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1948

WESTERN AUSTRALIA

REPORT
OF THE
COMMISSIONER
OF
PUBLIC HEALTH
FOR THE YEAR
1947

PERTH :

By Authority : W. H. WYATT, GOVERNMENT PRINTER.

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1947

Report of the Public Health Department

The Hon. the Minister for Health.

I have the honour to submit the report of the Department of Public Health for the year, 1947.

ADMINISTRATION.

Assistant Commissioner.

In order to relieve the Commissioner of much of the Departmental routine, attention to which has in the past prevented him from devoting to major problems of administration and disease control, the time which their importance warrants, approval was given during the year for the creation of the office of Assistant Commissioner, and Dr. A. Neave Kingsbury, formerly Government Bacteriologist and Pathologist, was appointed to this position from 1st October, 1947.

Dr. Kingsbury had a distinguished record of service with the Malayan Government before joining the Department in November, 1941. For almost two years following the retirement of Dr. Atkinson, he carried out, single handed, the onerous duties of Commissioner and Pathologist.

Local Authorities.

During the year close attention was given to enlightening Local Authorities in their functions and responsibilities under the Health Act with a view to improvement in Local Health Administration.

Local Health Authorities were addressed by the Commissioner individually and collectively at conferences in many parts of the State. Emphasis was laid upon their obligation to extend health administration on an efficient basis throughout their respective areas, and they were urged to appoint the trained inspection staff necessary to keep them at all times informed of the epidemiological situation obtaining within the health areas.

All Road Districts which hitherto had not been proclaimed health areas under the Health Act were so proclaimed towards the close of the year. These numbered 18 or 15% of constituted extra-metropolitan Boards; 5 consented to this course, 13 were compulsorily proclaimed.

Three Local Health Authorities which hitherto had not been provided with Health Inspectors appointed fully qualified officers for full-time duty during the year and eight, formerly unprovided with Health Inspectors, formed themselves into three groups to share the services of an inspector supplied by the Department at their expense.

One Local Health Authority arranged for regular periodic inspections by the officer of an adjacent Board.

By these various means inspection was organised during the year for the following Road Districts:—

Wiluna	Mullewa	Dalwallinu	Yilgarn
Cue	Morawa	Fremantle	Dumbleyung
Mt. Magnet	Perenjori	Swan	Manjimup

Initial steps were taken to form groups of adjacent local health authorities, sharing common problems, who would work on a co-operative basis as a regional health authority. Thirty-seven Local Health Authorities were tentatively so grouped into six groups and addressed upon the advantages of co-operation.

It is hoped that most of these groups will complete negotiations and assume the functions of regional health administration areas in collaboration in the near future.

Over a period of years the eclipse of the trained professional officer by lay administrators and the sub-ordination of medical initiative to departmental expediency, has progressively stultified the Department itself as a professional instrumentality and appears to have lowered its status in relation to other branches of political administration. Inevitably these developments have been followed by a depreciation in the public political and official concept of the importance of public health as an administrative responsibility and function.

The progress of public health administration throughout the world in recent years, has been marked by its invasion of new fields of human activity and public administration where the progress of medical knowledge has shown unsuspected risks to the public health, to be entailed in the environment created, the activities pursued or the habits formed.

In the first instance the health authority imposed broad controls upon these fields of human endeavour but with the passage of time it has become apparent that the problems involved require scientific research and detailed regulation. With the industrial expansion of these activities and their development by progressively more highly technical staffs and specialised professions, it has seemed appropriate that management and control should vest in the hands of their own specialised technicians rather than in those of the relatively unqualified health officer and in turn, in some countries, important public health aspects have tended to become obscured or forgotten. This trend has been strongly manifest in Western Australia where for many years medical and health administration has been effected largely by lay officers.

Reference was made in the Annual Report last year to the vesting of the metropolitan milk supply in a Board which included no medical officer of health. During the year there became apparent other anomalies arising from the dissipation of this Department's functions amongst other Departments whose staffs lack the training and experience to exercise them in the best interests of public health :—

1. Industrial Medicine :

Industrial medicine was not contemplated when this State's Health Act was first before Parliament. Since that time no amendment has been effected to provide this Department with the necessary legal background for entry into this important field.

All such powers, however, have, by virtue of the Shops and Factories Act, been vested in the Department of Labour which has no medical staff.

2. Building Standards :

The first interest to motivate State regulation of building construction was the recognition by the health authority that it was necessary in the interest of the public health to prescribe minimum standards of lighting, ventilation, sanitation and safety for new buildings. With the rapid and extensive advances in constructional technique, particularly those attached to the use of ferro-concrete and the erection of multi-storeyed buildings, it soon became necessary to have safety factors referred to specialists in building construction rather than to specialists in public health.

There is a danger here that all regulation of buildings may thus find its way beyond the ambit of the Health Authority, notwithstanding that the public health remains the most important reason for effecting control at all.

That these fears are not groundless is indicated by the fact that local authorities in this State now derive their powers, in respect of their control of building construction, from the Municipal Corporations Act and the Road Districts Act, both of which are administered by the Department of Public Works.

It is not surprising, therefore, that during the year a local authority was directed by the Housing Commission to amend its building By-laws under the Road Districts Act in terms which were not acceptable to the Department of Public Health and that the latter Department became aware of this instruction quite fortuitously.

3. Sale of Food :

Certain conditions are imposed upon the manufacture of bread by the Food and Drugs Section of the Health Act. Detailed regulation of the manufacture of bread, however, is effected under the Bread Act administered by the Department of Labour.

In respect of bread and certain other foodstuffs, public health control of the conditions of manufacture, distribution and sale, is limited and frustrated by the operation of the Shops and Factories Act administered by the Department of Labour.

4. Silicosis in Miners :

Administration of the Mine Workers Relief Act, is in the hands of the Mines Department. Detection of silicosis is effected for that Department by the Commonwealth Department of Health and sufferers are excluded from mining by the Mine Workers Relief Act.

The Mines Department has no health or medical organisation to follow these patients through their later years when a considerable proportion of them develop Tuberculosis, yet it appears that the Department of Public Health has hitherto taken no part in this very important service.

5. Child Welfare.

Several of the functions of the Child Welfare Department, which has no medical staff, closely concern phases of public health administration.

The remote detachment of these functions under another Minister impairs the efficiency of the Health Department by precluding ready access to important sociological data and by excluding it from part of its field of activity.

6. Local Health Administration.

The efficient control of Local Health Authorities is rendered unnecessarily difficult by the circumstance that control of their financial administration is vested in the Minister for Local Government and not in the Minister for Health.

Furthermore it is not possible for the Minister for Health to remove a Local Board of Health from office for default unless the Minister for Local Government agrees to suspend the Local Authority from all its local governing activities, a course which may be neither necessary nor desirable.

SANITATION.

Survey of the existing standards of sanitation throughout the State were continued during the year. Particular attention was given to water supplies, the pollution of streams and the conditions under which natives live in the vicinity of white settlement.

Water Supplies.

The metropolitan water supply is under the constant supervision of a Water Purity Committee, comprising the Principal Engineer, Water Supply, Sewerage, and Drainage Department, as Chairman, the Government Analyst, the Conservator of Forests and the Commissioner of Public Health. Inspections of the catchment area were made during the year by the Committee, and a few foci of possible pollution studied. As a result of these inspections it was considered advisable during the year to chlorinate water released from the Victoria and Wongong Reservoirs and from the Canning Dam through the open contour channel.

Of 155 extra-Metropolitan communities, 22 are supplied from the Mundaring Reservoir through the Goldfields Water Supply, 14 by deep bores and 17 from prepared catchments. The sources from which these 53 communities (34%) are supplied, may be regarded as reasonably safe from pollution. Of the remaining 102 communities:—

- (a) 41 (27%) are supplied from shallow wells exposed to human and animal pollution.
- (b) 20 (13%) are supplied from surface dams and earth tanks exposed to human and animal pollution.
- (c) 8 (5%) are supplied from rivers and streams subject to human and animal pollution above or at the site of withdrawal.
- (d) In one community, water supplies are drawn from a spring and in one community from a disused mine shaft.
- (e) 33 (21%) are supplied only by domestic rainwater catchment tanks.
- (f) Of the first four categories 27 (17% of the whole) supplement domestic rainwater catchment tanks by one or more of the other sources of supply listed.

In several areas the dams and wells are exposed to pollution by natives.

Certain small settlements—timber camps, mining camps, P.W.D. camps and the like—are provided with water from one or other of the sources above listed, and conveyed to the camp by rail or motor transport under conditions of delivery and storage exposing it to human and animal pollution.

In 61 communities (40%) supply is reported as adequate for normal needs and in 94 (60%) it is reported as inadequate.

Of the 155 communities surveyed water is distributed by reticulation in 66 (43%). In communities not supplied by reticulation and where water is drawn from sources other than domestic rainwater catchment tanks (36%) methods of distribution are not satisfactory.

Water is conveyed in tanks or open containers carried on trucks or in open buckets carried by hand. In a number of cases hand carriage is effected by natives.

On premises so served moreover methods of storage of the water are unsafe. Commonly, domestic supplies are stored in open tanks or drums at ground level from which requirements are dipped by hand as the occasion arises. In certain areas native employees of white households have access to these tanks.

There appears to be and to have been no liaison between this Department and the Department of Public Works in the design, construction, and maintenance of public water supplies in country districts. The results of this survey clearly indicate that close liaison is necessary and a method of ensuring it should be immediately devised. As one means to this end it has been recommended by this Department that the control of all public domestic water supplies throughout the State be supervised by the Water Purity Committee which is at present concerned only with the metropolitan area.

River Pollution.

Most of the major rivers of the State are subject to pollution at various points along their length in greater or less degree.

The rivers most affected are the Swan and its tributaries, the Helena and the Avon. Other rivers subject to risk of major pollution are the Murray, Collic, Preston, and Blackwood.

The principal sources of pollution are:—

- (a) Town drainage discharged untreated into the rivers or their tributaries.
- (b) Septic tank effluents discharged into tributary streams or the streams themselves where the soil is not sufficiently pervious to permit efficient underground disposal. Under the influence of metropolitan experience where the heavy body of sand in the local terrain usually permits effective subsoil disposal, it has become the practice to permit the exclusion of the aerobic chamber from bacteriolytic sewage installations. There is a failure to realise that the effluent from the anaerobic tank in such installations is not innocuous, and in impervious soils where complete sub-soil disposal cannot be achieved, aerobic treatment is necessary before effluent disposal is attempted.

In areas where the soil is impervious, a tendency has developed to dispose of the effluent after only anaerobic treatment into streams. Apart from the risk of transmission of bowel disease involved here, this practice favours the prolific breeding of pest mosquitoes.

- (c) Drainage from sanitary disposal depots.
- (d) Trade wastes from abattoirs, dairies, milk factories, flax mills, fertiliser factories, and the like.
- (e) Farm drainage.
- (f) Pollution by human agency, for example labour camps, natives, picnickers, bathers, and the like.

As a measure directed towards the more co-ordinated control of river pollution by Local Health Authorities, efforts were made during the year to interest groups of adjacent authorities, sited on the basins of major rivers, to co-operate as regional health areas.

Natives.

The freedom of the aboriginal native from infectious disease and the hygienic advantages of his migratory habit have left him unaware of the necessity for the sanitary disposal of human wastes and quite unadapted to life in settled communities. His neglect of essential sanitary practices constitutes a serious danger to white settlements in the vicinity of which he lives. Over the years no effort appears to have been made to educate him in the fundamental obligations of community life, nor does it seem that the necessity for doing so, before admitting him to citizenship, has even yet been realised.

Natives camped within the vicinity of townships are not provided with sanitary conveniences, nor the means for controlling fly breeding. Flies bred in the vicinity of native camps and elsewhere have free access to native excreta and thence to adjacent white communities.

It is unusual for natives in the more developed areas of the State to have access to an adequate water supply, unless they are camped on the banks of streams or in the vicinity of dams which they inevitably pollute notwithstanding that such streams or dams may serve as the source of water supply to the white community.

Where they have not access to streams, water supplies available to them are usually so limited, and the transport so difficult that they make do with minimum supplies. Washing of the person and of clothing must usually be neglected and the native himself suffers in consequence, not only in appearance but in health.

Accommodation is usually limited to improvised camps of brush and discarded building material, or in a few more advanced localities, to ill-designed and unhygienic structures of a more permanent nature.

Serious as this situation is in the Southern portion of the State, in the North its social and economic implications are even more important. Native hybrids admitted to full or partial citizenship in the North constitute a substantial proportion of the total population. Whilst the natural increase in whites in that region is very low, that of the hybrids is very high. It has not been possible to obtain recent figures for Western Australia, but it was observed as long ago as 1932 in the Northern Territory, that the rate of natural increase of hybrids who then constituted one-third of the population, was 50 times the rate of the white.

If this substantial component of the Northern population is to continue in complete ignorance of the principles of sanitation, it must be assumed that it will ultimately determine the standard of living for that area, and it will be difficult or impossible for the white race to survive there at a reasonably high standard of living unless it is heavily re-inforced by immigration.

FOOD.

Four meetings of the Food and Drug Standards Advisory Committee were held during 1947.

During the year Mr. H. Bowley, Government Analyst, retired from the Committee after having served on it continuously for eight years. His advice and experience were of great assistance to the Committee in its deliberations.

On the recommendation of the Advisory Committee, the following amendments were made to the Food and Drug Regulations.

- (a) *Regulation 1.*—To provide that four point face measurement may be used in lieu of six point. (This amendment to be effective for six months only as from 23rd January, 1947).
- (b) *Regulation 10A.*—To delete the warning from the labelling requirements for products containing D.D.T.
- (c) *Regulation 1.*—To permit the Commissioner of Public Health, under certain conditions, to exempt from labelling requirements.
- (d) *Regulation 67.*—To provide that labels on spirits shall clearly indicate the blend and country of origin.
- (e) *Regulation 22.*—To permit artificial colouring in all types of fish pastes.

Meat.

Details of meat inspection are given in Appendix V. The grand total of all animals slaughtered under Government Supervision was 930,905 compared to 848,995 for the year 1946.

In collaboration with the Controller of Abattoirs and officers of the Rationing Commission, close attention was given during the year to the detection and prevention of illicit slaughter, but considerable difficulty was usually encountered in obtaining evidence sufficiently complete for the initiation of prosecution.

Comprehensive work of reconstruction at Government Abattoirs, at Midland Junction and Robb's Jetty, was undertaken during the year to provide for the more efficient and hygienic handling of meat.

Milk.

Milk submitted to chemical analysis is consistently of low standard, particularly in respect of solids not fat. Vendors charged with selling substandard milk plead that the fault lies with the producer and there may be some substance in this defence. The statutory standard for milk is not high and should be readily attained by a well conducted dairying industry.

Bacteriological tests revealed that both raw and pasteurised milk are still exposed to gross contamination.

Many complaints were received of dirty bottles, some containing foreign matter and it is apparent that there has been no improvement in the attention by distributors to care in the preparation of bottles before re-use.

Fish.

The export trade in crayfish is increasing in volume and importance. Assistance was provided by the Department in issuing certificates facilitating the entry of the export product into the United States of America, Great Britain, and the Federated Malay States.

Whale meat, turtle meat and shelled oysters were also exported under Departmental certification as to quality and soundness.

INFECTIOUS DISEASES.

There is still a general lack of appreciation by medical practitioners of the importance of early notification of infectious disease. Many cases are not notified; others are notified after long delays and few practitioners advise the Department when diagnoses are amended. Circulars have been issued on several occasions inviting attention to a practitioner's obligations in this regard, but the situation remains unsatisfactory. It appears that prosecutions may be necessary before accurate and complete records of the incidence of infectious diseases can be obtained.

Murine Typhus.

Cases of this disease numbered 141 in the period under review. Of these no less than 52 occurred in the Health area of the Perth Municipality. Seventy were reported in other Metropolitan health areas and 19 from elsewhere in the State.

An analysis of cases over past years shows that 7 per cent. have been under 15 years of age, 73 per cent. between 15 and 49 years, and 20 per cent., 50 years and over. Males have been infected slightly more frequently than females in the proportion of 11 to 9.

The relatively low rate in the under 15 age groups and the preponderance of cases in the working age groups, suggests that the place of employment rather than the home is the usual locus of infection. Late in the year the Commissioner discussed in Melbourne, with Professor F. M. Burnet of the Walter and Eliza Hall Institute of Medical Research, and Dr. E. V. Keogh of the Commonwealth Serum Laboratories, the planning of an epidemiological research into Murine Typhus in Western Australia with a view to approaching the National Health and Medical Research Council for a research grant. Particular importance attaches to the elucidation of the etiology of this disease owing to the increasing frequency with which claims for compensation are being submitted by patients under the Workers' Compensation Act.

Diphtheria.

The fall in incidence recorded in the previous report has continued. The numbers of cases in 1945, 1946, and 1947 have been 425, 380, and 339 respectively, though even the last figure represents an incidence some ten times greater than that for Ontario.

About 62 per cent. of the Diphtheria cases occurred in the metropolitan area where all facilities for immunisation are readily available. It is thus obvious that an intensification of propaganda is very necessary.

Local Authorities conducted 92 Diphtheria Prophylactic Clinics which completed the immunisation of 7,493 children.

A comprehensive plan directed towards the universal immunisation of children throughout the State was presented to Local Health authorities by the Commissioner during the year. The plan provides for the systematic recording of births, changes of address, and immunisation in local authority areas and will be implemented in 1948.

Veneral Disease.

Gonorrhoea declined in incidence by 22 per cent. (16 per cent. in males and 14 per cent. in females) during the year.

A very disturbing feature, however, was the increase in the incidence of Syphilis, figures for which stand at 225 per cent. of the figure for 1946.

It is of interest to note in face of these figures that representations were made during the year that the Government effect amendments to the Venereal Diseases Section of the Health Act which would have deprived the Department of much of its power of control.

VENEREAL DISEASE IN WESTERN AUSTRALIA, 1947.

Disease.	Male.		Female.		Total.	
	1946.	1947.	1946.	1947.	1946.	1947.
Syphilis—						
Primary	10	31	7	13	17	45
Secondary	3	13	8	14	11	28
Tertiary	5	7	12	14	17	21
Congenital.....	1	4	.....	6	1	10
Total Syphilis	19	55	27	47	46	102
Gonorrhoea	310	259	87	49	397	313
Chancroid	1	.....	.....	.....	1	1
Granuloma .....	.....	.....	1	.....	1	.....
Total	330	414 314	115	96	445	418

N.B.—This statement includes eight cases notified in the Services (1947).
(Included in 1947 total figures only)

HOSPITALS.

The status and function of the Principal Medical Officer in his relation to the Department of Public Health, Government Hospitals, Board Hospitals, nursing staffs of hospitals and the private practitioners attending patients in these hospitals, require definition.

The Hospitals Act, 1927, apparently visualised the Principal Medical Officer as the professional head of the Department administering hospitals, but regulations under the Act have not been framed to implement this intention and the procedure over the years has been to concentrate control in the lay staff relegating to the Principal Medical Officer certain vague inconstant and minor functions of an advisory nature.

The Act also contemplates the appointment of District Medical Officers for whom certain duties are prescribed. These appointments, however, have largely fallen into desuetude by reason of changes in the medical and health organisation of the State since the promulgation of the Act.

In effect now, hospitals other than private hospitals may be grouped in three broad categories :—

(a) *Government Hospitals in Country Districts.*

These are managed by the Department with or without the assistance of an Advisory Committee with no executive power.

They are financed by Government allocation supplemented by fees. Like country Board hospitals—which most of them originally were—these hospitals have no resident or salaried visiting staff and admit patients under the care of practitioners in the district who treat and charge them as private cases. Indigent patients may be treated without charge by the medical practitioner or in certain instances an arbitrarily fixed fee may be paid him by the Department.

(b) *Board Hospitals (Country).*

These are controlled by Boards elected by subscribers or appointed by the Government and are financed in part privately, in part by Government subsidy and in part by collection of fees.

These hospitals have no resident or salaried visiting staff and admit patients under the care of practitioners in the district who treat and charge them as private cases. Indigent patients may be treated without charge by the medical practitioner or in certain instances an arbitrarily fixed fee may be paid him by the Department.

(c) *Board Hospitals (Metropolitan).*

Management is vested in a Board elected by subscribers or appointed by the Governor. Funds are derived from Government subsidy, public subscription, legacies and bequests, and the collection of prescribed in-patient and out-patient fees.

These hospitals are staffed by a resident medical staff under a medical superintendent responsible to the Board and by a visiting Honorary Medical Staff appointed by the Board.

Embarrassments arise from the following administrative deficiencies. There are in country hospitals :—

(a) No definition of the responsibility of the attending medical practitioner.

(b) No definition of the relationship between the medical practitioner and—

(i) The Principal Medical Officer.

(ii) The Nursing Staff.—Only a professional officer is competent to advise upon professional appointments or upon the efficiency or discipline of the nursing staff, yet in most country hospitals the medical practitioner has no direct access to the Board or to the Department on these matters and his intrusion into this field may well cause acute dissension.

(iii) The Board of Management, if any, or the Department.

