Report of the Commissioner of Public Health / Western Australia.

COMMISSIONER OF PUBLIC HEALTH

WESTERN AUSTRALIA

REPORT

FOR THE YEAR 1961

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REPORT

OF THE

Commissioner of Public Health

for the year 1961

Presented to both Houses of Parliament

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The Honourable Ross Hutchinson, D.F.C., M.L.A.,

MINISTER FOR HEALTH

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Sir,

I have the honour to submit the Report of the Department of Public Health for the Year 1961.

LINLEY HENZELL, M.D. (London), B.Sc., D.P.H.,

Commissioner of Public Health.

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DEPARTMENT OF PUBLIC HEALTH

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Report of the Commissioner

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To the Honourable the Minister for Health.

I have the honour to submit the report of the Department of Public Health for the year 1961.

VITAL STATISTICS

In the course of the year there was an increase in the population of 2·00 per cent. (from 722,900 to 737,367).

The following are the main vital statistics, the figures in brackets being those for the whole of Australia :—

Birth Rate—23·16 (22·87) per 1,000 of mean population.

Death Rate—7·77 (8·48) per 1,000 of mean population.

Rate of natural increase in population, *i.e.*, Excess of Births over Deaths per 1,000 of mean population—15·39 (14·53).

The Maternal Mortality was 0·41 (0·45) per 1,000 live births. This rate remains approximately stationary.

The Infant Mortality rate was 19·67 (19·54) per 1,000 live births—a decrease from the preceding year when it was 21·62 (20·16).

The Still Birth rate was 13·86 per 1,000 total births, those for the preceding two years being 13·18 and 12·98 respectively.

It will thus be seen from these figures that the general health of the community continues to be satisfactory.

STATE HEALTH COUNCIL

The constitution of the Council is as follows :—

Mr. George Pestell—Representing the Royal Australasian College of Surgeons.

Dr. Cyril Fortune—Representing the Royal Australasian College of Physicians.

Dr. Roland Nattrass—Representing the Royal Australian College of Obstetricians and Gynaecologists.

Dr. D. M. Clement, Dr. H. Leigh Cook, Dr. I. O. Thorburn, Dr. M. F. Williams—Nominated by the British Medical Association.

Professor Gordon King, Professor C. W. D. Lewis, Professor E. G. Saint—Representing the Faculty of Medicine of the University of Western Australia.

Professor W. B. Macdonald—Professor of Child Health, University of Western Australia.

Professor K. J. Sutherland—Dean of the Faculty of Dental Science of the University of Western Australia.

Dr. F. G. Prendergast—Representing Psychiatrists in private practice.

Inspector-General of Mental Services (Dr. D. W. Moynagh) or his Deputy.

The Commissioner of Public Health, Dr. Linley Henzell.

The Deputy Commissioner of Public Health, Dr. W. S. Davidson.

The Under Secretary for Health, Mr. J. J. Devereux.

In the course of the year, Professor K. J. Sutherland and Dr. F. G. Prendergast were appointed to the Council.

In the course of the year there were three meetings of the State Health Council ; one meeting each was held of the Maternal and Infant Health Committee, the Mental Health Committee and the Dental Health Committee.

Of the various matters which were considered by the Council, mention might be made of the following recommendations :—

The Council approved in principle of the establishment of a permanent camp for natives in the metropolitan area, such camp to be near transport, shops and schooling, and so constructed as to conform to a high housing standard so as to safeguard high standards of infant and child welfare.

A special meeting of the Council was held in June at the request of the Hon. the Minister to consider the report issued by the Special Committee appointed by him to enquire into Metropolitan Hospital Needs. There were present by invitation Professor Gordon Stephenson, Professor of Town Planning in the University of W.A., and Mr. R. G. Hayward, Secretary of the W.A. Branch of the British Medical Association.

Mr. Hayward gave details to Council of the demographic statements which he had prepared relating to the distribution of doctors in the State, and his estimated requirements of the community for the need of medical practitioners for the period up to the year 1980.

Professor Stephenson then outlined the numerous points which were taken into consideration by the Special Committee when preparing its report on Metropolitan Hospital Needs.

The salient feature of this report was its recommendation that there should be established a major teaching hospital on a proposed medical centre on University land at Hollywood adjacent to the Perth Chest Hospital. It gave reasons why the site of the Royal Perth Hospital was not considered suitable for this long range project.

Following discussions with Professor Stephenson, the Council endorsed in principle the overall plans of the Committee and the siting and function of the proposed hospitals outlined in the report.

At other meetings Council resolved to draw to the attention of the Hon. the Minister the fact that more hospital beds are required for the treatment of hemiplegics at Shenton Park Annexe.

After further consideration, Council reiterated its previous opinion that vaccination against smallpox was preferable over the age of 12 months rather than earlier.

Council resolved to recommend to the Department that it should investigate the possibility of conducting a Diabetic Detection Survey in a restricted locality.

Council also recommended the adoption of a personal medical record card and agreed that an approach should be made to the Health Education Council, asking it to undertake the preparation and printing of these cards.

The following resolutions of the Dental Health Committee were adopted by the Council :—

(1) Regarding the use of fluorides in the prevention of dental caries, the Committee considered that public water supplies should be fluoridated and that alternative methods of providing fluoride, although beneficial to individuals, made little impact on the problem as a whole.

(2) The Committee resolved that the Hon. Minister for Health be advised to expedite the introduction of a Bill in Parliament to authorise the fluoridation of public water supplies.

(3) The Committee recommended that fluoride compounds be removed from the Tenth Schedule of the Pharmacy and Poisons Act to allow their sale without prescription.

(4) The Committee recommended that dentrifices containing less than 0·5 per cent. of fluoride be exempt from the Schedules of the Pharmacy and Poisons Act.

(5) The Committee wished to inform the Hon. Minister that in the Committee's opinion there was insufficient evidence that fluoride compounds added to dentifrices improved the effectiveness of these dentifrices in the prevention of dental caries.

Council endorsed the principles concerning the new Mental Health legislation which had been submitted to it by the Hon. the Minister before the Bill incorporating these principles was presented to Parliament.

As the years progress, the value of the State Health Council in its role as a forum for discussion on matters of policy concerning the health of the community and its value as the source of expert medical advice have become increasingly apparent. It is considered that it acts in a constructive manner to correlate and co-ordinate all aspects of professional opinion in the State, and it is hoped that those sections of the medical profession outside the Public Health Department feel that they are members of a working partnership. It is trusted that the Council will continue to operate in this manner in the future.

LOCAL AUTHORITIES

The continued collaboration between this Department and other Government Departments on the one hand and the Local Authorities on the other, in connection with the Metropolitan Refuse Disposal Committee and the Fly Control Committee, have shown the value of combined efforts in these spheres.

The Fly Control Committee's work is considered to be of very great importance, particularly in view of the forthcoming British Empire and Commonwealth Games to be held in Perth in November, 1962. It cannot be emphasised too often or too definitely that fly control is the business of every member of the community and that the only way to reduce the fly population is to prevent them from breeding.

With some success in the attack on the house fly and the blowfly, the problem of the bush fly is becoming very prominent. Unfortunately, the Government Entomologist, Mr. Jenkins, advises that little is known of the breeding habits of the bush fly and there is urgent need for some investigations to be carried out in this respect. This matter will receive consideration as soon as possible.

Once more the temporary employment by Local Health Authorities of students on vacation in the summer to act as Fly Control Officers was most successful, and it is anticipated that it will be extended next year.

Western Australia has an unenviable reputation concerning its fly population and the fatalistic, resigned and complacent attitude of many citizens should be sharply and continuously jolted because it is possible to prevent the breeding of flies if every citizen plays his part.

LEGISLATION

The following amendments were made during the year :—

Health Education Council Act.—Consequent on the appointment of a Dental Health Committee of the Health Education Council, the Act was amended to provide for the appointment of a dental practitioner on the Council.

Medical Act.—This Act was amended to permit the registration of visiting medical practitioners who receive short-term appointments to hospitals or institutions for the purpose of research or teaching, etc.

The *Fly Eradication Regulations* were published on 2nd March, 1961, and the *Food Hygiene Regulations* on 20th September, 1961.

GERIATRICS

Improvements in social conditions and new methods in treating disease—especially the antibiotics in the control of infection, have greatly prolonged life in the last 50 years. It is common knowledge that a combination of a birth rate maintained at a high level, a great reduction in the infant mortality rate, the control of communicable disease, together with the prolongation of life in older age groups by modern medical methods, has caused what has been aptly named a " population explosion." The world's population is now increasing at a rate of 1·7 per cent. per year and it is a matter of simple arithmetic to estimate what it will be in the future, on present trends, at any particular year.

The expectation of life at birth has greatly increased (from 53 years in 1900 to 70 years in 1960) in Australia. Numerically, the numbers of persons in the community over the age of 65 is steadily increasing. In Western Australia census figures show that these are :—

	1947	1954	1961
65 years and over	40,621	47,289	55,097
Total population	502,480	639,771	736,629
Percentage 65 years and over	8·08%	7·39%	7·48%

The proportion of the population over the age of 65 years in this State remains fairly constant. This is, temporarily, at any rate, due to the high birth rate, low childhood mortality rate, and an increase in the number of younger persons in the population caused by the immigration of persons of younger age groups.

Increasing infirmity inevitably results in a large number of elderly people becoming unable to care for themselves to a greater or lesser degree, until many ultimately need to be cared for by others, either in their own homes, or in institutions or hospitals of one kind or another.

Modern care of the older age groups demands that all efforts should be made to keep them physically and mentally active, able to care for themselves, in whole or in part, and to retain them in the community life in which they have always lived. The greatest happiness of the greatest number of old people is best achieved by encouraging them to continue to live in their own homes.

However, there are a number of reasons why some old people cannot continue to live in their own homes. A breakdown in physical or mental health may lead to a breakdown in social relationships and removal from the home surroundings may become inevitable. Nevertheless, the number permanently removed from their own homes should be as small as possible.

Under modern conditions it has been estimated that about 3 per cent. of all persons over the age of 65 are accommodated in " institutions " of one kind or another. In Great Britain in 1950 it was estimated that of this 3 per cent. (roughly 150,000), 70,000 were in infirmary beds and the opinion was expressed that of these, the majority did not need that sort of provision.

In the 1950 United States Census, 3·1 per cent. of the population over 65 were in " institutions " of various sorts. Of these, 56 per cent. were in homes for the aged and nursing homes, 37 per cent. in mental hospitals and the rest in chronic disease hospitals.

An attempt has been made to form some conclusions concerning the position in Western Australia. This is fraught with many difficulties. In many so-called hospitals ("C" Class hospitals) persons are admitted as "patients" who would perhaps be more accurately described as needing institutional and custodial care. In some cases the comparatively infirm are nursed in bed and treated as hospital patients, with the result that they rapidly become such, whereas more appropriate attention would keep them ambulant and able to care largely for themselves. In very few of these institutions is there any provision for a rehabilitation programme, and little attempt can be made to return patients to the community.

It is difficult to obtain completely accurate information concerning the amount and type of accommodation provided for elderly people. The number of "C" Class hospital beds is accurately known as they are licensed under the Health Act. Accurate figures are available in the Mental Health Department. It is in the "Home" accommodation that there could be a lack of accuracy. However, the Commonwealth Department of Social Services has supplied a list of Homes according to their records and all these have been written to and have given the amount of accommodation available.

The following is a summary of the estimated available accommodation in this State for persons receiving "institutional" care and treatment for reasons which may be termed "geriatric":—

"Home" Beds for the Elderly—		
Metropolitan	1,212	
Country	140	
		1,352
Hospital Beds for Geriatric Cases—		
Metropolitan "C" Class Hospitals—Private	1,122	
Country "C" Class Hospitals—Private	12	
	1,134	
Home of Peace	252	
Mt. Henry	175	
Sunset	251	
Woodbridge	35	
Wooroloo	174	
Claremont Mental Hospital (approximately)	200	
		2,221
Occupying "A" Class Hospital Beds—		
Royal Perth Hospital and Fremantle Hospital (12½% of total beds)	114	
Country Hospitals (approximately 25% beds, long stay)	380	
		494
Total		4,067

The estimates of 12½ per cent. of Royal Perth and Fremantle Hospital accommodation may reasonably be considered to be occupied by long-stay geriatric cases. The same applies to 25 per cent. of accommodation in country hospitals.

The total institutional accommodation in use in the State is therefore of the order of 1,352 plus 2,715 = 4,067.

At the 1961 Census there were 55,097 persons over the age of 65 years in the State. Therefore 7·4 per cent. (approximately) of persons over the age of 65 are accommodated in "institutional" beds. It is realised that these calculations are approximate because of the difficulty (as in other countries) of obtaining accurate information. Nevertheless, there can be no doubt that the figure is of the order of 7 per cent., and this should be compared with the British figure of 3 per cent. and the United States figure of 3·1 per cent., in 1950.

If one now turns to the number of hospital beds available for geriatric cases in this State, a similar gross surplus is found in comparing them with those of countries of a comparable standard of social development.

There are approximately 2,700 beds for geriatric (long-stay) cases for a State population of 736,000 or 3·8 beds per 1,000 population. This figure should be compared with an accepted British standard of 1·5 per 1,000 for a population of which 11 per cent. is over the age of 65 years, compared with the Western Australian figure of 7·5 per cent. over the age of 65 years. An adjustment according to these different percentages should reduce our geriatric bed requirement approximately from 1·5 per 1,000 to $\frac{7 \cdot 5}{11} \times 1 \cdot 5$ = 1·0 per 1,000.

Thus, in Western Australia, there are about three times as many geriatric beds available than should be the case if our hospital and medical services were organised on a more up-to-date basis.

What are the reasons for this gross surplus and extravagance in the provision of "institutional" accommodation? An answer to this may be found by making a brief examination of the position in Great Britain where it has been found that the provision of certain social services greatly reduces the need to admit elderly persons to "homes" and hospitals. These services include :—

Out-patient geriatric services attached to general hospitals.

Day hospitals associated with general hospitals.

Mobile physiotherapy services.

Provision of appliances for the disabled.

Follow-up home nursing services.

Home help services.

Meals-on-wheels.

Local social centres.

Provision of housing units for the elderly, not in large blocks of flats or the large out-moded "homes," but in groups of small numbers distributed throughout the community.

Laundry facilities.

Library services, etc.

These comments are offered with due regard and tribute to the excellent work done in this State by the League of Home Help, the Silver Chain, various Church organisations and certain local authorities.

