The Department has been particularly fortunate in securing the services of Dr. H. Jellett, late Master of the Rotunda Hospital, Dublin, and author of several well-known text-books on obstetrics. Dr. Jellett, who is one of the world's leading authorities in regard to this branch of medicine, has been appointed Consulting Obstetrician to the Department. His report giving an outline of his activities during the year appears later.

Dr. Paget, a medical practitioner of many years' standing, with special knowledge of midwifery practice, was appointed as Inspector of Private Maternity Hospitals.

Dr. Elaine Gurr, recently returned to New Zealand from a course of ante-natal study in Great Britain was appointed to organize a system of ante-natal clinics.

These officers also have submitted reports which show the progress made during the year in their separate divisions.

Publicity and Propaganda.—Public-health education plays a part, and an important part, in the activities of any health organization. During the year the Department issued numerous pamphlets and leaflets dealing with different phases of public health. In addition, officers in Wellington delivered a course of lectures in sanitary science and hygiene to the Workers' Educational Association, while other lectures were delivered from time to time in various parts of the Dominion. Commissions and Boards of Inquiry also took up a considerable amount of time of departmental officers. Two of the larger matters of this sort in which the Department was represented were an inquiry into the Wellington milk-supply and the Mental Defectives Commission.

Free use has also been made of the daily papers for the purpose of disseminating information of interest in regard to the public health, and the Department desires to express its indebtedness to the Press for their readiness to accept such material for publication. At the forthcoming Exhibition at Dunedin the Department hopes to have a special display featuring its various activities.

Research.—The past year has been distinguished by the impetus given to research work, for never before in the history of the Department has such activity been shown in this direction.

At the moment of writing several separate investigations are under way. An inquiry in regard to the iodine content of soils and vegetables from different parts of the Dominion is nearing completion. This will have a very direct bearing on the question of goitre-prevention, as it is intended to advocate the use of iodized salt in areas where deficiency of iodine is shown to exist. An investigation has just been commenced into anterior poliomyelitis, its origin, mode of spread, and measures which may be taken for its control. These two inquiries are being conducted at the Otago University Medical School under the able supervision of Professor Hercus, and have been rendered possible by Government grants. Dr. Renfrew White, Orthopædic Specialist, Dunedin Hospital, has been authorized to conduct an inquiry into rheumatoid arthritis, and allied conditions. Arrangements are in train for the commencement of an investigation into the cancer problem. A sum has been handed over by the Wellington Hospital Board which, with Government subsidy thereon, will finance a year's inquiry at the Otago Medical School.

It may be stated that New Zealand can hardly expect to do as much as the older, more populous, and better-equipped countries in regard to research, but it is considered that we should be failing in our duty to humanity if we did not at least attempt to carry our share of the burden.

In relation to medical research it must be stressed that brilliant "discoveries" are not to be expected, and a statement from the annual report of the Medical Research Council (Great Britain) bearing on this aspect may well be quoted here: "The lesson to be learnt is that before the practical fruit of research work in the shape of new powers of control of health and disease can be expected the tree providing it, which is the growing body of knowledge, must have been planted and tended and must have reached proper development. When and at what point the fruit is to be gathered can rarely, if ever, be foretold, but if it is to be obtained it can only be through steady cultivation of the growth from which it springs." And, again, from the same report: "There is a real danger here less the insistent calls given by disease and suffering for immediate relief should actually delay progress by attracting

scientific effort along the wrong paths. While many problems offered in the medical field, as the experience of the war has shown, can be and have been solved by direct and organized attack, others may not yield now to a frontal attack, nor until the general level of knowledge and preparation has been raised a stage higher. Power to prevent or cure a disease must not be expected to come by sudden discovery, nor often as the result of a special campaign, however vigorously prosecuted. Rapid gains, often unforeseen and in unexpected directions, may be confidently expected, however, so long as the area of accurate knowledge is maintained in its growth; we cannot foretell the flow of water here and there in the irrigating-channels along a shore, but we know the flow must certainly follow whenever the tide raises the general level of the waters. This is a consideration of high importance, and it has always been duly weighed in the past endowment of medical research. Rare and insufficient as this endowment has hitherto been in this country it has sometimes failed in effect by its devotion to an attack upon some particular disease where effort with existing knowledge has been premature so long as it has been narrowed in its aim."

City Medical Officers of Health.—During the year overtures were made to the local governing authorities of the four main centres to the effect that they should employ full-time Medical Officers of Health and so assume a larger responsibility in health matters. These, however, proved fruitless. The present system whereunder the State employs and actively directs all Medical Officers of Health in the Dominion has certain obvious advantages, and has undoubtedly enabled the attainment of a reasonably high standard of sanitation throughout New Zealand in a relatively short time. The larger centres of population, however, have their own distinct problems and now require more supervision than is possible under such a system. It is hoped the four City Councils may see their way in the near future to assume a more active share in public-health administration, and for this purpose will either appoint their own Medical Officers of Health, or, by arrangement with the Department, will employ the full-time services of departmental officers, who will work under their direction and be primarily responsible to them.

League of Nations.—It is with pleasure the fact is recorded that the Director-General of Health, Dr. Valintine, has proceeded overseas for the purpose of carrying out a three-months study tour of Europe under the auspices of the Health Section of the League of Nations. This tour will enable Dr. Valintine to study at first-hand the systems and methods of health administration in vogue in certain countries of Western Europe. The increased knowledge the Department will acquire in this way will prove of inestimable value in the shaping of future policies.

The Department's Functions and Aspirations.—The combatting of epidemics is only part, and a comparatively small part, of the Department's functions and duties. It is evident from the statements of the Directors of the various Divisions which appear later in this report that the Department enters closely into the very lives of the people. At all times much quiet unobstrusive work goes on in the direction of improving the sanitary conditions of dwellings, factories, and workshops; conserving the purity and wholesomeness of food and water supplies; protecting the health of school-children; supervising public and private hospitals, &c. These routine duties are not spectacular but none the less are of supreme importance. The aim of the Department, stated in a few words, is to lengthen the period of life and to make it happier and more effective. For this purpose the Department endeavours to remove all influences which may exercise harmful effects over the individual from birth—or rather, since it has initiated its scheme for ante-natal work, from before birth—until the physiological limit of old age. If the individual should have the misfortune to become ill the Department supervises or even provides the agencies which will make him better. We are still far from attaining the ideal of perfect health, but it can certainly be said that the New-Zealander reaches a higher standard of health than the inhabitants of any other part of the world.

SECTION 2.—HOSPITALS AND CHARITABLE INSTITUTIONS.

Hospital Boards' Finance.

The subsidies paid to Hospital Boards under the permanent appropriations were £559,662, or approximately £10,000 less than appropriated, the subsidies payable in respect of the year itself being £565,847.

More than one-third of the increase of £147,000 over the subsidies paid the previous year was due to the operation of the new subsidy rates, which brought the Government's contribution to the deficit in the Hospital Boards' budget to one-half. Nearly a similar amount was due to an increase in Boards' maintenance and capital requirements.

It might have been anticipated that this year there would have been but a slight increase in subsidy requirements, but such, unfortunately, does not appear to be the case. It is estimated that there will be an increase of about £30,000. At the time of writing all Boards' estimates are not yet to hand, but a near forecast is possible. As far as can be judged, one of the chief reasons of the increase is the amount required by way of sinking fund and interest in respect of loans for capital works. The shorter the loan the heavier, of course, the sinking-fund burden, but it is the interest that has imposed the greater burden and has so inflated the Boards' estimates. For the ten-year period prior to 1921, when a heavy increase occurred, the average annual increase in subsidies was about 7 per cent. The estimated increase this year of 6 per cent. is not, therefore, disproportionate.

Loans for Capital Works.

The increase in the burden of Hospital Boards levy on the rates has been the subject of protest from some of the contributory local authorities. In more than one instance objection was made to Hospital Boards financing their capital works by means of levy and subsidy instead of by long loans. The policy of the Department, however, for the past year or two has been to decline to approve loans

for a longer period than twenty years and to persuade Boards to meet their capital requirements, as far as possible, by shorter loans and, wherever practicable, by levy and subsidy, providing such does not impose too great a burden all at once on the rates.

The following is a summary of the loans approved during the financial year :—

Term.	Amount. £
Under ten years	69,908
Ten years	125,000
Twelve years	100,000
36½ years	4,500
Total	£299,408

The £4,500 for which approval was given for 36½ years represented one loan only for the purpose of providing an additional amount to a previous loan of £45,000 for a new hospital, and was the only exception to the Department's policy regarding short-dated loans.

The Department's reasons for its policy have been given at length in previous reports, and it is pleasing to note that such policy is in accordance with the views expressed in a leading article in a recent issue of the New Zealand publication "Accounting, Commerce, and Insurance," which states :—

"Many local bodies have raised large loans in recent years at very high rates of interest, and in some cases as high as 6½ per cent., but it is unfortunate for ratepayers that most of the loans arranged at high rates of interest have been for long terms extending up to 36½ years, and in consequence decidedly in favour of the financial institutions and private lenders who have advanced money. When rates of interest are high, only the most essential and urgent loans should be raised, and then only on short-dated terms with a small sinking fund instalment, so that a redemption loan can be raised on more favourable terms when the loan expires.

"It is amazing the ignorance of most members of local authorities as to the rules of finance and the fundamental principles of the Local Bodies' Loans Act. If the average member of a local authority had even a working knowledge of the law in relation to the raising of loans, and the responsibility it entails on ratepayers, members of local bodies would not have rushed so lightly into loan obligations which will entail a heavy burden on the ratepayers for the next twenty or thirty years."

The Department's policy in regard to loans was endorsed by the recent Conference of Hospital Boards, which passed a resolution that loans for hospital-construction should not be for a longer period than twenty years.

The Increasing Burden of Hospital Expenditure.

The increasing burden of hospital and charitable relief upon the ratepayers and the Consolidated Fund is, of course, a matter for concern, even if such amounts have been wisely and necessarily expended, and as a natural consequence the Department has examined various suggested methods for relieving the burden. So far, however, no method has been devised which possesses features superior to the present method of meeting the deficit by an equal burden on the local rates and the Consolidated Fund.

As a matter of fact, although it must be expected that there will always be a slight increase in our hospital expenditure, yet as the health of the people tends to improve as a result of preventive medicine and the better understanding and practice of the laws of hygiene the cost of hospitals should tend to decrease in comparison with the increase in the population. The advance made during recent years in medical science, however, and the consequent necessity for modern equipment and special departments has prevented any appreciable diminution in the increase of expenditure.

Patients' Payments.

As a result of the Bryce Inquiry at Palmerston North the principle has been clearly indicated that the public hospitals are, or should be, available to all who seek admission. Two other principles are correlated thereto, the one that those able to do so should pay for the full cost of their treatment, and the other that such cost should include a sufficient and reasonable remuneration to the medical officers of the institution. In regard to the first, this matter has been discussed at two Conferences of Hospital Boards held recently, the one in October last and the other in May. At the former Conference the Boards agreed that a uniform charge was desirable, and that 9s. per diem should be the fee charged. At the latter Conference the Boards negatived a proposal that the fees should be raised to approximate the full cost of treatment. It seemed to be felt that it would impose a hardship on patients conscientiously doing their best to meet their hospital accounts, and might, indeed, act as a deterrent to people seeking treatment where such is necessary, whilst at the same time the increase in the amount of fees collected might be negligible. The fact remains, however, that the average cost of our hospitals, including all overhead charges, is between 15s. and £1 per diem, and of the 9s. per diem charged by the majority of the Boards under 4s. per diem is collected. A considerable amount can still be done in the direction of educating people to recognize their obligations in regard to their hospital accounts. There are still people to be found who consider that because they are ratepayers they should be entitled to free treatment.

Controversial Questions.

In regard to the question of the medical staffing of hospitals, it is generally stated by every one concerned that the time has come when those members of the medical staff of a hospital at present giving their services in an honorary capacity can no longer be expected to do so. Whether, however,

they should be reimbursed wholly or in part, and whether hospitals at present utilizing the services of an honorary medical staff should, when making a change, substitute an entirely stipendiary staff, is one on which there appears to be a great difference of opinion, those in favour of a purely stipendiary staff urging that the terms of employment of the medical staff of a hospital should not be any different to those governing the employment of the nursing or any other staff.

Another question which is the subject at present of some difference of opinion is that of the establishment of private wards. It has been felt that the establishment of private wards is a reasonable complement of a hospital that is open to all, provided that the establishment and maintenance of such wards do not impose a penny burden on the rates or the Consolidated Fund, and provided that any tendency to class distinction is consistently repressed. It is true that class distinctions are difficult to prevent, and no doubt crop up at present on occasions, both in private and public hospitals, but the organization and discipline of a well-regulated public hospital is such that there should be little room for class distinctions.

Constructional Inspections.

The Department during the past year has approved of the erection, additions, or alterations to hospital buildings estimated to cost £370,404.

The work of the Technical Branch is rapidly increasing, as a greater number of Hospital Boards are now availing themselves of the assistance afforded by the Technical Inspectors. The work of checking plans and specifications forwarded by the Boards is being carried out satisfactorily, and the recommendations of the Department are readily adopted when placed before the Boards. As a result several of the Boards have now handed over entirely to the Department the preparation of plans and the carrying-out of all the additional work at their hospitals, and the results have given every satisfaction. It is hoped, with the assistance of the Architectural Branch of the Public Works Department, to now carry out, on behalf of any Hospital Board who desires, all the alterations and additions which become necessary, and by this means the Boards will receive the benefit of the Department's special knowledge in the various phases of hospital construction and effect considerable savings both in the cost of building and also the architects' fees.

The engineering services of several large hospitals are now being reorganized by the Technical Branch with a view to better service, less labour, and economical working.

The work during the past year can be briefly summarized from the following list of works undertaken :—

	Number.	£
General hospitals	6	147,127
Additions to hospitals	13	29,819
Maternity hospitals	4	16,757
Tuberculous sanatoria	1	10,423
Old People's Homes	3	26,267
Nurses' Homes	16	111,802
X-ray appliances	3	11,610
Engineering services	5	3,467
		£357,272
Land-purchase		18,000
Department's institutions	12	13,132
		£388,404

Medical Records.—The routine inspections of hospitals carried out during the past year have revealed in certain institutions a lack of proper and complete medical records. The necessity for a definite system of records needs very little elaboration, and where such a system is not already installed it is hoped the Boards and officers concerned will take the matter in hand.

Medical records to be complete should include full details of history of patient, examinations made for diagnosis, treatment given, and the results of such treatment. They should be filed in an approved manner, with an adequate method of cross-indexing according to patient's number, name, and disease. An essential of such a system of filing is that it should provide for ready and easy compilation of annual statistics of number of patients treated, sex, age, disease, and result.

A similar system should be instituted for records of operations.

Bacteriological Departments.—It is essential that adequate facilities should be provided in connection with our public hospitals to enable bacteriological investigations to be carried out. This is already an accomplished fact in New Zealand so far as the larger institutions are concerned. Fully equipped bacteriological departments are to be found in the four main centres under the charge of well-qualified medical men, while the hospitals at Whangarei, Hamilton, Gisborne, Napier, Palmerston North, New Plymouth, and Invercargill have smaller but reasonably adequate departments under the charge of competent technicians.

The problem of the smaller institutions can be met by contiguous Boards agreeing to combine and establish a laboratory at the hospital which is the strategic centre of the district to be served.

This has recently been done by a group consisting of Taranaki, Hawera, and Stratford Hospital Boards, and is a very valuable precedent which has the hearty support of the Department.

X-ray Departments.—X-rays are now practically indispensable for diagnosis, and of growing importance for therapeutic purposes. This important branch of institutional work has developed rapidly in the Dominion, as is shown by the following statement which gives the number of hospitals at the present moment in possession of X-ray plants:—

Class I, 200 occupied beds and over: Each hospital in this group has an X-ray installation.

Class II, over 100 occupied beds and under 200: Each hospital in this group has an X-ray installation.

Class III, 40 to 100 occupied beds: Each hospital in this group has an X-ray installation.

Class IV, 20 to 40 occupied beds: Of the eleven hospitals in this group six have X-ray installations.

Class V, 10 to 20 occupied beds: Of the fifteen institutions comprising this group six already have plants suitable to the size of the institution and amount of work involved. Further, two other institutions are now arranging for the necessary installation.

Class VI, under 10 beds: Of the twenty-nine hospitals in the group three have complete X-ray plants of a size suitable for their requirements. One other is at present arranging for an installation.

In other words, every public hospital in the Dominion containing forty beds or over is provided with an X-ray apparatus, while of the institutions which remain eighteen out of fifty-five either already possess an apparatus or have the same in process of installation.

Equipment for administration of deep therapy is arranged for in the four base hospitals. It is not the policy of the Department to encourage the installation of such apparatus in other than these larger institutions except in most unusual circumstances.

Hospital Dietetics.—The need for qualified dietitians for the larger institutions has again to be stressed, for in recent years dietetics has developed from a more or less haphazard tradition to an exact science. Dunedin Hospital, it is interesting to record, is the pioneer institution in this respect, for during the year under review it added a qualified dietitian to its staff. Other Boards in the Dominion are watching the experience of the Dunedin Hospital with close interest.

These appointments, however, are now well past the experimental stage, and the experience of English and American hospitals where dietitians have been added to the staff is that these officers have fully justified their appointments.

House Managers.—The Department is very definitely of opinion that hospitals of one hundred beds and over should appoint House Managers for the control of the buying, accounting, and distribution of stores and supplies. This officer should also control the male domestic staff, and assume responsibility for such matters as state of grounds, exterior of buildings, &c. Past experience shows that considerable savings and increased efficiency will result where such a policy is followed. The Department is prepared to assist Hospital Boards at any time either to select suitable men for these positions or to train at one of its own institutions any officer already in the employ of the Board who is regarded as suitable for such a post.

Stores System.—One of the most important matters in connection with the proper administration of the hospital is the systematic recording of the receipt, issue, and custody of stores.

Hospital Boards can only have regular information as to institutional costs where the stores system is comparable and perpetual. Such a system to be effective need not necessarily be elaborate, but it should be so designed as to afford complete check over materials from their receipt in the hospital to the time of their final consumption. It is the intention of the Department to issue in the near future regulations governing the keeping of stores accounts. A committee of hospital House Managers and Secretaries will deal with the matter, and it is hoped to evolve a scheme which will prove satisfactory and acceptable to all classes of institutions.

Combined Buying.—The value of all stores and supplies required for all institutions in the Dominion now amounts to over £400,000 annually.

The reports of the Inspecting House Manager on various institutions visited by him during the past year show clearly that very great economy would be effected by combined buying.

The wide discrepancies in prices paid in adjoining districts, particularly in the case of hospitals outside the four main centres, show that there is a real and pressing need for the adoption of some system other than the present haphazard one of buying locally. The position of the local wholesaler or retailer need not be considered unless his prices are in accord with the ruling market rates. The case for combined buying has already been very thoroughly discussed in the *Journal of Public Health*, 1920, under the heading of the "Economic Aspect of a Central Purchasing Organization for Hospital Boards." The whole matter was discussed at the recent Hospitals Association Conference, and steps are now being taken with a view to instituting a method of control and distribution whereby fair and equitable prices are paid and expenditure reduced.

With the question of combined buying must be considered the standardizing of equipment and supplies. A very large percentage of requirements can be standardized, and from this still further economies may be expected.

SECTION 3.—DIVISIONAL, SECTIONAL, AND INSTITUTIONAL REPORTS.

Public Hygiene.—Dr. T. McKibbin has submitted a full and comprehensive report upon the activities of this Division. Comment has already been made upon certain matters coming within the purview of this report, but attention is drawn to the full and detailed account of the anterior poliomyelitis epidemic.

Child Welfare.—Sir Truby King again presents an impressive picture of work carried out under his inspiring leadership. The reduction in the mortality rate of infants, particularly of those in their first month, is very gratifying.

Nursing.—Miss Bicknell's report shows that sound progress is being made in the training of nurses. Her remarks, however, on the importance of medical nursing in comparison with surgical nursing may well be taken to heart.

The St. Helens hospitals continue to render valuable and increasingly efficient service.

The scheme for the superannuation of nurses, which has your earnest support, will, it is hoped, be brought into operation at an early date. There is no need for me to stress the necessity for this provision for a body of women who render particularly unselfish and valuable service to the people of the Dominion.

School Hygiene.—Dr. Ada Paterson very rightly refers to the important part health education plays in the building-up of robust children. In this direction the Division of School Hygiene continues to do excellent work. The statement as to the prevention and treatment of goitre in school-children is of outstanding interest, as illustrating the excellent work that is being accomplished in the schools.

The comments on the results of the medical examination of school-teachers undergoing training in our colleges demands careful consideration by the authorities concerned.

Dental Hygiene.—The report of Mr. T. A. Hunter shows the extent of the work accomplished by his Division in a field of preventive medicine fraught with great possibilities. That the dental nurses stationed in the various centres have performed in some eighteen months 127,716 operations is striking evidence as to the need of their services and the extent to which they are used. The results of the recent examination indicated that the training of the nurses is on particularly sound lines.

Maori Hygiene.—It is satisfactory to note from the report of Dr. Te Rangi Hiroa that the general health of the Maori people continues to improve. The work of the officers of this Division in the conquest of disease has undoubtedly helped to foment that spirit of good will and loyalty which so distinguishes the Maori race.

Maternal Welfare.—Dr. Jellett is exercising a marked influence in rising the standard of midwifery practice in New Zealand. The evolution of an adequate and efficient maternity service depends largely on the principles enunciated in his available report.

Dr. Paget and Dr. Elaine Gurr are to be congratulated on the progress made in their special spheres of maternity and ante-natal work. The co-operation of the British Medical Association and the Plunket Society in these great avenues of service is most encouraging.

The standard of private hospitals, both maternity and general, is being raised by close departmental inspection and the very earnest desires of those in charge of such institutions to co-operate fully with the Department.

Queen Mary Hospital, Hanmer Springs.—Special features of Dr. Chisholm's report are his references to the extension of his institution so as to allow of the accommodation of female cases, and to the satisfactory results achieved. Thanks are due to the Red Cross Society for continuing to maintain the recreation-room at this institution. The Department is greatly indebted to this and similar organizations which cater for the pleasure and comfort of the patients in our various institutions.

King George V Hospital, Rotorua.—It is with pleasure that one records the increased development of this institution and the widened scope of its activities. It is eminently satisfactory that this hospital is now practically fulfilling the functions of a base hospital for the district. The good work carried out speaks well for the administration of Dr. Wallis and the efficient and loyal services rendered by his officers.

Pukeora Sanatorium, Waipukurau.—Dr. Maclean by his report shows that he takes a most sympathetic interest in the welfare of his patients. Features in the report to which special notice is directed are the extended use of the sanatorium and the increase in the length of stay of civilian patients, so ensuring a greater chance of permanent arrest of the disease. Dr. Maclean's further report in regard to the use of sodium morrhuate will be awaited with interest.

Otaki Sanatorium and Hospital.—Dr. Curtis is to be congratulated upon the results obtained in his institution. The improvement in the type of case admitted to the sanatorium speaks well for the co-operation the Department is receiving from the medical profession in the way of encouraging early sanatorium treatment. The Otaki Hospital was used to a much lesser extent than the previous year.

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

SECTION 4.—MISCELLANEOUS.

Board of Health.—Quarterly meetings of the Board of Health were held during the year, when a variety of matters was dealt with. Requisitions were served upon a number of local bodies requiring the carrying-out of sanitary works. Other matters dealt with included the care of mental defectives and sterilization of the unfit, control of venereal diseases, subdivision of hospital districts, medical research, &c. The thanks of the Government are due to the members of the Board for the willing manner in which they give their services and for the able advice tendered by them at all times.

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

——	1920.	1921.	1922.	1923.	1924.
Number on register on 1st January	1,015	1,064	1,071	1,073	1,138
Number added during year by registration ..	71*	60†	33‡	76§	84‖
Number added during year by restoration ..	5	4	1	1	1
Number removed during year on evidence of death	25	10	8	11	19
Number removed during year by direction of Medical Board—					
Ceased to practise	..	..	1	..	..
Letters not delivered and returned to Registrar-General	..	40	21	..	..
Reported dead	..	7	2	..	..
Number removed during year by direction of Supreme Court	2	..	..	1	..
	1,064	1,071	1,073	1,138	1,204

* Includes 36 with New Zealand qualifications. † Includes 28 with New Zealand qualifications. ‡ Includes 21 with New Zealand qualifications. § Includes 59 with New Zealand qualifications. ‖ Includes 67 with New Zealand qualifications.

The outstanding event of the year was the passing of the Medical Practitioners Amendment Act, 1924, which transferred the registration duties of the Registrar-General to the Department of Health, and greatly increased the disciplinary powers of the Medical Council.

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

Masseurs Registration Act, 1920.—During the past year the Masseurs Registration Board has met as required.

The Board gave lengthy consideration to the Masseurs Registration Amendment Bill, which finally became law as the Masseurs Registration Amendment Act, 1924. This, *inter alia*, defined the term "massage," so extending the jurisdiction of the Act.

There have been no appeals from the Board's decisions.

The Register of Qualified Masseurs contains 403 names.

Plumbers Registration Act, 1912.—Two meetings of the Plumbers Board constituted under the above Act were held during the year.

Examinations under the Act were held in June and November. At the June examination 193 candidates presented themselves for examination, the results being that forty-two candidates passed last year in the theoretical and twenty-seven in the practical, whilst twenty-nine qualified for registration and were placed on the register. At the November examination 219 candidates presented themselves for examination, the results being sixty-five candidates passed in the theoretical and sixteen in the practical; forty-one qualified for registration and had their names duly recorded on the register.

To date the names of 1,595 plumbers have been entered in the register, and thirty-three names removed through death.

During the year 1,223 pocket certificates of registration were issued.

Staff.—In the death of Miss White (R.R.C., Medaille de la Reine), Matron of King George V Hospital, Rotorua, the Department suffered a serious loss. Miss White was a capable and highly esteemed officer, and I desire to endorse the tribute paid to her memory by Dr. Wallis.

The Department is glad to see the distinguished work of Sir Truby King, Director, Division of Child Welfare, in the interests of mother and child in this and other countries has been fittingly rewarded, and desires to congratulate Sir Truby upon the signal distinction which has been conferred upon him.

It is pleasing to record that Dr. Frengley has so far recovered as to have returned to duty. Unfortunately, however, Dr. Frengley has found it necessary in the interests of his health to retire from the post of Deputy Director-General which he has so long filled with honour and distinction and to assume less onerous duties. It is some consolation to know that Dr. Frengley's services are not lost to the Department, and it can be confidently expected that in his new capacity as Director, Division of Food and Drugs, he will render the same high standard of service which has characterized his work in the past.

Mr. Hurley, Government Bacteriologist, Wellington, who retired on superannuation as from the 31st May, 1925, has been a most zealous and efficient officer of the Department. He will carry with him into his well-earned retirement the good wishes of his former colleagues.

The staff of Medical Officers of Health has been augmented by the appointment of Drs. Crawshaw, Mecredy, and Shore.

In conclusion, I desire to express my sincere appreciation of the high standard of service rendered by each and every member of the staff. The loyal co-operation, the zeal, the energy which have characterized the work of all officers during the past year have done much in lightening the load borne by the Director-General of Health.

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

PART II.—PUBLIC HYGIENE.

I have the honour to submit my annual report for the year ended 31st March, 1925.

SECTION 1.—VITAL STATISTICS.

Population.

The population of New Zealand at the census of 17th April, 1921, was 1,218,913. This total does not include Maoris, whose numbers were separately determined as 52,751.

The mean population for 1924 (exclusive of Maoris) was estimated to be 1,298,635. This total represents an increase over the corresponding figure for the previous year of 24,084, or a percentage increase of 1·89.

Births.

The births of 28,014 living children were registered in the Dominion during 1924, as against 27,967 in 1923, and a yearly average of 27,223 during the pre-war period, 1910-14. The birth-rate for 1924 was thus 21·57 per 1,000 of mean population.

The general course of the birth-rate during the last ten years is shown in the following table :—

Births (Number and Rate) in New Zealand, 1915-24.

Year.	Total Number of Births registered.	Birth-rate per 1,000 of Mean Population.
1915	27,850	25·33
1916	28,509	25·94
1917	28,239	25·69
1918	25,860	23·44
1919	24,483	21·54
1920	29,921	25·36
1921	28,567	23·34
1922	29,006	23·17
1923	27,967	21·94
1924	28,014	21·57

The birth-rate for 1924 is exceedingly low. Indeed, with the exception of 1919, when it was only 21·54, such a low rate has never before occurred.

Still-births.—Still-births, which are defined by the Births and Deaths Registration Amendment Act of 1915 as " children which have issued from their mother after the expiration of the twenty-eighth week of pregnancy, and which were not alive at the time of such issue," are compulsorily registrable in the Dominion. The next table shows the number of such births, and their rate per 1,000 live births, in individual years for the quinquennium, 1920–24.

Still-births (Number and Rate) in New Zealand, 1920–24.

Year.	Total Number of Still-births registered.	Rate of Still-births per 1,000 Live Births.
1920	840	28·1
1921	903	31·6
1922	842	22·1
1923	894	32·0
1924	855	30·5

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

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

Deaths.

The number of deaths recorded during 1924 was 10,767, as compared with 11,511 in 1923, and a yearly average of 9,370 in the period 1910–14. The Government Statistician gives the crude death-rate for 1924 as 8·29 per 1,000 of mean population, and the standardized death-rate (International Index of Mortality) as 10·15.

In computing the latter the Government Statistician takes the age and sex distribution of the population into account to enable equitable comparison with other countries.

The following table gives the number of deaths and the death-rate in the Dominion for the decennium, 1915–24.

Deaths (Number and Rate) in New Zealand, 1915–24.

Year.	Total Number of Deaths.	Crude (Actual) Death-rate.	Standardized Death-rate (Index of Mortality).
1915	9,965	9·06	11·38
1916	10,596	9·64	11·88
1917	10,528	9·58	11·66
1918	16,364	14·84	16·80
1919	10,808	9·51	11·75
1920	12,109	10·27	12·80
1921	10,682	8·73	10·93
1922	10,977	8·77	10·70
1923	11,511	9·03	11·12
1924	10,767	8·29	10·15

Both the crude (8·29) and standardized (10·15) death-rates for the year 1924 are the lowest on record, and they are in all probability lower than those of any civilized country. New Zealand has ordinarily a lower death-rate than any of the Australian States, which, again, have considerably lower rates than other countries.

Infant Mortality.—The infant-mortality rate for 1924 was 40·2 per 1,000 births. This rate is the lowest recorded in the Dominion.

The next table demonstrates the relative obstinacy of the first-month mortality to react to the administrative measures which have proved so successful at later ages.

Infant Mortality in New Zealand, 1900–24.—Proportion of Deaths under Twelve Months to every 1,000 Births in Individual Years.

Year.	Under One Month.	One Month and under Twelve Months.	Total under Twelve Months.	Year.	Under One Month.	One Month and under Twelve Months.	Total under Twelve Months
1900 ..	31·1	44·1	75·2	1913 ..	29·7	29·5	59·2
1901 ..	29·8	41·6	71·4	1914 ..	28·9	22·5	51·4
1902 ..	32·2	50·7	82·9	1915 ..	29·2	20·8	50·0
1903 ..	31·7	49·4	81·1	1916 ..	27·0	23·7	50·7
1904 ..	29·4	41·6	71·0	1917 ..	27·9	20·3	48·2
1905 ..	30·1	37·4	67·5	1918 ..	26·7	21·7	48·4
1906 ..	29·6	32·5	62·1	1919 ..	28·4	16·9	45·3
1907 ..	30·4	58·4	88·8	1920 ..	30·8	19·7	50·5
1908 ..	31·2	36·7	67·9	1921 ..	30·7	17·1	47·8
1909 ..	29·9	31·7	61·6	1922 ..	27·2	14·7	41·9
1910 ..	30·2	37·5	67·7	1923 ..	29·1	14·7	43·8
1911 ..	28·5	27·8	56·3	1924 ..	24·0	16·3	40·2
1912 ..	30·1	21·1	51·2				

Maternal Mortality.—The following table shows the number of deaths from puerperal causes, and the rate of such deaths per 1,000 births, for the five-yearly period, 1920–24 :—

Deaths from Puerperal Causes (Number and Rate) in New Zealand, 1920–24.

Year.	Total Number of Deaths from Puerperal Causes.	Rate per 1,000 Births.
1920	.. 194	6·48
1921	.. 145	5·08
1922	.. 149	5·14
1923	.. 143	5·11
1924	.. 140	5·00

While the vital statistics of New Zealand generally compare more than favourably with those of other countries, unfortunately, in proportion to its population more women die as a result of child-birth in this country than in many other countries which have not the advantages that we possess. The following table shows the position clearly :—

Maternal-mortality Rates.