(c) No protection for the patient in respect of fees charged for medical attention in public or intermediate beds.

(d) No firm policy in respect of fees to be paid by the Government to the Medical Practitioner for the treatment of indigents or natives unable to pay private fees.

(e) No logical or constant formulae for :—

(i) The reimbursement of the hospital authority in respect of drugs and dressings used by the practitioner in the treatment of private cases. This has become an issue of major importance with the increased use of costly anti-biotic and ethical preparations.

- (ii) The responsibility of providing instruments necessary for the use of the visiting practitioner. The hospital authority does not dispute the supply of trivial or major equipment such as clinical thermometers or X-ray units, but between these two extremes there is a wide range of values in instruments necessary, particularly in the theatre, which are always likely to become a matter of dispute.

A serious disadvantage is the failure to define the relationship of the private practitioner to the hospital Board, particularly in towns where only one medical practitioner is in practice. This omission has occasioned incidents at times culminating in acrimonious quarrels.

Prima facie an elected lay Board is not competent to select, discipline, or discharge professional staff. To appoint, control and discipline members of a nursing staff, particularly in their professional capacity, the Board must have the advice of a medical practitioner and in its relations with its medical officer, the Board must have access to some medical referee.

Boards having no salaried medical officer can seek only the advice of the private practitioner attending the hospital and when he, permanently established in the district is in conflict with the nursing staff recruited for temporary service, the problems confronting Boards in adjudicating between them may well be insuperable.

At present, medical practitioners may refuse to furnish confidential returns required, through the lay Board or departmental staff whilst the channel of communication from the Board to the lay staff of the Department obtrudes as an obstacle to the free exchange of confidential information between the medical practitioner and the Department.

Medical practitioners can effectually close country hospitals by the simple expedient of refusing to admit or to treat patients there. This obstructive action may be well- or ill-intentioned, and wisely or unwisely determined.

Hospitals may be closed by this means on the ground that they are unhygienic or because the quality of the nursing service is too poor. How far pique or an impish spirit of mischief actuates this decision, there is no statutory authority to determine.

In such cases it would be logical for the Principal Medical Officer to make the necessary enquiry and take disciplinary action on the Board's behalf, but there is no legal provision for this course. Even were there, the only disciplinary measure available to him in respect of the medical practitioner would be exclusion from the hospital—one difficult of application where no other medical practitioner is available.

It appears that the nominal office of Principal Medical Officer has been retained so that the Board or Department whose policy has precipitated a quarrel between itself and a Medical Practitioner, may relegate to him the invidious task of devising a formula for compromise or settlement, without conferring upon him the status or authority to undertake the assignment.

Complete overhaul of Hospital Administration with clear definition of the relationships of its respective lay and professional components has become necessary.

Notwithstanding the evident fluidity of the method of staffing country hospitals, it presents several material advantages:—

- (a) It provides the hospital with a medical staff without cost.
- (b) It affords the patient free choice of medical attendant where more than one practitioner is available in the district.
- (c) It enables the country practitioner in most cases without assistance from the Government, to maintain some financial stability in private practice in rural areas.

The introduction of the Commonwealth Hospital Benefits Act, however, threatened completely to disrupt this unorganised if convenient expedient for medical staffing.

The hospital authority whether Departmental or Board, was now entitled to collect, in respect of each bed approved by the Commonwealth as a public bed, a stipulated sum per day calculated upon the average daily revenue per bed during a base year. Admission to such a bed entitled the patient to free hospitalisation and to treatment without fee irrespective of his means.

Country hospitals eager to obtain the maximum revenue from this source for the most part had the majority of their beds approved as public beds. The immediate effect of this under the Act was to deny the attending medical practitioner the right to collect a fee. Even beds in single bed wards could not usually be excluded as private beds because in small hospitals it was usually necessary to admit to them public bed cases such as natives or indigent patients suffering from diseases requiring special attention or isolation.

Strict adherence to the terms of the agreement between the State and the Commonwealth under the Hospital Benefits Act would have entailed the payment to rural medical practitioners of compensatory salaries averaging from £750 to £1,500 per annum and aggregating some £100,000 annually. Unless this were done the deprivation of fees in respect of patients in hospital would have driven these rural practitioners out of practice unless they could arrange to treat their cases in private hospitals, boarding houses, hotels or elsewhere as alternatives to admitting them to hospital. Either alternative was an unsatisfactory solution from the patient's standpoint. Representations to the Commonwealth Minister for Health resulted in the State being permitted to continue the system whereby unsalaried medical practitioners charged fees to patients in public beds on condition no fee was collected by the hospital itself.

This was regarded as a concession to meet an emergency, but as most of the hospital fees, used as a basis for determining the Commonwealth reimbursement rate, had never included medical charges, it more nearly approximated plain justice and honest accounting.

The incidence of the Commonwealth Hospital Benefits Act upon metropolitan hospitals and its requirement that no means test be applied to in-patients precipitated refusal by the medical profession to continue affording the hospitals honorary service.

This created a crisis in hospital staffing which would have closed the hospitals but for the forbearance of the profession who continued to serve in an honorary capacity whilst a solution to the problem was sought.

This impasse was debated through 1946 and 1947 and may be regarded as having been temporarily resolved by uneasy compromise effected during the year. Under this compromise the medical profession will continue to afford service to metropolitan hospitals for a period of three years, provided Boards of Management meantime plan to conduct them as community hospitals.

Under the constant threat by the Commonwealth Government of further regimentation of the profession into a National Health Service medical practitioners have become increasingly aware of their insecurity and now view conditions of appointment more critically. It is probable, therefore, that in the near future the problem of the medical staffing of major hospitals will again become one of public interest and a brief statement and analysis of the principal alternatives to the Honorary System may not be amiss.

(a) The Honorary System.

Under the honorary system attention for impecunious in-patients and out-patients alike is afforded free of charge by specialists practising in the City.

The merits of the Honorary System are :—

- (i) The high value placed upon honorary appointments by members of the medical profession, both as enhancing prestige and affording opportunity for the improvement of technique and art, assures that the very best medical attention obtainable in the area is made available to the patients in hospital.
- (ii) This, the highest standard of medical attention available in the area, is at the disposal of the sick completely without cost either to the hospital or to the patient.
- (iii) Being without cost, there is no limit other than availability to the number or quality of specialists that may be appointed at the discretion of the Hospital Board and its advisers. The staff may at any time be expanded to reduce the volume of work required of any individual specialist or to extend service into new fields of medical endeavour. In considering such expansion the Board is able to come to a decision entirely free from any harassing consideration of cost for professional services.

The honorary system is incompatible with the Hospital Benefits Act to the extent that qualification for free medical treatment by an honorary staff can only be determined by a means test, the application of which to persons admitted to public beds, the Act specifically prohibits. The disadvantages of the honorary system in a universally free service then, are :—

- (i) It involves the application of a Means Test in some form.
- (ii) It is inapplicable to hospitals providing free treatment for all cases irrespective of income.
- (iii) His services being purely voluntary the honorary medical officer cannot be dragooned by any hospital authority into providing attention for any particular individual.

There are two alternatives to the honorary system when no means test is permitted :—

(b) Full-time Salaried Officers.

Full-time salaried officers may be appointed to conduct all specialist activities in the hospital. The advantages of this method would be :—

- (i) The application of a means test would be unnecessary.
- (ii) As salaried employees of the Board of Control medical practitioners appointed would be completely at the direction of the Board and its Medical Superintendent.

The disadvantages, however, are serious and more than outweigh the hypothetical advantages :—

- (i) It would be necessary to provide funds totalling perhaps in the vicinity of £250,000 per annum for the payment of medical practitioners for the performance of duties which are at present being performed free of charge.
- (ii) The constitution of the medical staff, its dimensions and its scope, would be always subject to the availability of funds. The management of hospitals has always been subject to grave embarrassment by inadequacy of finance. To imagine that without even greater embarrassment it can readily incur the additional expense of paying liberally for services now given gratuitously, is illogical in the extreme. That being so it would from time to time be necessary to vary the conditions of appointment by lowering salaries paid, by restricting the field of activity, by reducing the staff or otherwise whittling down the annual expenditure on medical service, and whereas under the honorary system the best is always available, under the salaried system quality must inevitably fluctuate with a general tendency towards deterioration.
- (iii) It would be impossible for any Hospital Board using a salaried service to offer an amount to the individual specialist sufficient to attract the most successful and proficient practitioners away from private practice yielding an annual income of some thousands of pounds. The best attention would, therefore, definitely not be available and the quality of the attention provided in the hospital would be determined by the salaries the Board could afford to pay.

This might be acceptable in some situations but could not be entertained in a hospital associated with a Medical School and it would tend towards a gradual deterioration in the quality of service.

It would be fallacious to argue that such salaries would at least be preferable to the present system of service without remuneration, for :—

- (i) Highly remunerative private practice now available to the specialist as a source of income would be excluded.
- (ii) Salaried medical practitioners and specialists would be required to treat, at the equivalent of a reduced rate, persons who would otherwise be available to them in private practice at fees determined by the specialists themselves.
- (iii) Prestige and experience so highly valued by the honorary would not attach to an appointment the value of which was determined on the basis of a remuneration acceptable to the inexperienced or inexpert general practitioner, but not to the skilled.

(c) Sessional Appointments.

This system involves payment of medical practitioners on the basis of the time spent each day in attendance at the hospital. This system has the following merits :—

- (i) By permitting the continuance of private practice it enables the Hospital Board to select its staff from the more competent practitioners, those who in fact might be expected to seek appointment under the honorary system.
- (ii) It meets the objection of the medical profession to the free treatment of the well-to-do by paying the practitioner some remuneration in respect of such persons attended in public beds. It effects a useful compromise between the honorary system and the salaried system, the practitioner continuing to provide free medical attention for the indigent without cost to the Board but also discharging the obligations of the Board in respect of patients in a position to pay, in return for a fixed remuneration per hour of attendance.

- (iii) It affords ambitious and enterprising young general practitioners, appointed to the staff, an opportunity to establish themselves as specialists in the metropolitan area providing them with a livelihood whilst they are building a reputation and improving their professional competence.

This system, however, has these disadvantages :—

- (i) There will be a tendency in the course of time for the practitioner and the Board to overlook the fundamental fact that payment per session is not made as a return for the actual time of service, but only as a remuneration for that portion of the patients treated who might be considered able to pay a private practitioner.

Under the erroneous impression that the sessional fee is a time fee for the whole period, representations may be made that it is inadequate. Under such circumstances staffing by the most expert of the profession would require very considerable increases in fee, whilst failure to provide these increases would occasion deterioration in the quality of the staff offering.

- (ii) A progressive increase in the proportion of the well-to-do included amongst persons attended might similarly occasion demands on the part of the staff for upward revision of their fees.
- (iii) Under the imminent threat of a National Health Service in which salaries and emoluments may well be determined upon any such payments in operation at the time, the medical profession must be expected to be insistent upon a scale of sessional payments far in excess of the amount warranted by recouping of fees uncollected from the occasional patient in a position to pay.

These difficulties of reconciling with the Hospital Benefits Act the staffing of hospitals conducting no means test stem from the disturbing factors introduced by the continuance of private medical practice. Realisation of this fact has created in some quarters a demand for the nationalisation of the medical profession on the basis of a salaried service.

It is to be supposed that the motives behind a nationalised medical service will be first to reduce the cost of illness to the individual and second to improve the quality of attention rendered. The means by which such a service could be provided must be studied carefully before the existing structure is disturbed, otherwise interference may cause disorganisation and deterioration of the service already available without achieving these objectives.

It is not possible here to discuss at length the several methods by which a National Medical Service could be attempted, but as during the next few years this is a matter likely to become a major public and political issue, the critical examination of the probable ultimate outcome of regimentation—a salaried service—may not be out of place.

Cost.

Under the existing system of private practice, a limited number of medical practitioners, by working long hours, is more or less successful in meeting the demands of the sick public. It is not to be supposed that any fewer could cope with these demands were medicine nationalised, rather is it to be expected that the elimination of cost to the individual and the inclination to use to the maximum a service provided through taxation, would increase the demand beyond the capacity of the present strength of the medical profession. This would entail either an increase in personnel at added cost, or a deterioration in the quality of service afforded the individual by practitioners endeavouring to cope with larger numbers during a given time.

It must be expected that officers of a salaried service would shortly demand and be morally entitled to receive the right to limit their working time to that number of hours per week legally prescribed for other avocations, and the reduction of a practitioner's working time to 40 hours per week would necessitate doubling or even trebling the present strength of a profession, the members of which are accustomed to be on call throughout the 24 hours of the day.

The cost of this substantial increase in professional strength could not be met by any theoretical re-distribution of the collective earnings of the profession. Unless the rewards of medical practice, including the relatively high incomes of specialist practice, continue, the inducement for youth to undertake the long period of arduous study involved, would be lost and the numbers entering the profession may be expected to be inadequate even to maintain it at its present strength. It would then be necessary to recreate inducement either by substantially raising medical salaries or by applying rigid controls to the incomes of all alternative occupations.

In the public service incidental costs shortly dwarf the expense of professional salaries. Government administration involves completion of a profusion of documents and returns. Even if idle, a highly paid

officer's time is regarded as too valuable for clerical duty and this work is allocated to a corps of clerks specially appointed for the purpose. This extra expense is not incurred by the practitioner in private practice.

Under present conditions of practice a considerable amount of service is afforded to hospitals by the profession, free of charge. In Western Australia this may conservatively be estimated at not less than a quarter of a million pounds annually. Under a salaried service these medical practitioners would have to be paid and all honorary service would disappear.

It must also be remembered that a medical practitioner attending a private case hesitates to incur on his behalf the expense of mechanical diagnostic procedures and laboratory examinations which by closer attention to the patient himself he feels can be safely avoided. In a free service there must inevitably develop a tendency amongst the more casual or impatient of such practitioners, to have the diagnosis mechanically made for them by ancillary aids without regard to their cost to the State.

The introduction of a nationalised medical service must inevitably, therefore, entail far greater gross outlay than is represented by the sum of all medical expenses paid annually by individuals in the community today. These costs must be borne by taxation in one or another form. For the majority of those in the tax paying section of the community it is probable that the amounts paid in taxation for this purpose during a lifetime, will be far in excess of the aggregate of medical expenses which would be paid during life under the present system. For those to whom taxation does not extend—and as costs mounted, these would become progressively fewer, the service would, of course, be free, but for the majority of these today, free or nearly free medical service is already available.

These very considerable increases in cost might be tolerated by the community in the interests of improved service, and it is therefore expedient to examine the probable success of the scheme in its second objective.

Quality.

The reduction of hours to a prescribed maximum per week would involve the patient requiring frequent or continuous attention being attended successively by two or more practitioners. The very close personal relationship between medical attendant and patient, which is a feature of the existing system would be irreparably destroyed and although continuity and uniformity of treatment might be assured by routine procedures developed for the purpose, the psychological relationship between doctor and patient would be ignored.

The unrestricted use of diagnostic aids would encourage the busy or the indolent practitioner to have his diagnosis made for him by other means than his own careful examination and professional acumen. Disuse of the talents required for successful clinical determination, would tend towards a deterioration in his own professional ability. It is to be expected that his deterioration would extend also to his therapy and a tendency towards "drag net" prescribing without careful and rational decision is to be expected.

A salaried service, however, initially designed to avoid this contingency must ultimately inevitably be administered on the lines of the public service. Inevitably too, direction would finally rest in the hands of those concerned with the services accounting. As costs mounted and as complaints from the tax paying public became more clamant, economies would become necessary. These must be applied to reducing either the extent or the quality of service or both of them.

In a nationalised service ordered on the public service system, the problem of the right to promotion and to specialisation at present determined by individual effort and attainment, would of necessity be permanently acute. The right to promotion and to specialisation must, in such a service, be determined by prescribed formulae. If promotion is to be by seniority, senior officers will ultimately be those best adapted to survival in a conservative and orthodox organisation in which the impulses of individuality are suppressed. If promotion is to be by merit, the problem of establishing a reference authority competent to assess merit in all the varied branches of the profession and in all the psychological complexities of a multitude of individuals would be insuperable. Promotion by merit would soon be suspected as affording opportunity for nepotism and would be abandoned with general approval.

Medicine owes much to the inspiration and tenacity of purpose of individuals who have developed theories or phases of specialised practice regarded in their day as heretical, and many such men have in the past been branded as charlatans and imposters by their contemporaries.

In a system of free private practice individual expression cannot be entirely suppressed. In a salaried service administered on a public service structure orthodoxy, conservatism and caution will inevitably suppress initiative.

Probably the great majority of the public today, resentful of the incidence of taxation, conscious of their own financial contribution towards social services and oppressed with the fear of heavy medical expenses would welcome some form of national medical service or at least some measure of insurance against or relief from the cost of illness. It is important that in this mind they should not with precipitation accept a scheme which may give no financial relief yet may impair the quality of service now available to them.

Schemes for social security as devised in our time, are uniformly, but quite unnecessarily planned upon the standardisation of stimulus and response, the suppression of individual enterprise and the frustration of self-expression. Such curbs to freedom are alien to the British tradition and will be repugnant to many who have matured in a more liberal environment.

There is not lacking evidence in our own recent experience that many persons, attracted to socialism by its abstract promises of re-distribution of wealth and planned economy, will revolt against the restrictions upon their own individual liberties which its actual practice entails.

Until most of the people are conditioned to approve, or at least tolerate the unwonted restraints necessary to organise a national medical service on a salaried basis, efforts to implement it are likely to be followed by a crop of anomalies and abuses which will discredit and not improbably ultimately abort it.

To meet the popular demand for an improved and less costly medical service for the individual, there must be some safer and better method than one which inspires antagonism and sabotage in its professional executive, which without compensating substitution, eliminates from medical practice the motives and influences responsible in the past for the advancement of medicine and which requires for its survival a drain upon the public purse which public opinion itself may not for long be content to endure.

A profession which unique amongst the gainful occupations has developed an honorary system of service, sustained it over many years and successfully used it for the advancement of medical and surgical science should not find it difficult to evolve a modification to the benefit and satisfaction of both parties. Retention of the Honorary system for the service of the lower income groups and the organisation of medical insurance to ease the burden upon the more affluent treated at home or in community hospitals would appear more rational lines of approach to a complex problem, a hasty and ill-judged solution for which may well prove calamitous.

Nursing.

Inspections of Government controlled and subsidised hospitals totalled 77. Hospitals other than private hospitals were during the year 182 trained nurses short of the number necessary to maintain adequate staffing.

As a first step in the policy of developing country hospitals as training schools to increase the output of trained nurses and to improve the quality of nursing, nursing training schools were established during the year in connection with the hospitals at Northam, Collie, and Narrogin.

Miss D. H. Bailey was appointed Organiser of Nursing Training and a Central Preliminary Training School was established at Northam.

Junior tutors were trained with the students at the preliminary training school and subsequently posted to the training schools to ensure the maintenance of a high standard and continuity of school policy.

The school commenced instruction on 15th September and during the remainder of the year 19 nurses (18 female and 1 male) completed the preliminary course.

Girls schools in the Metropolitan Area were visited by the Organiser of Nursing Training and pupils were addressed upon the attractions of nursing as a profession.

To maintain the interest of girls in nursing until they are able to commence training in hospitals, pre-nursing courses were organised for:—

- (a) Girls still attending school who desire later to commence training as nurses.
- (b) Girls who have left school and are in employment awaiting call to a training hospital.

These courses are conducted by arrangement with the Education Department.

Private Hospitals.

One new licence for an "A" Class General Hospital was granted during the year.

One hospital previously registered as a general and maternity hospital was converted this year to a convalescent hospital. The number of private hospitals (other than maternity hospitals) registered during the year was 35, made up as follows:—

"A" Class General	....	....	....	10 to provide 287 beds
General and Maternity	....	....	....	14 to provide 587 beds
Convalescent	....	....	....	11 to provide 148 beds

Accommodation for nurses already inadequate was subjected to further strain by the introduction of the shorter working week.

Maternity Hospitals.

Maternity hospitals licensed during 1947, numbered 15 for 134 beds. Maternity beds licensed in hospitals registered as general and maternity hospitals were 155, giving a total of 289 maternity beds in private hospitals.

347 maternity beds were registered in country hospitals and 108 at the King Edward Memorial Hospital, Subiaco.

Maternity hospitals in the metropolitan area were inspected twice and in the country once during the year. The usual supervision of practising midwives was effected. Appliances, records and attendances of midwives on district work were checked. Only 51 births were notified as having taken place in dwellings.

Maternity deaths notified from private Maternity Homes totalled 8. The reports in all cases were forwarded to the Coroner by the Medical Practitioner and Midwife concerned. The circumstances attending these deaths were studied by a specialist obstetrician and a midwife and the professional attendants were pronounced free from blame.

NURSES' REGISTRATION BOARD.

Fourteen meetings were held during the year.

On the recommendation of the Board, the Nurses' Registration Regulations were amended to permit a trainee who had completed her training as a general nurse, but had not reached the age of 21 years to proceed with her Midwifery training notwithstanding that she was not eligible for registration.

Regulations were made dealing with the procedure to be adopted in regard to Appeals against decisions of the Nurses' Registration Board.

