Report of the Commissioner of Public Health / Western Australia.

1950

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WESTERN AUSTRALIA

REPORT

of the

COMMISSIONER

of

PUBLIC HEALTH

for the year

1949

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Report of the Commissioner of Public Health.

The Hon. Minister of Public Health.

I have the honour to submit a report on the Department of Public Health for the year 1949.

ADMINISTRATION.

The outstanding event of the year was the resignation of Dr. Cecil E. Cook who had been Commissioner of Public Health since early 1946. Writing as one who is to succeed him early in 1950 one must express appreciation for the work done by him in the three and a half years during which he served this State.

After over eight years' service in the Department, one has had the opportunity to observe at close quarters the vitalising effect on the department's activities produced by his incisive intellect. The whole outlook on public health and preventive medicine in the State has been changed. One must therefore congratulate the Commonwealth Health Department on its new appointment.

On the 4th August, 1949, Dr. W. S. Davidson was appointed as Assistant Commissioner of Public Health and following Dr. Cook's resignation carried on as Acting Commissioner till the end of the year. The Department has been fortunate to secure a man of his administrative experience in the Services to augment its strength at a time when it is developing new activities.

Early in the year (10th January, 1949), Dr. D. J. R. Snow was transferred from service in the North-West to undertake epidemiological studies in the Metropolitan Area, with particular reference to poliomyelitis. It is trusted that the long neglect of planned work in epidemiology will be remedied by his appointment.

STATE HEALTH COUNCIL.

During 1949, the Government approved of the appointment of a State Health Council comprising representatives of the Department and the practising Medical profession. The members of the Council were :—Dr. C. E. Cook (Chairman), Dr. G. Ashburton Thompson, Dr. R. H. Crisp, Dr. F. L. Gill, Dr. H. S. Lucraft, Dr. B. W. Buttsworth, Dr. H. Leigh Cook, Dr. A. B. Webster, Dr. M. F. Williams and Mr. H. T. Stitfold (Under Secretary).

The initial meeting of the Council was held on 23rd September, 1949, and subsequent meetings were held on 23rd November and 28th December, 1949.

The Council appointed Sub-Committees to deal with :—

(a) Infant and Maternal Health.

(b) Hospital Requirements.

Outstanding among the many problems which engaged the attention of the State Health Council were the consideration of hospital bed requirements throughout the State, the establishment of a State Consultant Service, Infant Mortality and medical attention for natives.

The formation of this Council is due to the foresight of Dr. Cook who realised the need for expert advice to guide the activities of the Department. The function of the Council is to offer the Department and the Minister technical advice on the many aspects of disease and health with which they are confronted.

It is anticipated that it will sustain the Department with its assistance in the future and provide what had been lacking—close contact between the Department and the practising profession.

LOCAL AUTHORITIES.

The year under review was a period of consolidation following the 1947 declaration of all remaining local government units as Local Health Authorities. With few exceptions the Boards have responded well to the challenge of new responsibilities and generally reflect awareness of the importance of their position in the administration of Health legislation.

The wider employment of Inspectors has noticeably effected the attitude of many Local Health Authorities. Failure to realise their important role had in the past frequently given rise to obtsructionism and lack of initiative on the part of many Boards. It is pleasing to note the retreat from this attitude in the face of more widely disseminated knowledge.

Sixteen Boards adopted in full the model by-laws, thus making the provisions of the Health Act almost uniform throughout the State. Local Authorities have felt the impact of changing monetary values which has been a feature of post-war years. The power of local authorities to derive income by way of rates has been lessened to a point which has in fact embarrassed Boards with a high population—valuation ratio. Should the trend continue it will be necessary to consider recommending that legislative action be taken lest the financial position of local authorities deteriorates to a point which prevents their efficient operation.

SANITATION.

Continued attention has been given to the sanitary conditions existing in camping and caravan areas and during the year regulations relating to their control were gazetted. This long neglect has been remedied and it now remains to see that they are enforced and that reluctant local authorities will be induced to remedy the danger spots formerly tolerated.

NURSING.

The training of nurses in Departmental country hospitals has been successfully pursued during the year. The Central School has now been firmly established at Cottesloe since September. In her report, Miss Bailey, the Organiser of Nursing Training states that the number of students passing through the Central Preliminary Training School has increased from 93 to 107.

Considerable difficulties are being experienced in obtaining tutorial staff, but Miss Bailey's energy is overcoming these obstacles.

It must be emphasised that the present accommodation at Devonleigh is cramped and inadequate and that expansions are necessary.

NURSES' REGISTRATION BOARD.

Eleven meetings were held during the year.

On 14th September, the Repatriation General Hospital, Hollywood, was approved as a general training school for female nurses.

The number of nurses registered in the various divisions of the register was :—

	1949.	(1948).
General	1,731	(1,858)
Midwifery	1,004	(998)
Infant Health	190	(199)
Children's	22	(17)
Mental	52	(60)
Tuberculosis	24	(13)

Figures in parenthesis are those of 1948 for comparison.

During the year one application for restoration of name to the Midwives Register was granted and one was refused.

Sixteen examinations were conducted during the year, as follows :—

General	3
Midwifery	3
Tuberculosis	3
First Year Professional	3
Mental	1
Educational	3

HOSPITALS.

A review of the general hospital position throughout the State was commenced towards the end of the year by the newly appointed Hospital Requirements Committee of the State Health Council. There is great need to correlate country and metropolitan hospital needs and to hold the scales evenly in forming decisions which might affect one section of the community at the expense of another.

The report on private hospitals submitted by the Inspecting Matron, Miss Bottle, reveals the continuation of abuses and exploitation or chronic cases and the aged sick by boarding houses masquerading as hospitals. The position requires careful policing and firm handling.

FOOD AND INSPECTORIAL STAFF.

During the year the work of the inspectorial staff increased still further and the Department was unable to meet all its commitments with Local Health Authorities with whom it had contracted to provide a measure of health supervision. The necessity for additional staff is apparent but this cannot be rectified until more qualified men are available.

The Annual Conference of Health Inspectors of Local Health Authorities was held in Perth on the 14th and 15th July, 1949.

The following lectures were delivered and well received by large audiences :—

"The Role of Health Inspector" by Dr. C. E. Cook, Commissioner of Public Health.

"Survival of Pathogenic Organisms in Faecel Wastes" by Dr. W. A. Young, Director, Medical Laboratories, Public Health Department.

"Immunity and Immunisation" by Dr. D. J. R. Snow, Medical Officer, Department of Public Health.

"Observations on the Recent Poliomyelitis Epidemic" by Dr. D. J. R. Snow, Medical Officer, Public Health Department.

"Principles of Bacteriolytic Sewage Systems" by Inspector G. O. Evans, Public Health Department.

"Health Act—Legal Interpretations" by Mr. D. A. Coates, Public Health Department.

"Food and the Analyst" by Mr. J. C. Hood, Deputy Government Analyst.

"Sewerage Plumbing in Rural Areas" by Health Inspector Evans, Public Health Department.

"Pathogenic Organisms in Water Supplies—Sampling and Interpretation" by Dr. W. A. Young, Director, Medical Laboratories, Public Health Department.

"Rural Water Supplies and their Protection" by Dr. A. P. Davis, Medical Officer of Health, City of Perth.

"Demolition Orders and Material Supplies" by Mr. R. J. Bond, Secretary, State Housing Commission.

During 1949, it was found unnecessary to call a meeting of the Food and Drug Standards Advisory Committee.

Details of work of Inspectorial staff are included in the Appendix XXVI.

Samples Submitted, 1949.

Chemical Analysis.	No. of Samples.	No. failing to comply with regulations.
Lemon Fruit Cordial	1	1
Grape Fruit Cordial	1	1
Jelly Crystals	2	....
Gelatine	4	....
Water	3	....
Fly Spray	1	....
Artificial Cream	2	....
Antiseptic	1	....
Aerated Water	1	....
Milk	24	2
	40	4
Water	2	...

Septic Tanks.

No. of Septic Tanks was 2,909 at £1, 101 at £2, a total of 3,010 and total revenue of £3,111.

Milk Sampling, 1949.

The number of samples taken was 24, of which two were under standard.

Food Sampling, 1949.

The number of samples taken was 19, of which two were under standard.

Prosecutions, 1949.

General.—Five prosecutions resulted in fines of £18 and costs £11 18s. 10d.

Venereal Disease.—Six prosecutions resulted in fines, £2, Costs £2 6s. and Bonds £105.

Imported Fish, 1949.

Total weight 1,078,686 lbs. Inspection Fees £321 0s. 9d.

MEDICAL LABORATORIES.

The work of the Medical Laboratories has been gravely impeded by the failure to fill the vacancies for two senior appointments, namely those of Medical Bacteriologist and Bio-chemist. The laboratory staff is responsible for the entire pathological work of the Royal Perth Hospital—a large general metropolitan hospital of 450 beds, as well as the bacteriological and serological work of this Department. With its present medical staff it is impossible to fulfil its functions to its own satisfaction or that of the hospital or the Department.

As a branch of medicine, pathology has long been a Cinderella in Australia. The position of the pathologist is widely recognised in Britain and other countries as being of a professional status of consultant rank. One need not be surprised, therefore, that advertisements offering the salary of a comparatively junior medical officer meet with no response.

I feel that I would be failing in my duty should I not call your attention to these grave deficiencies in our medical staff.

Nevertheless in spite of this depressing handicap, Dr. Young and his staff have rendered good service and are to be congratulated on their efforts under conditions which were, at times, of almost insuperable difficulty.

In his report, Dr. Young comments on the fact that in his efforts to cope with the routine work, no investigations of special problems has been possible. There is no lack of promising fields for research, but unfortunately the staff shortage will not permit of this vitally important function of the laboratory.

Attention should be drawn to the basic point emphasised by Dr. Young, that the combination of the hospital and departmental laboratory services in one laboratory is already showing signs of proving too large an organisation for the accommodation provided in the hospital. The need to build a separate Public Health Laboratory in the near future must be faced.

NOTES ON INFECTIOUS DISEASES.

Tuberculosis.

The report of Dr. Alan King, the Director, Tuberculosis Control Branch, is published in the Appendix II., as also is that of Dr. Elphick, Medical Superintendent, Wooroloo Sanatorium (Appendix III.).

The year has shown further progress in the field of Tuberculosis Control. Concentration on priority groups in the case-finding programme is obtaining good results. The death rate from Tuberculosis in this State has continued to decline and is now the lowest on record (23·5 per 100,000 population) (Appendix IV.). A noteworthy preventive measure introduced during the year was B.C.G. vaccination. This vaccine is prepared at the Commonwealth Serum Laboratories in Melbourne, and has been administered to susceptible persons in specially vulnerable groups such as hospital nurses, contacts of known cases, and so on.

The projected Mantoux and X-ray Survey in the North-West, with particular reference to the aboriginal population, has had to be postponed because of delay in securing the necessary equipment, but it is hoped to complete this survey during the course of 1950.

Scarlet Fever.

An explosive outbreak involving more than 60 cases occurred during the last two months of the year. Investigation of its origin by Dr. W. S. Davidson—*see* Appendix XXI.—suggested that the manner of infection was by consumption of unpasteurised milk probably infected by two milk handlers who were harbouring the causative organisms in their throats. Immediate treatment of these two men, the pasteurisation of the bulk milk involved, and the prophylactic treatment of exposed individuals, quickly brought the outbreak under control.

Murine Typhus.

Investigations relating to the causal agent, the animal reservoir, and insect vector of this disease, were continued during the year. Various difficulties have been encountered, and the work, to a certain extent, has been hampered by a decline in the incidence of the disease. Only 61 notifications were received during the year as compared with 141 in 1947, and 87 in 1948. It is possible that this progressive reduction is due to improved rat-control. *See* Report—Appendix I. of Dr. W. A. Young, Director of Medical Laboratories.

Leprosy.

During the year, 51 notifications were received (48 in 1948); three of these were in whites (all of whom were apparently infected outside this State—one in Queensland and two in India). The remaining cases occurred in natives and half castes and the vast majority were infected in the Kimberleys. (Appendix XVII. (c).)

The disease continues to present a major problem of native health in the Kimberleys. The appointment of an additional medical officer to Derby under the regional registration scheme should assist in controlling this disease. One of his main duties is the regular medical inspection of station natives.

The average annual number of admissions to the Derby Leprosarium is now approximately 40, and at the end of the year 268 patients remained under treatment and surveillance at that institution. (Appendix XVIII.)

Sulphetrone therapy has proved most encouraging. (Appendix XIX.)

Venereal Disease.

There was a decrease in the incidence of syphilis during 1949, but a slight increase in the number of new cases of gonorrhoea. Details are shown in the following table.

Maternal Mortality.

During the year the maternal mortality rate fell from 1·47 in 1948 to 1·18, the lowest ever recorded.

VENEREAL DISEASE—WESTERN—AUSTRALIA, 1948-1949.

Disease.	Male.		Female.		Total.	
	1948.	1949.	1948.	1949.	1948.	1949.
Syphilis—						
Primary	8	8	1	1	9	9
Secondary	8	3	10	....	18	3
Tertiary	22	8	10	9	32	17
Congenital	2	2	2	....	4	2
Total, Syphilis	40	21	23	10	63	31
Gonorrhoea	214	241	32	31	246	272
Chancroid	2	1	....	....	2	1
Granuloma	....	* 3	1	* 7	1	*10
Total	256	266	56	48	312	314

* Natives.

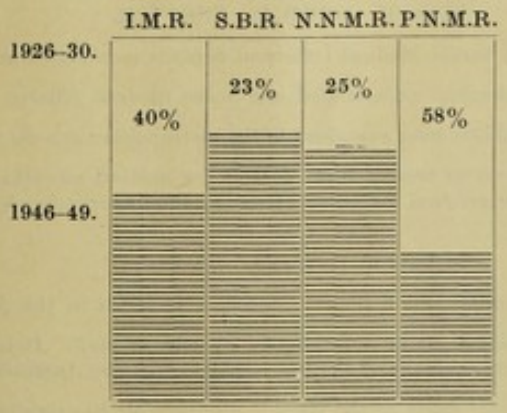
MATERNAL MORTALITY.

Year.	Live Births.	Deaths From:							
		Puerperal Septicaemia.		Abortion.		All other causes of the Puerperal State.		All causes of the Puerperal State.	
		No.	Rate.	No.	Rate.	No.	Rate.	No.	Rate.
1943	10,481	3	0.29	3	0.29	17	1.62	23	2.19
1944	10,870	4	0.37	5	0.46	18	1.66	27	2.48
1945	10,672	2	0.19	5	0.47	13	1.22	20	1.87
1946	12,105	3	0.25	5	0.41	18	1.49	26	2.15
1947	12,874	2	0.16	8	0.62	22	1.71	32	2.49
1948	12,981	6	0.46	1	0.08	12	0.93	19	1.47
1949	13,511	2	0.15	3	0.22	11	0.81	16	1.18

All rates per thousand line births.

INFANT MORTALITY.

In the 1948 Report, Dr. Cook drew attention to certain significant features of the fall in the Infant Mortality rate over the past 20 years and pointed out that while the death rate of infants between the ages of one month and one year (post-natal) had been halved, the decline in neo-natal mortality (deaths under one month) and the stillbirth rate had been much less—about one-fifth.



Percentage reduction in Infant Mortality Rate 1926-30 and 1946-49.

There is reason to believe that stillbirths and neo-natal deaths have closely allied, and in some instances, identical causes. One may infer that while improvements in medical treatment, hygiene and sanitation and the expanding Infant Health Clinics have materially reduced the death rate of infants over one month, the causes of stillbirths and deaths under one month are continuing and largely uncontrolled.

During the year post-mortem examinations of stillbirths occurring in the metropolitan area have been performed by Dr. Pearson. Information was obtained concerning the details of confinements from the respective doctors. A mass of information has been obtained and a preliminary analysis made by Dr. Snow in his report published in the Appendix VI.

Attention is drawn to his conclusions that infants are being lost through :—

1. Ante-natal causes, *e.g.*, toxaemia of pregnancy.
2. Obstetrical difficulties, *e.g.*, malpresentation.
3. Prematurity—which is often related to toxaemia.

This investigation should be carried on and further attention paid to toxaemia and difficulties in labour which may be anticipated and prevented by closer ante-natal supervision of the mother. It is in fields of preventive medicine such as these that a public health department can produce results of incalculable social benefit. Close co-operation is needed with the practising medical profession and the State Health Council is the medium through which this may be obtained.

EX-NUPTIAL BIRTHS.

One of 27 of all births was ex-nuptial—a rate per 1,000 live births of 36.6 compared to 37.9 in 1948. The infant mortality amongst ex-nuptial births was 15.8 per 1,000 (metropolitan 4.1, country 26.5).

DIETETIC STANDARD.

The diet of a people is governed not only by the natural availability of foods, but by the alteration produced in them by large-scale processing, and the food-habits of the population inculcated by subtle and unscrupulous advertising.

The high incidence of dental caries in our population is notorious. Almost all modern work points to the great influence of diet on dental health and to harmful effect of our over consumption of sugars and soft starches. The public needs education in this respect to counteract the increasing availability of articles of food of this nature, which are on sale in stores and shops and the sale of which is widely advertised.

The relationship of possible fluorine deficiencies in the State's water supplies to dental caries also needs further investigation and work on these lines should be developed.

During the year a special survey of school children in the South-West was carried out by the Commonwealth Department of Health at the request of the State Government, to determine if wide-spread anaemia in fact existed, as had formerly been reported. The result of this survey revealed that no such anaemia existed and that the blood haemoglobin levels came within the normal range.
Indebtedness to the Commonwealth Health Department for carrying out this work must be expressed.

INFANT HEALTH.

During the year new centres were commenced in the Kimberleys and Osborne Park. Two city centres were subdivided to make three, and, in addition, 25 new sub-centres were opened.

The total number of centres and sub-centres is now 251, comprising 42 centres and 209 sub-centres.

The volume of work has increased, there being 186,189 attendances at centres and visits by sisters to mothers in their homes compared with 184,209 in 1948.
The Report of Dr. Stang, the Medical Supervisor of Infant Health, is included in the Appendix VIII.

SCHOOL MEDICAL SERVICE.

The Report of Dr. Stang, Senior Medical Officer of Schools is included in Appendix X.

The service is still considerably understaffed and more medical officers are needed.

During the year 12,361 children were examined in the metropolitan schools and 10,451 in the country.

Of these 3,780 were referred to their private doctors for medical attention, 8,854 were referred for dental attention, and 5,561 were referred for home attention and observation by the parents.

SCHOOL DENTAL SERVICE.

The report by Dr. McKenna, Senior Dental Officer, is included in the Appendix XII.

The Service in 1949 continued to be handicapped by lack of staff. It is hoped that matters will improve during 1950, when new graduates from the University of Western Australia might become available.

With the additions that were made to the staff, it was possible to examine more children—4,131 as compared with 2,957 in 1948.

In addition a tour was undertaken towards the end of the year in the North-West, which part of the State is entirely lacking in the services of a resident dentist.

The teeth of the children of the State need more care, preventive and otherwise, than it is possible to obtain at the present.

NORTH-WEST SERVICE.

During the year the medical staff in the North-West continued at full strength and much valuable curative and preventive medicine work has been done. The reports of the various medical officers are contained in Appendices XIV, XV and XVI.

It is regrettable that it has not been possible to do much to remedy the grave sanitary and hygienic defects recorded by Dr. Cook in his Annual Reports for 1947 and 1948. A Departmental health inspector paid another visit during the year and some increase in consciousness of sanitary matters was noticed.

To all visitors to the North and North-West, the discrepancy existing between the local living conditions and those existing in other parts of the State is most marked. Notice should be drawn to the comments of Dr. Davidson in Appendix XIII.

The difficulties associated with remedying housing and living defects at the present time are appreciated. In the control of any circumstance harmful to the social structure the first step is to acknowledge that it exists. Complacency is the enemy of progress and one cannot but feel that more energy will be needed to render this strategically vital part of our State permanently habitable for the white population it so urgently needs.

Towards the end of the year the writer was appointed Commissioner. The difficulties of writing an Annual Report when one has not been responsible for the administration of the Department are obvious. It is proposed therefore to deal with each phase of its activities as reported by those responsible.

LINLEY HENZELL,
M.D. (London), B.Sc., D.P.H.
Commissioner of Public Health.

APPENDIX I

ANNUAL REPORT FOR 1949 BY THE DIRECTOR OF MEDICAL LABORATORIES TO THE COMMISSIONER OF PUBLIC HEALTH.

I have the honour to submit a report on the working of the Public Health Laboratories and some steps in the further development of a Laboratory service for Western Australia in 1949.

General Staffing.—Early in the year approval was given to the appointment of a medical bacteriologist and a medical biochemist, three technicians for the main laboratories at the Royal Perth Hospital and a technician at the King Edward Memorial Hospital Laboratory. Although the two former appointments were widely advertised, it was not possible to fill either of these appointments during the year.

Two science graduates, one with considerable experience in blood grouping and another with experience in clinical bacteriology, were added to the staff in March, and a third to the biochemistry Laboratory in April. A very experienced histology technician took over the histology Laboratory in October and a trained museum technician joined the staff in November. A technician was appointed to the King Edward Memorial Hospital Laboratory in January. It is regretted that he resigned in November as the result of ill health due to war-time injuries.

The general staff position has been relatively poor throughout the year in face of constantly increasing demands on laboratory services. The work in the histology laboratory, for instance, was largely maintained by a cadet trainee under the supervision of the pathologist for a period of seven months. Other laboratories were equally hard-pressed at times, particularly the haematology section, which on many occasions had to be run by a trained technician giving half of her time and a partly trained temporary laboratory assistant. At the end of the year the staff position was showing definite improvement, although the resignation of the technician at the King Edward Memorial Hospital Laboratory necessitated the withdrawal of one technician from the haematology section, which again required temporary help.

The Cadet Trainee Scheme.—One further trainee, a Reconstruction trainee, was enrolled early in the year. The three previously enrolled trainees, one laboratory assistant appointed before the scheme was instituted, and the new trainee all showed excellent progress during the year despite the difficulties of training. They worked in the various sections of the laboratory in rotation for approximately quarterly periods, obtaining a basic knowledge of the work in each section as a preparation for the more advanced training which will be given in their last two years of cadetship.

The Staffing of Sectional Laboratories.—Some progress has been made in developing a highly trained staff in each section of the laboratories, but the shortage of trained medical personnel has delayed many planned improvements in technique and limited the training of technical staff. The frequent movement of staff from one section to another to fill gaps to maintain routine work has further delayed the specialised development of each section.

The King Edward Memorial Hospital Laboratory.—This laboratory was opened as a section of the public health laboratories in January to function not only as a general clinical laboratory, but also as a specialised Rh. blood grouping laboratory, and a laboratory for the more detailed investigation of the diseases of child-bearing mothers and newly-born infants. The work, particularly in blood-grouping, showed fair progress during the year. Equipment was built up and other special equipment ordered. After the resignation of the first technician, a technician of some experience undergoing further training in haematology was put in temporary charge. In the absence of the honorary haematologist to the hospital, Dr. G. A. Kelsall, in the latter part of the year, Dr. J. Watson, late director of the Red Cross Blood Transfusion Service, undertook to supervise the special blood grouping work of the laboratory.

The post-mortem examinations on still-born children are being carried out by the Police Surgeon, Dr. A. T. Pearson, and the histo-pathological work from them by the pathologist, Public Health Laboratories.

The Medical Laboratory Service of Western Australia.—Serological investigations are carried out for all hospitals in the Perth-Fremantle area and elsewhere in W.A. The central laboratory, as in the past, performs a wide series of other examinations for all Western Australian hospitals and acts as a reference laboratory for the Princess Margaret Hospital for Children and the Sanatorium at Wooroloo. The Rh. blood grouping service for all parts of Western Australia has made a promising start. Trained personnel is not yet available to act as reliefs in other laboratories, but Fremantle Hospital laboratory was helped by the loan of a senior trainee cadet during one period of staff shortage. When trainees are more advanced in their training, it will be possible to loan them for short periods to other laboratories while their technicians are transferred to the central laboratory for short refresher courses. Some training in special techniques has already been given to technicians from other laboratories. The full development of this part of the scheme awaits the more complete training of our cadet trainees, who will when trained be available for staffing regional hospital laboratories, as well as those in the Perth-Fremantle area.

Further improvements have been made in the collection of specimens from hospitals and practitioners in distant centres by telegraphic communication, arrangements with air lines, etc. As the result of this a wider range of specimens reaches the central laboratory for examination from these distant centres. A moderate number of specimens are still received in poor condition. When this occurs practitioners are circularised with information regarding improved methods.

Standardised postal specimen-containers for all specimens have not yet been arranged owing to the present shortage of suitable containers.

Laboratory Accommodation.—By the taking over of a previously unused room in the Royal Perth Hospital as a laboratory-office for the director and some other re-arrangements of laboratories it has been possible to remove tuberculosis work from the main routine laboratory and institute a separate tuberculosis laboratory. Two small rooms adjacent to the biochemistry laboratories in the old buildings of the Royal Perth Hospital were taken over which allowed the provision of a separate balance and instrument room, a wash-up room and a waiting room for patients undergoing series of tests. Alterations to the office include the provision of a reception counter for specimens, a screen, and new stationery cupboards and a large filing system. Improvements for several laboratories were planned but not completed at the end of the year.

Animal House Accommodation.—No major improvements were made to the animal houses during the year apart from some cages of a new type. The supply of experimental animals throughout the year was spasmodic and during periods of scarcity urgent diagnostic work was delayed.

Laboratory Equipment.—Among major items of equipment arriving during the year were a large time-controlled centrifuge to take sixty-four specimens of blood for use in the serology laboratory, a micro-projector with photographic attachments for demonstration purposes and museum photo-micrography, and one monocular microscope for routine work. A series of stainless steel preserving tanks were supplied to the museum preparation room and the post mortem department. Various workshop equipment was provided for the museum preparation room and the supply of other items was awaited. A high power binocular microscope, and photo-electric equipment for haemoglobinometry were on order but had not arrived.

Routine Work.—The figures for routine examinations are to a limited extent only comparable with those for the latter half of 1948. The total figures show a relative increase over those for the latter half of 1948, but as the tendency is to relegate more simple examinations to stem laboratories and to increase the scope of the examinations in the main laboratories, the figures do not indicate the large increase of work passing through the laboratory.

ROUTINE EXAMINATIONS, 1949.

——	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals.
Pathology and Bacteriology	4,587	5,397	5,047	3,759	4,720	4,677	4,103	4,864	4,656	4,523	4,995	4,474	55,812
Biochemistry	562	588	631	563	607	731	682	787	694	746	774	644	8,009
Total	5,149	5,985	5,678	4,322	5,327	5,408	4,785	5,651	5,350	5,269	5,769	5,118	63,821

Two hundred and twenty-eight post mortem examinations were performed and 2,519 biopsies were examined by the Pathologist, Dr. T. R. Lubbe ; 19,636 blood counts and examinations were carried out in the haematology division ; 9.972 sera were examined for syphilis, gonorrhoea, typhoid, typhus, etc., in the serology division ; 3,068 throat swabs were examined for diphtheria, 2,226 smears for gonorrhea, 1,014 smears for leprosy ; 1,657 water examinations and 99 milk examinations were made in the Public Health bacteriology division. The 8,009 biochemical investigations covered a still wider field of estimation of the chemical constituents of serum, cerebro-spinal fluid, faeces, urine, gastric contents, etc. Medico-legal examinations covered the usual field of suspected cases of murder, rape and other offences. A hit-and-run motor accident provided an interesting identification of fibres from the clothing and hair from the head of the victim, which were found on the chassis of a car.

Tuberculosis.—The total number of specimens examined showed approximately a 95 per cent. increase over those examined in a comparable period of 1948. The total examinations numbered 4,132. With the limited staff of one technician with the part-time help of one cadet trainee the maintenance and improvement of routine procedures has more than occupied their time. An additional bacteriology technician has been appointed to commence work in the tuberculosis laboratory in January, 1950. The use of fluorescent microscopy is still delayed for further tests and the availability of better apparatus. The examination of gastric contents has again increased in proportion to the examination of sputum specimens. Of 525 gastric contents, 12 per cent. showed acid-fast bacilly direct examination, whereas 30 per cent. gave positive cultures, using Lowenstein-Jensen medium. By comparing culture and guinea-pig inoculation on 300 specimens, it was found that both culture and guinea-pig inoculation were needed, as, although both tests were frequently positive on a specimen, at least 30 per cent. of specimens gave a positive reaction by either culture or animal inoculation alone.