Country and Year.	Maternal Rate per 1,000.	Country and Year.	Maternal Rate per 1,000.
Denmark, 1921	.. 2·0	Germany, 1918	.. 4·9
Netherlands, 1921 ..	.. 2·3	New Zealand, 1924 ..	.. 5·0
Sweden, 1917	.. 2·5	Spain, 1915	.. 5·2
Italy, 1917	.. 3·0	Ireland, 1920	.. 5·5
Norway, 1917	.. 3·0	Switzerland, 1915 ..	.. 5·5
Uruguay, 1920	.. 3·4	France, 1914	.. 5·7
Japan, 1921	.. 3·6	Scotland, 1919	.. 6·2
England and Wales, 1922	.. 3·8	United States Birth-registration Area, 1923	6·8
Union of South Africa, 1919	.. 3·9		
Hungary, 1915	.. 4·0	Belgium, 1919	.. 7·2
Finland, 1918	.. 4·4	Chile, 1920	.. 7·5
Australia, 1921	.. 4·7		

The reduction in the infant-mortality rate has been until now wholly due to the saving of infant life after the age of one month. This year the death-rate of infants under one month has been reduced to 24 per 1,000 live births, but considerable further improvement is necessary.

Closely allied in its causes with the death-rate under one month is the mass of still-births which occurs annually in the Dominion. Still-births have been notifiable since 1915. The rate of still-births for the year 1924 was 31 per 1,000 live births.

In order, therefore, to reduce maternal mortality, still-births, and the deaths of infants in the first month of life the Department is inaugurating throughout the Dominion a system of ante-natal clinics for the examination and tuition of expectant mothers, is devoting special attention to the improvement of maternity hospitals, the training of midwives, and the prevention of puerperal infection.

SECTION 2.—NOTIFIABLE DISEASES.

The Infantile-paralysis Epidemic.

This epidemic began on the 25th November, 1924, at Petone, and quickly spread to Wellington. Its incidence until and including the 30th April, 1925, was as follows:—

	Cases notified.	Deaths.
Whole Dominion—		
Population 1,300,000	1,257	166
Auckland Health District—		
Population 398,000	310	61
Wellington Health District—		
Population 476,000	604	70
Canterbury-Westland Health District—		
Population 250,000	277	27
Otago-Southland Health District—		
Population 207,000	66	8

Expressed as a ratio per 100,000 of mean population this produces:—

	Cases notified.	Deaths (per 100,000 of Population).
Whole Dominion	97	12·7
Auckland Health District	78	15·3
Wellington Health District	127	14·7
Canterbury-Westland Health District	111	10·8
Otago-Southland Health District	32	3·9

Severity.—The most severe epidemic of infantile paralysis recorded to date was that of 1916 in the north-eastern States of America.

The population of these north-eastern States in 1916 was, roughly, thirty-two millions, and in that year there were 72 cases per 100,000 of population and 16 deaths per 100,000 of population.

In this recent epidemic in New Zealand there were 97 cases per 100,000 of population and 12·7 deaths per 100,000 of population.

To judge from the death-rate, then, which is the most reliable index of severity, the epidemic we have lately experienced can be regarded as comparatively severe.

This year in New Zealand the number (97) of cases notified per 100,000 of population is high. This probably spells careful diagnosis and free notification of mild cases, which is an aid to prevention of spread and is a satisfactory feature.

In the early stages of the epidemic a committee set up by the Council of the British Medical Association and the Department of Health promulgated to all medical practitioners in the Dominion a pamphlet summarizing the symptomatology of this disease, and, in order to lessen the spread of this disease, emphasizing the importance of notifying all cases capable of conveying infection.

Age incidence of cases notified—

95·7 per cent. were under 20 years of age.
92·1 per cent. were under 15 years of age.
61·9 per cent. were under 6 years of age.

The optimum ages were—

Children of 2 years and under 3 contributed 15 per cent. of the total.
Children of 3 years and under 4 contributed 13·7 per cent. of the total.

These ages give the highest attack rate.

On either side of these,—

Children of 1 year and under 2 contributed 11·9 per cent. of the total.
Children of 4 years and under 5 contributed 10 per cent. of the total.

This age incidence may be called typical.

Deaths from Infantile Paralysis in New Zealand Annually.

Year.		Year.	
1912	2	1919	1
1913	2	1920	2
1914	9	1921	9
1915	3	1922	9
1916	123	1923	2
1917	10	1924–25	166
1918	4		

Eight years, therefore, have passed since the last epidemic.

The reports we received from the medical attendants concerning the early cases indicated severity of type, and it was feared the paralysis result throughout the Dominion would be formidable. Although, however, 166 deaths have occurred, later reports from nearly all centres state that recoveries from paralysis have been unexpectedly numerous. We have received interim estimates from Medical Officers of Health, obtained from the various hospital Superintendents, and though these are not yet final they establish beyond doubt a remarkably high proportion of recoveries. These cures are very gratifying and reflect credit upon those in attendance upon the cases.

Our death-rate was comparatively high, and naturally one would have expected a high paralysis rate also. That appears to be the usual concomitant of severe epidemics of this disease. Either, then, an anomaly is presented by our high death-rate and low paralysis rate, or, what is more probable, a distinct advance has been made in treatment. New Zealand is well supplied with hospitals.

The great majority of the cases were promptly sent to hospital. Careful splinting and posturing has been the usual practice, and in the larger centres this has been done under the direction of surgeons who have received special tuition in orthopædic work. Convalescent serum has been used in considerable measure.

Prevention of Spread.—I may say the loyal manner in which the general public have observed the precautionary measures deemed expedient, and the complete co-operation of the great majority of medical practitioners with the officers of the Department of Health, have caused the latter considerable gratification.

Within our memories infantile paralysis was considered not to be an infectious disease. It has all along been far more prevalent than we realized. To judge from observations in many epidemics, the mild systemic cases must in epidemic periods be very prevalent indeed, and even in normal years when from two to ten deaths are recorded in the Dominion there are probably far more mild systemic cases in particular localities than are recorded.

Many experienced observers believe that the disease in mild form is very common indeed, that in epidemic years immunity is acquired by a large proportion of the child population, and in non-epidemic years by means of a less virulent strain of virus there is a far greater degree of immunity thus conferred than we have hitherto realized.

It is thought that this inestimable immunity factor is the important element underlying the mystery which surrounds infantile paralysis and its means of spread.

In common with other infectious diseases, infantile paralysis is probably most conveyable in its acute stage. Its incidence preponderates enormously in persons under sixteen years of age. Mild systemic cases are believed to be very much more common than frank meningitic or paralytic cases. A great number of them probably are not recognized as such, and there is every chance that medical opinion or aid will not be sought. Hence, in addition to the usual measures of notification, hospitalization of the case, and isolation of susceptible contacts, it was decided to definitely restrict the congregation of children in areas where infection was believed to be rife.

As with diphtheria, there is apparently an age immunity as well as an acquired immunity.

It is an infantile disease, and we can reasonably claim that a great majority of those susceptible children of tender years who have escaped this epidemic will also escape a future visitation of infantile paralysis several years hence.

It was decided not to isolate adult contacts when a child was sent to hospital, unless, of course, such adults had pyrexia or some symptoms attributable to this disease, or unless their occupation meant close contact with numbers of children. While it is admitted an adult may become a carrier probably this is a rare event, and in any case there is no practicable means of testing such a condition or of knowing how long it may persist. The isolation of adults has a damaging economic effect, and there is as yet insufficient evidence to justify our isolating all adult contacts when the patient has been sent to hospital, in view of the fact that apparently very few actually contract the disease.

Scarlet Fever.

The course of scarlet fever in New Zealand during the last five years is briefly shown in the tables below. The notifications for 1924 reveal a satisfactory decline as compared with previous years, and the death-rate shows no change from the previous year.

Scarlet Fever in New Zealand, 1920–24.

Year.	Notifications.		Deaths.	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1920	1,248	10·46	15	0·13
1921	1,845	15·07	24	0·19
1922	1,449	11·58	10	0·08
1923	1,201	9·42	13	0·10
1924	1,176	9·05	13	0·10

Diphtheria in New Zealand, 1920–24.

Year.	Notifications.		Deaths.*	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1920	2,442	20·48	95	0·81
1921	2,611	21·33	107	0·87
1922	1,989	15·89	78	0·62
1923	1,951	15·31	68	0·53
1924	2,717	20·84	82	0·63

* Figures include deaths from croup.

Enteric Fever.

The position as regards this disease for the period 1920–24 is shown in the table below :—

Enteric Fever in New Zealand, 1920–24.

Year.	Notifications.		Deaths.	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1920	389	3·26	40	0·34
1921	451	3·68	24	0·19
1922	539	4·31	67	0·54
1923	276	2·17	23	0·18
1924	354	2·73	19	0·15

Tuberculosis.

The notifications for 1924 show a slight increase in comparison with the preceding year, the figures being respectively 1,072 and 1,002.

The next table, based upon death returns, gives a truer idea of the variations in the prevalence of this disease during the period 1915–24.

Tuberculosis in New Zealand, 1915–25.

Year.	Number of Deaths from Tuberculosis.	Death-rate from Tuberculosis per 10,000 of Mean Population.	Percentage of Total Deaths from all Causes.
1915	693	6·30	6·95
1916	742	6·74	7·00
1917	755	6·87	7·17
1918	832	7·54	5·08
1919	762	6·71	7·05
1920	851	7·21	7·03
1921	793	6·48	7·42
1922	821	6·56	7·48
1923	792	6·21	6·88
1924	736	5·67	6·84

The position disclosed by the table is, on the whole, a satisfactory one. It will be seen that the death-rate from tuberculosis for the year was extraordinarily low, and constitutes a new record. Of the total of 736 deaths in 1924, 573 were assigned to pulmonary tuberculosis, and the remaining 163 to other forms of tuberculosis.

Mortality from tuberculosis is steadily reducing, and South Africa, Australia, and New Zealand have a very much lower death-rate from this disease than most other countries.

Pneumonic Influenza.

The table appended illustrates the course of this disease for the quinquennial period 1920–24. Following the heavy incidence during 1923, this disease has declined in 1924 to a low level in both cases and deaths.

Pneumonic Influenza in New Zealand, 1920–24.

Year.	Notifications.		Deaths.	
	Number.	Rate per 10,000 of Mean Population.	Number.	Rate per 10,000 of Mean Population.
1920*	470	..	480	..
1921	295	2·41	105	0·86
1922	216	1·73	23	0·18
1923	1,144	8·98	223	1·75
1924	180	1·39	32	0·25

* The disease first became notifiable in pneumonic septicæmic and fulminant forms in June, 1920.

Acute Primary Pneumonia.

The notifications for this disease show a satisfactory situation. In 1924 756 cases were notified, as compared with 788 cases in 1923 and 946 cases in 1922.

Puerperal Fever.

The following table shows the course of this disease for the quinquennium, 1920–24 :—

Puerperal Fever in New Zealand, 1920–24.

Year.	Notifications.		Deaths.	
	Number.	Rate per 1,000 Live Births.	Number.	Rate per 1,000 Live Births.
1920	124	4·14	67	2·22
1921	178	6·23	48	1·68
1922	262	9·03	52	1·79
1923	176	6·93	52	1·86
1924	308	10·99	52	1·86

While the death-rate has remained stationary the figures disclose a freer notification of this disease by medical attendants. Closer attention is being paid to the prevention of this disease, and it is hoped that the measures taken, which have been referred to elsewhere, and the co-operation of the medical profession will in the near future bring about an actual reduction in this death-rate.

Table A.—Notifiable Diseases in New Zealand, 1924, showing Distribution by Months.

Month.	Scarlet Fever.	Diphtheria.	Enteric Fever.	Tuberculosis.	Cerebro-spinal Meningitis.	Poliomyelitis.	Puerperal Fever.	Pneumonic Influenza.	Pneumonia.	Erysipelas.	Eclampsia.	Tetanus.	Trachoma.	Lethargic Encephalitis.	Hydatids.	Food Poisoning.	Ophthalmia Neonatorum.	Septic Abortion.	Lead Poisoning.	Hookworm.	Phosphorus Poisoning.	Actinomycosis.	Totals.
January	70	145	38	79	3	2	7	7	36	13	4	5	1	2	2	3	3	..	..	..	..	..	420
February ..	109	112	37	97	4	2	12	2	27	8	1	1	3	2	3	..	2	..	..	..	..	..	422
March	81	208	62	72	3	..	32	7	29	12	2	..	7	2	2	1	2	..	..	1	..	..	523
April	110	275	33	70	3	..	25	8	20	20	..	..	1	3	5	..	2	..	..	..	..	..	575
May	123	346	37	86	1	..	27	10	37	21	2	1	1	1	..	..	1	..	2	..	..	..	696
June	107	350	22	67	1	1	26	6	52	16	1	1	..	2	4	..	4	..	..	..	..	..	660
July	139	356	23	97	2	1	38	17	99	25	10	2	2	1	4	..	3	..	..	..	1	..	820
August	124	265	20	98	3	1	32	17	131	23	4	1	..	6	3	..	7	..	..	..	..	1	736
September ..	84	223	21	102	2	..	32	19	102	26	3	..	..	4	3	..	..	..	..	..	..	..	621
October	81	159	30	99	2	2	35	43	97	17	7	3	3	2	4	..	1	..	..	..	..	..	585
November ..	83	163	16	97	3	5	15	36	81	14	3	1	2	2	4	..	5	1	..	..	..	..	531
December ..	65	115	15	108	4	59	27	8	45	15	2	1	..	3	4	10	1	10	..	..	..	..	492
Totals, 1924 ..	1,176	2,717	354	1,072	31	73	308	180	756	210	39	16	20	30	38	14	31	11	2	1	1	1	7,081
Totals, 1923 ..	1,201	1,951	276	1,002	36	17	176	1,144	788	213	38	20	8	36	29	13	27	..	..	..	..	2	6,977

Note.—Septic abortion became notifiable on 30th August, 1924.

Table B.—Infectious Diseases notified in New Zealand during 1924, showing Distribution by Hospital Districts.

Hospital District.	Estimated Population (excluding Maoris).	Estimated Maori Population.	Scarlet Fever.	Diphtheria.	Enteric Fever.	Tuberculosis.	Cerebro-spinal Meningitis.	Poliomyelitis.	Puerperal Fever.	Influenza (Pn. Fulm. and Septicæmic).	Pneumonia.	Erysipelas.	Eclampsia.	Tetanus.	Trachoma.	Lethargic Encephalitis.	Hydatids.	Food Poisoning.	Ophthalmia Neonatorum.	Septic Abortion.*	Lead Poisoning.	Hookworm.	Phosphorus Poisoning.	Actinomycosis.	Totals.
Bay of Islands ..	4,575	2,896	..	..	..	11	..	..	..	2	1	..	..	..	1	..	..	..	..	..	..	..	..	..	15
Mangonui	4,160	2,904	..	1	37	8	..	..	1	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	49
Whangaroa	965	701	1	..	..	3	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
Hokianga	2,915	3,328	..	3	1	3	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	9
Kaipara	11,250	1,387	3	39	..	10	1	..	3	..	3	..	..	..	..	1	..	..	..	..	..	..	..	..	60
Whangarei	15,395	1,202	1	12	5	17	..	..	4	1	2	1	1	..	..	..	..	..	1	..	..	..	..	..	45
Auckland	218,300	1,760	122	350	* 71	154	8	5	79	49	135	40	8	2	4	7	1	..	7	..	..	..	..	..	1,042
Waikato	81,300	9,376	38	218	41	101	2	..	15	15	23	11	2	3	6	2	2	..	..	..	..	..	..	..	479
Thames	14,525	1,382	7	33	7	18	..	1	2	3	13	3	..	..	..	..	..	..	..	..	..	..	..	..	87
Waihi	3,845	..	8	..	1	15	..	..	3	1	1	..	..	1	..	..	..	..	..	..	..	..	..	..	30
Coromandel ..	2,110	305	..	11	..	6	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	18
Tauranga	8,425	2,260	4	1	9	7	..	..	..	1	20	1	..	..	..	..	..	..	..	..	..	..	..	..	43
Bay of Plenty ..	8,440	4,215	4	8	6	17	1	..	1	1	3	4	..	..	2	..	1	..	..	..	..	..	..	..	48
Taumarunui	10,215	786	..	12	10	11	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	34
Waiapu	2,465	3,693	..	1	28	2	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	33
Cook	24,190	2,329	13	80	6	26	1	..	5	..	6	9	..	..	..	..	2	..	..	..	..	..	..	..	148
Wairoa	4,690	3,000	5	3	27	15	..	..	..	1	20	2	..	..	..	..	1	..	..	..	..	..	..	..	74
Hawke's Bay ..	40,985	1,441	20	27	12	42	..	2	14	8	37	16	1	..	..	..	1	..	1	..	..	..	..	..	181
Waipawa	21,395	599	18	2	5	13	1	..	2	2	9	6	..	2	..	..	1	..	1	..	..	..	..	..	62
Taranaki	30,840	1,787	9	206	17	13	1	1	7	3	3	1	1	..	..	..	..	3	..	1	..	..	..	..	266
Stratford	9,825	38	4	21	3	2	..	..	1	4	6	2	1	..	..	..	..	..	..	..	..	..	..	..	44
Hawera	19,065	977	13	138	3	6	2	..	2	5	7	1	2	..	..	..	3	..	..	..	..	..	..	..	182
Patea	5,140	322	3	3	1	5	..	..	1	..	4	..	..	..	..	1	..	..	..	..	..	..	..	..	18
Wanganui	50,810	2,117	27	93	11	15	1	1	8	22	18	8	2	..	1	1	1	..	..	1	..	..	..	..	210
Palmerston North ..	51,800	2,053	19	181	2	51	1	..	17	6	60	6	1	..	..	1	2	1	2	..	..	..	..	..	350
Wellington	128,340	764	92	354	11	63	3	57	30	6	44	15	4	1	3	5	1	5	6	..	..	..	..	..	700
Wairarapa	33,500	837	27	44	..	16	..	..	8	6	5	4	..	..	..	..	2	..	..	1	..	..	..	..	113
Wairau	13,610	218	2	3	..	1	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	8
Picton	3,350	207	..	1	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2
Nelson	27,510	101	5	54	4	7	..	..	4	2	3	..	..	..	..	..	..	..	..	..	..	..	..	..	79
Westland	7,750	73	8	56	..	6	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	73
Buller	9,365	4	5	50	..	..	1	..	..	1	2	..	1	..	1	..	..	..	..	..	..	..	..	..	61
Inangahua	3,545	..	4	13	..	1	..	..	..	..	9	..	..	..	..	..	..	..	..	..	..	..	..	..	27
Grey	12,275	6	3	79	5	3	..	..	2	..	3	2	1	..	..	1	2	..	..	..	..	..	..	..	101
North Canterbury ..	160,317	809	446	232	14	177	4	..	42	32	154	29	9	3	..	4	7	3	6	4	2	..	..	..	1,168
Ashburton	18,425	17	64	14	1	13	2	..	8	..	22	2	2	..	..	1	3	2	1	..	..	..	..	..	135
South Canterbury ..	43,520	242	78	92	1	22	..	4	9	1	45	4	1	..	..	2	2	..	2	1	..	..	1	..	265
Waitaki	17,580	50	7	16	4	20	..	..	3	1	12	7	1	..	..	..	..	..	..	..	..	1	..	1	73
Otago	98,475	116	33	223	8	105	2	1	14	1	53	26	1	1	..	3	3	..	4	2	..	..	..	..	480
South Otago	16,975	24	15	8	..	15	..	..	5	..	9	2	..	..	..	1	2	..	..	..	..	..	..	..	57
Vincent	5,190	..	3	1	..	1	..	..	2	..	5	1	..	..	..	..	..	..	..	..	..	..	..	..	13
Maniototo	2,855	..	2	1	..	4	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	8
Southland	56,680	265	57	29	3	39	..	1	10	1	7	2	..	2	..	..	1	..	..	1	..	..	..	..	153
Wallace and Fiord ..	11,420	39	6	4	..	8	..	..	1	2	9	2	..	1	..	..	..	..	..	..	..	..	..	..	33
Dominion Totals, 1924	1,318,507	54,430	1,176	2,717	354	1,072	31	73	308	180	756	210	39	16	20	30	38	14	31	11	2	1	1	1	7,081
Dominion Totals, 1923	1,268,750	53,590	1,201	1,951	276	1,002	36	17	176	1,144	788	213	38	20	8	36	29	13	27	..	..	..	..	2	6,977

* Septic abortion and miscarriage.

Table C.—Notifiable Diseases in New Zealand, 1924, showing Distribution by Age and Sex.

Disease.	Under 1 Year.		1 to 5 Years.		5 to 10 Years.		10 to 15 Years.		15 to 20 Years.		20 to 25 Years.		25 to 30 Years.		30 to 35 Years.		35 to 40 Years.		40 to 45 Years.		45 to 50 Years.		50 to 55 Years.		55 to 60 Years.		60 to 65 Years.		65 to 70 Years.		70 to 75 Years.		75 to 80 Years.		80 Years and over.		Total Cases at all Ages.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Scarlet fever	..	5	104	120	157	260	90	150	34	62	11	42	10	41	9	29	8	15	3	10	1	4	3	4	1	1	..	..	..	1	..	..	..	..	..	1	431	745
Diphtheria	7	13	345	355	461	505	162	216	57	106	50	94	27	92	25	57	19	44	14	18	8	14	4	7	1	10	..	4	..	2	..	..	..	..	..	..	1,180	1,537
Enteric fever	..	..	17	14	33	24	29	30	34	22	24	18	17	14	11	11	14	7	8	7	4	3	2	4	2	1	1	2	1	..	..	..	..	..	..	..	197	157
Tuberculosis (pulmonary)	..	..	4	5	5	14	13	15	58	79	54	106	88	95	66	61	74	41	59	32	41	18	40	13	17	9	20	5	11	4	11	3	3	4	2	2	566	506
Cerebro-spinal fever ..	..	3	6	3	5	2	3	1	2	..	1	..	2	..	..	..	2	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	22	9
Acute poliomyelitis ..	5	2	28	19	7	7	..	4	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	41	32
Puerperal fever ..	..	..	..	..	..	..	..	..	..	20	..	75	..	104	..	62	..	35	..	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	308
Septic abortion ..	..	..	..	..	..	..	..	..	..	..	..	5	..	2	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11
Eclampsia	..	..	..	..	..	..	..	..	..	5	..	11	..	10	..	5	..	6	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	39
Erysipelas	1	3	3	4	1	6	2	..	3	4	4	12	4	6	5	7	10	13	11	12	14	14	9	15	9	5	3	11	4	3	3	3	2	1	2	1	90	120
Ophthalmia neonatorum	12	19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12	19
Influenza (pneumonia, &c.)	2	..	7	8	6	4	9	6	10	10	13	3	16	3	9	2	12	3	7	3	7	7	3	3	3	2	5	2	4	4	1	..	..	2	1	3	115	65
Acute primary pneumonia	17	7	71	77	74	52	42	31	36	21	26	13	25	12	29	18	20	19	29	15	22	3	16	6	11	6	11	5	7	4	8	7	3	1	4	8	451	305
Lethargic encephalitis ..	..	..	1	1	2	1	3	..	1	..	1	3	2	1	1	2	1	..	2	4	..	2	..	1	1	..	..	..	..	..	..	..	..	..	..	..	15	15
Trachoma	..	..	..	..	2	..	2	1	1	1	1	1	3	..	4	..	2	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16	4
Hydatids	..	..	1	..	..	..	..	3	2	2	3	1	1	2	4	..	2	2	2	1	..	2	..	..	2	2	1	1	..	..	2	1	..	1	..	..	20	18
Tetanus	..	1	1	..	2	..	1	..	4	..	1	..	1	..	..	..	..	1	..	..	..	..	..	..	1	1	..	..	2	..	..	..	..	..	..	..	13	3
Food poisoning ..	..	..	..	..	1	1	2	..	1	1	..	1	1	..	..	..	..	2	1	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	9	5
Actinomycosis ..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
Hookworm	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Lead poisoning ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..
Phosphorus poisoning ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
Totals ..	44	53	588	606	756	876	358	457	244	333	190	385	197	382	164	257	164	190	138	116	102	68	77	53	48	37	41	30	29	18	25	14	8	9	9	15	3,182	3,899

SECTION 3.—NON-NOTIFIABLE DISEASES.

CANCER.

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

Number of Persons who died from Cancer, the Proportion per 10,000 Persons living, and the Percentage of all Deaths, 1915–24.

Year.	Deaths from Cancer.	Total Deaths: All Causes.	Deaths from Cancer per 10,000 of Living Persons.	Deaths from Cancer per 100 of all Deaths.
1915	900	9,965	8·19	9·03
1916	909	10,596	8·27	8·50
1917	957	10,528	8·71	9·09
1918	936	16,364	8·49	5·72
1919	1,031	10,808	9·07	9·54
1920	1,029	12,109	8·72	8·50
1921	1,044	10,682	8·53	9·77
1922	1,066	10,977	8·52	9·71
1923	1,115	11,511	8·75	9·69
1924	1,245	10,767	9·59	11·56

It will be noted the death-rate from cancer per 10,000 of living persons continues to increase. This is true of all or nearly all civilized countries. Whether there has been a real or only an apparent increase has to be considered. Cancer is almost wholly a disease of middle and late life, and the span of man's life is steadily lengthening, notably in New Zealand—that is to say, he is being saved from typhoid, tuberculosis, and other diseases to die later of cancer.

Again, in many countries, notably England, coincident with the rise in the cancer death-rate there has been a decline in the deaths from abdominal diseases—peritonitis, intestinal obstruction, tumour, and other badly defined forms of disease. Some of the increase is therefore due to better diagnostic methods of recent years, and is apparent more than actual.

Statistical inquiry, too, is steadily improving. Registrars make inquiries of medical practitioners regarding obscure death-certificates, and many deaths have finally been assigned to cancer which in former years would have been placed under other headings.

Statistically, there is evidence to show that the apparent increase of cancer during the last half-century is largely due to more careful and better methods of diagnosis and of death-certification.

Despite cancer our general death-rate continues to reduce. Cancer, however, causes approximately one-tenth of our annual deaths, and every available means of ensuring prompt and skilful treatment should be adopted.

The nature and causation of most varieties of this disease are still obscure, but efficient treatment lies in early diagnosis and immediate treatment by radium, Rontgen rays, or operation.

Fuller information concerning the distribution of the above diseases, together with details of the remaining notifiable diseases, is contained in the subjoined tables.

VENEREAL DISEASES.

Venereal Clinics.—Cases treated during Year ended 31st December, 1924.

Reference.	Auckland.		Wellington.		Christchurch.		Dunedin.		Total.	
Number of persons dealt with at or in connection with the out-patient clinic for the first time and found to be suffering from—	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
Syphilis	64	19	60	29	28	16	19	5	171	69
Soft sore	17	..	..	..	..	..	..	..	17	..
Gonorrhœa	361	33	324	46	234	62	59	10	978	151
No venereal disease	67	12	131	51	61	12	4	..	263	75
Total attendances of all persons at the out-patient clinics who were suffering from—										
Syphilis	785	346	2,290	888	902	386	419	230	4,396	1,850
Soft sore	71	..	..	..	57	..	..	..	128	..
Gonorrhœa	7,971	223	30,141	1,027	7,150	550	1,090	145	46,352	1,945
No venereal disease	188	18	203	106	181	119	5	..	577	243
Aggregate number of in-patients' days of treatment given to persons suffering from—										
Syphilis	..	..	1,203	..	335	229	..	..	..	..
Gonorrhœa	..	..	4,233	..	137	110	..	..	..	..
Number of doses of salvarsan substitutes given	117	40	1,161	380	456	195	..	..	..	..
Examination of pathological material: Specimens from persons attending at treatment centre which were examined for—										
Detection of spirochætes	21	..	14	..	9	..	..	..	..	..
Detection of gonococci	1,451	243	933	248	603	221	..	..	..	..
Wasserman reaction	107	31	354	179	337	166	..	..	..	..
Others	33	2	19	2	53	27	..	..	..	..

SECTION 4.—QUARANTINE AND PORT SANITARY WORK.

PORT HEALTH INSPECTION OF OVERSEAS VESSELS DURING THE YEAR ENDED 31ST DECEMBER, 1924.

Port.	Number of Vessels inspected.	Remarks as to Cases of Infectious Diseases on Board or Person not allowed to land.
Kaipara	1	
Dargaville	2	
Whangarei	4	
Auckland	335	149 prohibited immigrants reported; 10 cases infectious disease reported.
Thames	1	
Tauranga	1	
Gisborne	7	
Napier	14	
New Plymouth	18	
Wanganui	18	
Wellington	157	7 prohibited immigrants reported; 40 cases infectious; 8 cases contagious disease reported.
Picton	4	
Nelson	2	
Greymouth	2	
Westport	1	
Lyttelton	51	2 prohibited immigrants reported; 1 case infectious; 3 cases contagious disease reported.
Timaru	5	
Oamaru	2	
Port Chalmers	27	1 case contagious disease reported.
Bluff	54	
	706	

SECTION 5.—BACTERIOLOGICAL LABORATORIES.

TABLE SHOWING PUBLIC-HEALTH WORK PERFORMED IN BACTERIOLOGICAL LABORATORIES DURING THE YEAR ENDED 31ST DECEMBER, 1924.

Specimens.	Number of Examinations carried out.																			
	Positive.										Negative.									
	Whangarei.	Auckland.	Hamilton.	Gisborne.	Napier.	Palmerston North.	Wellington.	Christchurch.	Dunedin.	Invercargill.	Whangarei.	Auckland.	Hamilton.	Gisborne.	Napier.	Palmerston North.	Wellington.	Christchurch.	Dunedin.	Invercargill.
Diphtheria diagnosis ..	24	286	158	24	16	159	1,175	253	209	43	146	1,869	475	24	315	592	8,161	2,298	854	277
Diphtheria clearance ..	52	..	151	4	25	642	..	486	533	26	100	..	717	55	46	1,391	..	3,537	830	40
Tuberculosis—																				
Sputum	56	122	103	7	93	30	209	49	133	82	177	637	382	38	479	187	820	581	576	225
Cerebro-spinal fluid ..	2	..	..	..	..	1	2	9	5	1	2	..	13	..	39	..	20	40	17	8
Urine	3	..	..	..	3	..	14	40	37	1	24	12	35	4	73	6	184	309	224	44
Pleuritic fluid ..	..	..	..	..	2	..	..	1	..	..	5	..	26	1	44	7	23	68	11	2
Fæces	..	..	..	..	..	1	..	3	..	..	..	..	1	..	12	..	17	23	6	2
Other material ..	2	..	..	..	9	..	1	14	17	..	10	1	9	1	22	..	35	35	76	14
Typhoid-fever diagnosis—																				
Agglutination tests ..	5	4	34	8	36	6	42	18	19	..	21	8	66	14	183	16	276	40	37	3
Blood-culture ..	..	13	5	1	1	..	..	2	..	..	2	33	52	6	8	1	..	2	2	2
Fæces	..	1	2	..	8	..	..	2	..	..	9	65	9	..	34	4	9	34	7	2
Typhoid-fever clearance—																				
Fæces	..	..	1	..	6	..	1	2	3	..	13	14	60	14	27	3	45	30	12	2
Urine	..	..	4	..	..	..	..	2	1	..	1	42	51	8	8	..	18	27	6	1
Cerebro-spinal-fever diagnosis—																				
Swabs	..	..	..	..	..	..	..	..	9	..	1	..	..	..	..	..	..	3	10	1
Cerebro-spinal fluid ..	..	..	2	1	..	3	..	..	1	..	1	2	5	..	..	5	29	1	3	2
Cerebro-spinal-fever clearance-swabs	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Gonorrhœa	15	65	25	9	51	19	535	160	181	5	21	214	93	13	129	50	879	269	391	25
Ophthalmia neonatorum for gonococcus	1	..	1	..	..	..	45	..	1	3	..	..	2	..	2	..	88	2	3	1
Syphilis, spironema, pallidum	..	..	..	..	1	..	6	..	..	..	..	1	..	..	2	..	12	..	1	..
Syphilis, Wasserman reaction	..	159	..	..	51	..	160	144	239	..	..	447	..	..	396	..	825	591	1503	..
Hydatid disease ..	..	..	1	1	10	1	3	3	1	1	..	..	..	2	12	..	1	10	9	6
Vincent's angina ..	..	12	6	..	21	..	19	5	..	..	..	13	18	..	..	..	24	13	..	..
Leprosy	..	..	..	..	1*	..	..	1	..	..	..	3	..	..	..	..	..	6	..	..
Anthrax	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
Tetanus	..	..	11	..	..	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..
Anchylostomiasis ..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Actinomycosis ..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	1	..
Others	4	23	4	2	28	..	9	119	..	2	..	11	16	1	15	..	18	29	..	4
Plague: Extermination of rats	..	..	..	..	..	..	..	..	..	..	..	13,842	..	..	..	..	521	..	3	..

* Rat leprosy.

SECTION 6.—WORKING OF THE SALE OF FOOD AND DRUGS ACT.

TABLE 1. — SHOWING SAMPLES RESPECTIVELY OF MILK AND OTHER FOODSTUFFS TAKEN AND DEALT WITH DURING THE YEAR ENDED 31ST DECEMBER, 1924.