There is very little attempt made to rehabilitate "patients" admitted to our "C" Class hospitals. Practically no physiotherapy or occupational therapy services are provided. It is often easier for the staff to nurse a frail patient in bed than to encourage him to get up and about and so fend for himself. It is only too true to say that much of our accommodation of this type is used as a dumping ground for elderly persons and that discharges home are noted for their infrequency. In general, we have plenty of quantity, but too little quality. These patients and their "treatment" are the cause of the Commonwealth Government expending huge sums on Hospital, Pensioner and Pharmaceutical Benefits, and there is in operation a process of government subsidy of neglect.

It may safely be said that the socio-medical problems of the elderly probably constitute our most urgent public health challenge, especially as they are so closely related to the mental health problems of the community.

It is suggested that the following steps be taken to begin to combat this melancholy position :—

(1) The progressive development of social centres for the elderly, by a co-operation of voluntary agencies, churches, local authorities and State and Federal Governments.

(2) The continuing development of services attached to these centres, such as Meals-on-wheels, Home helps, home nursing, library services, etc., which will enable elderly people to continue living in their own homes.

(3) The development of geriatric in-patient and out-patient services in our metropolitan hospitals, together with

(4) Day hospital development.
These of necessity include progressive rehabilitation services, with an adequate staff of social workers, occupational therapists, etc.

(5) An improvement in the standard of medical, nursing and rehabilitative care given in geriatric hospitals maintained by the State Government and in private "C" Class hospitals.

It is to be expected that as these standards improve there will be less apparent need for hospital beds of this type, and the less efficient of them will go out of existence.

(6) The building of further institutional accommodation of this type should not be encouraged for the present. Efforts should be directed to the progressive development of the social services already outlined in order to keep elderly persons *out* of institutional beds and in their own home surroundings.

(7) A progressive educational programme in the needs of the elderly. This would include education of, amongst others, the general public, the medical and nursing professions, local authorities, voluntary and church bodies. The assistance of the Health Education Council should be sought.

It is realised that to undo a practice of "laisser-faire" and extravagance, and to substitute for it an up-to-date practice in line with modern thought will involve considerable effort and time.

Insofar as the Public Health Department is concerned, it is considered that this is our most urgent task at the present, and that the Department has not the requisite staff to cope with it adequately. A beginning has been made by the recommendation of the appointment of an Assistant Principal Medical Officer whose efforts should ease the burden on the Commissioner of Public Health and Principal Medical Officer, and the Deputy Commissioner of Public Health. Geriatrics is now a specialty in medical practice and social medicine. As a next step it is considered that an experienced medical officer, well-qualified academically and well-experienced clinically, should be appointed, and that, subject to the Commissioner of Public Health, he be responsible for the organisation of these various geriatric services. Such medical men are not easy to obtain, and it is recommended that efforts be continued to find such a person.

In these observations, the picture of the State as a whole has been outlined. The Deputy Commissioner of Public Health, Dr. W. S. Davidson, has made a closer study and accurate assessment of metropolitan needs and has prepared a report which follows immediately. Note should be made of his comments concerning " multiple pathology " in the elderly and of the need, in every case, for a complete clinical assessment of the patient's condition before treatment and rehabilitation are planned.

GERIATRICS : METROPOLITAN AREA

The social, economic and medical problem of dealing with old age has arisen from improvements in the last 100 years in social welfare, preventive medicine, clinical medicine, and therapeutics and the resulting increase in the number of people who live to old age. Removing the problem of premature death from disease produces the problem of old age and as it is no solution to a problem to solve it merely by creating another problem, a responsibility still rests with Society and Medicine to alleviate the suffering of the aged and the strain they place on the general economy.

Much has been said and written on this subject but in order to understand fully the action taken in other countries and the possible application of their methods to our own problem, it is necessary to understand fully what the problem is. In other words, instead of relating philosphical answers to philosophical questions, we must determine the extent of our own problem and select the answer best suited to it.

Our figures make it abundantly clear that the real problem lies in the age group 70 years and over. This age group, although only 5·7 per cent. of the total population, occupies over 30 per cent. of the beds in our Public General Hospitals. In addition, this age group overflows into the " C " class or convalescent hospitals occupying therein 1,300 beds or a number equivalent to our total Public General Hospital beds. Further than this, aged persons occupy homes for the aged to the extent of another 1,300 beds excluding homes built for pensioners by the State Housing Commission.

Table 1 shows the metropolitan male and female populations aged 70 years and over and the number of beds in various categories occupied by them per thousand aged males or aged females. The numbers per thousand cannot be compared directly with similar figures from other countries because metropolitan institutions have a role to play in covering the rural population. The extent to which this rural commitment increases metropolitan figures has not been accurately determined. The main objective in displaying the figures is to show differences between male and female requirements and draw conclusions therefrom.

A factor which plays a big part in the discrepancy between male and female demand for beds in the metropolitan area is the difference in distribution of the sexes in the old age groups throughout the State. Although total figures for the State are 19·7 thousand old women and 15·1 thousand old men, in the metropolitan area these populations are 14·8 thousand and 8·8 thousand respectively. There is therefore a very distinct gravitation of elderly females to the metropolitan area, making their number 60 per cent. higher than that for males, whereas in the country there are more elderly males than females.

In the metropolitan area it will be seen that the elderly male makes a higher demand in proportion to his numbers on acute hospital beds than the elderly female—12·8 beds per thousand elderly males compared to 8·9 beds per thousand elderly females. Wilson *et alia* in discussing Multiple Pathology in the Elderly, indicated that in their series of 200 unselected cases presenting as sick there was an average of 6·4 diseases per elderly male and 5·4 per elderly female. It would therefore appear that the higher proportion of acute beds for males is required partly to meet a higher proportionate demand from country areas and partly because the elderly male is more subject to acute disease.

There is little significant difference in the demand for residential accommodation between male and female. In the males it is 61 beds per thousand and in the females 57 beds per thousand. When, however, we come to the " C " Class hospital, which is classified as a convalescent hospital but, in fact, specialises in long stay geriatric cases, we find that the elderly female demand on such beds is out of all proportion to that of the elderly male, namely 64 per thousand against 39 per thousand in respective populations 70 years and over.

An analysis of the cases in " C " Class hospitals showed that in males 49 per cent. and in females 43 per cent. were ambulatory. In both sexes 30 per cent. required skilled nursing, and only 46 per cent. were mentally normal. Of the mentally obnormal, most were merely confused, but the females showed a higher percentage of disturbed or troublesome cases, 15 per cent. as against 2 per cent. in the males. Thirty-seven per cent. of the males were incontitent and 28 per cent. of the females.

As so many of the patients are ambulatory and so few require skilled nursing, the question arises as to whether or not a number of such cases could not be treated equally well at home if some real attempt was made to rehabilitate them and some assistance given in the home. The high figures for mental confusion and incontinence suggests that these may often be determining factors in the breakdown of family responsibility for home care.

This family responsibility for home care breaks down more readily in the case of the elderly female and accounts for the much higher demand she makes than her male counterpart on " C " Class hospital accommodation. Her tendency to be more disturbed, troublesome and interfering probably accounts for this.

If more careful assessment of the patient's condition is initially made, more intensive treatment and rehabilitation measures instituted and more support given in the home, it should be possible to decrease greatly our present usage of 3·3 beds per thousand population for long stay geriatric cases, so that our requirements more closely approximate to 1 to 2 per thousand of total population, the figure considered adequate in the United Kingdom, even although the problem is much greater there because of the higher proportion of old people.

Although " C " Class hospitals are run by private enterprise and at no cost to the State, we must bear in mind that half the cost is met by the Commonwealth Government from general taxation and we must look forward to what future costs might rise when we consider that our present population of 65's and over is only 7·5 per cent. of the total population. In England the 65's and over now amount to 12 per cent. of the population and more energetic measures of dealing with the aged have had to be adopted on economic grounds as well as for the benefit of the old people.

We must therefore devise a method of dealing with the problem which is more beneficial for the needs of the aged and which, at the same time, reduces the overall cost. There is no doubt in my mind that the United Kingdom has given more thought to this problem and produced a better organization to deal with it than any other country today. The following plan results from a grouping of the best ideas obtained from the United Kingdom along with our own experience.

Integrated Plan for Care of the Aged

Prevention.—Old age cannot be prevented, but much of the illness and disability associated with it, can. There is a need to maintain the old person's interest in himself and his surroundings. This is done by an organisation of interests and activities which may be grouped for preference around old people's Social Centres. The strong herd instinct that prevails among Americans has led to the development of all sorts of clans, sects, brotherhoods, orders, religious groups, etc. All are highly organised and indulge in functions and ceremonial which often superficially appear meaningless but are devised to maintain interest. The elderly remain in these various organisations, often as office bearers, etc., and maintain an interest in living through their activities. Our Social Centres in Western Australia are designed for the same purpose and to the extent they have been developed they have been very successful. All sorts of assistance and activities can spread from these Social Centres into the homes such as social visitors, libraries, meals on wheels, and home help.

There is, however, a need for a greater effort in getting old people to attend these Centres. We must find out where lonely old people live and find a means of introducing them to centres.

In this realm of prevention, local knowledge of an intimate nature is required, and it is in this aspect of care of the aged that local authority and local voluntary community effort is most applicable and urgently required.

Assessment and Diagnosis.—This is a most important aspect of geriatrics and one in which we are possibly least organised.

The ageing tissues and organs in the old person gradually lose much of their vitality and resistance to disease. This renders an old person more subject to many diseases which are no different to diseases in younger persons except that they require more intensive treatment and a longer convalescence. There are also diseases peculiar to old age which can be treated or their disabling effects ameliorated. The main point of interest in the treatment of diseases of old age is the Multiple Pathology that almost invariably is present in any old person presenting as sick. This means that when an elderly person is at last driven to seeking medical advice it is for some troublesome symptom which may be related to only one of several diseases from which the patient is suffering. These diseases may be inter-related or quite separate. The main thing is that the total pathology must be diagnosed and treatment devised that is best suited to the whole. Unless the Multiple Pathology is ascertained and treated, rehabilitation cannot be expected to obtain optimum results.

Assessment and diagnosis of this order can frequently only be done by a teamwork of specialists, the use of laboratories, X-rays, etc., and therefore can only take place in the in-patient or out-patient department of a well equipped hospital.

Treatment.—The general course of treatment is devised at the initial assessment and it is also decided where that treatment is to be carried out, at home, as an out-patient or a day patient or a patient in an acute bed, or in a hospital bed of lower category. Irrespective of whether the presenting symptom warrants the attention of a psychiatrist or a genito-urinary surgeon, the initial assessment must be carefully made to ensure that total pathology is treated and that the treatment is given in the most appropriate surroundings.

Treatment should always be directed, where at all applicable, towards the rehabilitation of the patient and his discharge from hospital.

Rehabilitation.—The selection of patients for rehabilitation must depend on the assessment and the response to treatment. The original breakdown will have been due to mental, physical or social factors or various combinations of these. Similarly, rehabilitation will employ mental and physical therapeutic measures and improvements in the patient's social background to achieve its ends, so that the work is not completed in the hospital by the physician, the psychiatrist, the orthopaedic surgeon, the physiotherapist and occupational therapist, but is continued into the home by the family doctor, the health visitor and social worker. The initial assessment and treatment will ensure that only patients with a suitable life expectancy and with a suitable diagnosis will be accepted for intensive rehabilitation measures and the family doctor, the health visitor or social worker will ensure that the improvements obtained in the patient's condition in hospital are not allowed to vanish through neglect when he returns home.

Shared Responsibility.—Perhaps the greatest difference between the continental method as seen in its most extensive form in the Scandinavian countries and the British method is the emphasis given in Britain to the return of the patient to the community and to his family. The Scandinavian method is a system

of old people's settlements which includes old people's homes for the able-bodied, homes for the frail and hospitals for the sick and bedridden. This system involves the isolation of the aged into cantonments apart from the general population. It is an expensive method of dealing with the problem, it can never meet the whole problem and it tends to make old people still more introverted and withdrawn from general community activities and from playing their part in the general social structure. The British method with accent on shared responsibility puts the main responsibility for the care of the aged on the family but gives the family and the family doctor extensive assistance to carry out this function in the way of health visitors, day hospitals and a guarantee of a hospital bed for specific periods to meet the convenience of the family. There is, of course, both in Britain and the Continent an intermingling of both systems and that undoubtedly is the manner in which the problem must be tackled. The extent to which Shared Responsibility or Old Age Cantonments is developed and intermingled will depend on the size of the problem, the money available and the willingness of the family to share the problem.

It is often said that the social structure of Australia is not very suitable for the care of the aged in the family and that Australian families desire to get rid of their responsibility in this matter. This, however, need not be true where a proper system of shared responsibility has been introduced and there is every indication that Australian families can carry this responsibility if given the proper support from an organised system.

Method.—Social centres for the still healthy old people.

Social workers or health visitors to keep in contact with elderly persons living alone to see that they avail themselves of the resources the community provides and that unnecessary deterioration does not take place.

Assessment and treatment facilities in the form of out-patient and in-patient units in major general hospitals.

Rehabilitation units, physical, mental and social, attached to major general hospitals.

Day hospitals attached to or working in co-operation with major general hospitals to assist in early discharge from hospital and to maintain treatment. Day hospitals also play a part in Shared Responsibility by taking the patient out of the family during a considerable part of the day.

Geriatric hospital beds for non-rehabilitable cases, long stay cases and for periodic use in the system of Shared Responsibility. Sufficient beds of this type are probably already in existence in Western Australia.

A system of contact between hospital and home, involving health visitors, domiciliary nurses, home helps, meals on wheels, etc.

A transport system between the home and day hospital.

As geriatrics requires the co-operation of many specialties and involves not only the physical and mental assessment and treatment of the patient but also the investigation of his social background and the remedy of defects therein, it stands to reason that the full investigation and treatment of geriatric patients is a time-consuming and specialised task for which most medical practitioners have insufficient time. Practised as a specialty, it is time-consuming and with little financial reward. It is therefore clear that a co-ordinated geriatric service can only be successful if at the specialist clinical level it is developed and controlled by salaried medical practitioners having suitable qualifications in this field and an enthusiasm which amounts to dedication for this type of work. Such specialists in charge of geriatric departments in General Hospitals are in a position to supply the family doctor with the assistance he requires in the diagnosis and care of his elderly patients.