Haematology.—Carried out under constant conditions of strain due to understaffing and frequent changes, the 19,636 blood examinations show on analysis certain points of interest. Allowing for differences in readings of visual haemoglobinometers by several technicians due to variations in colour perception, 44 per cent. of patients examined showed haemoglobin levels within the normal range for men and women. There was a similar percentage of normal red cell counts. Normal leucocyte counts numbered 61 per cent. Only seven case of leukaemia and four of polycythaenia were examined. Out of 150 cases diagnosed clinically as pernicious anaemia, only 19 were in the active stage of the disease during the periods of monthly examinations carried out.

Blood grouping techniques have been improved particularly Rh. blood grouping, but the supply of Rh. grouping sera requires more intensive following-up of mothers with erythroblastotoc infants.

Bacteriology.—The prevalence of Ps. pyocyanea infections in urines and wounds was unusually high. An investigation was carried out in a ward in Royal Perth Hospital where cases had occurred and Ps. pyocyanea was found in air-borne dust and bedding fluff and all bacterial counts were alarmingly high. Ps. pyocyanea was also found in the ward nail-brushes and in a bowl of " disinfectant " the action of which was neutralised by the addition of soap. To exclude the possibility that Ps. pyocyanea was reaching the wards from sources outside the hospital, 50 cultures were taken of road dust and dust in the surrounding areas and on window sills and on verandahs on all sides of the hospital. No pathogenic organisms were found.

The bactericidal effect produced by ultra-violet light on air-borne organisms was investigated using a lamp available commercially. A " screened tube " gave a reduction of 62.5 per cent. of air-borne organisms under test conditions in a small room.

Formalin vapour was proved to be an efficient disinfectant for hairdressers' implements in closed glass cupboards.

Only one strain of dysentery organisms, S. dysenteriae flexneri, was isolated during the year. No strains of typhoid bacilli, S. typhi, were isolated. Streptococcus viridans produced four cases of sub-acute bacterial endocarditis. Meningococcal meningitis was not identified, and only two cases of pneumococcal and one of Haemophilus meningitis.

Cancer diagnosis.—The incidence of malignancy was 24.2 per cent. in 1,917 cases examined. Much valuable information is lost owing to the lack of detailed particulars relating to age, sex, summary of case history, etc., which should accompany all specimens. From the information available the usual preponderance of skin and lip cancer in the male and breast and uterine cancer in the female is noticeable. Although not perhaps statistically significant, the occurrence of eleven melanomata in females compared with four in males is suggestive. Malignant tumours were diagnosed in 248 males, and 196 in females.

The use of micro-projection has considerably improved the demonstration of histology sections to groups of clinicians and to the cancer clinic.

King Edward Memorial Hospital Laboratory.—Preliminary blood-grouping figures show 15.3 per cent. of Rh. positive bloods, 43 per cent. Group A, 10 per cent. Group B, 44 per cent. Group O and 3 per cent. Group AB in 1,770 bloods examined. The further refinements of blood grouping and geno-typing are being instituted, Coombs sera prepared and the Coombs test taken into routine use.

Research.—Many problems for investigation have presented themselves, but are all postponed until staff and equipment can deal more effectively with routine work.

Typhus.—The investigations relating to the causal agent, animal reservoir and insect vector were continued. The decreased incidence of typhus continued throughout the year. Despite arrangements made for the early reporting of cases, the number of early blood samples was regrettably small and no rickettsial infections were established in experimental animals. This failure was probably due to the late reporting of cases. Resistance of the local guinea-pig to the species of Rickettsia infecting man is another possible contributory factor.

The finding by Professor Burnet of complement-fixing anti-bodies to Rickettsial antigens in sera of human cases of typhus-like fever and of 25 to 50 per cent. of rats in the Perth-Fremantle area, indicates the rickettsial nature of local " typhus " and the frequency of infection in local rats.

Attempts were made to isolate Rickettsiae by inoculating dust from rat runs into guinea-pigs on the assumption that this dust would contain Rickettsiae in the faeces of the insect vector, presumably a rat flea. Fifteen specimens of dust were examined with negative results.

Mr. E. P. Hodgkin's investigations into the rat-flea incidence in the relatively small number of rats examined showed a low rat-flea index. Owing to the delays occurring between the capture of the rats and the counting of the fleas, he was not prepared to attach undue significance to the low rat-flea index as a cause of the low rates of typhus infection and the failure to isolate rickettsial strains from the dust of rat-runs.

Owing to the shortage of animals, a large scale investigation of rat spleens and brains was postponed. A survey of the antibody content of the sera of W.A. rats was planned, but had not been carried out at the end of the year.

The incidence of typhus in W.A. has progressively dropped from 1947 to 1949, with 141, 87 and 61 cases in these three years.

The Diagnosis of Early Cancer.—Still further collections of sputum and other wet-fixed smears have been made and studied with a view to further developments, and routine examinations of sputa for cancer cells was commenced as an auxiliary method in the diagnosis of cases of early bronchogenic carcinoma.

The Laboratory Advisory Committee.—Two meetings of this committee took place during the year to deal with routine problems. The need for resident pathological registrars to act as liaison officers between hospital staff and the laboratories and to undertake night and week-end laboratory work was stressed. No suitable residents were found to be available for these duties. Delays in the delivery of biopsy specimens and the inadequacy of information sent with specimens for examination was discussed. Although some members of the hospital staff use the laboratories for consultations over difficult cases there are still many who treat the laboratory as a reporting organisation only. This latter tendency is to be deprecated and is not acceptable to any large modern laboratory.

When it is possible to obtain the approved increase in medically qualified staff, it will be possible to maintain an adequate consultative clinical pathology service.

Pathological Museum.—With the advent of the first whole-time museum technician and the provision of some of the specialised equipment needed, plans have been prepared for the re-mounting of old museum material and the mounting of good new material, the preparation of descriptive notes, indexing, illustrating, photography, etc. Certain defects in the structure of the museum itself will need remedying before the re-planning of stands can be commenced. The development of a pathological museum for a future medical school is necessarily a slow and laborious procedure. As work develops additional technical help will be required to increase the speed of development and the part-time help of an artist will also be required. A demonstration of pathological exhibits and illustrated material of a pathological nature of public health interest was prepared by the Public Health Laboratories for the Road Board School. This was also visited by various health workers, medical personnel, school teachers, university students and elder school children. Although limited in scope, the interest aroused showed the need for a permanent public health museum, demonstrating all branches of public health work, which would be of value to all health workers as well as to the future medical school.

Contacts with other Laboratories in Australia.—No official visits were made by the Director or any other member of the staff to laboratories in other States owing to pressure of work, but previous contacts were maintained by correspondence. The co-operation of university departments and the Department of Agriculture was given freely on many problems.

The Future of the Public Health Laboratories in the Royal Perth Hospital.—The biochemical laboratories with the recent small additions are too small for the work required of them and the staff needed to carry it out. The opening of the new biochemical laboratories in the new wing when it is built will remedy this defect. The development of work in the sections of bacteriology, serology, pathology, and museum to keep pace with the requirements of hospital and public health services will produce serious congestion in the new main laboratories in three years' time or less. The building of new public health laboratories separate and distinct from the hospital laboratories will be needed to allow further development of both hospital and public health laboratory work.

Staff Changes.—The following appointments and resignations have occurred.

Appointments—

Mr. L. E. Lucas, Laboratory Technician, King Edward Memorial Hospital, 24th January, 1949.
Mr. R. O'Connor, Reconstruction Trainee, 7th February, 1949.
Miss D. Nicholas, B.Sc., Haematology Technician, 3rd March, 1949.
Miss H. Barr, B.Sc., Bacteriology Technician, 8th March, 1949.
Miss C. D. Goldie, B.Sc., Biochemistry Technician, 26th April, 1949.
Mr. J. Finlayson, Pathology Technician, 17th October, 1949.
Mr. K. Iles, Museum Technician, 8th November, 1949.
Miss N. Hardwick, Laboratory Assistant, (re-appointed) 8th November, 1949.
Mr. N. Mossenson, Temporary Clerk, 15th November, 1949.

Resignations—

Miss B. Hoare, 4th February, 1949.
Miss J. Blomfield, 4th February, 1949.
Miss N. Hardwick, 18th February, 1949.
Mr. J. S. Scott, 17th March, 1949.
Mr. L. E. Lucas, 4th November, 1949.

Acknowledgments.—I wish to express my appreciation of the co-operation and keenness of all members of the laboratory staff both permanent and temporary, which alone have made the present development of the laboratories possible.

I also wish to place on record my gratitude for the help and understanding of the Commissioners and the Deputy Commissioner of Health, the Under Secretary, Assistant Under Secretary and many members of the staff of the Public Health Department given to me in the many problems I have brought to them.

W. A. YOUNG,
B.Sc., M.B., B.S., D.T.M. & H., M.R.C.S., L.R.C.P.,
Director of Medical Laboratories,
Western Australia.

APPENDIX II

REPORT FROM THE DIRECTOR, TUBERCULOSIS CONTROL BRANCH TO THE COMMISSIONER OF PUBLIC HEALTH.

Having succeeded you, sir, on 1st February, 1950, as the Director of Tuberculosis Control, and at your request, I have the honour to submit a report on the activities of this Branch of the Public Health Department for the year ended 31st December, 1949.

I have, therefore, on this occasion submitted a report combining the usual report of the Director, with that of the Tuberculosis Physician.

It is apparent, sir, from the following details, that the Tuberculosis Control programme in this State is gathering momentum.

Perth Chest Clinic.

There has been a great increase in cases referred to the Clinic by medical practitioners, the number this year approaching 4,000.

This has shown again the necessity of X-ray examination of all patients with symptoms referable to their chest, as apart from other conditions, 2.7 per cent. were shown to be suffering from active pulmonary tuberculosis.

Out-patient clinics were held Monday, Wednesday and Friday mornings, and Artificial Pneumothorax clinics were held on Tuesday and Friday mornings, with supplementary clinics for ex-staff on Thursday mornings and for workers on Friday at 5.15 p.m.

Out-patient Clinic attendances	6,345
Average per Clinic	45
Total number of 17 in. x 14 in. films taken	8,400

Number of patients receiving Pneumothorax—

	Male.	Female.	Total.
Unilateral	8	42	50
Bilateral	1	8	9
Total number of X-ray screenings			2,016
Total number of refills			1,774

Number of cases referred by General Practitioners—

1st January–31st December	3,947
1. Normal X-rays	3,240
2. Total number of abnormalities of all sorts diagnosed	735
3. Patients with pulmonary tuberculosis admitted to Hospital (Royal Perth Hospital, Wooroloo, Hollywood and Edward Millen Home) and in which diagnosis confirmed	74
4. Patients in which pulmonary tuberculosis diagnosis confirmed, and observed as out-patients	24
5. Suspect cases undergoing further observation	140

6. *Other conditions diagnosed by association of X-ray and clinical findings—*

Chronic Bronchitis and Emphysema	56
Pneumonitis (non-tuberculosis)	86
Cardiac abnormalities (including Cardio Vascular abnormaliteis)	75
Bronchiectasis	43
Silicosis	28
Pneumonic process (non-tuberculous)	18
Pulmonary fibrosis of unknown etiology	9
Spontaneous Pneumothorax	13
Marked bony abnormalities	44
Pleural Effusion	7
Pleural shadowing (sequelae of Pleurisy)	70
Calcification of Pleura (sequela of Pleurisy)	2

Carcinoma of Lung (including secondary carcinoma)	8
Other Pulmonary Tumors	6
Bronchial asthma	1
Lung Abscess	1
Cystic disease of lung	7
Aneurysm of Aorta	5
Old Empyema	9
Substernal Thyroid	2
Sarcoidosis (confirmed by Biopsy)	1
Mega Oesophagus	1
Phrenic Paralysis (unexplained)	1
Hodgkin's disease	1

Old Non-Tuberculosis patients who continue to attend Clinic—

Non-tuberculosis cases are referred to the Royal Perth Hospital, but some continue to attend.

Silicosis	32
Bronchiectasis	5
Chronic Bronchitis and Emphysema	11
Old Empyema	7
Bronchial Asthma	11

Mass Radiography (35 *millimetre*).

Perth Chest Clinic Unit		15,676
Number of 17in x 14 in. re-takes		606
Mobile Unit		10,005
Number of 17in. x 14in. re-takes		479

The following Special Surveys are included in the total of films taken by the Mobile Unit :—

Migrants		5,191
Midland Workshops		2,175
Fremantle Survey, volunteers and contacts		2,507
Claremont Mental Hospital (supplementary survey)		132
Result of Surveys—		
Total number abnormal		367
Number of cases of Pulmonary Tuberculosis discovered		68
Admitted to Hospital	39	
Under Out-Patient observation	29	
		68
Suspect cases under observation		46
Other conditions diagnosed by X-ray appearances and clinical findings—		
Silicosis		15
Chronic Bronchitis and Emphysema		17
Cardiac abnormalities		42
Bronchiectasis		11
Pleural Shadowing		40
Bony abnormalities (marked)		12
Pulmonary Fibrosis of unknown etiology		5
Old Empyema		8
Cystic Lung		4
Lung Abcess		3
Carcinoma and other Tumours of Lung		5
Substernal Thyroid		1
Pleural Effusion		5
Pleural shadowing and Calcification of Pleura		6
Pneumonitis (non-tuberculous)		26
Spontaneous Pneumothorax		4
Diaphragmatic Hernia		2
Pneumonic Process		2
Fibrosis from Pulmonary Embolus		1
Carcinoma of Thyroid		1
Carcinoma of Breast		1
Sacoidosis (confirmed by Biopsy)		1

The percentage diagnosis of active pulmonary tuberculosis has been found to be 0·19, or roughly two per thousand in our native population, whereas the incidence in the migrants (displaced personnel) has been 0.54, or over five per thousand.

ROYAL PERTH HOSPITAL.

Dr. Roland Anderson, the Medical Superintendent, has continued to personally supervise the mass radiography of Hospital in-patients and out-patients.

A six monthly check from 1st July to 31st December showed that 40 active cases of otherwise unsuspected Pulmonary Tuberculosis were discovered amongst in-patients (10 per 1,000 patients X-rayed) and 30 cases amongst out-patients (7 per 1,000 patients X-rayed).

Acknowledgment is here made of Dr. Anderson's remarkable contribution to case finding, as yet still unique in Australian public hospitals.

Apart from patients admitted direct to hospital after detection, 193 patients were referred during the year to the Perth Chest Clinic for further investigation.

The results of this group showed ;—

Number of cases of active Pulmonary Tuberculosis	30
Admitted to Hospital	19
Under out-patient observation	11
Suspect cases undergoing further observation	12
Silicosis	4

FREMANTLE CLINIC.

This clinic has been continued once a week on a Thursday afternoon

Total attendances during the year	1,112
Average attendance per clinic	21
Attendances of known cases of Pulmonary Tuberculosis	424
Contact X-rays—	
35 mm. (Caravan visit)	150
17 in. x 14 in.	176
Cases referred by general practitioners	114
New cases of Pulmonary Tuberculosis referred and diagnosed through clinic	24
Artificial Pneumothorax clinic—	
Patients attending	14
Average No. per clinic	4

HOLLYWOOD—REPATRIATION GENERAL HOSPITAL.

Visits were made twice weekly on Tuesday morning and Friday afternoon, mainly for consultations.

Dr. W. P. Harris has been appointed Physician in Charge of the Chest Wing and In-and Out-patient Departments are functioning very effectively. The Repatriation Department is to be congratulated on its tuberculosis control measures for ex-servicemen.

The availability of eight beds for female civilians, as during the previous year, has appreciably helped to ease the strain in the provision of such accommodation.

PRINCESS MARGARET HOSPITAL.

The Clinic was continued on a Friday morning.

It is attended by one of the visiting nurses and acts in co-operation with the Chest Clinic, by the examination of children who are contacts and those attending the Hospital who have a positive Mantoux reaction.

Although Pulmonary Tuberculosis in children is comparatively rare, there are usually five or six cases in Hospital who are also seen in consultation with Dr. Edmonds the Superintendent, and the honorary staff.

COUNTRY CLINICS.

The nucleus of a system of Chest Clinics exists in the larger country centres : Kalgoorlie, Dr. Webster ; Bunbury, Drs. Lawson-Smith and Foster ; Northam, Drs. Chester, Hodby and Robinson ; Collie, Drs. McPherson and Walsh ; Geraldton, Dr. Beaumont ; and acknowledgment is due to these practitioners for their work in collaboration with the Branch.

In addition, and increasing number of X-ray films are being referred from these and numerous other country towns, the cases found showing the necessity of further broadening of activities beyond the Metropolitan Area.

KALGOORLIE CLINIC.

Dr. Webster reports as follows :—

Total new patients attending Clinic—

Contacts	61
Suspects examined	144
New cases (notified)	14
Total	189
Artificial Pneumothorax refills	197
17in. x 14 in. X-ray films	190
Total attendances at Clinic	680

BUNBURY CLINIC

Dr. D. C. Foster reports :—

Total new patients attending Clinic—

Contacts	25
New patients examined	413
New cases (notified)	6
Artificial Pneumothorax refills	85
Total number of screenings	509
Total number of attendances	554

NORTHAM

Monthly visits were continued to the Hospital, where patients and X-ray films were examined in consultation with Drs. Chester, Hodby and Robinson.

A total of 758 chest X-rays were taken.

CASE FINDING.

It can be seen that efforts at case finding have been directed mainly at those groups from which there is a higher return of active cases of Pulmonary Tuberculosis.

The number of cases notified during the year (excluding 86 notified from Claremont Mental Hospital) is the highest number recorded for twenty years.

This must be regarded as the result of the increased effort in the detection of cases, and is, of course, no indication of any increase in disease.

It is hoped that the contined discovery of cases at an earlier stage, as the result of the case finding programme, may allow of even further improvement in the mortality rate.

STATISTICS.

The appointment of a Records Clerk in July has enabled the commencement of the establishment of a case register.

This, as anticipated, has been found to be a major task and it may be that further augmentation of staff is required for the dual purpose of records and statistics.
A good beginning, however, has now been made.

NOTIFICATIONS AND DEATHS.

Year.	Notifications.			Deaths.	Death Rate. per 100,000.	Ratio of Notifications to Deaths.
	P. Pulmonary.	Non-Pulmonary.	Total.			
1945	271	14	285	163	33.2	1.7
1946	343	69	412	170	34.6	2.4
1947	352	40	392	141	28.2	2.8
1948	325	20	353	161	31.3	2.2
1949	*499	20	519	127	23.5	4.86

* Includes 86 notified from Claremont Mental Hospital as a result of special survey of inmates.

DEATHS.

The death rate has been steadily falling since 1920 and this year the figure is down to 23.5 per 100,000 of the population.

This a record low by any world standard, and may be regarded as a very satisfactory and a most encouraging figure.

Despite the increase in population, the actual number of deaths due to tuberculosis is the smallest number recorded since 1900.

EPIDEMIOLOGICAL SURVEY.

During the year a Mantoux Survey was carried out by the Assistant Tuberculosis Physician, Dr. Heymanson, and visiting nurses with the object of obtaining representative baseline figures for future comparative purposes.

Some 3,175 subjects between the ages of six and forty years were tested, comprising groups from Aquinas College, Wesley College, Perth Boys' High School, Perth Girls' High School, Girdlestone High School, Kensington State School, Nedlands State School, Carlisle State School and Midland Junction Workshops.

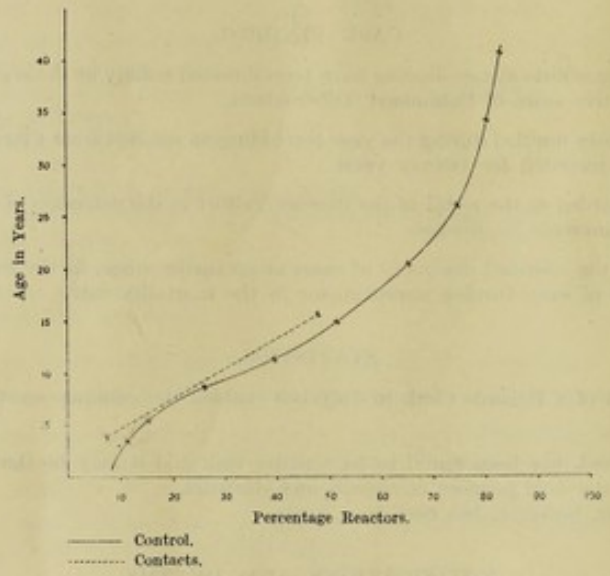
The percentage in the age group, 6–10 years is considered rather high. It is expected with the improvement in the metropolitan milk supply, due to Tuberculin testing of herds and compulsory pasteurisation, that the figure should drop appreciably in future years.

In addition, 650 Mantoux tests were carried out in children and adolescent contacts of known cases of pulmonary tuberculosis.

As expected, the percentage of positive reactors in this group proved higher than in the control group ; but this was not marked.

The survey is not considered broad enough to have any more than local value, but is reported for interest.

The following graph shows the results obtained :—



B.C.G. VACCINATION.

A notable step forward in tuberculosis prevention measures in this State has been the use from June in this year of B.C.G. vaccine, prepared by the Commonwealth Serum Laboratories B.C.G. Unit in Melbourne, controlled by Dr. Edgar North.

The vaccine has been administered to the negative Mantoux reactors of potentially vulnerable groups, contacts of known cases, hospital nurses, and a small number of the general population up to the age of forty years.

A hundred per cent. Mantoux conversion resulted ; five cases of axillary adenitis, a mild complication resulted, in which, however, the end result was completely satisfactory.

As yet, due to the specialised technique, the vaccine is only available to approved vaccinators.

A total of 1,232 vaccinations were performed, mainly on nurses of the Royal Perth Hospital, Fremantle Hospital, Princess Margaret Hospital, St. John of God Hospital, Mount Hospital and Government Hospital trainees.

MEDICAL STAFF.

As during the latter half of 1948, the Branch functioned with a medical staff of three : Director, Tuberculosis Physician and Assistant Tuberculosis Physician.

It is hoped that the addition of a Senior Medical Officer may enable the Chest Clinic to carry on as at present, while allowing of the necessary field-work that will be associated with projected activities.

Dr. Peter Gibson continued his work in supervising the post-operative care of our cases in the Royal Perth Hospital, and in effecting liaison between the Hospital, the Sanatorium and the Chest Clinic.

VISITING NURSES.

The staff of seven visiting nurses is kept fully occupied with the work of the out-patient Clinics, Mantoux testing, visiting of patients in their homes, liaison with the Sanatorium, arranging contact X-rays, etc.

Sister Railton, who has been in charge since 1942, was promoted to Head Office in August, and her position has been filled by Sister Cockerell.

We wish Sister Railton, who has performed outstanding work as a visiting nurse, every success in her new position.

Sister Cockerell reports—

There are 835 notified cases of Pulmonary Tuberculosis visited in the Metropolitan area.

Patients with positive sputum	181
Patients on complete rest in bed	48
Total number of visits to patients	4,932

All patients are now graded by medical officers in relation to frequency of visits, to obviate any wastage of effort.

REHABILITATION.

Close liaison has been kept with the Commonwealth Department of Post-War Reconstruction (now a division of the Social Services Department), and rehabilitation courses have been arranged on discharge from the Sanatorium for some twenty of the more " stable " cases.

As mentioned in Dr. Elphick's report, amalgamation between the Tuberculosis Association and the Wooroloo Colony is proceeding and this, it is hoped, will have a far-reaching effect on rehabilitation of ex-tuberculosis patients, as the Association has designated this as their main activity.

CHEST HOSPITAL.

The need for our new Chest Hospital is just as apparent, and a positive approach to this problem will soon have to be made.

The unsatisfactory by-product of successful case finding has been the difficulty in finding beds. The ever-present female waiting list for admission is a constant worry to medical officers. It is also a reproach to our community that beds are often just not available for seriously ill sufferers.

As the Superintendent of Wooroloo Sanatorium points out in his report, the position necessitates the discharge of patients after a shorter period of hospitalisation than necessary ; and often when the patients are still infectious.

This cannot be considered satisfactory as, in spite of the home supervision by visiting nurses and instruction to these patients in hygiene and sputum control ; isolation in the home cannot be regarded as effective.

SURVEY OF ABORIGINES.

It has not yet been found possible to carry out the envisaged Mantoux testing and X-ray survey of the aboriginals in the north of the State ; due to delay in the provision of the necessary X-ray equipment, but it is hoped to complete arrangements for this undertaking in the near future.

MISCELLANEOUS.

Following the survey of the Claremont Mental Hospital in 1948, a paper was prepared together with Dr. Frank Prendergast, the Medical Superintendent of Claremont. This was published in the Medical Journal of Australia in January of this year.

TREATMENT.

Apart from the weekly conferences at Wooroloo, attended by Clinic and Sanatorium staff ; the Chest Team met usually at monthly intervals at the Chest Clinic.

Details of treatment are given by Dr. Elphick in his report, but if one can attempt to analyse the trend of treatment during the year, it is this :—

Conservative treatment or prolonged bed rest still continues to play a major part in treatment.

The results of collapse therapy, particularly in combination with Streptomycin therapy, are proving very successful, and enable a quicker discharge of patients from hospital.

There has been a slight swing away from Artificial Pneumothorax treatment to the permanent type of collapse. This appears to be the result of the success of the modified type of Thoracoplasty, or apicolysis with Lucite plombage, which may often be completed in one stage, as opposed to the older classical Thoracoplasty which generally required two or three operations.

Resection therapy is definitely required for certain patients and is a life saver where previously there was no hope.

Progress in surgical treatment is entirely due to the skilled teamwork of Mr. F. J. Clark as Surgeon and Dr. G. R. Troup as anaesthetist ; and the Department is fortunate in being able to obtain their services on a part-time basis.

SUMMARY.

The year has shown further progress in the programme of Tuberculosis Control.

The case finding programme is obtaining results due to concentration of effort on priorty groups.

It is pleasing to record the commencement of the use of the preventative B.C.G. vaccine in this State.

It is considered results of treatment, due to newer methods and drugs, especially Streptomycin, are very encouraging.

The year has shown continuation of the decline of the death rate due to Tuberculosis ; the figure now being the lowest on record in this State.

ACKNOWLEDGMENT.

I would like to express my indebtedness to you, sir, for your ever-ready advice and, together with you, our appreciation to the Staff of the Branch and the Sanatorium for their hard work and co-operation ; to the Honorary and Medical Staffs of the Royal Perth, Fremantle and Princess Margaret Hospitals for their valued co-operation ; to the various members of the Chest Team, who regularly attend meetings at the expense of their week-end leisure ; and to the metropolitan and country practitioners who are assisting in the detection and treatment of cases.

ALAN KING, M.B., B.S., B.Sc.,
Director Tuberculosis Control Branch

APPENDIX III

ANNUAL REPORT FOR WOOROLOO SANATORIUM, 1949.

The Director of Tuberculosis, Perth Chest Clinic,
17 Murray Street, Perth.

I have the honour to present the annual report for Wooroloo Sanatorium for the year 1949.

Accommodation.

Patients.

The painting of the wards was completed during 1949, and the result is most satisfactory. By contrast the remainder of the institution appears strikingly dilapidated and it is hoped that early steps will be taken to complete the renovation of the chapel and women patients' sitting-room, the administrative and kitchen blocks and the covered ways.

To date work has not commenced on the transfer of the Red Cross building from Northam to Wooroloo, but it is understood that the contractors intend making a start on it early in 1950.

The necessity for covering the wards with fly-wire has been accentuated during the past four months by a particularly profuse plague, firstly of blowflies, and later of house and bush flies.

Staff.

Work was commenced during the year, and is progressing favourably, on the erection of two Medical Officers' houses, six cottages for other staff, and quarters for sick staff. In spite of this additional accommodation however, the problem of accommodation for staff is extremely acute and it has been found necessary during this year constantly to house a number of male staff on the verandah of one block of quarters and in the old schoolroom which has been converted into a dormitory. It is hoped shortly, to convert this dormitory into cubicles, but the only apparent solution to the problem would appear to be the erection of further staff quarters. Further reference to this is made in the appendix. In addition to the necessity for new buildings, general maintenance and renovations are urgently required on the Medical Officers' and Secretary's houses, in which the woodwork particularly has become badly dilapidated.

Staff.

Resident Medical.