Hospital District.	Number of Samples taken.		Samples not complying.							
			Number of Samples.		Number of Vendors.		Number of Warnings issued.		Number of Prosecutions recommended.	
	Milk.	Other.	Milk.	Other.	Milk.	Other.	Milk.	Other.	Milk.	Other.
Mangonui	4	5	..	3	..	3	..	3	..	..
Whangaroa	..	..	..	..	..	..	..	..	..	..
Bay of Islands	..	..	..	..	..	..	..	..	..	..
Hokianga	5	1	..	1	..	1	..	1	..	..
Kaipara	19	5	1	..	1	..	1	..	..	..
Whangarei	18	5	2	4	2	4	2	..	..	..
Auckland	631	93	67	19	65	19	45	13	14	..
Waikato	85	5	8	1	8	1	5	..	3	..
Thames	8	4	1	1	1	1	..	..	1	..
Waihi	..	..	..	..	..	..	..	..	..	..
Coromandel	..	..	..	..	..	..	..	..	..	..
Tauranga	7	3	..	1	..	1	..	..	..	..
Bay of Plenty	4	..	..	..	..	..	..	..	..	..
Taumarunui	58	13	1	5	1	5	1	..	..	1
Waiapu	..	..	..	..	..	..	..	..	..	..
Cook	55	7	2	1	2	1	1	..	1	1
Wairoa	9	3	1	..	1	..	1	..	..	..
Hawke's Bay	93	5	8	1	8	1	6	1	2	..
Waipawa	38	..	1	..	1	..	..	..	1	..
Taranaki	19	2	7	1	6	..	1	..	6	1
Stratford	29	20	3	3	3	3	2	..	1	3
Hawera	35	18	6	2	6	2	3	..	3	2
Patea	..	..	..	..	..	..	..	..	..	..
Wanganui	16	12	2	6	2	6	2	2	..	4
Palmerston North	14	6	2	..	2	..	1	..	1	..
Wellington	1,706	59	69	9	69	6	47	4	22	3
Wairarapa	27	..	4	..	4	..	..	..	4	..
Wairau-Picton	37	7	7	3	7	3	5	..	2	1
Nelson	70	16	15	1	15	1	12	..	3	1
Westland	25	20	7	1	6	1	4	1	3	..
Buller	40	5	4	1	4	1	1	1	3	..
Inangahua	3	5	..	1	..	1	..	1	..	..
Grey	56	10	6	..	6	..	2	..	4	..
North Canterbury	289	56	69	14	65	14	35	3	41	3
Ashburton	15	2	..	..	..	..	..	..	..	..
South Canterbury	85	6	23	2	23	2	10	..	13	2
Waitaki	39	5	1	3	1	3	..	..	1	..
Otago	14	20	..	7	..	7	..	..	..	..
South Otago	30	3	1	1	1	1	..	..	1	..
Vincent	11	1	..	..	..	..	..	..	..	..
Maniototo	6	..	..	..	..	..	..	..	..	..
Southland	69	11	..	3	..	3	..	..	..	..
Wallace and Fiord	29	..	..	..	..	..	..	..	..	..
Totals, 1924	3,698	433	318	95	310	91	187	30	130	22
Totals, 1923	3,363	559	239	39	226	36	105	16	110	18

TABLE 2.—SHOWING THE RESULTS OF WEIGHINGS OF BREAD, BUTTER, AND OTHER FOODSTUFFS RESPECTIVELY DURING THE YEAR ENDED 31ST DECEMBER, 1924.

Hospital District.	Number of Samples weighed.			Samples not complying.												
				Number of Samples.			Number of Vendors.			Number of Warnings issued.			Number of Prosecutions recommended.		
	Bread.	Butter.	Other.	Bread.	Butter.	Other.	Bread.	Butter.	Other.	Bread.	Butter.	Other.	Bread.	Butter.	Other.
Mangonui ..	48	25	..	3	7	..	2	3	..	..	..	..	..	..	..
Bay of Islands ..	36	6	..	..	..	..	..	..	..	..	..	..	..	..	..
Hokianga ..	12	6	..	2	..	..	1	..	..	..	..	..	..	..	..
Kaipara ..	95	6	..	34	..	..	4	..	..	4	..	..	..	..	..
Whangarei ..	72	15	..	2	..	..	2	..	..	..	..	..	..	..	..
Auckland ..	1,033	471	64	95	62	15	33	6	2	7	4	2	3	..	..
Waikato ..	504	493	60	34	1	..	11	1	..	4	..	..	..	..	..
Thames ..	96	..	..	1	..	..	1	..	..	..	..	..	..	..	..
Coromandel ..	24	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Tauranga ..	381	91	13	50	..	..	15	..	..	2	..	..	2	..	..
Bay of Plenty ..	513	..	..	9	..	..	5	..	..	..	..	..	..	..	..
Taumarunui ..	799	70	18	73	27	3	26	6	1	4	1	..	1	..	..
Waiapu ..	40	..	..	10	..	..	1	..	..	..	..	..	1	..	..
Cook ..	140	49	..	1	..	..	1	..	..	1	..	..	..	..	..
Wairoa ..	89	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hawke's Bay ..	190	222	21	35	6	..	6	1	..	3	1	..	3	..	..
Waipawa ..	210	193	..	2	..	..	..	..	..	..	..	..	..	..	..
Taranaki ..	86	332	..	..	..	..	..	..	..	..	..	..	..	..	..
Stratford ..	60	35	7	..	..	..	..	..	..	..	..	..	..	..	..
Hawera ..	305	413	161	..	14	..	..	2	..	..	1	..	..	1	..
Patea	20	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wanganui ..	30	18	24	..	..	..	..	..	..	..	..	..	..	..	..
Palmerston North	171	62	..	..	..	..	..	..	..	..	..	..	..	..	..
Wellington ..	590	191	..	40	..	..	4	..	..	4	..	..	..	..	..
Wairarapa ..	210	67	..	10	..	..	1	..	..	..	..	..	1	..	..
Nelson ..	381	252	10	10	19	..	1	3	..	1	1	..	..	2	..
Westland ..	172	66	..	14	6	..	1	1	..	1	1	..	..	..	..
Buller	191	42	..	..	..	..	..	..	..	..	..	..	..	..	..
Inangahua ..	20	2	..	..	..	..	..	..	..	..	..	..	..	..	..
Grey	94	..	..	14	..	..	4	..	..	4	..	..	..	..	..
North Canterbury	441	284	..	63	6	..	5	2	..	5	3	..	..	1	..
Ashburton ..	..	36	..	..	18	..	..	2	..	..	2	..	..	..	..
South Canterbury	69	68	..	..	..	..	..	..	..	..	..	..	..	..	..
Waitaki ..	152	184	47	3	..	..	1	..	..	1	..	..	..	..	..
Otago	155	56	6	1	1	..	1	1	..	1	1	..	..	..	..
South Otago ..	128	147	24	..	6	..	..	1	..	..	..	..	..	..	..
Vincent ..	94	102	..	..	..	..	..	..	..	..	..	..	..	..	..
Maniototo ..	66	98	..	..	..	..	..	..	..	..	..	..	..	..	..
Southland ..	620	287	80	2	..	..	2	..	..	2	..	..	..	..	..
Wallace-Fiord ..	40	109	128	..	..	..	..	..	..	..	..	..	..	..	..
Totals, 1924 ..	8,377	4,498	663	508	173	18	128	29	3	44	15	2	11	4	..
Totals, 1923 ..	7,724	4,424	952	767	230	183	172	33	13	75	16	11	21	2	1

TABLE 3.—SHOWING INSPECTIONS OF PREMISES ENGAGED IN SELLING OR MANUFACTURING FOODSTUFFS DURING THE YEAR ENDED 31ST DECEMBER, 1924.

Hospital District.	Number of Premises inspected* engaged in selling or manufacturing Foodstuffs.	Number of Instances Articles were "seized" or "destroyed."	Number of such Food Premises requiring Sanitary Alterations.	Hospital District.	Number of Premises inspected* engaged in selling or manufacturing Foodstuffs.	Number of Instances Articles were "seized" or "destroyed."	Number of such Food Premises requiring Sanitary Alterations.
Mangonui	212	14	133	Palmerston North ..	418	42	18
Whangaroa ..	61	1	39	Wellington ..	1,734	86	11
Bay of Islands ..	57	5	30	Wairarapa ..	856	11	28
Hokianga	218	4	126	Wairau-Picton ..	131	..	..
Kaipara	177	16	77	Nelson	542	8	10
Whangarei ..	76	6	28	Westland	164	13	51
Auckland	2,227	54	422	Buller	155	12	15
Waikato	1,723	17	203	Inangahua ..	90	1	17
Thames	1,293	2	248	Grey	219	12	58
Tauranga	716	13	57	North Canterbury ..	757	18	109
Bay of Plenty ..	609	..	156	South Canterbury ..	402	7	51
Taumarunui ..	764	5	102	Waitaki	786	23	136
Waiapu	183	3	2	Otago	436	23	50
Cook	642	18	34	South Otago ..	539	..	38
Wairoa	247	2	18	Vincent	81	..	2
Hawke's Bay ..	982	2	65	Maniototo	72	..	3
Waipawa	603	7	10	Southland	793	9	147
Taranaki	539	23	..	Wallace and Fiord ..	161	1	7
Stratford	152	11	8				
Hawera	187	43	17	Totals, 1924 ..	20,733	519	2,552
Patea	40	1	3				
Wanganui	689	6	23	Totals, 1923 ..	19,690	404	1,833

* Not number of inspections.

Auckland Milk-supplies.

I append a report on the Auckland City Milk-supplies by the Medical Officer of Health (Dr. Hughes), based upon exhaustive bacteriological tests made by the Government Bacteriologist (Mr. F. L. Armitage). This report is of considerable value, and its preparation has entailed much labour and care, and credit is due to the officers concerned in furnishing it.

While it is admitted the American standards, used by these officers as a basis for comparison with Auckland supplies, aim at ideal milk and are not uniformly enforced in America, the report evinces, as one would expect, that much of the milk supplied to Auckland citizens is not clean. No time should be lost in improving the sterilization and drying of milk-cans at the milk-depots, and in ensuring the delivery of clean and cool milk from farm to depot and from depot to comsumer.

I believe the surest way of getting this would be for the Auckland City Council to apply for regulations to be gazetted under section 294 of the Municipal Corporation Act and to itself license and control all depots and dairies supplying Auckland. Both education and control of dairymen are essential. The Health and, I have no doubt, the Agriculture Departments will do their utmost to help the City Council particularly with farm dairies, but neither has power to license the dairyman.

SECTION 7.—GENERAL.

During the year the Dominion was divided into twelve health districts, of which four are administered from Auckland, four Wellington, two Christchurch, and two Dunedin. From illness and other causes the Division has been short of its complement of nine Medical Officers of Health. Happily, Dr. Findlay has recovered and will shortly resume work, and Drs. Mecredy, Crawshaw, and Shore have been appointed to complete establishment.

In co-operation with the local governing authorities the routine work has been performed of supervision of water-supplies and of sewage and refuse-disposal schemes, inspections of buildings, abatement of nuisances, control of infectious diseases, &c. Towards the end of the year the infantile-paralysis epidemic absorbed all the energies of every available member of the staff, and thanks are due to the Director and staff of the School Medical Division for valuable assistance.

In connection with the administration of the Sale of Food and Drugs Act, thanks are due to the Comptroller of Customs and the Dominion Analyst and their officers for valued assistance and advice.

Extracts from the reports of the various Medical Officers of Health which appear in another part of this report show a progressive improvement in the sanitary conditions generally throughout the Dominion and an ever-growing appreciation on the part of local authorities of their responsibilities and duties under the Health Act.

Finally, I desire to place on record my appreciation of the continued very loyal and able co-operation of the Medical Officers of Health and their staffs in what was in many respects a particularly onerous and trying year.

T. McKibbin,
Director, Division of Public Hygiene.

REPORT ON AUCKLAND MILK-SUPPLIES.

For comparison and classification purposes the standards of the American Association of Certified Milk Commissions recommended by the New York Milk Committee, and also of the British Government optional under the Milk and Dairies (Amendment) Act, 1922, are used.

The definition of the four classes of milk in these regulations include more than the mere enumeration of bacteria, but the above standards are used in so far as the division into classes is based on the bacterial counts.

Taking the American standard, 7 per cent. of the samples examined during the last twelve months would come within Class A of the American classification—*i.e.*, certified milk. Twenty-nine per cent. of the samples come within Class B—*i.e.*, may be sold without pasteurization. Forty-one per cent. of the samples would be suitable for pasteurization only—*i.e.*, Class C; while some 22 per cent. would not be regarded as suitable for drinking purposes, but would be allowed to be sold for cooking and industrial purposes after pasteurization. Taking pasteurized milk, 40 per cent. of the samples examined would satisfy the American standard for milk allowed to be sold as pasteurized milk.

The New Zealand regulation concerning pasteurized milk is that it shall not contain any living colon bacilli. Examination showed that of the samples examined for bacillus coli 33 per cent. contained bacillus coli in 1 c.c. of milk.

Taking the English regulations (optional), Milk and Dairies (Amendment) Act, 1922, 14 per cent. of the samples examined during the last twelve months would come under classification 1 (*i.e.*, certified milk), 38 per cent. would come within Grade A (raw), and 25 per cent. would come within Grade A (pasteurized).

Cooling of Milk.—Milk to be safely kept should be cooled immediately after milking to 50° F. or lower, and with the exception of the necessary heating for pasteurization should not subsequently be permitted to exceed that temperature. The maintenance of a low temperature alone will not ensure a low bacterial content unless the milk is clean to start with, but, on the other hand, maintenance at a comparatively high temperature such as 60° to 70° F. is likely to result in a high count, even with an originally "clean" milk. The following observations of temperatures of Auckland milks at the time of delivery were recorded: For six months of the summer the average temperature on delivery of raw milk was 70° F., of pasteurized 60°, and of pasteurized and bottled milk 65° F.; and for six winter months the average temperature for the above was 57° F. During the six summer months only 43 per cent. raw milk samples were below 70° F. on delivery, and 3 were below 60° F. Of pasteurized milk 17 per cent. pasteurized milk-samples were below 60° F., and no pasteurized bottled milk was below 60° F. on delivery.

The temperature of samples of milk taken on milkmen's rounds showed an average temperature for January, February, March, October, November, and December, to be 69° F.

For June, July, and August, the average temperature was 50° F.

Without the use of ice little could be done at farms to keep the milk in summer at the required temperature.

Sterilization of Milk-cans at the Milk-depots.—The cans are not properly cleaned, are not sterilized, and are not dried. The result of leaving them in such a condition is that, especially in summer, there is an enormous increase in the bacteria present. Examination of cans at the depot after washing and steaming, and also on their return to the farm, bear out the above.

Cans steamed and *dried* on the farm for experimental purposes gave infinitely better results than those obtained from cans dealt with in the usual way at the depots. The methods at the farms are matters in the hands of the Agricultural Department, but no doubt this is the point at which clean milk should be obtained for a start, as otherwise I hold that it is useless. If the milk is dirty to start with, subsequent care in transport, handling, and storage cannot transform it into a clean milk, whatever may be the extent to which further contamination is limited.

The question of low temperature is a difficult one in this climate, especially in the summer months, but it is important in preventing increase in the number of bacteria present in the milk.

The sources of the greater part of the contamination in the milk-samples are as follows:—

(1.) Dirty-farm milking owing to dirty utensils and methods;

(2.) The indiscriminate mixture of various grades of milk at the depots, &c., with the result that comparatively clean milks are depreciated by dirty ones;

(3.) The use of improperly cleaned cans. The farmers rely on the factories for washing and steaming, and this latter is carried on very inefficiently. The contamination arising from improperly cleaned cans being frequently sufficient to make the milk of high bacterial content and difficult or impossible to pasteurize without injuring the milk or interfering with the cream-line;

(4.) The failure to cool the milk to a sufficiently low temperature, particularly in the summer, and to maintain a sufficiently low temperature in many cases during storage and transit.

The farmers supplying milk to depots see no reason for additional care or precautions because they are aware that the milk will be there steamed and pasteurized and because the price they obtain for the milk is the same whether it be good, indifferent, bad, or quite unfit for consumption.

The milk-factories are competing with one another. Any attempt on the part of one of them to impose restrictions or limits of cleanliness would result in the loss of suppliers, who would simply go to another company.

As regards the cleanliness on the farms, such as of cows-milk pails, strainers, &c., the responsibility for this rests with the Department of Agriculture, and no doubt there is difficulty in enforcing regulations here.

Education in the benefits of improved methods of cleanliness confirmed by payments based on quality should result in great improvement.

T. J. Hughes, Medical Officer of Health.
F. G. Armitage, Government Bacteriologist.

PART III.—CHILD WELFARE.

SECTION 1.—PROGRESS IN WORK.

During the year steady progress has been made all over the Dominion in extending and improving the service for the well-being of mother and child by means of the Child Welfare Bureau and the Plunket Society. It is estimated that by the end of 1925 there will be about 120 Plunket Nurses at work—an increase of, say, 20 over the previous year.

The demand for these specially trained nurses always exceeds the supply, but it is confidently anticipated that there will soon be available one Plunket Nurse for every 10,000 of population (equivalent to, say, 250 child-births per annum), besides the extra relieving nurses needed to provide for holidays and sick-leave. However, until the Plunket Nurses at work number, say, 200 for a population of one and a half millions it will not be possible to do full justice to the care and supervision of children up to school age.

By means of its consistent scheme for supplying uniform, authoritative, free advice, education, and training in mothercraft (appealing alike to all ranks and classes in the community, and run by earnest and devoted representatives of the whole of its womanhood), New Zealand has done its best to keep invidious class and professional feelings and distinctions entirely outside the range of its simple, practical project for "Helping the mothers and saving the babies"—to quote the motto of the Plunket Society. In order to make clear the steps by which this organization (the Royal New Zealand Society for the Health of Women and Children), which was at first an entirely voluntary body, has become more and more closely associated with the Health Department and the Government I may quote the following passages from an address given by myself at the Society's Fourth General Conference held at Wellington in July, 1914, just before the war:—

WHAT IS THE ESSENTIAL NATURE AND PURPOSE OF THE PLUNKET SOCIETY?

It is a society for promoting the "Health of Women and Children." Ours is a mutual, educative, health mission to all classes, and we know that we get home with this mission better by appealing in the first place to the most intelligent—to the most highly receptive—members of the community than we should if we restricted our appeal to those of lesser intelligence. We know that members of the Society, having gained knowledge themselves, infect their neighbours and friends, directly and through the instrumentality of the Plunket Nurses, and thus tend to leaven the whole population, partly by precept and partly by example.

Sir Horace Plunket, speaking recently on the question of health—you all know what Sir Horace Plunket has done for Ireland—said that nothing was more important for all of us than a general understanding and adoption of the elementary laws of health; but, he said, "You will never get home with these matters until they are understood and practised by the most intelligent and most capable people, because in health, as in other matters, example and the 'setting of the fashion' is the best way to get sound and rational ideas to filter through the whole community."

I am paraphrasing what he said, but I think you will apprehend my meaning. What strikes one in this connection in the Old World is the fact that having to cope with the problem of widespread poverty this so dominates the situation that attention is restricted mainly to the question of philanthropic patronage and doles, or the giving of advice of the very simplest character to people of the more or less submerged classes. So much help is needed for the poor that the paramount need of practical education for all classes in domestic hygiene and mothercraft, as covered by the aims of our Society, has been lost sight of.

I brought this matter before people in the Old Country as Government delegate for New Zealand to the great Conference on Infant Welfare, held in London in 1913, and spoke to representative Americans about it; and they all admitted that they were doing nothing whatever in the way of education for motherhood as regards the vast majority of the population—the vast mass of the self-respecting, self-reliant, artisan, and middle classes.

When we turn from the idea of the Plunket Society to the idea of the District Nursing scheme of the older countries we turn for the most part from the self-reliant and self-supporting classes to needy people seeking philanthropic aid or charitable doles. We realize this distinction very clearly when we consider New Zealand. Some years ago the question of possible "overlapping" as between the work of our Society and that of the District Nurses was raised. We at once investigated the matter.

There had been a District Nurse working in Dunedin for between four and five years, and there had been one or two Plunket Nurses working in the same area during the same period. It was found that throughout all that long time there had not been one single instance in which the District Nurse and the Plunket Nurses had been simultaneously in attendance at the same house, or in which they had served the same people at the same time.

What is the inference? The inference is that the self-reliant class of people who were seeking the aid of the Plunket Nurses, who were most receptive of new ideas, and who were trying to become more competent and more capable of rearing a great race, however poor some of them might be, were not usually the class who would seek or even accept any help or teaching associated with the idea of charitable aid.

In Christchurch and Wellington we found the same state of affairs—the Plunket Nurse and the District Nurse rarely, if ever, visited the same house at the same time: both were fully occupied, but their work never clashed or overlapped.

Of course, we have a few cases in New Zealand of people, not necessarily poor people, who cannot get the help of a private nurse in time of need, and they are naturally dealt with on occasion by the District Nurse, if one is available, or in a sudden emergency the Plunket Nurse would do what she could.

But directly you deliberately attempt to associate and combine the scheme of work for Plunket Nurses with the scheme of work for District Nurses you alter the whole nature of the thing—you alter the whole plan of campaign. Experience has proved to us that in such cases the Society's health mission to mother and child—the Plunket Nurses' systematic, regular round of visits—becomes impossible, and is replaced by tending and waiting on sick people.

The safeguarding of the baby is the great work which claims our attention, and this work would be rendered futile if the services of the Plunket Nurses were diverted from teaching domestic hygiene and looking after mother and child to taking charge of people suffering from pneumonia and other diseases.

The problems are entirely different. You have set yourselves to try to ensure that the twenty-five thousand children who come into this country every year shall be properly reared. Of course, we are very grateful to the Government for the help it is giving us, but I scarcely think any one would suggest that the subsidies we receive are more than the work deserves. It is estimated that each healthy adult on reaching the age of twenty-one is a public asset worth £300 (now over £500). Therefore if they all lived and arrived at perfect manhood and womanhood the babies coming to us in the course of the next ten years would become worth to our country no less than £75,000,000—seventy-five millions sterling: now, say, £125,000,000, taking into account present values.

What public subsidy brings a greater return to the country than the grant of 2s. 6d. a head paid to the Society for doing its best to ensure that each baby born in the Dominion shall be given the best chance of attaining perfect health and fitness?

Compare what is being done here with what is being done in Australia. They give a £5 bonus to every mother on the birth of her child—a bonus which confers no necessary benefit on the child, and may be dissipated at once by either the father or the mother. Such a scheme would cost New Zealand £125,000 a year, while the Plunket Society receives, say, £3,000 a year (since increased to £30,000). The Commonwealth scheme does nothing to enlighten the motherhood of the country—nothing that would tend to ensure the better rearing of children, and thus lessen the incidence and risks of malnutrition, adenoids, dental caries, tuberculosis, and digestive, respiratory, and epidemic diseases.

I know you all feel that your committees have as much to do as they can do effectively when they undertake to carry out the Society's scheme of work. Now, it has been asked whether, in spite of all that has been said, there might not be some country places where district nursing could with advantage be tacked on to Plunket nursing—the one nurse serving both functions.

Again our answer must be in the negative. A Plunket Nurse can arrange her time-table six months ahead for regular periodical visits to places fifty miles away from her residential centre, and mothers will come long journeys to see her if they know precisely when she can be found at her appointed place. All such possibilities vanish if the spending of days or even hours with sick people, as need may arise, is made one of the nurse's bounden duties.

The two things cannot be combined, either in town or country: we find the combination of duties absolutely incompatible. The Plunket work must be kept apart, but this does not mean that our Society has no sympathy with district nursing. On the contrary, we have always wanted to do anything we could to co-operate with and help District Nurses. We even went the length of offering to give them the benefit of three months' training at the Karitane Baby Hospital, Dunedin, free of charge, because we felt that in the course of their rounds District Nurses would be bound to come across cases where a knowledge of mothercraft could be put to good account; just as Plunket Nurses can incidentally help a campaign against tuberculosis, though their direct mission is the teaching of mothercraft and domestic hygiene and not the nursing of sick people. However, by convincing parents of the supreme importance of fresh air and sunlight, proper feeding, and due exercise, recreation, rest, and sleep the Plunket Nurses are in reality always engaged in the fight against tuberculosis and all other diseases.

The Chief Health Officer can always count on the whole-hearted and loyal help of the Society in any matter where its nurses can legitimately assist or co-operate with him in the humanitarian and noble work of which he is the head.

The facts and figures given above have a double relevancy and significance. They show the wonderfully liberal increase in pecuniary support given by the Government to the Royal New Zealand Society for the Health of Women and Children (Plunket Society) in the course of the last ten years—an increase from £3,000 in 1914 to nearly £30,000 for the year 1924–25. But more significant even than this increase in subsidies has been the growing desire of the present Minister of Health to do everything possible to draw closer the ties linking the voluntary work of the Plunket Society with the State-conducted humanitarian agencies presided over by his Department.

Last year at a public meeting in Palmerston North, held in connection with the annual gathering of the local Plunket Society, and attended by Dr. Valintine and myself as representing the Health Department, and Dr. Wylie as representing the British Medical Association, the Minister of

Health (the Hon. Sir Maui Pomare) proclaimed the opening of a joint campaign for the avowed and specific purpose of bringing down the rate of maternal mortality, while at the same time incidentally improving the health and fitness of mother and child, and reducing the rate of infantile mortality, especially in the first month.

Important provisions made by the Government during the year, in the joint interests of mother and child, are the following :—

(1.) The provision for extending and further co-ordinating the ante-natal service of the St. Helens hospitals and the Plunket Nurses by the appointment of Dr. Elaine Gurr to give special attention to this sphere of work.

(2.) The liberal vote made by the Government (£12,000) for erecting special premises at the Karitane Hospital, Dunedin, so as to enable a special intensive course of training to be given to practising maternity nurses and midwives, with a view (*a*) to lessening maternal mortality; (*b*) to affording special instruction in the care and feeding of infants, especially during their first month.

The new institution will provide the necessary extra course of instruction for 200 nurses a year.

It is too early yet to estimate the beneficial results sure to follow on this increased co-operation of the State with enthusiastic and devoted voluntary efforts; but in spite of the fact that there has been no time, so far, for any appreciable fall in the rate of maternal mortality the death-rate amongst infants has decreased during the first month of life (the period during which mother and child are practically one being) from an annual average of 29 per 1,000 births for the previous five years to 24 per 1,000 for last year. This reduction is attributable mainly to the enlightened policy of the then Minister of Internal Affairs (the Hon. Downie Stewart) in arranging with the Registrar-General for each branch of the Plunket Society to be supplied with the name and address of the mother of every new-born babe wherever possible, and as soon as possible, in the first week after childbirth. This has enabled the Plunket Nurses to get in touch with a steadily increasing proportion of mothers before serious mistakes have been made. The tactful means by which rapprochement is brought about appears in the terms of the following memorandum, which is posted to the mother by the Plunket Nurse when she receives the birth notification from the local Registrar :—

THE ROYAL (N.Z.) SOCIETY FOR THE HEALTH OF WOMEN AND CHILDREN.

.....192

Dear Mrs.....

Notice has just reached us of your baby's birth, and as you may be losing the help of your own nurse about this time, we wish to let you know that you are more than welcome to the services of the Plunket Nurse. Can we advise or help you in any way ?

The whole aim and purpose of the Society is "To help the Mothers and save the Babies."

If you would like me to call you need only fill in and post the enclosed card, or you can arrange matters by telephoning to the Plunket rooms (....., telephone.....) at any time between.....and.....on.....

.....

Plunket Nurse.

(Post-card enclosed for the mother to fill in and return to the Plunket Nurse.)

Name and Address. { *Mrs.*.....
.....
.....

Would like Plunket Nurse to call.
(State between what hours.)

Best Time to call. { *Morning* .....
Afternoon .....

Best Days. { *Monday, Tuesday, Wednesday, Thursday, Friday.*
(Strike out inconvenient days.)

In the last Annual Report of the Central Council of the Plunket Society appears the following :—

If mothers are not given sound and sensible advice and help in due time it is surprising how readily and groundlessly they will wean a baby, and, more surprising still, how often their advisers will fall in with the proposal to do so.

This accords with the following authoritative statement by Dr. J. S. Fairbairn, Obstetrician and Gynecologist to St. Thomas's Hospital, London :—

It is not enough for our women to recognize, as they do already more or less, that breast-feeding is best for both mother and child. What needs to be deeply impressed on them is that failure in nursing is almost always due not to failure of nature, but to failure to live in accord with natural laws and requirements and failure in management.

We must enlighten public opinion on the subject and make the truth perfectly plain, because for a generation or more the artificial feeding of babies has become so general and widespread as to be almost taken for granted in many cases. Women do not truly realize that even the best substitute for the natural food is always second-best, and that the process of feeding by bottle is as inferior to suckling as artificial food is to natural food.

The medical profession is not without blame in this matter. True, it has given lip-service to the general principle, and there have always been voices crying in the wilderness, but the profession as a whole has not made a strong-enough stand against failure to nurse or early weaning. With feeble protest, doctors have tended to fall in with the wishes or whims of their patients, and, often on the flimsiest grounds, they have consented to

bottle-feeding, and so in a sense have become *particeps criminis*. Certainly the medical profession has failed hitherto to arouse any strong feeling on the subject of breast-feeding, especially in face of the desire of patients to escape what so many have come to look on superficially as an irksome and needless burthen, instead of regarding it in the true light as a bounden duty and sacred privilege. . . . Has bottle-feeding ever achieved for any child what breast-feeding could not excel; and, if so, why do we recognize wet nursing as best, where feasible, if the mother fails?

The evils of substitute feeding are not disproved in the very slightest by hundreds or thousands of examples of children who have apparently thriven in spite of it. A true judgment can be formed only by allowing for the higher standard attainable, and by considering the actual results over tens and hundreds of thousands—the results not in childhood only, but in adolescence and in after-life. Then, the evidence is indisputable that artificial feeding is vastly inferior feeding, and that as regards growth, health, stamina, and the power of resisting disease the bottle-fed baby is handicapped not only at the start of life, but all through life.

To the mother also nothing but good results from completing the cycle of motherhood. The mental and moral effects on her are difficult to express and impossible to define precisely, but she is always a better woman for having nursed her child. The bodily benefits are much more easily explained. For nine months the child has drawn its sustenance from organs within the mother's abdomen, and a special blood-supply has arisen to meet this extra demand. After birth, the suckling of the child should divert this blood-supply to the breasts, and the internal organs should shrink to their former size and weight. This is why in the absence of suckling there is a tendency to congestion, permanent enlargement, descent of these organs, and other displacements.

(Extract from the Introduction to the author's booklet "Natural Feeding of Infants," by J. S. Fairbairn, M.D., F.R.C.S., Lecturer on Midwifery and Diseases of Women, St. Thomas's Hospital, London.)

SECTION 2.—INFANTILE PARALYSIS AND OTHER DISEASES.

The recurrence of a serious epidemic of infantile paralysis which commenced towards the close of 1924, after eight years of almost complete immunity, has engrossed public attention of late. It therefore seems desirable to discuss the essential bearings and significance of this epidemic, and to compare infantile paralysis with other children's diseases.

First let it be understood that the terms "children" and "childhood" will be assumed to embrace all children from birth to fifteen years of age. Within these ages the epidemic has affected some 1,250, and has caused the death of about 150. This sudden incidence of sickness and mortality from one peculiarly alarming cause, focused within five months, naturally led to extreme anxiety and distress, especially in the North Island, where nearly nine hundred of the cases occurred.

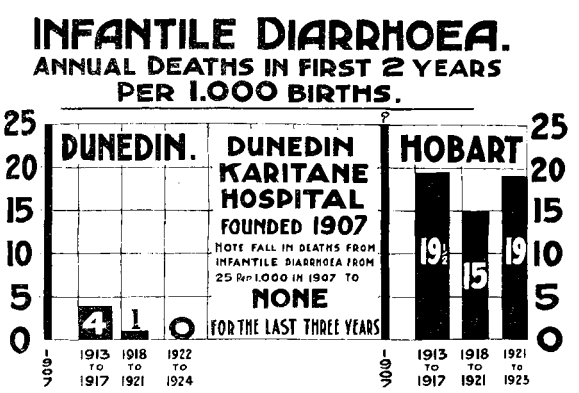
Now the panic is over, and we may fairly expect many years of practical immunity, it is time to point out the comparative lowness of the death-rate and damage-rate caused by infantile paralysis as compared with a dozen other diseases of children with which familiarity has bred in the public mind, if not contempt, at least comparative indifference. These other diseases are largely preventable, and yet they still rob us of from eight hundred to one thousand children a year, and handicap more or less gravely the lives of thousands of others who are said to "recover," but who do not really regain full normal growth, development, health, vigour, and resistiveness to disease.

The following table applies to the whole or portions of the period of eight years from the end of the first quarter of 1917 to the 31st March, 1925. It is designed to show the essential facts and figures in their true perspective. The children included are from birth to fifteen years of age. The reason for going back eight years is in order to cover completely what may be regarded tentatively as the typical New Zealand cycle of infantile paralysis—though, of course, this particular periodicity may not be maintained in future. The previous grave epidemic occurred in the summer of 1916.