W. S. DAVIDSON.

Table 1

BEDS OCCUPIED IN METROPOLITAN AREA BY AGED (70 YEARS AND OVER)

——	Metropolitan Population (70 and over, in 1,000's)	Public General (Hospital Beds occupied per 1,000)	Homes for Aged (Beds occupied per 1,000)	"C" Class Hospital (Beds occupied per 1,000)	Total (per 1,000)
Male	8·8	12·8	61	39	112·8
Female	14·8	8·9	57	64	129·9

FOOD AND INSPECTORIAL STAFF

Mr. C. E. Flower, Chief Inspector, in his report (see Appendix XII) draws attention to the fact that with the increase in the amount of work which has to be done by the Department's Inspectors in the metropolitan area, it is not possible to maintain an adequate number of routine visits to country areas. He indicates that the number of visits paid to the country has declined from 120 in 1959 to 104 in 1960 and to 93 in 1961.

It is quite evident that the Department needs to appoint more Health Inspectors and, unless this is done, it cannot adequately fulfil its obligations in this respect under the Health Act.

Attention has been drawn repeatedly to this shortage in the Department's Health Inspectors but so far unsuccessfully. With the rapid expansion of this State, it is obviously impossible to expect the increased amount of work to be done by the same number of Inspectors. For example, it is not possible to keep the close surveillance on food handling on food premises that is desirable, particularly in a climate such as ours.

The Health Inspectors' Conference was held in September and was opened by the Minister for Health, the Hon. Ross Hutchinson, D.F.C., M.L.A., and was, as in previous years, most successful. The duration of the Conference was increased to three days and this increase was shown to be more than justified. Appreciation should be expressed to all those who contributed to its success.

Food and Drugs

Three meetings of the Food and Drugs Advisory Committee were held during the year.

Regulations and recommendations prepared by the Food Standards Committee and Food Additives Committee of the National Health and Medical Research Council were reviewed and minor amendments to suit local conditions were made in a few instances. The foods under consideration included meat and meat products, marzipan, jelly crystals, flour and milk products, antioxidants, food colours and other food additives.

The Department is grateful to Mr. W. A. Ashton, Mr. M. G. Muggleton, and Dr. L. Samuel, Government Analyst, for their work on this Committee.

Pesticides

The Department wishes to express its thanks to Mr. C. F. H. Jenkins, Government Entomologist, Dr. L. Samuel, and Mr. F. W. Avenell, Registrar of the Pharmaceutical Council of Western Australia for their assistance as members of the Pesticide Advisory Committee.

This Committee examined 91 applications for the registration of pesticides, and recommended approval for 90. The total number of pesticides now registered with the Department is 981.

PUBLIC HEALTH LABORATORIES

During the year the Perth Chest Hospital commenced to admit general cases and became a teaching hospital associated with the Faculty of Medicine in the University of Western Australia. This section of the hospital is staffed by the University Departments of Medicine and Surgery, together with an Honorary Physician and Honorary Surgeon of Royal Perth Hospital seconded for the purpose. Arrangements were concluded for the Public Health Laboratories to undertake the general hospital laboratory services for this section of the hospital, in addition to its other duties. These arrangements have worked smoothly, although the work was handicapped by the resignation of Dr. Stirrat (Histopathology and Virology). (See Appendix II, Report of Dr. W. Laurie, Director, Public Health Laboratory Service.)

Owing to the inadequate accommodation it has been found necessary to make use of the premises in other buildings in the metropolitan area. The former Poliomyelitis Centre in Stirling Street was taken over and is now used for all water and sewage work and for the processing of dirty glassware. Some assistance in regard to labour has been obtained by co-operation with the Slow Learners Group, for which acknowledgments are made.

By the co-operation and the generosity of the Repatriation Commission, the histopathology section work is done in a laboratory which has been placed at our disposal by the Repatriation General Hospital, Hollywood. It is pleasing to record the close co-operation which exists between this Hospital and our Laboratory Service.

The contract has been placed for the erection of a sheltered workshop at the Claremont Mental Hospital. This workshop will afford facilities for media preparation and other work in connection with the Laboratories, and it is anticipated that it will be of great assistance in the rehabilitation of the patients at the Hospital.

These extensions to outside premises emphasise the very cramped nature of the space available at the Perth Chest Hospital and it is hoped next year to consider the preparation of plans for new laboratory premises.

In the course of the year, the development of the satellite laboratories in the country towns continued. Laboratories at Derby and at Narrogin are now ready for occupation and the one at Manjimup is under construction. The satisfactory working partnership existing with the Commonwealth Laboratories at Kalgoorlie Hospital continues.

Volume of work done in 1961 increased overall by 40 per cent. compared with that in 1960. This increase was contributed to by the expansion of services to country hospitals, the demands made on the Laboratories by the University Departments of Medicine and Surgery in the Perth Chest Hospital and by a great increase in exfoliative cytology used so much in the diagnosis of cancer.

Note should also be made of the developments in mycology.

Of particular importance is the outstanding work done by Dr. Kovacs into the laboratory investigation of cases of human disease (pseudo-tuberculosis) caused by the "Battey" bacillus, which infects about 5 per cent. of all cases with disease clinically akin to tuberculosis. This work is to continue.

In 1961 Dr. Kovacs paid an extended visit to Europe and North America, the costs being defrayed by the generosity of the Women's Auxiliary of The Tuberculosis Association of W.A. As guest speaker for 1961, he attended the Annual Conference of the German Society of Hygiene and Bacteriology, and he also attended the 1961 Annual Conference of International Union against Tuberculosis in Toronto, Canada.

It is pleasing to record the international recognition afforded Dr. Kovacs for his outstanding work on mycobacteria (causing tuberculosis) and the Salmonella (intestinal organisms).

The developments in the occupational health activities of the Public Health Department have called for laboratory assistance increasingly, particularly in the field of biochemistry.

TUBERCULOSIS CONTROL BRANCH

The contemporary problems associated with the control of tuberculosis in this State have been clearly delineated by the Director of the Tuberculosis Control Branch, Dr. F. G. B. Edwards, in his report, Appendix III.

Although the tuberculosis mortality rate of 2·6 per 100,000 in 1961 was the lowest ever recorded in the State and is one of the lowest in the world, Dr. Edwards draws attention to certain significant spheres in which continued case-finding must be carried out on an intensive scale. The continued high incidence of tuberculosis in goldminers who have silicosis, the fact that the incidence of the disease in migrants is 2½ times that of native Australians, and the high rate in ex-servicemen all indicate the directions in which a high level of activity on the part of the Branch should continue.

As an index of the decline of the disease in the community in general, it is interesting to note that, whereas in the first Mass Compulsory X-ray Survey carried out in 1954 the general incidence of active disease in the adult community was found to be 1·4 per 1,000, this declined to 0·7 in 1957 and the more recent rate as revealed when the third survey of the metropolitan area commenced in May, was 0·4 per 1,000.

The people of the State are to be congratulated on their co-operation in these surveys which, although compulsory under the terms of the Health Act, receive willing attendance from the public.

Of great interest and epidemiological significance is the apparent increase in the number of cases of disease caused by atypical (anonymous) mycobacteria. The collaboration between Dr. Kovacs of the Public Health Laboratory Service and the Branch is revealing more patients who apparently have pulmonary disease caused by these bacteria. The studies are continuing.

COMMUNICABLE DISEASES

Effective control of communicable diseases continues. (See the report of the Director of Epidemiology, Appendix V).

Poliomyelitis

Of particular note is the outstanding success of the use of the Salk vaccine prepared by the Commonwealth Serum Laboratories in Melbourne. Since 1956 when vaccination commenced on a State-wide scale, only 16 cases of poliomyelitis have been diagnosed in the State, of which 13 had not received any injections of the vaccine, two had received only one injection and one had received three doses, the third only three days before the onset of symptoms. Dr. Snow comments that this record of success is unmatched in any other comparable community in the world.

Smallpox

Increased speed of air transport has resulted in a potential risk of the introduction of smallpox. Dr. Snow's comments should be read with interest.

Venereal Disease

There is evidence of some increase. All control measures contained in the Health Act should be retained.

Drug Addiction

Some other drugs of addiction (*e.g.*, bromide preparations—"Relaxa-Tabs") are still not included in the appropriate Schedule of the Pharmacy and Poisons Act and may be purchased without control over the counter from pharmacists.

Trachoma

In spite of the attempts to eliminate trachoma in the aboriginal population by the use of sulphonamides, the incidence of the disease remains stationary (approximately 50 per cent.). Because of the social habits of aborigines, re-infection after cure renders the task extraordinarily difficult. This experience is similar to that observed overseas. New lines of attack are being explored, but of major importance is the need for a raising of the living standards of aborigines.

MATERNAL MORTALITY

See the Report of the Maternal Mortality Committee, Appendix VI.

In 1960, the Health Act was amended in order to provide for a more thorough enquiry into the causes of maternal deaths, to elucidate more accurately causation and to plan more effectively for their prevention.

The experience of the first year of operation is outlined in the Report of the Committee, which has given outstanding service under the chairmanship of Professor Gordon King, Professor of Obstetrics and Gynaecology in the University of Western Australia.

This Report contains a summary of the position concerning maternal mortality in this State since the beginning of the century and clearly shows the value of the new method of enquiry, which will continue.

INFANT HEALTH SERVICE

The Report of Dr. E. M. Gibson, the Medical Supervisor of Infant Health, is contained in Appendix IX.

As is to be expected in a growing community with a high birth rate, the activities of the section expand every year. In 1961 the mothers of 75 per cent. of all infants born during the year availed themselves of the Service.

It is pleasing to record the close co-operation which exists between the Service, medical men in private practice, and the University Department of Child Health, which avails itself of the facilities of the Service and its centres for the training of medical undergraduates. These facilities are also extended to those nurses undergoing their training for the Infant Health Service at Ngal-a.

Owing to its great success on inauguration in 1960, the Pilot Pre-School Health Scheme was extended in the course of the year. This was made possible by the increase in the numbers of sisters who had undertaken special training in a Pre-School Health Course and by the collaboration of general medical practitioners. This valuable work is to continue.

The Correspondence Section continues to give a most valuable service to mothers in outback areas. The enthusiasm of the sisters concerned is gratifying.

The Mothercraft teaching which is provided to schools and also to expectant mothers is increasingly in demand, and it was necessary to appoint an additional sister through the year.

Under Dr. Gibson's very capable guidance and with the benefit of the advice of Professor Macdonald of the University Department of Child Health, the Service has earned a well deserved reputation in other States and overseas.

SCHOOL MEDICAL SERVICE

The report, Appendix X, indicates that the medical staff has succeeded in fulfilling their two-year inspection schedule in many country schools.

Of the total number of 58,012 children examined, 19,238 had some defect or other, including dental defects, which were notified to parents, and 5,562 were referred for medical attention.

It is pleasing to note that the staff is successful in encouraging the parents of children to obtain appropriate attention.

SCHOOL DENTAL SERVICE

The activities of the School Dental Service continued to be gravely handicapped by a shortage of staff. This is commented on by Mr. A. G. McKenna, the Senior Dental Officer, in his report, Appendix XI.

Instead of the nominal establishment of 15, the numbers of dental officers available during the year varied between 8 and 11. In any case, 15 dentists would be insufficient to provide a proper service to the children in our schools.

It is apparent therefore that the service which is given can be only a partial one, and one can sympathise with the frustation of dental officers on the staff. Every effort will continue to be made to obtain an enlarged staff.

OCCUPATIONAL HEALTH

Under the guidance of Dr. D. D. Letham, Physician—Occupational Health, this Section has progressed in the course of the year.

In his report, see Appendix XV, Dr. Letham comments on the approach which he has made to the effect of noise in industry and refers to the appointment of an Ear, Nose and Throat Consultant to assist.

A survey of employees in industries, other than mining, in which there is a hazard of silicosis and asbestosis, was carried out during the year. Observations will continue.

A close watch is kept on the use of pesticides. Dr. Letham comments that there is considerable lack of knowledge, in many cases on the part of management and staff, of the risks attached to the handling and use of these dangerous substances.

Work was also undertaken on dermatitis associated with the use of cement and lime and detergents. These surveys also revealed a lack of knowledge on the part of those engaged in the industries in which these are used. It is evident that a considerable amount of public education is required in order to prevent the occurrence of these and other occupational illnesses.

In the course of the year a part-time Health Inspector, Mr. W. H. Moyle, was employed as a Field Officer, and it is obvious that this will need to become a full time appointment in the near future. In addition, Miss O'Sullivan was appointed as Sister to assist Dr. Letham.

Dr. Letham is pursuing the activities of his section vigorously and already has gleaned much information concerning occupational disease in this State and is taking active steps to reduce its incidence.

NURSING BRANCH

In her report, Appendix XIII, the Principal Matron, Miss Lee, observes that the staffing position at most hospitals has been reasonably maintained, although there are always shortages in certain areas.

Efforts are being made to increase the number of Enrolled Nursing Aides as they are of great assistance.

The routine inspections of " A " Class and " C " Class hospitals continued throughout the year.

" A " Class hospitals maintained by boards and Church organisations continue to be of a very high standard.

The standard of accommodation of the " C " Class hospitals is slowly improving. It is the responsibility of this Department to license these premises and to ensure that there is a minimum cover of trained nursing staff for the care of the patients. It has no control over the quality of the nursing, medical and rehabilitative care given. As has been mentioned elsewhere in this report, there is a great excess in the number of beds available in this type of accommodation, but this is offset by the comparative absence of any serious attempts at rehabilitation, so that beds remain choked by patients who are permanent residents, many of the institutions being largely boarding-houses.

NURSES' REGISTRATION BOARD

See Appendix XIV.

In the course of the year, the newly appointed Education Officer, Miss Bailey, has been busily engaged on the preparation of data for the Board to assist it in its consideration of the re-organisation of training of nurses in this State. This is a long and arduous task, but it is expected that next year Miss Bailey will be in a position to present an outline of proposals for the consideration of the Board and interested training schools.

PHOTOGRAPHIC SECTION

In his report, Appendix XVI, Mr. Plummer, the Senior Medical Photographer, comments on the increase in the amount and scope of work which this section is called upon to do. It provides a service of medical photography not only to the Public Health Department and its branches, but to four major metropolitan teaching hospitals (Princess Margaret Hospital, Fremantle Hospital, King Edward Memorial Hospital and Perth Chest Hospital) and also to the University Department of Child Health, the Health Education Council, the Claremont Mental Hospital and the Institute of Radio-therapy.

In the course of the year Mr. Plummer went on long service leave to Britain, where he attended the Annual Congress of the Institute of British Medical Photographers at Cardiff, where he presented a paper on Photography of the Uterine Cervix.