Regulation 20 (d) was amended to provide, under certain circumstances, for a shortened period of training in "B" Class Hospitals, six months of which must be taken at an "A" Class Hospital.

It was decided and training schools were notified, that as from July, 1948, the first professional examination would be conducted by the Board.

The number of Nurses registered in the various divisions of the Register was:—

		1947.	(1946.)
General	....	1,809	(1,163)
Midwifery	....	965	(730)
Infant Health	....	209	(151)
Mental	....	68	(51)
Tuberculosis	....	3	(...)
Educational	....	40	(20)

Figures in parentheses are those of 1946 for comparison.

Nine names were restored to the Midwives Register.

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

General	....	3
Midwifery	....	3
Mental	....	1
Tuberculosis	....	3
Educational	....	3

The Repatriation General Hospital, Hollywood, was approved as a training school for male general nurses.

Northam, Collie, and Narrogin hospitals were approved as full-time training schools for general nurses.

INFANT HEALTH.

During the year, six new Infant Health Centres were opened, bringing the total to 37. The number of sub-centres has been more than doubled and facilities are now available in 183 towns and villages throughout the State. Nor have the needs of the population in the North-West been overlooked; ports and stations have been visited by an experienced departmental nurse who advised on infant health.

The total attendances of babies numbered 154,158 compared with 120,383 in 1946, and the average number of attendances per baby rose from 9.3 to 10.0. The number of babies born in the State was 12,874; the total of those attending, whose age was under nine months, was 8,147.

An analysis of feeding returns indicates that only 53 per cent. of babies under nine months are breast fed. On the goldfields and in some agricultural areas, the percentage drops to some 45 per cent., though in the Claremont-Cottesloe-Nedlands area the figure is 62 per cent. About 23 per cent. of babies are fed on dried milk. This breakaway from natural function will adversely affect both mothers and babies and urgent action to correct this trend is necessary by all organisations interested in mothercraft.

The Government has assumed further financial responsibility for centres—travelling allowances to Nurses "on circuit" and also petty cash expenses are now defrayed from departmental instead of from Committee Funds.

A detailed statement of attendances, etc., will be found in Appendix X.

SCHOOLS MEDICAL SERVICE.

The results of the medical inspections of school children in metropolitan and country schools are included under Appendix XI. Although the individual standards by different medical officers may vary, the figures again suggest that country children are in better condition than those of the metropolitan area.

Among 9,809 metropolitan and 8,537 country children, the respective percentages requiring ophthalmic or tonsillar treatment were as follows:—

	Metropolitan.	Country.
Ophthalmic	3.8	5
Tonsillar	10	21

The fall in the number of children examined in the metropolitan area from 13,602 in 1946 to 9,809 in 1947, was due to extensive sick leave of the inspecting medical officers.

School Dental Service.

The return of a dentist from Army duty was a welcome addition to a very inadequate staff. Even so, the number of school children examined (3,205) represents only about 1 in 25 of those attending the schools. Over 80 per cent. of the children required dental attention and only 11 per cent. had been treated by private dentists.

Although the number of children treated was much the same as in the previous year, the amount of work undertaken shows a marked increase. Thus, fillings rose from 2,685 to 5,249 and extractions from 2,940 to 3,816.

The general standard of dental hygiene among school children is extremely poor and the present staff is quite inadequate to cope with the situation. Ill-health frequently derives from lack of dental care and a considerable increase in the number of dentists on the establishment of the school service is very essential.

Ophthalmic Nurse.

The ophthalmic nurse was engaged for the greater part of the year in assisting the medical officer inspecting country schools. She also undertook special examinations in three schools having 272 scholars, including 55 native children. Of these, 144 were referred for Specialists' treatment—58 for visual defects, one for an auditory defect, and 84 for various other conditions.

INSPECTION STAFF.

On the 11th and 12th July, the Second Annual Conference of Health Inspectors was held in Perth.

With one or two exceptions, all Local Health Authorities who employed full-time Health Inspectors, were represented at the Conference by their Officers.

Those attending were addressed by technical and professional officers on subjects having a direct bearing upon health inspection.

The Conference provided an opportunity for Inspectors to discuss among themselves and with available experts improvements in technique and advances in public health.

Bacteriolytic Sewage Disposal.

The number of plans approved by the Department for bacteriolytic sewage treatment installations was 2,142, an increase of 350 over the previous year.

The revenue derived from this source is indicated in the Statement of Receipts and Expenditure (Appendix XIV.)

Imported Fish Inspections.

Imported fish of a total weight of 412,265 lbs. was inspected during the year.

Fifty boxes of Kipperred Herrings and 1,205 boxes of Smoked Herrings were condemned as unfit for human consumption.

Analysis of Food.

One hundred and fifty-four samples of food and drugs (of which 105 were of milk) were submitted for analysis. Twenty-one per cent. of the milk samples and 20 per cent. of the others failed to comply with statutory standards.

Legal Proceedings.

Legal proceedings taken by the inspection branch of the Department resulted in the imposition of fines amounting to £64 and the recovery of costs totalling £14 3s. 6d. One offender was committed for trial for forging a meat brand.

Appeals.

No appeals lodged in accordance with the provisions of the Health Act were received against Orders served by Local Health Authorities.

NORTH-WEST SERVICE.

The North-West and Kimberley Division comprises ten Road Board districts of which details of population, area, and health revenue are set out in Appendix XVI.

The climate is tropical and the conditions under which the population lives are such as to favour the endemicity and epidemicity of tropical disease, particularly those of insect borne and bowel borne etiology.

Local Health Authorities as the Table discloses, have insufficient financial resources to provide themselves with the necessary staff to maintain efficient hygiene supervision and there is, at present, no pretence of any effective measure of health control in the area. On the contrary, such conventional methods of sanitation as are undertaken, are commonly so mismanaged as to render them an even greater menace to the health of the population than complete neglect.

Conditions, in fact, are such as to involve a serious risk of epidemics following the introduction of infection by returning troops infected overseas with malaria, amoebiasis, and hookworm.

The post-war disorganisation of health services in Asia, the acceleration of travel with the expansion of air services and the wider sampling of the airborne population have together significantly aggravated the risk of the introduction of quarantinable disease.

Cholera epidemic in South-East Asia may at any time be introduced to the North-West by airborne travellers before the development of symptoms reveals their infective condition to the Quarantine Service.

Aedes aegypti, the vector of *Dengue* and *Yellow Fever*, abounds in the vicinity of all North-West settlements, breeding profusely in the domestic water supply tanks and after rain in the extensive accumulations of discarded cans, bottles, and other rubbish in the vicinity of all towns. The speed with which aircraft now reach Northern Australia from Africa, renders it possible for infected persons or vectors to be landed on these shores undetected, notwithstanding strict quarantine supervision.

Smallpox.—With the exception of those who were vaccinated whilst serving with the Forces, the population is unprotected against Smallpox. The comparatively large coloured population, particularly the migratory native component is entirely unprotected.

The long incubation period of smallpox, would facilitate the introduction of infection by airborne passengers and the difficulties of control, particularly in the native population, dispersed by panic to remote parts of the unsettled area would be insuperable.

The situation in this area in respect of certain phases of public health, directly concerned with the control of epidemic disease, may be thus summarised:—

Sanitation.

Over the greater part of the sparsely settled or unsettled portions of the area, no system of night soil disposal exists and the native population habitually pollutes the ground and streams within the vicinity of camps. In towns and townships the conservancy system is the method in use for collection and removal of human excreta. Privies are dilapidated and insanitary, the pans are universally exposed to flies; conditions of removal are bad and the methods of disposal unsafe.

Rubbish and Household Wastes.

No organised system for the collection and disposal of household wastes and rubbish exists anywhere. Masses of rotting organic matter are left to serve as breeding foci for flies. Wide spread and scattered accumulations of cans and broken bottles litter the areas of settlement and their vicinity, sometimes for acres, providing extensive breeding grounds for mosquito vectors of dengue and yellow fever.

Water Supply.

Water supply for settlements is obtained from surface sources or from shallow wells. Quite commonly these sources are continuously or periodically exposed to contamination by the excrement of natives.

Water from wells in the drier areas is highly saline, hard, unfit for domestic use and, in most cases, utterly inadequate in quantity for the demands of a tropical population. Attempts to supplement supplies by rainwater storage are only partially successful, and the cost of transport from more suitable sources is excessive.

Where supplies are augmented by rainwater catchment from the roofs of dwellings, the water is collected and stored under conditions predisposing to pollution and the breeding of disease vector mosquitoes.

Where local supply is supplemented by transport of water from more suitable sources, it is collected, delivered, and stored under conditions which favour pollution and a wide dissemination of bowel infection. Commonly it is delivered in open tanks or buckets, carried by natives and stored in open containers from which the requirements of white and native alike are obtained by dipping.

Slaughterhouses.

Conditions under which animals are slaughtered for sale as meat are most primitive, and in no case do they offer in the slightest degree the more conventional safeguards applied in civilized communities.

Eating Houses.

With only rare exceptions are the preparation and exhibition of food for sale in hotels, dining rooms, or other eating houses, conducted with regard to the safety of the consumer. On the contrary, in the great majority of public eating houses the conditions of preparation and service constitute a menace to the public health.

Housing.

Dwellings, except in a few restricted areas of recent construction, are dilapidated, unsafe, and unsuitable. A considerable proportion are in a condition warranting condemnation as unfit for occupation or use. Even where more substantial, they commonly lack ablution, bathing, laundry, and culinary provision de-

manded by health legislation in civilized communities. No Local Health Authority in the area has provided itself with the legal machinery enabling it to deal with this problem and few owners or occupiers could, in any case, comply with a legal notice to bring the premises up to standard unless this can be effected by partial demolition.

The conditions under which natives, employed by the white population, are housed are such as to favour the dissemination of Tuberculosis, Leprosy, Malaria, Dysentery, and Hookworm.

The conditions under which the slender white population lives in this area in more or less close association with partly civilised hybrids and wholly uncivilised natives, involves a real risk that social and health standards will stabilise at a level set by the uncultured coloured majority.

Condemned to live indefinitely in dilapidated and ramshackle dwellings progressively undergoing further deterioration without prospect of repair, seasonally plagued by blood sucking insects, inured by years of usage to grossly insanitary practices in respect of waste and excreta disposal, often compelled by circumstances to conserve water by the sacrifice of domestic cleanliness, and habituated to the consumption of unsafe and unpalatable drinking water, the local population must acquire a tolerance for discomfort and squalor such as is normal only amongst uncultured coloured people.

Measures necessary to be taken towards the correction of this situation include :—

- (a) Provision of an adequate health organisation.
- (b) Complete and thorough cleansing of all centres of population and the provision of efficient systems of wastes disposal including the installation of water carriage systems for nightsoil disposal.
- (c) Provision of an adequate and safe reticulated supply of potable water in all settlements.
- (d) Condemnation and demolition of sub-standard dwellings and their replacement by suitable accommodation in planned towns if necessary upon new sites.

Leprosarium.

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

	Males.	Females.
Inmates as at 31st December, 1946	129	102
*Admissions for period ended 31st December, 1947	29	12
Discharges for period ended 31st December, 1947	17	12
Deaths for period ended 31st December, 1947	3	.....
Absconded	2	.....
Total remaining in Leprosarium as at 31st December, 1947	136	102

* Includes four males and two females re-admitted.

Medical Staff.

Difficulty in staffing the North-West Medical Service continued to be experienced during the year.

It is felt that these remote and more or less undesirable professional appointments are only attractive to young men when they afford an opportunity of saving in a few years a substantial sum which can be used either for the purchase of a desirable practice elsewhere or for commencing post-graduate study preparatory to entering a speciality.

From the Department's standpoint the latter is the appointee of choice. His eagerness to specialise marks him as a man of fundamental ability and enterprise committed to and probably capable of substantial advancement in his profession.

He appears to be the type competent efficiently to perform the variety of duties required of him in the North-west and one unlikely to fall a victim to the temptation towards inebriety which the North-west ports hold for the idle and for those lacking ambition. There will be an inevitable tendency towards professional deterioration in even a short period of service in this area and it is to the advantage of the State that this deterioration should be offset by post-graduate study following the period of service there and before the medical officer returns to practise in the community elsewhere.

Formerly these appointments provided the financial inducement to attract young men, but the incidence of income tax has largely eliminated this whilst the ready availability of partnerships and assistantships in the metropolitan area at present, is a major counter attraction.

In order to offset these impediments to staffing of the North-west, the terms of appointment were revised during the year to provide that :—

- (a) Surface transport is to be provided by the Department.
- (b) The effective deduction in annual salary attributable to the incidence of income tax, is to be made good by granting the appointee, in addition to three months' recreation leave, a period of six months study leave on full pay at the end of his three years' service, subject to the approval of the proposed course of study by the Principal Medical Officer.

The positions were advertised in Australia and in the United Kingdom and five appointments from the United Kingdom were made.

Dr. Milne, Dr. Elphinstone and Dr. Edwards left England by air in December for appointment respectively to Broome, Derby and Wyndham. Dr. Saint, Port Hedland and Dr. Snow, Onslow, were expected to take up duty early in 1948.

VITAL STATISTICS.

Statistical information supplied by the Government Statistician is included in Appendix XII.

Population.

During 1947 the population of the State reached and passed the half million mark, there being 258,303 males and 244,428 females, a total of 502,731.

Birth Rate.

Births during the year totalled 12,874, an increase of 769 above the previous year. The rise in the birth rate has continued, the figure for 1947 at 25·61 per thousand of mean population being 1·12 per thousand higher than that in 1946.

Death Rate.

The general death rate (9·40 per thousand of mean population) is slightly lower than that for 1946 (9·61), and compares favourably with that for other States, and for New Zealand.

Maternal Mortality.

Cases of maternal deaths are analysed hereunder :—

Year.	Live Births.	Deaths from—							
		Puerperal Septicaemia.		Abortion.		All other causes of the Puerperal State.		All causes of the Puerperal State.	
		No.	Rate per 1,000 live Births.	No.	Rate per 1,000 live Births.	No.	Rate per 1,000 live Births.	No.	Rate per 1,000 live Births.
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

The maternal death rate at 2·49 per thousand live births, is higher than it has been for some years, notwithstanding a decline in deaths from puerperal septicaemia. Significant is a substantial increase in deaths following abortion.

Infant Mortality.

The infant mortality rate (30·92 per thousand live births) was not significantly lower than that for the previous year (corrected rate 31·06). The marked discrepancy between the metropolitan infant mortality rate and that of the rest of the State remarked in last year's report, was again evident. The metropolitan rate was 27·0 per thousand live births (25·01 in 1946), whereas the mortality for the rest of the State was 35·16 (37·84 in 1946).

Intangible factors prejudicing the value of these statistics are introduced by uncertainties attending the registration of native births and deaths. Although native deaths are reported to the Registrar General, an unascertainable number of native births (other than fullbloods) are never registered. Deaths of such would, therefore, unduly weight the infant death rate although their number is not likely to be sufficient to occasion any significant distortion in the overall figure.

In last year's report it was suggested that the inclusion of native infants might, in part at least, explain the discrepancy between the metropolitan and country infant mortality rates. An effort was made this year to determine how far the infant mortality rates were affected by the inclusion of natives. Figures in such detail are available for only five months of 1947, but these show that after the exclusion of natives the white infant mortality rate in the metropolitan area was 24.55 and in the country 37.36.

It is improbable, therefore, that the unfavourable rate in country districts is attributable to any loading by native deaths.

A comparison of the metropolitan and country infant mortality rate in Victoria and Western Australia is of interest :—

DEATHS PER 1,000 LIVE BIRTHS.

Year.	VICTORIA.			WESTERN AUSTRALIA.		
	Metropolitan.	Country.	Total State.	Metropolitan.	Country.	Total State.
1943	34.08	38.19	35.76	29.66	36.22	32.63
1944	31.00	33.27	31.96	29.27	36.49	32.57
1945	26.87	29.93	28.03	25.16	34.72	29.52
1946	27.04	27.32	27.16	25.01	37.84	31.06
1947	26.82	25.57	26.28	27.00	35.16	30.92

The figures show that whilst the rate has, since 1943, progressively fallen in both metropolitan and country areas in Victoria, ultimately reaching in both a figure lower than the metropolitan rate in Western Australia, the West Australian metropolitan rate is only 2.66 per thousand lower than it was in 1943 whilst the country rate has not varied significantly.

The causes of infant deaths in Western Australia during the year were :—

Prematurity	133
Malformation	54
Diseases of Nervous System	40
Diseases of Circulatory System	8
Diseases of Respiratory System	71
Diseases of gastro-intestinal tract	15
Diseases of the skin	5
General conditions	51
Infectious disease	45
Accidents, etc.	12
Total	424

Appendix XIII is an analysis of the distribution of these deaths through the statistical divisions of the State.

If the South-Western statistical district is accepted as the largest and most representative of the rural sub-divisions, a comparison of its figures with those of the metropolitan division indicates that the principal causes of death associated with pre-natal and natal influences were accounted responsible in the following proportions :—

	Metropolitan.	South-West.
	%	%
Prematurity	33.6	32.5
Malformations	15.1	11.6
Cerebral Birth Trauma	9.4	9.2

It does not appear, therefore, that the high infant mortality in the country is attributable to pre-natal or natal influences arising from any rural disability in respect of inadequate or imperfect pre-natal or obstetric service, as compared to those available in the City.

On the other hand respiratory and bowel infections were accounted the cause of death as follows :—

	Metropolitan.	South-West.	Northern Dvn.
	%	%	%
Respiratory	6.6	7.0	35.0
Intestinal Infections	4.2	10.4	15.0

These figures suggest that for the conservation of infant life in country districts, there are required :—

- (a) Improved sanitation.
- (b) More extensive coverage by Infant Health Nurses.

Six country infant health travelling clinics were opened, during the year, and an Infant Health Nurse from Headquarters' Staff completed an itinerary through the Northern Division during the year.

In future it is hoped that the Northern Division will be visited by an Infant Health Nurse at least twice annually.

The high proportion of infant deaths from causes originating in pre-natal and natal influences throughout the State emphasises the need for improved pre-natal facilities and for research into the factors involved whether genetic, nutritional, organic or virus induced.

With this object in view laboratory facilities are being provided at the King Edward Hospital and a study Committee has been appointed to confer with the Commissioner of Public Health.

The Committee consists of :—

Dr. G. Ashburton-Thompson, Obstetrician ; Dr. Gerald Moss, Physician ; Dr. Roy Edmonds, Paediatrician ; Dr. A. T. Pearson, Pathologist ; Dr. G. A. Kelsall, Serologist ; Matron Walsh, Midwife.

Still Births.

Still births for 1947 were at the rate of 23 per 1,000 confinements—Metropolitan 22·6, Country 22·4.

For study purposes, midwives were required for portion of the year to supply certain information when reporting still births under Section 314 of the Health Act.

One hundred and twelve reports were reasonably well completed and these are analysed in Appendix XIV.

Analysis shows that the principal cause of still births was Toxaemia. Prematurity and abnormal presentation were substantial contributors.

It is evident that there may well be a fruitful field for improved ante-natal care in the prevention of still births.

Neo-Natal Deaths.

Detailed figures for 1947 are not yet available from the Commonwealth Statistician but the information in respect of 1946 became available during the year.

An analysis of the ages at which premature babies die shows that 95 per cent. of deaths occur in the first week.

Further analysis of infant deaths in the first week reveals that 56 per cent. are due to prematurity, 14 per cent. to injury at birth, 12·5 per cent. to malformation and 5·6 per cent. to asphyxia during birth.

It would appear that a profitable field of endeavour towards efforts to reducing infant mortality offers in the saving of the premature. Notification of premature deaths should be made compulsory and the adequate nursing of these infants by specially trained nurses in suitably equipped wards, should be obligatory as an alternative to their removal to a special ward maintained for the purpose at a public hospital undertaking the training of such nurses.

With this in view new nurses' quarters are under construction at the King Edward Memorial Hospital on completion of which it is hoped wards, now occupied as accommodation for nurses, will be free for the recommencement of the training of nurses in infant care.

In the prevention of neo-natal deaths as in the prevention of still births, much may be hoped from a wide extension of facilities for enlightened ante-natal study and care.

Ex-Nuptial Births.

One in 27 of all births during the year were ex-nuptial.

Detailed statistics in respect of 1947 ex-nuptial births are not yet available from the Statistician, but during 1946 the infant death rate amongst these was 30 per cent. higher than amongst nuptial births in the metropolitan area and 48 per cent. higher in country districts.

Towards conserving infant life in the ex-nuptial group financial assistance was approved during the year to the Alexandra Home in order that that institution for the care of unmarried mothers and their infants might extend its scope and undertake the training of mothercraft nurses.

Since the end of the war, the ex-nuptial birth rate has shown a downward trend. Details for the years since 1945 are as follows :—

Year.	Births.	Ex-Nuptial Births.	Rate per thousand live births.
1945	10,672	510	44·89
1946	12,105	529	43·69
1947	12,874	474	36·81

Abortion.

The better to study the causes of abortion, information was collected from practitioners and midwives reporting cases under Section 314 of the Health Act.