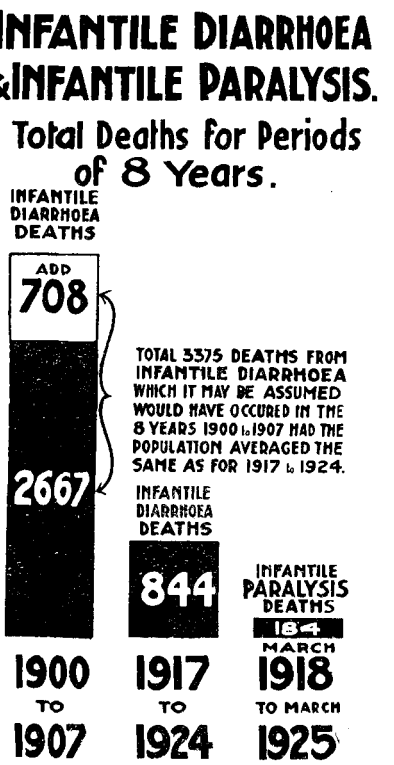
MORTALITY TABLE FROM BIRTH TO FIFTEEN YEARS OF AGE.

Average number of children in New Zealand under fifteen—about			400,000
Total deaths of children under fifteen in the last eight years—about			17,600
Yearly average deaths of children under fifteen in the last eight years—about			2,200
Deaths from infantile paralysis for year ending 31st March, 1925			150
Average deaths per annum of children under fifteen for the last eight years:—			
Deaths from infantile paralysis (inclusive of the recent epidemic)			23
Deaths from nervous diseases (other than infantile paralysis)			177
Deaths from other epidemic diseases—			
Diphtheria	90		
Measles and scarlet fever	45		
Whooping-cough	40		
Influenza	40		
		215	
Deaths from respiratory diseases (bronchitis, broncho-pneumonia, pneumonia, and pleurisy)		250	
Deaths from digestive diseases (gastritis, gastro-enteritis, and diarrhœa)		200	
Deaths from tuberculosis		85	
Deaths from various general and local diseases (circulatory, urinary, glandular, &c.)		250	
			1,157
Deaths from external causes (drowning, burning, shooting, and other accidents)			120
Deaths (mostly avoidable) occurring mainly in the first month, due to prematurity, injuries during birth, malnutrition, wasting, and debility caused by early and ignorant artificial feeding and other mistakes			900
(This heading also includes some congenital malformations and deficiencies preceding birth.)			
			2,200

The above approximate summary shows that infantile paralysis is responsible for the deaths of only about twenty-three children per annum, compared with 1,157 deaths caused by other nervous diseases, common epidemics, the prevailing types of respiratory and digestive diseases, and tuberculosis, &c.; and that only about 1 per cent. of deaths of children from all causes is due to infantile paralysis. This comparison is not made with the purpose of minimizing the importance of infantile paralysis, but solely in order to emphasize the gravity of other diseases of early life, some of which could be almost stamped out, and all of which could be greatly reduced both in frequency and in their power to kill and injure children. The only practical and effective way to solve this problem is by educating and training the whole adolescent girlhood and motherhood of the Dominion in the essentials for establishing and maintaining their own health, and for the bearing and rearing of strong, healthy children.



Graph I.



Graph II.

Infantile Diarrhœa.

Graph I shows the *complete stamping-out of deaths from infantile diarrhœa in Dunedin, in the course of only fifteen years, effected by educating and training the mothers.*

Throughout the rest of New Zealand, where education in mothercraft, though active, has been less intensive than in Dunedin, deaths from infantile diarrhœa have been reduced on the average to a fourth of the previous rate, while in other countries and cities similarly situated little or no reduction has taken place. The contrast of Dunedin with Hobart (a city of about half the population, and with a similar climate) is given as fairly typical of other temperate regions. The average rate of late years for the Australian Commonwealth, Canada, and South Africa (whites) has been about 20 per 1,000 births.

Comparative Mortality Rates for Infantile Diarrhœa and Infantile Paralysis.

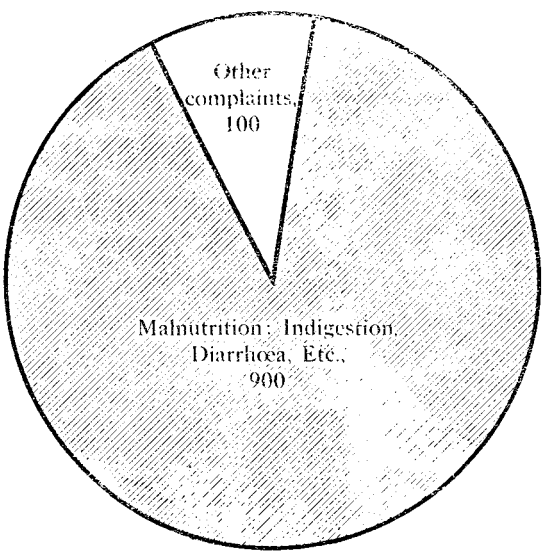
Graph II was prepared in order to impress on the public the extreme gravity of a common, easily preventable disease such as infantile diarrhœa—not only as a cause of death, but still more as liable to impose lifelong handicaps on the survivors. It is astonishing that the deaths of 300 or 400 children a year from infantile diarrhœa (rising to nearly 600 in a specially bad year) should have been passively accepted as inevitable less than twenty years ago, and attracted little attention in spite of the fact that ten times these numbers were damaged more or less seriously for life. On the other hand, the great majority of children who survive the acute stage of infantile paralysis make good recoveries; and it should be borne in mind that a partially crippled limb is generally a much less serious handicap than gravely damaged internal organs, on which the body has to depend for future digestion, nutrition, growth, development, and resistiveness to disease.

The following extract from my annual report for 1921–22 may serve to drive home the moral :—

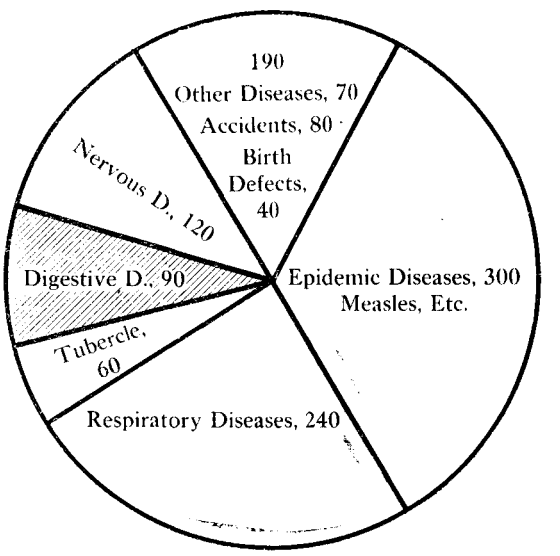
The whole population must be brought to realize that from the beginning to the end of life proper nutrition of the body is the foundation of every form of fitness and capability—physical, mental, and moral.

Decay of the teeth, common colds, adenoids, &c., are mainly effects and expressions of impaired nutrition early in life, just as indigestion, appendicitis, consumption, and cancer are common consequences later on.

The following graphs show how impaired nutrition in the first year leads to the deaths attributed during the next four years to specific causes such as bronchitis, pneumonia, measles, and tuberculosis. The bodies of well-nourished children form a soil hostile to the microbes of disease, and if such bacteria do gain a temporary foothold they rarely kill the vigorous, healthy child or maim it for life, as so often occurs in the case of flabby, soft children whose tissues have poor resistive and defensive powers.



Graph showing that in 9 cases out of 10 parents seek medical advice for their babies on account of so-called " digestive disturbances."



Graph made from the Registrar-General's statistics, compiled from the New Zealand medical certificates of death during 1921, showing what are the registered causes of deaths occurring in the second, third, fourth and fifth years of life per 1,000 deaths.

Note that while 90 per cent. of infantile ailments come under the rough heading " digestive disturbances " or imperfect nutrition, only 9 per cent. of the children who die in their second, third, fourth, and fifth years are certified as having actually succumbed to " digestive diseases." However, with few exceptions, the main predisposing cause has been defective nutrition and vitality of the body, leading to invasion of the system and death attributed to specific microbes of epidemic, respiratory, and other diseases."

As Dr. Almond, of Loretto, said : " We ought to turn out the schoolboy pretty well germ-proof. . . . I only wish there was a word to express that normal and glorious condition of being which ought to be that of the average man and woman. Perhaps in some future century, when the perfection of the human animal is regarded as of equal importance with the perfection of the steam-engine, there will be such a word."

There is a strange irony in the fact that while children, from the beginning to the end of school life, are kept immured in houses with glass windows which stop the passage of the ultra-violet rays (now proved to be essential for stimulating nutrition, growth, development, spirit, *joi de vivre*, and mentality), the authorities responsible for the health and vitality of the monkeys at the London Zoo have recently gone to the expense of installing special apparatus for providing them with a supplementary supply of ultra-violet rays in order to overcome the insufficiency of winter sunshine in the clear space of Regents Park. This affords a very strong additional argument for open-air schools, and for ensuring that all children get plenty of outing, exercise, and exposure to direct sunlight during school-time and in the best hours of the day as a necessary part of their physical education and equipment for life. Two centuries before Herbert Spencer, John Locke—profound and far-sighted physician, philosopher, statesman, and practical teacher—said that schoolgirls needed to have their skins browned and their bodies hardened by exposure, outing, and exercise as much as their brothers, and that if this were so we should have far less of " pale faces and stinking breath " among our women.

National Inefficiency.

From 1914 to 1920 the whole thinking world became profoundly impressed by the overwhelming evidence of the alarming unfitness of a large and increasing proportion of the rising generation—especially in the most civilized countries. There was no gainsaying the proofs of defective nutrition and vitality shown by the prevalence of small jaws and defective teeth which tended to decay quite early in life or in adolescence.

The secondary effects of these primary faults, mainly in the mothering, rearing, nutrition, and upbringing of the children at home and at school, revealed itself most strikingly in the rejection of 50 per cent. and upwards of the young men of all countries for military service on account of various forms of bodily deficiency, actual debility, or disease.

The question we have to ask ourselves now is, "Are we in this Dominion tending already to forget this most important of all revelations and lessons of the war; are parents in general as anxious as they should be about ensuring the bodily health and efficiency of their children; are they not still far more interested in their children distinguishing themselves at the 'Competitions,' or in their passing examinations, winning scholarships, and securing free secondary education, &c.?" There can be but one answer to this question. It is distressing to turn to the scathing reports of Dr. Hercus (Professor of Public Health), Dr. Ada Paterson (Director of School Hygiene), Mr. Hunter (Director of Dental Hygiene), and our School Medical Officers, School Nurses, and Dental Nurses as to the quite unjustifiably large proportion of malnourished, flat-chested, retarded, weakly, undersized, underweight children attending our schools, and the scant attention paid in many cases by their parents or other guardians to such simple essentials as plain, wholesome, regular meals, pure air, due exposure to sunlight, and sufficient outdoor exercise, recreation, rest, and sleep. Yet the provision of these simple requirements would prevent the vast majority of the bodily deficiencies, disabilities, and diseases which arise during the twelve or fifteen years from the end of infancy to the close of school life.

That New Zealand is not alone in paying insufficient attention to these most important matters for the future of our race is indicated by the following warning given last year to his countrymen by Mr. Herbert Hoover who played such a prominent part in the feeding and general hygienic care both of civilians and military during and after the Great War: "Five years ago the American people received a shock at the revelations made by the 'draft' (conscription for war service)." Only one in every four of the young manhood of the United States was then found to be fit enough for military service. Commenting on this, and the fact that the public soon got over their shock and failed to take the warning seriously, Mr. Hoover says: "We rejected those men for the army, but we let them drift back without question into our industrial life. There they remain to-day a serious handicap to progress. The last generation in giving those men to us gave us a burden which we are now passing on as a load to the next generation. Of the twenty-two million children in our schools 30 per cent. are far below standard weight, and three million are in urgent need of medical attention. Most of this is due to lack of understanding in parents, rather than to poverty."

F. Truby King,
Director of Child Welfare.

PART IV.—MATERNAL WELFARE.

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

Shortly after taking up the duties of Consulting Obstetrician to the Health Department I made a careful inspection of the larger maternity hospitals in the country—namely, the four large St. Helens hospitals; the Essex Home, Christchurch; the Alexandra Home, Wellington; and the Batchelor Hospital, Dunedin. Almost all future improvement in maternity practice in New Zealand depends on the efficiency of these institutions, because they alone are capable of raising the standard of maternity practice and of the teaching of medical students and midwives. Having seen these hospitals I came to the conclusion that certain things were necessary. These, briefly, are as follows:—

(1.) The consolidation of all public maternity hospitals in the same city into a single institution.
(2.) The enlargement of the existing St. Helens hospitals, where the existing structure is suitable, so as to provide a single large hospital for all maternity patients of the class who are eligible for treatment in such institutions.
(3.) The rebuilding on the required scale of such of the St. Helens hospitals as at present occupy unsuitable buildings, which were never intended for hospitals.
(4.) The provision in this manner, in each of the four centres, of hospitals with a number of beds sufficient to provide material for the instruction of nurses and medical students, with a resident medical officer in each, and with ante-natal clinics attached thereto.
(5.) The systematizing of the technique of these hospitals, and the adoption of uniformity in the teaching of nurses.
(6.) The creation of two classes of nurses—maternity nurses and midwives—with the object of raising the standard of staff nurses in maternity hospitals, and so improving the practical teaching of probationers.

It yet remains to be seen how far financial considerations and the vested interests of the institutions which I wish to see amalgamated with the St. Helens hospitals will interfere with the first four suggestions I have made, but I trust that neither the one nor the other will be allowed to be a bar to their adoption. I have seen at Home the evil effects that have followed the creation of many small hospitals in the same town, and the consequent lack of a single large one—effects which have reacted both on the ultimate efficiency of the smaller hospitals and on the teaching of students and nurses. I have also seen the extreme difficulty of consolidating hospitals which had already been in existence for very many years. In this country these separate institutions have not yet become so crystallized by time that it is impossible to alter them, and I would strongly urge the necessity for doing so, along the lines I have mentioned, while they are still comparatively young institutions.

My fifth and sixth suggestions are being carried into effect, and I hope will soon be accomplished facts.

Most of the work which I have done since my appointment has been directed towards the carrying-out of these suggestions. In addition, I have interviewed certain Hospital Boards in the South Island with the object of suggesting the necessity for creating small maternity hospitals and for adopting a plan of hospital building of a somewhat different type from that adopted so far. This plan has mainly for its object the creation of a hospital in which the labour ward, the accommodation for waiting patients, and the necessary offices belonging thereto are distinct from the lying-in wards and their necessary offices, and in which the administrative part of the hospital is distinct from both. The object of such a plan is to ensure, so far as is possible, that newly admitted patients prior to or during delivery shall not be brought into contact with lying-in patients or their surroundings, and so to lessen the risk of an infection being carried from a lying-in patient to a woman who is being delivered. Such a plan, in the case of a large hospital, entails little extra cost in building. In a small hospital it entails a little more expense, and my reason for referring to the matter here is to lay stress on the fact that such extra expense is money well spent, from the point of view of the safety of the patients.

In conclusion, I wish to express the hope that the suggestions I have made, both those which have been adopted and those which I hope may be adopted shortly, will help to bring about a reduction in maternal mortality in this country and a steady improvement in the teaching and the practice of the science and art of midwifery.

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

I have the honour to submit my report on the work done in connection with maternity work by the Health Department for the year 1924–25.

Ante-natal Clinics.—As indicated in my report submitted to you, July, 1924, the first requirement was to organize ante-natal clinics available for all classes of patients where they could receive skilled care and advice. As shown in Dr. Gurr's report, these have already been successfully established in Wellington and Christchurch, and a considerable number of nurses have been specially trained by Dr. Gurr for this work, the value of which is recognized by both the medical profession and patients. Dr. Gurr's and my very sincere thanks are due to the Plunket Society, to Sir Truby King, and Miss Patrick, Supervisor of Plunket Nurses, for their very hearty co-operation with us in helping to establish these clinics and for giving their nurses every facility to receive the special training in this work. This training has been given free of cost to all nurses who have been made available. The result, it can be confidently expected, will result in saving many mothers from unnecessary suffering, reduce the maternal mortality, and reduce the number of still-births and infant deaths in the first month of life. It is obvious that only by ante-natal care, together with more skilled attendance—which includes the skill of "masterly inactivity" where indicated—can the still-birth and maternal-mortality percentage be reduced.

Our further success along this line of work depends upon the co-operation of the medical profession, and it is gratifying to be able to record that the work of the ante-natal clinics has received the approval of the Council of the British Medical Association and each of the branches in whose districts the clinics have been started. It remains only for the individual members of the profession to give their assistance to and to accept the assistance of these specially trained nurses to make this—the first essential step in improved maternity work—a great success. I am confident that as this work becomes better known and therefore more fully appreciated we shall secure this essential support from our brother practitioners, who will find it to be not only in their patients' interests but in their own also. Dr. Gurr was specially appointed for this work, and I wish to place on record my appreciation of the manner in which she has carried out the work and the very admirable results obtained. Her special knowledge gained in London, Dublin, and Edinburgh, together with her enthusiasm, energy, and tact, have been of the greatest value.

Training of Nurses.—The second step required towards improved maternity work was improvement in the training of nurses, particularly in the aseptic technique of maternity work. To this end new regulations for midwives have been put into force requiring the strict observance of sound aseptic methods in making internal examinations, including the use of sterilized rubber gloves and guards, and requiring that such examinations shall be only made when absolutely necessary. A very detailed aseptic technique of labour and the puerperium has been drawn up, and is now in the press, and will be issued as a basis for the training of the New Zealand midwives and maternity nurses in this part of their work, and also for the information of all medical men, midwives, and maternity hospitals, who, it is hoped, will adopt this technique as a standard, thereby bringing the practice of asepsis in maternity work to the same high standard as is observed in surgical work. Arrangements have been made by which a standard maternity outfit to be used in connection with this technique can be sterilized at our ante-natal clinics for the use of medical men and nurses in private practice at the cost of from 2s. 6d. to 3s. These outfits, supplied by the patient, will be prepared and packed under instruction of the nurses in charge of the clinic, and will enable asepsis to be carried out thoroughly and efficiently.

In order to ensure a sufficiency of well-trained maternity nurses and midwives it has been decided to divide the training into two parts, and to form two classes—(1) the maternity nurse, and (2) the midwife. To enable this to be done a new Nurses and Midwives Registration Bill is now in course of preparation and will be submitted to Cabinet in time for next session. This scheme of training will enable us to use our smaller maternity hospitals for training maternity nurses, while our larger maternity hospitals will be devoted to giving the midwives' training to the maternity nurse after she has been in

practice for a certain period, during which time she will be working under the direction of medical practitioners. By thus dividing the training into two periods a refresher course after practical work will be given to the maternity nurse and the standard of work raised.

Maternity Hospitals.—To enable better work to be carried on it was essential that all maternity hospitals should be brought up to a greater standard of efficiency. Towards this end new regulations for the conduct of private hospitals have been drawn up and issued, and a new register to be used in all maternity hospitals, with charts attached, has been issued also.

Inspection of hospitals has been carried out as fully as possible. Every private hospital, maternity or general, is inspected two or three times a year by our Nurse Inspectors, and I have personally inspected about one hundred and fifty hospitals, either in conjunction with the Nurse Inspector for the district or alone. Inspection of these hospitals has been made an inspection of methods in addition to the inspection of building and equipment, and there is no doubt that the result will be a very much higher standard of efficiency. As far as possible regulations have been enforced, but in many instances it has been found that the necessities of certain districts or particular cases have required relaxing of certain of these. In every instance the possibilities and requirements of the particular case have been considered, and the aim has been to attain the required standard of efficiency with the minimum expense to those licensees whose financial position and earning-power render concessions necessary. Personally I have found all but a few quite ready to do their utmost to second my efforts, and I think it is only just to the great number of nurses who by hard work and enterprise have provided private hospitals—in the outlying districts specially—to state that in most instances my visits of inspection have been made a pleasant task by the readiness of the licensees to do their utmost to meet reasonable requirements and to benefit by the advice given to them. In most instances they have carefully studied the new Midwives Regulations, the new Private Hospitals Regulations, and the pamphlet on puerperal sepsis and its prevention, all of which were issued by the Department for their instruction, and have endeavoured to loyally abide by these regulations and instructions. Notification of abnormal temperature, which is now required to be taken under these regulations to enable prompt measures to prevent the spread of infection, has generally been readily given, and in no instance has it been found necessary to take legal action against any licensee of a hospital. It is gratifying and encouraging to be able to state that practically all but an almost negligible minority of the medical profession have earnestly co-operated with the Health Department to prevent the occurrence and spread of puerperal sepsis and otherwise help to advance organized efforts to promote maternal welfare. I regret that it has been necessary to take action against doctors in two cases of failure to notify cases of puerperal sepsis, in both of which convictions were recorded. I hope that the influence of the British Medical Association, on which we can confidently rely, and public opinion will eventually bring this very small minority of practitioners to understand that to protect their patients they must bring themselves up to date in aseptic methods, and must comply with the regulations issued under the law or suffer the consequences of their reactionary attitude.

Inspection of methods and of results of methods in maternity hospitals has been rendered much more complete by the issue of a new Maternity Hospital Register complete with charts, which must be properly kept and retained or sent in for inspection. The inspection of these helps very much in rapidly and accurately estimating the efficiency of the hospital work, and, together with the monthly return sheets, enables the Inspectors to keep in close touch with the results and to make inspection more complete and more helpful.

Inspection of maternity hospitals has shown that in many instances facilities for doing the most efficient work were lacking. To remedy this each St. Helens hospital has received the personal attention and inspection by departmental officers, and the four larger ones have been inspected by Dr. Jellett, Consulting Obstetrician to the Department of Health. Dr. Jellett's report upon each of these hospitals, together with his report upon the training of maternity nurses and midwives, has been received and given the fullest possible consideration. Considerable alterations have been carried out in St. Helens hospitals at Wellington, Wanganui, and Auckland on the lines advised by him. Lack of time has prevented the completion of these alterations, many of which are now proceeding. Arrangements are on foot to amalgamate the St. Helens Hospital, Christchurch, with the Essex Home, thereby producing one up-to-date and efficient maternity hospital of a sufficient size for easier and better training in place of two comparatively small hospitals whose efficiency as training-schools must be inferior to the larger hospital in which it is possible to give special duties to members of the staff selected for their ability to teach one particular subject.

In New Zealand there are certain limitations to the provision of these large hospitals which at present are unalterable. Its population is small and scattered, and this makes it impossible even in the larger towns to establish maternity hospitals of the size which Dr. Jellett considers the minimum for full efficiency in training midwives. The provision of these larger hospitals is rendered more difficult by the fact that in some of the larger towns where one large hospital could be kept full there are organizations running maternity hospitals on a charitable or semi-charitable basis, whereby the cases that should be used to fill one institution are divided up among two or three. Efforts have been made to persuade these organizations to continue to carry out the rescue work, but to abandon the maternity work and pass it over to the central institution to be done there. Unfortunately, these efforts have been unavailing. They feel that they have been doing useful work for many years, and it has been found impossible to persuade them to sacrifice their feelings in this matter so that arrangements can be made to concentrate maternity work in one institution. While greatly regretting their refusal to give up the maternity portion of their charitable work in the interests of a better training for maternity nurses and midwives, and incidentally to safer attendance on their own patients, one is bound to recognize from their point of view the sacrifice asked is very great; none the less their attitude in this matter is regrettable.

Basis for Improvement in Maternity Work.—During the ensuing year expansion of the work already begun will require to be pushed on. There is a great demand for expansion of ante-natal clinics, which, as I have previously stated, are the basis of all improvements in maternity work. To quote Sir George Newman, Head of the British Ministry of Health: "No sound progress can be made in the reduction of maternal mortality apart from ante-natal supervision; and, above all, there is need for an enlightened public opinion which shall afford the necessary support to action."

I look to the widespread establishment of ante-natal clinics as the best means of creating the necessary enlightened public opinion.

Before closing this brief outline of the work done to improve our public and private maternity hospitals and to improve the training of midwives I wish to express my great appreciation of the advice given by Dr. Jellett. Dr. Jellett's position as a recognized authority and author on these subjects, and his very great experience as Master of the Rotunda, Dublin, render his advice more than acceptable: I consider it to have been invaluable.

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

I have the honour to submit my report on the work of the ante-natal clinics from October, 1924, to the end of March, 1925.

Ante-natal clinics were established in Wellington in October, 1924, and in Christchurch in February, 1925. Arrangements are made whereby the clinics will commence in Auckland and Dunedin at an early date.

In the Wellington District there are six clinics in connection with St. Helens Hospital, Alexandra Home, Salvation Army Maternity Hospital, Plunket Society (Kent Terrace), Plunket Society (Lower Hutt), and Plunket Society (Petone).

In Christchurch clinics are organized in connection with St. Helens Hospital, the Plunket Society (Carey's Buildings), Essex Home, Salvation Army Hospital, and New Brighton Plunket Society.

STAFF.

A Nurse Instructor in the work has been appointed to each centre and is responsible for training maternity nurses in ante-natal work.

The following nurses have been appointed as Nurse Instructors: Sister Robinson, formerly Sub-matron of St. Helens Hospital, Wellington, was appointed for Wellington District; Sister Wilson, formerly Matron of Walton-on-Thames Hospital, was appointed for Christchurch.

St. Helens Nurses.—St. Helens nurses are trained in ante-natal work at St. Helens hospital by the Nurse Instructor, and a course of twelve lectures on the subject are given to the nurses.

Nurses of Maternity Hospitals.—The nurses of other maternity hospitals—viz., Alexandra Home, Essex Home, Salvation Army Maternity Hospital—are trained by the Nurse Instructor at the ante-natal clinics held at these maternity hospitals. All nurses attend the course of twelve lectures.

Plunket Nurses (Wellington and Christchurch).—Plunket Nurses in Wellington and Christchurch are trained at the Plunket Society ante-natal clinics by the Nurse Instructors and attend all lectures.

Plunket Nurses in Country Districts.—In order that Plunket Nurses in country districts may receive training, arrangements have been made whereby they may be freed from their duties for a period of three months to take their training, and relieving nurses will be supplied. This will involve an extra salary in each case during the time of training. The extra salary has been assured by the Health Department for the time necessary to take the training.

Nurses' Duties.—The duties of the nurses in charge of the clinic may be divided into four groups:—

(1.) General hygiene and sociological instruction applicable in all cases, normal or abnormal.

(2.) Medical examination, and taking the patient's history with a view to finding out anything that suggests any pre-existing organic disease, or any organic or functional disease peculiar to pregnancy, or any condition that may interfere with the course of pregnancy or labour. In this connection the history of previous pregnancies and labours is of special importance, and also obstetrical data, including measurements of the pelvis. If necessary X-ray reports are added to the chart, or any special reports on specimens which have been sent for biochemical, bacteriological, or pathological examination. The urine is examined regularly in all cases, and the results of the examination will be entered in the ante-natal clinic chart and sent at once to the doctor who is to attend the patient during her confinement. If the nurse finds any reason to suspect the existence of venereal disease or any abnormality she will immediately notify the doctor in charge in order to safeguard the mother and her child.

(3.) Besides the work of the clinic, the nurse is responsible for ante-natal and post-natal visiting where the health and special conditions make such advisable and necessary.

(4.) The nurse will instruct the patients regarding the maternity outfits, and will be responsible for packing and sterilizing the outfits.

To minimize the risk of sepsis during labour and the puerperium a sterilized maternity outfit has been designed by Dr. Paget, Inspector of Hospitals. Each expectant mother is requested to prepare a standard maternity outfit and take it to the clinic, where it will be packed, sterilized, and returned to the patient. It must then be kept unopened in her home until required by the doctor or nurse. A small fee to cover cost of sterilizing is made.

At the hospitals or Plunket rooms the clinics are conducted by hospital or Plunket Nurses who have double qualifications and special training in ante-natal work. Each nurse acts entirely as an assistant to the patient's medical attendant, and under his or her instructions.

The main clinics in connection with St. Helens hospitals in the four centres of New Zealand are staffed by Medical Officers. These clinics are to be used as the training-centres for ante-natal clinic nurses, and also the clinics where cases may be sent for diagnosis and treatment from the subsidiary clinics.

Sisters Robinson and Wilson are supervising all clinical work and instructing maternity and Plunket Nurses in ante-natal clinic work in Wellington and Christchurch. They also visit all patients in their respective districts who are unable to attend the clinics, and pack the maternity outfits.

Each Nurse Instructor sends a monthly report to the Medical Officer of Health in charge of the clinics in the district in which she works.

Course of Training given to Ante-natal Clinic Nurses.—The training is divided into—(1) A course of twelve lectures given by the Medical Officer; (2) practical instruction given by the Nurse Instructor.

At each clinic it is possible to train three nurses in the practical work, each nurse having special duties and taking them in rotation.

By division of duties the examining-room does not become crowded, nor is the patient embarrassed, as only the Nurse Instructor and one trainee are present during the examination. Each nurse on duty has the opportunity of gaining experience in the different branches of ante-natal work—viz., (1) examination of the patient; (2) diagnosis; (3) instruction, education, and treatment (as directed by the patient's medical attendant).

Attendances, Appointment Cards, &c.—All patients are encouraged to attend the clinics once a month up to the seventh month, and every fortnight after that, bringing with them each time a specimen of urine.

To ensure regular attendance and privacy every patient is given an appointment card on which is written the date, day, and hour she is to attend, and also any instruction that the doctor in charge of the case may wish carried out.

In this way *free* ante-natal supervision is continued during the entire period of pregnancy, and is required primarily to detect abnormal conditions and give these timely treatment. Also to advise the expectant mother in the care of her own health, the management of her baby after it is born, and to educate individual and public opinion in methods of promoting maternal welfare.

Pamphlets giving advice upon diet, abdominal exercises, and upon questions of special importance to the expectant mother are issued free of charge by the Department.

Dental Hygiene.—Special attention is paid to dental hygiene. Dental cards are filled in for all patients requiring treatment, and taken by them to their dentists. Patients are sent to a dental clinic only when they are unable to pay dentists' fees.

Goitre-treatment. — The treatment of goitre is urgently needed, and Professor Hercus and Dr. Eleanor Baker-McLaglan were consulted regarding the ante-natal treatment to be adopted and preventive treatment for congenital goitre.

It is suggested that all the expectant mothers in the Christchurch district (where goitre is prevalent) be given iodized salt during pregnancy, and also that the infants be observed consistently to see if goitre develops. We hope that statistics may be obtained from these investigations which will be of value to the Department.

Pelvimetry by Radiography.—Arrangements are made whereby patients attending the clinics may have the advantage of an X-ray examination when necessary.

An aid to the diagnosis of the position of the fœtus, size of the fœtus, and the size of the pelvis is that afforded by X-ray examination. The measurements of the bony pelvis may be estimated, and deformities of the pelvis are easily recognized.

The existence of multiple pregnancy may be determined and differentiated from hydramnios.

A hydrocephalic or an encephalic head may be recognized, and overlapping of the cranial bones, consequent on shrinkage of the brain-tissues, may be considered diagnostic of intra-uterine death of the fœtus.

Treatment of Venereal Disease.—If venereal disease is suspected, blood is collected for a Wasserman test, or urethral and cervical swabs are taken and forwarded for bacteriological examination. Should the result be positive, the patient attends the hospital clinics for treatment.

Work accomplished.—During the last three months 728 visits were recorded at the clinics in Wellington and Christchurch. The patients attend regularly, and the importance of continuous supervision was impressed upon them *without in any way alarming them about the ultimate safe issue.*

Ante-natal Visiting.—Ante-natal patients unable to attend the clinics were visited in their homes in order that they might be kept under observation.

Maternity Outfit.—Twelve sterilized maternity outfits were prepared for district cases.

Abortions, Miscarriages, Premature Labours, Still-births.—These constitute a very important cause of loss of child-life and maternal morbidity. In each case the cause was investigated and entered in the monthly report, given in appendix. The conditions diagnosed early and treated promptly were—

(1) Kidney-disease; (2) toxæmias of pregnancy; (3) venereal disease—all of which are potential dangers to both mother and child.

Albuminuria.—During the last three months six patients were treated for albuminuria and kept under supervision, with the result that no cases of eclampsia were reported.

Two of the patients who attended the clinic late in pregnancy were delivered of still-born babies. If patients would attend the clinic early in pregnancy much could be done to safeguard both mother and child.

Venereal Disease.—Two patients with gonorrhœa and one with syphilis were treated with satisfactory results.

Contracted Pelvis.—Two cases were detected which required special treatment. This condition is uncommon in New Zealand women, and I find it occurs chiefly among immigrants who attend the clinics.

When a contracted pelvis is suspected from the patient's history and appearance, from the external measurements and vaginal examination, or from the disproportion between the head and the pelvis, internal measurements are taken and necessary treatment given.

FIGURES RELATING TO ANTE-NATAL WORK IN WELLINGTON FROM OCTOBER, 1924, TO MARCH, 1925.