During the year, Mr. K. J. Locke, one of Mr. Plummer's assistants, obtained the Associateship in Medical Photography from the Royal Photographic Society of Great Britain.

The work of this section has been handicapped by the limited accommodation and, in the circumstances, Mr. Plummer is to be congratulated on his ability to provide the services which he does to hospitals and to other institutions under difficult circumstances.

HOSPITAL MORBIDITY AND MORTALITY STATISTICS

These statistics (Appendix XVII) are prepared from returns submitted for 1961 by the three major public hospitals and represent approximately one-third of the general hospital beds in the State. The returns submitted are coded according to the International Classification of Diseases.

The tables show the use made of these hospital beds and can be compared with tables shown in previous Annual Reports.

Persons 70 years and over represented 17·57 per cent. of total discharges from these hospitals and they occupied 27·47 per cent. of the beds. This age group is only 5·7 per cent. of the total metropolitan population.

48·56 per cent. of the beds were occupied by cases undergoing surgical operation. 19·54 per cent. of beds were occupied by accident cases, but only a third of these were road accidents. Accidental falls again contribute to hospital morbidity and mortality rates figures similar to those from road accidents.

Operation cases are coded according to the Code of Surgical Operations, General Register Office. Operation cases are also included in the main table under the International Classification of Diseases Code.

In general, there has been little change from the 1960 figures but the average number of days in hospital for all diseases has decreased from 15·51 days to 14·57 days, and for operation cases from 18·28 days to 17·22 days.

There is need for further professional assistance in the Department to ensure a more continuous professional administration of the State's hospital services.

Close integration is necessary between the general, medical, public health and hospital activities of the Department to ensure a correct perspective in the approach to all the medical services concerned with the people's health. The hospital no longer works in isolation but is a cog in the public health wheel. The Commissioner of Public Health is also the Principal Medical Officer and, in principle, the opportunity is afforded to develop and maintain this integration.

Adequate professional supervision of State hospital services is not possible with the present staff available and additions are necessary.

LIBRARY

See Appendix VIII.

In the course of the year the library was accommodated in new quarters in the Department. Although these are a great improvement on the old ones, they are still inadequate for this purpose. The broadening of the activities of this Department and the developments of all branches of medicine entail a corresponding increase in the need for library services, and there can be no doubt that additional accommodation will need to be provided in the fairly near future.

It is pleasing to record the excellent co-operation that exists with other library services in this and other States, and Dr. Woolcott and his staff are to be congratulated on the excellent service which they provide under difficult circumstances.

CONCLUSION

As in previous years, appreciation must be expressed of the assistance and co-operation of all members of the staff which has continued throughout the year. The Department has been once again, Sir, indebted to you for your consideration and active support.

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

Appendix I

VITAL STATISTICS FOR WESTERN AUSTRALIA

	1959	1960	1961
Mean Population—			
Males	362,796	368,112	375,768
Females	348,941	354,788	361,599
Total	711,737	722,900	737,367
Births—			
Males	8,726	8,699	8,800
Females	8,385	8,227	8,278
Total	17,111	16,926	17,078
Birth rate per 1,000 of Mean Population	24·04	23·41	23·16
Deaths—			
Males	3,240	3,353	3,326
Females	2,257	2,344	2,430
Total	5,497	5,697	5,729
Death rate—rate per 1,000 of Mean Population	7·72	7·88	7·77
Natural increase rate per 1,000 of Mean Population	16·15	15·35	15·39
Infant Mortality per 1,000—			
Live Births :			
Metropolitan Area	18·28	19·47	16·51
Rest of State	22·16	23·89	23·03
Whole State	20·16	21·62	19·67
Stillbirths :			
Metropolitan	102	117	121
Whole State	225	226	240

Comparison of Infant Mortality and General Death Rate

Place	Infant Mortality			General Death Rate		
	1959	1960	1961	1959 (*b*)	1960 (*b*)	1961
New Zealand (*a*)	19·89	19·66	19·13	9·09	8·81	9·03
Western Australia	20·16	21·62	19·67	7·72	7·88	7·77
New South Wales	22·65	21·16	20·84	9·37	9·14	8·95
Victoria	21·21	18·46	17·80	9·01	8·59	8·39
Queensland	20·25	21·01	20·01	8·43	8·30	8·42
Tasmania	23·42	19·09	16·81	8·14	7·70	7·89
South Australia	20·71	18·94	20·00	8·62	8·26	8·06

(*a*) Non-Maori. (*b*) Adjusted in accordance with the preliminary results of the 1961 Census.

Appendix II

PUBLIC HEALTH LABORATORIES

To the Commissioner of Public Health, Western Australia.

I.—ADMINISTRATION

General

The problems peculiar to these laboratory services have been discussed in previous annual reports. In brief the need is one of providing both a public health laboratory service and a hospital+out-patient laboratory service over the whole of a very large land area with scattered foci of population.

This combination of service to the community and service to the individual within the community has considerable advantages : the question is well discussed in the World Health Organisation special report on hospital laboratory services. To quote, " One of the major advantages of integration of the public health and hospital laboratory services is the elimination of overlapping functions. This applies particularly in the field of microbiology. Much duplication of accommodation and equipment can be avoided. With a central supply section providing consumable stores, reagents, stains and media, the saving in administrative costs is considerable. A unified laboratory system also eliminates competition for personnel and facilitates professional and technical training programmes to a degree which cannot be achieved when there are two overlapping services.

" Furthermore, the activities of all medical personnel concerned with the health of the community and of the individual make contact at a common point. Thus the clinicians, medical officers of health, and pathologists are constantly in touch through the laboratory, whereas, if two parallel laboratories perform the public health and hospital laboratory functions, the medical personnel responsible for the community health and those responsbile for the sick may seldom have professional contact. An integrated service emphasizes the important preventive aspect of medicine. The pathologist, being responsible for the bacteriological services to the patient and also to the community, has an opportunity of co-ordinating them and ensuring co-operation between the clinicians and the public health officers.

" Thus a unified laboratory brings together the clinician concerned with cancer of the lung, the pathologist concerned with its diagnosis, and the public health administrator responsible for the control of potential environmental carcinogens ; it ensures contact between the bacteriologist, the medical officer of health and the clinician in charge of the infectious diseases hospital ; it facilitates the meeting of the surgeon, the bacteriologist, the epidemiologist, and the municipal medical officer, to all of whom the control of certain hospital hazards represent an internal integration of hospital laboratory and public health functions. [1]

" In highly developed countries with extensive hospital and laboratory services, much can be said in favour of two parallel services in which, by reason of specialized training, a higher degree of technical and professional proficiency may be attained.

" The difference of emphasis, upon the health of the community on the one hand and upon that of the individual on the other, is sometimes advanced as a reason for the separation of the two services. It is maintained by the protagonists of this view that, when the two services are provided from the same laboratory, the pathologist is tempted, by reason of his medical training and clinical interest, to lose sight of the welfare of the community in his understandable concentration on the diagnostic problem of the individual hospital patient.

" In less fully developed countries, in which trained professional and technical staff is at a premium and where dispersal of energies and personnel can only lead to a general lowering of standards, the advantages of integration outweigh the disadvantages. The only point at issue is that of deciding how far integration should go and whether it should stop at the local, the intermediate, or the regional level.

" The question of a dual system of laboratories, or of a partially or completely integrated laboratory service, is therefore one which can only be decided in the light of the available personnel, the needs and degree of development of a country, its tradition, background and experience, its geographical and sociological features, and its medico-political pattern."

Branch Laboratories

The system of branch laboratories is functioning very satisfactorily : Problems are

(1) *To the North.*—Still only has Derby as an isolated laboratory. With the continued opening-up of this area more laboratory help will be required in the fairly near future.

(2) *To the South.*—Narrogin laboratory is ready for functioning after a regrettably long delay.

Manjimup laboratory is under construction after an equally long delay.

A sub-laboratory will be opened at Margaret River in 1962.

No decision has been reached as regards Esperance.

(3) *To the East.*—At the beginning of 1961 the Commonwealth and the State Medical Administrators agreed to a working partnership of the Commonwealth Health Department laboratory at Kalgoorlie and the laboratory services of Western Australia, with neither side surrendering any of its rights. This arrangement has proved highly satisfactory in practice.

In addition plans are in hand for meeting some of the laboratory needs of the Mental Health Services.

[1] " A typical example is cross-infection in modern hospital care which has arisen from indiscriminate use of antibiotics. Antibiotics have reduced mortality from infectious diseases and now protect surgical patients to an extent never before possible, but their abuse and misuse, resulting in resistant strains of bacteria, and a certain carelessness which has crept into daily hospital aseptic routine present a serious problem.

The routine periodic checks on the branch laboratories show their work to be of a high standard, and the monthly returns of work done in these laboratories show how fully the services are being utilised by the medical men of each area. Almost without exception the senior men in charge of each branch laboratory are being overworked but have never complained. One serious shortcoming still true is that the Director and the other senior staff of the central laboratories do not visit the branch laboratories sufficiently often.

Accommodation

As shown in the summaries of work done, demands on the laboratory services have again shown a marked upward trend in 1961, a finding common to all laboratories. This renders accommodation an even greater problem to us. Steps taken or proposed to meet the situation include—

(1) *Immediate.*—In 1961 the old poliomyelitis vaccination centre in Stirling Street, Perth, was taken over and all water and sewage laboratory work was transferred there. This branch also serves as the clearing house for the processing of dirty glassware. Much of this work is being done with co-operation of the Slow Learners' Group as a temporary measure until the new Claremont workshop has been completed.

In addition the Repatriation Department kindly made available some laboratories in Hollywood Repatriation Hospital. Without this aid it would not have been possible to cope with the much increased demands on our services.

(2) *Mid-term Action.*—After regrettable delays a building contract has been placed for a somewhat truncated sheltered workshop sited at Claremont Mental Hospital, the aim being to provide interesting and remunerative work for the mentally sick and at the same time relieve the laboratories of many repetitive chores.

(3) *Long-term Action.*—At present it is possible to function only by the regrettable expedient of scattering small laboratories and work areas over Perth, some of these being several miles away from the Perth Chest Hospital. This is uneconomic and adds much to the difficulty of adequate supervision of work and administration. It has been agreed that a start must be made early in 1962 for the planning of a large new central laboratory, probably in the grounds of the Perth Chest Hospital.

Equipment

Money made available for new equipment and for replacements in 1962 was roughly half of what was asked. It is hoped that this reduction in expenditure will prove only a short-term policy since working costs can only be kept within a reasonable limit by taking advantage of all new labour-saving devices such as cathode-ray polarography and tracer techniques.

Although the safety hoods were delivered to us 18 months ago they have not yet been put into working order and the staff are therefore still exposed to much unnecessary danger.

Tours and Conferences

As mentioned above the Director of these laboratories has again failed to visit branch laboratories as frequently as should be done and has been unable to take part in any conferences. This is due to his being heavily committed to routine laboratory work because of staff shortages. At one time in 1961 the Director was the only pathologist left in the central laboratories.

During 1961 Dr. Kovacs paid an extended visit to Europe and North America including appearances as a guest speaker at the 1961 Annual Conference of the German Society of Hygiene and Bacteriology and at the 1961 annual Conference of the International Union against Tuberculosis in Toronto, Canada. These invitations indicate the wide acceptance of Dr. Kovacs' sterling work on Mycobacteria and on the Salmonellae, a recognition further emphasized by his being elected to the International Committee on Microbiology of the American College of Chest Physicians. It should here be noted that Dr. Kovacs' expenses during this long tour were paid not from any Government source but by the Women's Auxiliary of the Tuberculosis Association of Western Australia. This was a very far-sighted and much-appreciated gesture.

During May Miss McAleer of the Mycology Department of the laboratories delivered a paper at the meeting in Brisbane of the Australian and New Zealand Association for the Advancement of Science and advantage was taken of this trip for her to spend some time also with mycologists in Sydney and Melbourne.

Working Hours

In 1961 a system of staggered working hours was introduced enabling the laboratores to function every day, week-ends and holidays included, from 8.00 a.m. to 10.00 p.m. This not only gave a faster turnover of work but obviously provided a much fuller utilisation of space and equipment. On these grounds alone, excluding the great advantages to the patient, this system might well justify extension. With modern laboratory working space and equipment now so costly it is quite uneconomic to leave them empty and idle for 75 per cent. of the time.

Character of Work

In mid 1961 Perth Chest Hospital was partly converted to a general hospital because of the great falling-off of tuberculosis in the State. Necessarily this produced wider and heavier demands on the laboratory services.

II. STAFF

General

In 1961 one senior technologist and one technician were brought from overseas with one senior lost by emigration during the same period. In addition there was a gain of three technologists from local sources, offset somewhat by a loss of one technologist to a local laboratory.

Reference has already been made to the problem posed by wastage of trainees. An even more serious problem and one becoming increasingly common is loss of trained staff who proceed overseas shortly after qualifying. Since the training and the laboratory standards in this country are now of a high standard this drift to the United Kingdom is not usually justified and represents a heavy financial burden on the State which has paid the qualified worker a good salary during his early non-productive years of training.

STAFF CHANGES IN 1961

Posts	Resignations	Recruitments	Seconded	Remarks
Pathologist	1	1	....	
Pathology Registrar	....	1	1*	*To Polio Unit
Senior Technologist	1	3	....	
Technologist	2	6	1*	*To University virus research
Laboratory Assistants	1	1	....	
Clerical Workers	2	2	....	
Laboratory Attendants	4	12	....	
Others	....	....	....	

Health of the Staff

The health of the staff was less satisfactory than in 1960 : however, analysis shows that a disproportionate amount of this sickness absenteeism was accounted for by a small proportion of the staff, mainly attendants.

In 1961 as in 1960 one member of the staff was incapacitated for a long period by a motor vehicle accident.

Medical Staff

Dr. Stirrat took over the Histopathology and Virology Departments on his arrival in February, 1961, after a tour of laboratories in the United Kingdom. Unfortunately he had to resign this appointment in November, 1961. The loss of Dr. Stirrat's valuable services was partly met by the recruitment of Drs. Hobday and Topliss. This still leaves the senior professional staff at too low a number for the satisfactory working of the services.

III. WORK DONE IN 1961

1. *General*

The work of the year is summarised in a series of tables given in the appendix, with table 1 giving a general summary. As shown in table 1 the work of the central laboratories in 1961 increased by 40 per cent. over that done in 1960. This upward trend is characteristic of all laboratories at present and is somewhat less than would have been expected in view of the conversion of half the Chest Hospital beds to the taking of general medical and surgical patients in association with the University Departments of Medicine and of Surgery. This influx of general patients and teaching units not only increased the amount of work done but necessarily also increased the scope of the tests in use. This is shown by the sharp marked increase in haematology (59%), in biochemistry (117%) and in histopathology (five-fold increase). The histopathology figures include exfoliative cytology examinations the numbers of which are spiralling upwards each month.