Two hundred and twenty-six notifications were received and of these 215 were in sufficient detail to permit analysis (*see Appendix XV*). Analysis shows that 183 were in married women, in 159 of whom the abortion was described as spontaneous though no pathological basis for spontaneity was ascribed. In 9 induction was therapeutic, and in 15 by unskilled interference.

Of 31 unmarried women abortion was described as spontaneous in 16, and occasioned by unskilled interference in 15.

General practitioners have called attention to the increasing frequency with which married women seek termination of pregnancy on the ground that they are boarding or living in flats or in houses too small to accommodate an increase in family. If the current housing shortage is not to play an important part in reproducing in women the unnatural and nationally decadent attitude of repugnance for child birth which has marked the last three decades, positive action to nullify its influence must not be delayed.

Of pressing importance are :—

- (a) The granting of a high housing priority to pregnant women.
- (b) The planning of houses capable of later extension to accommodate larger families. Many of those at present being built by the Housing Commission are too small for growing families and for the most part do not lend themselves to ready extension.

CONCLUSION.

The general survey of health administration and public hygiene commenced last year, has been completed.

A little progress has been made towards providing the basic local organisation necessary for effective health control and for education of the public in hygiene, but the advance has been trivial and in striking disproportion to the time, labour, energy and expense devoted to attaining it. Apathy, parsimony, unenlightened obduracy and ill-advised resistance have continued to characterise the attitude of many local health authorities, but no action toward compulsion has yet been taken in most cases.

Matters calling for early and close attention include :—

- (a) Improvement of rural water supplies.
- (b) The education of natives and hybrids in hygiene and the housing of these people under conditions consistent with the maintenance of their own health and the security of the white population with which they live.
- (c) Radical improvement in health administration, hygiene and tropical disease control in the Kimberley and North-west divisions.
- (d) Intensification of Diphtheria immunisation.
- (e) General improvement of ante-natal care.
- (f) Further extension of Infant Health Clinics and the wider dissemination of knowledge of infant care and feeding, particularly in country districts.
- (g) Improved provision for care of the prematurely born.
- (h) Re-organisation and expansion of the schools medical and dental service.
- (g) Improved provision for the rehabilitation of crippled children.

(Sgd.) CECIL E. COOK, C.B.E., M.D., D.P.H., D.T.M. and H.
Commissioner of Public Health.

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APPENDIX I.

REPORT BY THE GOVERNMENT PATHOLOGIST AND BACTERIOLOGIST

The Commissioner of Public Health.

I have the honour to submit herewith a report on the working of the Public Health Laboratories during 1947. The staffing situation was satisfactory throughout the year except for an interval of some six weeks during which the Pathologist was on sick leave. Improvements in the diagnosis of *M. tuberculosis* have been instituted and it is anticipated that modifications in technique will be introduced in the near future for *C. diphtheriae* and the enteric-dysentery group. Routine procedures will also be extended to include agglutination of the *Leptospira* group.

Leptospirosis.

The causation of the condition which occasionally affects meat inspectors at a local bacon factory (described in prior reports as ? swineherds disease) has now been further clarified. Thanks to the courtesy of Dr. Mackerras and of Dr. Derrick (the Queensland Institute of Medical Research), specimens of sera from two cases were examined there for leptospirosis. Both had been infected nearly two years before but fortunately the serum of one, taken soon after defervescence, was also available in this laboratory. The latter specimen agglutinated *L. pomona* to a titre of 1/1,000. It is hoped later to examine for agglutinins specimens from a reasonably large number of swine.

Abortion/Still Birth Cases.

The investigation into the causes of still births and abortions which, at the instance of the Commissioner of Public Health, was commenced in 1946, continued during the year under review. Three distinct lines are being explored: (a) Rh grouping; (b) examination for *Br. abortus* agglutinins; and (c) serological tests for syphilis. The total numbers are yet too small for the drawing of definite conclusions but the following resumé of results may prove of interest.

Rh. Grouping:

The Department is appreciative of the co-operation of the Red Cross Transfusion Service of W.A. in undertaking these tests. 121 cases were examined. 14.9 per cent. were found to be Rh. negative—a proportion which does not differ widely from that for the general population.

Br. abortus Agglutinins:

In assessing the diagnostic value of these agglutinins, it should be remembered that investigators have recorded their presence in blood from apparently normal cases. On the other hand *B. abortus* has sometimes been cultured from the blood of afebrile individuals showing only a low titre. It is perhaps unwise to place undue diagnostic weight on the presence of agglutinins for the *Brucella* group.

The following table shows the results obtained:—

	<i>Br. abortus</i> Agglutinin Titre.	Number of Abortion Cases.	Number of Control Pregnant Cases.
Negative	139	54
1/50	13	3
1/100	10	4
1/200	3	1
1/400	2	1

If the numbers yielding agglutination at a titre of 1/100 and higher are expressed as percentages of the totals, figures of 9 per cent. for the abortion cases and of 9.5 per cent. for the normal pregnant cases are obtained. However, many of the abortions were due to interference and a more detailed analysis will be found elsewhere in this Report.

Syphilis.

In an abortion group of 205 cases one only gave a "one plus" reading by Wassermann and by Kahn while four others yielded "plus/minus" results by both tests. Among 310 normal pregnant women one gave a "plus/minus" reading by both tests. If weak reactions ("plus/minus") be ignored the incidence of syphilis was some 0.5 per cent. among the abortion group and 0.0 per cent. for the controls.

It would appear that we must look to etiological factors other than these for the causation of many abortions.

Typhus Fever.

In the past year 133 specimens of blood yielded Weil Felix reactions (OX19) to a titre of 1/100 or higher. Though on serological grounds this titre cannot be assumed to be diagnostic, it is frequently regarded by practitioners as confirmatory when signs and symptoms are indicative of typhus fever and no further specimens are then submitted for test. A small proportion of the total may, however, be due to non-specific reactions. The following table shows these "positive" specimens arranged according to monthly incidence and for purposes of comparison, the corresponding figures for the previous three years have been included.

"Positive" Weil Felix Reactions (OX19).

Month.	1944.	1945.	1946.	1947.	Totals.
January	8	5	5	5	23
February	10	12	9	12	43
March	7	13	11	20	51
April	6	12	14	21	53
May	7	5	13	5	30
June	8	6	4	11	29
July	8	9	13	12	42
August	3	4	4	10	21
September	1	8	6	17	32
October	4	5	5	8	22
November	1	3	10	4	18
December	5	4	6	8	23
Totals	68	86	100	133	387

It is true that climatic, economic, and other factors which may affect incidence are not constant in each month year after year. Yet the monthly totals for the four years do give a rough approximate idea of seasonal incidence. It may be accepted that incidence will probably rise from February to April and will usually fall from October to January. The time intervals for fleas to become infective, incubation in the human case, and the development of agglutinins after the onset of fever may total nearly a month. This delay must be considered in attempting correlation with *X cheopis* bionomics.

From the above table it appears that a serious increase in incidence is facing the Department. Without doubt a rise is in fact occurring, but some of the apparent increase may be due to the gradual improvement in medical services available to the public in the post war period.

Typhoid Fevers.

Over the past five years the annual numbers of serological positives have been 16, 19, 52, 23, and 29. Of the 29 positive specimens in the year under review four only occurred from May to November inclusive. The curve rises from December to March and to fall again in April. February and March are peak months with seven and eight cases respectively. Infection will precede serological diagnosis by some three weeks and thus there is considerable correlation of incidence with the fly season.

Undulant Fever.

The number of serologically positive specimens for the years 1943 to 1947 have been 4, 4, 11, 9, and 14 respectively. The public has been repeatedly warned that the consumption of raw milk may be a dangerous hazard; frequent recommendations have been made that all milk be pasteurised or alternatively scalded or boiled. It may be that the increasing number of cases is due to a wider appreciation by practitioners of the presence of this infection. But the fact that fourteen cases occurred during the year is abundant evidence that the risk from raw milk remains unabated.

Tuberculosis.

With the expansion of the Tuberculosis Branch and the projected mass radiological survey, it was deemed necessary to extend and improve the laboratory facilities for the diagnosis of tuberculosis. Mr. A. M. C. Guthrie has been appointed as an additional technician and since his arrival in August, concentration and culture methods have been more extensively utilised.

If a sputum is found negative by the direct smear technique on three occasions and clinical signs of the case still suggest tuberculosis, or if radiological findings are indicative, then concentration and culture methods are applied. Gastric contents are invariably concentrated and cultured, and urine is concentrated and inoculated into guinea pigs.

The method employed for concentration is by digestion for 30 to 45 minutes at 37°C. with 4 per cent. caustic soda followed by neutralisation (phenol red) with 3-4 per cent. sulphuric acid. After centrifuging at 3,000 r.p.m. for ten minutes, the deposit is inoculated to three tubes of culture media (one non-glycerinated) and also smeared on to a slide. Staining is by the Ziehl-Neilson method using malachite green as a counter-stain.

Certain necessary ingredients of Lowenstein-Jensen's medium were unobtainable here until the end of the year and various other media were of necessity employed as an alternative.

It is possible that the digestion method affects some strains of *M. tuberculosis*, for primary culture colonies are not infrequently of the "smooth" type. On subculture, or sometimes even with the effluence of time, there is change to the "rough" type. Smooth and very chromogenic (golden) colonies of acid fast bacteria are sometimes encountered in cultures from gastric contents: these chromogenic organisms are non-pathogenic to guinea pigs.

During the latter part of the year the sputa from two cases were positive by smear concentrate but negative by culture while in one case cultures were positive although the smear was negative.

The apparatus for examination by the fluorescent technique is now available and promises to be a useful adjunct in diagnosis.

Leprosy.

Two thousand two hundred and ten films from 615 lepers or suspected lepers were examined during the year. Five hundred and fifty-five of the films showed acid-fast bacilli.

Milks.

Bacterial counts were made on 79 specimens of milk. Smear examination of centrifuged deposit were undertaken on 34 additional samples.

Waters.

Specimens from reservoirs and supplies examined for bacterial content and for *B. coli* numbered 1,333. Scattered sampling from the metropolitan reticulation has continued. The number of examinations for country districts shows an increase. It is not always easy, however, to ensure that these samples are received in the laboratory before all the ice in the forwarding boxes has melted.

Medico-legal.

Sixty-one exhibits from 19 cases were received during the year. Forty-three articles from 10 cases were examined for seminal stains; in four of these the identification of blood stains was also involved. Twenty exhibits from six cases were submitted for the identification of blood stains only. In four cases the blood grouping of stains was undertaken.

Two cases required the identification of hair; one, a histological report in connection with possible poisoning, and an additional case involved the interpretation of autopsy findings.

The table on page 29 shows the numbers of specimens submitted for some of the more important tests. Figures for 1939 and 1946 are included for comparison. It is again emphasised that the numbers refer to tests and not to cases—more than one specimen may be received from a single case.

Investigation.		Result.	1939.	1946.	1947.	
DIPHTHERIA	Culture for <i>C. diphtheriae</i>	Positive	391	723	826	
		Negative	5,809	4,442	5,179	
GONORRHOEA	Complement Fixations	Positive	142	781	321	
		Negative	911	1,966	1,442	
		A.C.	.....	91	71
	Smears	Positive	632	510	302	
		Suspicious	.....	25	0
		Negative	4,444	4,029	2,453	
LEPROSY	Smears	Positive	0	441	555	
		Negative	5	1,506	1,655	
SYPHILIS	Wassermann Reactions	Bloods	Positive	398	740	568
			Negative	3,708	5,395	5,017
			A.C.	31	35
	C.S.Fs.	Positive	.....	17	12
		Negative	.....	230	230
		A.C.	.....	3	0
Kahn Reactions	Bloods	Positive	.....	769	714
		Negative	.....	1,540	1,734
TYPHOID FEVERS	Widal Reactions	Positive	10	23	29	
		Negative	160	262	370	
TYPHUS FEVER	Weil Felix Reactions	Positive	41	100	133	
		Negative	114	182	266	
TUBERCULOSIS	Smears	Positive	101	84	76	
		Negative	772	554	782	
	Cultures	Positive	.....	.....	10
		Negative	.....	.....	225
	G.P. Inoculations	Positive	5	8	14	
		Negative	63	105	108	
UNDULANT FEVER	Agglutinations	Positive	.....	9	14
		Negative	.....	277	385
MORBID HISTOLOGY		Malignant	30	99	48	
		Precancerous	.....	11	6
		Benign tumors, benign uterine conditions, inflammation and general	111	209	77	
						64
MEDICO-LEGAL CASES		.....	25	19	19
		
BACTERIOLOGICAL EXAMINATIONS	Waters Milks	.....	763	968	1,333
		.....	12	139	113
BLOOD COUNTS		.....	89	111	

General.

In addition to the tests included in the above table, Paul Brunell reactions were undertaken on twelve cases. Friedman pregnancy tests were made on fifteen specimens. Thirteen cerebro-spinal fluids and fourteen nasal swabs were examined in connection with meningitis cases. Sixty urines and faeces were cultured with reference to the carrier state. Four hundred and seventy-nine cultures of solutions and sera were made for the Red Cross Transfusion Service. Four hundred and eighty-seven miscellaneous bacteriological and chemical tests were performed.

Apparatus.

On account of the increased incubator space required for *M. tuberculosis* culture work, an additional incubator has been obtained. Replacement water distillation plant and a paraffin embedding oven are on order.

Staff.

The writer was appointed Assistant Commissioner of Public Health on October 1. In his stead, Dr. W. A. Young has been appointed Government Pathologist/Bacteriologist but has not yet assumed duty. Mr. A. M. C. Guthrie was appointed a laboratory technician on August 4.

Finally it must be added that Messrs. Croome, Drummond and Guthrie and Miss L. A. W. Anderson have consistently carried out their duties with zeal and precision.

A. NEAVE KINGSBURY, M.D., B.S., B.Sc., D.P.H., D.T.M.T.H.,
for Government Pathologist and Bacteriologist.

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

The Commissioner of Public Health.

I have the honour to submit a report on the activities of the Tuberculosis Branch for the year ending December, 1947.

The year 1947 has seen important developments in the activities of the Tuberculosis Branch of the Public Health Department. There have been the appointments of Drs. Alan King and Elphick to the staff, the purchase of Cathedral Hall in Murray street for conversion to a chest clinic and headquarters of the Branch, and the transfer of myself from Wooroloo to the Metropolitan Area. These advantageous changes have been to a certain extent counterbalanced by the grave shortage of nursing staff at the Sanatorium, which has been so serious that it merits early attention in this report.

It had been hoped that the institution of the training scheme for Tuberculosis Nurses would have eased our position at the Sanatorium. Unfortunately, the limitation of acceptance of trainees to those over 21 years of age has resulted in a very poor response, and the Sanatorium is grossly understaffed on the female side. The Matron, sisters and nurses have responded to the conditions magnificently, and it is remarkable that they have been able to carry on.

Applicants for training under the age of 21 years are forthcoming, and it is urged that the Nurses' Registration Act be amended as early as possible to reduce the entering age for trainees from 21 to 18.

Undoubtedly, one of the principal causes of the nursing shortage at the Sanatorium is its distance from Perth, and its comparative isolation. Added amenities for the nurses and greatly improved transport facilities would help to overcome these difficulties.

During the year, 71 A.C.H. at Northam, which has about 180 beds, was leased from the Army with the intention of using it as a Tuberculosis Hospital pending the building of the chest Hospital in Perth. Unfortunately, it has been found impossible to provide nursing staff: the hospital has not been used for the purpose for which it was leased, and it appears unlikely that it will be so used.

Deaths.

In 1947, the total number of deaths was 141, being a death rate of 28.2 per 100,000. The following are particulars of the number of deaths since 1942—

Year.	Deaths.
1942	192
1943	153
1944	149
1945	163
1946	170
1947	141

In a population of 500,000, it is probable that the fall in the number of deaths in the past year is not statistically significant.

Of 128 deaths from pulmonary tuberculosis, 104 occurred in various hospitals, and 24 in the patient's own home. The terminal stages of the disease are usually highly infectious, and increased hospital facilities for this stage of the disease are necessary, to reduce the spread of the disease.

Notifications.

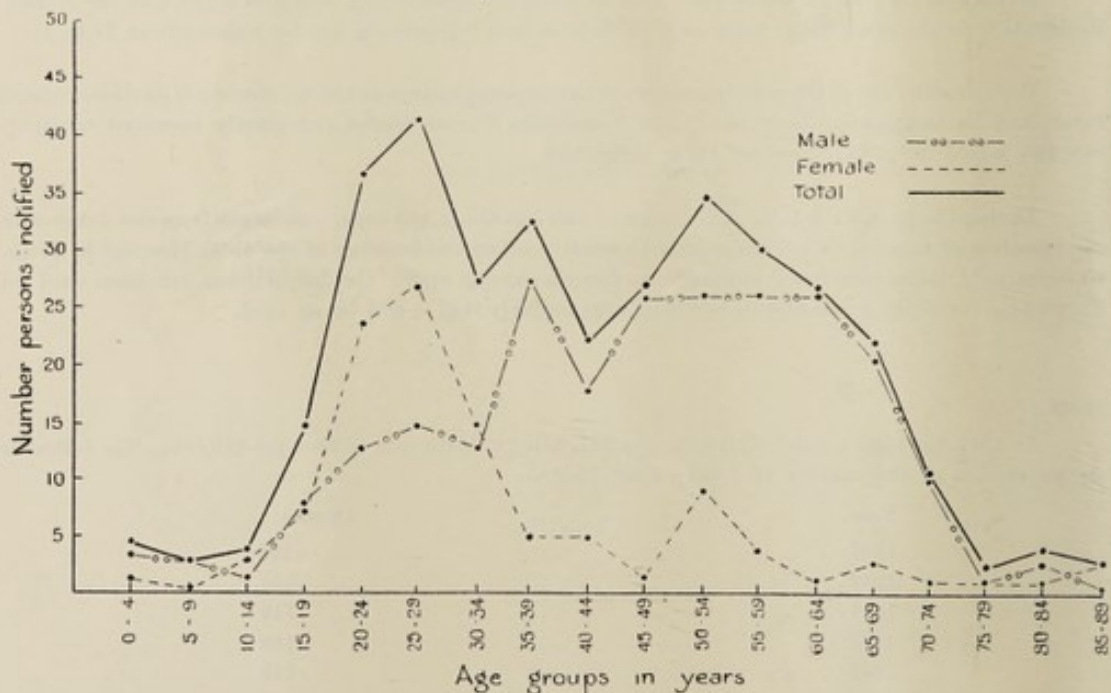
These totalled 392. The ratio of notifications to deaths is 2·8. This is considered to be satisfactory in the circumstances.

The following table illustrates figures of notifications and deaths for the past five years:—

Year.	Notifications.			Deaths.	Death rate per 100,000.	Ratio of notifications to deaths.
	Pulmonary.	Non-pulmonary.	Total.			
1943	273	54	327	153	31·7	2·1
1944	219	7	226	149	30·5	1·5
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

If adequate facilities for diagnosis existed in country areas it is highly probable that the notification figures would be increased. With the poor means at their disposal, country practitioners might well find it almost impossible to diagnose the disease in its early stages.

Pulmonary Tuberculosis.—The age and sex distribution of notifications for pulmonary tuberculosis is illustrated in the following figure:—



An analysis of the sex and age distribution of the persons notified yields results that are significant and of guidance for the future. Of 243 total male notifications 49 (20·1 per cent.) were in the age group 15-34 years, 173 (71·2 per cent.) in the age group 35-69, being evenly distributed throughout the whole

group. Of 109 total female notifications 73 (66.9 per cent.) were in the age group 15-34 years, and only 28 (25.7 per cent.) in the 35-69 age group. In the 0-15 age group six males and three females—totalling nine children—were notified; that is, 2.6 per cent. of the total for both sexes.

These figures confirm conclusions already drawn from experience in other countries.

1. It is futile and relatively unproductive of results to conduct routine X-ray examinations of the chests of children under 15 years of age. Pulmonary tuberculosis in children is comparatively very rare. Most of the cases notified in this State last year were contacts of known cases of the disease.

2. In females the peak of incidence occurs in early adult life. Clinical experience points to the additional fact that the disease in young adult females is unstable, with an unpredictable course, and that the minimal or early case requires treatment and prolonged observation in hospital, with early use of collapse treatment if the future course of the disease is in doubt.

3. In males the maximum incidence occurs in middle and later life with a fairly even distribution between the ages of 35 to 70. It is probable that in Western Australia the gold mining industry, with its numerous occupational casualties, adds additional emphasis to this distribution in later life, but a similar, if less marked, trend is seen in other countries.

Routine X-ray surveys of the population should include all the adult population over the age of 15 years, and the inclusion of all middle-aged and elderly males is essential if the survey is to produce the maximum benefit.

During 1947 there were 30 deaths certified as being due to silicosis. Many of these deaths were caused by heart failure secondary to silicosis, and occurred in circumstances in which complete and thorough investigation into the possible presence of pulmonary tuberculosis was not possible. It is likely that in some, at least, tuberculosis was actually present. The contribution of our gold mining industry to the incidence of tuberculosis is, therefore, likely to be greater than is apparent.