Dr. Greer resigned in February, 1949, after four years of valuable service, and I take this opportunity of expressing appreciation of his co-operation and assistance since my appointment as Superintendent. Drs. Letham and Fisher have continued throughout the year to render valuable service, Dr. Letham in his capacity as Pathologist and also assisting in the X-ray department, and Dr. Fisher being responsible for a considerable amount of general clinical work, particularly during periods of staff shortage, and also conducting a mantoux survey of patients and staff. Dr. Edwards joined the staff in October and has proved a willing and co-operative colleague.

Until an extreme staff shortage prohibited it, Resident Medical Officers from Royal Perth Hospital have spent periods of a month in residence at the Sanatorium and have assisted generally with clinical work. Their interest has been keen and their help appreciated. It is felt that this practice is desirable, not only as regards the immediate service they render, but also from the point of view of their experience in the diagnosis and treatment of tuberculosis, as a result of which they will continue to render valuable service to the tuberculosis service on entering into practice at the conclusion of their residence.

Consultant.—During the year the institution, and particularly the Medical Officers, have derived further benefit from the friendly and sympathetic guidance and ready advice of the Director of Tuberculosis ; and the Tuberculosis Physician, whose weekly visits to the Sanatorium as a consultant have continued to act as a stimulus to the resident staff.

It was a source of considerable pleasure to all members of the staff to learn of the honour bestowed upon the Director of Tuberculosis by the Government in asking him to accept the position of Commissioner of Public Health, gratifying particularly as it will serve to retain his services in this State, although his loss to the tuberculosis service of Australia is a severe one. I take this opportunity of expressing sincere appreciation of his invariable sympathy and encouragement in all problems associated with the Sanatorium and wishing him success and happiness during his term of office as Commissioner. It is felt that his loss as Director has been alleviated in no small measure by the appointment of Dr. Alan King to the directorship, and I offer him congratulations on his appointment and assure him of the full co-operation of the resident staff of the Sanatorium.

The monthly meetings at the Perth Chest Clinic have been attended regularly by the full medical staff and have been a source of benefit and interest to all. All possible candidates for surgical treatment have been considered, and the general policy regarding surgical management of cases has been discussed.

We are grateful to Drs. F. J. Clark, G. R. Troup, I. O. Thorburn, C. Fortune, E. R. Beech, A. A. Merritt, the staff of the Chest Clinic and the Resident Staff of the Chest Wing of the Repatriation General Hospital, to whose regular attendance at these meetings their value has been due.

Throughout the year Professor Young, the Director of Medical Laboratories, has on many occasions assisted us in various problems associated with pathology and bacteriology, and his technical staff has supplied us with regular supplies of various culture media required. Valuable advice was given to our technician in the preparation of Lowenstein's medium for the culture of tubercle bacilli, as a result of which this medium is now prepared at the Sanatorium.

Nursing.—The nursing staff under the leadership of Matron Lochhead has maintained a high degree of efficiency, and I am grateful to Matron and the Sisters for their constant co-operation and assistance. The problem of staff shortages has been less acute, being largely replaced by lack of accommodation for the staff available.

Administrative.—The Secretary, Mr. C. J. G. Stansfield, has continued to render valuable service, and under him the administrative staff have worked efficiently.

Occupational Therapy.—Miss Margaret Mort completed a most valuable term of office in February and resigned then to continue her studies overseas. Miss Mort's work was greatly appreciated by patients and staff, and it is to be hoped that following her period of post-graduate study she will return to Wooroloo Sanatorium, which will undoubtedly benefit from her increased experience. Miss Mort's place was taken by Miss Margaret Myer who, throughout the year, has continued the work commenced by Miss Mort and rendered conscientious service in all aspects of her work.

Miss Joyce Chapple completed her period of service as Red Cross handcraft worker in March, and was replaced by Miss E. Burgess. Miss Burgess, throughout the year, has assisted patients with handcrafts and in this way contributed largely to the diversional therapy of the institution.

Engine Room.—Mr. Stackhouse resigned from the position of Engineer and was replaced in May by Mr. H. Leys who, since his appointment, has proved a most efficient and co-operative member of the staff. I am grateful to him for his ready advice and assistance on many occasions.

Treatment.

Admissions	220
Discharges	142
Deaths	39

A particular feature of the admissions was the number of migrants and shipping cases referred. Of 220 admissions 22 had arrived in Australia within six months of their admission, and in addition five cases were admitted direct from ships in port. A review of the 414 patients receiving treatment at the Sanatorium during 1949 reveals that apart from shipping cases 22 have been in Australia for under one year and a further 14 for less than two years.

Of the discharges enumerated, a small percentage absconded. These were mainly of the unscrupulous recalcitrant type, with no regard for public health principles, but no effort has been made to return them to the institution because of the difficulties associated with retaining them. The need for the refractory ward is still pressing, as in its absence such patients will continue to disseminate their infection throughout the general population.

During the year active treatment was utilised in a large number of cases, each case having been considered by the full Sanatorium staff together with Dr. King or, in the majority of cases, by the full Thoracic Consultant Team.

Details of the treatment are as follows :—

Artificial Pneumothorax.	Males.	Females.	
Inductions or attempted inductions	7	14	
Satisfactory pneumothorax (Obtained with or without pneumolysis)	4	10	
Failed induction or inoperable adhesions	3	4	
Complications	Nil	Nil	
Thoracoscopies			21
Complete pneumolysis			13
Pleural aspirations			119
Refills			1,416

Major Collapse Procedures (Performed at R. P. H. on Sanatorium patients)

Thoracoplasties	22
Apicolyses with leucite plombage	4
Apicolyses with resection of ribs and plombage	13
Monaldi drainage of cavity, followed by plombage	1

Resections (Performed at Royal Perth Hospital)

Pneumonectomies	4
Lobectomies (upper)	2
Lobectomies (lower)	1

Phrenic Operations.

Phrenic crushes	2
Evulsion	1
Pneumoperitoneum inductions	3

Of these, one is still in progress, one was abandoned forthwith because of pneumatocele, and one after four months following an air embolus.

Bronchoscopies	19
Thoracotomy and drainage of empyema	2
Miscellaneous operations (non-tuberculous) on Sanatorium patients	20

Streptomycin.

Streptomycin has been used extensively throughout the year whenever indications have justified it, and has proved of extreme value in the control of recent exudative disease, laryngeal and tracheo-bronchial disease and also as an adjunct to resections and collapse procedures in selected cases.

Details of streptomycin therapy are as follows :—

Indication.	No of Cases.	Beneficial Effect.	Relapse.	No Effect.	Worse.
Recent or apparently recent widespread dissemination, with or without older disease	27	19	4	....	4
Tonsillar and/or laryngeal disease (irrespective of pulmonary disease)	12	3	7	2	....
Tracheo-bronchial or bronchial tuberculosis	4	2	1	1	....
Intestinal disease	3	2	1	....	....
Cutaneous Sinuses *e.g.* scrotal (irrespective of pulmonary disease)	5	4	....	1	....
T.B. Mastoiditis	1	1	....	....	....
As covered during thoracoplasty, in presence of contra-lateral disease, bronchial disease or other complications	19	18	....	*1	....
Associated with resection, for extensive disease	6	6	....	....	....
Associated with A.P. for suspected bronchial disease and tension type cavity	2	2	....	....	....

*This patient had had a previous course of streptomycin, preparatory to attempted resection, and subsequent investigation revealed a streptomycin resistant strain of organisms.

Para-amino Salicylic Acid.

Para-amino salicylic acid was used in three cases and has given an indication that in selected cases it is of definite benefit.

X-Ray.

Following Dr. Greer's resignation Dr. Letham has undertaken the responsibility of the X-ray department, and during the latter half of the year the major part of the radiography has been done by Miss C. Visscher, under the guidance of Dr. Letham and Mr. Park, the senior technician of the Chest Clinic.

Screenings	2,757
X-rays	2,189

Laboratory.

Miss E. Bothwell, as senior technician, has continued to work conscientiously, and has been assisted part-time by Miss C. Visscher. In September, an oven was installed and since October Lowenstein's Medium

has been prepared at the Sanatorium for the culture of tubercle bacilli, with most satisfactory results. In addition, Dr. Letham has commenced work on the preparation of media for testing streptomycin sensitivity, and equipment has been obtained for the preparation of microscopic sections. It is hoped that this work will be commenced in the near future.

Details of the laboratory examinations during 1949 are as follow :—

Sputum examinations (direct smear for T.B.)	837	(68% positive)
Sputum examinations (concentration)	175	(30% positive)
Sputum examinations (culture)	1,468	(17% positive)
Gastric contents (culture)	184	(6% positive)
Pleural fluid examinations (concentration and smear)	116	(38% positive)
Pleural fluids (culture)	65	(31% positive)
Guinea pigs inoculated for T.B. (sputum or gastric contents)	59	(30% positive)
Urine examinations	152	
Urine Cultures for T.B.	12	(17% positive)
Faeces examinations	31	
General bacteriological investigations	24	
Smears and Scrapings examined for lepra bacilli	9	
Blood Counts	106	
Sedimentation Rates	19	
Sundries	12	
Total laboratory investigations	3,392	

Leprosarium.

Two new patients were admitted to the Leprosarium during 1949, making a total of three patients in residence. Mr. G. Fraser ceased duty in July and wus replaced by Mr. and Mrs. Vukosavljevic who, since their appointment, have worked consistently well in the care of the patients and the maintenance of the garden and grounds at the Leprosarium. All three patients have received treatment with sulphetrone, the results of which are extremely promising.

The buildings at the Leprosarium are in urgent need of renovation and internal decoration, and arrangements are being made to commence this work as soon as possible.

The question of financial assistance for leprosy patients is being considered, and it is hoped that satisfactory conditions may be provided in this regard.

Engineering.

Under Mr. H. Leys, the engine room staff have worked conscientiously and have at all times been most co-operative and helpful. During the year the electric wiring throughout the wards was renewed and a new generating machine has arrived for installation in the near future. This will permit the installation of a number of essential electrical appliances, impossible previously because of lack of requisite power.

The seven inch main installed by the Goldfields Water Supply Department from the main Kalgoorlie line to the Sanatorium reservoir tank gave promise of improving the water supply generally throughout the institution. Corrosion of branch lines, however, has to date obviated any great improvement, and it is hoped that steps will shortly be taken to improve these branch lines and to renew any pipes beyond repair.

A new calorifier was installed, and the hot water system to the male nurses' quarters and the top block of quarters renewed with satisfactory results, and hot water systems were installed in the Secretarys' and Dr. Letham's houses.

A completely new telephone system was installed during the year by the P.M.G. Department, with two trunk lines to Perth, and the effect has been a most gratifying improvement on the old system.

The bell systems in the wards were extended to include all the female wards, and the two wards on either side of the duty rooms on the male side of the hospital. Thus all beds occupied by patients on complete bed rest are now in direct communication with the duty rooms.

Ground Staff.

Under the head groundsman, Mr. E. Dowell, the ground staff have worked consistently well, and the programme of improvement to the grounds has continued, with the planting of further extensive lawns between blocks 1B and 2B. Some difficulty has been experienced with water restrictions, but in spite of this the grounds generally continue to improve in appearance.

A pleasing addition to the improvements during the year was the clearing and levelling of an area below the men's wards to make an oval. Cricket matches played on this oval between the Sanatorium club and visiting teams have contributed substantially to the interest and entertainment of patients, and it is anticipated that during the winter months basketball and possibly hockey matches may be arranged. The cost of clearing and levelling the ground, for which a bulldozer was required, was borne by the Gooch

Bequest, but a large part of the finer levelling and the laying of the pitch were the responsibility of the ground staff, to whose efforts the credit for the final preparation of the oval is due.

Rehabilitation.

Occupational Therapy.

Miss Meyer, as Occupational Therapist, has supervised all aspects of occupational therapy in the wards. She has been concerned particularly with post-operative cases, providing diversional therapy designed specifically to promote adequate shoulder and arm movements, and has also managed the " Sheltered Workshop " in which a number of patients have been employed throughout the year.

Mr. W. J. Skipworth, as Education and Rehabilitation Officer, has arranged for, and supervised, vocational training for suitable patients. His activity has contributed largely to the improved morale of the younger patients particularly, who commence training as soon as they are fit, and may look forward to suitable occupations on discharge. In all, thirty-one courses were arranged during the year, including commercial training, designing, radio mechanics and telegraphy, woodwork, and electrical engineering. In addition, Mr. Skipworth has assisted patients with problems associated with their financial benefits, and acted as English tutor to many New Australians, both patients and staff, as an instructor in English and arithmetic to members of the nursing staff sitting for their preliminary education examination prior to the commencement of their training.

A valuable addition to the occupational therapy staff was obtained with the appointment of Mr. Guy Grey-Smith as part-time Art Therapist. Since his appointment Mr. Grey-Smith has stimulated considerable interest among the patients in this form of therapy, and many patients have shown considerable talent. A small exhibition, held in the Recreation Hall on 11th December, demonstrated the quality and nature of the work produced by Mr. Grey-Smith. Lithographs which have been received from England are now being framed, and it is hoped to have one or more hung in each ward for the benefit and interest of patients.

Colony.

The various departments of the Colony have continued to function satisfactorily, and a number of patients have been employed in the tin-smithy, garden and orchard. It is regretted that the manager of the tin-smithy has had to cease work temporarily on account of ill health. The work associated with the maintenance of the orchard is considered too strenuous for ex-patients generally, and it has been decided to dispose of a portion of the orchard property, retaining two of the cottages situated on it, and to employ the manager of the orchard in other work.

Social Welfare.

During the year the social welfare of the patients has been the responsibility of the Medical Officers, the Sisters of the Chest Clinic and the Rehabilitation Officer, who has attended to a large extent to the problems associated with financial benefits. The Sisters of the Chest Clinic have visited the Sanatorium at regular intervals and acted as liason officers between the patients, their homes, the Chest Clinic and various Social Service Departments and industrial organisations in the city. The need for a full-time Social Worker for Sanatorium patients, however, becomes increasingly obvious, and it is felt that with 250 patients such a worker would be fully occupied.

Entertainment.

During the year a series of lectures and recitals of " Everyman's Music " were arranged through the courtesy of the Adult Education Board, and again proved extremely entertaining and instructive. In addition, a number of concert parties and theatrical parties contributed to the entertainment of patients and staff, a most popular concert being arranged on Christmas Eve by the staff of the Sanatorium. In addition, patients have enjoyed picture shows on two nights per week.

Our thanks are again due to the Red Cross for assistance with the financial arrangements associated with Adult Education and for continued help with transport for all artists and concert parties visiting the Sanatorium. In March the patients were given an opportunity to express their appreciation for the work of the Red Cross in a practical manner, and a sum of £75 was raised by the patients and the staff as a subscription to the Red Cross March Appeal.

We are grateful to the W.A. Lotteries Commission for the gift of a new motor alternator for the motion picture machine and for payment of the cost of lining the back wall of the Recreation Hall with porous tiles, as a result of which the acoustic properties of the building have improved considerably.

During the year a most efficient bus service was instituted by the Western Australian Government Railways, providing transport to and from Perth and Northam via the Sanatorium twice daily. The problem of transport to and from the city has thus been largely solved.

Dairy Farm.

In spite of severe losses of young stock sustained as a result of the tuberculin testing during 1947 and 1948, the Dairy Farm has made a substantial recovery and the quality of the stock is indicated by the results obtained in the 1949 Royal Show at which the Farm exhibited the champion bull in the Illawarra

Shorthorn class, and received in all twelve awards in the cattle section. Of two exhibits in the pig section, one received first prize and the other second prize in its section, and in all a total of £44 in prize money was received. This success was due very largely to the efforts of the Manager, Mr. W. B. Wallace, whose keen interest in his stock has been maintained. An extremely high quality of milk has been delivered to the Sanatorium throughout the year, although it is regretted that a considerable amount of feed was lost in the early part of the summer as a result of bush fires.

Poultry Farm.

Under Mr. S. Roberts the Poultry Farm has again provided a large proportion of the eggs required by the Sanatorium, but during the drier months it is still impossible completely to meet the demands of the institution.

The guinea pigs are still kept at the Poultry Farm, and steps have been considered regarding the increase of the guinea pig herd in order to supply the Director of Medical Laboratories with sufficient guinea pigs for the purposes of investigation in Perth.

Conclusion.

It is with pleasure that I record my appreciation of the assistance and encouragement that I have at all times received from yourself and the Commissioner of Public Health. I would also express my appreciation of the assistance and co-operation of the Under Secretary, Mr. H. T. Stitfold, the Assistant Under Secretaries, Messrs. H. E. Thurkle and J. Devereux, and of all other members of the staff of the Public Health Department.

Finally I record grateful recognition of the loyal support of my medical officers, the Matron and nursing staff, and all other members of my staff which, throughout the year, has made it a pleasure to continue work at the Sanatorium.

H. R. ELPHICK, M.B., B.S.,
Medical Superintendent.

APPENDIX IV

WESTERN AUSTRALIA
PULMONARY TUBERCULOSIS.

Recorded Notifications and Deaths shown in rates per 100,000 of Population. Compiled from Official Records.

Year.	Population in 1,000's.	Notifications to Commissioner of Public Health.		Deaths Recorded with Registrar General.	
		Notifications Received.	Rate per 100,000 of Population.	Deaths Recorded.	Rate per 100,000 of Population.
1911	287	259	90.2	190	64.98
1912	301	429	142.5	220	65.3
1913	313	424	135.4	206	70.0
1914	323	353	109.3	229	75.0
1915	321	336	104.6	233	72.1
1916	313	511	163.2	225	71.5
1917	306	464	151.6	217	70.0
1918	308	432	140.2	245	78.7
1919	320	467	145.9	289	89.6
1920	330	442	133.9	259	77.0
1921	334	424	126.9	277	83.0
1922	341	387	113.4	256	75.0
1923	350	361	103.1	216	62.0
1924	363	381	104.9	228	63.0
1925	373	403	108.0	259	70.0
1926	381	415	108.9	252	67.0
1927	392	409	104.3	231	60.0
1928	407	395	97.0	252	71.0
1929	420	400	95.2	245	60.0
1930	429	569	132.6	218	52.0
1931	432	372	86.1	223	53.0
1932	435	339	77.9	203	48.0
1933	439	295	67.2	207	47.0
1934	442	287	64.9	218	49.0
1935	447	270	60.4	210	47.0
1936	452	338	74.8	193	43.0
1937	457	239	52.3	172	38.0
1938	464	247	53.2	178	39.0
1939	470	202	43.0	179	38.0
1940	473	231	48.8	181	39.0
1941	474	154	32.5	185	39.0
1942	477	113	23.7	175	37.0
1943	477	273	57.2	144	30.0
1944	482	219	45.4	134	28.0
1945	488	271	55.5	149	31.0
1946	492	343	79.4	163	33.0
1947	503	372	73.9	128	25.0
1948	515	325	63.1	157	30.0
1949	533	499	93.6	123	22.2

APPENDIX V

PULMONARY TUBERCULOSIS

NOTIFICATIONS RECEIVED BY THE COMMISSIONER OF PUBLIC HEALTH, WESTERN AUSTRALIA FOR THE YEAR 1949.

Shown in Months, Sex and Ages in Years.

1949. Month.	0–1.		1–2.		3–4.		7–8.		9–10.		10–14.		15–19.		20–24.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
January	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....
	....	1	....	....	....	....	....	....	....	....	....	....	....	4	3	4
February	....	....	....	....	....	1	....	....	....	....	....	....	1	1	....	4
March	....	....	....	....	....	....	....	....	....	....	....	1	1	....	4	....
April	....	....	....	1	....	....	....	....	....	....	....	....	1	1	....	1
May	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3	1
June	....	....	....	....	....	....	....	....	....	....	....	....	....	2	2	1
July	....	....	....	....	....	....	....	....	....	....	....	....	1	....	3	4
August	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	2
September	....	....	....	....	....	....	....	....	....	2	....	....	1	4	2	3
October	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4	4
November	....	....	....	1	....	....	1	....	....	....	1	....	1	....	2	2
December	....	....	....	....	....	....	....	....	....	....	....	....	1	....	1	1
Total	....	....	1	2	....	1	1	....	....	2	1	1	8	13	25	27

Months, Sex and Ages in Years—*continued.*

1949. Month.	25–29.		30–34.		35–39.		40–44.		45–49.		50 and Over.		Total Male.	Total Female.	Grand Total.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.			
January	2	....	3	2	5	2	7	2	5	4	30	22	53	33	86*
	....	6	1	4	3	1	....	1	1	....	9	3	17	24	41
February	2	4	....	....	2	3	4	1	1	....	8	3	18	17	35
March	2	....	....	1	....	1	5	....	....	....	6	2	18	5	23
April	1	2	1	2	1	....	3	2	2	....	8	1	17	10	27
May	2	1	2	1	5	2	3	....	2	1	6	1	23	7	30
June	3	....	2	1	1	....	3	1	4	....	9	2	24	7	31
July	1	1	....	1	3	1	1	....	2	1	3	4	14	12	26
August	1	3	1	1	3	4	3	1	2	....	6	1	17	12	29
September	2	1	4	1	3	1	5	....	1	2	13	1	31	15	46
October	3	3	9	1	3	2	2	1	....	3	12	2	33	16	49
November	4	....	2	2	4	1	4	....	2	....	12	....	33	6	39
December	3	1	2	....	....	....	4	4	2	....	15	3	28	9	37
Total	26	22	27	17	33	18	44	13	24	11	137	45	326	173	499

* Result of Mass X-Ray Survey of Government Mental Institutions in Western Australia.

APPENDIX VI

STILLBIRTH ENQUIRY - PRELIMINARY REPORT.

By Dr. D. J. R. Snow, Medical Officer, Department of Public Health.

" Death borders upon our birth, and our cradle stands in the grave."
(Joseph Hall, Bishop of Norwich, 1574–1656)

I. THE IMPORTANCE OF STILLBIRTH AND INFANT MORTALITY RATES.

Authorities are unanimous that the Infant Mortality Rate is of high importance, and that this is so whether it is considered from the point of view of public health, economy, or international status.

SMILLIE (1947)[1] from America states that it " is the most delicate and most important index of the degree of the sound development, and the measure of the cultural level of any community. The new-born healthy baby is the community's greatest asset."

CREW (1948)[2] from Scotland remarks that, by means of the I.M.R. it is possible to recognise the stage of social evolution reached by any given community, and that " it is a measure of a people's progress." He also writes " the Stillbirth Rate together with the two sub-divisions of the Infant Mortality Rate, constitutes one of the best yardsticks which can be used for the assessment of the quality of a people and of a social structure."

BULLOUGH (1949)[3] from England indicates that it is the best single index of the hygienic state of a community because it is easy to compute, and its significance is easy to grasp ; and that many of the dangers which make the passage of an infant through early life hazardous, are preventable.

ALLEN (1947)[4] from Ireland has written that " the neo-natal period is acknowledged to be the most critical phase of human existence," and that the neo-natal death rate has been described as " pathetic, discreditable and unnecessary." Further, he says " . . . . . any special measures which can be taken to provide better care for the newborn will not only add credit to the professional skill of obstreticians and paediatricians, but will assist in increasing human happiness . . . . . "

In Australia, despite an I.M.R. which, by 1946, was the lowest in the world (29 per 1,000 births) excepting only New Zealand (28), the importance of conserving infant life must be painfully clear to all thinking people. It has repeatedly been said that the best immigrants are Australian babies. While a reduction in the I.M.R. in any country would be a worthy achievement, in Australia it is almost imperative.

II. THE ORIGIN AND DEVELOPMENT OF THE ENQUIRY IN WESTERN AUSTRALIA.

In April, 1947, Dr. Cecil Cook submitted a vigorous, blunt, and authoritative report to the Minister for Health in Western Australia on " Population trends in relation to health administration." In characteristically clear language he directed attention to " the progressive ageing of the existing population " and emphasised the need " to prevent the infant wastage associated with abortion, stillbirth, infant mortality, and chronic invalidity following birth injury." He went on to say that a higher birth rate was " the only effective demographic factor which can correct population trends at present threatening to convert the population into one predominantly senescent." He estimated the stillbirth rate in Western Australia at 24 per 1,000 confinements in 1946 and continued " the magnitude of the loss of infant life through pre-natal and natal causes is not fully represented in the stillbirth figure. A number of infants recorded as live births have been so influenced by the same pre-natal conditions as cause stillbirth that they die shortly after birth or survive crippled, or presenting some less gross abnormality unfitting them for full and normal ultimate citizenship . . . . . some 55 per cent. of all infant deaths during the first year of life occur during the first week after birth. The causes of these deaths are primarily those which play such a significant part in the stillbirth rate ; namely, prematurity, birth injury, and inherent defect following abnormal conditions ' in utero ' . . . . . Research into causes and prevention of prematurity, the avoidance of birth injury and the influence of maternal toxaemia is necessary to reduce not only the stillbirth rate, but also the number of neo-natal deaths and the birth of crippled children."

He urged the appointment of an Advisory Committee on Infant Mortality (consisting of an obstetrician, physician, paediatrician, pathologist, serologist, and midwife) for the purpose of :—

(1) Investigating the causes of sterility, abortion, stillbirth, and neo-natal trauma.

(2) Preparing an ordered plan for medical and pathological research into the problems arising from its studies.

(3) Recommending measures to be taken by statute and otherwise for the purpose of assisting its researches and implementing prophylactic measures.

He finally suggested that " autopsy upon stillbirths in the metropolitan area should be made obligatory by law."

Ministerial approval for the constitution of this committee was secured on the 14th of May, 1947, and its first meeting took place soon afterwards.

The same problem was apparently exercising the minds of men elsewhere in the Commonwealth, for, in May, 1947, the attention of the Minister for Immigration was drawn by a Tasmanian Member to the movement of Australia's population towards older age groups in a question in the House of Representatives. In his reply, the Minister said "The information now furnished by the Commonwealth Statistician indicates a position which is truly alarming . . . . . the sad truth is that Australia, as we know it, is only 150 years old, but we are slowly bleeding to death. If the nett rate of reproduction does not improve, we will be finished as a nation at the end of another 50 years."

The accompanying statement in *Hansard* indicated that :

(1) There had been a steady increase in the number of persons aged 65 and over ; their relative proportion of the total population in Australia having risen from 3.9 per cent. in 1901 to 7.7 in 1946.

(2) There had been a steady decrease in the size of families ; the average issue of married women who bore children having diminished from 3.2 in 1911–15 to 2.3 in 1941–45.

(3) There had been a steady downward trend in the number of children under 15 years ; their relative proportion of the total population having fallen from 35.1 per cent. in 1901 to 24.4 per cent. in 1946.

These figures were obviously most disturbing and placed Dr. Cook's recommendations in an even more important light.

In Western Australia the problem was accordingly approached through an Advisory Committee on Infant Mortality. Discussions took place as to the character and type of information likely to be of value and a system of collecting and recording the data was considered. Two pro-formas were eventually evolved—one for abortions and another for stillbirths. These were widely distributed and by the end of 1947 a fair number were beginning to flow in but it was obvious that the majority of these were being hastily compiled and of relatively limited value. Administrative machinery was set in motion with a view to facilitating the serological examination of cases and an endeavour was made to elaborate some simple system of classification.

After a period of approximately two years during which notification of abortions was obligatory it became clear that the information obtained through the medium of the official form was relatively worthless. Apart from figures which almost certainly represented an under estimate and which provided an inaccurate indication of the incidence and extent of abortion throughout the State, little information of significant value was forthcoming. The reasons for this were obvious. There was a natural distaste on the part of doctors to interrogate at length patients who had recently suffered a distressing experience. There was a marked reluctance to divulge information of a private, personal and confidential nature although the identity of the patient was concealed. There apparently was the usual widespread antagonism towards the obligation of completing pro-formas, questionnaires and forms of any description ; and finally, there was the question of time and labour spent in completing these forms.

So far as the patient herself was concerned it was clear that answers to essential but embarrassing questions in many cases were incomplete. The forms for more than half the cases reported were returned with the barest possible information and were in no sense worthy of laborious statistical analysis.

Information gleaned from stillbirth notifications, however, were less disheartening although here, too, the data provided was incomplete and haphazard. There were certain general trends which commanded attention, *e.g.*, prematurity, toxaemia, birth injury and malformation appeared to be consistent factors associated with happening of the stillbirth and it was clear that a more vigorous pursuit of the stillbirth problem might conceivably provide clues which could be of value not only in reducing the stillbirth rate but also in correcting factors which might be significant, and determining the occurrence of hitherto unexplained pre-natal deaths in utero ; and further, of throwing some light on the pathogenesis and control of spontaneous abortion. It was manifest that in collecting this information close attention required to be given to three cardinal points :—

(1) The nature of the data required must be decided after consultation with leading obstetricians and paediatricians.