The large increase in the tuberculosis work in spite of the falling-off of phthisis is explained by the much greater amounts of work necessitated in the identification of the atypical mycobacteria which are becoming increasingly common either as saprophytes or as pathogens. This is discussed more fully in the appropriate section below.

2. *The Problem of Increasing Demands*

Laboratory services are a very expensive necessity. Speaking generally it is true to say that demands on hospital laboratories have increased five-fold in the last ten years and there seems no indication of any slackening of the rate of increase. Some of this increase is due to the introduction of new laboratory methods; some is due to newer techniques in surgery and medicine demanding newer techniques in the laboratory ; and some is due to an almost virtual abandonment of the clinical-side-room, with a shunting back to the laboratory of simple tests once the responsibility of the interne and the nurse, e.g., simple estimations of haemoglobin and the testing of the urine for albumen. All of this costs a great deal of money, and the time may come soon when we shall have to weigh the excessive cost of over-investigation against the equally costly mistake of prolongation of a patient's stay in hospital because of faulty or late diagnosis due to too little investigation.

The laboratory itself is trying to cope with increasing costs by methods such as mechanisation as in electronic counters, auto-analysers, autokines, etc. ; by the use of less well-trained staff for certain routine repetitive work as in the screening of exfoliative cytology ; by the steadily-increasing use of ready-made culture media ; by increasing use of disposable ware, e.g., plastic petri dishes ; and by the farming out of

washing-up of dirty glassware. However, there is a limit to what the laboratories can accomplish, and the clinicians may soon have to consider their side of the problem, e.g., the question of re-starting the clinical-side-room system, and the insistence that laboratory requests may only be signed by clinicians of some standing and experience !

3. *Microbiology*

A. General Bacteriology

The yearly increase of the work performed in the microbiological laboratories was most pronounced in 1961. The number of tests compared with those for 1960 rose by 57·2 per cent. (*see* table 2).

(a) *Diphtheria.*—In general bacteriology the majority of the diphtheria examinations done were mainly to find contacts of the few cases diagnosed in our laboratories or in the Princess Margaret Hospital for Children.

In all cases tellurite-blood plates, Loeffler slopes, and Schroer's enrichment medium were used. Loeffler's medium gave only 67 per cent. positive results, against tellurite-blood and Schroer's media, in which 100 per cent. positive cultures were obtained.

In each case the typing and virulence test was done. The results of these examinations were as follows :

Type	gravis	mitis
Number	2	19
Virulent	0	14

The few cases reported in 1961 drew attention to the fact that diphtheria is still " underground " and that the need for active immunisation should be further stressed. Each diphtheria case is a risk as some patients develop diphtheria in spite of immunization, e.g., an example of fatal diphtheria in a fully immunized child reported by Dunnet, Schallibaum and Scott (B.M.J. 1960, I, 251).

(b) *Sensitivity Testing.*—Extensive examinations were carried out on the sensitivity of pathogenic microorganisms, (Table A). It should be mentioned that only 39·5 per cent. of the Staphylococcus aureus strains were sensitive to 10 units of penicillin and only 17·5 per cent. to one unit. Practically all these strains were sensitive to Chloramphenicol, Erythromycin and Bacitracin. The last three antibiotics were also the most effective against Enterococci. The relatively low Streptomycin sensitivity of Streptococcus haemolyticus Group A (39·7%) and of Diplococcus pneumoniae (41·4%) should also be mentioned. 97·4 per cent. of the Ps. pyocyanea were sensitive to Polymyxin B but only 62·7 per cent. to Streptomycin. Oxytetracycline took third place with 48·4 per cent., Chlorotetracycline and Tetracycline being less effective. The high sensitivity of B. anitratum to Erythromycin is of importance. This phenomenon has been observed over the last five years, although an occasional strain has turned out to be resistant to this antibiotic. In 1961, all 47 strains cultured were sensitive to Erythromycin.

The importance of sensitisation by traces of Penicillin necessitated the systematic examination of milk for Penicillin.

B. *Mycology*

Some interesting and relatively rare diseases have been recorded by us this year—two of them picked up from cases in which fungal pathogens were unsuspected. Were it not for the fact that mycological examination is carried out routinely on pus and other swabs, these would have been missed. One of these diseases, *chromoblastomycosis*, is a new record for Western Australia. The causal organism, in this case Fonsacaea Pedrosoi var Cladosporioides, was cultured in the laboratory and seen in direct examination of pus. The histology department showed negative results from the biopsy material until restained for fungi at our request. This shows the necessity for biopsy material being sent for culturing as well as for histological examination—special staining is necessary to show fungal elements in tissue.

Sporotrichum Schenkii the causal organism of *sporotrichosis* was grown from a swab sent in from the country for bacteriological examination this year—to our knowledge it is the first culture of this organism in Western Australia and up to that time the disease had not been recorded in this State.

Another interesting case is one of *aspergillosis* in which sputa and biopsy material from a lung abscess grew Aspergillus species under anaerobic conditions only.

A case of *cryptococcosis* was also recorded, and the causal fungus Cryptococcus neoformans isolated and shown to be pathogenic to laboratory animals.

It is noteworthy that these diseases have come to light in the first year that mycology has been done on a firm basis in this department.

Sputa from hospitalized patients are yielding a high percentage of Candida species. It is hoped some time to investigate the full significance of this fact.

Among the pathogens isolated from skin and nail scrapings this year were various species of Trichophyton (including T. rumbrum, T. verrucosus, and T. tonsurans), Microsporum gypsum, Candida albicans, and Aspergillus niger. Some cases of Tinea versicolor were also identified.

Ear swabs gave a variety of pathogens the most common being various species of Aspergillus and Candida.

C. *Salmonella Investigation Unit*

The work performed in the Salmonella-Shigella laboratory can be seen in table B.

The distribution of the Salmonella serotypes is shown in table C and those of Shigellae in table D.

In continuation of the publication (Kovacs, M. J. Australia, April, 1959) extensive work was done on the occurence of Salmonellae in coconut : 21 per cent. of the 1,282 samples were found to be contaminated. With tetrathionate and a newer enrichment medium a high incidence of Salmonella contamination rate was observed. We intend to publish our findings with the new method for the detection of Salmonellae in coconut.

The most important finding was that the action of the selenite enrichment medium was inhibited by the addition of coconut. This observation is of great interest as most laboratories use selenite medium for the detection of Salmonellae in coconut. We must therefore assume that the present findings using this unsuitable medium represent only a small percentage of the actual contamination rate of coconut with Salmonellae.

A pulmonary infection with S. cholerae-suis should be noted. In 1960 and 1961 this serotype was cultured from 11 sputum and 4 pleural fluid specimens from the patient. The patient's serum agglutinated both O suspensions 6, 7, and also agglutinated H antigen c : 1, 5 at a titre 1 : 320.

Table E shows the sensitivity pattern of the different Shigella types. Although our material is limited, the results suggest that the standard drugs used for the treatment of bacillary dysentery (Sulphadiazine, Chloramphenicol, etc.) are ineffective. This is very important for clinicians and we consider that in each case or outbreak the sensitivity of the strain should be ascertained.

D. *Tuberculosis and Mycobacterial Pseudo-tuberculosis*

Although Western Australia is leading all Australian States in the organisation for control of M. tuberculosis, the disease still remains a problem and undetected cases represent a source for the spread of infection. Fortunately the number of primary resistant cases is only of minor significance in Western Australia. The serious problem in our State is the occurence of pulmonary disease caused by the " Battey " bacillus. About 5 per cent. of individuals with symptoms suggesting pulmonary tuberculosis are actually infected with " Battey " disease, and therefore one may speak of an endemic occurrence of the disease in Western Autralia.

The importance of these phenomena is represented in the increase of 28·9 per cent. in the number of examinations during 1961 in contrast to 1960, (table 3). From the 12,973 cultures done, 1,299 (10 per cent.) were positive. The distribution of the positive cultures is as follows :—

M. tuberculosis	851 = (65·5%)
M. tuberculosis bovine type	2 = (0·15%)
M. sp. Gr. II (scotochromogens)	22 = (1·7%)
M. sp. Gr. III (Battey bacillus)	392 = (30·2%)
M. sp. Gr. IV (quick-growing strains)	32 = (2·5%)

The significance of the occurrence of unclassified mycobacteria is evident from the comparative distribution of the M. tuberculosis cultures (851) to the " Battey " cultures (392), i.e., only 2 : 1.

The analysis of the *first isolations* of mycobacteria in 1961 shows the gravity of the situation due to the disease caused by " Battey " bacterium in Western Australia. In this year we had 138 first isolations of M. tuberculosis and 79 M. sp. " Battey." In 22 of these 79 cases there were *several* positive cultures ; in the remaining cases " Battey " bacterium was found on one occasion only and we assume that in these cases the bacteria were only " casual " strains apparently not connected with any disease.

The vast majority of the specimens were sputa and only about 25 per cent. of the specimens were from other sources : i.e. gastric contents, bronchial lavage, urine, etc. Research work was done on animal tuberculosis, mainly to find a probable reservoir of the " Battey " bacillus.

Different media were compared in their yield of positive cultures. The results of a comparative test of 262 positive cultures can be seen from table F.

The best medium was, as in the past, the Kirchner with 25 units of Penicillin, this was followed by the Gottsacker, Middlebrook and blood media. The lowest result was obtained in Loewenstein-Jensen medium with starch. Our previous experience has shown further that in our laboratory I.U.T.M. gave less positive cultures than the Loewenstein-Jensen medium with starch. The " Battey " bacillus grew best on Kirchner medium and for this species the blood medium had preference over Gottsacker medium.

Streptomycin blood levels according to Middlebrook's method were systematically done and 104 assays were performed. I.N.H. blood levels were done with the vertical diffusion test used by Schmeidel.

Middlebrook and Cohn's method for direct sensitivity on Bacto-Middlebrook 7H9 agar A medium with Felsen plates (Am. J. Pub. Health, 1958, v. 48, 844) was introduced towards the end of 1961 for the microscopically positive sputa. The drug concentrations used in this medium are as follows :—

Streptomycin	2 mcg/ml.
Isoniazid	0·2 mcg/ml.
Para-amnosalicylic acid	3 mcg/ml.

The results are read after 21 days' incubation.

In practice a provisional sensitivity test can therefore be reported with the culture report. The correlation of the Middlebrook method and the sensitivity test with the tube dilution method using resistant ratio is under investigation.

E. *Virology*

The work of the virology laboratories is summarised in table 4 appendix.

Compared with 1960 the year 1961 showed only a 7 per cent. increase in work. This is partly explained by there having been no epidemic in 1961 such as occurred in 1960, and is partly explained by the continued failure to realise how important is serology in the speedy diagnosis of viral infections, in which so often the recovery and identification of the virus itself may be a very slow business and in any event does not necessarily prove that the virus so recovered is responsible for the patient's illness : serology investigations are quicker and, where there is a marked titre difference with paired sera these are highly suggestive of the correct diagnosis. All too often all that we receive are 1–2 specimens of faeces, or rather poor throat washings even when several persons in an area have become affected by what appears to be a viral illness. As pointed out by Rivers, the basic principles of immunology and serology apply in viral rickettsial diseases just as they do in other fields of medicine, and Harding points out that " at present the indirect or immunologic (serologic) methods for laboratory diagnosis of the viral and rickettsial diseases still have a greater usefulness for routine diagnosis than do those which are involved in the direct isolation of these agents." Unfortunately in certain viral infections this useful tool is of little value, e.g., with many of the important enteroviruses.

Morrissey, writing in his capacity as Chief of the Bureau of Virus Diseases and Research in Illinois sums up the position when he says, " One of the serious handicaps facing the virus laboratory is the general lack of understanding on the part of the clinicians . . . . with regard to the proper use of the virus laboratory. Methods of a virus laboratory reveal useful information only if appropriate specimens are collected at the proper stage of illness and are transported to the laboratory adequately preserved and accompanied by a clinical history and any pertinent epidemiologic information. The personnel of the laboratory should be free to select the most promising tests on the basis of the clinical information provided and on the basis of knowledge of the prevalent viruses in the community. Specimens received without clinical information or with such requests as " P.U.O." or " Viral Studies " can not be intelligently examined."

Another factor militating against satisfactory recovery of viruses or infected material is the question of transportation in this large country. If a practitioner in the country is supplied with specimen bottles marked " Transport Medium " it is only reasonable for him to use such bottles for transport of material possibly containing viruses even although such transport medium was originally designed only for transport of Salmonellae or Shigellae and may be highly lethal for viruses. With this in mind our bacteriology and virus laboratories are co-operating in an effort to produce a transport medium suitable for all purposes.

The third and a very important factor militating against satisfactory fast work in the virology laboratories is the world-wide lack of diagnostic reagents. Correspondence with fellow workers on several Continents confirms our view that at present virology is in the state that bacteriology was fifty years ago, with each individual laboratory devoting a great deal of its time and energy to the production of diagnostic reagents. A small range of such reagents is now available commercially in Italy and in the U.S.A. and we have hopes that Commonwealth sources may soon much increase their range of such reagents. Until this is done the significance of results will remain uncertain and virology will be possible only in central highly-organised laboratories.

4. *Biochemistry*

Table 5 appendix gives details of work done during the year. This department of the laboratories shows the largest increase in the year's work, a trend which is world-wide and which will continue here, especially in view of the changed character of the Chest Hospital. The only way to contain working costs within reasonable limits in this department is to utilise fully all major advances in equipment. This means that in order to save money it is essential to spend money, a principle which is not easily comprehended by those who guard the purse-strings ! One example will suffice : by cathode-ray polarography it will be possible to estimate serum vitamin B 12 in a matter of a few minutes compared with the seven days needed by the present microbiological techniques. Similarly chromatography equipment would represent an annual saving in work costs as well as enlarging the scope of work now possible. Gas chromatography equipment would much extend our ability to investigate problems of fats and sterols, steriod hormones, fatty acids, carbo-hydrate derivatives, volatile solvents, atmospheric pollution, etc., etc. In other words unlike the position in 1960 lack of new equipment will be a pressing problem soon with space also at a premium while the staff situation has eased somewhat.