There is at present a lack of co-operation between some of the activities of the excellent Commonwealth Laboratory at Kalgoorlie and the Public Health Department. All miners who are excluded from the gold mining industry because of silicosis cease to be the responsibility of the Commonwealth Laboratory. They should as a routine be followed up by the Tuberculosis Branch of the Public Health Department with X-ray and sputum examinations every six months. This measure would undoubtedly produce fruitful results in the diagnosis of pulmonary tuberculosis among them at an earlier stage than at present, enable earlier treatment and isolation to be undertaken and so would reduce the risk of spreading the disease in their contacts.

Control of the Recalcitrant Patient.

It is regretted that the Bill to amend the Health Act to provide adequate powers of isolation for the recalcitrant, wilfully careless and alcoholic patient was not accepted by the Legislative Council. Experience in this and other countries over many years has proven the need for this legislation. It was pointed out in the report for 1946 that these powers are in existence in Canada and many States of the U.S.A., that they have been shown to have a salutary effect on the few persons for whom they were designed, and that they have been acceptable to the community. Their need is recognised by all workers in tuberculosis control.

Medical Staff.

During 1947, certain important additions to the medical staff of the branch have made possible a widening of the scope, and an increase in the efficiency, of its activities. Dr. Alan King took up duty as Tuberculosis Physician in January. His experience and energy have greatly extended the range of the work done at the Royal Perth and Fremantle Hospitals. He has paid weekly visits to the Sanatorium, and has periodically seen in consultation all cases admitted, thus obtaining continuity of treatment and observation of all cases from diagnosis through treatment to follow-up on discharge. His taking on a share of internal pneumolyses has also considerably eased the burden of my work. By an arrangement with the Repatriation Commission, his services have been loaned to Hollywood Hospital, where he acts as the Repatriation Specialist on Tuberculosis; it is pleasing to note the high standard of treatment of Repatriation cases under his direction.

Dr. King's advice and comments have been freely sought in all matters connected with the organisation and planning of the present and projected activities of the Branch. Their value is here acknowledged.

In April, Dr. Elphick commenced his duties as Deputy Medical Superintendent at the Woorloo Sanatorium, and on my moving my residence to the metropolitan area at the end of August, was appointed Medical Superintendent, an increased responsibility which he has been well able to bear. Phrenic nerve operations and bronchoscopies are now done at the Sanatorium by him, thus easing the strain on bed accommodation at the Royal Perth Hospital. He also is taking on his share of internal pneumolyses at the Royal Perth Hospital.

Co-operation with the consulting staff was made closer and more productive of results during 1947. Their regular visits to Wooroloo Sanatorium are mentioned by Dr. Elphick in his report, and it is appropriate to emphasise their great and increasing value here. It is considered that the clinic, sanatorium, and consulting staffs have been welded into a co-operative team whose work is reflected in the added efficiency of our treatment. Major surgical treatment in the able hands of Mr. F. J. Clark has reached a standard of which the State might well be proud.

As in previous years, inestimable assistance has been given by Dr. Anderson, the Medical Superintendent of the Royal Perth Hospital, by Dr. Ian Gordon, his Surgical Registrar, by the Honorary Medical and Resident staffs of the Hospital, and by its staff of physiotherapists. It is gratifying to record such co-operation with one's professional colleagues.

My own transfer to the Perth area has enabled me to give more time and energy to general direction and to the organisation of the expanded campaign for 1948.

Diagnosis and After-Care.

In June the Public Health Department was fortunate in being able to buy Cathedral Hall, which is situated in Murray Street, opposite the Royal Perth Hospital, and within a very short distance of the Public Health Department. At the close of the year, alterations to convert this hall into the headquarters of the Branch, with accommodation for chest clinics, radiography (35 mm. miniature and full 17 in. x 14 in. size), and administration. It is anticipated that these premises will be open early in 1948.

X-ray equipment has been ordered, and through the co-operation of the Department of the Army, a mobile 35 mm. unit has been leased; this is to be dismantled and assembled in the new chest clinic, when a beginning will be made on mass radiography.

It must be emphasised that the radiographic examination is only one of a whole series of steps which must be made before a survey is complete. Miniature radiography has one function only—to detect persons with an abnormal or suspicious X-ray appearance of chest disease. These are then submitted to further radiological examination on full size films, and those with confirmed abnormalities undergo clinical and bacteriological investigation. Many cases will be referred to their private practitioners for this purpose.

It cannot be stated too strongly that in many cases it is impossible to say from X-ray appearances alone whether a diseased process is active or inactive. In these cases, further investigation is essential. Thus the initial miniature X-ray film is only the trigger which sets in motion a whole series of steps before it can be said that an adequate survey has been made.

It will be evident that an increased medical and laboratory staff, together with hospital beds for observation cases, are necessary if this is to be efficiently done.

Another aspect is that many other pathological processes in the chest are discovered apart from tuberculosis. These include other lung conditions (such as new growth and bronchiectasis) and abnormalities of the heart. It is therefore essential to secure full and complete co-operation between the chest clinic and medical practitioners and hospitals. The clinic becomes a sorting house for these various conditions, and cases may be referred to the appropriate doctor, hospital or clinic for further investigation and treatment.

The maximum benefit from a survey would be obtained if all the population over 15 years of age could be X-rayed at once, so that infectious persons could be dealt with immediately. This is obviously impracticable, but the optimum benefit from the means at our disposal can be obtained by the initial and early examination of the most susceptible groups, which should have a first preference. These would include:—

1. all outpatients and inpatients of hospitals,
2. miners receiving pensions for silicosis,
3. gold miners and all ex-gold miners,
4. other persons exposed to hazard from silica dust, such as iron-moulders,
5. nurses and ex-nurses and others caring for the sick,
6. persons handling food,
7. students over 15 years of age in High Schools, Technical Schools and the University.

Other groups would earn a high priority because of exposure to others, and would include:—

1. teachers,
2. hairdressers,
3. barmen and barmaids,
4. patients attending ante-natal clinics.

Other sections could be considered because of accessibility and ease of handling, such as :—

1. all persons consulting private practitioners—
 - (a) for any chest symptoms.
 - (b) for any other reason.
2. members of the Public Services.
3. employees in big stores, offices, and industrial concerns.
4. employees of public utilities (Railways, etc.).

Specific mention should be made of important investigations into the incidence of pulmonary tuberculosis in patients calling in the services of general practitioners in the normal way. Dr. Albert Daniels, a general practitioner in California, carried out such a survey in 1941 and 1942. He X-rayed the chest of every patient who called in his services, and found a prevalence of 2·8 per cent. with active tuberculosis.

Comparable work has been done in London, where general practitioners referring for X-ray examination all of their patients who present *any* chest symptoms have found an incidence of the disease of over 3 per cent. These figures indicate the probability that if it were possible to X-ray the chests of all the patients attending general practitioners, a high percentage of the total cases in the community might be readily diagnosed.

This would further have the effect of increasing the co-operation between the Public Health Department and the practising profession, to the benefit of the community. In a determined attack on the disease this co-operation is vitally necessary.

An indication of the success of anti-tuberculosis measures may be obtained from a comparison of the proportion of the population reacting positively to tuberculin from time to time. It is therefore proposed to carry out a Mantoux survey of a cross-section of the population of different age groups. This can readily be done with school children of all ages, High School and University students, student nurses, entrants to and members of the public services and employees of public utilities, industrial and commercial concerns. Thus we will have a base-line and will be able to compare the rate of infection of the population now with that in five or ten years time. Unless these tuberculin surveys are done in a planned manner to cover a representative cross-section of the population, the results might well be misleading.

In the Annual Report for 1946, an answer was given in the affirmative to the question whether a case-finding programme should be commenced and new cases discovered in the absence of sufficient beds to isolate and treat them. During the past year this question has been similarly answered in other countries where nursing shortages are as acute as ours, and where active surveys nevertheless are being conducted. The attitude of declining to adopt *any* measures because a *full* and ideal programme cannot be begun at once is supine, defeatist, and dangerous. Vacancies for four new visiting nurses have been created, and will be filled early in 1948. If bed stays in hospital and sanatorium are to be reduced because of lack of accommodation and nursing staff, so that there can be an increased hospital turnover, there will be a considerable increase in the number of patients receiving treatment and isolation in their own homes. An increase in the medical staff in the Metropolitan Area will be necessary to cope with this added work.

Medical officers experienced in chest diseases are rare in Australia. We must recruit and train our own. This recently has been recognised by the Repatriation Commission, which in the past year has attracted medical officers to its service by offering salaries and conditions of appointment far more generous than those of the State Public Service. If our efforts to cope with our plan for tuberculosis control are not to be defeated by lack of medical staff, this problem must be faced at once.

Dr. Rosenthal, of Victoria, has also been studying the problem of control of infectious persons in their own homes. He suggests not only a considerable increase in the visiting nurse staff, but also the use of "housekeepers" or home-helps, who would be employed by the State to assist in the household duties in a home with an infectious patient. To his suggestion might be added the provision of portable huts or chalets which can be lent by the State to the patient for erection and use in his back garden, where the premises are suitable, so that he can live outside a house where there might be children or young adults. This has been done for years in England with a fair measure of success.

A following report has been submitted by Dr. Alan King and includes activities of the clinics at the Royal Perth and Fremantle Hospitals.

Children's Hospital.

During the year I commenced weekly attendances at the Chest Clinic at the Children's Hospital. During the year, there were 1,830 attendances at the clinic and 576 radiographs were taken. To avoid the needless taking of chest radiographs in children, a policy has now been adopted of restricting films to cases when :—

- (a) The child has a positive Mantoux and is a contact to a known case of the disease, and
- (b) When there are clinical indications that pulmonary tuberculosis is a possibility in diagnosis.

Visiting Nurses.

The visiting nurses' role in the control of tuberculosis is of the utmost importance. Infection spreads largely in the home and it is here that the origin of the disease and its propagation must be investigated. The number of visiting nurses is to be substantially increased during 1948.

The loss of Miss Campbell's services on her appointment to the staff of the Royal Perth Hospital was a severe handicap.

The following is a summary of the visiting nurses' work during 1947:—

Attendances at Metropolitan Chest Clinics (Royal Perth, Fremantle, Children's and Repatriation General (Hollywood) Hospitals), seven weekly.

Number of home visits to patients and contacts, 2,861.

Miscellaneous visits which include enquiries pertaining to tuberculosis and general health matters, 140.

Country Clinics.

Kalgoorlie Hospital.—The Kalgoorlie Clinic continues to do good work under Dr. Webster, who reports as follows:—

Total number of new cases attending (including 165 contacts)	251
Total number of suspects	46
Total number of new cases found to have tuberculosis	40
Total number of radiographs taken	168
Total number of attendances and screenings	612
Total number of artificial pneumothorax refills	31

During the year, Sister McMahon was appointed as a Visiting Nurse to work in the clinic and to visit cases at their homes in the Kalgoorlie area.

Bunbury Clinic.—In the absence of Dr. Lawson Smith, who is doing post-graduate work in Melbourne, Dr. Foster reports as follows:—

Total number of new attendances (including 151 contacts)	727
Total number of new cases found to have tuberculosis	5
Total number of radiographs taken	96
Total number of attendances	936
Total number of artificial pneumothorax refills	63

Northam Hospital.—Monthly visits are paid by myself, and chest radiographs and cases discussed with Drs. Chester, Hodby, and Robinson at the Hospital. Exact records have not been kept but approximately 200 chest films were taken during the year.

Collie Hospital.—It has not been found possible to pay regular visits to the Collie Hospital during 1947. However, Drs. Dennis, McPherson, Smith, and Walsh are fully aware of the need of search for cases of pulmonary tuberculosis and have sent many doubtful chest films to Perth during the year for reporting. Several artificial pneumothorax cases are also regularly refilled at the hospital.

It has not yet been found possible to establish a clinic at the Geraldton Hospital, but improved X-ray facilities there, and the interest of the local medical practitioners, have resulted in good work being done during the year.

During 1947, arrangements were made to have all nurses in country hospitals X-rayed periodically. In the latter end of the year, this service was extended to all hospital staffs. In country hospitals with meagre X-ray equipment, this is often difficult, but appointments have been made for nurses for chest radiographs at the Royal Perth Hospital when on leave in the city. The mobile unit attached to the Commonwealth Laboratory at Kalgoorlie has rendered valuable and ready assistance in X-raying hospital staffs in outlying goldfields towns.

Treatment.

The reports of Dr. Elphick and Dr. King discuss various aspects of treatment. Mention should be made of the increasing use of major surgery and of the possibilities of combining it with streptomycin. It is expected that the latter will be increasingly used during 1948. The high standard of major surgical treatment has already been referred to.

In Dr. King's report, note should be made of the reservation of certain beds at the Fremantle Hospital for cases of pulmonary tuberculosis. This new development is a welcome one.

Bronchoscopy has been increasingly used during the year as a diagnostic procedure, with particular reference to the selection of cases for major surgery. We are indebted to Mr. Harold Nash for his enthusiasm in this work, which he has carried out at the Royal Perth Hospital. Within recent months, Dr. Elphick has commenced to do these examinations at the Sanatorium; they are becoming more and more a part of the routine investigation of the patient.

A following report has been submitted by Dr. H. R. Elphick, Medical Superintendent of the State Sanatorium, Wooroloo.

Attention should be drawn to his comments on the long overdue renovation of the ward accommodation and the need for increased amenities for patients.

In closing this report I would like to pay a tribute to the encouragement given by the ready sympathy with, and comprehension of, the problems of tuberculosis control shown by you during the year, and also to the understanding co-operation given by the Under Secretary, Mr. Stiffold, the Assistant Under Secretaries Messrs. Devereux and Thurkle, and by other members of the staff of the Public Health Department.

LINDLEY HENZELL, M.D., London.
B.S., B.Sc., D.P.H.
Director, Tuberculosis Branch.

REPORT OF TUBERCULOSIS PHYSICIAN FOR YEAR ENDING 31st DECEMBER, 1947

The Director of Tuberculosis.

I have the honour to submit a report of my activities for the year ending December, 1947.

As you know, my duties are divided between the Royal Perth Hospital, the Fremantle Hospital, Wooroloo Sanatorium, and the Repatriation General Hospital, Hollywood.

ROYAL PERTH HOSPITAL.

Outpatient Clinic.

This clinic is conducted on Wednesday and Saturday mornings. The attendances for the year have totalled 3,370; this meant an average of 35 patients per clinic.

The Public Health Resident Medical Officer of the Royal Perth Hospital usually assists at these clinics and undergoes training in tuberculosis work.

Contact X-rays.

In addition, 959 contact X-rays have been arranged through the clinic.

Artificial Pneumothorax Cases—X-ray, Screening, and Refill Clinic.

There have been 1,776 attendances at the two weekly clinics, *i.e.*, Wednesday afternoons and Saturday mornings. This is an average of 18.5 attendances per clinic. There are 11 males and 54 females under artificial pneumothorax treatment.

My duties here, of course, are only as assistant when required, and to conduct the three-monthly review of cases as they pass through the clinic. As some of the Public Health Residents have been Junior Medical Officers, it has been necessary to assist in training them in the giving of artificial pneumothorax refills.

Positive Sputum Cases.

In a three-monthly check of cases passing through the clinic, it was considered that there were over 100 positive sputum cases; that is, cases that could be considered chronic and possibly infective to others. This can be taken as an indication of the number of these cases present in the clinic.

Inpatients.

It has been my pleasure to accompany the Director of Tuberculosis on his ward rounds.

FREMANTLE HOSPITAL.

Outpatient Clinic.

This clinic is conducted once a week on Thursday afternoons. There have been 223 attendances of notified patients. There have been 247 patients referred for investigation. In addition to this, 202 contact X-ray films have been examined.

At various times there have been up to 12 cases undergoing refills for artificial pneumothorax treatment. At present there are seven female cases and one male case who attend on an average of once a fortnight.

Inpatients.

From October, a small three-bed female ward has been made available by the co-operation of the Fremantle Hospital Board and the Medical Superintendent. These beds have proved invaluable in view of the great shortage of beds for female cases.

It is also possible to utilise two beds on the verandah of the male ward, but merely as a temporary measure pending transfer of cases to Wooroloo.

WOOROLOO SANATORIUM.

Weekly visits are made on Tuesday afternoons to assist in the review, *i.e.*, in the discussion of treatment of cases in the Sanatorium.

Chest Team.

A visit is also made on the first Saturday of each month for the meeting of the Chest Team. As you know, these meetings have been well attended both by members of the team and private practitioners, and the discussion of possible surgical treatment of cases has proved very stimulating.

REPATRIATION GENERAL HOSPITAL, HOLLYWOOD.

Visits are made to the R.G.H., Hollywood, to the extent of two full days per week. The outpatient clinic is conducted on Monday morning, theatre work and review of cases on Tuesday morning, review of cases and ward rounds on Friday.

Outpatient Clinic.

The outpatient clinic was for the former half of the year conducted at the Royal Perth Hospital, where 101 were on the clinic strength. It was then transferred to the R.G.H., Hollywood. This formation of a centralised clinic enabled a complete search of files, with the result that the clinic strength was increased to 314 as at 31st December, 1947. There are 57 cases receiving artificial pneumothorax treatment at this clinic.

I am assisted at this clinic by Dr. Woolcott of the Hospital staff, who performs the refills.

It appears that with a further check of the records, this clinic will grow larger, and it will probably require two mornings per week.

Inpatients.

As at 31st December, 1947, there were 100 positive sputum cases in the wards. This includes 20 cases undergoing artificial pneumothorax treatment, and 15 cases on whom thoracoplasty has been performed. There are also 20 cases undergoing D. and R. chest.

Pleuroscopy and Adhesion Section.

These totalled 30 operations, 14 of which were pleuroscopy only, and 16 operations of adhesion section on 12 patients (three two-stage operations, one bilateral case each side).

A separate, fuller report as furnished to the Senior Medical Officer, Repatriation Commission, and the Medical Superintendent, R.G.H., Hollywood, has been previously referred to the Director.

MISCELLANEOUS.

Australian Medical Congress, August, 1948.

As Honorary Secretary of the Section of Public Health, Tuberculosis and Tropical Medicine, a fair amount of time has been given over to meetings and planning.

Science Congress, August, 1947.

A paper was prepared and given on the subject of "Problems of Mass Radiography."

B.M.A. Meetings.

A paper was prepared on "Artificial Pneumothorax and Internal Pneumolysis," and was read at a meeting of the Western Australian Branch of the B.M.A., in August, 1947.

Chest Clinic.

It has been my pleasure to assist the Director in planning the layout of the new chest clinic at "Cathedral Hall."

Chest Hospital.

With the Director, I have visited the possible sites for the chest hospital.

REMARKS.

Grading of Patients.

It is suggested that all outpatients be graded as to the number of home visits made by the Visiting Nurses.

I have noticed that there has been some misdirected effort here, and suggest that priority for visits be given to ill and positive sputum cases.

Suggested grading—with the appointment of new Nurses—could include weekly, fortnightly, monthly, three-monthly and six-monthly visits.

Outpatient Clinics, Refill Clinics.

It is suggested that with the transfer of the clinic from the Royal Perth Hospital to the new Chest Clinic it is possibly advisable to fall into line with the 40-hour week and to hold the two outpatient clinics and refill clinics on week days.

Repatriation Department.

It is suggested that it will be necessary to reduce the time allotted to my duties with the Repatriation Department.

With the commencement of the programme of mass radiography, it is anticipated that there will be an increase in my duties associated with this work.

Dr. John Woolcott, who is assistant at the Repatriation outpatient clinic, is being trained in the conduction of this work, and may, in the future, be capable of running it himself.

15th March, 1948.

ALAN KING,
Tuberculosis Physician, Department of Public Health.

ANNUAL REPORT FOR WOOROLOO SANATORIUM

The Director, Tuberculosis Branch,
Department of Public Health,
PERTH.

I have the honour to submit herewith a report of the activities of Wooroloo Sanatorium for the year 1947.

Accommodation.

1. *Patients.*—Plans for the erection of further accommodation for patients were abandoned in view of the approval of the building of a metropolitan chest hospital. The need for the long overdue renovation and painting of the wards is rapidly becoming more obvious. The Wards have never been painted since their erection and as a result appear extremely dingy and unattractive, creating a very bad impression, particularly on new patients who frequently find difficulty in settling down. Innumerable flies have left their marks on walls and ceilings, and the cement floors are in many cases badly dilapidated and in need of repair. In addition the necessity for a sitting room, and recreation, reading and study rooms, especially for the male patients, is rapidly becoming more pressing. The patients themselves are acutely conscious of the lack of comfort, and several representations were made on their behalf during the year to question the possibility of accommodation, at least for a sitting room. Many of the male patients are permanent inmates, and the only place to which they may go and sit, in winter time particularly, is the billiard room. In addition many convalescent cases, studying various subjects as part of their rehabilitation, find it impossible to concentrate in a noisy ward.

It is therefore recommended that immediate steps be taken to renovate and paint the wards, and also to provide a sitting-room and study for male patients, either in a new building or by conversion of one of the male wards.