(2) The utmost co-operation of general practitioners was essential if all relevant details were to be secured.

(3) Post mortem examination of stillborn infants was an important agent, and indeed, would probably comprise the most reliable, the most valuable and the most important component of the investigation.

This latter proposal involved many administrative, legal and professional difficulties. The first step was the selection of the leading maternity hospital in the metropolitan area as the hub of the scheme and it was arranged that all post mortem examinations should be conducted there. Next, the residential areas within convenient radius of this centre were officially proclaimed as areas subject to the obligations

outlined in a special Act of Parliament whereby an autopsy on stillborn infants became compulsory by law. Finally, a medical practitioner accustomed to routine post-mortem examinations was appointed to the specific task of conducting autopsies on all these stillborn infants.

III. METHOD OF INQUIRY.

Definitions.

" Stillbirth "	Any child weighing 2 lb. 12 oz. or more which has issued from its mother but did not breathe or show any other signs of life.
" Premature birth "	Any child weighing 5 lb. 8 oz. or less at birth, but not less than 2 lb. 12 oz.
" Pre-viable infant "	Any infant weighing less than 2 lb. 12 oz. at birth.
" Neo-natal death "	Death occurring within the first four weeks after birth.

Data Available.

1. Within 48 hours of the occurrence of a stillbirth or premature live birth the medical practitioner, who was in attendance, is obliged by State Law to submit a report on it to the Commissioner of Public Health on a special form distributed for this purpose.

2. 5 cc. of maternal blood is sent to the Public Health Laboratory and subjected to the following investigations :—

(i) Wassermann Reaction.
(ii) Blood Grouping.
(iii) Rh. typing.

3. In certain proclaimed districts in the metropolitan area all stillbirths are submitted to post-mortem examination by a medical practitioner appointed by the Commissioner. The vast majority of these examinations are conducted by the same practitioner. At his discretion, sections from one or more organs are sent to the Public Health Laboratory for histo-pathological examination.

4. All these reports—clinical, post-mortem, histological, and serological, are eventually submitted to the Department where they are recorded and tabulated by a medical officer.

System of Classification.

A study of the first one hundred reports received made it evident that the adoption of some broad basic classification of presumptive causes of death was necessary in order to facilitate the recording of the facts available and to simplify the subsequent presentation of tabulated data. After perusal of the relevant literature and consideration of the Report on Neo-natal Mortality and Morbidity released by the British Ministry of Health in 1949, the following provisional classification was devised :—

Asphyxia
Injury
Malformation
Prematurity
Toxaemia of Pregnancy
Rh. Incompatibility
Others
Unknown

Each of these categories is capable of further analysis with a view to revealing the frequency of individual factors which are likely to have contributed to the main cause, and their nature will be shown in later tables.

IV. COMMENTS ON CATEGORIES SELECTED.

Asphyxia.

The term asphyxia when applied to the problem of foetal and infant mortality implies a state of oxygen insufficiency existing before during or after birth. It is used synonymously with the terms " hypoxia," " anoxia," or " anoxaemia " ; and is not necessarily attributable to respiratory deficiency or obstruction. During the pre-natal period the foetus is dependent on maternal oxygen, which may be diminished from anaemia, cardiac, or pulmonary disease ; further, at this time, abnormalities of the placenta or umbilical cord may interfere with the transference of oxygen to the foetus ; or the foetus itself, by reason of a cardio-vascular malformation may be unable to distribute available oxygen in an efficient manner. During labour very prolonged uterine contraction, premature separation of the placenta, and compression of the cord may reduce the supply of oxygen ; while undue cranial stress may damage the nerve centres responsible for the subsequent initiation of respiration. Immediately after birth anoxia may result from the non-establishment of respiratory movement, obstruction of the air passages from liquor amnii or meconium, or congenital anomalies of lungs, diaphragm, etc.

Injury.

Injury to the foetus occurs almost exclusively during the process of parturition and its causation is essential mechanical. Few, if any, foetal structures are immune to birth trauma but by far the commonest and most lethal group of injuries are those involving the cranium and its contents. Relative disproportion malrepresentation, excessive moulding from prolonged labour, too rapid moulding in precipitate labour, forceps, breech extraction and other similar factors can cause distortion of the foetal skull beyond the limits of its normal plasticity, and result in rupture of the dural septa with dangerous intra-cranial haemorrage from torn venous sinuses. With less gross distortion, the septa may remain intact but kinking of major veins may set up sufficient stasis to result in bleeding or scattered areas of cerebral softening. Tentorial tears involving the lateral and straight sinuses are particularly dangerous because of sub-tentorial haemorrhage causing compression of the medulla. Tears of the falx cerebri also lead to serious results. Sub-arachnoid haemorrhage is not usually fatal unless extensive. Haemorrhage into one or other of the ventricles is commonest in prematurity and highly lethal ; while scattered punctate or petechial haemorrhages have a variable prognosis and are commonly associated with asphyxia.

Malformation.

The foetus is liable to a wide range of malformations but comparatively few of these seriously jeopardise its chances of a separate initial existence. Several others, however, although they may permit of live birth, are incompatible with continued existence long beyond the neo-natal epoch. Anencephaly, spina bifida, hydrocephalus, cardio-vascular abnormalities, atresia of essential passages and congenital absence of various structures, are a few general examples of conditions which comprise major hazards. The aetiology of malformations is still the subject of investigation and study, but in general, at the present time, they constitute the so-called " irreducible minimum " which is beyond the control of those striving to reduce the rate of stillbirth and infant death. As reduction in other controllable causes is effected however, the influence of foetal malformation will assume much greater importance.

Prematurity.

A definition of prematurity based on a weight criterion is less unsatisfactory than one based on the period of gestation. Amenorrhoea may be delayed and the height of the uterus is variable ; hence the more or less universal introduction of the 2¾—5½ lb. rule. Though an improvement, even this definition has limitations. A 5 lb. baby may be quite mature and a 2½ lb. baby is not necessarily " pre-viable." Nevertheless the new definition is more useful and informative than its predecessor.

The tissues of the premature infant are especially fragile. They are therefore more susceptible to the ill-effects of oxygen deprivation and mechanical injury. Owing to immaturity of their vasomotor, respiratory, and other centres they are capable of but feeble response to adverse circumstances. Prematurity alone, on the grounds of physiological inadequacy, may be sufficient to prohibit survival. Cerebral damage and asphyxia are the main risks during premature birth and account for most of the deaths in the early neo-natal period, while after the first week of life they commonly die because of infection. Furthermore, the circumstances under which premature births take place, are peculiarly prejudicial to survival ; for example, many are associated with toxaemia of pregnancy, ante-partum haemorrhage, malformation, or multiple pregnancy. It is thus evident that the factors operating towards a fatal outcome among premature infants are usually complex, multiple, and complementary.

Toxaemia of Pregnancy.

By the term Toxaemia of Pregnancy is meant the condition characterised by the familiar triad—albuminuria, hypertension and oedema. For the purpose of the enquiry cases of albuminuria alone or hypertension (140+/90+) alone have been included, but cases of accidental haemorrhage alone have been excluded. Professor F. J. Browne, during a recent lecture on the subject in Perth repeated that hypertension was the early sign, and that when the systolic arterial pressure attained 180 mms. of Hg., renal arteriolar spasm resulted in kidney damage and albuminuria, while the spiral arteries in the placenta when similarly affected could cause retro-placental bleeding or " accidental haemorrhage " and foetal death. Disturbance of maternal fluid balance would obviously also involve the foetus ; while the foetal risk associated with the disaster of eclamptic fits in the mother can readily be appreciated. Nevertheless there is a considerable proportion of cases in which a mildly toxaemic mother delivers a full-term stillborn child despite a normal labour and an apparently unaffected placents. The nature of the lethal factor here in unknown.

Rhesus Incompatibility.

The term " Rhesus Incompatibility " includes hydrops foetalis, icterus gravis neonatorum, and haemolytic anaemia of the new-born. They are merely grades or degrees of the same disorder which is characterised essentially in haemolysis of rhesus positive foetal erythrocytes by antibodies developed in rhesus negative maternal blood. The effects in the foetus include anaemia, hyperbilirubinaemia, extramedullary erithropoeysis (erythro-blastosis), aedema, and in some cases neuronal degeneration and yellow staining in the basal ganglia (" kern-icterus "). Hydrops foetalis, which is characterised by general aedema with effusions, hepatosplenomegaly, and other changes, is fatal before or soon after birth. Icterus gravis is a less consistent cause of stillbirth but often causes death in the neo-natal period ; while the mortality from congenital haemolytic anaemia is relatively small. While Rhesus incompatibility is known to be responsible for many intra-uterine deaths, stillbirths, and premature births, the precise frequency of the association remains to be determined, particularly in specific races and localities.

V.—PRELIMINARY FINDINGS.

A report written by Dr. J. C. Edwards on stillbirths and infant deaths due to obstetrical causes in Western Australia for the year 1948 and for the first seven months of 1949 is recorded elsewhere.

In August, 1949, routine post-mortem examinations in the metropolitan area were instituted and the notification form was considerably modified. The data presented in the following tables therefore represent the twelve month period, 1st August, 1949, to 31st July, 1950, and include the findings of the first substantial series of post-mortem examinations conducted almost exclusively by Dr. A. T. Pearson.

During this twelve month period a total of 290 notifications were received ; 175 of these relate to cases in which post-mortem examination was carried out. The 290 comprise 250 stillbirths and 40 neo-natal deaths ; and 95 out of the 290 were premature infants. In 47 cases one or more of the cardinal features of eclamptic and pre-eclamptic toxaemia were noted.

It must be pointed out that although practitioners are legally obliged to notify stillbirths and premature births to the Commissioner on the prescribed form, they are at present under no obligation to notify neo-natal deaths in a similar manner. The 40 neo-natal deaths included in the series do not therefore represent the total number which occurred within the State during the period under review. They are merely those cases in which interested practitioners have exercised the option of using existing facilities with a view to ascertaining the precise cause of death.

It is well known that neo-natal deaths, especially those occurring within the first few days of birth, are often due to the same causes as determine stillbirths, e.g., intra cranial injury. It is, therefore, desirable that infant deaths occurring within 28 days of birth should be included in the inquiry.

As far as possible an endeavour has been made to ascribe death to a single basic cause. Where this has not been possible the case has been classified as "cause unknown" or uncertain. In many cases has or more major factors appear to have combined in determining the fatal outcome, but a single factor has been selected as the basic cause on the balance of the evidence available. Thus, although there were 95 premature infants, in only 37 cases has death been attributed to prematurity itself although it is clear that it will have played a major part in many other cases which have been classified under " asphyxia," " injury " and so on. It must be emphasised therefore that the figures presented are only provisional and are intended merely to indicate trends. Accurate and detailed statistical analysis must await the introduction of a punch-card system, which will come into operation in the very near future.

In some cases a confident conclusion can be reached in regard to the essential cause of death, e.g., prolonged labour—large baby—primipara—forceps applied—pathologist reports tentorial tear with subdural haemorrhage. It would be unreasonable to challenge the decision that stillbirth or neo-natal death here was due to " Injury."

Other cases, however, are complicated by the co-existence of two or more major factors, e.g., prolonged labour—occipito-posterior position—ante-partum haemorrhage—toxaemic mother—pathologist reports post-mortem findings indicative of asphyxia. Here the conclusion " asphyxia " is acceptable but it is obvious that several factors probably contributed to its production (prolonged uterine contraction interferring with placental circulation, premature separation of the placenta, and undue cranial stress from an adverse position) and it is difficult to say to what extent toxaemia contributed to the fatal outcome.

The combination toxaemic mother—premature baby—breech presentation occurs frequently. In such a case death could be ascribed either to " toxaemia " or to " prematurity " ; while the breech presentation is probably incidental and carries no undue hazard in view of the small size of the child (e.g., 3 lb.).

Maternal albuminuria—prematurity—ante-partum haemorrhage—anencephaly, provides another complex example. Here, death could be ascribed to " malformation."

Each broad causative group has been broken down in order to reveal the relative frequency of the salient factors involved, and in several instances more than one factor has been recorded. Thus, in 65 cases, death has been attributed to " Asphyxia " ; in some of these prematurity was associated with ante-partum haemorrhage ; in others a prolapsed cord has complicated a breech presentation ; the individual factors involved therefore exceed the total number of cases. The same principle applies to the other groups : for example in the " Injury " group it will readily be appreciated that the combination " occipito-posterior and forceps " would not be uncommon and in the " prematurity " group " Twins and toxaemia " will be a familiar association.

The value of the sub-groups therefore lie mainly in the fact that they show, in a general way, the nature of abnormalities which contribute to infant mortality. It is extremely difficult to be specific in this matter, irrespective of how accurate the subsequent statistical analysis may be. The factors which are associated with pre-natal death, stillbirth and neo-natal death, are so complicated and so closely interdependent, that only broad and general over-all conclusions will be justified.

VI.—CONCLUSION.

It will be necessary to accumulate information relating to many more hundreds of cases of stillbirth and neo-natal death before useful statistical analysis can be attempted, sound conclusions drawn, and confident recommendations made with a view to minimising infant wastage, but the trends are already clear.

Infants are being lost mainly through :—

(1) Ante-natal causes, e.g., toxaemia,

(2) Obstetrical difficulties, e.g., malpresentation,

(3) Prematurity.

Something can be done to combat each of these main groups, and the active development of the following scheme prepared by Dr. G. A. Thompson for consideration by the Infant and Maternal Health Committee, need not await the presentation of accurate statistical data.

POLICY OF INFANT AND MATERNAL HEALTH COMMITTEE.

Tentative scheme by Dr. Geoffrey Ashburton Thompson for short term and long term planning.

The following " skeleton " is submitted to this Committee as a basis for the formation of short term and long term policies for the development of maternal and infant welfare services for the State. It is incomplete in many details and even those given may need alteration, amendment, and modification and additions will have to be made. It is presented for criticism in the hope that it may be at most a guide for future consideration and progressive amplification.

Patient and Baby	Town	Ante and post natal clinics, Rest Homes, Domestic Service (C.W.A., etc.), Transport.
	Country	Creches, Welfare Clinics, the Pre. Infant and transport.
Nurse	Town	Midwives and Midwifery nurses (trainees), P.G. training for Matrons and Midwives for the various units to be established.
	Country	Welfare training—Recruiting of trainees.
Doctor	Students	For training as obstetricians.
	R.M.O.s	
	Superintendents, G.P.S.	As teachers of R.M.O.s and students post graduate courses.
	Specialists	Consultant panel—Teaching panel (Obstetricians, Pediatricians, Pathologists, Radiologists, Haematologists, Anaesthetists).
Hospital	Town	Central Unit and Subsidiaries standardised as to staff, equipment and architecture.
	Country	Regional units and subsidiaries standardised as above.

Suggested Policies.

A. *Short Term Policy* to deal with immediate reforms.

B. *Long Term Policy* to be considered under three headings, *viz.* :—

1. Building, staffing and equipment (this to include recruiting of trainees and housing of same).
2. Ante and post natal care.
3. Educational—

Doctor—Under graduates, R.M.O. Superintendents, Post Graduates.

Nurse—Pupil trainees (town and country). Post graduate training for Matrons and Sisters, *e.g.* College of Nursing, Australia.

Table VII.

Preliminary Analysis of 290 *Stillbirths and Neo-natal Deaths, 1st August,* 1949 *to* 31*st July,* 1950 (*includes* 175 *subjected to Post Mortem Examination*).

	Autopsy (175)	No Autopsy (115)	Total (290)
Asphyxia	49	16	65
Injury	40	9	49
Malformation	13	7	20
Prematurity	14	23	37
Toxaemia of Pregnancy	8	14	22
Rh Incompatibility	18	1	19
Others	13	3	16
Unknown	20	42	62

Asphyxia (65).

	Autopsy (49)	No Autopsy (16)	Total (65)
A.P.H.	17	8	25
Breech	16	3	19
Occ. Posterior	2	4	6
Twins/Triplets	4	1	5
Cord Complications	7	3	10
Prematures	10	4	14
Atelectasis	4	....	4
Aspiration of liquor or meconium	3	....	3

Injury (49).

	Autopsy (40)	No Autopsy (9)	Total (49)
Breech	10	1	11
Occ. Posterior	3	6	9
Forceps	13	9	22
Large baby (8)	9	3	12

The 49 cases ascribed to " Injury " include the following specific cranial and intra-cranial injuries detected at post-mortem examination :—

Tear of tentorium cerebelli	17
Tear of falx cerebri	3
" Sub-dural haemorrhage "	4
" Sub-arachnoid haemorrhage "	4
Other varieties of intra-cranial haemorrhage	9
Depressed fracture parietal bone	2

Malformations (20)

	Autopsy (13)	No Autopsy (7)	Total (15)
Anencephaly	3	2	5
Porencephaly	1	....	1
Hydrocephalus	2	2	4
Congenital Heart	3	....	3
Monsters	....	1	1
Ileo-caecal atresia	1	....	1
Spina Bifida	2	....	2
Others	2	....	2

Prematurity (37).

	Autopsy (14)	No Autopsy (23)	Total (37)
A.P.H.	4	5	9
Maternal disease other than toxaemia	1	2	3
Pre-natal death	3	2	5
Unknown	6	14	20

The 37 cases tabulated above are those in which no alternative cause other than prematurity itself was apparent from the data available.

An additional 54 stillbirths and neo-natal deaths, however, occurred in premature infants, resulting in a total of 91 cases of prematurity.

In 35 instances either " ante-partum haemorrhage " or toxaemia of pregnancy, or both, were associated ; four accompanied multiple pregnancy ; six were from Rhesus negative mothers ; and three from mothers with general disease (measles, diabetes, positive W.R.). Thus in 43 cases or a little less than half, the cause of premature birth is unexplained.

Post-mortem examination in 41 cases showed :—

Asphyxia	11 (mainly in the cases of A.P.H.)
Malformation	5
Intra-cranial haemorrhage	7
Rhesus disease	2
Others	8
Uninformative	8
	41

Rh Incompatibility (19).

	Autopsy (18)	No Autopsy (1)	Total (19)
Hydrops Foetalis	6	....	6
Others	12	1	13

Toxaemia of Pregnancy (22).

	Autopsy (8)	No Autopsy (14)	Total (22)
Albuminuria + hypertension + fits	1	....	1
Albuminuria + hypertension + oedema	....	3	3
Albuminuria + hypertension	6	10	16
Albuminuria only	....	1	1
Hypertension only	1	....	1

The 22 cases tabulated above refer only to those in which no other ascertainable cause of death appears evident from the notes available, and where post-mortem examination failed to reveal any significant abnormalities.

An additional 25 stillbirths and neo-natal deaths, however, were accompanied by maternal toxaemia, resulting in a total of all 47 cases involving toxaemia of pregnancy.

The relevant details of all 47 are as follows :—

Albuminuria + hypertension + Fits	4
Albuminuria + hypertension + Oedema	5
Albuminuria + hypertension	19
Albuminuria only	14
Hypertension only	5
	47

Of the infants born of these toxaemic mothers, 40 were stillborn and seven died early in the neo-natal period. In 24 instances the birth weight was under 5½ lb., in 11 over 5½ lb. while in 12 it was not recorded. In other words, at least half of these infants were premature.

In 11 instances " ante-partum haemorrhage " was an associated feature ; four were multiple births ; and in eight instances signs of foetal life ceased several days before delivery. 20 of the mothers were primiparae.

Maternal age groups were as follows :—

0–20	2
20–24	20
25–29	8
30–34	10
35–39	5
40–	2
	47

Twenty-six cases were submitted to post-mortem examination.

The Pathologist reported as follows :—

Asphyxia	8
Toxaemia of Pregnancy	6
Intra-cranial Injury	6
Malformations	2
Other	4
	26

Breech Presentations.

Breech presentation is recorded in 56 instances.

In 47 the breech presented naturally ; five were transerve presentations which were converted into breeches ; in three instances a leg was brought down in order to control ant-partum haemorrhage due to placenta praevia, and in one case because of prolapsing cord.

The 56 are made up of 13 primiparae, and 42 multiparae, while in one instance parity is not recorded.

Nineteen infants weighed less than 5½ lb., and in these cases death cannot be attributed to the presentation as the small size of these babies precludes the undue hazard usually associated with the breech birth of infants.

In five instances breech presentation was associated with multiple birth.

Ante-partum haemorrhage occurred in 13 cases, and in three of these (as already mentioned), version was performed in order to control bleeding.

Post-mortem examination was conducted in 33 instances, the respective findings being as follows :—

Asphyxia	17
Intra-cranial injury	12
Other	4

In 20 cases there is no record of any abnormality associated with the presentation, *e.g.*, ante-partum haemorrhage, toxaemia of pregnancy, prematurity, congenital malformation, etc. ; and these cases therefore probably died as a result of the hazards peculiar to breech delivery. In 12 of these 20 cases the results of post-mortem examination are available, and reveal that four died from asphyxia and eight from intra-cranial injury.

VIII. REFERENCES.

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APPENDIX VII

STILLBIRTH AND INFANT MORTALITY RATES.

Year.	Total Births, including Stillbirths.	Stillbirth Rates.	Neo-natal Rates		Total Mortality Rates under 1 Year.	Other Post Natal Rates Over 1 month and under 1 Year.
			Under 1 Week.	Under 1 Month.		
1926	8,534	27.4	....	27.6	48.0	20.4
1927	8,708	26.0	....	23.0	44.7	21.7
1928	8,981	30.9	....	23.1	33.5	12.4
1929	9,316	28.4	18.8	25.8	54.6	28.8
1930	9,546	27.0	18.0	23.5	46.5	23.0
1931	8,777	26.0	20.1	26.6	40.5	13.9
1932	8,175	25.7	21.02	25.2	43.5	18.3
1933	8,105	29.4	18.1	22.5	35.8	13.3
1934	8,029	29.2	19.3	24.8	38.8	14.0
1935	8,377	30.8	20.6	24.8	39.0	14.2
1936	8,730	28.9	19.6	24.8	40.1	16.2
1937	8,850	27.2	16.8	21.2	36.5	15.3
1938	9,325	23.9	16.6	19.1	33.1	14.0
1939	9,249	23.0	16.5	19.7	40.0	20.3
1940	9,363	25.9	20.5	24.9	43.0	18.1
1941	10,375	24.8	15.1	18.1	34.4	15.7
1942	10,109	20.6	17.1	20.3	36.2	15.9
1943	10,759	25.8	17.1	21.0	31.8	10.8
1944	11,144	24.8	18.6	21.0	32.0	11.0
1945	10,896	20.6	18.0	20.0	28.9	8.9
1946	12,398	23.6	17.1	20.6	30.3	9.6
1947	13,178	23.0	16.9	19.4	30.2	13.2
1948	13,197	20.1	16.9	18.7	25.0	8.4
1949	13,779	19.4	16.2	19.0	25.9	6.8

In above table all rates are calculated in deaths per 1,000 of total births, including stillbirths.

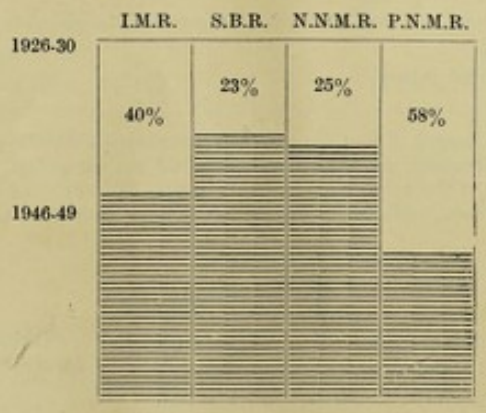
INFANT MORTALITY, W.A., 1926–45.

———	Infant Mortality Rate.	Stillbirth Rate.	Neo-natal Mortality Rate.	Post-natal Mortality Rate.
1926–30	45.2	27.9	24.6	21.2
1931–35	39.5	28.2	24.7	14.7
1936–40	38.7	25.7	21.9	16.7
1941–45	32.6	23.3	20.0	12.4
1946–49	27.8	21.5	18.3	9.5

Reduction in rates, 1926–30 to 1946–49 :—

	%
Infant Mortality Rate	40
Stillbirth Rate	23
Neo-natal Mortality Rate	25
Post-natal Mortality Rate	58

Thus the reduction in the post-natal mortality rate is more than the reductions in the stillbirth rate and neo-natal mortality rate put together and more than double either.



Percentage reduction in Infant Mortality Rate 1926-30 and 1946-49.

APPENDIX VIII

THE COMMISSIONER OF PUBLIC HEALTH

I have the honour to submit a report on Infant Health activities throughout Western Australia for the year ended 31st December, 1949.

The number of individual babies who attended the Centres throughout the State was 18,063 as against 17,488 for the previous year. These babies made a total attendance at the Centres of 168,436, this latter figure being again an increase on the previous year. In addition there were 866 expectant mothers advised and kept in touch with

The Correspondence Sister had on her roll 975 individual mothers in constant communication with her. This sister also had 234 consultations *re* expectant mothers.

A total of 17,753 home visits were paid by the Infant Health Sisters. In addition, 3,122 telephone consultations were given, mainly in the country districts. Also in some cases letters were written by local Infant Health sisters to mothers who were temporarily unable to come into their Centres. These are not included in the work of the Correspondence Sister.

Breast Feeding Returns.

It had been felt for a long time that the Breast Feeding returns were not as high as they should be. A questionnaire was sent to all the Sisters asking them for the numbers and percentages of all their babies (who became twelve months of age during that year), who were fully breast fed for their first five months of life, and for those that were partially breast fed for the same period. It was found that 36.21 per cent. of babies were fully breast fed for the first five months of life, 13.71 per cent. were partially breast fed for the same period, thus making 49.92 per cent. babies fed on breast milk in varying proportions during the first five months of their life. This is not as high as we would wish.

The sisters have been asked to make a very special educational drive amongst the mothers in an endeavour to increase the amount of breast feeding.

Breast Feeding is the most essential part of infant care and mothercraft training, and it is hoped that as a result of our very vigorous efforts in this field better results will be obtained during the coming twelve months.

Infant Mortality.

The infant mortality rate was 26.42 per thousand living births for the year under consideration.

Correspondence Infant Health Section.

This section received 2,380 letters and 2,521 letters were written in addition to first and second circular letters, sets of patterns, and telephone calls. These latter added up to a further 1,600 advices. Six hundred and nineteen individual mothers called at the Centre when in Perth.

The Correspondence Sister makes two visits per year to the North-West, covering towns from Carnarvon through to Wyndham. All these visits are made entirely by air. During these trips the Sister examines as many pre-school children as possible, as well as all the babies throughout the area.

Travelling Infant Health Centres.

More and more Travelling Centres are being started—at the present time there are 16—and a great number of new Sub-Centres throughout the country districts are being opened up in connection with existing Travelling Centres. These Travelling Centres do a very great service in the country areas, as in most of them the sisters travel approximately a 300 mile circuit per week, giving their service not only to the mothers in the townships, but to mothers en route.

North-West Centre and Flying Sister.

A sister was stationed in the North-West to take in Wyndham, Derby, Broome and outlying stations.

All these districts which are now being served by their own Sister must naturally decrease the numbers in touch with the Correspondence section. This is only what was expected, and it proves the value of the Correspondence Infant Health Centre. It is often through this section that the needs of a district are brought to our notice, and so in due course an Infant Health Centre for that area is established.

Telephones.

A great number of Centres now have telephones installed, and wherever there is a permanent building efforts are made to get the telephone connected. The telephones are useful at all times, but particularly when there is an epidemic of some infectious disease. The mothers are not supposed to ring up instead of coming to the Centre, except at times when an emergency arises. The telephone is a distinct aid to the work.

New Centres.

The Infant Health work has continued to expand and the following new Centres were established during the year on a full-time basis.

1. North-West, which includes Derby, Wyndham, Broome and all the outlying stations.
2. *Osborne Park*, which is a Travelling Centre, and caters for Scarborough, East Scarborough, City Beach, Lake Guelup, Waterman's Bay, Tuart Hill, Innaloo, as well as Osborne Park itself.
3. Two big city Centres were sub-divided to make three.
   (a) Mt. Hawthorn is now one complete Centre with a sub-centre at the further end of this suburb.
   (b) *Wembley and Floreat Park* are now a complete Centre with West Perth as a new sub-centre.
   (c) *Leederville and North Perth* were joined to make one Centre and a Sub-Centre was opened up in connection with this Centre at the further end of Walcott Street in Mt. Lawley. Both these new Sub-Centres are filling a long felt want and proving of great benefit to all the mothers in and around their respective areas, by saving them a long walk.