Standardisation of techniques through the service is now in force with the making-up of all necessary reagents a responsibility of the central laboratories so ensuring high standards in the branch laboratories and enabling them immediately to detect equipment failures by means of the routine check samples sent from the central laboratories.

As yet the making of the standard reagents or the making of check samples are not reflected in the summary of work done. If these be included then the increase in work is significantly more than the 117 per cent. recorded. Although standardisation of techniques is now in operation it is essential to change " standard " methods whenever an improvement is offered. An example of this is the estimation of serum iodide. The generally-used method at present is to estimate protein-bound iodine : this however is unsatisfactory and experiments are now in hand with a view to substituting a more satisfactory method, namely, estimation of serum butanol-extractable iodine : this test is free from many of the fallacies of the older test. Enzyme tests are another example of the necessity for continued re-appraisal of old techniques and the testing of new techniques. Certain of these enzyme tests are of considerable importance in occupational health investigations. One major new advance in which we lag is that of tracer techniques : although we have staff equipped to undertake this work the lack of working space prevents our undertaking it at present.

Co-operation continues with other departments inside the laboratory service, inside the public health service, and inside the State departments as a whole. Occupational health problems are of especial importance, especially cholinesterase estimations on individuals handling certain of the toxic insecticides. Urinary coproporphyrin estimations similarly much increased in numbers during the year.

One interesting finding reported on occasion during the year is that of only mild and transient rises in related enzyme levels in individuals with classic electrocardiograph changes of a myocardial infarction. These findings prove most disturbing to the clinicians and one possible explanation is that the individuals concerned possess large functionally efficient intercoronary anastomoses which are almost immediately effective and prevent any significant myocardial death, the electrocardiograph changes recording no muscle death but electrochemical imbalance.

5. *Haematology*

Work done in 1961 is listed in table 6 appendix. Compared with 1960 there was almost a 60 per cent. increase in work done ; there is likely to be a large increase also in 1962 in view of the change of half the Chest Hospital beds to take general medical and surgical patients. This change really did not begin to operate fully until late in 1961 but in the few months towards the end of the year the change already became reflected by the increased demands for blood for transfusion purposes which will markedly accelerate in 1962, and already has necessitated a large increase in refrigerator space to hold the increased blood stocks now necessary.

During the year the important service continued of sending out frequent " check " specimens of blood for haemoglobin estimation and for blood grouping, not only to branch laboratories but to all country practitioners who wished to take advantage of this service. Surprisingly often this detected faults in equipment, e.g., " surge " effects of an unsatisfactory power supply in one laboratory, and in another laboratory faulty batteries in a battery-operated piece of equipment.

In 1961 an investigation was begun in which were compared the results of the two commonest methods of estimating prothrombin deficiency, i.e., Quick's method and Owren's method. These tests are of much importance in the control of anticoagulant therapy and from published reports it is obvious that laboratories in several parts of the world have undertaken parallel series of investigations much similar to this now being used by us.

Reference has already been made to that fact that clinical-side-room investigations no longer seem to be widely used although the numbers of junior clinical staff have much increased in all hospitals in recent years. This is particularly reflected in the work of the haematology department where a check of results shows that about 20 per cent. of patients investigated have a completely normal blood picture.

6. *Serology*

The work of this section is set out in table 7.

Brucellosis and Red Cross Blood Donors

During this year, 1,501 sera supplied by the Director of the Red Cross Blood Transfusion Service, were tested against Brucella suspensions. Results are shown in table 7A. Positive findings in 71 of them many in low titre only, indicate contact with the causative organisms of brucellosis. These donors were apparently fit people, and bear out the statement made in the Report of 1960 that " this disease is much more common in Western Australia than is realised."

Leptospirosis

All sera for routine agglutinations are now tested against suspensions of L. pomona, L. canicola, L. hyos, and L. icterohaemorrhagiae. Results are shown in table 7B.

Virus Serology

The recruitment of a technologist in September ensured sufficient staff to undertake all normal demands for routine virus serology. A limiting factor was the availability of antigens. In addition to diagnostic material from our own virus laboratory and the Commonwealth Serum Laboratories, commercial sources in Britain, America, and Italy were explored, and all supplied some material. This proved to be of high quality but appeared to be expensive. No attempt was made to cost those produced locally.

Medico-legal

Apart from routine forensic work, an increase was noted in requests for identification of proteins. These included suspected adulteration of sausages with horseflesh, pork sausages with beef and mutton, identification of goat meat suspected of being dog, and beef alleged to be donkey.

Identification of human and animal hairs has been a feature of our work for some years. Like other workers, we have encountered many difficulties of classification. A method of making casts of hair scales from heated perspex has proved most useful.

Mr. Plummer, medical photographer, discussed hair casts and other problems with scientific officers of Scotland Yard during leave in England, and brought back very useful technical information.

The laboratory assisted in the investigations into six cases of death by violence, twelve sex offences and a number of other cases. Officers appeared in court on seventeen occasions.

Hydatid Disease

Sixty-seven sera were tested for evidence of hydatid disease, using a complement-fixing antigen prepared from local human material. Ten gave " positive " reactions. Four of these were subsequently proven cases, four were shown to have no other evidence of hydatid disease, and no final information was obtained about the other two.

Toxoplasmosis

For a number of years, in response to requests from ophthalmologists and others, we have forwarded to reference laboratories small numbers of sera from cases in which toxoplasmosis was suspected. These reference laboratories were firstly in California, and later we were indebted to Dr. Alison Garven, of the Footscray and District Hospital, Melbourne, for her assistance. Through her help, and that of Dr. Ian Cook of Brisbane, we now maintain a strain of T. gondii, and in 1961 carried out 137 complement-fixation tests using antigen prepared in our virus laboratories.

We still experience difficulty with dye tests.

Staff

Another technologist was appointed in August. Thus at the end of the year, staff in the serology laboratory consisted of one senior technologist, two technologists, two assistants, a typist, and a laboratory attendant.

7. *Histopathology*

Table 8 appendix shows the work done in the histopathology department for the year 1961. With the arrival of Professor Stirrat in early 1961 it was possible to reopen the histopathology department which had been temporarily closed after a period of almost 50 years activity. Under Professor Stirrat's able direction this department soon re-expanded to a normal service and as a result the unexpected departure of this officer late in the year threw a considerable strain on the very few officers available to carry out this work. A relatively new section of histopathology is that of exfoliative cytology : this work is especially important in a chest hospital and it was discussed fully in the Annual Report for 1960.

Properly carried out, exfoliative cytology is of much value and often serves to detect carcinomatous change when much more difficult types of investigations are not advisable or possible, and even when such investigations, e.g., bronchial biopsy have shown no malignant disease. For example, up to the present we have been able to demonstrate carcinoma cells in the sputum of over 80 per cent. of Chest Hospital patients who later were proved to have carcinoma. Such successes, particularly in detecting carcinoma of the cervix, have been much publicised in the Lay press and as a result whether we like it or not the public will insist on such services being made available, quite overlooking certain very important points. Firstly, the most satisfactory results will only be obtained when the work is carried out by a person with much experience of this work : our results in the Chest Hospital are due to the work having been consistently carried out only by one member of the medical staff. However, as numbers increase more and more, use will have to be made of "screening" workers, i.e., individuals with no pathology experience or training except in this one field. This is a regrettable expedient the value of which is still to be satisfactorily proved. Certainly there is little room for such workers in the examination of sputum specimens where " fringe benefits " are of such importance.

As an indication of the increasing use of this service both by hospital staff and by country practitioners, in 1961 the numbers of specimens examined per month rose to an average of 175 and already early in 1962 the number is over 300 per month.

During 1961 the histopathology material showed a surprisingly wide range but did not provide anything of outstanding interest except in the work on coronary heart disease which is discussed in the section on research.

8. *Parasitology*

This is still classed as a section of the work of the Salmonella Investigation Unit but with the opening-up of the North West of the State it will soon require to be treated as a separate sub-section of the laboratories. Even in the South Western areas of the State helminth infestations are not excessively rare, and already from the small amounts of material from the North West it is obvious that bowel infestation is as common as would have been expected in that near-tropical area.

In 1961 we twice identified Hymenolepis diminuta ova in the stools of a patient from a local practitioner : Sir Edward Ford of the School of Public Health, Sydney, kindly informed us that the last published records of such a finding in Australia were in 1939, and none had ever been reported from Western Australia previously.

IV.—BRANCH LABORATORIES

Table 9 summarises the work done in the branch laboratories during the year 1961. These figures do give some idea of the bulk of the work but do not give a clear picture of how varied are the demands on the workers in charge of branch laboratories. In their activities these men resemble the Barber of Seville, " Figaro here, Figaro there, Figaro, Figaro, everywhere." It is greatly to their credit that their work is no less high in quality than would be the case in more leisurely laboratories with large staffs, and in some ways we consider the men in charge of country laboratories are carrying the heaviest burdens in the laboratory services.

V.—RESEARCH

This laboratory service follows the English Public Health Laboratories in the recognition that research is an essential part of its functions. Such research, although a necessary leavening, should be of a practical nature and must not be on such a scale as to interfere with the primary functions of the laboratories. That this last is a real danger was well illustrated in 1961 when a whole series of research investigations were undertaken without prior reference to this laboratory although the laboratory part of the research was the basic investigation !

The research investigations listed in the 1960 Annual Report are being continued ; these are almost all research projects which were initiated by the laboratories themselves into problems of practical importance needing urgent attention, e.g., the question of the Quick versus the Owren Prothrombin Tests. It is interesting to note that in spite of their heavy routine duties certain of the branch laboratories also have undertaken small research projects into problems in which the individual worker is particularly interested, e.g., one laboratory is investigating improved methods of blood grouping.

In addition to the " domestic " research there had been a marked rise in the number of research projects being undertaken at the request of or with the cooperation of other departments or institutes, for example,

(1) Sub-clover infertility investigations being conducted in cooperation with the Bureau of Animal Health.

(2) Fly Survey.—Investigation of the part played by flies in the possible transmission of viral-bacterial bowel disorders. So far nothing significant has emerged from this but the number of flies obtained was much too small for this finding to have any significance.

(3) Diarrhoeal diseases investigation into the problem of summer diarrhoea

(4) Otitis externa investigation

} Both undertaken at the request of the Australian College of General Practitioners. The investigations will be reported more fully in the next report.

(5) World Health Organisation Research.—In late 1961 the World Health Organisation asked the Government of Western Australia to allow the Public Health Laboratories to become the World Health Organization reference laboratory for Mycobacteria serving all interested areas in the Western Pacific. This fits well with a continuation of Dr. Kovacs' original work and is a further recognition of his contributions in this field.

(6) Coronary Interarterial Anastomoses.—The State Government of Western Australia again has most generously supported continuance of research into this important problem.

VI.—PUBLICATIONS

During the year no papers were published by members of the staff concerning work done in these laboratories. Dr. Laurie published two letters connected with work done elsewhere.

Together with other workers a start has been made on the writing of a hand book dealing with hospital cross-infection and its prevention.

VII.—ACKNOWLEDGMENTS

Within the limits of this report it is not possible to thank the many individuals inside and outside Australia who have so often helped us in difficult problems over the year. Such a list of thanks would include workers on practically every Continent. None the less our gratitude to all these individuals is very real.

Departments to which we are especially indebted include the Commonwealth Health Service Western Australia, the Repatriation Department, the Mental Health Services, Fremantle Hospital, and the Coroner's Surgeon, Fremantle.

It is hardly necessary again to point out that, as the strength of a chain is the strength of its weakest link, the reputation of this laboratory service often rests with the large number of junior officers all of whom work hard and well : this is true in fact of all ranks of the service.

The Director wishes particularly to record his appreciation of the continued help given to him by Dr. Kovacs and by the Principal Technologist, Mr. Drummond.

Wm. Laurie,
Director, Public Health Laboratory Service.

Table 1

PUBLIC HEALTH LABORATORIES—PERTH CHEST HOSPITAL—WORK DONE 1961

GENERAL

Laboratory Sections	Source				1961 Total	1960 Total	1961 Increase
	State	Common-wealth	Hospital	Others			
Bacteriology :							%
Tests	25,700	9,350	2,996	1,290	39,336	25,019	57·2
Unit Values	260,562	66,881	22,101	9,931	359,475	263,193	36·6
Tuberculosis :							
Tests	....	28,558	....	....	28,558	22,148	28·9
Unit Values	....	176,946	....	....	176,946	132,253	33·8
Serology :							
Tests	27,886	2,726	337	1,217	32,166	29,006	10·9
Unit Values	133,778	12,580	1,732	12,925	161,015	161,581	....
Haematology :							
Tests	7,889	7,941	9,611	5,219	30,660	19,290	58·9
Unit Values	25,187	29,304	35,075	19,018	108,584	67,842	60·1
Biochemistry :							
Tests	1,665	3,964	3,306	681	9,616	4,425	117·3
Unit Values	23,350	38,128	29,721	9,256	100,455	36,505	175·2
Histopathology :							
Tests	5,143	1,934	687	1,238	9,002	1,886	4·8 times more
Unit Values	52,536	16,474	5,935	12,478	87,423	17,444	5 times more
Virology :							
Tests	22,366	....	....	....	22,366	20,831	7·4
Unit Values	....	....	....	....	....	....	....
Totals :							
Tests	90,649	54,473	16,937	9,645	171,704	122,605	40·0
Unit Values	495,413	340,313	94,564	63,608	993,898	678,818	46·4