—	St. Helens Hospital.	Alexandra Home.	Salvation Army Maternity Hospital.	Plunket Society, Wellington.	Plunket Society, Lower Hutt.	Plunket Society, Petone.
Number of primipara	52	49	23	36	3	..
Number of multipara	91	37	3	27	8	..
Number of mothers who had ante-natal treatment and unable to nurse their babies	..	..	..	..	..	..
Cases of abortion while under ante-natal care (state cause)	..	..	..	..	..	..
Cases of miscarriage while under ante-natal care	1	..	..	..	..	..
Cases of premature labour while under ante-natal care	1	2	1	..	..	..
Cases of still-births (state cause)	5	2	1	..	..	..
Cases of albuminuria (state cause)	1 chronic nephritis 3 pre-eclamptic	1 chronic nephritis 2 pre-eclamptic	..	..	..	..
Cases of eclampsia	..	..	..	..	..	..
Cases of contracted pelvis, and degree	1–1st D.	1 – 1st D. (rachitic)	..	..	..	..
Cases of version (state reason)	..	..	..	..	..	..
Cases of induction (state reason)	1 contracted pelvis	1 contracted pelvis	..	..	..	..
Cases of Cæsarean section or operative measures, and why	..	..	..	..	..	..
Cases requiring dental treatment	33	23	8	8	..	..
Cases requiring X-ray treatment	..	..	..	1	..	..
Cases requiring treatment for goitre	10	4	3	2	1	..
Cases requiring treatment for gonorrhœa	0	2	0	0	..	..
Cases requiring treatment for syphilis	..	..	..	..	..	..
Number of cases of hyperemesis	..	..	..	..	..	..
Number of cases of malpositions (state what position)	3 breech	1 breech	1 breech	..	..	..
Number of cases of twins	..	1	..	1	..	..
Number of new cases since October, 1924	144	86	26	63	12	..
Number of return cases since October, 1924	151	122	25	85	14	..
Number of attendances since October, 1924	295	208	51	148	26	..

331 expectant mothers treated in the Wellington district. 728 attendances.

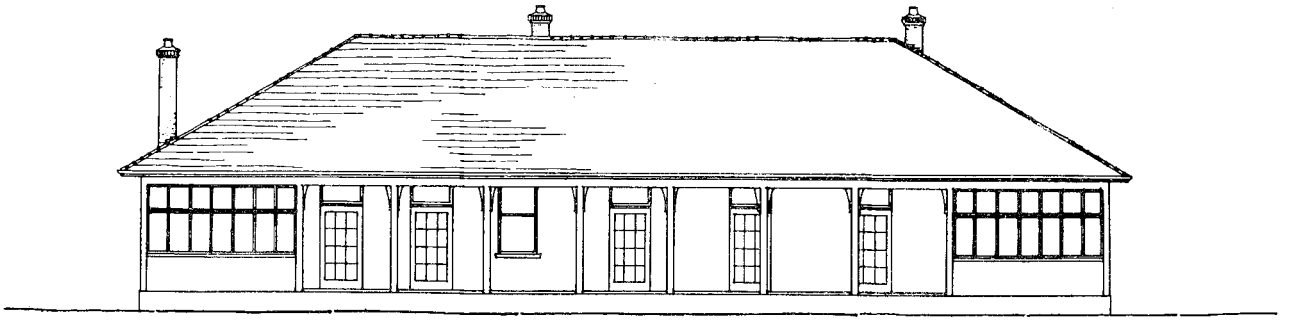
Research.—Ante-natal work opens up a wide field for research, which is almost unexplored in New Zealand. At many of the ante-natal clinics abroad most valuable research work is being carried out on subjects concerned with maternal and infant mortality. Such investigations are called for not only to increase the accuracy of our vital statistics, but to show the nature and extent of the dangers which threaten the expectant mother during pregnancy and the puerperium.

Infant and Maternal Mortality.—Attention has been drawn to the fact that the comparatively high maternal-mortality rate in New Zealand is associated with a high infant-mortality rate for the first month of life, a high rate of still-births, and a high mortality among first-born children either at birth or during the first three months of life.

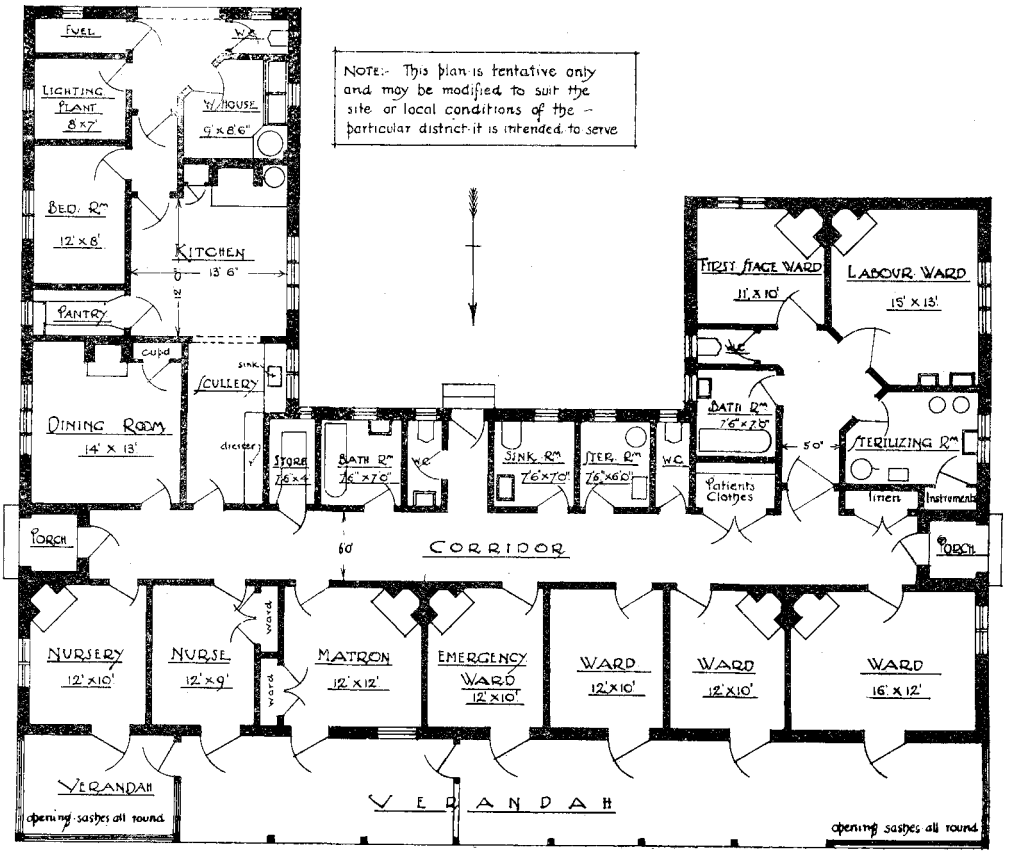
As stated by Sir Truby King and other authorities, the chief causes of still-births and infant mortality in the first month of life are ante-natal causes and birth injuries. Anything that injures the mother injures and imperils her child. It follows, therefore, that the welfare of the mother and her child before and at the time of parturition depends largely on ante-natal care, which should be one of the principal factors in reducing maternal and infant mortality.

My thanks are due to Sir Truby King, Dr. Jellett, and Dr. Paget for their advice and help in starting the ante-natal clinics, and to the members of the British Medical Association and the Plunket Society for their assurance of co-operation in this work and for their expression of appreciation for the work being done.

SUGGESTION FOR SMALL HOSPITAL.



·FRONT · ELEVATION·



NOTE:- This plan is tentative only and may be modified to suit the site or local conditions of the particular district it is intended to serve

·PLAN·

HEALTH DEPARTMENT'S PLAN FOR SMALL MATERNITY HOSPITAL WITH ONE EMERGENCY BED.

PART V.—NURSING.

I have the honour to submit my annual report for the year ending 31st March, 1925.

SECTION 1.—NURSES REGISTRATION ACT.

Two examinations were held under the Nurses Registration Act, in June and in December. There were in all 290 candidates, of whom 263 were successful and are now enrolled on the State register. In addition, thirty-four overseas nurses were admitted.

The question of improving the standard of training in our hospitals is one of grave moment at the present time. There appears to be a decided trend towards nurses becoming imbued with the idea that surgical nursing is on a higher plane than medical nursing, and the latter, which, after all, is the true test of a nurse's worth and which calls forth all her best qualities, is apt to take second place.

For this no doubt the war, with the great impetus it gave to surgery, is largely responsible, the nurses merely taking their cue from the surgeons.

However this tendency may have affected the medical profession, there is no doubt the importance attached to one branch has been disastrous to the nursing profession, particularly while the system of allowing young House Surgeons who have only recently left their student days behind them to lecture pupil-nurses is permitted.

It is to be hoped that with the advent of Sister-tutors a much more thorough and practical training of nurses to be nurses will be evolved.

Diploma in Nursing.—The Diploma in Nursing, instituted last year at the Otago University, is now available for young women who are desirous of combining an academic course with one of hospital training.

The course is of five years' duration, and during the fifth year there is provision for two separate courses—(1) teaching and administration in school, and (2) public-health nursing. Either of these is open to all already registered nurses as a post-graduate course.

The first, it is hoped, will be made use of by nurses who have an aptitude for teaching, who will on qualifying take posts in hospitals throughout the Dominion as Sister-tutors engaged in the efficient teaching and training of pupil-nurses. Hospital Boards have already been advised to select members of their nursing staffs who would be suitable for University training in Dunedin, such members on qualifying being required to return to the service of the Boards as Sister-tutors for a specified period.

The second will be for nurses engaged in preventive work to safeguard the health of the entire community.

Two nurses have been sent by the Government to qualify as instructors in connection with these courses.

Miss Janet Moore, A.R.R.C., late Matron of Waikato Hospital, Hamilton, is at present studying at Bedford College, London, and Miss Mary Lambie, recently a school nurse under the Department, is taking the public-health course at the Toronto University.

Three candidates have already entered on the full diploma course at the Otago University, and it is hoped that as it is better known more will be willing to avail themselves of this opportunity of acquiring a more scientific basis for the necessary practical training.

Reciprocity with other countries: Correspondence has been carried on with the States of Victoria, South Australia, and Queensland with a view to establishing a basis of reciprocity, but no finality has been reached. In the meantime there is nothing to prevent either side from continuing to accept any nurse whose credentials fulfil the conditions required by the country she may be visiting.

Reciprocity may come later, but it is more than ever important that nothing should be done which may tend to lower our standard. So great an advance has been made in the older countries in connection with providing facilities for the better training of nurses that we are liable, owing to our isolated position, to be left behind, whereas in the past the New Zealand nurse has been admittedly second to none. Fortunately, at the forthcoming Conference of the International Council of Nurses to be held in Helsingfors in July next New Zealand will be represented by at least five nurses, who will thus have a splendid opportunity of meeting and exchanging views with leaders in the profession from many countries.

An institution which is greatly needed at this time is the preliminary training-school in connection with the larger centres where candidates for the nursing profession may be tested for two or three months as to their suitability or otherwise before entering the wards. Should this system be adopted the smaller hospitals might arrange to send their would-be pupils to the nearest centre, thus overcoming the difficulty of providing the extra accommodation required. In the four centres, hostels might be provided where the students could be boarded under the care of a competent person, possibly a nurse who though no longer able for active nursing-work may be well fitted to undertake the control of such an institution.

Hospital Boards have been approached on this subject also, but so far there has been no indication that the proposition is regarded favourably. However, as the system has been in vogue in Great Britain and other countries for some years and has proved most successful there is little doubt of its being accepted in New Zealand ere long, as this country is not usually content to lag behind in any scheme which makes for progress.

Nurses in the Public Service.—It is with great regret that I have to report the loss by death during the year of two members of the nursing staff of the Department: Miss Whyte (R.R.C. and Medaille de la Reine), Matron of King George V Hospital, Rotorua, who had served with distinction during the

war, died suddenly after a short illness. Miss Lottie Earp, Health Nurse, succumbed after a serious operation while on leave in the United States, where she had gone to gain further experience. Both these officers had done excellent work, and the Service is the poorer for their loss.

King George V Hospital, Rotorua.—There have been a good many staff changes in this hospital, and these, with the increased work due to the epidemic of infantile paralysis, have made the last few months very strenuous. Miss Searell, A.R.R.C., who had been appointed Acting-Matron for six months on the death of Miss Whyte, has been confirmed in the appointment.

The addition of a Sister-tutor to the staff has proved a great success, and pupil-nurses are being given every assistance in making the most of the facilities at their command.

Pukeora Sanatorium, Waipukurau.—The past has been a quiet year so far as the nursing staff has been concerned, there having been an unusually small number of changes. On my last visit in February last there appeared to be a very good feeling existing between the Matron and all the members of her staff, both nursing and domestic. One does not expect nurses to make too long a sojourn in a sanatorium, both the nature of the work and the isolation involved combining to render the life irksome.

Otaki Hospital and Sanatorium.—Here also there have been few changes. Miss Pownall succeeded Miss Sealey in the Matronship, the latter having retired after over twenty years' service in the institution. The opening of the new nurses' quarters has provided the staff with a very comfortable home, which was urgently needed.

Queen Mary Hospital, Hanmer Springs.—Unfortunately, I have not been able to visit Hanmer during the year. Miss Hodges, A.R.R.C., is now Matron, and Miss Trott, after a visit to Great Britain, where she took a special course at the Maudsley Hospital in neurological nursing, was appointed Sub-Matron on her return.

District Health Nurses.—In this branch there have been a good many changes. Several nurses having been granted leave in order to take their midwifery training, others have been moved to their districts. Two nurses were granted leave to attend the Wembley Exhibition, and one or two have left on account of marriage. Several outbreaks of enteric among the Maori population in the east-coast district and among the Urewera Tribe have demonstrated the usefulness of this body of nurses.

Maori Nurses.—There are now four Maori nurses engaged in work among their own people, three of these being appointed assistants to pakeha nurses until they shall have gained sufficient experience to enable them to take complete charge of districts. At King George V Hospital, Rotorua, four Maori girls are undergoing training.

School Nurses.—This branch of the nursing activities of the Department is very popular to many nurses desiring to live in their own homes and to be freed from the irksomeness of night duty. Their work will be fully reported on by the head of their division.

Red Cross Nurses.—The two nurses sent by the Red Cross Society to Bedford College to undergo the course in public-health nursing, having returned to New Zealand, have been engaged in lecturing on home nursing and hygiene under that body, one being stationed in Taranaki and the other on the west coast of the South Island.

Later it is hoped these nurses may be attached to the Department, where their special knowledge should be invaluable.

Superannuation for Nurses.—So far no further progress appears to have been made with regard to superannuation for nurses, though it may be that the long-looked-for legislation may be passed during the forthcoming session.

It is gratifying to note that two Hospital Boards during the year have taken advantage of the permission given by the amending Hospitals and Charitable Institutions Act, 1920, to grant pensions to their Matrons of ten years' or upwards of service.

The officers benefiting by this provision are Miss Fraser and Miss Ewart, formerly Matrons of Dunedin and Christchurch Hospitals respectively.

SECTION 2.—MIDWIVES ACT.

At the two examinations held under the Midwives Act there were 167 candidates, of whom 158 were successful. There were also fifteen overseas midwives registered.

As an outcome of the Kelvin Commission held last year Dr. H. Jellett, formerly Master of the Rotunda Hospital, Dublin, and author of several text-books on midwifery, was appointed Consulting Obstetrician to the Department, while Dr. T. L. Paget was appointed an Inspector of Hospitals with special jurisdiction over maternity hospitals and midwifery training.

For some time past it has been recognized that a longer course of training in midwifery would be beneficial, and a new scheme is being drawn up which will require amending legislation. The main features of the scheme are—(1) a preliminary course of training in maternity nursing for those who wish merely to work under medical supervision; (2) a more intensive training in midwifery for those who are desirous to be qualified as midwives in order to practise in country districts or to conduct private maternity hospitals.

At present, as has already been pointed out, nurses registered under the Nurses Registration Act undergo training in midwifery in many cases merely as a means of obtaining better positions. This practice has resulted in a large number of qualified midwives who are not interested in this branch of nursing, and do not intend to make use of the knowledge gained.

The new scheme has for its object, in addition to the improvement in the quality of the training, the discouragement of all those who have no wish to carry on the actual work of midwives.

The following table will illustrate the growth of the work of the St. Helens hospitals during the year. Totals for the preceding year are included for purposes of comparison.

ST. HELENS HOSPITALS.—STATISTICS FOR 1924.

Town.	Births (Living Children).	Still-births.	Deaths of Mothers.	Deaths of Infants.	Outdoor Cases.	Pupil Midwives qualified.
Auckland	612	19	1	6	231	26
Wellington	427	20	1	9	79	17
Christchurch	276	13	2	3	185	19
Dunedin	146	2	..	1	80	9
Invercargill	149	5	..	..	19	7
Gisborne	110	7	..	2	3	6
Wanganui	117	3	1	..	26	6
Totals, 1924 ..	1,837	69	5	21	623	90
„ 1923 ..	1,666	45	7	31	554	79

St. Helens Hospital, Wellington. — The ante-natal department at this institution has been greatly extended during the year, a clinic having been established under Dr. Elaine Gurr, who has had a considerable amount of experience in connection with such activities in Great Britain. Such has been the popularity of this movement that it has been found necessary to open the clinic twice a week, and the accommodation for those attending is quite inadequate. Following the purchase of property opposite the institution, it is hoped ere long to have a suitable block provided for those attending the clinic. Instruction in this treatment will in future be an integral part of the training of every pupil passing through St. Helens hospitals.

Already results have more than justified the establishment of the clinic.

Dr. Agnes Bennett having left on extended leave for England, Dr. Corkill was appointed to act as Medical Officer during her absence.

Miss Newman and her staff have done excellent work in the face of many difficulties.

St. Helens Hospital, Auckland.—Dr. Inglis reports a very successful year and the busiest in the history of St. Helens. There was one maternal death in indoor cases, and no deaths among outdoor patients, while the infant mortality was six (indoor). The morbidity list (patients developing temperatures of 100° F. or over on two occasions during the first ten days of puerperium) reached 3·8 per cent. The ante-natal clinic was well attended.

Instrumental deliveries in the institution numbered 5·4 per cent., while outside cases (*i.e.*, those attended by private medical men) numbered 40·2 per cent.

St. Helens Hospital, Christchurch.—The staff continue to do good work in this hospital in spite of cramped conditions and lack of sufficient accommodation for booked patients which, as Dr. D. Anderson remarks, "is quite below what is required for such a large district."

The ante-natal clinic which Dr. Anderson was carrying on so successfully has received a further impetus from the advent of Dr. Elaine Gurr, who has now instituted a more complete system on the lines of that recently inaugurated by her in Wellington, and has now the use of the new Isolation Ward for patients attending the clinic and for those who require treatment in hospital before actual confinement.

Unfortunately, owing to Dr. Anderson's increasing private practice he was obliged to relinquish his position as Medical Officer. His resignation was accepted with deep regret by the Department, for it was realized that the services of a very efficient and enthusiastic officer were thus being lost.

Dr. Lindsay was appointed in succession, Dr. Irving remaining, as before, as consultant.

St. Helens Hospital, Dunedin.—Here again stress has been laid on ante-natal treatment, with the result that all patients admitted for a variety of causes for treatment prior to confinement did well and went through the puerperium normally. There were six premature infants, all of whom did well. The one infant death was that of a fœtus premature at the sixth month, which lived for one and a half hours. Quite a number of medical students attend at the Hospital for practical experience in midwifery.

Miss Holford, Matron, and Miss Gow, Sub-matron, still continue to render the enthusiastic service that has so marked their administration of this Hospital for many years past.

St. Helens Hospital, Invercargill.—There has been a slight increase in the number of patients. Morbidity cases were accounted for by tuberculosis, scarlet fever, thrombosis, and catarrhal infection of respiratory tract. There were no deaths of either mothers or infants. Two cases were sent to the public hospital for Cæsarean section.

Townley St. Helens Hospital, Gisborne.—This small hospital recently celebrated the birth of the thousandth baby born in the institution. The mother, having had six children born in the building, was thought to have fairly earned the silver spoon presented by the staff.

The long-promised additions and alterations are now in progress, and when completed should add materially to the convenience of the staff and the efficiency of the work.

There were no maternal deaths. Of the two infant deaths, one was premature, living for six days, the other died after three days from icterus neonatorum.

St. Helens Hospital, Wanganui.—Dr. Wilson reports as follows:—

"The work of the institution has been carried out to my satisfaction by Matron and her staff. The decrease in admissions from previous year I partly attribute to publicity given in the Press to maternal mortality, and partly to the fact that the birth-rate in Wanganui and district shows a slight decrease as compared with 1923.

The one maternal death was due to rupture of the uterus (contracted pelvis). There were no deaths of infants.

Certain alterations made within the building have tended to make the working of the institution less difficult.

MATERNITY HOSPITALS UNDER BOARDS AND ASSOCIATIONS.

Hospital.	Births.	Deaths of Mothers.	Deaths of Infants.	Attended outside.	Pupils trained.
Timaru	63	..	3	..	..
Batchelor	185	..	1	12	6
Stratford	118	..	2	..	3
Lawrence	32	..	..	..	..
McHardy Home	148	..	7	..	4
Wairau	183	..	2	..	8
Picton	51	1	..	..	..
Denniston	31	..	1	..	1
Alexandra Home	149	..	..	124	12
Essex Home	146	..	3	..	3
Havelock	20	..	..	1	..
Cromwell	50	1	1	..	3
Motueka	46	..	4	..	1
Mangonui	49	..	4	..	3
Hokianga	47	..	..	..	1
Whangarei	205	..	3	..	10
Kawakawa	61	..	..	11	3
Kaikoura	41	..	..	3	2
Oxford	12	..	..	1	..
Waikari	33	..	2	4	2
Naseby	59	..	1	2	1
Opunake	34	..	1	..	..
Masterton	52	..	5	..	2
Rangiora	92	2	1	4	6
Methven	53	..	..	..	2
Ashburton	100	..	2	..	..
Geraldine	52	..	2	..	..
Te Puke	52	..	..	..	..
Thames	45	1	1	..	1
Whangaroa	7	..	..	..	..
Rakaia	49	..	..	2	1
Waiuku	63	..	2	..	2
Taumarunui	54	..	1	..	..
Matamata	22	..	..	..	..
Kawhia	9	..	4	..	..
Otahuhu	25	..	1	..	..
Whakatane	52	..	4	..	..
Raetihi	62	..	1	..	..
Waiuta	11	..	..	..	..
Amuri	13	..	..	..	..
Roxburgh	39	..	3	..	..
Leeston	9	..	..	..	..
Akaroa	40	..	2	4	..
Totals	2,664	5	64	168	77
Salvation Army.					
Wellington	75	..	2	..	1
Auckland	61	..	7	..	..
Dunedin	99	..	4	..	1
Christchurch	43	..	3	..	..
Napier	90	..	1	..	1
Gisborne	88	..	2	2	..
Russell	9	..	..	..	..
Totals	465	..	19	2	3

SECTION 3.—PRIVATE HOSPITALS.

Owing to the policy of decentralization the administration of private hospitals is no longer under my control, but is undertaken by the Medical Officers of Health through the Nurse Inspectors and will no doubt be reported on by them.

J. BICKNELL,
Director, Division of Nursing.

PART VI.—SCHOOL HYGIENE.

SECTION 1.—ADMINISTRATION AND MEDICAL INSPECTION.

I have the honour to report upon the work of the Division of School Hygiene to the end of March, 1925.

(1.) Staff.

The permanent staff consists at present of a Director, twelve School Medical Officers, and thirty-one school nurses.

During the year Dr. Mecredy was transferred to the position of Assistant Medical Officer of Health, his position in the school service being filled by Dr. Mary Wilson. Dr. Grace Stevenson was appointed to the service in November, 1924. Dr. Henderson and Dr. Baker McLaglan returned to duty after long leave of absence. Dr. Jean Wood, Dunedin, has been acting as a junior School Medical Officer (temporary appointment) during the early part of this year.

There have been during the year several resignations and fresh appointments in the school nursing service. The number of school nurses on the staff has been increased from twenty-seven to thirty-one.

(2.) Figures relating to Work accomplished.

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

Schools inspected:—		
Of roll under 100	731	
Of roll 100 to 500	288	
Of roll 500 and over	137	
		1,156
Children examined:—		
Complete examinations	55,021	
Partial examinations	60,620	
		115,641
Notifications sent to parents relating to defects requiring treatment	33,153	
Health talks given to school-children	965	
Parents interviewed	6,818	
Public lectures and addresses to parents	88	
The figures for the work of the school nurses are as follows:—		
Number of days assisted medical officer in schools	1,601	
Number of days engaged wholly in clerical work	1,740	
Number of children examined for medical schedule	75,979	
Number of children re-examined after inspection of medical officer	38,980	
Number of visits to homes in—		
Large towns	9,428	
Small country towns	2,291	
Scattered districts	2,168	
Number of children taken personally to hospitals	387	
Number of children taken personally to dental clinic	2,768	

(3.) Findings of Medical Inspection.

Total number of children examined	55,021
Percentage found to have no defects	10·25
Percentage found to have defects	89·75
Percentage with defects other than dental	57·59

Percentage showing evidence of—

Subnormal nutrition	5·88
Pediculosis	2·63
Uncleanliness	2·62
Skin—	
Impetigo	1·01
Scabies	0·97
Ringworm	0·13
Other skin-diseases	0·82
Non-vaccination	83·24
Heart abnormality	1·09
Respiratory diseases	0·51
Total deformities of trunk and chest	23·09
Stooped shoulders	6·49
Flat Chest—	
Undefined	0·47
True	0·55
Postural	1·01
Scoliosis	1·05
Pigeon breast	4·41
Depressed ribs	5·04
Depressed sternum	3·80
Assymmetrical chest	0·27
Other deformities	1·48
Deformation of jaw and palate	9·47
Mouth, teeth—	
Dental caries	67·83
Mouth, teeth—	
Extraction of permanent teeth	8·68
Fillings	23·56
Perfect sets of teeth	4·52
Nose and throat—	
Enlarged tonsils and adenoids	16·78
Obstructed nasal breathing	0·81
Enlarged cervical glands	8·69
Goitre, all degrees	18·33
Incipient	12·53
Small	5·00
Medium	0·70
Large	0·11
Eye, external eye-disease	1·02
Vision—	
Total	3·85
Corrected	1·50
Uncorrected	2·35
Ear—	
Middle-ear disease	0·45
Defective hearing	0·39
Defective speech	0·81
Mental—	
Feeble-mindedness	0·24
Imbecility	0·01
Epilepsy	0·04
Tuberculosis	0·05

Much that has been said in previous years is again applicable. In this Dominion, with its wide spaces, plentiful sunlight, and generous food-supply, improvement of the physique of the people depends mainly upon increased knowledge of the right use of its resources. Comparatively few families in New Zealand have not means to obtain the essentials for healthy living, but thousands of children are less robust than they should be, owing to faulty conception on the part of parents as to what is implied by good nurture. Hence the necessity for wider popular education.

One means toward this end is arranging, as far as possible, for mothers to attend the examination of their children. Advice given in public addresses or in pamphlets often has too general an application and readily becomes wearisome by repetition, but an actual demonstration to parents of the physical condition of their children never fails to impress.

The size of the staff and the area to be covered, unfortunately, make it impossible to arrange this for all classes. The parents of infants and of special cases are therefore individually requested to attend, a general invitation serving for the rest of the school. Much is done by talking to the children themselves, and in teaching simple health rules many infant-mistresses are admirable. One can on inquiry receive ready and satisfactory replies as to habits, dietary, sleep, exercises, &c., showing that there is without doubt in the schools a growing knowledge of the principles of right living.

Mention may be made of the practical piece of education being carried out by the ladies of the Hastings Community Club under the supervision of Dr. Clark, School Medical Officer. The character of lunches brought to school by the children being often very unsatisfactory, these ladies have undertaken to prepare suitable lunches themselves and supply them at a minimum cost. It is hoped in this practical way to educate children and parents in the selection of their dietary.

(4.) Nutrition and Posture.

The intimate relationship between good nutrition and correct posture was discussed in last year's report. The necessity for a regime providing suitable food, fresh air, and sunlight exercise and sufficient rest is evident. A fact which undoubtedly requires emphasis is that nearly all children need more rest. Great benefit would be obtained by a modification of the school curriculum, permitting definite rest periods, especially in the case of the younger and the weaklier children. This was shown in the nutrition class conducted in Auckland last year.

The nutrition class at the Normal School, Auckland, carried out under the supervision of Dr. Mecredy, was of special interest in that it demonstrated that simple and readily available measures are sufficient to bring about improvement in the physical condition of weakly children. The class consisted of some twenty children, specially chosen because of their poor physique and general debility. The arrangement for nutrition classes elsewhere commonly allows for extra feeding, more particularly for an extra milk-ration once or twice a day. In this case the good result obtained was due largely to the insistence on common health laws, lunches of suitable character, to the fact that fresh air was utilized as much as possible, and frequent rests given, the longest being a midday siesta of thirty to forty minutes. The co-operation of the parents was secured by personal interviews and a general meeting at which the object of the class was explained to them. In this way an improvement was also brought about in the regime of the child's life outside school. There was a decided improvement in all members of the class, an interesting fact being that though the time actually devoted to the usual school subjects was less the mental attainment of the nutrition class at the end of the year was most satisfactory. An observation such as this indicates that much of the usual school-teaching may be wasted upon children too dulled by fatigue to benefit by it, and that a curriculum modified to permit of more frequent rests and periodical complete relaxation might achieve better results.

Cleanliness of Children.—It is satisfactory to note that the standard of personal cleanliness is steadily improving. This may be attributed to the careful supervision exercised by school-teachers, and also to the energy of school nurses. In most schools in good residential areas pediculosis is non-existent and want of personal cleanliness rare. In the more congested parts of cities, however, where overcrowding prevails and adequate facilities are lacking, great benefit would be conferred by well-equipped cleansing-stations.

Under present conditions the home treatment of scabies and other minor skin-diseases is often spasmodic and ineffective, so that they may persist for weeks and even months. They thus become a source of prolonged misery and, necessitating, as they do, the absence of the victims from school, a great handicap to progress. All this would be prevented by a few days' prompt and vigorous treatment at the outset.

The question of the establishment of cleansing-stations is at present under discussion by the Health and municipal authorities in the larger centres.

Dental Caries.—The reports of all School Medical Officers again lay stress upon the importance of correct diet in the prevention of dental caries. Excess of refined, starchy food and sweets, lack of foods necessitating vigorous mastication, scarcity of fresh fruit and vegetables in the dietary, the habit of eating between meals, are repeatedly quoted as predisposing to this defect. Hence it follows that comparative immunity is not necessarily found among children of superior social advantages. The teeth of children in orphanages and of Maoris in the remote Urewera compare favourably with those of the general school population. In regard to the Maoris, the racial factor has to be considered, but it has frequently been noted that Native children living in cities under conditions approximating those of white children tend to lose their superiority.

The following is a summary of an interesting investigation made by Dr. Mecredy when School Medical Officer of Auckland :—

Table showing Results of Medical Examinations of School-children.—Auckland District.

Group of Children.	Totals.	Perfect Sets of Teeth.	Average Number of Treated Teeth per Head.	Average Number of Carious Teeth per Head.	Average Number of Carious and Treated Teeth per Head.	Deformity of Jaw or Palate.	Enlarged Glands.	Enlarged Tonsils.	Bony Deformity of Chest.	Remarks.
		Per Cent.				Per Cent.	Per Cent.	Per Cent.	Per Cent.	
City schools, Standard VI	394	*2·0	4·5	3·4	7·9	27·1	9·9	20·8	..	* Includes 3 recent immigrants.
City schools, Standard II	891	†0·7	1·5	4·5	6·0	15·8	18·9	21·7	..	† Includes 4 Hindus and 1 recent immigrant.
City schools, Primers ..	905	‡3·3	0·4	7·1	7·6	6·8	18·0	23·9	..	‡ Includes 7 recent immigrants.
City schools, all children	2,274	§2·0	1·6	5·4	7·0	14·1	16·9	22·3	13·2	For 2,218 children. § 1·3 per cent. without 4 Hindus and 11 recent immigrants.
Country schools (includes 109 Maoris)	1,380	1·8	0·9	6·3	7·2	13·3	16·0	23·5	11·3	For 1,275 children.
Maoris in five Urewera schools	170	23·0	..	3·2	3·2	2·5	4·1	11·2	5·3	
Maoris in North Auckland schools	313	6·4	0·2	5·0	5·2	‖2·0	‖12·7	‖14·2	‖3·9	‖ For 204 Maoris only.
St. Stephen's College ..	74	9·5	1·6	3·3	4·9	9·5	6·5	6·5	..	
All Maoris and half-castes	557	11·8	0·3	4·3	4·6	¶3·3	¶8·5	¶11·8	¶4·5	¶ For 448 Maoris only. For 374 Maoris only.
Full Maoris (included in above)	278	..	..	..	3·7	..	..	..	..	
All white children ..	3,545	**1·9	1·4	5·8	7·2	..	..	..	..	** Excluding 4 Hindus and 11 immigrants, 1·5 per cent.
Children in three orphanages	124	††6·4	††0·9	††2·8	4·2	††18·0	††22·4	††27·6	..	†† For 94 children only.
1923.										
All Maoris (Bay of Plenty)	523	13·2	0·2	3·8	4·0	..	..	..	..	
All white children ..	5,317	1·5	1·1	6·0	7·2	..	..	..	..	