In addition to the above Centres and Sub-Centres there were 25 other new Sub-Centres opened, mainly throughout the country districts.

For the year ending December, 1949, there were in Western Australia :—

Centres—		
Metropolitan, including Correspondence Scheme	22	
Country	20	
		42
Sub-Centres—		
Metropolitan	76	
Country	133	
		209
Total Centres and Sub-Centres for whole State		251

At each main Centre there is a fully trained Triple Certificated Sister in charge.

The work of these centres, together with that of the Correspondence Sister, covers the infant health of the whole State. No mother need be without the advice of a qualified Infant Health Sister.

Buildings.

There has been great activity throughout the State in connection with Infant Health buildings. Many Centres obtained their permits to build and this year were either engaged in raising the rest of the money necessary or taking other steps to get their buildings under way.

Karlgarin provided a new cement room for use as an Infant Health Centre. This is an excellent room and was furnished by the Lotteries Commission.

The Kalgoorlie Infant Health Centre was taken over by the Kalgoorlie Municpal Council, who immediately took steps to make arrangements for the erection of a proper Centre. In the meantime they put their existing centre into order by refurnishing, painting and generally improving the rooms.

Bunbury got their plans out for a very effective Centre, together with nurse's quarters.

Wembley's building is almost completed.

Mothercraft Lectures.

A new Sister was appointed and the Mothercraft lectures were restarted in all the big High Schools in the metropolitan area, and practically in all the colleges.

Mothercraft leaflets were brought up to date and printed.

Arrangements were made to start the Infant Health Sisters in Charge or Centres, both metropolitan and country, on the project of giving Mothercraft lectures to any High School or college in their particular district. This project will be developed until eventually these Sisters are doing all the Mothercraft lectures in the State. In this way the lectures will not cease should one particular sister resign. These Sisters giving the Mothercraft lectures will be brought in from time to time and given a Refresher Course to keep them up to date. The Domestic Science Teachers also will be given a Refresher Course as they can take over some of these lectures, particularly those relating to cooking, clothing, etc.

In addition to the Mothercraft lectures given at the schools, courses of lectures in Mothercraft were given to Girl Guides and also to groups of women who applied for such lectures.

There was a Mothercraft section in the Royal Show exhibited by the Claremont Class. It was an excellent section.

A " Mothercraft Demonstration Corner " was purchased and set up in the Stirling Street Lecture room. This has proved invaluable as many of the Sisters use it when they have young parents coming to the Centre for the first time. Many Centres are now thinking of establishing a " Corner " in their own building as it shows everything a mother needs for a new baby, including all the clothing, etc.

The new sister appointed for these Mothercraft lectures has undertaken some of the duties as a Nurse Inspectress. She has gone round many of the country Centres, familiarised herself with the sisters and the particular problems connected with the various districts. The Sister was from another State and a highly qualified officer with knowledge of the methods of the different Infant Health training schools throughout Australia and New Zealand.

Pre-school Children.

The pre-school section of our work is becoming more known and better appreciated by the mothers and consequently many of them bring their toddlers to the Centres on the days set aside for toddlers. Gradually the Centres are becoming equipped with special Toddlers' scales. These scales are suitable for the child that can stand up and are equipped with height measuring rods. Special cards have been provided to keep detailed records of the progress of these children. Mothers appreciate this section of the work and are beginning to realise that we wish to keep in touch with the child from babies through to the school child, viz., six years of age. This pre-school age is a vitally important period in the life of a child, and is frequently neglected. It is during this period it is most liable to contract one of the various infectious diseases unless the utmost vigilance is exercised.

Scales.

The position is still difficult in regard to baby scales as we are unable to import scales form other places.

There is a firm in Perth which makes scales to conform to the Weights and Measures Act and these are, of course, very costly, both for us and for the manufacturer, and he states unless he can be given a large order it is not worth his while to set up all the machinery necessary to make the scales. The scales are too costly to be bought very freely, hence the reason why the manufacturer finds it necessary to have some guarantee. It is difficult to get anybody to give a large order because it involves many hundreds of pounds.

Refresher Course.

This year saw the inauguration of a new scheme, viz., the Refresher Course for Infant Health sisters. The Government gave the Department permission to call in all the Infant Health sisters throughout the State for a Refresher Course. The Refresher Course took place at the end of November from Friday afternoon 2 p.m. until the following Monday at 1 p.m. By doing it over the weekend it was found that the Centres were inconvenienced to a minimum possible degree.

The Doctors co-operated valiantly, a very fine syllabus was set up and a series of ten lectures was given ; not one Doctor asked refused to help.

After the course a copy of every lecture was typed and given to the sisters so that they would have the subject matter for reference.

In addition to all the lectures a film evening was provided, which comprised half educational films and half entertaining films. The purpose of the film evening was to show the nurses what was available in films so that they in their turn could go back and tell their local Committees, Parents & Citizens' Associations, etc., about these films in the hope that such film evenings would be instituted in their own districts, and so " spread the word " in connection with all the different avenues of preventive medicine.

This Refresher Course was possibly the most valuable piece of work that has been started of recent years as it keeps the sisters right up to the minute in their work. It is hoped to have the Refresher Course at either one or two yearly intervals, as it appears necessary.

Nurses.

The Infant Health service is fortunate in having an excellent group of sisters who have worked very well and faithfully over a great many years. The State owes them a debt of gratitude for the constant interest and hard work which they have given so unstintingly over and above that for which they are paid. Practically all the Centres were open throughout the whole of the year, and where any Centres had to be shut for any reason various of our ex-Infant Health Sisters who are married and living in the district came forward to keep the Centre open until a permanent Sister could be appointed.

As well as at least one permanent Sister being on the staff for relief work, it was found necessary to appoint four extra relief Sisters who could be used whenever necessary for sick leave, etc. These sisters, when not used on actual Infant Health work, are used in another section on child health work and from this store are drawn any new Sisters we require for the opening up of new Centres.

The Lotteries Commission.

The Lotteries Commission have made very substantial contributions to nurses' salaries and other expenses involved in the maintenance of Centres. They have also been generous in the provision of new scales for Centres. In some cases they have given money towards new buildings, and in other cases where they have not thought this desirable they have given money towards the furnishings.

Local Infant Health Committees.

Local Infant Health Committees are to be found in many towns or suburbs where there is an Infant Health Centre. The Committees are responsible for the building, furnishing, and cleaning of the Centre, and also for the purchase of a car if one is necessary for the work of that Centre.

A large amount of money needs to be raised for this purpose and involves a great deal of hard work on the part of the honorary Committee members. Therefore, to those Committees who are still in existence I wish to offer my grateful thanks as they have worked so hard, so long and so consistently in the interests of the mothers and babies in their districts.

The members who have been on the Committee for a long time are finding it increasingly hard to recruit new members, because the general attitude seems to be that as the Federal Government takes a Social Service tax the Infant Health Centres should be the financial responsibility of the Federal Government. As a result the local Committees are gradually fading out and handing over the whole of their duties to the Department. Where there is already a furnished building in existence then it is a comparatively easy matter to carry on, but where a building has to be erected the position is most difficult.

Local Authorities.

The Local Authorities are becoming more " Infant Health conscious " in as much as many of them have definitely accepted their responsibility towards the work. This evidence of interest being shown by the fact that in certain places they have raised a loan to find any extra money that the Committee needed for the erection of a building.

In some cases the Local Authorities have assumed the full responsibility for the erection of the building.

Government.

The Government has been very generous to this section of preventive medicine and has granted the requisite money for any extra staff that were necessary for the further development and extension of the work.

We have this year, as you will have noticed from the reports, started a North-West service, extended the Correspondence Sister's visits to the North, and started the yearly Refresher Course for Infant Health Sisters. The Government accepts responsibility for the payment of sister's salaries, together with all mileage rates, general travelling allowances, and petty expenses of the Centres.

Conclusion.

To sum up, therefore, the past year has seen further development in the Infant Health work throughout the whole State and it has been possible, through the staff of relieving Infant Health nurses, to keep practically all the Centres open throughout the year and to keep them operating fully and efficiently.

E. M. STANG, M.B., B.S., D.P.H.

Medical Supervisor of Infant Health.

ANALYSIS OF INFANT HEALTH CENTRE ATTENDANCES.

COUNTRY CENTRES

Infant Health Report for year ended 31st December, 1949.	Albany.	Beverley.	Boulder.	Bridgetown.	Bunbury.	Busselton.	Corrigin.	Geraldton.	Kalgoorlie.	Katanning.	Kellerberrin.	Manjimup.	Moora.	Narrogin.	Norseman.	Northam.	Three Springs.	Wagin.	Waroona
Births Reported	282	132	254	254	309	666	206	282	503	230	229	214	166	211	102	188	123	401	285
Total Individual No. of Babies Attended Centre	337	293	267	257	443	694	512	412	489	325	342	350	296	293	219	246	259	523	491
Total Attendance of Babes at Centre	4,298	3,113	3,418	1,843	3,441	4,999	3,781	2,676	3,291	2,819	4,555	2,868	2,467	2,995	1,614	2,377	2,814	3,920	4,232
No. of Individual Expectant Mothers Advised	51	33	9	—	17	31	30	1	29	17	6	—	15	34	11	8	33	9	55
Total No. of Visits	584	254	510	213	857	....	24	408	957	205	487	210	112	341	298	690	245	343	253
Nos. referred to Doctors and Hospitals—																			
(a) Babes	83	17	24	22	15	54	120	34	75	33	26	36	54	23	17	36	24	29	28
(b) Mothers	24	—	3	—	—	4	80	4	8	2	2	3	12	6	2	—	10	8	2
No. of such Babes on Roll under Nine Months	208	124	93	171	153	258	273	183	330	114	273	234	206	132	104	113	106	362	227
(a) Breast Fed	86	45	34	38	101	85	88	58	121	30	60	89	73	58	38	38	40	105	109
(b) Comp. Feeding	19	5	17	18	4	15	65	27	22	17	17	32	40	15	7	9	10	17	33
No. of such Babes Artificially Fed—																			
(c) Fresh Milk	52	37	—	18	5	31	68	18	4	13	18	54	27	30	2	24	10	44	31
(d) Dried Milk	49	35	42	41	43	59	47	73	176	54	71	51	64	22	54	37	41	97	51
(e) Condensed Milk	2	1	—	—	—	—	2	4	7	—	1	—	2	3	3	4	1	10	3
(f) Patent Foods	—	1	—	—	—	2	3	1	—	—	1	4	—	2	—	1	4	89	—
(g) Educational Diets	—	—	—	56	—	66	—	2	—	—	105	4	—	2	—	—	—	—	—
Percentage of Breast Feeding of Babes Born between 1st Jan. and 31st Dec., 1949—																			
(a) Fully Breast Fed for Five Months	29·48	33·55	42·85	29·97	36·36	14·06	40·90	38·61	45·97	25·94	39·91	40·16	28·75	43·94	26·59	46·23	42·72	39·09	44·8
(b) Breast Fed and Complement for Five Months	9·61	13·17	16·32	4·54	13·13	8·57	16·47	6·93	16·78	8·67	14·36	11·96	26·25	33·75	13·82	4·30	19·09	8·27	20·0

METROPOLITAN CENTRES

Infant Health Report for year ended 31st December, 1949.	Armadale.	Bicton.	Claremont.	Cottesloe.	E. Fremantle.	E. Vic. Park.	Fremantle.	Inglewood.	Kalamunda.	Midland Jctn.	Mt. Hawthorn.	Mundaring.	Nedlands.	North Perth.	Perth.	South Perth.	Subiaco.	Vic. Park.	Wembley	Total.	Total for previous Year.
Births Reported	222	385	283	325	267	303	524	622	268	417	453	162	209	588	693	315	132	450	294	11,949	10,365
Total Individual No. of Babies Attended Centre	373	661	573	423	430	404	827	1,120	661	540	350	324	333	537	1,317	593	539	757	253	18,063	17,488
Total Attendance of Babes at Centre	3,814	7,005	6,868	5,176	4,923	6,010	6,866	9,363	3,932	5,614	3,213	3,812	4,836	6,351	8,618	6,501	3,051	5,971	4,991	168,436	165,689
No. of Individual Expectant Mothers Advised	7	36	54	10	28	—	34	108	15	1	3	22	16	25	58	5	27	21	7	866	1,013
Total No. of Visits	676	469	1,159	777	516	379	709	215	1,486	290	398	564	388	790	786	126	250	291	493	17,753	17,507
Nos. referred to Doctors and Hospitals—																					
(a) Babes	15	35	112	32	58	45	146	79	26	102	32	39	42	68	106	32	62	75	39	1,895	1,854
(b) Mothers	1	14	50	3	18	6	42	51	1	14	....	6	12	21	9	1	28	15	7	469	542
No. of such Babes on Roll under Nine Months	188	309	352	335	491	265	427	400	213	341	124	129	162	334	981	404	186	387	153	9,845	9,466
(a) Breast Fed	57	152	223	140	191	63	167	183	118	119	64	51	69	102	514	115	98	136	68	3,926	4,132
(b) Comp. Feeding	13	20	25	52	22	17	46	46	12	27	15	20	10	117	115	30	20	43	10	1,049	888
No. of such Babes Artificially Fed—																					
(c) Fresh Milk	27	10	42	59	33	24	34	67	9	54	13	18	14	38	136	47	30	74	32	1,247	1,276
(d) Dried Milk	34	43	57	79	94	53	167	85	27	137	25	37	28	73	188	56	28	134	40	2,492	2,313
(e) Condensed Milk	7	7	5	5	9	6	9	7	4	4	2	3	1	1	28	12	5	....	3	161	239
(f) Patent Foods	....	5	....	....	2	39	4	12	....	....	2	....	1	3	....	6	5	....	....	187	111
(g) Educational Diets	50	72	....	....	140	63	....	....	43	....	3	....	39	....	....	138	....	....	....	783	507
Percentage of Breast Feeding of Babes Born between 1st Jan. and 31st Dec., 1949—																				Average for State	
(a) Fully Breast Fed for Five Months	37·85	43·92	55·71	20·06	38·59	30·26	42·14	45·73	36·99	16·66	51·06	49·47	20·25	40·13	53·35	28·88	30·04	29·09	42·93	36·21	....
(b) Breast Fed and Complement for Five Months	3·95	10·28	8·16	11·76	29·23	17·24	10·33	11·20	8·67	9·67	27·65	7·81	5·53	12·05	4·45	8·17	29·20	25·71	29·02	13·71	....

APPENDIX X

THE COMMISSIONER OF PUBLIC HEALTH.

I have the honour to submit a report on the activities of the School Medical Service in Western Australia for the year 1949.

During 1949, there were two full-time and one part-time Doctors and three full-time nurses engaged on School Medical work. These School Doctors between them examined 12,361 children in the metropolitan schools and 10,451 in the country schools, making a total for the State of 22,812 children. This is a highly commendable figure for such a small staff and reflects great credit on the officers concerned.

Of the total number of children examined—

3,780 were referred for medical attention,

7,854 for dental attention,

5,561 for home attention and observation.

By observation is meant that the parents were told to watch a certain condition and if it got worse then to get medical attention.

Of the children who were referred for medical attention—

1,958 were referred for throat or nose defects,

780 for eye defects.

The rest of the children referred for medical attention were sent for such troubles as Rheumatism, undernourishment, heart defects, skin complaints, anaemia, etc.

Nutrition.

Of the total number of children examined it was found that 17,758 were normal and only 2,186 were below standard, the rest, viz., 2,868, were above the normal. This means that 12.3 per cent. were below standard and 16 per cent. were above normal. This does not mean that those below standard were grossly so, probably in many cases they were only slightly lower than the normal. In some cases those that were "above normal" would be due to a medical defect, such as glandular trouble, but the majority were just fat children, here again in the majority not grossly so.

These nutrition figures show a distinct improvement on previous years, and particularly on 1948, as during that year of the total number of children examined 16,721 were normal and 3,525 were below standard.

It is interesting to note that this year, as last year, the greatest improvement would appear to have been in the metropolitan area, because we find that of the children examined in the metropolitan area, 10,733 were of normal nutrition and only a further 1,129 were below it, whereas in the country for those that were normal nutrition, 7,025, another 1,057 were below standard. It was also noticed in 1948 that the greatest improvement in nutrition was in the metropolitan area.

Oslo Lunch.

This lunch, which is a well-balanced lunch comprising wholemeal bread, butter, fresh vegetables, fruit, cheese, half a hard-boiled egg and a large glass of milk, is being supplied to the children at many of the schools. The head teacher organises the lunch and it is worked by a roster of mothers. Buying in bulk enables the lunch to be provided at a very low figure of about 6d., 7d., or 8d. per meal, far lower than could be possibly be bought by the parents in their own homes.

This project is spreading throughout the State and there are quite a number of schools putting it into operation. Undoubtedly it requires organising ability and work for the teacher, and whether it is started in a school or not depends on the enthusiasm and interest of this teacher. Many schools are doing it, such as the Mount Hawthorn Infant and Senior, Gosnells, Collie, Manjimup, Bunbury and many others. At the Mount Hawthorn School alone there are over 3,000 lunches per week bought by the children, which is an average of about 600 per day. This project has been working at this school now for some few years and has been an unqualified success. Any teachers wishing to start the lunch in their own schools have been urged to go to Mount Hawthorn to see the system and copy it.

Local School Medical Examinations.

Efforts were again made this year—at the request of some of the local people—to have the children in country districts examined by local Doctors. With the exception of one or two towns this did not prove possible.

North-West.

In the North-West the children were all examined by the local Doctors, who are Departmental officers. The medical examination of the children throughout this area will be carried out each year by such officers.

Work of School Nurses.

The School Nurses paid a total number of 1,308 home visits, of which 1,204 were in regard to the need for medical attention for certain defects. It was pleasing to note that when the nurses visited the homes, already 458 children had had the necessary medical attention, and as a result of the nurses' visits another 388 parents promised to get it ; 25 parents claimed they were disinterested, and 333 parents were either out or had left the district.

Child Hygiene.

Through the hard work of the School Nurses the cleanliness of the schools is improving each year. The pediculosis figure was again the lowest on record as the percentage of pediculosis amongst the children in the State Schools was 0.9 and for the Convents it was 1.2, making an average total for the whole State of 0.96. It is interesting to note that in 1925 the percentage for the State Schools was 14.8 and for the Convents 28.5 ; since then, through concerted and persistent efforts, the pediculosis figures have been reduced systematically year by year.

Medical Examinations at Health Camps.

In addition to the usual examination at the schools medical examinations have been given to children attending the various National Fitness Camps.

Also special attention has been given to the medical examination of orphans coming into the State under the Migration scheme. It has been most gratifying to notice the improvement in the health and physique of these children during the 12 months under consideration. As their general health and well-being has improved so also has their intelligence in many cases. There is no doubt that the apathy and also lack of intelligence so many of them showed when they first arrived here was due to the diet and general poor conditions in England.

Conclusion.

Prevention of ill-health calls for the early recognition of departures from normality. To leave the initiative in this matter to parents would be to court trouble, even though the great majority of parents are keenly alive to the interests of their children. These early indications of disease and mal-development must be sought by those skilled in their recognition and experienced in assessing their significance. In fact no matter how interested the parent was in the child these indications would not be obvious to him. Indeed the earlier the case is brought to light the less obvious to the layman is the need for treatment, and yet it is this early treatment which is of such extreme value both to the child himself and to the community as a whole.

In my opinion the ideal to aim for is a two yearly complete examination of all school children. Once this has been attained then the next aim must be for remedial school Clinics, then for holiday, health and training homes where delicate, but not sick, children can go for various periods to have their health built up, after which they can be returned to ordinary schools.

So even although a National Health Service be established it should never supersede a School Medical Service, because this latter service is a specialised one and of the utmost value to the community for the *early recognition* of disease. All cases that require it, must be " followed-up " to ensure that appropriate action is being taken by the parents.

E. M. STANG, M.B., B.S., D.P.H.
Senior Medical Officer of Schools.

APPENDIX XI

SCHOOL MEDICAL SERVICE.

EXAMINATION OF METROPOLITAN AND COUNTRY SCHOOLS, 1949.

——	No. Examined.	No. Notified.	No. referred for Medical Attention.	No. for Home Attention and Observation.	No. requiring Dental Attention.	Recalls.	Specials.	Skin Complaints.		Nutrition.			Eyes Medical Attention.	Tonsils Medical Attention.
								No.	%	3.	Under	Over		
Metropolitan Schools.														
Boys	5,916	3,770	1,258	1,779	2,296	735	65	....	....	5,154	559	203	....	....
Girls	6,445	4,098	1,251	1,912	2,522	1,104	80	....	....	5,579	570	296	....	....
Total	12,361	7,868	2,509	3,691	4,818	1,839	145	646	5·2	10,733	1,129	499	439	1,163
Country Schools.														
Boys	5,384	2,459	639	937	1,490	34	....	....	....	3,732	828	824	....	....
Girls	5,067	2,442	632	933	1,546	25	....	....	....	3,293	229	1,545	....	....
Total	10,451	4,901	1,271	1,870	3,036	59	....	117	1·1	7,025	1,057	2,369	341	795
State Totals.														
Boys	11,300	6,229	1,897	2,716	3,786	769	....	....	....	8,886	1,387	1,027	....	....
Girls	11,512	6,540	1,883	2,845	4,068	1,129	....	....	....	8,872	799	1,841	....	....
Total	22,812	12,769	3,780	5,561	7,854	1,898	145	763	3·3	17,758	2,186	2,868	780	1,958

APPENDIX XII

REPORT OF THE SENIOR DENTAL OFFICER OF SCHOOLS.

In my last report (for the year 1948) I mentioned that approval had been given for an additional four School Dental Officers, to be stationed in country areas.

The resultant advertisements brought no response in Australia but there a few replies in Great Britain. Some of the applicants were interviewed by the Agent General and eventually four were chosen. Following is the history of this four.

Two, before having their passages booked wrote to say they had changed their minds.

One arrived in Perth but changed his mind before actually commencing duty and booked his passage back to Britain on the first available ship.

One came out and commenced duty ; he was given every consideration and encouragement and then stationed in the Geraldton area ; however, after six months he resigned.

In contrast another man came out of his own accord determined to try his luck in a new country. He approached us for a position, was engaged, and is now stationed in the South-West with headquarters at Bunbury.

Therefore of the four positions advertised in 1948, only one has been filled. The men from Great Britain claimed that the living and working conditions in this State were much worse than they had expected and that there had been much misrepresentation of the position in London. There is something in what they said, as working conditions of the older members of our staff could certainly be improved, but at the same time I think that the real reason behind the resignations and withdrawal of applications was the fact that under the recently formed National Health Scheme of Britain, dentists found that they could easily earn about £4,000 a year whereas the range we offered was £683–£787 plus cost of living variations.

During the year under review the vacant positions were again advertised in Great Britain at a slightly higher range of salary but there was no response. It seems therefore as if we shall have to look closer home for men.

Now in June, 1949, the Government's considered policy was to have the School Dental Staff greatly increased so that a far greater number of children could receive dental attention. As a result it was decided that a committee should be formed to devise ways and means of implementing that policy.

This Committee, consisting of the Commissioner of Public Health, the Director of Education and a representative of the Treasury was formed, had several meetings and in August, 1949, recommended as follows :—

1. That the children of all ages in all small and isolated schools should receive dental attention.
2. That children in all other schools up to the age of 10 should receive attention.
3. That the schools should be visited at least every two years.
4. To implement the above six new positions should be created. These would be in addition to the four positions created in 1948 and with the older members of the staff would eventually mean a total of 14 School Dental Officers.
5. Salary range should be £850–£1,100 plus cost of living adjustments.
6. A system of scholarships should be inaugurated, the intention being to assist young men to graduate in dentistry on the understanding that they would serve a certain term of years in our School Dental Service.

The sequel was that towards the end of the year the Public Service Commissioner created four new positions at a salary range of £735–£865 plus living allowance adjustments ; this range it will be seen, was very little more than had been offered before the Government and the inter-departmental committee suggested something much more attractive. At the time this report was written the vacancies had not yet been advertised.

It must be remembered that the working conditions of School Dental Officers of necessity cannot approximate those of private dentists. All the more reason therefore, that the salary offered should bear some relation to what can be earned in private practice. I also consider that the working conditions of the older members of the staff should be bettered by providing mobile surgeries and whatever electrical equipment can be profitably employed in them—similar in fact to what we are providing for the newer dental officers.

Anyway the position at the end of the year was that we had five dentists on our staff and there were seven vacancies ; equipment was in hand for three of the latter and it was hoped that orders for the four more sets of equipment necessary would be placed early in the new year.

During the year under review, four of our dentists worked throughout that period, while two new men each worked approximately six months each and except in my own case all the treatment rendered was, of course, amongst school children.

As usual, I myself attended to the bulk of the Institutional work in addition to the administration of our Sub-Department.

Some valuable country itineraries were undertaken by members of the staff, particularly one to the Extreme North-West. This was done by Mr. Turnbull, and as there was no private dentist North of Geraldton, Mr. Turnbull was asked to attend to adults as well as children. He also, by the way, relieved me on occasions at the Institutions.

Facts in regard to school work :—

Number of country schools visited	51
Number of metropolitan schools visited	15
Number of children examined	4,131
Number of children treated (with parents' consent)	2,797
Number of children who needed no attention	775
Number of children who were to be done privately	241
Number of children whose parents desired no treatment	318

Operations performed—

Silver Amalgam fillings	2,620
Copper Amalgam fillings	2,626
Cement fillings	1,058
Porcelain fillings	132
Silver nitrate treatments	966
Other conservative treatments	2,339
Extractions	5,705
Scaling and cleaning	353
Talks and personal interviews	1,167

During school vacations, when the dentists themselves were not on leave, orphanages were visited.

Facts about the Institutions :—

Wooroloo Sanatorium—

Number of visits by patients to surgery	511
Extractions	139
Fillings	71
Prophylaxis	21
New dentures	28
Repairs	17
Other treatments	85
Examination only	150

Mental Hospitals—

Patients' visits	421
Extractions	305
Fillings	4
Prophylaxis	18
New dentures	36
Repairs to dentures	39
Other treatments	92
Examinations only	120

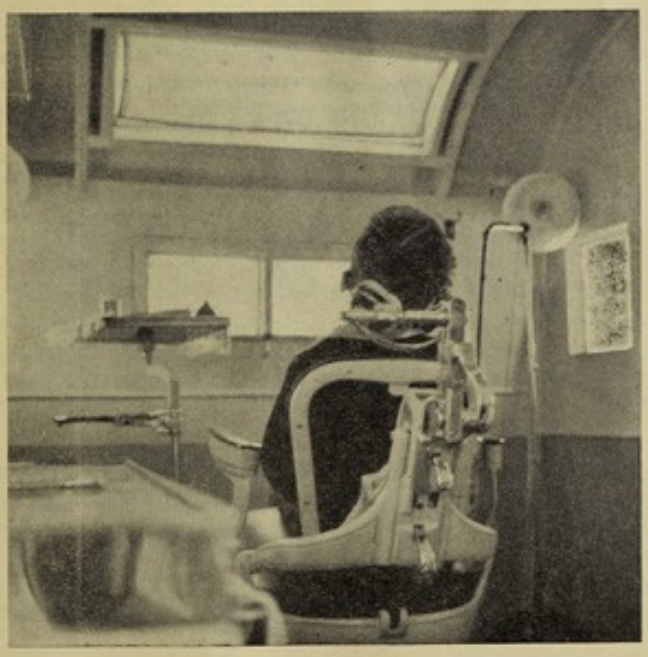
Prisons—

Patients' visits	252
Extractions	112
Fillings	43
Prophylaxis	12
New Dentures	7
Reparis to dentures	15

As usual, prison inmates paid fees for all work undertaken. Denture work for inmates of institutions was done in connection with the Dental Hospital.

A. G. McKENNA,

Senior Dental Officer.



Interior view of Mobile Surgery.

APPENDIX XIII

NORTH WEST TOUR.

A REPORT MADE TO THE COMMISSIONER OF PUBLIC HEALTH BY THE DEPUTY COMMISSIONER, DR. W. S. DAVIDSON.

September, 1949.