Table 2

MICROBIOLOGY—WORK DONE 1961

	State					Commonwealth				Hospital			Others			Total 1961	Total 1960	Increase 1961
	General Bacteria	Salmonella	Mycology	Waters	Total	General Bacteria	Salmonella	Mycology	Total	General Bacteria	Salmonella	Total	General Bacteria	Salmonella	Total			
																		%
Animal Inoculations	716	183	....	....	899	....	....	....	....	....	....	....	....	....	....	899	106	8·5 times more
Blood Specimens	150	....	....	....	150	165	1	....	166	18	....	18	12	....	12	346	289	19·7
C.S.F. Specimens	53	....	....	....	53	22	....	....	22	54	....	54	18	....	18	147	109	34·9
Faeces Specimens	74	899	....	....	973	18	218	....	236	11	45	56	1	1	2	1,267	880	44·0
Foodstuffs—																		
Fresh	748	1,596	....	....	2,344	1	....	....	1	....	....	....	....	....	....	2,345	972	141·3
Frozen or Tinned	9	471	....	....	480	....	....	....	....	....	....	....	....	....	....	480	495	....
Fertiliser	....	13	....	....	13	....	....	....	....	....	....	....	....	....	....	13	32	....
Mycology Examinations	....	....	4,710	....	4,710	....	....	19	19	....	....	....	....	....	....	4,729	1,261	3·7 times more
Sensitivity Tests	3,204	40	....	....	3,244	2,601	....	....	2,601	974	....	974	514	....	514	7,333	4,263	72·0
Serum Effusions	64	....	....	....	64	233	....	....	233	102	....	102	8	....	8	407	306	33·0
Sputum	988	12	....	....	1,000	2,257	3	....	2,260	734	....	734	31	....	31	4,025	2,836	41·9
Swabs, All Sources	2,275	....	....	....	2,275	830	....	....	830	222	....	222	305	....	305	3,632	3,019	20·3
Urine Examinations	413	....	....	....	413	2,742	....	....	2,742	753	....	753	373	....	373	4,281	1,395	3 times more
Vaginal Specimens	359	....	....	....	359	50	....	....	50	12	....	12	2	....	2	423	244	73·4
Venereal Diseases (Go.)	1,225	....	....	....	1,225	15	....	....	15	2	....	2	....	....	....	1,242	913	36·0
Waters and Sewerage Surveys	....	....	....	5,579	5,579	....	....	....	....	....	....	....	....	....	....	5,579	6,085	....
Others	1,398	521	....	....	1,919	171	4	....	175	69	....	69	25	....	25	2,188	1,814	20·6
Total: Tests	11,676	3,735	4,710	5,579	25,700	9,105	226	19	9,350	2,951	45	2,996	1,289	1	1,290	39,336	25,019	57·2
Unit Values	96,420	88,816	22,641	52,685	260,562	64,995	1,814	72	66,881	21,747	354	22,101	9,927	4	9,931	359,475	263,193	36·6

Table A

RELATIVE SENSITIVITIES OF PATHOGENIC MICROORGANISMS

(Expressed in Percentage)

	Nos. of Strains	Penicillin 10 units	Streptomycin 10 micrograms	Chlorotetracycline 30 micrograms	Oxytetracycline 30 micrograms	Tetracycline 30 micrograms	Chloramphenicol 30 micrograms	Polymyxin B 100 units	Erythromycin 10 micrograms	Bacitracin 10 units	Neomycin 10 micrograms	Sulphadiazine 250 micrograms
Staphylococcus aureus*	725	39·5	61·5	81·9	81·9	83·9	97·9	0	100	100	96	18·8
Enterococcus	193	17·1	42·5	58	48·2	50·3	95·9	0	93·8	90·1	62·7	3·6
Ps. pyocyanea	153	0	62·7	36·6	48·4	25·5	40·5	97·4	0	0	53·6	21·6
E. coli	614	0	86	76·9	75·7	74·9	90·4	85·8	0	0	95·1	51
Streptococcus haemolyticus	167	86·9	34·7	100	100	100	100	0	100	100	30	51
Diplococcus pneumoniae	225	93·8	41·4	100	100	100	100	0	100	100	25	54·4
Bacterium anitratum	47	0	90	100	100	99·1	100	100	100	0	99	98·7

* Sensitivity of Staphylococcus aureus to 1 unit Penicillin : 17·5%

Table B

SALMONELLA AND SHIGELLA SPECIMENS EXAMINED

Specimen	Number Examined
Faeces	678
Egg Pulp	471
Coconut	1,282
Oysters	310
Moore Swabs	90
Birds	12
Cats	10
Flies (batches)	14
Sputa	8
Strains for Identification	128

Table C

SALMONELLA SEROTYPES ISOLATED—1961

Salmonella Serotypes	Human Sources		Other Sources						Total
	Cases	Isolations	Coconut	Egg Pulp	Strains Received	Moore Swabs	Cats	Flies	
S. typhi	6	9	....	....	4	7	....	....	20
S. paratyphi B.	....	....	31	....	2	....	....	....	33
S. typhimurium	12	13	11	24	14	....	1	....	63
S. senftenberg	3	3	100	....	....	....	....	....	103
S. cholerae suis	1	9	....	....	1	....	....	....	10
S. anatum	3	3	....	1	....	....	....	1	5
S. derby	5	6	....	8	1	....	....	....	15
S. adelaide	2	2	....	5	....	....	1	....	8
S. muenchen	2	2	....	....	3	....	....	....	5
S. oranienburg	1	1	1	1	....	....	....	....	3
S. chester	1	1	1	2	3	....	1	....	8
S. bovis morbificans	....	....	....	9	1	....	....	....	10
S. meleagridis	....	....	....	1	....	....	....	....	1
S. bareilly	....	....	16	1	....	....	....	....	17
S. reading	....	....	....	1	....	....	....	....	1
S. orion	....	....	....	1	1	....	....	....	2
S. pullorum	....	....	....	103	....	....	....	....	103
S. newport	....	....	4	....	....	....	....	....	4
S. perth	....	....	22	....	....	....	....	....	22
S. ferlac	....	....	26	....	....	....	....	....	26
S. chittagong	....	....	17	....	....	....	....	....	17
S. angoda	....	....	10	....	....	....	....	....	10
S. waycross	....	....	6	....	....	....	....	....	6
S. chingola	....	....	4	....	....	....	....	....	4
S. kotte	....	....	4	....	....	....	....	....	4
S. weltevreden	....	....	6	....	....	....	....	....	6
S. solna	....	....	3	....	....	....	....	....	3
S. muenster	....	....	2	....	....	....	....	....	2
S. san diego	....	....	1	....	....	....	....	....	1
S. braenderup	....	....	1	....	....	....	....	....	1
S. tennessee	....	....	1	....	....	....	....	....	1
S. hvittingfoss	....	....	1	....	....	....	....	....	1
S. nchanga	....	....	1	....	....	....	....	....	1
S. lexington	....	....	....	....	....	....	....	....	....
S. new brunswick	....	....	....	....	1	....	....	....	1
S. ball	....	....	....	....	2	....	....	....	2
S. enteritidis	....	....	....	....	1	....	....	....	1
S. urbana	....	....	....	....	1	....	....	....	1
S. decatur	....	....	....	....	....	....	....	1	1
S. unidentified	2	2	3	....	1	9	....	....	15
Total	....	51	272	157	36	16	3	2	537

Table D

43 SHIGELLA ISOLATIONS FROM FAECES—1961

Type	Public Health Laboratories, Perth	Strains Received from Other Laboratories	Total
	No.	No.	No.
Shigella flexneri type II	4	5	9
Shigella flexneri type VI	1	7	8
Shigella flexneri type Y	1	0	1
Shigella sonnei	9	12	21
Shigella boydii II	0	4	4
Total	15	28	43

Table E

SENSITIVITY RESULTS OF SHIGELLA STRAINS—1961

Shigella Strain	Number	Number of Strains Sensitive								
		Streptomycin	Chlorotetracycline	Oxytetracycline	Tetracycline	Chloramphenicol	Polymyxin B	Bacitracin	Furoxone	Sulphadiazine
Sh. flexneri type 2	9	7	7	7	7	9	9	0	9	1
Sh. flexneri type 6	8	4	4	4	4	4	8	0	7	2
Sh. flexneri type Y	1	1	1	1	1	1	1	0	1	0
Sh. boydii type 2	4	2	4	4	4	4	4	0	4	3
Sh. sonnei	21	20	21	21	21	21	21	2	20	6

Table 3

MICROBIOLOGY—TUBERCULOSIS SECTION—EXAMINATIONS IN 1961

Type of Examinations		1961 Total	1960 Total	1961 Increase
				%
Sputum—				
Direct Smears	19			
Centrifuged Deposits	10,624			
Cultures	10,574	21,291	13,768	54·6
Direct Guinea Pig Inoculations	74			
Gastric Contents—				
Centrifuged Deposits	192			
Cultures	783	1,372	1,315	4·3
Direct Guinea Pig Inoculations	397			
Laryngeal Swabs—				
Centrifuged Deposits	11			
Cultures	11	31	347	....
Direct Guinea Pig Inoculations	9			
Bronchial Lavage—				
Centrifuged Deposits	244			
Cultures	244	691	342	102·0
Direct Guinea Pig Inoculations	203			
Pleural Fluid—				
Sulas	14			
Centrifuged Deposits	140			
Cultures	143	436	317	37·5
Direct Guinea Pig Inoculations	139			
C.S.F.—				
Centrifuged Deposits	9			
Cultures	9	26	14	85·7
Direct Guinea Pig Inoculations	8			
Urine—				
Centrifuged Deposits	494			
Cultures	494	1,466	1,144	28·1
Direct Guinea Pig Inoculations	478			
Miscellaneous (Great part of research work on animal tuberculosis)—				
Centrifuged Deposits	708			
Cultures	715	1,631	3,670	....
Direct Guinea Pig Inoculations	208			
Virulence Tests		270	87	3 times more
Sensitivity Tests		1,344	1,137	18·2
Serum—				
*Streptomycin Serum Level Assay (104)				
INH Level Assay		....	7	....
Total Examinations		28,558	22,148	28·9

Total Number of Cultures 1961	12,973	
Number of Positive Cultures in 1961	1,299 (10%)	
Number showing Mycobacteria Tuberculosis	851	
Number showing Unclassified Mycobacteria	448	

* Tests done in Bacteriology Laboratory.

Table F

CULTURE RESULTS OF 262 POSITIVE SPECIMENS ON DIFFERENT MEDIA

Medium	Kirchner	Gottsacker with 0·02% Tween 80	Lowenstein-Jensen	Blood medium (B 16)	Middlebrook
	%	%	%	%	%
Positive	93·5	78·6	52·6	63·7	64·1

Table 4

VIRUS SECTION—WORK DONE 1961

Work Done	State	Commonwealth	Hospital	Others	Total 1961	Total 1960	Increase 1961
							%
Preparation of Inocula	435	12	7	124	578	1,002	....
Tissue Culture	4,961	247	163	2,035	7,406	4,529	63·5
Egg Inoculation	3,913	118	63	452	4,546	6,151	....
Animal Inoculation	3,150	132	79	1,188	4,549	3,624	25·5
Neutralisation	1,160	142	....	192	1,494	464	3 times more
Haemadsorption	124	9	19	73	225	501	....
Haemagglutination and Inhibition	565	60	127	454	1,206	611	97·4
Sterility Tests	336	5	8	34	383	925	....
Others	1,956	10	....	13	1,979	3,024	....
Total Tests	16,600	735	466	4,565	22,366	20,831	7·4

"*State*" includes all tests for :—
King Edward Memorial Hospital
Princess Margaret Hospital
Royal Perth Hospital
Public Health Department
All Special Surveys
Heathcote Hospital
Albany Hospital
Mount Hospital
Port Hedland Hospital
District Medical Officer

"*Hospital*"—Perth Chest Hospital

"*Commonwealth*"—All Commonwealth work including Repatriation General Hospital and Kalgoorlie

"*Others*"—
University
Private Doctors
St. John of God Hospital.

Table 5

BIOCHEMISTRY DEPARTMENT—1961

Work Done	Source				1961 Total	1960 Total	1961 Increase
	State	Commonwealth	Hospitals	Others			
							%
Serum/Plasma Tests	1,302	2,325	2,127	587	6,341	3,566	77·8
C.S.F. Tests	69	26	70	48	213	142	50·0
Gastric Content Examinations	2	....	3	....	5	3	66·6
Effusions	25	87	51	5	168	72	133·3
Urine Examinations	151	140	70	15	376	190	97·9
Metabolic Tests	3	61	28	11	103	48	114·6
Others (including blood collection)	113	1,325	957	15	2,410	404	5 times more
Totals—							
Tests	1,665	3,964	3,306	681	9,616	4,425	117·3
Unit Values	23,350	38,128	29,721	9,256	100,455	36,505	175·2

In addition all reagents used in country laboratories were prepared.

Table 6

HAEMATOLOGY DEPARTMENT—WORK DONE 1961

Tests Done	Source				1961 Total	1960 Total	1961 Increase
	State	Commonwealth	Hospitals	Others			
							%
Red Cells—							
Total levels	655	220	243	358	1,476	739	99·7
Haematocrit	670	692	881	398	2,641	1,747	51·2
Absolute Values	1,888	1,095	1,342	1,068	5,393	3,066	75·9
Sedimentation Rate	557	658	661	344	2,220	1,002	121·6
Film Examination	607	608	790	359	2,364	1,842	28·3
Fragility Tests	....	....	....	1	1	1	....
Reticulocytes	3	21	42	....	66	31	112·9
Stipple Cells	2	....	....	....	2	4	....
Haemoglobin Levels	826	726	899	450	2,901	1,904	52·4
White Cells—							
Total	726	710	864	355	2,655	1,669	59·1
Differential	683	711	859	335	2,588	1,597	62·1
L. E. Cells	3	10	25	3	41	27	51·9
Blood Grouping—							
Major	155	108	130	478	871	1,042	....
Minor	155	108	130	477	870	1,043	....
Compatability	5	234	264	....	503	357	40·9
Bone Marrow Examinations	11	4	15	1	31	16	93·8
Coagulation Tests—							
Prothrombin Time	83	336	544	41	1,004	543	84·9
Bleeding Time	....	9	24	....	33	16	106·2
Clotting Time	....	18	32	....	50	27	85·2
Clot Retraction	....	4	6	....	10	7	42·9
Others (including Blood Collection)	860	1,669	1,860	551	4,940	2,610	89·3
Totals—							
Tests	7,889	7,941	9,611	5,219	30,660	19,290	58·9
Unit Values	25,187	29,304	35,075	19,018	108,584	67,842	60·1

Table 7

SEROLOGY DEPARTMENT—WORK DONE 1961

Work Done	Source				1961 Total	1960 Total	1961 Increase
	State	Commonwealth	Hospitals	Others			
							%
Treponemal Tests	16,588	1,568	114	....	18,270	16,279	12·2
Gonococcal Tests	1,399	122	8	....	1,529	1,382	10·6
Hydatid Tests	38	12	5	....	55	53	3·8
Bacterial Agglutinations	4,157	435	92	....	4,684	3,929	19·2
Rheumatism Tests	359	210	26	75	670	701	....
Leptospiral Tests	2,545	247	50	....	2,842	1,329	113·8
Viral Rickettsial Tests	1,939	80	32	....	2,051	3,349	....
Hormone Tests	139	15	6	1,141	1,301	1,269	2·5
Medico-Legal Tests	520	....	....	....	520	525	....
Others	202	37	4	1	244	190	28·4
Totals—							
Tests	27,886	2,726	337	1,217	32,166	29,006	10·9
Unit Values	133,778	12,580	1,732	12,925	161,015	161,581	....