Dental Nurses.—All School Medical Officers comment favourably upon the work done by the dental nurses, and the extension of their activities is generally desired. Where a dental clinic exists a higher standard of oral hygiene prevails, not only in those classes undergoing treatment, but throughout the school.

Defective Eyesight.—In addition to the usual routine test for errors of refraction, it would undoubtedly be a wise procedure to test all boys leaving school in order to determine whether they have normal colour vision. In connection with one of the large Wellington schools an interesting investigation was made. The headmaster gave all the boys in the school a simple test for colour vision, and such as were found doubtful were retested by an expert medical man. The number of boys found defective in colour vision was estimated at 17 in 250—*i.e.*, 6·8 per cent. In many occupations efficiency depends upon normal colour vision. It frequently happens, however, that men who have spent years in railway or steamship service find advancement blocked by the revelation that their colour vision is defective.

Health Camps.—It was not found practicable this year to hold the usual health camp at Turakina under the supervision of Dr. Elizabeth Gunn. A camp was, however, held at Hayward's, Upper Hutt, under the supervision of Dr. Helen Bakewell, Wellington District. The Y.M.C.A. gave their grounds and much practical assistance. The children concerned were the inmates of the special classes for mentally subnormal attached to the Mount Cook Schools, twenty-six in all. Though handicapped by stormy weather, this camp was an undeniable success, all the children showing improvement in health and nutrition. During the week of the camp every child put on weight, the increase varying from 2 lb. to 4 lb. Moreover, such a camp offers an opportunity for education in matters of ordinary conduct, as eating, dressing, bathing, &c., which though learned without effort by normal children cause infinite trouble to the mentally subnormal.

Physical Education.—The work of the physical instructors of the Education Department is of great value. Its influence on the physique of the children by promoting correct posture and good carriage and in affording education in the right habit of breathing has been amply demonstrated.

(5.) Infectious Disease.

The routine work of medical inspection of schools throughout the year was interrupted by minor epidemics of measles and whooping-cough.

Diphtheria in several districts again made its appearance in epidemic form. The incidence of diphtheria for the year ending 31st December, 1924, was 2,717 cases for the whole Dominion, with 82 deaths. It is therefore evident that the question of the control of this disease is a serious one. Attempts to prevent the spread of infection by the isolation of carriers in the general and school population are unsatisfactory, not only because of the constant and excessive demands for bacteriological examinations entailed thereby, but because comprehensive measures for isolating carriers and contacts cannot be carried out without serious interference with the life of the community.

Hitherto preventive treatment of diphtheria by toxin-antitoxin immunization has been carried out in only a few selected schools and orphanages. The necessity for making more extensive provision for preventive treatment is therefore apparent, and as a preliminary measure steps are being taken to make toxin-antitoxin treatment available in endemic areas with the object of extending its use as opportunity offers.

The epidemic of acute anterior poliomyelitis, which made its appearance towards the end of 1924 and extended over the first three months of 1925, was responsible for the schools throughout the Dominion remaining closed from the Christmas vacation until the middle of April. The control of the epidemic was thus little of a school problem, the services of the School Medical Officers and school nurses being utilized by the Medical Officers of Health in carrying out general measures for combating the spread of the disease.

(6.) Goitre.

School Medical Officers throughout the Dominion for the past two years or more have recorded the amount of goitre noted during their routine examination. It is now possible to map out fairly definitely the chief areas in the Dominion where goitre is endemic.

Professor Hercus, of the Otago Medical School, has, during the same period, been making investigations into the iodine content of soil and vegetation in various districts. It has been found that the areas where goitre is endemic coincide with those in which the iodine deficiency in the soil and vegetation has been demonstrated by Professor Hercus.

The School Medical Service has carried on preventive and curative work in the schools, beginning with small areas some three years ago, which, especially during the year 1924, gradually increased, so that at present there are approximately some five thousand children under treatment. Facilities are now provided by which the children in all schools in endemic areas may obtain treatment, the consent of their parents being first obtained. Treatment consists in the administration of 1 gr. of potassum iodine weekly for ten weeks in the school term, the total amount given to the children annually being thus 30 gr. Advice is also given that the diet should contain a plentiful supply of fresh fruit and green vegetables, and that health habits should be observed.

As iodine may do harm when given in unsuitable cases, the Department recommends that no treatment for the prevention or cure of goitre be carried our except under the supervision of the family medical practitioner or School Medical Officer. In those areas where it has been possible to observe the effect of some months of treatment results have been definitely encouraging. It is hoped at the end of the current year to make a more definite statement.

SECTION 2.—MENTALLY BACKWARD AND FEEBLE-MINDED CHILDREN.

The main aspects of the problem of mentally backward and feeble-minded children were outlined in last year's report. The special classes established in the larger centres show a record of good work, which justifies the extension of this provision to other areas.

The report of the Committee of Inquiry into mental defectives and sexual offenders, recently published, made definite recommendations for the education and care of mentally backward and feeble-minded children (page 23), which all familiar with the problem as at present in New Zealand will doubtless endorse.

"That the care of backward and feeble-minded children, so long as these remain in an educable stage, shall be the duty, as at present, of the Education Department.

"That the Education Department obtain the services of psychological experts with a view to creating a comprehensive system providing increased facilities for the study of the individual child in school, for the classification of children according to their mental capacities, and for the adaptation of the curriculum to the needs of special children. This may necessitate the establishment of an increased number of special classes, an extension of the residential special schools, and also provision for social readjustment of the children when required.

"That fuller provision be made in connection with our Universities and training colleges for the education of teachers in child psychology and its practical application, and for their training for service in special classes and special schools.

"That full use be made of residential special schools for those cases who fail to benefit by attendance at special classes, but who are considered capable of training in manual work or handicrafts. The lower grades of the feeble-minded who require merely custodial care should, as a general rule, be excluded from special schools; but where there is any doubt as to a child's degree of mentality or aptitude for manual training admission to a special school for a probationary period should be arranged."

SECTION 3. SCHOOL BUILDINGS.

The open-air-school campaign in Canterbury, inaugurated by Dr. Phillips, is being carried on vigorously. An Open-air Schools Council has been formed, composed of prominent professional and business men, having for its objects:—

(1.) Investigation of problems relative to the school life of children, especially those which have reference to the establishing of special activities, and upon all conditions of schooling as are necessary for the child's medical and physical welfare

(2.) The propagation of knowledge relating to these problems.

In association with the Open-air Schools Council is the Open-air Schools League, with a large and growing membership.

The open-air class-room at Fendalton, built according to Dr. Phillipps's plans, has been in use for nearly a year and has proved to be very successful, teachers and parents all whole-heartedly testifying to its advantages. At Oxford, owing to the enthusiasm of Dr. Burnett, Chairman of the School Committee, the new infant department consists of two open-air class-rooms. At Fendalton one of the rooms in the old school building has been made into an open-air room by the simple expedient of knocking out a blank wall and replacing it by folding doors. Without doubt many old and unhygienic school buildings could be transformed in such a simple way. A great advantage would be obtained by replacing the old-fashioned cumbersome desks and benches with tables and chairs. It is satisfactory to note the increasing number of teachers who use every opportunity of taking classes out-of-doors.

School-cleaning.—School-cleaning is rarely adequate. The difficulty of securing labour is great, especially in country districts. Much improvement would doubtless result had the Education Board its own staff of school-cleaners, which would, while not superseding the usual daily cleaners, give each school once or twice a year a thorough overhaul. In districts where electricity is readily available it should be possible to let each school have its own vacuum cleaner.

Outbuildings.—Where there is a water-carriage system, condition of sanitary convenience is, as a rule, fairly satisfactory. In country districts, however, there is need for great improvement.

SECTION 4.—TREATMENT RETURNS.

Owing to the dislocation of work in the early part of this year by the infantile-paralysis epidemic it has been impossible to prepare a complete summary of treatment returns. As far as it is possible to judge, the percentage of treatment obtained this year approximates that for last year, varying from 40 per cent. in outlying districts to over 90 per cent. in some city schools where there are good facilities.

SECTION 5.—EXAMINATION OF TEACHERS.

The medical examination of entrants for the teaching profession is now entirely in the hands of the School Medical Officers, who are specially requested to be as rigid as possible in their selection. Approximately some 800 were examined at the beginning of the year.

The report of one School Medical Officer may be regarded as typical.

"*Entrants to Teaching Profession.*—Number examined, 143. Ages, 16 to 21. General condition: Excellent to average, 91; fair, 45; rejected, 5. (Reasons for rejections: General debility and anæmia, 1; serious defective vision, 3; debility with a history of many attacks of bronchitis, 1.)

"Thirty-eight had remedial defects to be corrected—namely, defective vision, 12; dental caries, 26.

"Thirty had suffered from major illnesses—namely, diphtheria, 7; pneumonia, 5; appendicitis, 6; rheumatism, 2; scarlet fever, 6; enteric, 2; mastoid abscess, 1; hernia, 1.

"Twenty-six had had operations on the nose and throat.

"*Teeth.* Number of untreated carious teeth up to sixteen, 26; number of fillings up to twenty-two, 115; number with extractions up to thirty-two, 91; number with dentures, 10 (complete, 2, partial 8); number with perfect teeth, 1.

"*Goitre.*—Number with incipient goitre, 13; number with small goitre, 5.

"*Report on Students leaving the Training College.*—Number examined, 136; ages, 18 to 25. General condition: Excellent, 1; average, 81; fair, 48; rejected, 6.

"381 suffered from major illnesses or accidents—namely, appendicitis, 10; pneumonia, 10; concussion of the brain, 1; scarlet fever, 11; diphtheria, 4; rheumatism, 2; defective vision, 24.

"*Forty-one had remedial defects to be corrected.*—Defective vision, 13; defects of nose and throat, 6; dental caries, 22.

"Rejections were for—History of pleurisy and pneumonia, 1; poor condition with excessive goitre, 1; goitre with nervous symptoms, 1; cardiac affection with incipient goitre, 1; debility (nervous diathesis), 1; affection of the eye, 1.

"*Condition of the Teeth.*—Number with untreated carious teeth up to sixty-three, 22; number with fillings up to twenty-one, 94; number with extractions up to thirty, 88; number with dentures, 15 (complete 4, partial 11).

"*Goitre.*—Number with incipient goitre, 24; number with small goitre, 18; number with goitre with nervous symptoms, 1."

These figures indicate the physical condition of teachers at the beginning and at the end of their period of training for their profession.

School Medical Officers from all centres comment upon the poor physical condition of students at the end of their training-college course, a large percentage of them being under weight and showing signs of nervous exhaustion. It thus seems probable that an excessive demand is made upon these young people. A minority of them undoubtedly dissipate energy in unprofitable ways, which fact provides a strong argument for their being housed in well-supervised hostels. With regard to the majority, however, who are anxious to make the best of their training-college and University opportunities, it seems necessary to consider whether the standard of attainment required of them is too high, or whether the means afforded them for reaching it are adequate.

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

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

PART VII.—DENTAL HYGIENE.

In connection with the work of my Division I beg to submit a report for the year ending 31st March, 1925.

SECTION 1.—STAFF, TREATMENT, ACCOMMODATION, ETC.

Staff.

The allocation of the staff of the Division is as follows: At Whitmore Street Training Clinic, Mr. J. L. Saunders, Deputy Director, Division of Dental Hygiene; Mr. R. D. Elliott, Inspecting Dental Officer; Miss E. Haines, Senior Dental Nurse. In the field eleven dental officers and thirty-one dental nurses, stationed as follows: Dental officers—two at Auckland, one at Huntly, one at Gisborne, one at Wellington, one at Blenheim, one at Nelson, one at Motueka-Murchison, one at Christchurch, one at Timaru, one at Dunedin. Dental nurses—one at Whangarei, one at Auckland, one at Avondale, one at Hamilton, one at Hunterville, one at Te Kuiti, two at New Plymouth, one at Wanganui, two at Palmerston North, one at Gisborne, two at Napier, one at Hastings, one at Waipukurau, one at Pahiatua, one at Masterton, one at Lower Hutt, one at Blenheim, one at Nelson, one at Westport, one at Greymouth, one at Hokitika, one at Christchurch East, one at Beckenham, one at Clyde, one at Dunedin, one at Mosgiel, two at Invercargill.

In connection with the position of Dental Supervisor, which became vacant last year upon the resignation of Mr. R. Dunn, we have secured the services of Mr. J. L. Saunders, B.D.S., formerly of Christchurch, who commenced duty with the Department on the 1st August, 1924, and was appointed to the new position of Deputy Director, Division of Dental Hygiene, substituted for that of Dental Supervisor, as from the 1st November. The excellent results achieved by the probationers in the recent primary examination following six months' training under their new instructor indicate that our choice has been a fortunate one and that Mr. Saunder's qualifications for the position are undoubted.

Since my last report we have lost two of our dental officers, Misses Hanron and Whiteside, whilst Nurses Gully, Pinhey, Dunn, and West have for various reasons also left the service. In addition, I regret to say that two further nurses have broken down in health and are at present on extended leave—namely, Nurse Williamson, formerly stationed at Lower Hutt, and Nurse Jackson. The vacancies occasioned by these retirements, &c., have now all been filled by those nurses who qualified in October last and by several of the Department's bursars who became available for duty at the end of last year. Such losses, however, indicate the necessity for training each year sufficient nurses to allow for replacements. In this connection, too, I would like to mention that the number of dental students holding the Department's bursaries is now practically exhausted, and any further fully qualified service required will therefore have to be obtained from outside.

Staff in Training.—The staff at present in training numbers fifty-one, consisting of twenty second-year probationers who commenced duty in March, 1924, and the thirty-one new appointees who entered into the first year of their training at the beginning of this month. The former are making excellent progress, as is evidenced by the record results attained in the recent primary examination, which is referred to in more detail, together with other matters of interest in connection with the training, in the following extract from a report of the Deputy Director of this Division.

"I beg to report on the training carried out at the dental clinic, Wellington, since the time of my joining the Department (1st August, 1924). At that date there were thirteen senior and twenty-four junior probationers in training. The number of juniors has since been reduced by four, for various reasons.

"At the time of my arrival the senior nurses were within three months of the completion of their course. During October they were given their final examination, and, with the exception of one who was absent on sick-leave, were shortly afterwards sent out to clinics. The junior nurses had already received instruction in some of their subjects, and the work of preparing them in anatomy and physiology for their primary examination was taken in hand. During the last three months of the year the juniors received a thorough grounding in the technique of operative work, both theoretical and practical, the 'dummy jaws' being used for the latter. I found them already engaged in assisting the senior nurses at the chair, and during the last two months of the year they undertook such elementary treatment as cleaning and application of silver nitrate. Thus they gradually gained experience in the handling of patients, and at the same time were developing their operative technique by the use of the dummy jaws.

"On the 17th February, 1925, the junior nurses sat for their Primary Examination (conducted by Dr. M. H. Watt, Deputy Director-General of Health). The examination subjects were anatomy and physiology, and I am pleased to be able to report that all the nurses passed, with an average of 71 per cent. These nurses are now in the second year of their training, and after observing their work for the past eight months I must say that I am very much impressed with their enthusiasm and ability.

"A new draft of thirty-one probationers commenced their training early in March, 1925. This number includes three Maori probationers, who are to be trained for work among the Native children.

"During November and December, 1924, a refresher course was held at the Wellington Clinic for the nurses who had completed their training twelve months before (*i.e.*, the first draft to qualify). Two courses were held of ten days each, the syllabus in each case being the same. Eleven nurses attended the first course, and nine the second. Two were unable to attend on account of sickness.

"Immediately after the Christmas vacation Miss Haines spent nearly a month at Wellington Hospital gaining experience in hospital methods, routine, organization of duties, and other matters appertaining to the control and management of the staff. Miss Haines took full advantage of the opportunity offered, and the clinic has benefited immensely as the result of her experience.

"During January and February, 1925, the training was somewhat disorganized owing to the epidemic of infantile paralysis. The clinic was not open for the treatment of patients, and consequently the nurses lost several weeks of clinical work. The time was occupied by lectures and by continuing the preliminary operative work on dummy jaws. During this time, in response to a call by the Red Cross Society, practically all the nurses volunteered for V.A.D. duty at Wellington Hospital. They did one week's duty each, and it is understood that their efforts were appreciated by the authorities. Besides rendering a service to the public in an emergency, the experience was very valuable from a training point of view, as it gave the dental nurses personal experience of the 'atmosphere' that should pervade a training institution such as this clinic. In addition, I am convinced that the mingling of the dental nurses with those undergoing general training has helped to create a better understanding between the two professions, if such was necessary.

"In conclusion, I would like to acknowledge the assistance rendered by Mr. Elliott in his capacity as clinical demonstrator. But for Mr. Elliott's loyal support there would have been the greatest difficulty in carrying out the alterations in routine, &c., that have been introduced from time to time with a view to improving the efficiency of the clinic as a training establishment."

There will be no nurses available for allocation during the current year, as the second-year probationers will not have completed the required two years' training until March, 1926. In the following months of May and June, however, most of the original class of nurses will have completed the required three years' service with the Department for which they have contracted, and it is therefore very probable that some of the newly qualified nurses will be required for replacement purposes, while no difficulty is anticipated in finding suitable locations for as many as are available.

Treatment performed during 1924.

The following is a summary of the operations performed from January, 1924, to December, 1924, by dental surgeons, dental nurses, and probationers in training: Fillings, 59,322; extractions, 43,181; minor operations, 41,945: total operations 144,448.

Of this amount the dental nurses in the field, originally twenty-five in number, but now reduced to twenty-two, during the period under review have performed the following: Fillings, 32,701; extractions, 22,682; minor operations, 22,386: total operations, 77,769.

Of the filling-work shown above approximately 42 per cent. of the fillings were in permanent teeth.

In following the progress of the dental nurses the following summary of the operations performed by them since being placed out in May and June, 1923, up to December, 1924, may be of interest: Fillings, 56,196; extractions, 41,257; minor operations, 30,263: total operations, 127,716.

Accommodation, New Clinics, etc.

Since my last report new surgeries have been established at Gisborne, Blenheim, Beckenham, Waipukurau, Te Kuiti, Pahiatua, and Hastings, most of these in charge of dental nurses who qualified in October last, and two in charge of dental officers who are holders of the Departments' bursaries, assisted in each case by a dental nurse. In the Nelson Clinic it has been found necessary to appoint a nurse to assist the dental officer, and the remainder of the recently qualified nurses have been utilized in filling vacancies in clinics already established. In each case the room for a surgery has been supplied by the Education Board or by the local people, who have, as in the past, been only too willing to provide the facilities required.

Equipment.

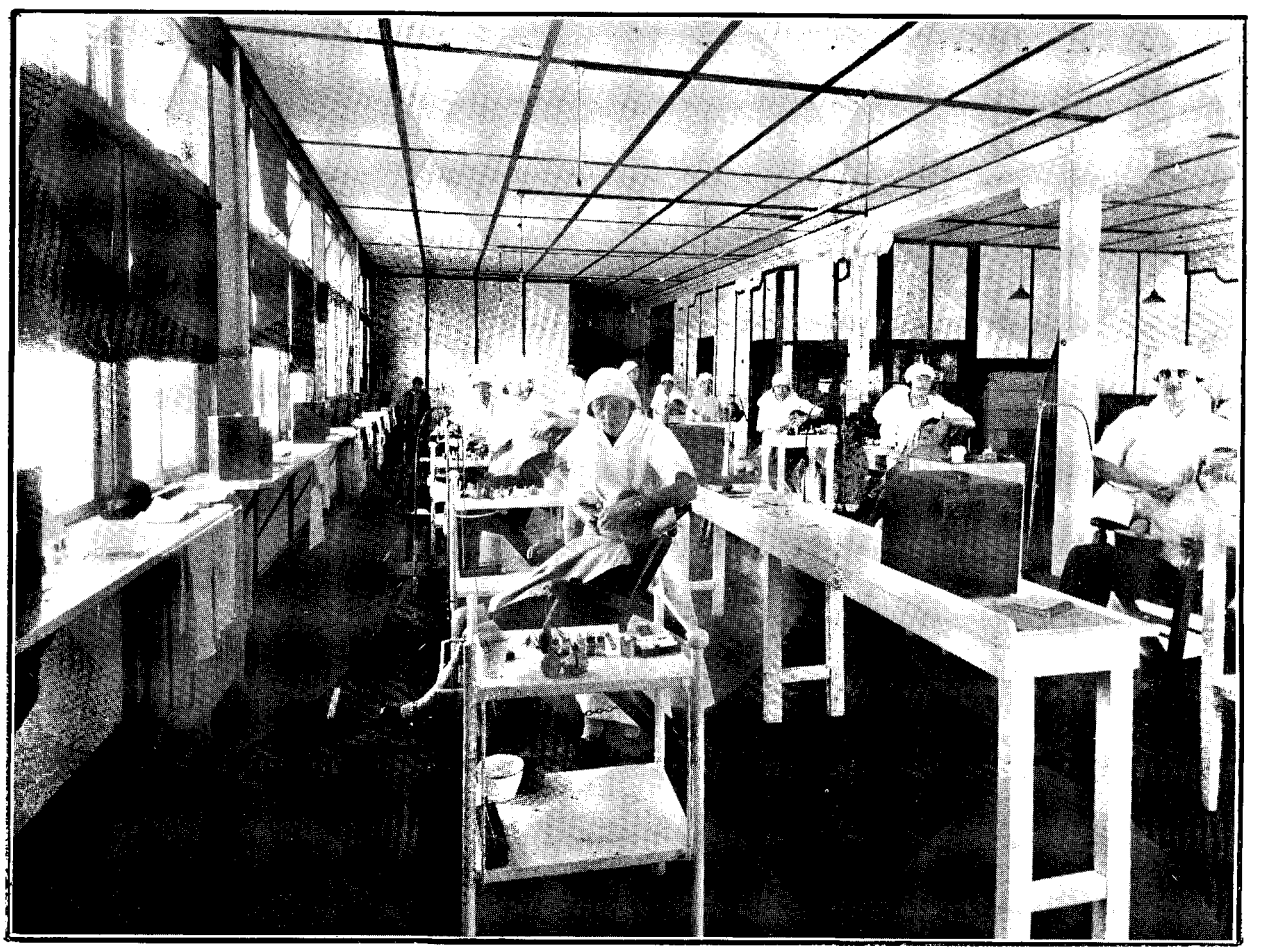
It is now possible to make fairly accurate estimates of our requirements in this direction, and consequently practically the whole of the equipment and materials required can be indented from abroad. By this means a considerable reduction in our working-expenses is effected, as we can not only secure the goods at wholesale price, but in consequence of the increasingly large amounts required can obtain a further reduction from the manufacturers by buying at quantity rates. With few exceptions the goods so purchased have proved entirely satisfactory, and I am happy to be able to say that the dental firms with whom we have been dealing have shown a desire to meet us as far as possible. The issuing of the materials, &c., to the various dental clinics is now being done very satisfactorily by our own store.

SECTION 2.—PROPAGANDA.

This important aspect of our work is not being overlooked, and every opportunity is being taken by the nurses to give advice on various dental and dietary matters to parents bringing their children to the clinics for treatment. In this connection a series of effective posters, seven in number, is now in course of preparation and will be issued to all clinics throughout the Dominion for display. The various pamphlets which have been from time to time drawn up are being distributed by the nurses throughout the schools. The keenest enthusiasm in these matters is being displayed in many districts where clinics have been recently established, while in other places where the scheme has been in operation for some time the good results which have accrued in consequence of the efforts of our officers in this direction are largely very marked, particularly in the case of the Nelson District.

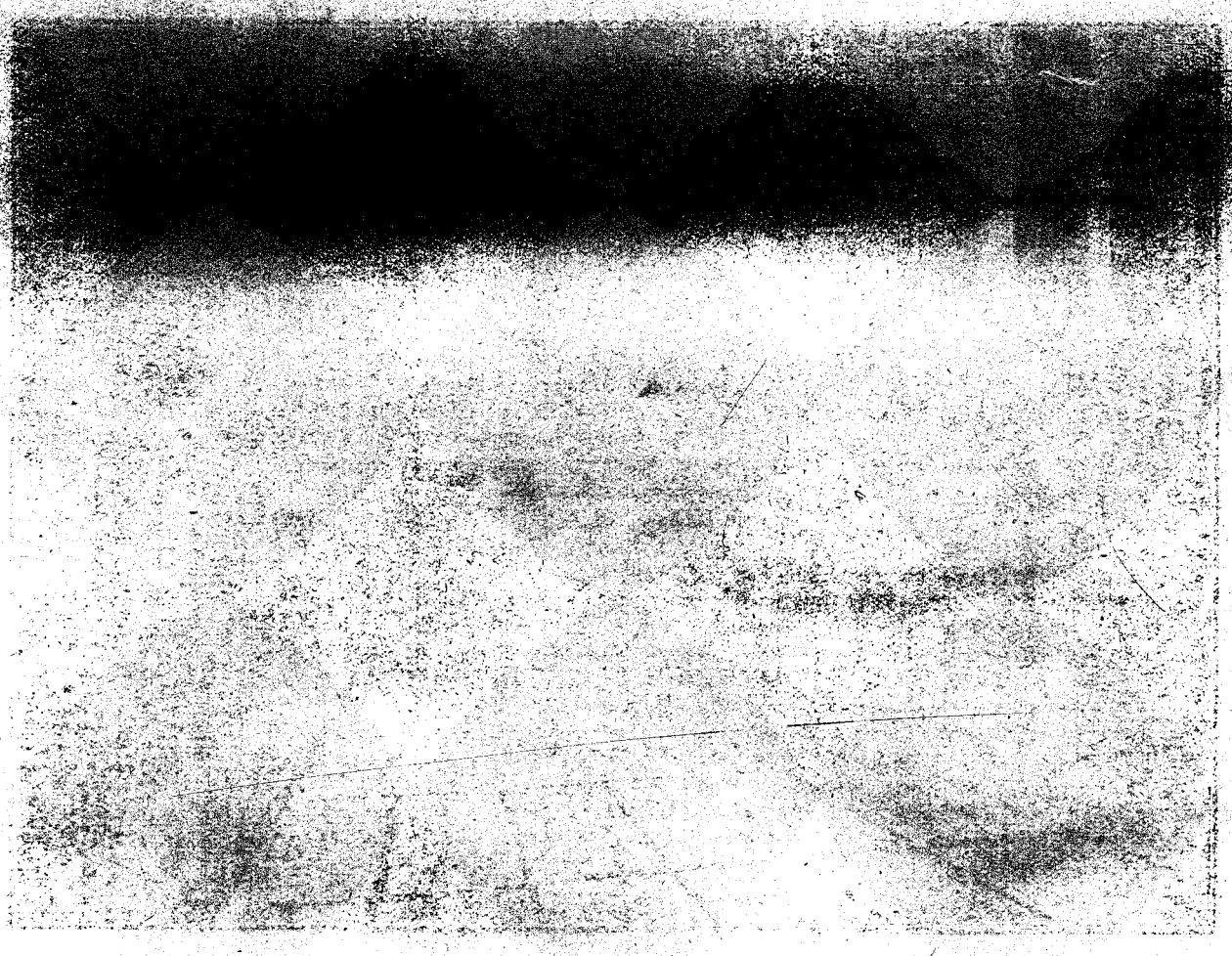
Advantage will be taken of the coming Exhibition to further our propaganda work, and it is proposed to exhibit a model school dental clinic and distribute to the public the leaflets, &c., used in connection with our work.

Thos. A. Hunter,
Director, Division of Dental Hygiene.



ONE SECTION OF THE DENTAL TRAINING CLINIC, WELLINGTON.

Face p. 48.]



PART VIII.—MAORI HYGIENE.

I have the honour to submit brief annual report for the year ending 31st March, 1925.

SECTION 1.—GENERAL HEALTH.

The general health of the Maori people continues to show improvement, and was even better than last year. This is largely due to the changed attitude of the people towards preventive measures. Instead of the passive resistance of the past to what were regarded as suspicious innovations there is now a spirit of hearty co-operation between the Maori people and the Department of Health. The Maori Councils, with their village committees, are only too anxious to assist the nurses and Inspectors of Health in preventing the spread of infectious diseases.

The steady improvement in Maori village and home life is reflected in the general health. The communal system of living has been disintegrated by the individualization of land. The crowded cluster of huts is no more. Even the thatched house is an ethnological curiosity. The tribal meeting-houses stand lone and deserted until custom and usage causes the tribe to assemble for a brief period. It is becoming increasingly difficult to distinguish between Maori habitations and those of their white countrymen. For cleanliness and general sanitation the poorest Maori dwellings compare more than favourably with those in the crowded parts of our cities.

Maori Health Councils.

The good work done in the past is being continued. Additional by-laws have been approved, giving these bodies power to deal with certain moral questions that affect the welfare of the race. As an example, the Maniapoto Council brought up the serious menace to moral and physical health caused by the drinking of methylated spirits. Those who have become addicted to it prefer it to the ordinary forms of alcoholic beverages. On the earnest representation of the Council a by-law has been gazetted to restrict the sale to those having a permit authorized by the Council. This restriction will thus assist the Council and the police in combating an evil that if allowed to spread would become a serious menace to health.

Councils and village committees are visited, and constant supervision is established through the Division of Maori Hygiene. Quarterly statements of accounts are rendered and duly audited. The co-operation existing between the Councils and this Division has been of the greatest value in dealing with matters incidental to the betterment of health conditions amongst the Maori people.

Water-supplies.

Three water-supplies under the jurisdiction of the Mataatua and Arawa Councils have been installed during the year. Those established during the previous year are all working well, and have solved a very serious problem in the settlements concerned.

Sanitation.

The improvement of sanitary conditions in the settlements has become a routine matter. Proper latrine accommodation in the individual houses and in connection with the tribal meeting-houses has received practical attention during the past year. The pollution of water-supplies has thus been protected. The by-laws dealing with this subject have been enforced with good results.

Public Gatherings.

The sanitation of the villages in which *tangis* or *huis* are held is now a matter of routine procedure. During the past epidemic of infantile paralysis the Maori people have supported the Department in every possible way. Many meetings that had been fixed beforehand were postponed in order to comply with the directions of the Department. No opposition has been experienced, but, on the other hand, the people were ready to assist to the best of their ability. A by-law has been approved at the wish of the Council that all public gatherings should be first approved by the Council. This was done to prevent any gathering whilst an epidemic existed in the district, and to prevent the undue impoverishing of the people.

Infectious Diseases.

Typhoid fever continues to be our greatest problem. During the past year epidemics occurred at Motiti, Clevedon, Raglan, and the Urewera country. The Maoris rendered every possible assistance in combating the disease. Inoculation met with no obstruction. It is a matter for congratulation that the system of inoculation carried out has prevented recrudescence in areas where the disease was once endemic. Sporadic cases have occurred in parts where but for inoculation serious epidemics might have resulted.

Infantile paralysis has not affected the Maoris, and credit is due to the Maori people for having so whole-heartedly supported the Department in carrying out restrictions as regards attending public gatherings.

Propaganda.

Much work has been done from month to month in circularizing the Maori Councils as to the methods to be followed in preventing the spread of any infection that was in the country. Articles have been written for the Maori newspapers to instruct the people in the methods they should adopt. Advice is also being constantly sought by interview and by letter regarding disease and sanitary precautions. Maoris are now so scattered that public gatherings are attended, when possible, for the purpose of reaching the people by means of lectures and addresses, and so educating them and obtaining co-operation with the work of the Division.

Native Health Inspectors.

Two assistant Maori Inspectors of Health have been appointed during the past year. Both are doing valuable work.

Health Nurses to the Maoris.

This branch of the service continues to be our first line of defence against the spread of infectious disease amongst the Maori. By constant visits to the villages in their districts the nurses have again and again located sporadic cases of typhoid, and by prompt action prevented the spread of disease. They have saved the Department and Hospital Boards large sums of money, and their services cannot be praised too highly. The Maoris have confidence in them, and are ever ready to avail themselves of their services. The only jarring note is struck by some of the followers of Ratana, who have a strong tendency to conceal cases of disease. These cases are due to the failure to appreciate the attitude adopted by the churches that spiritual and scientific methods should go hand-in-hand and assist each other.

SECTION 2.—ANTHROPOLOGY.

Physical measurements are still being taken as opportunity occurs. From the data now available it seems that the various types isolated by Dr. L. R. Sullivan from the measurements made by the Bayard Dominic expeditions working from the Bishop Museum, Honolulu, amongst other branches of the Polynesians, also exist in a varying degree amongst the Maori tribes of New Zealand. Data is also being accumulated on the physique of the various blends produced by miscegenation between the European and the Maori.

A study on "The Evolution of Maori Clothing" has also been conducted, and the article, with illustrations and diagrams of technical details, is appearing in the *Journal of the Polynesian Society*.

Te Rangi Hiroa,
Director, Division of Maori Hygiene.

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

SECTION 1.—AUCKLAND HEALTH DISTRICT.

Dr. T. J. Hughes, Medical Officer of Health; Dr. H. Chesson, Medical Officer of Health.