During a tour of the North-West from 4th August to 12th September, 1949, I visited several cattle and sheep stations, did a two-day Flying Doctor trip from Derby, and a three-day special charter flight to the Missions Stations of Kunmunya, Forrest River and Drysdale, inspecting the natives therein, and a two-day visit to Cockatoo Island as Medical Officer and Sanitary Inspector. I visited or resided at the following towns for varying lengths of time :—Derby, Halls Creek, Wyndham, Broome, Port Hedland, Marble Bar, Onslow. I paid brief visits to the Meat Works at Wyndham, Glenroy and Broome and spent a night at the Whaling Station at Point Cloates. I inspected the Medical and Sanitary arrangements in these places and endeavoured to form an impression regarding the social life, progress, and problems of the area. I discussed these problems with all manner of people. The Road Board at Derby invited me to a special meeting to hear their views and I spent the better part of a day with the Chairman of the Broome Road Board.

The following are some of the points made and impressions gathered :—

Medical.

The people want a complete medical unit stationed somewhere in the North. This unit would contain a surgical team and a laboratory. The universal opinion is that these would be available if sufficient monetary inducement was forthcoming. I think, however, that the remuneration is but a minor part of the doctor problem. The majority of doctors with sufficient experience for isolated work in the North are married and have families and the majority of doctors' wives are unwilling to live and rear families under present day conditions in the North while greater remuneration and better conditions are obtainable in the South.

We have here a vicious circle—the North will not be settled and civilised until white women are prepared to make their homes there and live there : white women are loathe to go there under present conditions, one of which is inadequate medical cover : doctors are difficult to settle in the North because they are married to white women.

Flying Doctor Service.

The Flying Doctor trip fortnightly carried out from Derby is largely a morale booster. The plane used carries mail and passengers and tries to run to schedule. As the plane is not fitted with a self starter, the engines are normally kept running at the halts. Any medical attention given under these circumstances of hurry and noise is of negligible value. Few station owners have made any attempt to provide a medical inspection room on their air strip and few or none provide the means for washing one's hands after seeing the patient.

Aeroplanes of the Flying Doctor Service at Port Hedland, when functioning, would appear to give more satisfactory service, probably because they have less commercial distractions.

Flying Doctor Wireless Service gives great comfort to people in inaccessible regions and is constantly used. Its danger, of course, lies in the need for the doctor to rely on the untrained observer. Tragedies, though rare, may occur, but are probably outweighed by its other benefits.

Where, as is universal in the North, the doctor is working single handed at his centre, it is thoroughly bad policy to expect him to go on protracted tours away from his hospital. It is at his hospital he performs his most valuable work and to that centre the patient should be brought. To leave his hospital for a day or two is to invite disaster. In consequence of this, the Flying Doctor routine trip from Derby has not been made for some time.

It would appear, therefore, that at Derby a Medical Officer is required for the following functions :—

(1) To tour the North-West by land and air transport and inspect all natives, to eradicate infectious disease, improve their nutrition and sanitary habits and maintain a medical service for them.

(2) To perform the Flying Doctor routine trips.

(3) To maintain the base hospitals and leprosarium at Derby.

It will therefore be necessary to increase the doctors at Derby to at least two and possibly three.

Leprosy.

In my tour of the Missions I picked up four fresh cases of leprosy. These were merely the ones who didn't know they had it or who were anxious to have treatment. The remainder had fled to the bush on the approach of the doctor's plane.

Leprosy has comparatively recently been introduced to Australia. By passage through non-resistant media it is gaining in virulence. It is some centuries since leprosy was prevalent in Europe and during that time the white man must have lost much of his resistance to the disease. It is therefore evident that we have in our midst a virulent infection against which we have limited resistance. Fortunately, infection would appear to require prolonged contact. But this prolonged contact or port of entry exists in our half-caste population. They will represent the vector of the disease from black to white. Of 260 lepers in the Leprosarium at Derby, approximately 40 are half-castes. Whites seldom marry or live in close contact with blacks, but half-castes do, and half-castes marry and live in close contact with whites.

The Derby Leprosarium is an excellently run institution. Its only fault is that it is not on an island and lepers can escape as they wish. Fortunately, this seldom takes place as the standard of care given them is so high, that once there, few wish to leave before cured.

There is an urgent need for an organised inspection of all natives in the North. This will need patrol men and doctors and the need is now.

The Natives.

These are of four categories :—

(1) The Station Native.
(2) The Hanger-on round the Town Native.
(3) The Mission Native.
(4) The Bush Native.

Each and any one of these may contain varying amounts of white, Malayan, Chinese, Japanese, Indian or Negroid blood.

(1) The Station Native in the Kimberleys has his home on the station. He and his family are born, brought up and cared for until they die there. They are clothed, fed and doctored through Station offices. They are not paid and poorly housed. Sanitary arrangements for them are practically non-existent ; the argument being that improperly used sanitary conveniences are more dangerous than a liberal use of the country side. That being so, I cannot understand why the native quarters are invariably in such close proximity to the homestead.

The argument against housing him is that he prefers to sleep outside ; he will only make a pigstye of it or someone will put a " hoodoo " on it and no one will ever go in it again. The ones I saw should all have a " hoodoo " on them.

The argument against paying them is that he doesn't understand money ; he would only gamble it away ; or be a source of income to " sharks " and " city slickers " if he had any money, he would buy drinks in various forms, and, anyway, he gets food, clothes and tobacco—what more can he want ?

The natives in the cattle country at a casual glance appear contented although unpaid. Farther south round Marble Bar, where they have been paid for years, the majority were on strike for more pay.

On the Station the men are stockmen and the women domestics.

He is reputed to be a good stockman, but the fact remains that there are far too many " clean skin " cattle and the activities of degenerate " wild " bulls cause deterioration in the standard of the herds.

The Native made it possible to pioneer the country and set up large Stations and he is paradoxically a bar to progress. As the native is content with primitive conditions, the station owner has exerted little effort or expense in building settlements for white men and women to live in. The native, however, is dying out and labour problems are becoming acute. The remedy may be to pay and house the native, not commensurate with his worth, but at the highest possible rate, then the white man can compete and when there are homes and amenities ready and fit for him and his wife, then we may see the country settled.

(2) The Hangers on Round the Town are migratory in their habits, perform casual labour when they feel inclined, and are a constant source of worry to the sanitary authorities. They are not to be confused with numerous half-castes and other castes who perform intelligent and useful work and are good citizens.

It is an unfortunate fact that the native has learned from the white man more of his bad than of his good habits. He has had ample opportunity to observe them.

(3) Mission Natives would appear to be of two categories :—

(a) A small permanent nucleus who seldom leave the Mission.
(b) A roving band that mingles with the Bush Native or the Missionaries according to the dictates of his stomach, his need of tobacco, the presence of the doctor and from various other whims known only to himself. This roving band is the vector of disease from bush to Mission and vice versa.

There is need for more medical supervision of the Missions. Every native drawing food or tobacco in a Mission should be on a nominal roll and all natives on that roll without exception should be produced for medical inspection.

The Missions perform a useful materialistic function in the care of orphans and abandoned native children and care of the destitute. There seems, however, no objective end in their education of the native.

I suggest that they might accomplish some useful work in educating the native as a hospital attendant, domestic servant, mechanic, etc., according to his or her ability, so that they may take their place in the community rather than in the bush.

(4) The Bush Native, apparently diminishing in numbers, is the reservoir of infection. Until an extensive organisation is prepared for his periodic surveillance, or until he dies out, we will never be rid of leprosy, yaws, granuloma and hookworm.

The White Man.

He is one of five categories :—

(1) The Townsman.

(2) The Station Owner.

(3) The Station Manager.

(4) Stockman.

(5) A heterogeneous group, including prospectors, miners, casual labourers, technicians, bagmen, beachcombers, and " rubber-neckers " like myself.

(1) It is universally agreed in the Towns that the Government does not do enough for the North, particularly the Towns. The townsman will elaborate the defects of his town when eliciting Government aid, but may be antagonised when self remedial measures are pointed out to him. Although many are of the fixed opinion that what has been good enough for the past 40 years is good enough for the next, there are a few who see clearly the backwardness of these Northern towns and are energetic in their efforts to improve them. Oddly enough, such men are as a rule merely there for business reasons and for a limited time ; they do not look on the North as their permanent home. The permanent residents are mostly half-breeds or retired pioneers, the majority of whom know little and care less about modern civilisation.

(2) The Station Owner is unfortunately often of the " absent " variety.

(3) The Station Manager is frequently paid at a rate that compares unfavourably with other employees in the pastoral industry who have far less responsibility than he has. It would seem to me that improved salaries and living conditions for these men might encourage the settlement there of men and their families who, by their demand for a higher standard of living, would encourage progressive development of the area.

(4) Stockmen are too few to comment upon. They cannot compete with the natives in frugality of living.

The white stockman, however, is the hope of the North. If the stations can induce him by payment and suitable habitation to make his home there, bring his wife and rear his children there, progress will have been made towards settlement. From him will arise the settlers. Purposely or otherwise he has so far been discouraged from making such a home for himself.

(5) The prospectors prospect for all sorts of things. Some find them, some don't.

The other categories mentioned occur anywhere and are of little interest.

The Towns.

I was told repeatedly that the North-West was a young country. I expected to see young towns. Instead, I was met with decay, indifference and an uncertainty as to the future.

With the disappearance of the Pearling Industry, Broome has lost its prosperity and there is considerable debate as to which, Broome or Derby, or either is to be the capital of the North. Until this point is settled men are loathe to build and Road Boards to increase expenditure in case they are backing a losing horse. From the medical point of view, also, it is imperative that a decision is soon made so that we can build our Medical Centre in the right place. The prime necessities of this capital are that it should have a deep all weather harbour, an all weather aerodrome and an abundant good water supply. These are things that require specialised investigation, but in that investigation the claims of the farther North coastline should not be forgotten. With a port and with an inland country town at, say, Fitzroy Crossing, the country would begin to open up and prosper.

A barrier to this prosperity is the high cost of living. A careful day-to-day budget discloses the fact that the cost of living in the North is 50 per cent. higher than in the South. A Derby Road Board suggestion to ease this was to amalgamate their electricity and water supply financially with that of the metropolitan area. The electricity rate there is 1s. 6d. per unit and the water rate twice that of Perth. A concession like this would be of great financial help to the Northern towns and spread over the metropolitan area the resulting increase would not be noticed. It is most important to have a cheap and adequate electricity supply in a hot climate where fans are an indispensable necessity and make life bearable. Further, in towns like Port Hedland and Onslow, where firewood is very expensive and almost unobtainable, electric cookers would ease the housewife's problem.

Derby Road Board have progressive ideas and have commenced installing septic systems in all bungalows, the cost to be paid by the householder over a period of years. They are at present held up by non-release of materials. I hope these are released soon before they give up in disgust trying to be progressive.

The Country.

I know little about soil, but where grass and trees grow in such profusion and where there are rivers waiting to be controlled for power and irrigation, I am sure other things more valuable than grass and trees will grow also.

The Tableland reminded me of the Deccan Plateau of India and I am sure the country there is waiting for someone to plant a seed and watch it grow. Castor oil, cotton, maize, tea, tobacco, pineapples, bananas, ground-nuts—no end of things that might be tried and a place found to grow them. The very mangroves along the coast could be used to tan the hides that are now exported raw—a leather industry with everything at hand except the men to work it.

The climate on this Tableland I am told is never unpleasantly hot and a breeze always blows.

The Hotels.

Hotels reflect the character of their neighbourhood, further than that, they can influence it. If a hotel by its very appearance makes you take off your hat and wipe your feet before entering, it is maintaining the standards of civilised life. In the North you can go to bed in a hotel without performing these formalities and cause no comment. The difficulty is to find your bed and a place to put your hat should you take it off. The hotel is a " shilling a night doss house " attached to a bar, except that you pay 13s. a day. You don't engage a room, you ask for a bed and try to remember which is yours on the packed verandah or crowded room.

There is urgent need here for Government Guest Houses so that men can take their wives and children to the North and know they can find lodging and can leave them there while they explore the country or otherwise employ themselves. To remove some of this residential trade will not upset the hotel proprietors in the slightest. They look upon it merely as a necessary encumbrance on the money making bar.

Conclusion.

Until such time as a white man can take his wife there and make his home and rear his children there, the North will not progress ; it will degenerate and the black man will not save it, nor will cattle and sheep. The earth requires care and some return for its outlay. We have a Native Affairs Department active in the North ; we need a White Man's Affairs Department also.

I apologise if my digressions from pure medicine should seem irrelevant but it is fundamental that in the closely integrated organisation of human society, no aspect stands alone and is unaffected by the rest and therefore the health of man can never be dissociated from the influences of his environment. Further, when civilisation ceases to progress it stagnates, then disintegrates. Stagnation is far advanced in many quarters in the North.

APPENDIX XIV

REPORT ON THE WORK OF THE DISTRICT MEDICAL OFFICER AT WYNDHAM DURING THE YEAR 1949.

Dr. J. C. Edwards.

The work of the District Medical Officer can be grouped under the following headings :—

(a) Medical work among the white population based upon the work at the District Hospital.

(b) Medical work at the Wyndham Native Hospital.

(c) Advice and medical visits undertaken under the auspices of the Flying Service.

(d) Work as M.O.H. and Quarantine Officer, of which nothing further need be mentioned.

Work at the District Hospital.

The great part of the time of the D.M.O. at the District Hospital is spent in attending the morning and evening out-patient surgeries. This work consists mainly in treating minor ailments and slight injuries, treated under the Workers' Compensation Act. This work is much heavier during the winter months, when the population of Wyndham is considerably increased by the presence of Meatworks Butchers.

During 1949 there were 207 admissions into hospital beds. Among these admissions there were :—

Confinements	6
Operations in Theatre	6
Other anaesthetics in Theatre	4

The last named anaesthetics were for dental extractions and the setting of fractures. The majority of extractions and fractures are treated in the Out-patient Department.

The Native Hospital.

Precise details of admissions to the Native Hospital are given in the returns sent in by the Superintendent.

Natives attend this hospital for confinements and the treatment of injuries and disease. The natives are very susceptible to colds and infectious diseases of the chest. Unless these troubles are treated promptly, they are liable to terminate in a fatal pneumonia. The natives also have a poor resistance to tuberculosis.

There were a considerable number of patients treated for granuloma inguinale. In the past the majority of these patients have responded—at least temporarily—to treatment by a course of antimony injections, but there have always been a few cases which resist this treatment. One patient in the hospital who has been under treatment for several years without success responded satisfactorily to treatment by Streptomycin. This seems to be the general rule among antimony-resistant patients.

Many native patients give a positive Wassermann reaction without any demonstrable signs of disease. Undoubtedly these patients are suffering from latent yaws. This disease is seen in an active form in a number of native children. Syphilis unlike Gonorrhoea is a rare disease among Kimberley natives.

A number of cases of leprosy were admitted to the Wyndham Native Hospital. These were transferred as rapidly as possible to the Derby Leprosarium. The leper compound at the hospital is not suitable for the lengthy confinement of a native leper.

As usual many patients were sent to the hospital without any accompanying form or letter regarding the history of the patient's illness as known to the person responsible for the native. This makes diagnosis and treatment difficult, besides being against the regulations. It must be remembered that many natives cannot make themselves understood in English. We repeatedly ask for the correct forms to be completed. It would be of assistance if the Department would circularise station managers and Superintendents of Native Missions and stress this point once more.

It would be of assistance to the District Medical Officer if the Department of Native Affairs could circulate annually to him the population and other vital statistics of the stations and missions on which natives reside. It is difficult to assess the health of the native population outside the hospital and town.

The Flying Doctor Service.

The District Medical Officer made a number of " Flying Doctor trips " also he flew to the Forrest River and Drysdale River Missions. The major portion of the work in conjunction with the Flying Doctor Service consisted of making diagnosis and advising treatment by pedal wireless, and of treating in the Wyndham Hospitals patients who had been brought to hospital by the Flying Doctor Service.

It will be realised that, although caring for sick patients by wireless is against all the best tenets of clinical medicine, it is under the circumstances inevitable. Often two conflicting considerations are presented to the District Medical Officer for decision. On the one hand there may be an element of uncertainty as to whether the patient about whom advice is required, is or is not seriously ill and in urgent need of treatment ; on the other hand there is the knowledge that to charter a special plane may cost the Flying Doctor Service about £40 or £50 of public money. For this reason everything possible should be done to enable the station managers to give the D.M.O. coherent and useful information on which to make a diagnosis. Also, the knowledge of the use of the hypodermic syringe would be of assistance as it is often desirable to prescribe pencillin, etc., at times when it would be unnecessary to bring the patient into hospital for any other reason. For this reason it would be of great assistance if the Kimberley Infant Welfare Sister could find time to tour the stations and missions to instruct those in charge, in the elements of T.P.R. recording, sterilisation, infant health and other simple nursing techniques.

APPENDIX XV.

REPORT ON ACTIVITIES BY MEDICAL OFFICER BROOME.

by Dr. M. R. Milne.

FINANCIAL FIGURES (YEAR 1949).

	£	s.	d.	
Broome Hospital Medical Fund Subscriptions	358	10	0	
Broome Freezing Works Medical Fund Subscriptions	300	0	0	(approx.)
Broome Pearlers Medical Fund—Fees	180	0	0	
Total of all other debits, as raised on Returns	792	12	8	
	£1,631	2	8	

This figure of £1,631 2s. 8d. represents the net income of the Department resulting from the personal and professional exertions of the District Medical Officer, Broome, in 1949.

FIGURES ABSTRACTED FROM MONTHLY RETURNS FOR 1949.

Confinements	28
Diphtheria Immunisations	18
Venereal Disease	18
Leprosy (white)	1
Dengue	1
Compressed Air Sickness (Pearl Shell Divers)	6
Beri Beri	13
Varicella	6

Notes and comments on above figures—

1. *Venereal Disease.*—All cases treated to bacteriological cure. All sources of infection, where disclosed, were sought out, tested, and treated. All cases refer to Gonorrhoea.

2. *Dengue.*—Only one typical case seen and treated although Dengue is a popular local self diagnosis for any mild upset. I consider the disease rare here in spite of almost universal neglect of anti mosquito measures and omnipresence of the correct mosquito vector.

3. *Compressed Air Sickness.*—All six cases occurred in divers in the September-December period only. During this period shell was being sought in depths exceeding twenty fathoms. As a result of these cases I inquired of the Pearlers about the methods of staging and times for decompression. It became apparent at once that precautions and times considered safe in the Naval Diving Manual were not being adhered to. Further, it was apparent that the resubmersion and restaging of a developed case was being carried out haphazardly and incorrectly. I endeavoured to make these points to the Pearlers and the answers were briefly :—

(a) It would not be economical for men to make short deep dives with long decompression as advised. "We wouldn't get any shell to speak of."

(b) The diver wouldn't stay down for the necessary decompression—being impatient and anxious to get back on board.

(c) The figures in the Diving Manual are unwarrantably long. This opinion was based on experience with Japanese divers whose oriental fatalism made them heedless of the risks, and whose corpses now lie in rows in the cemetery here.

I am convinced that this type of sickness is unnecessary and due solely to ignorance, greed and lack of interest in the welfare of the diver.

I do not think that it could be reduced, however, unless some more rigid control is exercised over this industry. It would seem essential to have a skilled and competent trained diving expert on each boat to ensure that rational safety measures were enforced. At present, the luggers are wholly manned at sea by Asiatic crews.

4. *Beri Beri.*—Thirteen cases of wet beri beri were noted in Asiatic members of Pearling crews—all seen in the last three months of the Pearling season. I cannot see how this can be avoided as Racial preference and prejudice determine diet consumed at sea.

5. *Varicella.*—A small outbreak occurred in September-October, altogether five children and one adult being affected. The disease was mild. There was no word passed to me of any cases in Derby or Port Hedland. I presume a carrier arrived in Broome when children came home from school for holidays by aeroplane.

SUMMARY OF DUTIES CARRIED OUT DURING YEAR.

1. Regular attendance at Hospital for out-patient sessions and regular visits to in-patients.

2. Setting aside of special evening for ante-natal work (since 1948)—an experiment of great value.

3. Personal conduct or supervision of every confinement.

4. Duties as Medical Officer to the Gaol.

5. Duties as Commonwealth Quarantine officer when required.

6. Overland trips by car to bring medical attention to Catholic Missions. Two such trips were undertaken during the year in July—and again in August when I made an inspection of the Missions with Mr. C. E. Flower, the visiting Health Inspector. These trips were fully reported earlier.

7. One thousand four hundred and thirty-five cases were seen at the Hospital.

8. The nursing and domestic staffs were vaccinated as directed after each change of staff unless recent successful vaccination had been done.

9. Numbers of operations performed, if desired, may be found by inspecting the Regular monthly returns—the compiling of which, and allied documents was also part of my activities during the year.

10. Service of Derby Hospital during the four weeks over Christmas when that town was left unattended.

PUBLIC HEALTH MATTERS.

During the year I was the unpaid Medical Officer of Health, advisory to the Broome Road Board. In this capacity I attended the regular Board meetings whenever professional duties allowed. Surprise visits were paid on several occasions to food shops, freezing works, etc., in the district and several prosecutions resulted.

I have the undernoted comments to make about Public Health aspects in Broome :—

1. *Water.*—Reticulated water quite undrinkable, hard, saline and odorous. Bad in quality and grossly insufficient in quantity. The latter fault is being improved at present by the relaying of the town mains. No treatment is being given the water prior to reticulation.

11. *Sanitation.*—An incredible degree of complacency exists about the disgrace of the pan system—which is almost universal in the town. Only the government houses (Commonwealth) and one or two others have septic tank installations. There is still a local resident whose views are considered worth while, who declares that " Septic tanks wouldn't work in Broome." The actual disposal site for the excreta is satisfactory—being handled by intelligent aboriginals.

III. *Housing.*—Except for Commonwealth built property, universal decay and neglect are to be seen. No new house has been built for many years. Most of the houses occupied by the coloured people are totally unfit for habitation as are many occupied by white people. In places, conditions of indescribedly primitive squalor, filth and neglect are tolerated with an apathy that cannot be conveyed to you. Conditions wholly satisfactory for the spread of pestilence exist here, and local interest in their elimination resides solely within my office.

IV. *Shops.*—On the whole are fairly good although none is ceiled.

V. *Pests.*—

(a) FLIES are universal due to sanitary pans and a general disregard to elementary precautions with rubbish. Diarrhoeal diseases are astonishingly infrequent. The municipal rubbish tip is less than one mile from the town. It is a national disgrace.

(b) *Mosquitoes* are universal and will continue to be so while domestic rain water storage is necessary. I have never examined a house tank without finding larvae in it. In no tank is effective mosquito proofing practised. It is still a prevalent local belief that mosquitoes " blow in from the bush." Aldes Argentius is the most common mosquito. After high tides a smaller black insect is prevalent which breeds in the salty tidal pools.

VI. *Butchery.*—The new premises erected by Messrs. Streeter and Male is now in use. It is an improvement. The slaughteryard remains unsanitary and the carrying of carcases on an open truck, a practice which cannot be approved. However, it continues.

VII. *Hospital.*—Adequate in bed-size but in bad repair and ill designed with leaking roof, termite infestation and incredible sanitation. Plans exist for approved repairs and alterations. It is hoped that these will be implemented soon.

SUGGESTIONS.

1. That the Department use every influence to secure early publication of the Dundas Report.

2. That the Department investigate how much cargo space is available on State ships departing for the North-West and see whether materials for works could be shipped (see 5).

3. That subject to Engineer's report, the advisability of making septic tank installations compulsory be considered.

4. That expert opinion on town planning should be sought—in respect of North-West towns.

5. That the materials and labour for repairs to the District Hospital be expedited.

6. That the Pearlers Medical Fund Subscription rate be doubled forthwith. At present it is £10 per boat (10 men) per year (5d. per week per man to cover every medical attention).

7. That Departmental consideration be given at once to a substantial increase in D.M.O.'s salary. The purchasing value of the salary locally bears no relation to its apparent value.

NATIVE HOSPITAL—BROOME.

Figures for Year, 1949 :—

Inpatients	169	483 attendances.
Outpatients	214	
Births	16	
Venereal Disease	5	(7 deaths)
Leprosy (Native)	6	
Tuberculosis	8	

1. Hospital buildings and facilities remain inadequate but promised provision of NISSEN HUTS will greatly improve the position.

2. Seriously ill natives and natives requiring surgical attention continue to be treated at the District Hospital. This is necessary to effect economy in equipment which it would be senseless to duplicate at the two Hospitals. The native patients, however, prefer their own company and are not happy in the District Hospital.

3. No provision for adequate treatment of the Tuberculosis Native exists. The diagnosis amounts to a death sentence. I do my best, but singlehanded I can do little.

4. Lepers are expeditiously removed to Derby by the most convenient route, usually without loss of time.

5. High priority should be afforded to filling repair and furnishing requests for the Native Hospital.

APPENDIX XVI

ONSLOW.

By Dr. J. J. Elphinstone.

Hospital Out-patients	375	
Hospital Admissions	175	(including natives)
Midwifery Cases	1	native
	11	Whites
Major Operations	1	(Caesarean Section)
X-Ray Examinations	94	
Inoculations—		
Anti-diphtheria	2	
Pertussis	1	
Anti-tetanus	2	
Post-Mortem Examinations, for coroner	7	
Post-Mortem Examinations, for others	2	
Natives inspected, on stations, etc.	179	
Ships inspected	1	
Blood Donors Grouped	12	

APPENDIX XVII

INFECTIOUS DISEASES.

Notes by Dr. D. J. R. Snow, Medical Officer, Department of Public Health.

DIPHTHERIA (a)

Previous Incidence and Mortality.

Records of the incidence and mortality from diphtheria in Western Australia since 1911 (when the Health Act was introduced) are set out in the following table, and the relative morbidity and mortality rates for the various years will be more conveniently appreciated by examination of the accompanying histogram.

DIPHTHERIA.

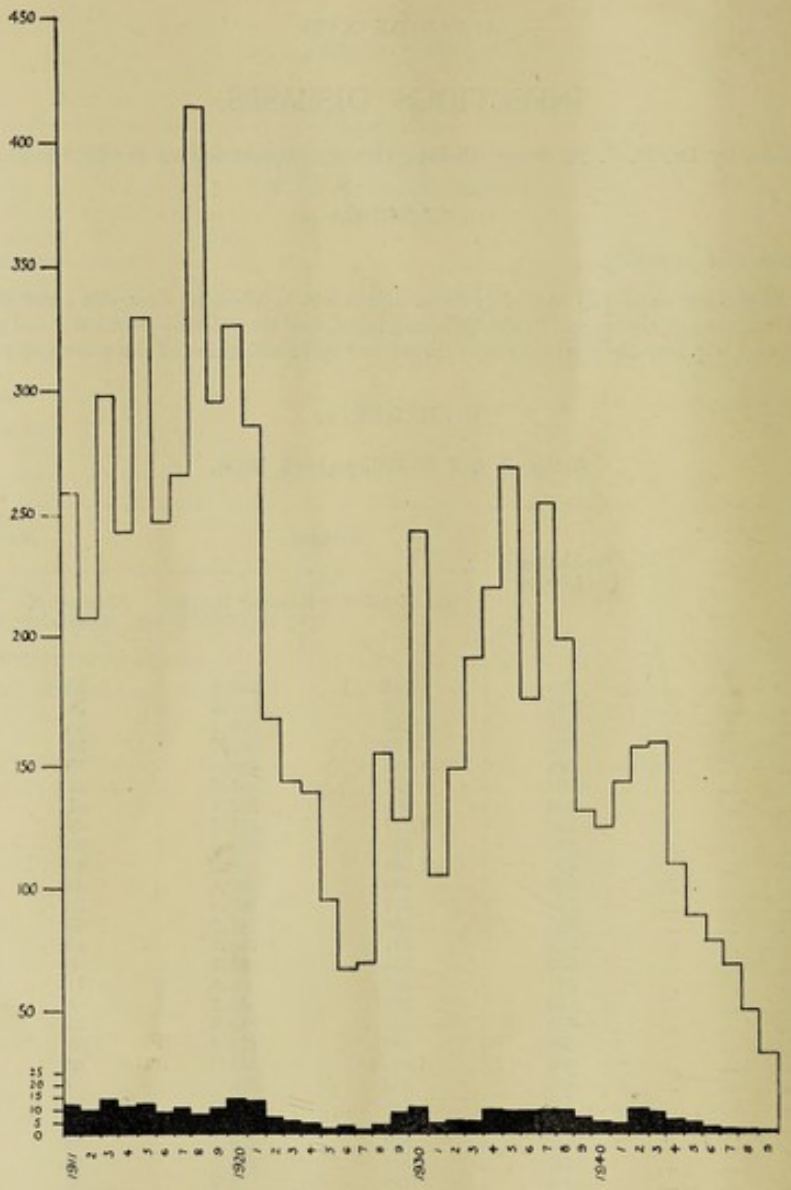
Incidence and Mortality (1911–1949).