2. *Staff.*—During 1947 the problem of accommodation for married members of the staff became acute, mainly due to the employment of male nurses, and it was possible to do very little to solve it. Tenders received for the erection of a house for the Deputy Superintendent and six cottages for other members of the staff were so prohibitive that plans to build these were temporarily abandoned. Four army huts obtained from the Disposals Commission were transferred to Wooroloo and are being converted into eight flats for the use of married male nurses, and it is expected that these will shortly be ready for occupancy.

During the year the nurses' dining room was renovated and painted with pleasing effect, and the orderlies' and male nurses' quarters on the upper block were completely renovated and painted.

Staff.

Medical.—The outstanding occurrence during the year was the departure of Dr. Henzell from Wooroloo to Perth to assume his duties full time as Director of Tuberculosis. Since his appointment as Medical Superintendent in 1941, Dr. Henzell has rendered inestimable service to the State and to Wooroloo Sanatorium in particular, and his transfer to Perth left everyone, the writer in particular, with a distinct feeling of uncertainty and powerlessness. His ready advice and unflinching sympathy have made it possible to carry on in his absence.

I commenced duty as Deputy Superintendent on 21st April, 1947, and on Dr. Henzell's transfer to Perth on 29th August, became Acting Superintendent until 1st October, when my appointment as Medical Superintendent was made by Executive Council.

Dr. Guinan remained on sick leave and under treatment in the Sanatorium until May, when he was transferred to St. John of God Hospital, Subiaco. In September he returned to his home in Sydney where it is hoped he will continue to improve and make a complete recovery.

Dr. Letham has been on sick leave since 11th July, 1947, and our sympathy and best wishes are extended to him. Until Easter Dr. Gordon acted as Senior Resident and as such rendered valuable and capable service. He then returned to Perth Hospital as Surgical Registrar.

Dr. Greer throughout the year has been a staunch support both in his clinical work and in control of the X-ray department. For his willing and untiring help I am deeply grateful.

During the year we have had the assistance of Resident Medical Officers from the Royal Perth Hospital. Their work has been good and their interest keen.

Consultant.—In addition to the existing consultants, Mr. F. J. Clark, Mr. L. E. Le Souef, Dr. J. G. Hislop, Dr. G. Troup and Dr. A. N. Kingsbury, members of the honorary thoracic team of Royal Perth Hospital,

namely Mr. B. M. Nairn, surgeon, Drs. I. O. Thorburn and R. V. Pratt, physicians, and Dr. Douglas Wilson, anaesthetist, have attended the monthly clinical meetings and given valuable advice and help. The monthly meetings have been held throughout the year, and their success has been due to the regular attendance of the above mentioned consultants, together with the staff of the Chest Wing of the Repatriation General Hospital, and members of the Royal Perth Hospital resident staff, whose interest also has been sustained. We were fortunate during the year to be honoured by visits from Dr. H. W. Wunderley, Commonwealth Director of Tuberculosis, Dr. Geoffrey Todd, Medical Superintendent of Midhurst Sanatorium, and Dr. David B. Rosenthal, Superintendent of Gresswell Sanatorium, all of whom added interest to the Clinical Meetings by constructive criticism and valuable advice.

The State Tuberculosis Physician, Dr. Alan King, has paid weekly visits to the Sanatorium in the capacity of consultant, and his consistent interest and logical commentaries have had a most stimulating influence on all members of the staff.

Nursing.—During the year the members of the female staff diminished appreciably with the departure of all four year Government trainees who commenced their training at the Sanatorium. Three of these trainees, Nurses Baker, Boyd and Cressal, after the completion of their initial sixteen months, remained to complete their tuberculosis training, and received their tuberculosis certificates before proceeding on to Kalgoorlie to complete their general nursing certificates. In this way they rendered excellent service at a time when trained staff was numerically at an extremely low level.

Sister Stokes resigned in May, after almost ten years service. We are deeply indebted to her for her long period of conscientious duty. Our gratitude is also due to Sisters Fullarton, McGregor, Patterson, Pedrol, Clayton, Boddington, and Steinlin, who ceased duty during 1947.

A considerable number of male nurses have commenced work either as tuberculosis assistants or nursing orderlies, but of these only a small number have remained permanently, the remainder constituting a very transitory form of assistance of doubtful value.

The number of female trainees has been limited considerably by the age limit of 21, which is felt to be largely the cause of the present shortage of female nursing staff.

	Sisters.	Probationer Nurses.	Males.
1st January, 1947	7	25	20
1st January, 1948	7	12	32

In spite of the small number of nurses however, the standard of nursing treatment has been extremely high, and the excellent moral effect of Matron Lochhead on her trainees and trained staff alike has been largely due to her own consistent enthusiasm and personal effort. I am extremely grateful to her for the loyal support that she has at all times given me.

Secretarial.—Mr. Stansfield as Secretary, has continued throughout the year to render valuable service. I am grateful to him for help on many occasions. Mr. P. Brailey was appointed as a clerk on 4th July, 1947, and together with other members of the administrative staff has given efficient and conscientious service. Miss M. Parker whose place was taken by Mr. Brailey was granted leave to further her studies in shorthand and typing, and is to return in January as senior typist in place of Miss P. Elfverson, whose transfer to the Chest Clinic in Perth has been arranged.

Laboratory.—The staff of this department suffered a severe loss in July, 1947, when Dr. Letham went on sick leave. His work in the laboratory had been of a very high order and it is to be hoped that his recovery will be a rapid one. In his absence Miss Bothwell has carried on with her extremely meticulous work as bacteriological technician, and Miss V. Gillam has continued her haematological investigations.

In April, 1947 a number of guinea pigs were obtained and inoculations commenced; in addition breeding was continued, and the nucleus of a successful guinea pig herd has developed. Twenty-eight pigs were inoculated during the course of the year with sputum or gastric contents, and of these 21% proved positive.

The following is a summary of the laboratory work for the year:—

		Percentage Positive for T.B.
Sputum examinations (direct smear)	666	69
Sputum examinations (concentration)	1,127	30
Cultures for tubercle bacilli (sputum)	486	14
Cultures for tubercle bacilli (gastric contents)	60	10
Other bacteriological examinations	33	
Blood counts	648	
Blood sedimentation rates	583	
Pleural fluid examinations (chemical and micro.)	145	47
Pleural fluid examinations (culture)	67	42
Urine cultures	19	5
Guinea Pigs inoculated	28	21
Smears for leprosy bacilli	14	

Of those cases in which artificial pneumothorax was instituted however, 63 per cent. have a satisfactory collapse, and one patient only has developed a serious complication.

Twenty cases were subjected to thoracoplasty, and lobectomy was performed on two tuberculous patients with extremely satisfactory results.

Exact figures are as follow:—	Female.	Male.
Inductions (or attempted inductions)	26	8
*Satisfactory A.P.	16	5
	(64 per cent.)	(62 per cent.)
Unsuccessful attempts	3	....
Inefficient pneumothoraxes, abandoned without complications	6	3
Complication (persisting)	1	....

*A number of otherwise satisfactory cases developed fluid at some stage, but this has subsided, with or without aspiration.

The discrepancy between the numbers of male and female patients is due to the fact that a large percentage of young men with disease amenable to treatment are ex-servicemen, and as such are eligible for treatment at Hollywood Hospital.

Refills	1,850
Aspirations (pleural)	137
Thorascopies (at R.P.H. on Sanatorium patients)	30
Of these pneumolysis complete in	14
Thoracoplasties	20
	(52 stages)
Lobectomies	2
Phrenic crushes (at Wooroloo Sanatorium)	4
Bronchoscopies (at Wooroloo Sanatorium)	5

Leprosarium.

The occupied beds in this part of the hospital diminished from four to one. One patient was discharged, one was transferred to Royal Perth Hospital with cancer of the bladder, and one died.

Rehabilitation.

The Sanatorium was extremely fortunate in obtaining the services of Miss Margaret Mort as Occupational Therapist.

Since her appointment in April she has organised Occupational Therapy and Rehabilitation extremely efficiently, and it may now safely be stated that the patient's rehabilitation starts on the day he arrives in hospital.

Members of the rehabilitation section from the Department of Social Services have co-operated with her, and an efficient team has been formed to consider each patient's aptitude and possibilities for vocational training. As a result courses of training have been or are being arranged for 19 patients to date.

In addition Miss Mort has drawn up a comprehensive scheme for a "sheltered workshop in bed," by which it is intended to give employment to all patients who are capable of doing any work at all. In this way all will be given the opportunity to supplement their pensions, and to learn the elements of leather work, book-binding and other trades to be included in the scheme.

Mention has already been made of the shortage of accommodation, particularly as regards male patients. Those men who are embarking on courses which require concentrated study have difficulty in making progress in their beds, and as a result tend to become discouraged and disinterested. In addition space is required for the occupational therapy department in its new scheme, as many of the processes involved in the "sheltered workshop in bed" cannot be performed in bed, but are done by the "up-patients" who require bench and table space. In this regard the Red Cross Society has kindly donated to the Sanatorium the Red Cross Handcraft Centre attached to the Northam Military Hospital, and this is to be transferred to the Sanatorium grounds by the Public Works Department. This will be of extreme value as it will be placed in the area between the male wards and will thus be within easy reach of patients in both wards. So far, however, work has not been commenced on the transfer.

The hospital newspaper, "Light Diet," was inaugurated through the energies of the occupational therapist in May, 1947, and to date six numbers have appeared. The purpose of the paper is to create an interest and a means of self expression and education for the patients, and so far it has been an outstanding success.

The occupational therapist's detailed report of her activities is submitted herewith.

Social Welfare.

The number of social problems associated with the patients strongly suggests the advisability of the appointment of a full-time social worker. Up to date the burden of this work has been carried by the medical staff, recently helped by the occupational therapist, but there is sufficient work in the Sanatorium to occupy

a full-time worker who could interview all patients in a search for their problems. It is considered that her work would involve spending half her time in the Sanatorium and half in the metropolitan area interviewing relations and other individuals concerned with the patients' problems. Pending the appointment of a full-time social worker, the visiting nurses have accepted the responsibility of a part of this work, and their activities in this respect will be most welcome.

Entertainment.

During the year a series of lectures and recitals of "Everyman's Music" was arranged by the Adult Education Board. The Red Cross Society provided funds to defray half the cost of these lectures, and also made transport available for the lecturers. The lectures and recitals were without exception extremely interesting and entertaining and it is to be hoped that a similar series may be instituted in 1948. In addition, concerts and plays were produced in the patients' recreation hall by the Repertory Club, the Northam Keep Fit Club, the Relax Community Concert Party and numerous other concert parties. These, together with picture shows, have contributed to the patients' entertainment and are gratefully acknowledged.

The Red Cross Society during the year has been extremely helpful, and in addition to numerous personal gifts to the patients, has supplied cupboards for use in the occupational therapy department. Mention has already been made of the Society's gift of the Hut at Northam, and grateful acknowledgment is here recorded.

The Wooroloo Welfare Committee has generously helped the patients as in other years with donations of wool and Christmas gifts. In addition the ladies of this committee staffed the Colony hut at the Royal Show, assisted in collecting for the street appeal, and organised a garden party at the home of Mrs. H. N. Sampson in Kalamunda, the proceeds of which were donated to the Wooroloo Colony. Sincere appreciation is felt for their continued efforts to improve the welfare of patients generally.

Colony.

Throughout the year the Colony has continued its various activities, and numerous patients have worked in the tin-smithy, garden and orchard. The hostel has provided first-class accommodation for many relatives and friends of patients, as well as a large number of other guests.

The building appeal was eminently successful, largely owing to the efforts of an ex-patient, Mr. J. O'Hagan, who made numerous valuable contacts in the metropolitan area and the country.

No buildings have, as yet, been erected, but it is hoped that a programme will shortly be commenced to provide accommodation for Colony workers.

Dairy Farm.

Under the management of Mr. W. Wallace the Dairy Farm has continued its excellent service and progress. Net profit for the year was £466 15s. 4d., compared with a loss of £482 for 1946. This difference is due to a profit of £1,012 18s. 0d. from cattle trading, the amount being transferred to General Profit and Loss.

Severe losses, particularly of the younger stock, were suffered in November as a result of tuberculin testing. Over 50 per cent. of the heifers were T.B. positive and had to be destroyed; in addition, 15 per cent. of the older milkers and the stud bull, "Red Baron," were positive. These losses are extremely disappointing, particularly to Mr. Wallace, who has spent so much time and energy in the breeding of a first-class stud. Thanks to a supply of milking cows received from the Claremont Mental Hospital, an adequate milk supply has been maintained in spite of our losses, but it is certain that during the next two years the loss of young stock will have its most marked effect.

A considerable amount of the profit of the Dairy Farm is lost because of the necessity to purchase food for the pigs. The use of kitchen refuse has been impossible because of inability to obtain a suitable digester; the acquisition of such will save approximately £100 per year as it will render it possible to use all the waste from the kitchen which is at present carted out into the bush and buried.

Poultry Farm.—Mr. S. Roberts, the manager, has continued his excellent work on the Poultry Farm. During the year he increased his flock considerably, but in spite of this it has been necessary to purchase eggs from the Egg Board. It is planned during 1948 to increase the poultry flock still further in an effort to meet the requirements of the Sanatorium and the additional demands of the store customers.

The guinea pig herd has been housed at the Poultry Farm and Mr. Roberts' conscientiousness is largely responsible for the excellent results which have been achieved in breeding and building up the herd.

Conclusion.

I desire to express my gratitude to all the members of my staff, to Dr. C. E. Cook, Commissioner of Public Health, and to yourself, to the Under Secretary, Mr. H. T. Stitfold and the Assistant Under Secretary Mr. H. Thurkle, and to all the other officers of the Department of Public Health for their wholehearted co-operation and assistance to me since my appointment. I desire especially to thank Matron Lochhead and her nursing staff for their consistent and indefatigable efforts under frequently the most difficult conditions.

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

APPENDIX III

REPORT OF MEDICAL SUPERVISOR OF INFANT HEALTH

It is gratifying to record a small fall in the infant mortality rate from 31·06 in the previous year to 30·92 in the period under review. The number of babies attending centres was 15,392, compared with 12,913, and the number of baby attendances 154,158 as compared with 120,383. The total number of infant and expectant mother attendances and of home visits was 169,247.

This has been an outstanding year in regard to the development and extension. The following new country travelling centres have been established on a full-time basis:—

- Busselton Travelling Centre, incorporating: Alexandra Bridge, Argyle, Augusta, Boyanup, Donnybrook, Capel, Cowaramup, Jarrahwood, Margaret River, Kudardup and Witcheliffe.
- Corrigin Travelling Centre, incorporating: Bruce Rock, Hyden, Kondinin, Kulin, Quairading, Narembeen and Shackleton.
- Kalamunda Travelling Centre, incorporating: Bickley, Canning Mills, Carinyah, Carmel, Forrestfield, Karragullen, Maida Vale, Lesmurdie, Queen's Park, Piesse's Brook, Pickering Brook and Wattle Grove.
- Midlands Travelling Centre, incorporating: Ballidu, Bindi Bindi, Calingiri, Dalwallinu, Dandaragan, Kondut, Miling, Moora, Piawaning, Pithara, Waddi Forest, Walebing, Watheroo, Wongan Hills, Wubin and Yerecoin.
- Norseman Travelling Centre, incorporating: Daniels, Esperance, Grass Patch, Gibson's Soak, Kumarl, Red Lake, Salmon Gums and Scaddan. (A centre had previously functioned at Norseman only.)
- Wagin Travelling Centre, incorporating: Collie, Darkan, Dumbleyung, Kukerin, Lake Grace and Newdegate.

Certain old established centres have now obtained cars and have become travelling centres, thereby increasing their activities by the taking in of new towns or by increasing the number of visits to outlying districts from a monthly to a weekly basis. In this way the value of the service they give to the districts has been greatly enhanced. Such centres are:—

- Armadale, incorporating: Byford, Gosnells, Jarrahdale, Kenwick, Kelmescott, Maddington, Mundijong, Mardella, Orange Grove, Roleystone, and Serpentine.
- Kellerberrin, incorporating: Baandee, Chandler, Cunderdin, Doodlakine, Burracoppin, Merredin and Tammin.
- Katanning, incorporating: Broome Hill, Cranbrook, Gnowangerup, Kojonup and Tambellup.
- Narrogin, incorporating: Pingelly, Wickepin, Williams and Yealering.
- Waroona, incorporating: Brunswick, Coolup, Harvey, Mandurah, Pinjarra, Mornington Mills, Stirling Dam and Yarloop.

New sub-centres have also been started in:—

- Belmont and Rivervale from Victoria Park.
- Chandler and Burracoppin from Kellerberrin.
- Coolgardie from Boulder.
- Mends Street from South Perth.
- Melville Camp, Rockingham and Safety Bay from East Fremantle.
- Walkaway and Nanson from Geraldton.
- Welshpool from Victoria Park East.
- Williams from Narrogin.

There were 37 full-time centres and 146 sub-centres. With one exception a Sister is in charge of each. It can thus be said the infant health service is available in 183 towns and districts. Wiluna has been closed down owing to a considerable decrease in population which does not warrant a full-time Sister. Other centres have been closed temporarily through staff shortage during the year but it has frequently been possible to arrange a partial service by the help of a retired ex-infant health Sister living in the district.

Many of the city centres are now too large for satisfactory infant health work to be done. Too large a number of attendances involve a heavy strain on the Sisters and many mothers have to wait a considerable time before their babies receive attention. Further, sufficient time is not available for home visiting, which is a very vital part of the work. It will consequently make for efficiency if in the near future a number of these large centres are divided and new centres created.

The creation of two new additional country centres has received Ministerial approval and the districts concerned are now actively engaged in raising funds for the purchase of the necessary cars.

When the Department first assumed responsibility for staffing, the Cottesloe and Claremont Centres preferred to continue under local control. The Sisters in charge thereby lost certain privileges that accrued to those within the Departmental scheme and the local committees and communities had to raise money which would otherwise have been furnished from public funds. It is gratifying to record that Cottesloe, in a gracious letter, has now requested the Department to take over its centre and to bring it into line with others in the scheme; this has been done.

During the year, the Government decided to extend its responsibility for infant health activities by relieving local committees of certain expenses. All petty cash expenditure (excepting for cleaning, lighting and rent) and the cost of "overnight allowances" in connection with travelling centres are now defrayed from departmental funds.

The North-West.

The Correspondence Sister visited the North-West ports and the station circuit from Wyndham to Hall's Creek. This visit was made entirely by air. Owing to the co-operation obtained in all townships, the visit was very successful and all babies, with two exceptions, were seen throughout the area. The Sister also examined as many pre-school children (2-6 years of age) as possible. In all, 121 babies, 151 toddlers, and 22 expectant mothers and one father were interviewed. It is hoped that visits to the North-West will become a regular feature.

Mothercraft Lectures.

A new Sister, highly trained in mothercraft, was appointed during the year. The work is now solidly established and is proving entirely satisfactory. The lectures are appreciated by the students and the schools report that they are a popular feature of the curriculum.

The Protestant colleges in the metropolitan area willingly arranged for these lectures to be given to their students. The bigger Catholic colleges have been approached but have as yet been unable to include these lectures in their time-table. It is hoped, however, that in due course, mothercraft will be taught in all schools. The talks are in no way sex lectures; the course is designed for the training of the young girl in the care of the normal baby.

Modern School, the Technical College and all Government Girls' High Schools in the metropolitan area are having the lectures. A more advanced course is being given to the female students of the Teachers' Training College and the trainees at the Kindergarten Union, in order to interest them in this work, so that, in their turn, they will be able to hand on the acquired knowledge to pupils who come under their care.

Pre-School Children.

Many of the Sisters in charge of centres are making a special effort to contact the toddlers and pre-school children in their district. In some cases, where time-tables have permitted, a special day each month has been set aside as a Toddlers' Day and mothers, whether they have babies or not, are being encouraged to bring their toddlers to the clinics. The children are weighed and advice is given to the mothers on the many problems that they may have to face in connection with dietetic errors, habit formation, prevention of infectious diseases, etc. These toddlers' clinics are developing well and they should prove of considerable value, particularly in country districts.

Immunisation.

As a general public health measure the necessity for the immunisation of children, particularly against diphtheria, is brought to the notice of all mothers attending centres.

Scales.

The position in regard to infant scales has been unsatisfactory for some years. It was impossible to import them and scales used in the Eastern States do not comply with the terms of the local Weights and Measures Act. Scales are now being manufactured in Perth, which conform to the specified standards and which have been approved for use. These scales are purchasable from the makers at a cost of £22 7s. delivered to any centre, the manufacturers guaranteeing performance.

Infant Health Committees.

Infant Health Committees are responsible for the provision, furnishing, and cleaning of centres, and also for the supply of a car when one is necessary for the functioning of a centre. The raising of money for these purposes involves much hard work and thanks are due to the many committee members who give unstintingly of their time and effort in keeping alive local interest and in devising methods for raising money.

Nurses.

The Service is fortunate in having an excellent team of nurses. During the difficult times when nurses were hard to get, the older members of the staff continued to give of their best and thanks are due to them for their fine work. It was due to their help that many centres were kept open over the war years.