Administration.

During the year 1924 the health of the Auckland Health District was exceptionally good. 688 cases of diphtheria occurred during the year, but these were spread over a wide area, and the occurrence could not be described as epidemic in nature. Towards the latter end of the year an epidemic of influenza occurred, but the majority of the cases were of a mild type. Seventy-six cases of pneumonia following influenza were notified. The number of cases of influenza notified during 1924 shows an appreciable decrease compared with those of 1923. The same remarks apply also to scarlet fever.

Drainage schemes were approved during the year for Takapuna, Northcote, Birkenhead, Papakura, Ngaruawahia—the two former being in course of construction. A drainage scheme has been installed at Portland, and the drainage at Avondale is steadily progressing. Hamilton has completed its scheme, and extensions have been carried out at Taumarunui and Te Aroha. The drainage of Thames was commenced during the year, and the first portion of the work was completed.

Water-supplies.

During the year 196 samples of water have been obtained for bacteriological examination, and forty-three samples were obtained for chemical examination. A constant check is kept on all the various supplies throughout the district, and, whenever necessary, steps have been taken for the improvement of the supplies by clearing of the various watersheds or by chlorination of the supplies.

Food and Drugs Work.

Samples of various foodstuffs (exclusive of milk) to the number of 135 have been obtained for analysis during the year, and 397 weighings of foodstuffs were carried out. Particular attention has been paid to the milk-supply—a total of 841 samples for chemical examination, and a total of 202 were obtained for bacteriological examination. The results of the latter are forwarded to the Department of Agriculture and the farmer and milk-depot concerned. The results show considerable improvement in the quality of milk as regards cleanliness. There were twenty prosecutions during the year as regards the milk from a chemical point of view.

Great improvements have been carried out in regard to the milk-depots of three of the principal firms in the city. Messrs. Robinsons have erected an up-to-date factory.

Condemnation Certificates.

The number of condemnation certificates issued in respect of sanitary buildings during the year totalled twelve.

Private Hospitals, etc.

The inspections of private hospitals were attended to continuously. Rather than carry out the Department's requirements and improvements the owners of five maternity hospitals in the city and suburbs, with a total of twenty-four beds, closed down, while in the country districts five maternity hospitals, with a total of twenty-five beds, closed. The licensed number of beds in six maternity hospitals were reduced from forty-three to twenty-nine beds.

District Native Work.

The health of the Maoris was excellent throughout the year with the exception of three epidemics of typhoid fever. These occurred at Te Hapua in Mongonui County, at Raglan, and Clevedon. At Te Hapua thirty-four cases occurred, and at Raglan eight cases, whilst at Clevedon thirteen cases were dealt with. Inoculation of all the Natives was carried out before the Maoris were allowed to travel.

SECTION 2.—WELLINGTON-TARANAKI-HAWKE'S BAY HEALTH DISTRICT.

D. J. Boyd, Medical Officer of Health.

PART I.

Infectious Diseases.

The only serious outbreak of infectious disease during the year was the epidemic of poliomyelitis, but as a daily return of notifications was forwarded to you, and as the special report as requested by you in your memorandum of the 14th February will be forwarded in due course, I do not propose to make further reference to the epidemic in this report.

Notifications of infectious diseases, generally, have been lower than in recent years. There has been apparently no increase in puerperal sepsis in the districts generally, although in one or two institutions an undue number of confinement cases running temperatures which could not be considered normal have occurred. One maternity home has been closed for one month, for the second time this year.

Water-supplies.

Speaking generally, the public water-supplies throughout the district are satisfactory. However, as several complaints have been received during the year as to the quality of the water from the Karori Reservoir the city supply is being carefully watched. Samples are regularly taken for bacteriological examination, and occasionally for chemical analysis. Also the catchment area and boundary-fences are periodically inspected.

Quarantine Station, Somes Island.

It has not been necessary to open up the station during the past year, but considerable improvements have been carried out by the laying of linoleum on the whole of the floors of No. 3 building, the putting-down of concrete approaches to the various doorways, the repairs to and painting the roofs and the match-lining of Nos. 5 and 6 hutments. An iron pipe-line has been laid from the wharf to the lower reservoirs. The s.s. "Janie Seddon" has been fitted with the necessary appliances for the shipment and pumping of water from the mainland to the storage reservoir. The whole of the equipment has been examined, and unserviceable articles written off.

Hotel Inspections.

The whole of the hotels have been inspected by our Inspectors in company with the Inspector of Licensed Premises, and reports furnished to the respective Licensing Committees. The majority of the hotels are in a very satisfactory sanitary condition. In cases where defects were found no difficulty was experienced in having improvements carried out, as failure to comply with any recommendation is followed by an unfavourable report to the Licensing Committee. Licensees are usually anxious for their premises to be favourably reported on, thereby providing the Inspectors with an excellent lever in obtaining a high standard of sanitation.

Water and Drainage.

The district on the west coast of the North Island between Wellington and Otaki is rapidly becoming populated, and the question of improved sanitary services (*e.g.*, water-supplies and sewerage) for such places as Paramata, Plimmerton, Paekakariki, and Paraparaumu will have to be considered in the near future. The Hutt County has already instructed its Engineer to prepare a scheme for a water-supply for Plimmerton.

The Silverstream, Trentham, and Heretaunga districts also carry sufficient population to warrant water and sewerage. The question of the formation of a borough to include the Upper Hutt, Heretaunga, Silverstream, and Trentham is under consideration, and a poll on the question is to be taken in June next. In the meantime the Hutt County has instructed its Engineer to prepare a scheme for a water-supply for Trentham and Silverstream.

The Borough of Eastbourne is still without water and sewerage. A poll on a proposed scheme costing £24,000 was to have been taken in July last, but owing to financial troubles in connection with the ferry steamers it was not taken. On representation from this office the matter was again considered, and a poll was taken on the 29th April last. These proposals have now been carried.

Hawera Borough.

The Nolantown area, as the result of a petition by the residents, has been merged with the borough, and will therefore in the near future have the advantage of the connection to the Hawera water-supply and sewerage system.

Plague Precautions.

All local authorities and Harbour Boards were written to with a view to the urgency of taking all measures to reduce the rat population in all parts of the district, as outbreaks of plague have occurred in California and South Africa.

The majority of the local authorities at once took suitable action, but I regret to say that only during the last month has the City of Wellington made any attempt to deal with the rats which infest the city. The Wellington Harbour Board carry out a constant offensive against the rats. Plague precautions as regards shipping are fully enforced.

Food and Drugs Work.

A special report showing the number of samples taken, the weighings, inspections, prosecutions, and warnings, forwarded to you on the 20th April, is some indication of the work carried out in this branch of our activities. The new Food and Drug Regulations are gradually being enforced, but more definite action will be taken after the 1st August next, for the twelve months allowed by the Act for the quitting of old stocks and old labels will then have expired.

Rigid inspection of milk sold in Wellington is being maintained by the City Council Inspector.

The following foodstuffs have been seized and destroyed during the year:—

Fish.—6,983 lb., 51 cases, 54 sacks, 73 bundles, 5 tins.

Canned Fish.—775 tins.

Canned Foods other than Fish.—766 tins.

Meat.—22 cases rabbits, 13 kits mutton-birds, 6 hams.

Fruit.—91½ cases, 2 sacks, 13 lb., 7 baskets.

Canned Fruits.—18 tins.

Sundries.—44 lb. chocolates, 2 tins Turkish delight, 83½ lb. biscuits, 25 lb. dried figs, 13 packets raisins, 22 lb. honey, 78 lb. butter, 27½ lb. cocoa, 81 sacks potatoes.

Regulations under Health Act, 1920.

(1.) *Registration of Eating-houses by Local Authorities.*

These regulations were welcomed by local authorities, and the necessary resolutions fixing the fee for registration and the date of termination of registration annually have been passed by most of them. Pressure is being brought to bear on those who have not taken the necessary action. In some cases it was deemed advisable to grant only provisional registration pending the termination of the lease or the carrying-out of the extensive repairs.

(2.) *Regulations for the Prevention of Contamination of Foods.*

The enforcement of these regulations is being somewhat retarded by the fact that a by-law has to be made by the local authority prescribing the conditions as to license. In some cases the question of expense is a determining factor; in others it is the question of revision of existing by-laws. Some pressure, coupled with assistance and advice, has been brought to bear upon local authorities, resulting in a general move in the matter.

PART II.

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

Sanatorium Treatment.

About thirty years ago I had three continuous years of chest hospital work in the days when sanatoria were only just being started. It was interesting to me to note the difference between the early days of treatment of pulmonary tuberculosis cases and the sanatorium treatment of the present day. I was also interested in the Dreyer's vaccine treatment which Dr. Short was using on several cases. I was able to form some opinion of my own on the relative value of Dreyer's vaccine and other forms of tuberculin treatment. The opinion I was able to arrive at was that Dreyer's vaccine was not superior in any way to other tuberculins.

When in England I visited the sanatoria for the cities of Manchester and Newcastle-on-Tyne, and also one or two small sanatoria where the Dreyer's vaccine was being or had been used, and the Medical Officers in Charge confirmed the experience I had gained at Pukeora Sanatorium. The system of graduated exercise as carried out at Pukeora is quite equal to, if not better than, any of the methods used in England, so far as I was able to judge.

Inspectors of Health.

I am well satisfied with the work that has been carried out by all our Inspectors. The character and routine of the Inspectors' work are much the same in each district, but I am pleased to say that Inspectors are not automatic machines: each of them has his own distinctive personality, which actuates his work, and enables him to look at the various health and sanitary problems which come before him in a different light possibly from another Inspector or from the Medical Officer of Health. I consider this is a very important factor in our work. It helps materially, and especially the Medical Officer of Health. Matters which the Medical Officer of Health, sitting in his District Office, cannot or is not likely to become acquainted with are brought to his notice, and he is continually profiting by the information obtained.

Infectious Disease.

Until the epidemic of poliomyelitis started towards the end of the year notifications of infectious disease had been lower than the previous year 1923, which was a record year for diminution in all forms of infectious disease. This is a gratifying result to the Medical Officer of Health, although he knows that such a record can soon be upset by a general outbreak of some particular form of notifiable infectious disease. However, I think the Health Department can justly take some credit to itself, because I am satisfied that the work not only of our own Inspectors, but also of the Sanitary Inspectors of local authorities in making prompt investigations and dealing with infectious-disease cases in an

efficient manner has played some part in bringing about the gratifying results. Unfortunately, what might have been a record year for diminution of infectious disease was considerably upset by an epidemic of poliomyelitis, which first commenced in the Wellington Central Health District towards the end of November and eventually spread through the whole of the Dominion. I do not consider it necessary to write at any length in this report on this epidemic because full reports will be compiled. I will briefly say, however, that I have personally seen about three hundred of the victims of this the most distressing of all notifiable infectious diseases in various public hospitals. The more the Medical Officer of Health sees of these sad cases the more convinced he is of the necessity for organized effort to try to stamp out this disease in New Zealand.

The only other notifiable infectious disease I wish to make any remarks about is puerperal sepsis. I do not know what the statistics are for the health districts I am now administering, but I believe I am correct in stating that they show a decline, if not in actual notifications, at any rate in mortality rate. The new regulations for private hospitals have tended to increase notifications of minor "sepsis," of which, on inquiry, probably 50 per cent. are found not to be of puerperal origin. The new system of placing the Nurse Inspectors under the direct control of the District Office is certainly a considerable improvement and of much assistance to the Medical Officer of Health. The Medical Officer of Health now has trained and experienced nurses to carry out most of the detailed inspection and inquiry-work, which relieves him of a considerable amount of responsibility and worry.

Maternal Mortality.

We obtain special reports on all cases of eclampsia, and some of them disclose the amazing ignorance and lack of care that some pregnant women will develop, and some of the women are not of the uneducated class. It would almost seem as if there is a type of woman who, if she becomes pregnant, does not care what happens to her, and who is content to go along with quite obvious acute ante-natal morbidity without consulting any doctor. It is to be hoped that our ante-natal clinics which are now being successfully established in the larger centres will be able to reach this type of pregnant woman.

SECTION 3.—CANTERBURY-WESTLAND HEALTH DISTRICT.

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

Notifiable Infectious Diseases.

Scarlet Fever.—Under this heading 608 cases were reported for this year, this being an increase of 213 on the preceding year.

Diphtheria was responsible for 544 cases, being an increase of 190 cases on the preceding year.

These two diseases were responsible for the bulk of the notifiable diseases. Diphtheria could be very much lessened, I am sure, throughout the Dominion if the medical practitioners were to utilize prophylactic doses of diphtheria anti-toxin more frequently in the case of contacts. In regard to this disease, I am looking forward to the time when the Department will carry out the Schick toxin-antitoxin immunizing methods as a matter of routine, in order that there may be practically no susceptible individuals left in the Dominion.

Puerperal Fever.—A total of fifty-eight cases were notified, being an increase of twenty-four on the preceding year. The increase, I think, is largely due to the more careful and frequent notification made by practitioners than in former times. In any case it is noticeable that cases do not appear to be of the severe type noticed some two or three years ago. The great majority of the women recovered under the lines of treatment now in vogue for contending with this disease.

Ophthalmia Neonatorum.—This shows an increase of five cases on the preceding year. Here, again, better notification applies and to some extent accounts for the slight increase in numbers.

Food Poisoning.—Five cases were reported for the year, but none of these was traceable to any definite organism or food.

Sepsis following Abortion.—Eight cases were notified under this heading. The notification under this separate heading coming in only during the currency of the present year no comparison can be made with a similar condition in previous years.

Eclampsia.—Fourteen cases of this condition were notified.

Phosphorus Poisoning.—One case of this was notified in a poison-mixer engaged in preparing phosphorized pollard.

Ankylostomiasis.—One case of this disease was reported in a nurse returned from China after five years' residence there.

General Sanitation.

During the year progress has been made with the Christchurch drainage extensions. A scheme has been completed for Mount Pleasant, and the Redcliffs portion of Sumner have carried a poll authorizing a loan for the installation of a drainage scheme in this locality.

A considerable number of complaints have been received during the past two years in regard to the Malcolm Avenue septic tank. This installation has now been converted into a pumping-station pure and simple. Since the conversion I have not received any complaints at this office.

Timaru.—The drainage scheme in connection with Watlington has been installed, and it has proved successful. With the completion of this scheme it leaves very few houses not directly connected with the drainage scheme.

Food and Drugs Work.—This work has been steadily carried out by my Inspectors throughout their respective districts, and fines and costs aggregating £301 0s. 5d. were paid into the Consolidated Fund as the result of judgments given against offenders under the Sale of Food and Drugs Act and its regulations.

Importations of Cotton-waste, Mill-waste, Horse-hair, Bristles, and Skins.

The cotton-waste and the mill-waste are derived chiefly from England and Australia, and these materials inspected by this Department have proved satisfactory in every instance.

Horse-hair, bristles, and other hairs are obtained chiefly from Manchuria and China, badger-hair being received from Germany. A small amount of horse-hair comes from Australia. These have all been satisfactory, and in most instances have been sterilized by means of live steam.

Skins.—These have come from Manchuria, China, India, Africa, the Argentine, and Australia, in each instance being inspected by myself personally. Skins of rodents, such as marmots, &c., likely to carry plague are only admitted in the tanned state.

On the whole, I can safely assert that a steady improvement has been noticeable right throughout my two health districts, and the local authorities seem to be taking a greater interest in districts under their control from the public health point of view than formerly.

SECTION 4.—OTAGO-SOUTHLAND HEALTH DISTRICT.

Dr. Crawshaw, Medical Officer of Health, and Assistant Medical Officers of Health.

Notifiable Diseases.

General.—The notifiable diseases reported during the calendar year 1924 totalled 815, as against 729 in 1923, 680 in 1922, and 951 in 1921. The number in 1924 was 86 more than in 1923, and 28 more than the annual average of 787 for the previous three years. The diseases responsible for the increase in 1924 were diphtheria 281 (as against 91 for 1923), tuberculosis 192 (164 for 1923), and acute primary pneumonia 97 (25). The outstanding decrease in 1924 was four cases of influenza, compared with 221 in 1923.

With the foregoing exceptions the incidence of notifiable disease in this health district in 1924 was light. Of recent years the highest figures were 951 in 1921, the chief cause having been 400 cases of diphtheria.

Diphtheria.—Of the 281 cases of diphtheria in 1924 the Otago Hospital District was responsible for 229, most of which occurred in Dunedin and contiguous localities, 151 having been reported from Dunedin City alone. The outbreak began in April with twenty-nine cases, May sixty cases, June forty-four, and then a little over twenty a month until subsidence to normal by the end of November. These figures are for the whole health district. Schick tests and subsequent immunizations were carried out at the Port Chalmers, Mosgiel, and East Taieri Government schools and the Oamaru Convent School. Over three thousand swabs were taken to discover carriers and for clearance.

Enteric Fever.—Of the fifteen total cases of this disease four occurred in three households in Oamaru Borough, and four in connection with the one household at Beaumont on the Lawrence–Roxburgh Railway construction-works, at intervals between the 5th March and 28th August. Two of the patients were members of the family, and the other two patients had their meals in the house. Full investigations were made by Dr. Crawshaw, the then Medical Officer of Health, and a carrier was discovered in the person of the housewife. No cases have been notified since.

Tuberculosis.—With general reference to the notification of tubercular disease, many practitioners are still lax in notifying us of cases, especially of early ones. Despite the circular appeals which we issue fairly frequently to medical men to report promptly a considerable proportion do not notify until the disease is far advanced. In many instances the first intimation we receive is the notice of death.

The extensive new buildings at Waipiata Sanatorium were opened on the 8th April, 1925, and are very complete. The two new pavilions will accommodate twenty male patients and twenty female. The best of the previously existing shelters will take another fifteen—total, fifty-five.

Accommodation has been completed at Clyde Hospital for four male and two female advanced cases of tuberculosis, including lavatories, &c., and a kitchenette for heating food, at a total cost of £900.

The Waitaki Hospital Board proposes to erect accommodation at the Oamaru Hospital for ten advanced cases of tuberculosis.

Private Hospitals.

During the year the private hospitals of Otago and Southland have been visited on an average of four times in the towns, three times in the outlying districts, and more often if necessary.

Improvements have been made in the equipment of the hospitals of four beds and over, bringing them into accord with the requirements of the Department.

Most of the midwives in private practice have been visited and their bags inspected, which are all in excellent order.

A number of unregistered homes have been visited, and, when necessary, warned about taking in more than one patient at a time.

The incidence and death-rate of puerperal fever in connection with private hospitals during the year were unusually low. The majority of cases were transferred to public hospitals.

Food and Drugs.

Foods analysed and weighed.—During the year ended 31st March last 208 statutory samples of various foods were taken for analysis, 2,326 articles were weighed, and 2,794 food premises examined.

Food-supplies seized and destroyed.—In addition to large quantities of foods examined and passed, the following foods were seized and destroyed: 64 tins tinned fish; 14 tins tinned fruit; 32 lb. whitebait; 2 kits mutton-birds; 28 lb. pork; 3,857 lb. bacon; 6 hams; 3 lb. butter; 256 sacks butter-beans; 3,360 lb. potatoes; 210 lb. tomatoes; 19 boxes dates; 528 lb. cherries; 450 lb. walnuts; 41 dozen eggs; 18 tins baking-powder; 84 bottles coffee-essence; 2,278 lb. peanuts; 10,864 lb. sultanas.

Improved Methods.—Numerous food premises have been inspected throughout the district, and there is every evidence that manufacturers are aiming at improved hygienic conditions. Several food premises recently erected and where we have been able to give advice prior to erection are highly satisfactory. Compulsory registration under the new regulations must make for considerable improvement in the near future.

The general method of milk-delivery leaves much room for improvement.

As regards bread, some bakers are seriously considering the advisability of adopting the method of wrapping bread in paper at the bakehouse.

Contamination of Cream-cans.—Investigation into various phases of railway sanitation recently has disclosed, *inter alia*, several defects in the handling of food-supplies, milk and cream especially.

Administrative.—The number of local health authorities in the Otago-Southland Health District is fifty-two, being thirteen County Councils, four Road Boards, twenty-eight City and Borough Councils, and seven Town Boards. Of all these the Invercargill Borough Council is the only one which carries out its own sanitary inspections and infectious-disease precautions; and its Chief Inspector was associated with the Department for several years. Dunedin City Council does its own sanitary inspections, but the Department attends to its infectious-disease measures. The Department's Inspectors carry out both sanitary inspections and infectious-disease precautions for all the other fifty local authorities.

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

SECTION 1.—QUEEN MARY HOSPITAL, HANMER.

Dr. P. Chisholm, Medical Superintendent; Dr. W. Sowerby; Miss E. Hodges, A.R.R.C., Matron.

Main Hospital.—The number of service patients has steadily decreased, and those now being sent for admission belong to either one or the other of two classes:—

Firstly, the constitutional neurotic to whom the strain of war was too great. These patients are likely to require the shelter at an institution periodically for many years. Any stress appears to bring back their original symptoms. The second type of service patients are those who suffer from a neurosis based on some physical injury which handicaps them in their struggle for a livelihood.

The civilian patients presenting themselves are those suffering from a common neurosis, and the results obtained from treatment appear to be satisfactory.

Women's Hospital.—The Women's Hospital has been kept very busy, and there have been practically no vacant beds during the whole year. There is a long waiting-list which we have found very difficult to deal with, and in spite of the opening-up of a further ten beds for accommodation we have in no way touched the fringe of the number of patients asking for admission. The results obtained at the Women's Hospital have been satisfactory.

Medical Staff.—Dr. Lumsden was appointed in the latter part of last year, and his experience has been a great help to the institution.

Nursing.—Miss Thurston, who was Matron for some eighteen months, was transferred to the Pukeora Sanatorium, and Miss Hodges was appointed in her place.

Sister Trott, who was sent to England last year for further experience, returned to duty in September. The experience she gained has been of undoubted value to the institution. While in England Sister Trott obtained her Medical Psychological Certificate in Nursing of Nervous Diseases.

Farm.—The farm has been moderately successful. New land has been bought, and this should in the course of a year or two very materially lessen our expenses in respect to winter feeding.

Bathhouses.—The pools have been very popular and used to a great extent by the public.

Massage Department.—This department has been again hardworked and a small staff employed.

A considerable number of out-patients are treated in the Massage Department, and the fees collected amount to a very considerable proportion of the salaries of the Massage Department.

Water Service.—The maintenance of the water service has been expensive and a source of very great anxiety. The wooden-stave pipes have steadily got worse. However, the Public Works Department have now started installing the new line, and on the completion of this we should have a very satisfactory service.

Tea kiosk.—The tea kiosk has given satisfactory service to the public.

Garden.—This has been well cared for. The vegetable-garden has been somewhat handicapped this year, as new grounds had to be laid out for the garden owing to the fact of the new hospital being built on the site of the old vegetable-garden.

Maintenance Staff.—The maintenance staff have given good service, shown interest, and carried out their work very satisfactorily.

Alterations and Improvements by Maintenance Staff.—The male Massage Department, which was a very unsatisfactory building, has been remodelled to some extent and a new bathroom and new dressing-room added. A boot-room has been built on to Kitchener Ward. This has proved very satisfactory, and the intention is to build a similar room on to Joffre Ward during the winter. The whole of the Main Hospital and Women's Hospital has been completely painted. The "third house" of the Women's Hospital has been painted and redecorated throughout, and considerable alterations have been made in the kitchen and also in the sitting-room in order to make it suitable for the accommodation of women patients. This was previously used as a Weir-Mitchell block for men. Two of the Department's cottages in the village have been painted, repaired, and decorated throughout, and there now only remains one cottage belonging to the Department which has not been thoroughly renovated. Various parts of the Main Hospital have been painted. The general condition of the Department's buildings, excepting the bathhouses, is satisfactory, and they have been well cared for, and are all in an average good state of repair. A small cottage has been remodelled and added to for the accommodation of one of the staff. This should be completed in the course of a few weeks.

The new Women's Hospital was commenced in August.

Red Cross.—The Red Cross still maintain the recreation-rooms, and these are of very great value and service to male patients.

Out-patients—There has been an average amount of outside practice. This has been attended to satisfactorily by the Medical Officers.

Administration.—I wish to express my great appreciation of the work of the staff of the institution, especially those senior members who have worked loyally for the good of the institution. I desire to thank the Hon. the Minister of Health and yourself for help and assistance during the past year.

SECTION 2.—KING GEORGE V HOSPITAL, ROTORUA.

Dr. W. Stanley Wallis, Medical Superintendent; Dr. Dorset; Miss Searell, Matron.

Staff.—In submitting this report I beg to refer to the outstanding loss the nursing service in general and this Hospital in particular has suffered by reason of the death of the late Miss Whyte, whose service as Matron here has confirmed the approbation in which she was held both while on service and since her return.

As a general commentary upon the work of the institution I would say that each and every branch of it has developed and widened its particular scope during the year under review, and the institution has been visited by an increasing number of medical men, who have subsequently made use of the Hospital and its equipment for the treatment of their cases.

The continued loyalty of all the responsible officers in the institution and the desire to meet and fulfil the requirements of those in authority are worthy of record.

There have been several professional staff changes throughout the year, notably the appointment of Sister Searell as Matron, and the appointment of Dr. Dorset to replace Dr. Lumsden, who was transferred to Hanmer. Dr. Dorset has proved himself a worthy and capable officer.

Nursing Staff.—I beg to report that the training of probationers is proceeding satisfactorily, and we greatly appreciate the benefits that have accrued to us in this direction by reason of the appointment of a Sister-tutor.

Civilian Patients.—An increasing use is being made of the Hospital for the treatment of the generally sick of the community, and, judging from the year's work and the area from which they have been respectively drawn, it would seem as if this Hospital is being regarded more definitely than hitherto as the base hospital for this district.

The transfer of women patients to Ward 1 in the Main Block has been appreciated both by the patients and staff, and has enhanced its value accordingly.

Service Patients.—These patients are all concentrated in Lowry Ward No 1, and the arrangements have been happy and satisfactory.

Physiotherapeutic Department.—I beg to again express my satisfaction and confidence in the work and ability shown by my Head Masseuse, Miss E. J. Harris.

During the year 25,884 treatments have been given. The daily average number of out-patients treated has been twelve.

Dispensary and Laboratory.—The number of prescriptions dispensed during the year was 1,161.

Plaster Department and Operating-theatre.—724 plaster operations have been performed throughout the year, and an analysis of the work done is: 73 retention plasters; 157 corrective plasters; 30 plaster casts; 258 plaster bed-boots and splints; 206 other plaster operations.

X-ray Department.—The X-ray examinations for the year total 546. We beg to express our satisfaction at the installation of the new X-ray plant, and the results of its service have already helped us considerably.

It is gratifying to notice the increasing number of exposures that are being taken for outside patients.

Splintmaker's Shop.—The number of splints and appliances made during the year is 212, and the number of repairs is seventy-nine.

The services of this department are being sought after by an increasing number of medical men and Hospital Boards, and it may be found necessary to increase the assistance in this section.

Surgical Bootmaker.—The number of boots manufactured during the year is 162, and the number of repairs is 240.

Infectious-diseases Hospital.—We are glad to report that only one definite case of infantile paralysis required treatment in the Hospital in the infectious stage, although the severity of this case was extreme.

Buildings.—I beg to report that the general state of the buildings show them to be in good repair.

The whole of the exterior of the buildings has now been painted, and a large portion of the interior has been renovated.

Grounds.—The general appearance of the grounds has undergone a transformation during the year, and I am pleased to be able to record the many notices of congratulation we have received, both through the medium of the local Press and in other ways, upon the work of those concerned.

Transport.—The transport services are improved by the services of the Albion 2-ton truck, and the Buick car was thoroughly overhauled during the year.

The Willys Knight Ambulance has proved a boon to the district, and is used considerably by others as well as by this institution.

Visits.—During the year, at the requests of the Hospital Boards, I have visited both the Tauranga and the Whakatane Hospitals for the purpose of conferring with the Medical Superintendents regarding the management and treatment of certain special cases.

Conclusion.—We are pleased to be able to report a year free from untoward incidents relating to the treatment, management, and discipline of patients and staff under our control.

I beg to acknowledge our appreciation of the services rendered during the year by the Red Cross Society, Patriotic Society, the Rotorua Women's Club, and many other friends who have contributed their time, money, or its equivalent to the welfare of our patients.

Finally, I beg to thank the Hon. the Minister of Health and yourself for your advice and help throughout the year and the courtesy that has at all times been extended to us.

SECTION 3.—OTAKI SANATORIUM AND HOSPITAL.

Dr. A. H. Curtis, Medical Superintendent; Miss Sealy, Matron.

Results of Treatment.—In submitting an analysis of cases treated at the Sanatorium during 1924 the result may be considered satisfactory.

The percentage of cases discharged with the disease arrested—56 per cent.—compares well with previous years. Moreover, we have admitted a better class of case—fewer of those on the borderland—than was admitted last year, which has helped considerably towards the smooth running of the institution.

General Administration.—The work of the Sanatorium itself has been carried on successfully during the year, and it is again with pleasure that one is able to commend the excellent work of the nursing staff. To their efforts is principally due the element of content amongst the patients which so largely helps towards their recovery.

Alterations in the kitchen and the addition of a new range have greatly assisted towards the successful running of that department, resulting in the supply of good, well-cooked food.

The new building programme promised for this year has been begun by the completion of the Nurses' Home, which was formally opened by the Matron-in-Chief on the 19th March of this year.

Negotiations are in progress with a view to the installation of electric power from Mangahao, and when this is completed it is hoped that some form of mechanical laundry will be added. This will greatly lessen the labour at present used in washing and ironing by hand, and allow of the removal of the laundry from its present position at the back of the building.

Otaki Hospital.—The farm, under the Department of Agriculture, has done well during the year, and the supply of milk and mutton has been ample and of good quality. On the other hand, the supply of eggs has fallen off, necessitating purchase outside.

With regard to the grounds and gardens, considerable improvements are being carried out. A motor-mower has proved a valuable addition to the equipment, allowing time for more attention to general work. Several improvements are being prepared for the planting season, in the way of new flower-beds and shrubberies, also tree-planting.

Engineering.—The work of this department has been carried on satisfactorily. One set of accumulator-cells has been worn out after giving very good service, and the light is being supplied from the remaining set pending installation of hydro-electric power.

SECTION 4.—PUKEORA SANATORIUM, WAIPUKURAU.

Dr. G. Maclean, Medical Superintendent; Dr. N. R. MacKay, Assistant Medical Superintendent; Miss M. Thurston, C.B.E., Matron.

General.—From the statistics compiled it will be seen, by comparison, that the Sanatorium service is being used to a larger extent year by year. A noticeable feature is the increased number of civilian cases admitted, and it is to be expected that this figure will be augmented, while that relating to service patients will decrease. The mean residence of patients shows considerable increase, and, while the longer stay of the service patient is more easily made possible because of the receipt by him of the usual pension, it is gratifying to note that the civilian patient, upon whom the economic pressure necessarily falls heavily, is shown as being able to remain under treatment for a much longer period. Of the total number of cases admitted during the year, forty-three of the 226 were treated in former years for varying periods and sought readmission because of subsequent "breakdown" in health. One cannot but feel, in dealing with the question of convalescence in tuberculosis, the pressing need for medical supervision of patients during the period following Sanatorium treatment, and for the provision of farm colonies or settlements for patients able to resume work, but not able to take up at once hard work—whether mental or manual—in order to provide for those dependent on them.

Treatment.—During the year 333 patients have been treated, and thirteen deaths have occurred in the institution during that period, all of the latter being cot cases on admission, with advanced disease and quite unsuitable for Sanatorium treatment. Two of the cases mentioned died within a fortnight of admission. Though considerable improvement is shown in the selection of cases recommended for admission, there is still room for better selection of those likely to benefit by Sanatorium treatment. All cot cases have been seen daily as formerly, and patients on exercise have been paraded daily before exercise.

New departures in treatment have occurred during the latter part of the year in the exhibiting of sodium morrhuate to some thirty-four cases, following the method advised (Sir Leonard Rogers). Most of these patients have shown considerable improvement, many of them pyrexial and cot cases at the commencement of treatment. Though too early yet to form any conclusion on this method of treatment, it has been proved that smaller dosage than usually recommended has been most beneficial in assuring steady progress of the case. Another treatment given trial was X-ray therapy in tuberculous laryngitis. Three cases of severe type were treated by a radiologist within easy distance by rail of the Sanatorium, and all three showed decided improvement, the earliest result shown being the disappearance of pain in the region of the larynx.

Dental Treatment.—Notwithstanding the instructions issued to patients to ensure that dental defects be dealt with before admission, it has been found necessary to apply for a more efficient dental service than previously obtained. The arrangement of the Department whereby the services of the Dental Surgeon of the Napier Hospital have been made available for the patients of this

institution by the Hawke's Bay Hospital Board has proved very beneficial. Mr. A. R. Ford, B.O.S., visited the Sanatorium in the months of February and March. The total number of treatments performed in the course of his two visits was twenty-eight.

Visits.—The institution was visited during the year by the Hon. the Minister of Health, the Director-General of Health, the Superintendent Government Experimental Farms, the Inspecting House Manager, and the Technical Inspectors.