Year.	Population (in 1,000's)	Incidence.		Mortality.	
		Cases Notified.	Rate per 100,000 of Population.	Number of Deaths.	Rate per 100,000 of Population.
1911	293	764	259.9	36	12.2
1912	305	634	207.4	28	9.1
1913	319	957	299.1	44	13.7
1914	322	785	243.7	37	11.4
1915	316	1,045	330.0	38	12.0
1916	306	757	246.6	25	8.1
1917	306	800	266.7	31	10.1
1918	310	1,277	415.1	26	8.3
1919	327	971	296.1	35	10.6
1920	331	1,080	326.0	46	13.8
1921	336	958	287.6	44	13.0
1922	345	577	167.0	22	6.3
1923	356	504	141.2	20	5.5
1924	368	511	138.7	14	3.8
1925	377	354	93.7	6	1.6
1926	385	256	66.3	11	2.8
1927	399	273	68.2	6	1.5
1928	414	639	153.6	13	3.1
1929	426	539	126.3	33	7.9
1930	431	1,045	244.4	43	10.0
1931	433	452	104.2	19	4.3
1932	436	644	147.2	20	4.5
1933	440	848	192.6	20	4.5
1934	442	974	220.6	36	8.1
1935	447	1,308	269.9	35	7.8
1936	451	798	175.4	36	7.8
1937	457	1,166	255.0	39	8.5
1938	462	921	199.1	41	8.8
1939	468	610	130.1	27	5.7
1940	472	583	123.3	22	4.6
1941	473	674	142.2	20	4.2
1942	479	748	156.0	41	8.5
1943	481	755	156.7	38	7.8
1944	487	528	108.3	24	4.9
1945	492	425	86.3	20	4.1
1946	498	380	76.3	11	2.2
1947	502	339	67.4	8	1.5
1948	515	255	49.5	7	1.3
1949	545	170	31.2	4	.7

Several features command attention :—

1. There is a general downward trend both in the annual number of notifications and in the annual number of deaths. Whereas 38 years ago the annual tally exceeded 700 cases with 36 deaths, the incidence for the year under review was 170 (the lowest on record) with four deaths—giving a notification rate of 31 per 100,000 of the population and a diphtheria death rate which, for the first time since records have been kept, has fallen below unity.

2. The downward trend is not smooth. It is interrupted by years of relatively high incidence, so that the general impression is cyclical, with a series of alternating waves and troughs. The crests of the waves are separated by irregular intervals which vary from 5–10 years, and the last relative peak is registered in the years 1942–43 when the case rate was about 156 per 100,000 of the population and the death rate was approximately eight.



DIPHTHERIA: MORBIDITY and MORTALITY RATES per 100,000 population, WESTERN AUSTRALIA, 1911-1949.

3. The influence of immunisation is apparent in the period subsequent to 1937, whereafter there is a sharp fall in the morbidity rate, which is maintained until 1940, when the disorganisation of war interfered with immunisation campaigns, and an increased rate ensued. On cessation of hostilities in 1945 systematic mass immunisation was resumed and the effect on the diphtheria rate is progressive and striking.

Immunity and the Refresher Principle.

The degree of immunity against diphtheria conferred by artificial immunisation either with Formolinised Toxoid or with Alum-Precipitated Toxoid has been expressed in the following sentence: "A substantial degree of protection against catching the disease, and almost certain protection against death from it."

The duration of the immunity so conferred, however, cannot be expressed so simply. It is known that the majority of children successfully immunised in infancy maintain this immunity at a safe protective level into adult life. Nevertheless, reports from abroad and experience in our own State have indicated that some children tend to lose their immunity after the lapse of three or four years, and that these children account for the small but consistent proportion of cases of diphtheria in so-called "immunised" children.

Furthermore, a child, on entering school, leaves the relatively sheltered atmosphere of the home and becomes exposed to new risks from unsuspected diphtheria carriers.

For these two reasons, the Department, in common with many Public Health Authorities elsewhere, advocated, during the year, the adoption of a refresher principle, whereby all children who have been immunised in infancy, would receive a single refresher or booster dose at the age of five years or, in other words, immediately before it is sent to school. It is believed that the acceptance of this principle has contributed materially to the reduction in the incidence of the disease during the year.

Development and progress of immunisation in Western Australia.

Systematic mass immunisation against diphtheria by artificial means in Western Australia was inaugurated in 1934–35. An agreement was concluded with the Federal Government for the free supply of Diphtheria Prophylactic on the understanding that no charge would be levied against the general public when this Government Prophylactic was used ; and arrangements were made for the distribution of it by the Department to the various immunisation clinics organised by Local Health Authorities.

The concept of artificial immunisation against diphtheria, however, was not accepted by the community overnight. It established an uncertain initial foothold and extended slowly, but as inoculations increased, cases decreased, and public confidence grew. In 1935 there were 1,308 cases with 35 deaths. During the next five years the impact of immunisation on incidence became apparent and, by 1940, only 583 cases were notified, with 22 deaths. During the war years people were pre-occupied with more disturbing problems, and little progress was made in the field of immunisation. After the war, however, the question was tackled with renewed vigour. The rate of immunisation was rapidly accelerated and the annual number of notifications diminished in a most gratifying manner.

No reference to immunisation in this State would be complete without a tribute to the Central Committee for Anti-Diphtheria Immunisation. It is a body which was constituted in 1936 for the purpose of furthering the cause of immunisation, of discussing ways and means of extending the facilities for it, and of stimulating and sustaining public enthusiasm. The committee consists predominantly of laymen who give their services in an honorary capacity, and includes representatives from almost every metropolitan Local Authority, from the British Medical Association, and from the Department of Public Health. It meets every quarter and performs a function of very great benefit to the community in general but to the children of this State in particular.

For several years past, Local Health Authorities have been required to submit half-yearly returns to the Central Health Authority, giving the number of immunisations conducted at the clinic under their control. The majority of Local Authorities are conscientious in the submission of these returns, and they provide a useful index of the progress of immunisations in general. An unknown number of immunisations, however, are conducted by private medical practitioners with proprietary preparations, so that the actual number of immunisations carried out in any given period will always be slightly greater than those reported from public clinics. Nevertheless, this factor does not substantially detract from the value of the comparative picture afforded by reported immunisations, which reflects the general trend. The annual number of these immunisations since 1946 are as follows :—

1946	8,453
1947	7,493
1948	5,787
1949	10,511*

* Does not include 2,072 refreshers.

It has been pointed out that the best yardstick of immunisation is the number of births in the preceding year. In other words, the annual number of immunisations should approach the number of births. If this target were attained and maintained for a few years, a completely immunised child community would result and there would be no fear of a diphtheria epidemic.

The number of births in Western Australia since 1946 have been as follows :—

1946	12,105
1947	12,874
1948	12,931
1949	13,511

When the corresponding number of reported immunisations are compared with these figures it will be seen that there is a substantial difference. The number of unreported private immunisations will to a certain extent reduce this deficit but the residuum of unimmunised infants would probably still be very considerable.

Age Distribution.

The incidence of the disease in five-year age groups during 1949 is shown in the following table ; and it will be seen that the brunt continues to be borne by the 0–4 and 5–9 age groups, which together provide more than half the total number of cases. Although no age group is immune, the incidence of the disease is much smaller after the age of 10 years, and appears to be more or less evenly distributed in the "ten and over" age groups.

Age Group.	No. of Cases.
0– 4	43
5– 9	45
10–14	12
15–19	10
20–24	10
25–29	11
30–34	10
35–39	14
40 and over	15

The age distribution of cases thus serves to emphasize the importance of concentrating on the pre-school and the early school child in the endeavour to reduce the incidence of diphtheria still further. More vigorous primary immunisations in infancy will reduce the pre-school incidence, and extension of the school-entry refresher practice will reduce the incidence among the children of school-going age.

Conclusion.

The morbidity and mortality from diphtheria was reduced in 1949 to the lowest level on record in Western Australia, and this achievement is attributed essentially to the effects of artificial immunisation.

It is nevertheless of the highest importance that a maximum immunisation rate be maintained if the disease is to be abolished from the community. The low incidence of diphtheria, affording as it does, fewer opportunities for the development of natural immunity from small harmless infections, together with the steadily increasing child population, contribute to the creation of a large pool of susceptible persons, who will provide fertile soil in the event of an epidemic. Inadequate immunisation constitutes the third leg of a tripod upon which the risk of a potential epidemic rests. In other words as incidence decreases the need for immunisation increases. Thus, any relaxation in the demand for immunisation would be dangerous, and every effort will be made to keep the attention of parents focussed upon the need for it.

POLIOMYELITIS.

There were 61 notifications during the year ; 34 of these, or in other words, more than half were reported in January and February, and were clearly a " carry over " from the 1948 epidemic. The other 27 were more less evenly scattered over the remaining ten months of the year. There were three deaths.

Although the figures are too small for profitable analysis, they are tabulated below for future purposes and it is interesting to note that the 1948 features were maintained, e.g.—

(1) The 5–9 age group again provided the largest number of cases (13).

(2) The metropolitan area contributed more cases than the country (36 : 25).

(3) The sex incidence was more or less equal (33 males, 30 females).

It is extremely difficult to predict the future incidence of poliomyelitis in this State and it is not known how many latent infections occurred and what percentage of the population have thus developed a natural immunity, but it is evident that the community has been heavily " salted " and that the number of susceptible persons has been greatly reduced. This at least is some little cause for consolation if not satisfaction.

POLIOMYELITIS.

Showing Age Groups in Sexes in the Metropolitan and Country Districts and Totals.

Age Groups in Years.	Metropolitan.		Country.	
	Male.	Female.	Male.	Female.
0–4	6	4	1	1*
5–9	6	1	1	5
10–14	2	....	1	3
15–19	4	3	4	....
20–24	....	2	2	4
25–29	1	2	1	....
30–34	1	1	....	1
35–39	1	....	1	....
40–44	....	....	....	....
45–49	....	....	....	....
50 and over	1	1	....	....
Total	22	14	11	14
	36		25	
	61			

* Contracted overseas and reported from Country Centre.

Monthly Incidence in Metropolitan and Country Districts.

Month.	Metropolitan.	Country.	Total.
January	10	9	19
February	7	8	15
March	2	1	3
April	...	...	...
May	3	2	5
June	1	...	1
July	5	1*	6
August	2	1	3
September	3	1	4
October	2	1	3
November	...	...	...
December	1	1	2
Total	36	25	61

* Contracted overseas and reported from Country Centre.

THE INCIDENCE OF LEPROSY IN WESTERN AUSTRALIA.

Information concerning the incidence and distribution of leprosy in Western Australia prior to the Australia-wide survey conducted by Dr. C. E. Cook during the period 1923–25 is singularly lacking.

As a result of this investigation we learned that leprosy probably first appeared in Western Australia early in the century at three separate places—Roebourne, Derby and Perth.

In the Roebourne area the disease developed in the indigenous population in 1907–8, and was probably through the agency of a Chinese immigrant who arrived in the area in 1899, and was employed as a cook on Mardie and certain other stations in the district. Some 22 cases subsequently developed among the aborigines in the Mardie-Balmoral-Karatha regions ; but, consequent upon increasing awareness, prompt notification and compulsory segregation, the outbreak was controlled by 1917 and no further cases occurred.

The earliest reliable record for the Derby area is that of another Chinese cook, who probably acquired the infection in the Northern Territory but died at Derby in 1908 after suffering from the disease in a marked form for eight years. Several aboriginal cases followed in the West Kimberleys, and the infection is believed to have spread south to Beagle Bay and Broome.

Up to 1925 leprosy was unknown around Wyndham, Port Hedland and Onslow ; although an isolated case was reported from Marble Bar (a Filipino labourer) in 1903.

In 1889, a Chinese vegetable hawker was found to be suffering from the disease at Northam, and by 1925, at least five cases are known to have occurred in and around Perth.

During the six or seven years following Dr. Cook's survey, few cases were brought to light, but, in 1933, a large number of cases were notified chiefly from Derby, and the Commissioner, in his Report for the years 1933–34, had occasion to remark : " Leprosy has become a much more serious problem than previously, especially in the Derby district." A total of 84 cases are recorded during these two years and their distribution is shown in the following Table.

Centre.	1933.	1934.	Total.
Derby	30	30	60
Beagle Bay	4	10	14
Broome	3	2	5
Wyndham	1	2	3
Perth	1	1	2
	39	45	84

In 1935, 64 cases were notified ; and in 1936 an additional 27.

Since 1937, the annual notifications have remained substantial, with periodical fluctuations which probably depend upon several factors, e.g.—

(1) The intensity of search for cases among hinterland natives.

(2) The varying experience of North-West Medical Officers.

(3) The incubation period in groups of infected natives.

During the last three years (1947–49) over 40 fresh cases have been notified each year.

Up to 1935, cases of Leprosy in Western Australia were being sent to the Leprosarium at Darwin for segregation and treatment. This arrangement was unsatisfactory and it was eventually decided to establish an institution at Derby for this purpose :—

(1) Because of the vast majority of cases at that time appeared to originate North of Broome.

(2) Because aboriginals segregated in their own district would be less likely to abscond.

(3) Because the difficulty and expense of transport to Darwin would be obviated.

Construction of the Derby Leprosarium was completed at the close of 1936, at a cost of approximately £13,000 (towards which the Commonwealth Government contributed £5,000). This institution was formally opened in February, 1937, and about 90 patients were immediately admitted. At the end of 1949 there were 268 cases under treatment there.

During the last 15 years over 600 cases have occurred among natives and half-castes. There are 12 recorded cases among whites ; six of these were probably infected in Western Australia (two in the Derby and four in the Broome areas) ; of the other six, two were presumably infected in Queensland, two in India, and the source of infection of the last two is not known.

SUMMARY.

1. Leprosy was probably introduced into Western Australia about 50 years ago by three Chinamen.

2. It was reported from three separate areas—Perth, Roebourne and Derby.

3. In the Perth area there has been no development or spread of the disease, though isolated cases continue to come to light from time to time. In the Roebourne area a small outbreak developed but was brought under control by 1917. In the Derby area the disease gained a firm foothold, spread all over the Kimberleys, and now constitutes a major native health problem.

4. More than 600 cases have occurred in Western Australia during the last 15 years. The overwhelming majority of these have been among natives and half-castes ; 12 cases have been reported in whites (of which six were probably indigenous).

The average annual number of admissions to the Derby Leprosarium is now approximately 40.

5. The annual notifications are shown in Table A and Chart B ; and the geographical distribution is indicated in Table C.

TABLE A.

LEPROSY.

Cases notified and recorded in Annual Reports.

ALL CASES.

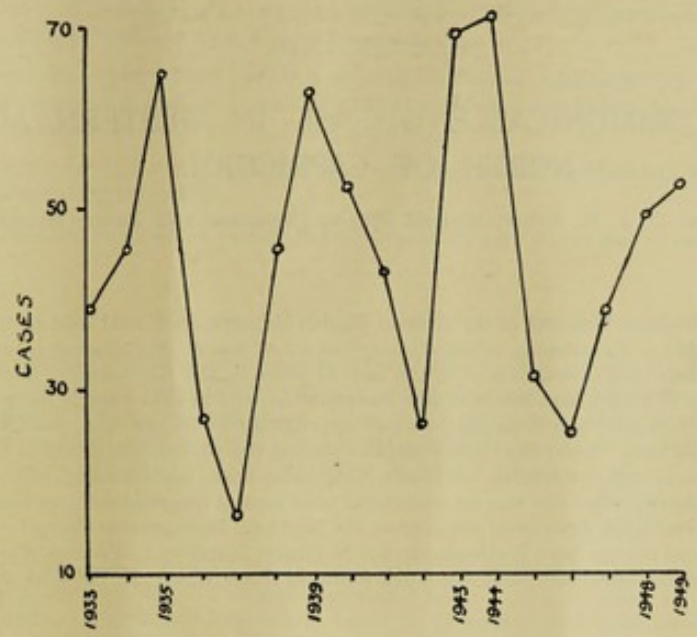
1923	3	
1924	....	
1925	1	
1926	4	
1927	4	
1928	....	
1929	4	
1930	....	
1931	2	
1932	5	
1933	39	(Derby 30, Beagle Bay 4, Broome 3, Wyndham 1)
1934	45	(Derby 30, Beagle Bay 10, Broome 2, Wyndham 2)
1935	64	
1936	27	
1937	16	
1938	45	
1939	62	
1940	52	
1941	43	
1942	26	
1943	69	
1944	70	
1945	31	
1946	27	
1947	38	
1948	48	
1949	51	
1950	....	

WHITES.

1933	1	
1934	1	
1937	1	(H.A.R. ; infected N. Qld. ; 52 ; deceased '47)
1938	1	(A.T. ; infected Derby ; 49 ; S.U.T.)
1942	1	(F.W.R. ; infected Broome ; O.A.P. ; deceased '47)
1943	1	(H.B. ; infected Derby ; discharged '47)
1949	3	(E.T. ; infected Qld. ; M.C. infected India ; R.C. infected India)
	3	(Br.P. ; infected B.B. ; Br.F. inf. B.B. ; Capt. S. infected Br.)

DERBY LEPROSARIUM.

Year.	Admitted.	Discharged.	Remaining.
1947	41	11	238
1948	49	17	247
1949	47	26	268



The above graph in which peaks of high incidence recur regularly at intervals of approximately four years is of interest from the point of view of the incubation period, although it is robbed of much of its significance by annual variations in the intensity of case-finding, the disruption of the war years, and other factors.

TABLE C.

Local Health Authority.	1935.	1936.	1937.	1938.	1939.	1940.	1941.	1942.	1943.	1944.	1945.	1946.	1947.	1948.	1949.	Total.
Wyndham	....	....	1	4	4	3	2	2	9	14	10	5	8	8	17	87
Halls Creek	5	....	1	6	7	5	4	1	9	9	1	6	6	8	2	70
West Kimberley	46	1	7	27	41	50	23	20	44	29	12	7	16	21	15	359
Broome	16	18	3	11	8	10	8	10	10	17	3	....	....	5	6	125
Marble Bar	....	....	....	....	....	....	....	....	....	....	....	....	2	....	1	3
Port Hedland	....	....	....	....	....	....	....	....	....	....	....	....	2	....	3	5
Roebourne	....	....	1	....	....	4	1	....	1	2	....	....	....	....	....	9
Tableland	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Ashburton	....	....	....	....	1	....	1	....	....	....	....	....	....	....	....	2
Gascoyne	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	1
Murchison	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Mullewa	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1
Northern Territory	....	....	....	1	....	....	....	....	....	2	1	1	2	7	3	17
	67	19	14	49	61	72	40	33	73	73	27	19	36	49	47	679

ADMISSIONS TO DERBY LEPROSARIUM, 1937–1949.

(Includes Re-admission of Absconders and Relapse Cases).

The disease has not yet been brought under control but closer observance of the following principles is expected to bring about a steady improvement :—

(1) Routine and regular inspections of natives in the Kimberleys by a medical officer.

(2) Prompt notification by station managers of suspects to the nearest Medical Officer.

(3) Expeditious removal of cases to the Derby Leprosarium.

(4) The closest possible liaison with the Police and Native Affairs Departments.

APPENDIX XVIII

NOTES ON COMMUNICABLE DISEASE IN WESTERN AUSTRALIA, NORTH OF CAPRICORN.

By Dr. D. J. R. Snow, Medical Officer, Department of Public Health.

Hookworm.

A study of the relevant files and of the Annual Health Reports since 1911 lead to the conviction that the information available is incomplete, unsatisfactory, and not worth reproducing in detail. There are, however, records of substantial infestation over the last 30 years in the Kimberleys chiefly in the Broome-Beagle Bay areas, where in 1921 a high parasite rate was reported, and in 1943 a single microscopical examination of 120 stool specimens after salt flotation revealed approximately 50 per cent. positives (Dr. D. J. Oldmeadow) and S/Sgt. Britten). Restricted investigations during the period 1921–1928 in Western Australia, south of Broome, produced negative results—in Perth, Kalgoorlie, Collie and Carrolup, but one positive native case, at Mogumber. Shortly after the war an occasional case among returned soldiers has been notified and referred for treatment, and a few have been detected at the Northam Immigration Camp for New Australians. In 1949, during a malarial survey from Katherine in the Northern Territory to Fitzroy-Wyndham in Western Australia 23 stools were examined and hookworm ova found in three (Black, R. H., Med. Journ. Aust., 1950, ii., 11).

There is sufficient evidence in the scanty records available to justify a thorough and systematic hookworm survey of the entire population of the Kimberley area.

Malaria.

From 1911 to 1932 the Annual Reports show " malaria " regularly recorded every year in the tropical part of the State, but malignant tertian malaria was not recorded as such until 1934 when an epidemic of " influenza " subsequently found to be falciparum malaria killed 15 whites and about 200 aborigines in the Fitzroy Basin. The epidemic coincided with widespread flooding during the wet season and represented a westward extension of outbreaks which had occurred in the Northern Territory during the two preceding years. Since that time there have been few reports of the disease in North-Western Australia and no records are available for the war years. In the post-war period the only cases recorded appear to have been an odd returned Serviceman, and no case is recorded for 1949.

The most authoritative reference is :

Ford, E. (1950) Med. Jour. Aust., 1, 749–60.

Venereal Diseases.

The prevalence of venereal diseases (including yaws and granuloma Inguinale) among natives in the North-West has been estimated from the Monthly Returns of the four main Native Hospitals for the years 1946–1949 inclusive. These indicate the following annual average number of cases :—

Syphilis	13
Gonorrhœa	20
Yaws	7
Granuloma	25

Precise figures for the various hospitals and separate years are shown in the attached table.

The 1946 Yaws Report of Dr. L. A. Musso indicates an average of 15 active cases per annum among Kimberley natives, with 236 inactive cases out of 1,683 natives examined during the period 1941–1946.

In regard to syphilis he remarks : " No cases of primary syphilis have been seen by me in the whole of this area (Kimberleys) since 1939. I have seen four cases of congenital syphilis, six of aortic regurgitation of syphilitic origin, and one case of cerebro-spinal syphilis."

Leprosy.

1. Leprosy was probably introduced into Western Australia about 50 years ago by three Chinamen.

2. It was initially reported in three distinct areas—Perth, Roebourne, and Derby.

3. There has been no development or spread of the disease in Perth, where, however, isolated imported cases continue to come to light from time to time. In the Roebourne area a small outbreak occurred but was brought under control by 1917. In the West Kimberleys the disease has gained a firm foothold and now constitutes a major native health problem.

4. During the last 15 years over 600 cases have occurred among natives and half-castes. There have been 12 cases among whites ; six of these were probably infected in Western Australia (two in Derby and four

in the Broome areas) ; of the other six, two were presumably infected in Queensland, two in India, and the source of infection of the last two is not known.

5. During the three years 1947–1949 the average number of admissions per annum to the Derby Leprosarium has exceeded 40 ; and at the end of 1949 there were no less than 268 cases remaining under treatment at that institution.

The annual number of new cases notified since 1923 and annual notifications by districts since 1935 are shown in the accompanying tables.

The only authoritative reference is the Commonwealth Report of the survey conducted by Dr. C. E. Cook during 1923–25.

Trachoma.

Records from all the main native hospitals reveal an occasional case of trachoma, *i.e.*, an over-all average of three a year but, as these almost certainly represent acute exacerbations necessitating hospital treatment, it is probably a gross under-estimate. One recalls many cases of blindness, pannus, ectropion, pronounced granulations, and other stigmata which give the impression that the disease is relatively common in the North and merits attention in any discussion on native health.

"*Sandflies.*"

Specimens of "sandflies" sent to the Government Entomologist in January-February, 1948, from Port Hedland for identification were "Culicoides ornatus Taylor"—also common in coastal areas of North Queensland and Northern Territory—believed to breed in Mangrove and tidal swamps—life history not known—aerial spraying considered unwarranted because of dubious value and costs involved—alternative recommended : that local authorities institute power spraying of mangrove swamps and residual spraying of dwellings—later use of T.I.F.A. machine.

VENEREAL DISEASE IN THE NORTH-WEST OF WESTERN AUSTRALIA.

Treated at Government Native Hospitals.

Summary of Extracts from Hospital Returns of Native Hospitals for Years shown.

	Gonorrhea.				Syphilis.				Yaws.				Granuloma.			
	1946.	1947.	1948.	1949.	1946.	1947.	1948.	1949.	1946.	1947.	1948.	1949.	1946.	1947.	1948.	1949.
Derby	12	2	....	4	....	....	8	9	4	1	3	5	17	6	18	15
Port Hedland	12	2	5	9	4	4	2	7	1	....	....	4	4	2	1	3
Wyndham	13	14	7	3	....	4	7	7	2	1	3	3	4	4	5	21
Broome	....	2	2	4	....	....	....	....	2	....	....	....	....	....	....	....
Total	37	20	14	20	4	8	17	23	9	2	6	12	25	12	24	39

APPENDIX XIX

LEPROSARIUM DERBY
SULPHETRONE TREATMENT

Report by District Medical Officer.

The best results seen with sulphetrone have been observed in early Leptromatus cases which in many cases showed a dramatic clinical and even bacteriological improvement. In many cases lesions cleared clinically in one year, and Bacteriologically in from one to two years. Older cases of lepromatus leprosy have shown some clinical improvement, but bacteriologically, remained positive after a period of two years of treatment. There are a small number of cases resistant, approximately 10 per cent., as indicated by clinical and bacteriological lack of improvement.

The routine dose was 3 grms. daily. In a very small number of cases, the dose reached 6 grms. daily. The reason for the smaller dosage was persistent anaemia, and/or albuminuria.

Very encouraging results have been observed following Sulphetrone treatment in lesions of the throat and eyes. In the past two years in no case has tracheotomy been required in the leprosarium.

In general, one gains the impression that Sulphetrone treatment is superior to any therapy applied so far, both from a clinical and a bacteriological point of view.

Sulphetrone has shown itself to be much more powerful than Diazon, which often gave clinical and bacteriological improvement in children, but only clinical improvement in adults. The results obtained were slightly better than with Promin. Many cases which had been treated for from one or two years with Diason or Promin, without satisfactory result, have been transferred to Sulphetrone treatment, and since then, the improvement has been definitely evident.

Parenteral Sulphetrone treatment has not yet been started here, for the reason that we have on hand only sufficient injectable material for one case for continuous treatment.

APPENDIX XX

WESTERN AUSTRALIA.

DERBY LEPROSARIUM.

Admissions and Discharges for the year 1949, *compiled from the Monthly Returns of the Superintendent.*

Months of Year, 1949.	Admissions.							Discharges.											Inmates remaining at Leprosarium		
	Male.			Female.			Total Admitted.	Male.					Female.					Total Discharged.			
	Admitted.	Re-admitted.	Total Males Admitted.	Admitted.	Re-admitted.	Total Females Admitted.		Discharged, Cured.	Deceased.	Absconded.	Discharged, Non-infectious.	Total Males Discharged.	Discharged, Cured.	Deceased.	Absconded.	Discharged, Non-infectious.	Total Females Discharged.		Male.	Female.	Total.
Total remaining 31st December, 1948	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	146	101	247
January	1	1	2	....	....	....	2	....	1	....	....	1	....	1	....	....	1	2	147	100	247
February	2	....	2	....	....	....	2	....	1	....	....	1	....	1	....	....	1	2	148	99	247
March	1	....	1	2	....	2	3	....	....	....	....	....	....	....	....	....	....	....	149	101	250
April	2	....	2	....	....	....	2	....	....	....	....	....	3	....	....	....	3	3	151	98	249
May	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	151	98	249
June	3	....	3	2	....	2	5	....	2	....	....	2	....	....	....	....	....	2	152	100	252
July	4	....	4	2	....	2	6	....	1	....	....	1	....	....	....	....	....	1	155	102	257
August	5	....	5	4	....	4	9	....	....	....	1	1	....	1	....	....	1	2	159	105	264
September	2	....	2	3	1	4	6	....	....	....	....	....	....	....	....	....	....	....	161	109	270
October	5	....	5	1	....	1	6	....	....	....	....	....	....	....	....	....	....	....	166	110	276
November	1	....	1	2	....	2	3	....	....	....	....	....	....	....	....	....	....	....	167	112	279
December	2	....	2	....	1	1	3	6	1	....	....	7	5	2	....	....	7	14	162	106	268
Totals	28	1	29	16	2	18	47	6	6	....	1	13	8	5	....	....	13	26	....	....	....

LEPROSARIUM DERBY, WESTERN AUSTRALIA.