A number of new and younger nurses are now coming into the Service. Many served during the war and have taken infant health as a Rehabilitation Course. They are joining with a desire to make this their permanent work; they take a very personal interest in their centres, which they strive to improve in every way. The majority of these nurses are West Australians, who have taken their course in one of the Eastern States or in New Zealand and have returned to their home State.

Generally speaking, there has been little difficulty in keeping centres more or less fully staffed. In country districts it has been particularly noticeable that towns which have nurses' quarters attached to centres, have been able to retain staff. Where resignations have occurred they have usually been from towns where accommodation is difficult to obtain or unduly expensive. When it has not been possible to secure nurses, ex-Infant Health Sisters who have married have frequently volunteered to return to duty. Actually, more work has been done than is shown in the reports because many sub-centres have functioned with a local nurse in charge, while the centre has been shown as closed or partially closed.

Many Sisters, particularly in metropolitan centres, have served for many years and are now in age groups where a certain amount of sick-leave must be inevitably expected. It is thus desirable that relieving Sisters should be available to relieve when sickness occurs. In the past year, one or two of the metropolitan centres have had to close for varying periods because a trained locum could not be obtained. Such closure would be avoided if sufficient relieving staff were available.

It was possible during the year to arrange an excellent lecture for the nurses by Dr. Kate Campbell, Director of Infant Health Training for the Victorian Baby Health Association. This lecture was considered so important that all Sisters from country districts were given the opportunity to attend. Full advantage was taken of this opportunity and it is hoped to arrange other lectures as the occasion presents itself.

The Lotteries Commission.

The Lotteries Commission contributes substantially to nurses' salaries and to the numerous expenses involved in the maintenance of centres. It has also been generous in the provision of scales for new centres. The financial assistance from this source is gratefully acknowledged.

Cars.

Infant Health work enjoys a high priority for cars and Permits have been readily available for purchase. These cars have "Infant Health Centre" painted on their front doors on both sides, together with the number of the particular centre. This advertises the Infant Health Service throughout the districts traversed and also precludes the use of the cars for other than official business. In view of the purpose for which they are purchased there is a remission of sales tax, and moreover, leading motor firms make a substantial reduction in the purchase price.

To sum up, the past year has been fruitful in development, the easing of the nursing situation has made for better staffing and centres have operated efficiently.

E. M. STANG,
Medical Supervisor of Infant Health.

APPENDIX IV.

REPORT OF THE SENIOR DENTAL OFFICER*The Commissioner of Public Health.*

Following is my report on the work of the Dental Staff for the calendar year 1947.

During the year Mr. Turnbull was discharged from the Army and resumed his duties with the Department. We were then back to our pre-war number of four after a shortage for some years due to war service of various members of the staff. I immediately endeavoured to catch up with some of the country work which had been neglected but I am afraid that without an increase of staff we cannot cope with all the work which is required of us. From all over the State we receive innumerable requests and demands for visits by our dentists and I would be only too pleased to fall in with their wishes if we had the numbers.

The following facts should be borne in mind:—

- (a) Dental *examination* of children can be even more rapid than the school medical examinations, and we could cover all the children in the State if that was all that was required of us, but the dental *treatment* which we perform—fillings, extractions, and so on—is obviously a much slower process.
- (b) Our experience has been that we cannot obtain dentists who would be willing to travel continually in country areas and so be away from home all the time; therefore our present staff were engaged on the understanding that they would be required to spend half their time travelling through the bush and the other half in metropolitan and suburban areas.
- (c) The remedy for this, as I have pointed out before, is a regional system under which each dentist would make his home in a large country town and work only in that town and in the surrounding districts up to a radius of perhaps 200 miles, and I am sure that with such a system in operation we could get willing and suitable applicants for positions.

At the request of certain local Parents and Citizens' Associations we have made several attempts to induce private dentists to undertake the systematic treatment of their local school children for modified fees and with some subsidy from this Department. In no cases, however, have we been successful, and from my personal observations as well as talks to dentists who have been involved in two of these negotiations, I am satisfied:—

- (a) That they are not anxious to deal with children at all.
- (b) That they would attend to children only if they had time to spare after doing their more congenial work amongst adults.
- (c) That they will accept nothing less than normal fees.

All the more reason, therefore, that a regional system of school dental officers should be evolved or at least attempted.

In my last report I mentioned that our trailer was immobile because of lack of traction power. That statement still holds and we cannot give a proper service to small schools until we are provided with a car to haul the trailer.

During the year under review 25 country schools and 20 suburban schools were visited and the total number of children examined was 3,205.

Other particulars are as follows:—

Number of children treated by the school dentist with the permission of the parents	1,998
Number who needed no attention	606
Number who were being attended privately	257
Number of those whose parents did not want their children treated	344

Operations performed were as follows :—

Silver Amalgam fillings	....	....	....	....	....	1,430
Copper Amalgam fillings	....	....	....	....	....	1,894
Cement fillings	....	....	....	....	....	1,775
Porcelain fillings	....	....	....	....	....	150
Silver Nitrate treatments	....	....	....	....	....	1,670
Other treatments	....	....	....	....	....	1,552
Extractions	....	....	....	....	....	3,816
Prophylaxis	....	....	....	....	....	303

In 25 cases work was done under general anaesthetic administered by local doctors.

During school vacations Orphanages, Native Settlements, and other institutions were visited, while on several occasions, after the schools had closed in the afternoons, visits were made to "Sunset" in order to attend men who were bedridden or otherwise unable to be taken to the Dental Hospital.

Regular Saturday morning visits were made to Claremont Mental Hospital; patients from Lemnos and the New Service Block at Claremont were also attended there. The details in regard to this work are as follows :—

No. of patients seen	....	....	....	....	....	476
New dentures made	....	....	....	....	....	27
Dentures repaired	....	....	....	....	....	43
Prophylaxis	....	....	....	....	....	7
Extractions	....	....	....	....	....	492

In 13 cases the extractions were done under general anaesthetics administered by the medical officers; other extractions were done, of course, under local anaesthetics; denture work was done in conjunction with the Dental Hospital.

Towards the end of the year the honorary dentist attending the Wooroloo Sanatorium resigned, and as it seemed impossible to get any other private dentist to undertake the work, I was asked if our staff would do it. I agreed to do so and as I was on a country itinerary at the time I asked Mr. Turnbull to see what was required. I have now personally taken over the duties at Wooroloo and will make regular weekly visits there in future.

A. G. McKENNA,
Senior Dental Officer of Schools.

APPENDIX V.
MEAT INSPECTION FOR YEAR ENDING 31st DECEMBER, 1947.

Animals Slaughtered.	CARCASSES CONDEMNED.										PART CARCASSES CONDEMNED.										ORGANS CONDEMNED.																		
	Paratyphoid Fever.	Fractation.	Infertus.	Immaturity.	Moriband.	Prophanosis.	Pyrexia.	Pneuro-pneumonia.	Sepsis.	Traumatism.	Tuberculosis.	Actinomycosis.	Tumourable.	Totals.	Abscess.	Tuberculosis.	Carcous Lymphadenitis.	Traumatism.	Tumourable.	Gangrene.	Arthritis.	Totals.	Abscess.	Actinomycosis.	Cirrhosis.	Fatty Infiltration.	Inflammation.	Melanosis.	Necrosis.	Pneuro-pneumonia.	Parasitic Cysts.	Traumatism.	Tuberculosis.	Tumourable.	TOTAL.				
FREMANTLE DISTRICT (including Watson's Bacon Factory).																																							
Cattle	21	...	...	...	3	4	1	1	19	12	161	...	1	223	7	243	107	...	22	3	4	...	386	161	21	335	25	199	...	7	330	...	14	14	113				
Calves	36	7	...	...	19	...	29	15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	602	2,322			
Sheep	25	1	...	...	8	...	17	66	...	...	349	5	2	470	2,258	39	5	120	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11	11			
Pigs	...	...	...	...	...	...	...	...	...	...	...	...	...	827	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3,447			
MIDLAND JUNCTION ABATTOIRS (including Foggett Jones, Ltd. Bacon Factory).																																							
Cattle	41	...	...	...	2	...	3	25	10	695	...	221	798	14	840	520	18	24	...	18	24	...	1,416	282	11	217	54	362	...	12	2	136	...	357	...	1,433			
Calves	...	...	...	...	82	...	9	...	14	...	...	23	1,074	1	...	74	20	34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	155	159		
Sheep	...	...	...	...	...	...	4	3	...	60	...	...	...	...	...	164	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	162	4,578		
Pigs	...	...	...	...	...	...	...	...	...	...	...	...	...	1947	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6,170			
KALGOORLE DISTRICT.																																							
Cattle	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	92	15	346
Calves	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	125	159
Sheep	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	162	4,578
Pigs	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6,170	
ANIMALS SUBMITTED FOR INSPECTION PERTH CITY MEAT MARKETS.																																							
Cattle	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Calves	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sheep	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pigs	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
ANIMALS SUBMITTED FOR INSPECTION, FREMANTLE MEAT MARKETS.																																							
Cattle	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Calves	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sheep	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pigs	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
COUNTRY DISTRICTS.—Combined Condemnations of all Country Districts (including Northam, Busselton, Narrogin, Albany, Gerallton, Katanning, York, Wagin, Bumbury, Rockingham, Merredin).																																							
Cattle	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Calves	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sheep	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pigs	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

*Totals of Animals Slaughtered: Cattle, 75,700; Calves, 22,201; Sheep, 710,681; Pigs, 124,323.

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

District.	Cattle.	Calves.	Sheep.	Pigs.	TOTAL.
Northam	1,143	235	11,407	948	13,733
Busselton	907	74	4,987	471	6,439
Narrogin	806	91	6,595	243	7,735
Albany	1,896	329	13,370	1,021	16,616
Geraldton	1,340	195	14,715	821	17,071
Katanning	783	77	4,836	90	5,786
York	513	86	4,333	215	5,147
Merredin	677	42	6,088	240	7,047
Bunbury	1,816	825	14,226	1,240	18,107
Rockingham	300	61	3,007	60	3,428
Wagin	275	13	2,800	55	3,145
Collie	1,626	67	9,350	538	11,581
	12,082	2,095	95,716	5,942	115,835

APPENDIX VI.

NOTIFICATION OF EACH TYPE OF INFECTIOUS DISEASE RECEIVED BY THE DEPARTMENT OF PUBLIC HEALTH FOR EACH WEEK OF THE YEAR ENDED 31st DECEMBER, 1947.

Week.	Ankylostomiasis.	Amoebiasis.	Amoebic Dysentery.	Bacillary Dysentery.	Dengue Fever.	Diphtheria.	C.S.M.	Leprosy.	Virus Encephalitis.	Malaria.	Puerperal Fever.	Polomyelitis.	Scarlet Fever.	Typhoid Fever.	Typhus Fever.	Pol. T.B.	Other T.B.	Undulant Fever.	Rubella.	Tetanus.	Tetanus Neonatorum.	Infective Hepatitis.
1						7	1	2					3			1						
2						4							1		1	5	1					
3						3							1		12	3	4					
4						12							1	1	12	6	12					
5						3							7		12	1						
6						5		4				1			12	2	1		1			
7						3							2		1	5				12		
8						9									12	12						
9						5							1		4	5	1					
10						3							1		4	4				2		
11						12									4	1			1			
12						9							3	1	3	15	1					
13						4	1						4		4	4	1					
14						3		2					3			11						
15						6							1	12	1	2						
16						6							3	1	11	15			2			
17						9							2		4	4				1		
18						7	1	2					4		6	7				1		
19						5	1						12		3	3						
20						8							1	2	1				1			
21						21	1								2	8						
22						5	2						1		1	14	3					
23						10	1						12	3	5	3	12					
24						10	1							12	12	7	1					
25						5	2						2	1	3	8			1			
26						9							6		5	7			2	1		
27						6	1	2					3		5	10	2					
28						8							2			6						
29						11							3			1	6	3				
30						7							3	4	4	9						
31						12	2						1	3	4	2				1		
32						3							1	3	2	13						
33						4							5	3	3	15	1					
34						12	3						6	3	2	5						
35						6	2						6		12	7	2		1			
36						5		11					3		3	8			1			
37						6	1						1	2	9	10			1	3		
38						10							2		3	7	1					
39						8	1						3	1	8	1				2		
40						3	2	6					2		3	9			1			
41						3	2						5		3	10	1					
42						3	1						2		4	1				2		
43						5							2	1	3	12				1		
44						3	1						4	2		4	1			1		
45						6		3					11	1	3	9			1	1		
46						7							3	1		18			2			
47						5							7	1	2	7						
48						5							2		4	1					1	
49						5		6					1	2	2	3						
50						3							5		1	6	1					
51						5	1						8		2	7	1	1	2			2
52						15	1						5	1		5	5	1			1	
Total, exclusive of Services		1	13	7	1	339	30	38	1		6	2	143	36	141	313	40	9	30	3		2
Services	102	4	5	1						295			1		1	39			2			

APPENDIX VII.

Western Australia.

DIPHTHERIA, 1922-1947.

	Population (1,000s)	Cases of Diphtheria	Cases per 100,000 Population	Case Mortality %
1922	339	577	170	3.6
1923	353	504	142	3.5
1924	364	511	140	2.7
1925	377	354	93	1.7
1926	385	256	66	4.3
1927	399	273	68	2.9
1928	414	639	154	2.0
1929	426	539	126	6.0
1930	431	1,045	242	4.1
1931	433	452	104	4.2
1932	436	664	152	3.0
1933	440	848	192	2.4
Mass Immunisation commenced :				
1934	442	974	220	3.7
1935	447	1,308	293	2.6
1936	451	792	175	4.54
1937	457	1,166	255	3.34
1938	462	921	199	4.44
1939	468	610	130	4.40
1940	472	583	123	3.75
1941	474	674	142	3.00
1942	479	748	156	5.48
1943	482	755	156	5.03
1944	488	491	100	4.80
1945	490	425	86	4.70
1946	494	380	77	2.89
1947	502	339	67	2.36

APPENDIX IX.

AGE AND SEX DISTRIBUTION OF CASES OF PULMONARY TUBERCULOSIS NOTIFIED TO DEPARTMENT OF PUBLIC HEALTH FOR EACH MONTH OF THE YEAR ENDED 31st DECEMBER, 1947.

AGES IN YEARS.

MONTH.	0-1		1-2		2-3		3-4		4-5		5-6		6-7		7-8		8-9		9-10		10-14		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
January	1
February
March
April	1
May	1	...	...	...	...	...	...	...
June	1	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
July	1	...	...	...	...	...	...	...
August
September	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
October	1
November
December
Totals ...	1	...	...	...	2	1	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	1	2

AGES IN YEARS—continued.

MONTH.	15-19		20-24		25-29		30-34		35-39		40-44		45-49		50 & Over		Ages not Stated		M.	F.	Total
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.					
January ...	2	...	...	2	...	2	1	...	...	...	2	...	2	1	7	1	1	...	15	7	22
February ...	2	1	2	1	1	...	...	...	...	1	1	3	1	...	5	1	...	...	12	7	19
March ...	1	...	...	1	2	2	2	1	...	2	2	...	2	...	6	...	...	1	15	7	22
April ...	...	...	1	3	...	5	3	2	5	...	...	1	...	1	9	...	3	1	22	13	35
May ...	...	1	2	1	...	4	...	3	2	...	1	1	3	...	8	3	1	...	18	13	31
June ...	...	3	2	4	...	...	...	2	...	...	1	...	1	...	8	1	...	...	14	11	25
July ...	...	...	...	3	3	1	...	1	2	1	1	...	3	...	12	1	...	1	22	8	30
August ...	...	...	1	1	1	3	1	2	5	...	3	...	3	...	9	5	1	...	24	11	35
September ...	1	...	1	1	3	3	2	...	3	...	2	...	...	...	14	3	1	...	28	7	35
October ...	...	1	1	2	1	3	2	1	4	...	3	...	3	...	16	1	...	1	30	10	40
November ...	1	1	1	2	4	3	1	2	5	1	2	...	5	...	8	2	1	...	28	11	39
December ...	1	...	...	3	...	1	...	1	2	...	...	...	2	...	8	1	...	...	13	6	19
Totals ...	8	7	11	24	15	27	12	15	28	5	18	5	25	2	110	19	8	4	245	121	352

APPENDIX X.
ANALYSIS OF INFANT HEALTH CENTRE ATTENDANCES.

METROPOLITAN.

COUNTRY.

INFANT HEALTH REPORTS. Year ending 31st December, 1947.	COUNTRY.																			Total.																			
	Albany.	Beverly.	Boulder.	Hedgestown.	Hanbury.	Busseton.	Corrigin.	Geraldton.	Kalgoorlie.	Kalamang.	Kellerberrin.	Manjimup.	Moora.	Narrogin.	Koreman.	Northam.*	Port Hedland.†	Wagin.	Waroom.		Armadale.	Charmonth.	Colliston.	East Fremantle.	East Victoria Park.†	Fremantle.	Inglewood.	Kalamunda.†	Leederville.	Metville.	Niland Junction.	Nedlands.	North Perth.	Perth.	South Perth.	Sudaco.	Victoria Park.		
Births Reported to Clinics	293	58	290	156	293	241	40	271	564	171	190	108	130	274	107	—	—	86	108	210	296	343	216	—	517	395	—	497	292	447	244	680	665	264	399	333	9,347		
Total Individual No. of Babies attended Centre	394	131	318	218	405	333	192	493	559	251	155	247	249	257	165	—	—	236	290	355	750	732	397	—	711	914	—	718	633	622	496	638	1,241	965	750	591	15,392		
Total Attendances Babies at Centre	4,764	1,142	4,069	2,148	3,842	3,000	192	4,659	4,995	2,427	1,630	2,241	2,113	2,897	2,055	—	—	870	2,062	4,438	7,327	6,387	3,675	—	8,337	8,272	—	8,615	6,157	6,902	6,426	8,678	10,266	9,291	9,161	5,529	154,158		
No. of Individual Expectant Mothers advised	31	12	17	3	23	13	2	22	48	8	13	9	15	19	7	—	—	7	37	2	81	6	5	—	40	14	—	26	14	6	—	39	50	53	72	15	700		
Total No. of Visits to Homes	635	93	692	240	863	245	1	585	1,023	137	—	243	86	458	165	—	—	171	187	300	1,003	743	194	—	773	293	—	962	545	608	418	610	1,068	518	390	230	14,389		
No. referred to Doctors and Hospital—	101	10	28	18	107	35	23	37	85	35	—	38	41	36	25	—	—	27	12	7	113	39	29	—	81	—	—	51	86	83	65	91	100	32	8	41	1,484		
(a) Babies	28	1	3	1	28	11	9	12	37	5	—	6	6	5	3	—	—	6	—	—	65	13	5	—	34	—	—	21	29	7	21	20	13	13	81	12	466		
(b) Mothers	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
No. of Babies on Roll under Nine Months	202	61	109	131	145	193	111	107	201	159	53	138	129	117	70	—	—	121	132	290	322	295	188	—	474	118	—	718	279	360	496	243	881	494	559	348	8,149		
(a) Breast Fed.	64	26	48	70	73	51	51	48	75	69	16	45	51	57	29	—	—	59	49	50	179	134	63	—	239	47	—	282	96	144	115	127	464	266	398	140	3,627		
(b) Comp. Feeding	16	2	15	2	6	28	20	2	16	13	9	11	15	16	14	—	—	9	6	15	31	47	20	—	37	10	—	36	18	23	15	18	85	12	81	23	659		
No. of such Babies Artificially Fed—	73	12	3	32	17	58	16	8	3	46	12	46	22	27	4	—	—	16	38	28	24	33	12	—	42	26	—	57	33	49	25	7	101	59	40	45	1,014		
(c) Fresh Milk	49	20	41	37	49	56	22	47	73	26	16	27	41	17	4	—	—	35	39	41	69	67	87	—	138	30	—	125	56	128	62	48	136	120	27	127	1,923		
(d) Dried Milk	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
(e) Condensed Milk	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
(f) Patent Foods	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
(g) Mixed Foods	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Temporarily closed.

† Partially closed.

APPENDIX XI.
SCHOOL MEDICAL SERVICE.

Examination of Metropolitan and Country School Children, 1947.

	No. Examined.	No. Notified.	No. referred for Medical Attention.	No. for Home Attention.	No. requiring Dental Attention.	Recalls.	Specials.	Skin Complaints.		Nutrition.			Eyes Medical Attention.	Tonsils Medical Attention.
								No.	%	3.	Under 3.	Over 3.		
METROPOLITAN SCHOOLS.														
Boys	4,351	4,227	1,672	1,829	2,419	976	73	—	—	3,546	859	665	—	—
Girls	4,958	4,733	1,732	2,566	2,469	1,097	126	—	—	3,587	717	791	—	—
Total	9,809	8,960	3,404	4,392	4,888	2,073	199	973	8.05	7,133	1,576	1,456	484	2,106
COUNTRY SCHOOLS.														
Boys	4,214	2,353	604	1,309	1,281	1	—	—	—	2,237	1,370	621	—	—
Girls	4,323	2,441	698	1,352	1,399	8	—	—	—	2,443	526	1,300	—	—
Total	8,537	4,794	1,302	2,652	2,680	9	—	265	3.1	4,680	1,896	1,921	325	861
STATE TOTALS.														
Boys	9,065	6,580	2,276	3,128	3,700	977	73	—	—	5,783	2,229	1,286	—	—
Girls	9,281	7,174	2,430	3,918	3,868	1,108	126	—	—	6,030	1,243	2,091	—	—
Total	18,346	13,754	4,706	7,044	7,568	2,085	199	1,238	6.00	11,813	3,472	3,377	809	2,967

APPENDIX XII.
VITAL STATISTICS.