Staff.—The professional services were supplied during the year by Dr. Hugh Short as Superintendent till 15th July, 1924; by Dr. L. A. Lewis, from 15th July till 14th October; by Dr. E. M. Litchfield as Assistant Medical Superintendent, from 1st November, 1924, till 28th February, 1925; by myself, from 16th April to 14th October, 1924, as Assistant Medical Superintendent, and from 15th October, 1924, as Medical Superintendent. Dr. N. R. MacKay commenced duty on 30th March as Assistant Medical Superintendent. Miss Thurston, O.B.E., entered upon her duties as Matron on 8th May, 1924, and has been assisted throughout the year by Sister T. d'Emden as Sub-matron.

Chef.—Alterations in the personnel of the kitchen staff and the appointment of a new chef have brought about great improvement in the cooking for the patients and male staff. A great variety of dishes has been made possible—a very desirable feature in regard to the provision of meals where cooking on institutional lines makes it difficult to avoid monotony in diet.

X-ray Department.—During the past year the X-ray Department has been at our disposal, and two visits have been made by the X-ray Assistant, kindly loaned by the Medical Superintendent, King George V Hospital, Rotorua. The total number of films taken was seventy-six. In addition to these services the X-ray plant has been used from time to time for screening of chests, and forty other films have been taken at varying intervals, the Dispenser again proving a very useful man in the radiography and developing work.

Red Cross Society.—The Red Cross Society continues to do valuable work for the patients, and the work of the Red Cross representative at the institution is an important factor in making the individual patient's stay at Pukeora very much more pleasant.

Vocational Workshops.—The vocational workshops have again been the means of providing useful occupation and training in various ways for the patients, and have proved an important factor in the successful treatment of a disease in which limited and regulated activity is most desirable. The classes in carpentry were discontinued during the latter part of the year owing to the large amount of maintenance carpentry and structural alterations to buildings necessary. These classes have again been resumed under the supervision of the Carpentry Instructor. The leatherwork and basketwork classes have been well attended throughout the year.

Average daily attendances have been as follows: Carpentry, 5 for five months only; leatherwork, 12·5; basket and raffia work, 10; raffia-matting work and needlework (bed patients only), 13·5.

Farm, Orchard, &c.—The Superintendent of Farms reports that the Sanatorium farm is in a very flourishing condition.

The orchard and kitchen garden, which has been closed down for a considerable period, has been reopened and the services of an orchardist obtained. In addition to the care of the orchard this employee is responsible for the care of 2 to 3 acres of kitchen garden, and this rearrangement has relieved the Head Gardener of duties connected with orchard and kitchen garden. The result is that the ornamental grounds are kept in decidedly better order.

SECTION 5.—STATISTICS OF PATIENTS FOR THE YEARS 1923, 1924, 1925.

—	King George V. Hospital.			Queen Mary Hospital.			Otaki Hospital.			Otaki Sanatorium.			Pukeora Sanatorium.		
	1923.	1924.	1925.	1923.	1924.	1925.	1923.	1924.	1925.	1923.	1924.	1925.	1923.	1924.	1925.
Number of patients in hospital at commencement of year	180	150	93	82	102	66	9	4	9	36	40	31	144	119	107
Number of patients admitted during year	598	524	838	379	463	453	169	169	145	76	80	82	273	264	226
Total admitted ..	778	674	931	461	565	519	178	173	154	112	120	113	417	383	333
Patients discharged cured ..	177	225	461	136	152	144	124	118	91	..	45	51	9	15	101
Patients discharged relieved ..	349	301	270	202	269	238	23	22	48	57	27	9	30	18	70
Patients discharged unrelieved ..	73	34	56	14	14	30	16	18	4	15	8	5	240	234	26
Patients who died	29	21	34	..	3	3	11	6	6	..	2	1	19	20	13
Patients transferred to other hospitals	..	..	..	7	22	11	..	..	..	..	7*	6*	..	..	..
Patients remaining in hospital at end of year	150	..	110	102	..	93	4	9	5	40	31	41	119	96	123
Total patients treated ..	778	674	931	461	565	519	178	173	154	112	120	113	417	383	333
Average daily number of patients treated	196	122	108	90	95	95	7·5	..	..	..	..	..	139	120	121
Average mean residence (*d* = days; *m* = months)	73*d.*	104*d.*	54*d.*	54*d.*	61*d.*	67*d.*	15·3*d.*	..	..	6½*m.*	147*d.*	217*d.*	118·4*d.*	117·75*d.*	192·33*d.*
Total number of deaths within 24 hours of admission	4	4	4	Nil	Nil	Nil	3	2	1	Nil	Nil	Nil	Nil	Nil	Nil.
Rate of mortality per cent. over total cases under treatment	3·21	2·52	3·22	..	..	..	6·1	1·2	4·0	..	6·09	3·03	0·04	0·19	0·25
Total number of operations performed	369	345	424	Nil	Nil	Nil	28	4	42	..	..	..	Nil	Nil	Nil.
Rate of mortality per cent. of operations	Nil	Nil	0·23	Nil	Nil	Nil	3·5	3·65	Nil	..	..	..	Nil	Nil	Nil.

* Readmissions after temporary discharge.

APPENDIX.

REPORT ON EPIDEMIC OF POLIOMYELITIS, 1925, BY DR. P. P. LYNCH.

Memorandum for the Director-General of Health, Wellington.

DEAR SIR,— Bacteriological Laboratory, Wellington Hospital, Wellington, 4th April, 1925.

I respectfully beg to present my report on work done for the Department during the recent epidemic of poliomyelitis. The work was commenced at the request of the Department on the 19th January and was continued throughout the rest of this month and the greater part of February and March. The Department allowed me the assistance of Mr. A. Pierard, who was kindly released by Mr. Hurley, the Government Bacteriologist, and Mr. de Clive Lowe, a final-year medical student from Dunedin. At the time I commenced the work the epidemic was in full swing in Wellington, and I had already examined a number of cases post-mortem, but beyond the histological examination of these nothing further was done. I decided to investigate what material was available from the epidemic,—

1. From the pathological standpoint, to determine the nature and extent of the lesions as compared with similar epidemics elsewhere.

2. From a bacteriological point of view, in order, if possible, to identify and culture the causal organism.

3. By animal-inoculation, to produce experimental poliomyelitis, with a view to carrying out immunilogical work later on. In this latter course I was advised by Professor Hercus, with whom I discussed the question.

As regards our present knowledge of the disease, there are two distinct schools of opinions as regards the etiological factor. That of Flexner and Noguchi, who attribute it to a virus which has the form of minute globoid bodies, which grow under anærobic conditions, and which are capable of passing through the finest filters; and that of Rosenow and his followers, who say that the causal organism is a tiny pleomorphic streptococcus, which attains its minimum size under anærobic conditions and will then pass through a Berkfeld filter.

We have studied the available literature on the subject (mainly in the form of abstracts), and the consensus of opinion seems to favour the etiological significance of the globoid bodies. Rosenow's view obtains but little support, and the majority of workers have been unable to reproduce his findings. Support is given to the coccus theory by Nuzzum and Willy, who in 1917, during an epidemic of poliomyelitis, used the serum of horses immunized against this particular streptococcus, with apparent success; and also by Max Herzog, who inoculated monkeys, lambs, and rabbits with this streptococcus, and said they produced the characteristic clinical and pathological picture of poliomyelitis. Amoss reports how an American worker named Bull failed to reproduce Rosenow's findings, and concluded that in animals inoculated with the streptococcus the focal lesions which were present were not identical with the lesions of poliomyelitis. He also failed to immunize monkeys. W. G. Smillie, of the Rockefeller Institute, could not prove the implication of the streptococcus in the disease, and looked upon it as a post-mortem or secondary invader. Ludwig Hectoen found that the streptococcus would not pass the finest filters, whereas the virus would, and found in many of the rabbits inoculated with the streptococcus the ordinary lesions of a streptococcus septicæmia. Amoss and Eberson failed to produce poliomyelitis after inoculating a series of animals with Rosenow's streptococcus. Many workers, including Hectoen, George Mathers, and Leila Jackson, have found the streptococcus fairly constantly present in the tissues from persons suffering from the disease, but do not consider that it plays any part in the etiology. Flexner and Noguchi have recovered and cultured the globoid bodies from persons suffering from the disease, have inoculated monkeys with it, and again recovered it. Further, after a series of cultures and subcultures they have, again, by subsequent inoculation reproduced the disease in monkeys in its clinical and pathological form.

Levaditi, Popper, and Landsteiner have corroborated the findings of Flexner and Noguchi.

PATHOLOGICAL INVESTIGATIONS.

Ten *post mortem* examinations were made during the course of the epidemic. This represents a small percentage of the total deaths in Wellington during the period, but is partly accounted for by the fact that in the early stages of the epidemic no pathologist was available to carry out the examinations. Appended hereto are briefs of typical cases examined.

Case I.—B. B., f., æt. 11. Admitted to Wellington Hospital 28/12/24, with a history of sudden onset of backache, headache, and inability to swallow, stiffness of neck and flexors of thighs. Patient was unable to speak properly, and had a measles-like rash on the extensor surface of arms and legs. There appeared to be a paralysis of the soft palate. In the afternoon the child developed respiratory embarrassment of a jerky nature. Two days later the breathing was very shallow and purely diaphragmatic. An acute erythema of the nose appeared, almost in the nature of a cellulitis. On 1/1/25 the child became cyanosed and drowsy, with weakness of the arms, and died on 3/1/25.

Post mortem examination done the next day showed intense congestion and œdema of the brain. On section the grey matter of the cord was picked out as a deep-red area, more marked in the cervical enlargement. There were areas of congestion and hæmorrhage in the floor of the fourth ventricle. The substance of the cord was soft and pulpy and bulged through the cut membranes. There was little naked-eye change in the other organs, beyond intense congestion of the lungs, which showed at the left base an area of collapse. Microscopical sections were prepared from the tissues of the central nervous system. There was nothing to be seen in the cortex and cerebellum beyond œdema and congestion. In the medulla and both cervical and lumbar enlargements of the cord there were areas in which the congestion of the vessels was very marked. There were tiny thrombi in some of the vessels, and one area of the cord showed marked unilateral hæmorrhagic softening, with round-celled infiltration of the grey matter and absence of nerve-cells. There were milder lesions on the opposite side, with well-marked perivascular collars of lymphocytes and plasma-cells. In the floor of the fourth ventricle there was a unilateral hæmorrhagic area with round-celled infiltration.

Case II.—W. W. C., m., æt. 2. Admitted 4/1/25, with a history of four days' drowsiness, rash on body, and loss of power in left arm, and loss of superficial and deep reflexes. Spinal fluid was slightly under pressure, was faintly opalescent, and contained twenty-five cells per cmm. 5/1/25 the child had convulsions, the respirations became sighing and irregular, and nystagmus was now present. The child was listless, and died 6/1/25.

Post-mortem done the next day showed the usual deeply congested brain and cord, with hæmorrhagic areas in the grey matter of the cord, most marked in the left-arm region. Lungs were congested and œdematous.

Microscopically the cortex showed nothing of note. In the medulla there were numerous cellular lesions similar to those described above. In the cord there was marked round-celled infiltration affecting the meninges, with congestion of the meningeal vessels. Numerous perivascular collars in the grey and white matter of the cord.

Case III.—B. J., f., æt. 8 12. Admitted 29/12/24, with a history of several days' malaise, slight cough, and inability to stand. The child presented bilateral intercostal paralysis, and both legs at this stage appeared to be spastic. There was difficulty in swallowing. Knee-jerks and abdominal reflexes were absent, and harsh rhonchi were heard over both lungs. On 6/1/25 the child became comatose and developed a weak cough. Died next day.

Post-mortem done the next day showed the same congestion and œdema of the brain and cord. There were naked-eye lesions in the cervical region on both sides and in the upper thoracic region. Both lungs were the seat of a septic broncho-pneumonia, most marked at the bases.

Microscopical findings were hæmorrhages, thrombi, and softening, with diffuse round-celled infiltration. There is bilateral lysis of the anterior horn-cells, the remainder are indistinct in outline as to cell and nucleus. There is congestion and œdema of the posterior columns.

Case IV.—J. W., m., æt. 11. Admitted 12/1/25 with a history of three days' feverish headache and inability to walk. He presented a complete intercostal paralysis and paresis of all limbs, with difficulty in swallowing. Passive flexion of the neck was painful. Spinal fluid was opalescent and under slight pressure. Slight increase in globulin and six cells. Knee-jerks were absent. A bulbar paralysis appeared and progressed rapidly, death occurring on 13/1/25.

At post-mortem we noted congestion of the brain, which was very marked in the floor of the fourth ventricle, in which situation there were also patechial hæmorrhages. In the lumbar region of the cord there was a nodular area of softening. There were hæmorrhages in the lumbar and cervical enlargements, and less markedly in the dorsal region. The lungs were congested and showed numerous interstitial hæmorrhages.

The microscopical findings were in every way identical with those of the case described above.

Case V.—D. R., m., æt. 8. Admitted 11/1/25, with a history of two days' frontal headache and pain in the back of the neck, with vomiting and thickness of speech. There was difficulty in swallowing. The child presented a dusky flush, and there was paresis of the left face and palate. The speech was thick and nasal, and the child could only swallow slowly. Spinal fluid was slightly opalescent, with seven cells per cmm. The child's condition became gradually worse until the 16th, when it developed slow gasping respirations and weak pulse, and died 18/1/25.

Post-mortem done next day showed extreme congestion of the brain and cord, with intense œdema. There were punctate hæmorrhages in the medulla 1 mm. below the floor of the fourth ventricle. The cervical region of the cord is more deeply congested than the rest.

Case VI.—L. R., m., æt. 3. Admitted 15/1/25, with a history of a two days' feverish head cold, followed by one day with pain in the back and weakness of the legs. The child was irritable, had a meningeal cry, and a double cervical adenitis. Both legs were paralysed. There was marked cervical rigidity, and the deep reflexes were absent. Spinal fluid was opalescent and under slight pressure. There was a definite increase in globulin, and there were 126 cells. On 17/1/25 both arms became paralysed, and the following day intercostal paralysis developed with rapidly ascending paralysis, and the child died comatose on 18/1/25.

At post-mortem the next day there was general congestion and œdema, with several extensive hæmorrhages into the floor of the fourth ventricle. The whole of the grey matter of the cord in all areas was disorganized with hæmorrhages and œdema. The cord was pulpy and soft and bulged through the membranes when cut across. The lesions were most marked in the lumbar region. The lungs showed hæmorrhagic spots.

Microscopical examination of the cord shows that the meninges are thickened, and there is marked infiltration of the anterior horn with round cells. In the same site there are many hæmorrhages, and some fairly large vessels show thromboses. There were poorly marked round-cell perivascular collars. There is extreme dilatation of the capillaries of the grey matter. There is marked lysis of the cells of

the anterior horn. There were marked perivascular lesions in the posterior columns. There was marked congestion of the liver, with round-celled infiltration in the portal tacts.

Case VII.—C. B., m., æt. 8. Admitted 31/1/25, with a history of having been ill seven days previous followed by two days' remission, and then four days ago an attack of headache, backache, and vomiting, followed by another two days' remission. This morning he vomited and was feverish and sweated freely. He had a papular rash on the abdomen, cervical rigidity with tenderness, and bilateral kernig. Spinal fluid was cloudy, with much increase in globulin, and 607 cells per cmm. On 1/2/25 weakness of the arms appeared, with pain in the left arm, and respiratory distress and complete paralysis of the diaphragm. There was marked tachycardia. Child died 2/2/25.

Post-mortem done the next day revealed marked congestion of the meningeal vessels. There was a cortical cyst, the size of a pigeon's egg, in the right parietal region. There was a small sub-ependymal hæmorrhage in the floor of the fourth ventricle. The cord was tense with œdema, and the cut surface bulged through the membranes. The grey matter of the anterior horn, especially in the lumbar and cervical enlargements, was irregularly darkened, and stands out prominently.

Micro.: There is engorgement of the meningeal vessels, with some degree of diffuse round-celled infiltration and general congestion and œdema of the cord, with lysis of some of the anterior horn-cells. There are engorged and thrombosed vessels with perivascular collars. There are similar lesions in the posterior horns. The medulla throughout all parts shows perivascular round-celled infiltration.

Case VIII.—J. H., m., æt. 7. Admitted 8/12/24, with a history of seven days' illness with feverishness, pain in the abdomen, and vomiting. On admission the child was restless, sweating freely, and had difficulty in swallowing. There was paralysis of the left deltoid, with loss of knee-jerks and abdominal reflexes. There were harsh rhonchi in the chest. On 9/12/24 child became suddenly cyanosed with weak pulse and died. Spinal puncture yielded no fluid.

After my arrival in Wellington I was handed portions of cortex, cerebellum, and medulla, of which I made microscopical examination. In the medulla there were engorged thrombosed vessels showing a well-marked perivascular infiltration with lymphocytes and a diffuse round-celled infiltration of the tissues. The findings were typical of poliomyelitis.

From the examination of the above cases one can only corroborate the findings of those who have previously described the disease. The most striking feature was the intense œdema of the cord, which was always present. On removing the laminæ one often noted an œdematous condition of the extra-dural fat. On palpation it was always noticed that the cord was tense, and, indeed, in some cases the consistence was that of indiarubber. On transverse section of the cord the white matter bulged through the cut surface. The grey matter was almost always swollen so as to occupy a relatively much greater proportion of the cord-section. In keeping with the degree of œdema present there was a corresponding congestion of all parts of the cord. In the grey matter there were often, in addition, hæmorrhagic areas, with the result that the grey matter stood out as a reddish or reddish-brown area. These hæmorrhagic areas were seen in the medulla in the majority of cases examined. Microscopically such areas showed dilated vessels, in some cases thrombosed, and some with diffuse areas of hæmorrhage in the vicinity. The cellular areas were of great interest. In the perivascular lymphatics in the engorged areas were noted collar-like collections of round cells with deeply staining nuclei. In none of the sections examined did we notice polymorphos in the inflammatory cells in any situation. In addition to these lesions were noted commonly diffuse round-celled infiltrations of the grey matter without and particular relation to the blood-vessels. In the more severe cases these cells were aggregated into clumps, and in some few cases were disposed round the central canal of the cord. Only in a few cases did we note an inflammatory infiltration of the meninges, and when this did occur it had no special distribution with regard to the vessels. In none of the cases did we note any infiltration of the meninges of the brain. In cord and medulla we encountered areas in which softening had occurred, and in many cases this involved the white matter, and microscopical examination revealed numerous vacuolated spaces. In a small proportion of the cases examined the naked-eye appearances were quite similar to the typical cases described above, but on microscopical examination no cellular lessions were found. There was, however, extreme congestion of the capillaries of the grey matter and tiny multiple extravasations of blood round these engorged vessels. These cases were noted clinically as definite cases of the disease, but following an extremely rapid course. The interpretation placed on these findings was that the overwhelming virulence of the infection left no opportunity for tissue-response.

Bacteriological Investigations.

Cultures and subcultures were made of material from the central nervous system of four definite clinical cases of poliomyelitis which terminated fatally, and cultures were also made in a similar manner from two definite clinical cases of experimental poliomyelitis in monkeys (*Macacus rhesus*).

The medium employed in almost all cases was that suggested by Noguchi—*i.e.*, fresh sterile ascitic fluid, in which was placed a fragment of kidney from a rabbit or a guinea-pig. The kidneys were removed aseptically from freshly killed animals. The medium was incubated overnight and tested next day for sterility; any contaminated tubes were rejected. The temperature of incubation throughout was 37° C., and the conditions were anærobic. Anærobiasis was maintained by placing a layer of sterile paraffin on the surface of the medium. Some were, in addition, placed in airtight jars, from which the oxygen was removed by the combined action of exhaustion and pyrogallol. The filters were Chamberlain F, and a very fine type of Muencke porcelain candle. Using these filters for a great variety of bacterial growth, it was evident that no ordinary bacteria were able to pass. Throughout the experiment every step was checked by means of controls.

The first lot of material to be cultured was from Case V. A portion of the cord taken from a segment in which the lesions were well marked was removed at post-mortem and planted in a tube of the medium. After five days' incubation very small bluish bodies were seen in smears stained with Giemsa. These were, however, present in the control-tube, though the arrangement was not so regular in the latter. The culture was then filtered through a Chamberlain F filter and subcultured on similar medium. After five days' incubation a stained smear failed to reveal the presence of similar bodies. During the five days' incubation of the primary culture an opalescence of the medium gradually occurred. This was also present in the control, and was probably due to autolysis of the kidney and cord-tissue.

The next cultures made were from Case VII. The cord and brain were flamed, and four primary cultures were made. After five days there was no result, except that some purple-staining bodies were seen with Giemsa both in cultures and controls. A 5-per-cent. emulsion of brain in sterile water was also made and put through a filter. Four cultures were made from this, but in five days there was no visible growth.

The next case examined was that of a child at Wanganui, who had died during a typical attack of the disease. At the request of the Department I went to Wanganui and made a *post mortem* examination in this case. The cord was removed and portions kept in 50 per cent. glycerine, the remainder was packed in ice in a Thermos flask. (Used next day for animal-inoculation, Q.V.) The glycerinized cord was kept for five days, after which three pieces were planted in medium. The medium in this case consisted of equal parts of ascitic, pleural, and hydrocele fluids, in which was placed 1 gram of sterile rabbit-kidney. All cultures showed after five days a streptococcus and a gram-negative bacillus, also minute organisms (? cocci) in clumps and chains, very much smaller than the streptococcus with which they were growing. It was noted that the streptococcus was markedly gram-positive, whereas the smaller bodies did not retain the stain by Gram's method. These cultures were then passed through a filter and subcultured without anything definite being found.

The next material for culture was from a monkey, B in our series, which was killed with chloroform during the acute stage of the disease. The cord was carefully removed and planted fresh in the medium. After five days a smear was made and stained with Gram. In it were noted gram-negative bacilli, gram-positive bacilli, and tiny "coccoid bodies" in clumps, short chains, and pairs. Some of these clumps were surrounded by clear zones. The small bodies observed appeared to be about 0·1 m. in diam. These cultures were cultured and subcultured. After five days smears showed similar bodies, in pairs only, which stained well with Giemsa, and did not resemble the granules in the control-tube, which did not stain so definitely. A subculture was also made without filtration, and this showed a profuse growth of these small bodies, much heavier than in the primary culture. In these subcultures contaminating organisms also flourished, but there were no contaminating organisms in the cultures from the filtrate. These small bodies we regarded as the "globoid bodies" described by Flexner and Noguchi. Direct smears made from the brain of the same case when stained with Giemsa showed small bodies with indefinite outline, but a control from a normal guinea-pig brain showed similar bodies, which were thus regarded as being non-organismal. Three lots of streptococci growing in primary culture from this monkey's brain were cultured under anærobic conditions for five days. In two tubes the cocci remained the same size without marked pleomorphism. A smear from the third tube revealed many small forms, all of which were, however, much larger than the bodies above mentioned, and all of which were markedly gram-positive.

Cultures were also made from the medulla of monkey B on solid media. This medium was prepared in plates as described below; the medium was inoculated and incubated anærobically in a Buchner jar. With a $\frac{2}{3}$ in. lens many dew-like colonies were seen after five days' incubation, lying in close proximity to the colonies of contaminating organisms. Some appeared to be growing on top of the larger colonies. Attempts were made to inoculate Noguchi medium with these, with only partial success, as none of the subcultures were pure. Possibly, we thought, the globoid bodies were growing in symbiosis with the other organisms.

Portion of the cerebrum of monkey E (experimental poliomyelitis) was removed with all possible precautions and planted in Noguchi 3F medium. In ten days a portion of brain was removed and crushed out; this showed with Giemsa contaminating organisms and numerous globoid bodies. Portions of cerebrum, lumbar cord, and medulla, treated fifteen minutes with 2 per cent. phenol, washed in saline, were planted in medium 3F. The results were in every case similar to the above.

Media.—Noguchi A medium was made and used as follows: Untreated ascitic fluid was filtered through a Chamberlain F filter and tubed in 10 c.c. quantities, to which was added about 1-gram fragments of sterile guinea-pig kidney; these were tested for sterility and covered with $1\frac{1}{2}$ in. of sterile paraffin.

Noguchi 3F medium was made from a mixture of equal parts of hydrocele, ascitic, and pleural fluids, filtered, tubed in 10 c.c. lots, and to this was added sterile rabbit-kidney in 1-gram pieces. Overlain with $1\frac{1}{2}$ in. paraffin.

Solid medium 3FA: One rabbit's kidney was ground up with sand and 10 c.c. distilled water and triturated for about twenty minutes. This was filtered through filter-paper and then through a candle. The filtrate was now added to 30 c.c. of 3F medium above, and the whole filtered through a sterile Muencke filter. To each volume of this filtrate was added one volume of agar of reaction + ·6 (Eyre) at a temperature of 40° C., and poured in plates.

From the above observations it will be seen that the globoid bodies described by Flexner and Noguchi were observed in the cultures from the cases in both human and experimental poliomyelitis. We were not able to overcome the difficulties of growing the organism in pure culture. The frequent gross contamination with other organisms over the long periods required for incubation prevented us from carrying the cultures through many generations of subcultures.

EXPERIMENTAL INVESTIGATIONS.

In commencing this work we realized that little could be done until we had produced experimental poliomyelitis. Consequently we obtained a small supply of monkeys from the municipal authorities at Wellington and Auckland. As previous experience seemed to show that the intracerebral method of inoculation gave the best results we decided to use this method exclusively. Through the kindness of Dr. Wilson, who gave us every possible assistance, suitable accommodation was got for the monkeys at the Hospital. We were also given part of the Out-patient Department, and such theatre equipment, gowns, &c., as was necessary to carry out the operative work under aseptic conditions.

The first case used for experimental purposes was Case VI in the series above. On the 22nd January a 20-per-cent. emulsion was made from glycerinized cord. Dr. Wilson anæsthetized monkey A with ether, and, after shaving and sterilizing the scalp, dressing-sheets were put in position, and a skin and muscle flap was turned down in the parietal region. A ½ in. trephine opening was made, leaving the dura uninjured. With a 24-gauge needle 0·2 c.c. of emulsion was injected deeply into the brain-substance. The skin and muscle flap was sutured back in position. After placing a collodion dressing over the wound the monkey was returned to its cage. It rapidly recovered from the operation, and seventy days after showed no signs of paralysis.

Monkey B was inoculated in exactly the same way on 31/1/25, except that a ¼ in. trephine opening was used. 0·4 c.c. of a fresh emulsion (20 per cent.) of cord (Wanganui case) which had been kept on ice for twenty-four hours was injected through a trephine opening in the parietal region. On 11/2/25 it was noticed that the animal was shivering. On the morning of the next day the animal was obvious ill and feverish, eyes were running, refusing food, unsteady gait, and loss of interest in surroundings. In the afternoon the condition was worse, the lower jaw was inclined to the right, and there was some weakness in the hind legs. On 13/2/25 the animal lay on its back unable to move, and its respirations were slow. Temperature normal. Examination showed pupils equal and reacting to light. No strabismus. Corneæ slightly glazed. No facial paralysis. There was evidently difficulty in swallowing. Forcible flexion of the head gives the animal pain. Both arms are paralysed, the right was flaccid, and the left slightly spastic. Deep reflexes lost. There was paralysis of the intercostals. Abdominal reflexes present. There was now some paresis of the legs, but knee-jerks were brisk. 14/2/25: Respirations 29. Right leg was flaccid, with absent reflexes. Paralysis of arms is now of flaccid type on both sides. Abdominal reflexes were now absent. 16/2/25: Spinal puncture fluid not under pressure. 5 c.c. withdrawn. Globulin greatly increased, thirteen cells per cmm. Animal was now *in extremis*, and was killed with chloroform.

Post-mortem: The brain showed œdema and marked congestion, the vessels in the floor of the fourth ventricle were congested, but there were no hæmorrhages. The cord was tense with œdema, and the meningeal vessels were injected. On section of the cord there were marked lesions in the grey matter of the cervical region, less in the dorsal and indefinite in the lumbar region. The operation-wound was soundly healed, and there was no evidence of hæmorrhage or infection at the site of inoculation. The mesenteric glands were not palpable.

Microscopical examination of the cord showed precisely the same lesions as were noted in the human cases. The perivascular collections of small round cells were to be seen most marked in the cervical region. There were no lesions in the meninges of the brain at the sire of inoculation or at any other part.

Monkey C was inoculated intracerebrally on 2/2/25 with 0·2 c.c. of a 20-per-cent. emulsion of the cord of Case VII. At the termination of the operation the animal collapsed and could not be brought round.

Monkey D was inoculated in the same way and with the same quantity of virus from Case VI. Six days later the animal appeared to be seedy with a tendency to drag the left leg, but this passed off and monkey recovered completely.

Monkey E was inoculated with emulsion of cord from a case which was at the time believed to be poliomyelitis, but which on subsequent examination proved to be a case of liver necrosis. On 16/2/25, one week after the above inoculation, the animal was reinoculated through the same trephine-hole with an emulsion of cord from monkey B, which had had the disease. 24/2/25: The animal was going off its food, and two days later it was seen crouching in the corner of its cage, shivering, with its head pressed against the wall. There now appeared some difficulty in mastication and swallowing. 27/2/25: Feverishness had now gone, but the animal was much worse. Mastication was impossible, and animal had to be fed with a pipette. The back legs seem very weak. 28/2/25: There was now, in addition, definite stiffness of the neck, paralysis of the left deltoid, paresis of both arms, intercostals working feebly, both legs flaccid paralysis, and deep reflexes lost. 2/3/25: There was some slight recovery in the left foot. 3/3/25: Respirations were much more difficult, the intercostals have only slight movement, right arm alone unaffected. 6/3/25: Paralyses remained unchanged. Spinal puncture showed fluid not under pressure, with a slight increase in globulin and 900 cells per cmm. Animal killed with chloroform.

Post-mortem showed that the site of inoculation was soundly healed. There was marked congestion of the cortex. The meninges of the cord were congested, and the cord itself was tense with œdema. There were no macroscopic lesions in the medulla, cervical, or dorsal regions. Lumbar enlargement showed swelling and darkening of the anterior cornu. The mesenteric glands were enlarged and soft. There were some recent adhesions in the left pleura. There were no naked-eye changes in any other organs.

Microscopic examination showed the same appearances as seen in other cases, except that there appeared to be some organization and the formation of young fibrous tissue in the anterior horn. No further inoculations were made with this material. It will thus be seen that of five monkeys inoculated there were two definite cases of the disease, proved clinically and pathologically. Further,

that although from these cases we had a source of fresh virus, which could immediately after death be placed in culture media, we had the very greatest difficulty in cultivating the virus, and failed completely to grow it in pure culture. Twice at the request of the Department I visited Auckland and worked on the same lines in conjunction with Dr. Gilmour. Ample material was available for culture purposes, and well over a hundred cultures were prepared very carefully, without producing a growth of anything resembling globoid bodies. This, of course, made the preparation of a vaccine or an immune serum a technical impossibility.

With a view to repeating the findings of Rosenow, we inoculated intracerebrally, through trephine openings, thirteen rabbits. We used 20-per-cent. emulsions of infected cords, injecting 0·2 c.c. in each case. Five rabbits died from septic meningitis or some other cause related to the operation itself. None of these showed any lesions suggestive of poliomyelitis, although some developed paralysis of the hind legs before death occurred. This was, however, found later to be the case with rabbits which had been inoculated with streptococci of low virulence from various sources, and has no relationship anatomically or bacteriologically to that occurring during an attack of poliomyelitis in a man or in a monkey.

Of the rabbits that recovered from the operation none developed anything suggestive of poliomyelitis. We came to this conclusion after examining microscopically the cords of these animals after death.

We regret that out of the volume of work done in connection with the epidemic nothing has arisen which is at all likely to be of assistance from a therapeutic standpoint. Attempts were made to estimate susceptibility by skin tests. Dr. Frengley suggested the use of an extract of preteins from the spinal fluid of infected cases. This was found to be not readily carried out, but, acting along the lines of his suggestion, the following method was used: Cord from a case recently dead was made up to a 20-per-cent. emulsion with saline by grinding in a mortar. This was then filtered through a porcelain filter; the filtrate was heated to 56° C. for forty-five minutes. About one hundred children in the wards of the Auckland Hospital were tested by intradermal injection of 0·2 c.c. of this filtrate. Half of this number were children who were ill with or convalescent from poliomyelitis. In no case was there the slightest reaction which could not be attributed to the mechanical injury to the skin. This destroyed any hopes we had of being able to devise some test on the same principle as the Schick test. I have now made arrangements to hand what cultures and glycerinized cords we have to Dr. Hercus, who is making arrangements to carry on the work. It is my intention to visit Dunedin during the next week and explain to him the details of the work, as this has for the most part been described in outline only in the above report.

I am very grateful for the assistance afforded me by the Department. Everything possible was done to facilitate the work, both in Wellington and other places that I visited for the purpose of collecting material.

If there are any points which you think are not covered by this report, I should be very pleased to supply them from such notes of the work as I have kept.

Yours respectfully,
P. P. Lynch, M.D.

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