The following table analyses admissions and discharges at the Leprosarium, Derby, during the year 1949 :—

	Male.	Female.
Inmates as at 31st December, 1948	146	101
Admissions for period ended 31st December, 1949	29	18
Discharges for period ended 31st December, 1949	7	8
Deaths for period ended 31st December, 1949	6	5
Absconded	....	....
Total remaining in Leprosarium for period ended 31st December, 1949	162	106

APPENDIX XXI

A MILK BORNE SCARLET FEVER EPIDEMIC.

By Dr. W. S. Davidson, Deputy Commissioner, Public Health Department.

A Scarlet Fever outbreak occurred in November.

The explosive nature of this outbreak and its distribution were highly suggestive of a Milk borne infection.

Investigation of the earlier cases showed that a significant number were obtaining bulk, unpasteurised milk from the same wholesale distributor through various vendors. Later in the epidemic the pattern of milk supply became more confused as contact cases arose.

An examination of bulk milk arriving in the wholesale depot detected no haemolytic streptococci, but two of the staff handling the milk harboured haemolytic streptococci in their throats. These two men were removed from handling milk and put under treatment on 18th November and at the same time, as a further precaution, all bulk milk was pasteurised.

These preventative measures rapidly reduced to normal a situation that was beginning to give rise to some concern.

Point Walter Migrant Camp was early involved in this outbreak and a problem of isolation of contacts arose. The inhabitants consisting of 258 adults and 92 children lived a more or less communal life with frequent contacts with one another. As five cases had occurred between the 6th and 15th November contacts were numerous and well nigh impossible to isolate. Consequently on 18th November the whole camp was put on suppressive sulphadiazine.

Dose for adults	4 tablets first day. 2 tablets daily thereafter.
Children	Half adult dose.

This treatment was given for 11 days.

There were no further cases reported from the Camp after the commencement of this treatment.

Table 1.

Cases at Point Walter.

November 6	1
November 9	1
November 12	1
November 15	2
Total	5

Table 2.

Early Cases in City of Perth.

November 14	2
November 15	1
November 16	2
November 18	2
November 18	3

All cases in Table 1 and all but two in Table 2 obtained bulk unpasteurised milk from the source discussed above.

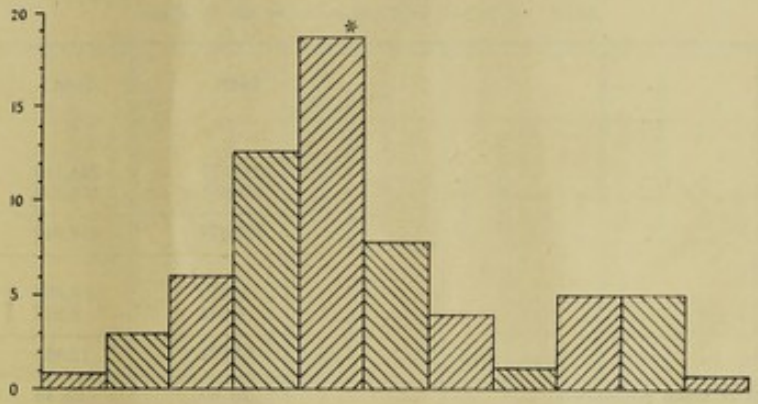
Table 3.

Weekly Case Notifications in Metropolitan Area.

Week ending,	22–10–50	No. 1
„ „	29–10–50	3
„ „	5–11–50	6
„ „	12–11–50	13
„ „	19–11–50	19
„ „	26–11–50	8
„ „	3–12–50	4
„ „	10–12–49	1
„ „	17–12–49	5
„ „	24–12–49	5
„ „	31–12–49	1

TABLE 4.

Histogram of Weekly Notifications showing rapid fall after removal of Handlers harbouring Haemolytic Streptococci and the Pasteurisation of Bulk Milk.



* Indicates where haemolytic streptococci carriers were removed from contact with milk and when pasteurisation of bulk milk began.

It is to be recorded that the Health Department received throughout, the prompt and effective co-operation of the Chairman of the Milk Board, of the Management of the Dairy concerned and of the Local Health Authorities.

The following points are to be noted :—

1. The collection of milk in large bulk quantities and its wide distribution unpasteurised and unbottled is ever fraught with the danger of a sudden and extensive epidemic of any milk borne disease.
2. Immediate notification of infectious disease is essential to control and prevention of widespread epidemic.
3. In a food or milk borne disease the early notifications give the best indication of the source of infection, the pattern later becomes obscured by contact infection.
4. The need for close co-operation between the Authorities responsible for the handling and supply of milk with the Health Authorities.
5. There is an indication that in a circumscribed community mass suppressive chemotherapy may replace isolation.

APPENDIX XXII

VITAL STATISTICS — WESTERN AUSTRALIA.

	1947.	1948.	1949.
Mean Population—			
Males	258,377	264,319	273,888
Females	244,601	150,524	259,195
TOTAL	502,979	514,843	533,083
Births—			
Males	6,850	6,664	6,826
Females	6,294	6,267	6,685
TOTAL	12,874	12,931	13,511
Birth rate per 1,000 of mean population	25.60	25.12	25.35
Deaths—			
Males	2,778	2,797	2,893
Females	1,945	1,888	1,897
TOTAL	4,723	4,685	4,790
Death rate per 1,000 of mean population	9.39	9.10	8.99
Natural increase rate per 1,000 of mean population	16.21	16.02	16.36
Infant mortaility per 1,000* births—			
Metropolitan area	27.00	22.58	21.53
Rest of State	35.16	28.78	31.56
Whole State	30.92	25.60	26.42
Stillbirths—			
Metropolitan Area	156	136	119
Whole State	304	266	268

* Excluding stillbirths.

Comparison of Infant Mortality and General Death Rate.

	Infant Mortality			General Death Rate		
	1947.	1948.	1949.	1947.	1948.	1949.
New Zealand (a)	25.04	21.93	23.66	9.38	9.13	9.5
Western Australia	30.92	25.60	26.42	9.39	9.10	8.99
New South Wales	29.81	30.30	27.29	9.53	10.04	9.43
Victoria	26.28	23.93	21.89	10.44	10.44	10.28
Queensland	30.82	27.96	24.72	9.15	9.31	8.57
Tasmania	27.31	27.65	23.91	9.17	9.55	8.76
South Australia	24.27	29.74	27.68	9.62	10.25	9.45

(a) Non Maori.

APPENDIX XXIII

Notification of each type of Infectious Disease received by the Department of Public Health for each week of the year ended 31st December, 1949.

Week.	Amoebiasis.	Amoebic Dysentery.	Ankylostomiasis.	Bacillary Dysentery.	C.S.M.	Dengue Fever.	Diphtheria.	Enteric Fever and Salmonella Infections.	Infective Hepatitis.	Infantile Diarrhoea.	Leprosy.	Malaria.	Poliomyelitis.	P.T.B.	Other T.B.	Puerperal Fever.	Purulent Ophthalmia.	Rubella.	Scarlet Fever.	Tetanus.	Tetanus Neonatorum.	Typhoid Fever.	Typhus Fever.	Undulant Fever.
1	....	....	....	1	1	....	10	....	....	....	....	1	1	3	....	....	....	....	....	....	....	....	....	....
2	....	....	....	....	1	....	5	12	....	....	....	....	9	6	....	1	....	1	12	....	....	1	12	....
3	....	....	....	....	....	....	3	....	....	....	....	1	5	16	....	1	....	12	12	....	....	12	1	1
4	....	....	1	....	....	....	6	....	....	....	....	1	5	9	....	1	....	....	12	....	....	1	1	1
5	....	....	....	....	....	....	4	....	....	....	12	....	12	11	1	....	1	12	12	....	....	12	12	....
6	....	....	....	1	....	....	7	1	....	....	1	1	4	5	....	....	....	12	12	....	....	1	....	....
7	....	....	....	12	....	....	5	....	....	....	....	....	5	94	....	....	....	12	1	....	....	....	1	....
8	....	....	....	....	....	....	4	....	....	....	....	....	1	4	....	....	....	....	12	....	....	....	1	....
9	....	....	2	1	....	....	4	....	....	....	12	1	1	10	1	1	1	12	....	....	....	1	1	....
10	....	....	....	....	1	....	1	....	....	....	....	....	1	5	....	....	....	1	4	....	....	....	1	....
11	....	....	....	1	....	....	4	....	....	....	....	....	12	5	....	....	....	1	3	....	....	....	12	....
12	....	....	....	12	....	....	10	....	....	....	....	....	....	9	....	1	....	1	4	....	....	....	12	....
13	....	....	4	12	....	....	5	....	....	....	3	....	....	5	....	1	....	....	7	....	....	....	12	....
14	....	....	....	....	....	....	5	....	....	....	....	....	....	6	....	....	....	....	12	....	....	....	1	....
15	....	....	1	....	....	....	6	....	....	....	....	1	....	11	....	....	....	....	12	....	....	1	1	....
16	....	....	....	....	....	....	5	....	....	....	1	....	....	5	....	....	....	....	12	....	....	....	12	....
17	....	....	....	....	1	....	12	....	....	....	....	....	....	6	....	....	....	12	12	....	....	....	12	....
18	....	....	....	....	....	....	3	....	....	....	12	....	....	6	1	....	....	....	7	....	....	....	12	1
19	....	....	....	1	....	....	4	....	....	....	....	....	....	7	1	....	....	....	6	....	....	....	12	....
20	....	....	....	1	....	....	4	....	....	....	....	....	1	8	....	....	....	1	4	....	....	....	4	1
21	....	....	....	....	1	....	4	....	....	....	....	....	12	4	....	....	....	1	4	....	....	....	1	....
22	....	....	1	1	5	....	3	1	....	....	12	1	12	7	....	....	....	1	7	1	....	1	4	....
23	....	....	....	....	....	....	....	12	....	....	....	....	12	2	1	....	....	....	4	....	....	1	....	....
24	....	....	....	....	1	....	5	....	....	....	....	....	....	8	....	....	....	....	12	....	....	....	12	....
25	....	....	....	....	....	....	9	....	....	....	....	1	....	7	....	....	....	1	12	1	....	....	12	1
26	....	....	....	1	....	....	....	....	....	....	....	....	....	8	....	....	....	....	12	....	....	....	1	....
27	....	....	....	1	....	....	3	....	....	....	5	....	....	6	3	....	....	1	12	....	1	....	....	....
28	....	....	1	12	....	....	3	....	....	....	....	....	12	6	1	....	....	....	12	....	....	1	12	1
29	....	1	....	....	....	....	2	12	....	....	....	....	12	7	....	....	....	....	12	....	....	....	....	....
30	....	....	....	....	....	....	3	....	....	....	1	....	12	4	....	....	....	....	12	....	....	....	....	....
31	....	....	....	....	1	....	1	....	6	....	....	....	1	3	....	....	....	12	1	....	....	1	....	....
32	....	....	1	....	4	....	4	....	....	....	6	1	....	8	....	....	....	12	1	....	....	1	....	....
33	....	....	....	....	....	....	....	....	....	....	1	....	....	12	....	....	....	12	4	....	....	....	....	....
34	....	....	....	....	....	....	....	....	....	....	....	....	....	8	....	....	....	12	4	....	....	....	....	....
35	....	....	....	....	....	....	5	....	....	3	5	....	12	6	....	....	....	3	1	....	....	1	....	....
36	....	....	....	....	1	....	3	....	....	....	1	....	....	6	....	....	....	12	12	1	....	....	1	....
37	....	....	1	1	2	....	1	....	....	....	4	....	1	11	....	....	....	12	12	....	....	....	....	....
38	....	....	....	....	1	....	4	....	....	....	....	1	....	18	....	....	....	4	12	....	....	....	1	....
39	....	....	....	....	....	....	1	1	....	....	....	....	....	12	1	....	....	1	12	....	....	1	....	....
40	....	....	1	....	2	....	2	1	....	....	7	2	....	5	....	....	....	5	12	....	....	....	12	....
41	....	....	....	....	....	....	2	....	....	....	....	....	1	16	....	....	....	4	4	....	....	1	....	....
42	....	....	....	....	....	12	2	....	....	....	....	....	1	5	1	....	....	12	1	1	....	....	....	....
43	....	....	....	....	1	....	3	....	1	....	....	....	....	14	3	....	....	11	3	....	....	....	....	....
44	....	....	....	....	....	....	....	....	....	....	....	....	1	24	....	....	....	10	6	....	....	1	....	....
45	....	....	....	....	....	1	5	....	....	....	4	....	1	6	2	....	....	4	13	2	....	1	12	....
46	....	....	3	....	....	....	....	1	....	....	....	....	....	11	....	....	....	3	18	1	....	....	....	19
47	....	....	....	....	1	....	3	....	....	....	....	....	....	4	....	....	....	10	8	....	....	....	....	....
48	....	....	....	....	....	....	5	....	....	....	....	....	....	13	3	....	....	1	6	....	....	....	12	....
49	....	....	1	1	1	....	4	....	1	....	3	....	....	5	....	1	1	8	1	....	....	....	12	....
50	....	....	1	12	....	....	4	....	....	....	....	....	....	7	....	....	....	....	5	1	....	....	....	....
51	....	....	2	3	....	....	3	....	....	....	....	....	2	15	....	....	....	3	4	1	....	....	1	....
52	....	....	....	....	....	....	1	....	....	1	3	1	....	14	1	....	....	....	12	....	....	1	1	....
TOTAL FOR YEAR, 1949	13	5	52	22	13	1	170	11	8	6	51	13	61	499	20	7	3	101	199	9	1	15	61	

APPENDIX XXIV

INCIDENCE AND MORTALITY OF NOTIFIABLE INFECTIOUS DISEASES, 1949.

Disease Notifiable.	Cases Reported.	Deaths. (a)
Amoebiasis	13	} ....
Amoebic Dysentery	5	
Ankylostomiasis	52	....
Bacillary Dysentery	22	2
C.S.M.	13	4
Dengue Fever	1	....
Diphtheria	170	4
Enteric Fever and Salmonella Infections	11	....
Infective Hepatitis	8	....
Infantile Diarrhoea	6	21 (b)
Leprosy	51	1
Malaria	13	....
Poliomyelitis	61	6
P.T.B.	499	123
Other T.B.	20	5
Puerperal Fever	7	2
Purulent Ophthalmia	3	....
Rubella	101	....
Scarlet Fever	199	....
Tetanus	9	} 7
Tetanus Neonatorum	1	
Typhoid Fever	15	....
Typhus Fever	61	2
Undulant Fever	9	....

(a) Excludiug full blood aboriginals. (b) Under two years of age.

APPENDIX XXV

TABLE SHOWING THE INCIDENCE OF INFECTIOUS DISEASES IN EACH STATISTICAL DISTRICT FOR THE YEAR ENDED 31st DECEMBER, 1949.

Statistical District.	Amoebiasis.	Amoebic Dysentery.	Ankylostomiasis.	Bacillary Dysentery.	C.S.M.	Dengue Fever.	Diphtheria.	Infective Hepatitis.	Infantile Diarrhoea.	Leprosy.	Malaria.	Poliomyelitis.	Pul. T.B.	Other T.B.	Puerperal Fever.	Purulent Ophthalmia.	Rubella.	Salmonella Infections.	Scarlet Fever.	Tetanus.	Tetanus Neonatorium.	Typhoid Fever.	Typhus Fever.	Undulant Fever.
Albany Municipality	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Albany Road Board	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Armadale-Kelmscott	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	....	1	....	....	....	....	....
Ashburton	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....
Augusta-Margaret River	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Balingup	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....
Bassendean	....	....	....	....	1	....	....	1	....	....	....	....	4	....	....	....	....	....	2	....	....	....	....	....
Bayswater	....	....	....	....	....	....	....	3	....	....	....	2	3	....	....	....	....	....	1	....	....	....	....	....
Belmont Park	....	....	....	....	....	....	....	8	....	....	....	....	4	....	....	....	....	....	1	....	....	2	....	....
Beverley	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....
Boulder	....	....	....	....	....	....	....	1	....	....	....	1	3	....	....	....	....	....	....	....	....	....	....	....
Brookton	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Broome	....	....	....	....	....	....	1	....	....	....	1	....	3	1	....	....	....	....	....	....	....	....	....	....
Broomehill	....	....	....	....	....	....	....	....	....	....	....	1	2	....	....	....	....	....	....	....	....	....	....	....
Bruce Rock	....	....	....	....	....	....	....	1	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....
Bunbury Municipality	....	....	....	....	....	....	....	6	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	2
Bunbury Road Board	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Busselton	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Capel	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Canning	....	....	....	....	....	....	....	2	....	....	....	1	3	....	....	....	....	....	1	....	....	1	....	1
Carnamah	....	....	....	....	....	1	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....
Carnarvon	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Chittering	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Claremont	....	....	....	1	....	....	....	3	1	....	....	....	8	1	....	....	1	....	12	....	....	....	2	....
Collie Municipality	....	....	....	....	....	....	....	15	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....
Collie Road Board	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....
Coolgardie	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....
Corrigin	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cottesloe	....	....	....	....	....	1	....	4	....	....	....	1	5	....	....	....	3	....	10	....	....	....	....	....
Cuballing	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Cue-Day Dawn	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Cunderdin	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Dalwallinu	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Dardanup	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Darling Range	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	....	....	1	....	....	....	....
Denmark	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	....	....	....	....	....	....	....
Dowerin	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....

APPENDIX XXV (*continued*)

Table showing the Incidence of Infectious Diseases in each Statistical District for year ended 31st December 1949—*continued*.

Statistical District.	Amoebiasis.	Amoebic Dysentery.	Ankylostomiasis.	Bacillary Dysentry.	C.S.M.	Dengue Fever.	Diphtheria.	Infective Hepatitis.	Infantile Diarrhoea.	Leprosy.	Malaria.	Poliomyelitis.	Pul. T.B.	Other T.B.	Puerperal Fever.	Purulent Ophthalmia.	Rubella.	Salmonella Infections.	Scarlet Fever.	Tetanus.	Tetanus Neonatorium.	Typhoid Fever.	Typhus Fever.	Undulant Fever.
Drakesbrook							4					1												
Dumbleyung												1												
Dundas													1											
Esperance												1	2											
Fremantle Municipality							4					3	22				6		11	1		1	10	
Fremantle Road Board												1		1										
Fremantle, East												1	7	2	1		1		2					
Fremantle, North					1		1					1	2				1		1				1	
Geraldton Municipality							1						3						2			1		
Geraldton Road Board							2						1											
Gnowangerup													1											
Gosnells							1						2		1		1		2					
Greenbushes													1											
Guildford													4											1
Harvey					1								2		1		1							
Kalgoorlie Municipality	1	1	1				10						15	1				1	2					3
Kalgoorlie Road Board							3						2											
Katanning												2	3				1		1					
Kellerberrin													2											
Kojonup													2											
Kondinin													1		1									
Kulin																	1							
Lake Grace													1						1					
Leonora													2											
Mandurah													1											
Manjimup																			1					
Marble Bar													2											
Melville												2	7						10				1	
Merredin													2						3					
Midland Junction				1			3					1	4						1				1	
Moora													1											
Morawa													1											
Mosman Park					1		6					1	6	2					4				1	
Mt. Magnet								6					1											
Mt. Marshall							1																	
Mullewa				4								1			1				2					
Mundaring							1					1	2				3		4					
Murchison				1																				
Murray							1						3						1				1	
Narembeen													1							4				

Narrogin Municipality	....	....	....	....	....	2	....	....	....	....	....	....	....	....	1	....	....	....	43	....	4	....	....	....	....	....
Narrogin Road Board	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5	....	2	....	....	....	....	....
Nedlands	....	....	....	....	....	....	....	2	....	....	....	....	....	....	*98	....	....	....	....	3	6	....	....	3	3	....
Northam Municipality	....	....	....	....	....	....	....	3	....	....	....	....	....	....	3	2	....	....	....	....	....	1	....	....	1	....
Nullagine	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....
Nungarin	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	2	....	....	....	....	....
Peppermint Grove	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....
Perenjori	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....
Perth Municipality	....	....	....	....	2	2	....	36	....	1	....	....	....	11	115	1	1	....	13	4	57	....	....	4	22	1
Perth Road Board	....	....	....	....	1	....	....	11	....	....	....	....	....	6	21	3	....	....	3	....	26	2	....	1	9	....
Phillips River	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Pingelly	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	1	....	1	....	....	....	....	....	....	....
Plantagenet	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Port Hedland	....	....	....	....	....	....	....	2	....	....	2	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....
Preston	....	....	....	....	....	....	....	1	....	....	....	....	....	1	....	....	....	....	....	....	2	....	....	....	....	....
Quairading	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	1	....
Rockingham	....	....	....	....	1	1	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	....	....
Serpentine-Jarrahdale	....	....	....	....	....	....	....	....	....	....	....	....	....	....	2	1	....	....	....	....	....	....	....	....	....	....
South Perth	....	....	....	....	....	1	....	10	....	....	....	....	....	1	15	1	....	....	1	....	11	1	....	1	2	....
Subiaco	....	....	....	....	3	....	....	5	....	1	....	....	....	3	16	1	....	....	1	1	6	....	1	....	3	....
Sussex	....	....	....	....	....	....	....	....	....	....	....	....	....	1	2	....	....	....	....	....	1	....	....	....	....	1
Swan	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Tableland	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....	....	....	....	....	....	....
Tambellup	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....
Three Springs	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....
Toodyay	....	....	....	....	1	....	....	3	....	....	....	....	....	....	....	....	....	2	....	....	....	....	....	....	....	....
Upper Blackwood	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	1	....	....	....	....	....
Upper Chapman	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Victoria Plains	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	....	....
Wagin Municipality	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....
Wanneroo	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
West Arthur	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....
West Kimberley	....	....	....	....	....	....	....	....	....	....	45	....	....	....	9	1	....	....	1	....	....	....	....	....	....	....
Westonia	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Wickepin	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	....	....	....	....	....	....	....
Wongan Ballidu	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Woodanilling	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....
Wyalkatchem	....	....	....	....	....	....	....	....	1	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....
Yilgarn	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	....	....	....
York Municipality	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....
York Road Board	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Contracted outside State	....	1	7	3	....	....	2	....	3	3	4	1	41	2	....	....	8	....	1	....	....	....	1	....	....	....
Service Personnel	....	12	3	45	3	....	....	....	....	....	....	9	....	....	1	....	....	....	....	....	....	....	....	....	1	....
Total	....	13	5	52	22	13	1	170	8	6	51	13	61	499	20	7	3	101	11	199	9	1	15	61	9	

* Includes mass X-ray survey of Mental Institutions.

APPENDIX XXVI

MEAT INSPECTION FOR THE YEAR ENDED 31st DECEMBER 1949.

No. of Animals Slaughtered.		Carcases Condemned.														Part Carcases Condemned.									Organs Condemned.													
		Para-Typhoid Fever.	Emaciation.	Icterus.	Immaturity.	Moribund.	Piroplasmosis.	Pyrexia.	Pleuro-Pneumonia.	Sepsis.	Traumatism.	Tuberculosis.	Actinomycosis.	Unmarketable.	Totals.	Abscess.	Actinomycosis.	Tuberculosis.	Caseous Lymphadenitis.	Traumatism.	Unmarketable.	Gangrene.	Arthritis.	Totals.	Abscess.	Actinomycosis.	Angiomatosis.	Cirrhosis.	Fatty Infiltration.	Inflammations.	Melanosis.	Necrosis.	Pleuro-Pneumonia.	Parasitic Cysts.	Traumatism.	Tuberculosis.	Unmarketable.	Total.
Fremantle District (including Watson's Bacon Factory).																																						
Cattle	17,570		53			2		3		5	7	68		9	147	4		91		10		37		142	225	9	287	18	124	42	3			154		51		913
Calves	804																																					
Sheep	124,028		12	2		12		8		4	3			62	103				32	8			11	51				5			2			2,238				2,245
Pigs	61,170	18	10	13		4		22		25		272		30	794	1,865		47		10				1,922	53			31						87				171
															1,044									2,115														3,329
Midland Junction Abattoirs (including Foggitt Jones, Ltd. Bacon Factory.)																																						
Cattle	41,482		52			2		3	1	16	17	417	1	1	510	8	664	390		20	3	13		1,098	195	2	225	52	156	45	2		6	133		436	7	1,259
Calves	3,555				1					2					3																							
Sheep	422,308		260	25		105		22		6	12			22	452				43	9	65		78	195				38	438		122			1,833				2,431
Pigs	39,537	4	2	3		1		4		13		201			228	87		201		18	10		2	318				52	158	93		4,051		354				4,608
															1,193									1,611														8,298
Kalgoorlie District.																																						
Cattle	4,527		27						2	3	1	29			62	8	50	87		2	1			148	68	29	12	2	73	18	5		4	16		173	3	403
Calves	113																																					
Sheep	35,935			3		3		3		3	2			3	17				25				2	27	5				84		6			808				903
Pigs	1,596	2										9			11	3		9		3	3			18					2			81		1				84
															90									193														1,390
Animals Submitted for Inspection—Perth City Markets.																																						
Cattle	543													5	5																							
Calves	16,795				113									137	150																							
Sheep	355		5												5																							
Pigs	325		1											1	2																							
															162																							
Animals Submitted for Inspection—Fremantle Meat Markets.																																						
Cattle	78		1												1	1	1				3			5														
Calves	943				2									10	12					20				20														
Sheep	32																																					
Pigs	32											1			1			1						1										3				3
															14									26														3
Country Districts.—Combined Condemnations of all Country Districts (including Northam, Busselton, Narrogin, Albany, Geraldton, Katanning, York, Wagin, Bunbury, Rockingham and Merredin.																																						
Cattle	18,738		3	1			2	2		2	1	9		7	27	4	59	39		26	1			129	55	90	42	11	19	16	1	3		186		28	5	465
Calves	2,080				33						1	1		1	36					1				1														
Sheep	109,717		75	3		3		5		1	5			7	99				30	13	3		1	47	30		63	44	87	15	88	20		2,715			35	3,097
Pigs	4,548	1			1	2						12		1	17	6	1	65		2				74	3			62		1		92		309			3	467
															179									251														4,029

Totals of Animals Slaughtered—Cattle 77,938; Calves 24,290; Sheep 692; Pigs 107,208.

Total Animals Slaughtered and Inspected in Country Districts where Meat Inspection is carried out.

District.	Cattle.	Sheep.	Calves.	Pigs.	Total.
Rockingham	754	4,247	84	54	5,139
Wagin	315	2,702	11	33	3,059
Sussex	1,008	4,778	80	277	6,143
Collie	1,774	9,453	66	363	11,656
Northam	1,671	13,337	259	857	16,124
Merredin	72	5,790	21	153	6,045
Narrogin	1,027	6,566	81	233	7,907
Albany	1,897	24,204	475	674	27,250
Bunbury	2,113	13,310	613	917	16,953
Geraldton	1,674	16,673	239	726	19,312
York	535	3,561	68	159	4,323
Katanning	969	5,087	83	102	6,172
	13,738	109,717	2,080	4,548	130,083

APPENDIX XXVII

REVENUE AND EXPENDITURE FOR THE YEAR 1949.

Revenue.

	£	s.	d.
License Fees	37	10	0
Meat Inspection Fees	7,885	19	7
Fish Inspection Fees	407	9	3
Pathological Laboratory	929	9	2
Sanitation Refunds	130	12	4
Inspection of Plans (Septic Tanks)	1,594	10	9
Miscellaneous	5,137	11	5
Nurses and Midwives' Registration and Examination Fees	832	9	0
Local Health Authority Recoups	82	19	7
T.B. Diagnosis (Generally)	18,124	4	2
T.B. Diagnosis (Wooroloo)	9,407	2	1
	£44,569	17	4

Expenditure.

	£	s.	d.
Salaries	63,168	9	2
Village Area Sanitation			
Payments Local Health Authorities	8,519	0	5
School Hygiene	3,463	1	2
Travelling and Transport	1,893	3	9
Postage and Telephones	819	18	6
Laboratory	3,680	8	1
Venereal Diseases	3,369	2	7
Miscellaneous	10,557	1	7
Infant Welfare Centres	16,821	7	7
Maintenance and Transport of Lepers	15,327	1	7
Medical Officer and School Dentists Travelling	2,392	10	7
Diphtheria Immunisation	74	15	3
T.B. Clinics	55,008	3	3
Argentine Ants	1,026	10	7
	£186,120	14	1
Sanitation, Government Buildings	10,748	1	0
	£196,868	15	1

By Authority: WILLIAM H. WYATT, Government Printer, Perth.