Western Australia.

	1945.	1946.	1947.
Mean Population—			
Males	253,688	255,688	259,438
Females	263,115	238,654	244,107
Total	489,803	494,342	503,545
Births—			
Males	5,400	6,285	6,580
Females	5,272	5,820	6,294
Total	10,672	12,105	12,874
Birth Rate—			
Per thousand of Mean Population	21.79	24.49	25.57
Deaths—			
Males	2,782	2,791	2,778
Females	1,930	1,962	1,945
Total	4,712	4,753	4,723
Death Rate—			
Per thousand of Mean Population	9.62	9.61	9.38
Natural Increase—			
Rate per thousand of Mean Population	12.17	14.88	16.19
*Infantile Mortality per thousand Births—			
Metropolitan Area	25.16	25.01	27.00
Rest of State	34.72	37.84	35.16
Whole State	29.52	31.06	30.92
Stillbirths—			
Metropolitan Area	131	175	156
Whole State	224	293	304

* Excluding stillbirths.

BIRTH, DEATH, AND INFANT MORTALITY RATES AND NUMBER OF STILLBIRTHS, 1938-1947.

	Birth Rate.	Death Rate.	Infant Mortality * (Under 1 year).			Stillbirths.	
			Whole State.	Metropolitan Area.	Rest of State.	Whole State.	Metropolitan Area.
1938	19.87	9.20	33.80	29.76	36.76	224	103
1939	19.41	9.31	40.84	37.98	42.97	213	97
1940	19.37	9.53	44.18	47.15	42.03	242	120
1941	21.36	10.07	35.28	35.21	35.34	257	119
1942	20.70	10.61	36.86	37.52	36.22	208	107
1943	21.83	9.55	32.63	29.66	36.22	278	159
1944	22.43	9.24	32.57	29.27	36.49	274	155
1945	21.79	9.62	29.52	25.16	34.72	224	131
1946	24.49	9.61	31.06	25.01	37.84	293	175
1947	25.57	9.38	30.92	27.00	35.16	304	156

* Exclusive of Stillbirths.

COMPARISON OF INFANT MORTALITY AND GENERAL DEATH RATE.

	Infant Mortality.			General Death Rate.		
	1945.	1946.	1947.	1945.	1946.	1947.
New Zealand (a)	27.99	26.10	24.99	10.07	9.70	9.38
Western Australia	29.52	31.06	30.92	9.62	9.61	9.38
New South Wales	30.63	30.22	29.80	9.32	9.77	9.53
Victoria	28.03	27.16	26.28	10.19	10.60	10.44
Queensland	29.76	29.27	30.82	8.77	9.75	9.15
Tasmania	27.48	30.23	27.31	9.74	10.14	9.17
South Australia	28.08	27.07	24.27	9.62	10.15	9.61

(a) Non-Maori.

TUBERCULOSIS.

Year.	TUBERCULOSIS OF RESPIRATORY SYSTEM.				OTHER FORMS OF TUBERCULOSIS.			
	Cases notified.	Deaths.	Deaths per 1,000 of Population.	Percentage of Total Deaths.	Cases notified.	Deaths.	Deaths per 1,000 of Population.	Percentage of Total Deaths.
1938	247	177	0.38	4.18	...	12	0.026	0.28
1939	202	179	0.38	4.13	3	14	0.030	0.32
1940	231	181	0.38	4.03	...	15	0.032	0.33
1941	154	185	0.39	3.88	2	22	0.046	0.46
1942	113	175	0.37	3.45	17	17	0.036	0.33
1943	273	144	0.30	3.14	54	9	0.019	0.20
1944	219	134	0.28	2.99	7	15	0.031	0.33
1945	271	149	0.30	3.16	14	14	0.029	0.30
1946	343	163	0.33	3.43	69	7	0.014	0.15
1947	372	128	0.25	2.71	40	13	0.026	0.28

INCIDENCE AND MORTALITY OF NOTIFIABLE INFECTIOUS DISEASES, 1947.

	Cases Reported.	Deaths. (b)		Cases Reported.	Deaths. (b)
Ankylostomiasis	(a) 102	...	Scarlet Fever	145	...
Amoebiasis	(a) 35	...	Typhoid Fever	36	2
Amoebic Dysentery	18	1	Typhus Fever and Typhus-like Diseases	142	3
Bacillary Dysentery	8	...	Pulmonary Tuberculosis	372	128
Cerebrospinal Meningitis (Meningococcal)	30	5	Other Tuberculosis	40	13
Leprosy	38	2	Undulant Fever	9	...
Acute Infectious Encephalitis	1	1	Rubella	32	...
Malaria	(a) 295	...	*Tetanus	3	11
Puerperal Fever	6	2	Tetanus Neonatorum ... ..	...	...
Acute Poliomyelitis and Acute Polioencephalitis	2	...	Infective Hepatitis (Weil's Disease)... ..	2	...
			Diphtheria	339	8

(a) Services.

(b) Civilians only.

*Not notifiable until Gazetted on 4/9/47.

APPENDIX XIII.

WESTERN AUSTRALIA.

INCIDENCE OF INFANT MORTALITY SHOWN IN DISTRICTS FOR YEAR, 1947.

Cause of Death	Metro- politan.	Northern Agri- cultural.	South Western.	Eastern Goldfields.	Northern Goldfields.	North- Western.	Northern.	TOTALS.
Malformations—								
Acephalia	1	.....	1	.....	.....	.....	.....	2
Achondroplasia	1	.....	.....	.....	.....	.....	.....	1
Hydrocephalus	2	.....	1	2	.....	.....	.....	5
Neurological Defect	1	.....	.....	.....	.....	.....	.....	1
Other Heart Conditions	24	5	7	2	.....	1	.....	39
Patent Ductus	1	.....	.....	.....	.....	.....	.....	1
Spina Bifidi	2	.....	1	1	.....	.....	.....	4
Umbilical Hernia .....	.....	1	.....	.....	.....	.....	.....	1
Cerebral—								
Cerebral Haemorrhage	14	3	8	3	.....	.....	.....	28
Cerebral Haemorrhage (Torn Tetorium)	3	.....	.....	.....	.....	.....	.....	3
Cerebral Injury	3	.....	.....	.....	.....	.....	.....	3
Encephalitis	1	.....	1	1	.....	.....	1	4
Epilepsy	1	.....	.....	.....	.....	.....	.....	1
Toxoplasmosis	1	.....	.....	.....	.....	.....	.....	1
Blood Conditions—								
Anaemia	1	.....	.....	.....	.....	.....	.....	1
Haemolysis of new born	3	.....	.....	2	.....	.....	.....	5
Icterus gravis Rh. Incompat- ibility .....	.....	.....	.....	1	.....	.....	.....	1
Thrombosis	1	.....	.....	.....	.....	.....	.....	1
Respiratory Conditions—								
Anoxaemia	1	.....	.....	.....	.....	.....	.....	1
Asphyxia .....	.....	.....	1	.....	.....	.....	1	2
Atelectasis	8	4	4	1	.....	.....	.....	17
Bronchitis .....	.....	1	.....	.....	.....	.....	.....	1
Pneumonia	14	11	6	9	.....	3	7	50
Intestinal Conditions—								
Atresia (Children's Hospital)	4	.....	.....	.....	.....	.....	.....	4
Convulsions .....	.....	1	1	2	.....	1	.....	5
Obstruction	1	1	.....	.....	.....	.....	.....	2
Pancreas, fibrocystic	1	.....	.....	.....	.....	.....	.....	1
Peritonitis	1	.....	.....	.....	.....	.....	.....	1
Pyloric Stenosis .....	.....	.....	.....	.....	.....	.....	1	1
Sclerosis	1	.....	.....	.....	.....	.....	.....	1
Skin Conditions—								
Dermatitis, exfoliative .....	.....	1	.....	.....	.....	.....	.....	1
Eczema	1	1	.....	.....	.....	.....	.....	2
Erythrodermia	1	.....	.....	.....	.....	.....	.....	1
Puerpura fulminans	1	.....	.....	.....	.....	.....	.....	1
General—								
Debility	1	.....	3	.....	.....	.....	.....	4
Exhaustion	1	.....	.....	.....	.....	.....	.....	1
Malnutrition	2	2	1	.....	.....	.....	.....	5
Marasmus	1	.....	2	.....	.....	.....	.....	3
Mastoiditis	8	3	.....	.....	.....	.....	1	12
Maternal Placentapraeva .....	.....	1	1	.....	.....	.....	.....	2
Mongolism	3	.....	1	.....	.....	.....	.....	4
Myocarditis toxic	1	.....	1	.....	.....	.....	.....	2
Oedema .....	.....	1	.....	.....	.....	.....	.....	1
Trachea, compression of .....	.....	1	.....	.....	.....	.....	.....	1
Tumours	4	.....	.....	.....	.....	1	1	6
Infectious Diseases—								
C.S.M.	3	.....	1	1	.....	.....	1	6
Diphtheria	1	1	2	.....	.....	.....	.....	4
Enteritis	10	.....	9	.....	1	.....	3	23
Para typhoid	1	.....	.....	.....	.....	.....	.....	1
Syphilis (Congenital)	2	.....	.....	.....	.....	.....	.....	2
Tetanus	1	.....	.....	.....	.....	.....	.....	1
Tuberculosis—								
Intestinal	2	.....	1	.....	.....	.....	1	4
Pulmonary .....	.....	.....	1	.....	.....	.....	.....	1
Whooping Cough	1	1	1	.....	.....	.....	.....	3
Carried forward.....	136	39	55	25	1	6	17	279

INCIDENCE OF INFANT MORTALITY—continued.

Cause of Death	Metro- politan.	Northern Agri- cultural.	South Western.	Eastern Goldfields.	Northern Goldfields.	North- Western.	Northern.	TOTALS.
Brought forward ...	136	39	55	25	1	6	17	279
Accidents, etc.—								
Coroner (no finding)	4							4
Drowning			2					2
Inhalation Vomica		1						1
Motor Car				1				1
Murder			1					1
Sepsis following burns		1						1
Suffocation					1	1		2
Total	140	41	58	26	2	7	17	291
Premature Total...	71	17	28	13		1	3	133
GRAND TOTAL	211	58	86	39	2	8	20	424

WESTERN AUSTRALIA.

INCIDENCE OF INFANT MORTALITY SHOWN IN DISTRICTS FOR YEAR, 1947.

Cause of Death	Metro- politan.	Northern Agri- cultural.	South Western.	Eastern Goldfields.	Northern Goldfields.	North- Western.	Northern.	TOTALS.
PREMATURITY.								
K.E.M.H.	28		*2					
St. John of God, Subiaco	14							
Parkview, Subiaco	1							
Kensington, Subiaco	4							
St. Helens, East Fremantle	2							
Hillcrest, North Fremantle	4							
Bundji Kudji, Beaconsfield	2							
Tressillian, Nedlands	1							
St. Annes, Mt. Lawley	5							
St. Davids, Mt. Lawley	1							
Beaufort, Midland Junction	4							
St. Andrews, Midland Junction	3							
Devonleigh, Cottesloe	1							
Royal Perth	1							
								71
St. John of God, Bunbury			4					
Bridgetown			1					
Busselton			2					
Carrolup (Native)			1					
Collie			1					
Cranbrook			1					
Dwellingup			2					
Gnowangerup			4					
Katanning			1					
Manjimup			1					
Mt. Barker			3					
Narrogin			5					
Pingelly			1					
Wagin			1					
								30
Kalgoorlie				13				13
Carnarvon						1		1
Derby							1	1
Wyndham							2	2
								3
St. John of God, Geraldton		1						
Geraldton		5						
Mingenew		1						
Moore River		2						
Moora		1						
Morawa		1						
Northam		3						
Kununoppin		1						
Quairading		1						
Toodyay		1						
								17
Total Premature	71	17	30	13		1	3	135

* Busselton, includes 1 Toxaemia.

APPENDIX XIV.
STILLBIRTH.

123 stillbirths were reported on special forms which were reasonably well completed for 112 cases. Many of the details furnished are condensed into the following table:—

	Maternal Ages.						Totals.
	15-19.	20-24.	25-29.	30-34.	35-39.	Over 39.	
No. of stillbirths specially reported	5	26	34	13	19	15	112
No. with previous maternal history of abortion/stillbirth	1	4	4	4	7	2	22
No. of primiparae	3	18	18	3	7	3	52
No. of premature babies .....	.....	1	5	5	1	2	14
Toxaemia.—Eclampsia Systotic B.P. of 150 mm. and over, and/or Albuminuria	1	11	*11	3	6	*6	38
No. of A.P.H. cases .....	.....	2	4	3	3	2	14
No. of breech, brow and footling presentations	1	.....	4	3	3	4	15
No. without F.H.S. prior to delivery	1	10	5	5	9	4	34
No. of instrumental deliveries .....	.....	4	7	.....	3	2	16

*Including 1 case of Eclampsia.

Caesarian sections were undertaken in four cases; in one instance the pelvis was reported as contracted. Two of the mothers were diabetics. No antenatal care is mentioned on over 60% of the forms, but this is believed to be a matter of non-completion rather than an indication of actual happening.

The cord was reported as prolapsed or twisted in four instances. Four of the babies were malformed and in three instances birth occurred before the mother reached hospital.

APPENDIX XV.

ABORTIONS.

Returns have been received for 226 cases of abortion. For the purpose of analysis these have been divided into four main groups: (a) Married primigravidae; (b) Other married women; (c) Unmarried primigravidae; (d) Other unmarried women.

(a) Married primigravidae: In this group of 12 cases, 11 are reported as "spontaneous." Expulsion occurred during the 3rd month (7 cases), the 4th month (1 case), the 5th month (2 cases) and the 7th month (1 case). One case was induced by rupture of the membranes during the seventh month on account of toxaemia.

(b) Other married women: Of the 183 cases in the group, 159 were said to have been "spontaneous." They occurred during the 1st month (1 case), 2nd month (49 cases), 3rd month (62 cases), 4th month (22 cases), 5th month (19 cases), 6th month (3 cases), and 7th month (3 cases). In nine cases, pregnancy was terminated on medical grounds by (i) Hysterectomy, for tuberculous spine (2nd month) and for incipient cardiac failure (3rd month), (ii) Curettage, mitral stenosis (2nd month), chronic debility (2nd month), mental disorder (2nd month) haemorrhage following operation on cyst (2nd month), chronic nephritis (2nd month), hyperemesis gravidarum (3rd month) and foetal death (4th month).

Self interference is believed to have caused 14 abortions. In all of these a syringe is said to have been employed. Five were in the 2nd, six in the 3rd, and three in the 4th month of pregnancy. In a case of alleged unskilled interference by another person a catheter is said to have been employed during the 4th month.

(c) Unmarried primigravidae: Of the 23 cases in this group, one, occurring in the 1st month; three, in the 2nd month; three, in the 3rd month and one in the 4th month (total eight) are reported as "spontaneous." Self interference in the 2nd and 3rd months is reported to have terminated 12 pregnancies; for five of these cases a syringe was employed; "pills" were taken in four cases; a catheter was used in one instance while the method is unspecified for two cases.

Unskilled interference by other persons using unspecified methods is said to have occurred in three cases at the 2nd, 3rd and 4th months respectively.

(d) Other unmarried women: In this group of eight cases all are said to have been "spontaneous." One case occurred in the 1st, five in the 2nd, one in the 4th and one in the 5th month of pregnancy.

Unskilled interference thus accounted for some 8% of the cases among the married, while the corresponding figure for the unmarried is 48%.

Of the total 226 cases under review, 186 (82%) are said to have occurred "spontaneously." Elsewhere in this report it is noted that the percentage Rh negatives among 121 aborting persons was 14.9% and that the incidence of syphilis among 205 cases was 0.5% as compared with 0.0% in 310 normal pregnant controls. Agglutinins for *B. abortus* have also been sought. The percentage of "spontaneously" aborting women showing agglutinins at a titre of 1/100 or over was 10% (41 cases) compared with 9.5% among 54 normal pregnant women. One of the cases (titre 1/100) aborted in the 3rd month; two (titre 1/200) in the 2nd and 3rd months, and one (titre 1/400) in the 5th month. The series is small and the presence of *B. abortus* agglutinins may not always be explicable in terms of specificity but it appears that the infection cannot be excluded as an occasional determining or predisposing cause until larger numbers have been examined.

It can, however, be concluded that the Rh factor and infection by *T. pallidum* or *B. abortus* are not major causes of abortion in this State. The factors causal of the numerous "spontaneous" abortions must be sought elsewhere.

APPENDIX XVI.

NORTH WEST.

Road Board.	Population.			Area of Road District.	Maximum possible Health Revenue from rates (Health District as at 30th June, 1947.)	
	Whites and Coloured other than natives.	Half Castes.	Full Bloods.		Scale " A " XI.	Scale " B " X2.
North-West—				sq. miles.		
Ashburton (Onslow)	336	60	310	25,281	44	66
Roebourne	225	} approx. 93	} 363	8,452	50	75
Tableland	196				14,871
Port Hedland	393	149	336	9,348	83	124
Nullagine	179	20	571	92,568	.....	.....
Marble Bar	344	51	461	69,526	12	18
Kimberley—						
Broome	484	536	1,221	20,740	114	171
West Kimberley	762	100	2,297	39,655	43	64
Hall's Creek	204	82	1,254	31,874	.....	.....
Wyndham	557	70	750	46,791	46	69

X1 Scale " A "—Calculated on maximum rate permissible under Section 39 (2)b, *i.e.*, 6d. in the £ on annual values or ¼d. in the £ on unimproved values.

X2 Scale " B "—Calculated on maximum rate permissible under Section 39 (2)a, (Areas specially declared by the Governor), 9d. in the £ on annual values or 1¼d. in the £ on unimproved values.

APPENDIX XVII.
WESTERN AUSTRALIA.
Darby Leprosarium—Admissions and Discharges for the year 1947, compiled from Monthly Returns of the Superintendent.

Months of Year, 1947.	ADMISSIONS.						DISCHARGED.						Inmates remaining in Leprosarium.						
	MALE.			FEMALE.			MALE.			FEMALE.			Male.	Female.	Total Remaining.				
	Admitted.	Re-admitted.	Total Male.	Admitted.	Re-admitted.	Total Female.	Discharged Cured.	Discontinued.	Discontinued.	Discontinued.	Discontinued.	Discontinued.	Discontinued.	Discontinued.	Discontinued.	Total Discharged.			
January	3	2	5	1	1	2	—	—	—	—	—	—	—	—	—	1	135	102	237
February	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	136	102	238
March	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	134	103	237
April	1	—	1	1	—	2	6	—	—	—	—	—	—	—	—	9	129	101	230
May	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	126	100	226
June	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	128	100	228
July	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	125	99	224
August	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	123	99	222
September	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	122	99	221
October	4	1	5	2	1	3	5	—	—	—	—	—	—	—	—	7	122	101	223
November	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	127	102	229
December	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	126	102	228
TOTALS	25	4	29	10	2	12	41	13	3	3	4	23	11	1	35	35	—	—	—

APPENDIX XVIII.

HEALTH DEPARTMENT.

Revenue and Expenditure for Year 1947.

REVENUE.

	£	s.	d.
License Fees	78	8	6
Meat Inspection Fees	7,835	9	10
Village Area Sanitary Contracts	35	9	9
Patho. Laboratory	659	6	0
Sanitation Refunds	158	19	8
Inspection of Plans (Septic Tanks)	1,214	8	6
Miscellaneous	1,400	12	11
Nurses and Midwives Registration and Examination Fees	512	5	9
Local Health Authorities Recoups	359	7	0
	<u>£12,254</u>	<u>7</u>	<u>11</u>

EXPENDITURE.

	£	s.	d.
Salaries	30,634	3	1
Village Area Sanitation	27	6	8
Payments Local Health Authorities	2,464	16	9
School Hygiene	209	18	0
Travelling and Transport	1,464	2	5
Postages and Telephones	363	12	3
Laboratory	562	18	9
Veneral Diseases	3,911	8	5
Miscellaneous	951	18	3
Infant Welfare Centres	6,373	13	3
Maintenance and Transport of Lepers	8,698	8	1
Medical Officer and School Dentists Travelling	1,458	18	1
Diphtheria Immunisation	529	2	2
T.B. Clinics	5,859	6	11
	<u>£32,875</u>	<u>10</u>	<u>0</u>
Sanitation Government Buildings	£10,026	13	10
Total Expenditure	£73,536	6	11
Less Commonwealth Grant for Veneral Diseases	£1,741	16	6
	<u>£71,794</u>	<u>10</u>	<u>5</u>