Table 7A

RED CROSS BLOOD DONORS TESTED AGAINST BRUCELLA ANTIGEN

Serum Dilution	20	40	80	160	320	640	1,280	Total Positive (any degree)	Total Tested
Positive Agglutinations (" one plus " or stronger)	43	20	5	1	....	1	1	71	1,501

Table 7B

SERA FOR ROUTINE AGGLUTINATION, TESTED AGAINST LEPTOSPIRE ANTIGEN

Serum Dilution	30	100	300	1,000	3,000	Total Positive	Total Tested
Agglutination with L. pomona	1	2	6	8	1	18	439
Agglutination with L. canicola	....	....	1	....	....	1	342
Agglutination with L. hyos	....	....	....	....	1	1	353
Agglutination with L. icterohaemorrhagiae	....	....	....	....	....	....	347

Table 8

HISTOPATHOLOGY DEPARTMENT—WORK DONE 1961

Work Done	Source				1961 Total	1960 Total	1961 Increase
	State	Commonwealth	Hospitals	Others			
							%
Exfoliative Cytology	755	1,025	335	14	2,129	1,856	14·7
Autopsies	56	....	....	....	56	30	86·6
Biopsies	1,580	870	338	1,196	3,984	....	....
Tissue Examination	2,589	....	....	....	2,589	....	....
Others	163	39	14	28	244	....	....
Totals—							
Tests	5,143	1,934	687	1,238	9,002	1,886	4·7 times more
Unit Values	52,536	16,474	5,935	12,478	87,423	17,444	5 times more

Table 9

PUBLIC HEALTH SATELLITE LABORATORIES—WORK DONE 1961

Laboratory Sections	Source						1961 Total	1960 Total	1961 Increase
	Albany	Bunbury	Derby	Geraldton	Northam	Wooroloo			
									%
Bacteriology—									
Tests	2,787	4,979	4,860	948	983	1,420	15,977	6,000	166·3
Haematology—									
Tests	4,048	8,139	1,407	2,865	2,414	3,512	22,385	13,563	65·0
Biochemistry—									
Tests	1,033	3,167	194	480	482	1,132	6,488	4,082	59·0
Total—									
Tests	7,868	16,285	6,461	4,293	3,879	6,064	44,850	23,645	89·6
Unit Values	34,465	160,633	51,623	27,312	20,506	24,300	318,839	162,121	96·6
Increase 1961—									
Tests	140%	22·6%	6 times	3 times	150%	92·3%	....	....	....
Unit Values	126%	45·2%	6½ times	3½ times	3½ times	60·8%	....	....	....

Appendix III

TUBERCULOSIS CONTROL BRANCH

Annual Report for the Year Ended 31st December, 1961

A ten year programme of intensive public health efforts has resulted in a steady decline in incidence and mortality. In 1961 an all-time mortality low of 2·6 per 100,000 population was recorded. Incidence rates have been falling more slowly ; total notifications for the year receded by 24 per cent. as compared with the previous year, but progressive figures suggest that little further fall will occur in 1962. This is related to the recommencement of Mass Surveys on a larger scale, giving an increased yield of cases from this source. Tuberculosis remains an important issue, as new cases are still discovered almost daily, indicating that eradication is still a good way off. Special problems such as the higher occurrence rate in silicotics, in persons born outside Australia (approximately two and a half times that of the Australian-born) and in ex-servicemen will be delaying factors. Further progress will depend on careful observation—as far as possible—of these and other groups at risk, maintenance of an up-to-date Case Register, removal of infectious patients from community contact, continued implementation of Mass Surveys along the lines recommended by the National Tuberculosis Advisory Council, and improved investigation procedures, such as regular routine bacteriological testing of all patients with apparently inactive lung lesions.

NOTIFICATIONS TO THE TUBERCULOSIS REGISTER

The 250 notifications are classified as follows according to type of disease :—

Pulmonary (adult type)		195
Pulmonary (childhood type)		2
Pleurisy with Effusion		12
Non-Pulmonary—		
Miliary	1	
Glands	8	
Skeletal	4	
Genito-urinary	24	
Abdominal	1	
Other	3	
		41

Seven cases were in children under 15 years, representing three per cent. of the total notifications ; two of these were migrants aged 14 with adult-type pulmonary lesions, both discovered in a Schools Tuberculin Survey. Only 5 children required admission to a children's ward for treatment, and of these only 3 had unequivocal typical mammalian tuberculosis. All responded well to treatment.

One case of bovine tuberculosis was reported, that of a migrant with pulmonary disease.

Twenty-one or 8·4 per cent. were re-notifications.

The proportion of new cases with minimal disease has risen, being now 43·1 per cent. of the total pulmonary notifications. This percentage should increase over the next few years if control measures remain at their present level.

STATE OF THE REGISTER

There was a sharp fall in the number of persons on the Register (Table 1). This was largely due to a complete review done during the year. Table 4 shows an analysis of all Register cases according to present extent of lesions and activity status.

CASE FINDING

Private practitioners were responsible for one-third of all new cases diagnosed.

Mass Compulsory Community Surveys

In May, a third Survey of the Metropolitan Area was begun, planned to cover initially a section of the northern suburbs. By the end of the year, the following districts had been surveyed :—

Town of Midland (including Midland Junction Railway Workshops).
Shire of Swan—Guildford.
Shire of Bassendean.
Shire of Bayswater.
Shire of Perth.

A total of 53,528 persons attended for their X-ray within the period specified by Gazettal notice. A running check of the Electoral Rolls was made throughout the Survey, and those who had not attended were requested by letter to present for X-ray. The final overall population cover was 80 per cent. Judging from replies received, the remaining 20 per cent. appeared to be made up as follows :—

Persons who had already been X-rayed within the previous twelve months (and not required to attend) .... 10 per cent.

Changed address, medically exempt, persistent defaulters, not on Electoral Roll 10 per cent.

Twenty cases of pulmonary tuberculosis had been diagnosed by the end of the year and admitted to hospital for treatment, and 10 more were under investigation as suspects. Several active cases were discovered amongst defaulters who later attended at written request. The defaulter call-up will continue through 1962.

The new case rate of 0·4 for every thousand films taken compares with 1·4 for the first Metropolitan Survey begun in 1954 and 0·7 for the 1957 Survey.

Sixteen cases of primary lung carcinoma were detected, of which five proved operable.

Two persons were prosecuted for not attending for x-ray and in each case a fine of £3 with £5 costs was imposed. Before prosecution was considered, they were given every opportunity to comply, including the offer of a Mantoux test as a substitute procedure.

The city will have been completely surveyed for the third time by about the middle of 1963, when well over 200,000 persons of 21 years and over will have been X-rayed.

EPIDEMIOLOGY AND PREVENTION

Testing of school children in the Metropolitan area was geographically integrated with the Mass X-Ray Units and continued at a steady pace. This was mainly done with the Heaf gun using concentrated Old Tuberculin; 11,078 children between the ages of 14 and 17 were tested; 88 Grade III and IV positive reactors were given prophylactic chemotherapy, and will have yearly follow-up X-rays. The percentage of positive reactors is high, due to cross sensitivity, and it will not be possible to use conversion rates in these age groups as an index of future control.

B.C.G. vaccination was limited to young contacts of known tuberculosis cases and other groups at special risk. Conversions occurred in 90 per cent. using the freeze dried vaccine, and there were no complications.

SPECIAL GROUPS

Migrants

Comparison with recent Census figures shows that the occurrence rate amongst persons born outside Australia is now about two and a half times that of the Australian-born population—that is to say, a group comprising 22·3 per cent. of the population accounts for over 40 per cent. of recent annual notifications and for 39 per cent. of patients at present on the Case Register (Tables 4 and 6). These figures are undoubtedly related to a high degree of exposure and "tuberculinization" in the country of birth. This group will continue to yield new cases out of proportion to its numbers in the community. Although all new migrants are examined under Commonwealth and State provisions, regular Mass Survey cover of those already established in the community is difficult and bound to be incomplete, since in many cases non-attendance cannot be checked through Electoral Rolls.

Miners

Table 7 which refers to men regarded as mine workers under the Mine Workers' Relief Act, discloses the continued high incidence of new cases of silicosis and the recent appearance of significant asbestosis in the mining industry. The seven recorded new cases of pulmonary tuberculosis all arose in established silicotics: one was infected with Group III atypical mycobacteria. The tuberculosis rate amongst miners has been remarkably constant since 1950 in spite of careful supervision from both the tuberculosis and pneumoconiosis angles. The proneness of silicotic lungs to invasion by the less virulent atypical mycobacteria—as well as by tubercle bacilli—illustrates their susceptibility to bacterial attack generally. The mechanism of progressive tuberculosis in these men might be reactivation of resting organisms in old primary lesions, following pulmonary damage after deposition of silicotic particles, rather than exogenous infection in already dusted lungs. If this is so, then little fall in the tuberculosis occurrence rate can be anticipated for the near future. Although a programme of prophylactic antimicrobial drugs for positive reactors among silicotics is contemplated with a prospect of limited success, one feels that the real solution depends on better methods of dust prevention.

Since 1957, Dr. J. C. McNulty has very capably combined the functions of Chest Physician and Mines Medical Officer in the mining areas.

Merchant Seamen

Since 1952, 71 cases of active tuberculosis have been diagnosed in merchant seamen, the larger proportion with advanced infectious disease. The extent of the problem is realized when one considers that for every case diagnosed, usually a crew member presenting because of marked symptoms, there must be other relatively symptom-free individuals and symptomless carriers in the merchant fleet who remain undetected. The exposure risk to crew members, passengers and seaport populations must be considerable. As a result of the efforts of Dr. R. M. Porter, the Western Australian State Shipping Service has recently instituted an annual chest X-ray scheme for all its employees. It is hoped that this principle might ultimately be applied to Australian seamen generally, and even to crews of ships of alien origin.

ATYPICAL (ANONYMOUS) MYCOBACTERIA

Table 8 shows the numbers of patients from whom atypical organisms were isolated. Of the 16 patients found to be consistently producing positive cultures, one had true pulmonary disease due to scotochromogens (Group II); 11 were considered to have pulmonary lesions due to nonphotochromogens (Group III); one, a child, had caseating cervical glands due to non-photochromogens; in the remaining three patients the pulmonary changes were not considered to be caused by mycobacteria. All patients from whom causal or intermittent isolations were obtained—excepting one who had a normal chest X-ray—had some form of chronic lung change, such as old healed tuberculosis, silicosis, bronchiectasis, bronchogenic carcinoma, non-specific fibrosis, so that the relationship between these organisms and chronic lung damage is a close one. Sensitivity tests disclosed almost uniform resistance to all three standard antituberculous drugs, except in the rapid growers (Group IV).

Atypical Antigens

Table 9 shows the results of comparative skin testing of Perth and Kalgoorlie school children with PPD–S and PPD–B, using both forearms simultaneously. In Kalgoorlie in particular there was a surprisingly large number giving a marked reaction to PPD–B, but little or no reaction to PPD–S. This might be related to the fairly common isolation of Battey type organisms from silicotics, and the occasional case of caseating cervical glands due to these organisms, turning up in the goldfields.

FUTURE PLANNING

Plans for 1962 include the following :—

More careful supervision of patients on drug therapy following discharge from hospital. This will involve more frequent home visits by Clinic Sisters, as well as improvement in other measures.

A complete Electoral Roll check for the third Metropolitan X-ray Survey now in progress, aiming at the greatest possible population cover.

Extension of country clinics to Bunbury and Albany and later Geraldton.

Improvement of contact follow-up, especially in country areas.

Routine X-ray of new grantees of Invalid and Aged Pensions (by arrangement through the Commonwealth).

A more thorough follow-up of migrants entering the country and consideration of the possibility of an effective X-ray cover of those already established here.

F. G. B. EDWARDS, B.A., LL.B., M.B., B.S.,
Director, Tuberculosis Control Branch.

Table 1

TUBERCULOSIS—MAIN STATISTICAL FIGURES

Year	Mean Population 1,000s.	Notifications				No. on Register (Pulm.)	Prevalence per 100,000 (Pulm.)	Number Receiving T.B. Allowance at 31-12-61	Deaths			Death Rate per 100,000	
		Pulm. (incl. Pleural effus.)	Non-Pulm.	Total	Pulm. per 100,000				Pulm.	Non-Pulm.	Total	Pulm.	All Forms
1950	558	586	18	604	104·8	2,100	376	515	125	3	128	22·4	22·9
1951	580	467	37	504	80·4	2,402	413	474	76	6	82	13·1	14·1
1952	601	508	49	557	84·5	2,574	428	396	75	7	82	12·5	13·6
1953	621	378	34	412	60·6	2,762	445	361	43	3	46	6·9	7·4
1954	640	348	34	382	54·3	2,769	432	326	57	4	61	8·9	9·5
1955	659	413	39	452	62·7	2,965	450	330	31	2	33	4·7	5·0
1956	677	424	44	468	62·6	2,900	428	264	43	3	46	6·3	6·8
1957	692	332	32	364	47·9	2,786	403	198	36	1	37	5·2	5·3
1958	706	355	24	379	50·3	2,726	386	213	22	4	26	3·1	3·4
1959	726	320	34	354	44·1	2,684	369	182	24	....	24	3·3	3·3
1960	731	296	34	330	40·5	2,388	327	148	29	1	30	4·0	4·1
1961	737	209	41	250	28·4	1,349	183	89	18	1	19	2·4	2·6

Table 2

ANNUAL NOTIFICATIONS OF PULMONARY TUBERCULOSIS SHOWING STAGE OF DISEASE*

Year	Parenchymal Disease						Pleural Effusion		Total
	Minimal		Moderately Advanced		Advanced				
		%		%		%		%	
1952	122	24	275	54·1	101	19·9	10	2	508
1953	98	25·9	210	55·5	65	17·2	5	1·4	378
1954	96	27·6	178	51·1	74	21·3	....	....	348
1955	111	26·9	225	54·5	64	15·5	13	3·1	413
1956	127	38	217	51·1	72	17	8	1·9	424
1957	102	30·7	163	49·1	61	18·4	6	1·8	332
1958	91	25·6	187	52·7	72	20·3	5	1·4	355
1959	103	32·2	151	47·2	55	17·2	11	3·4	320
1960	89	30·1	144	48·6	49	16·6	14	4·7	296
1961	†90	43·1	73	34·9	34	16·3	12	5·7	209

* Classified according to Diagnostic Standards N.T.A. † Includes 2 Primary.

Table 3

TUBERCULOSIS NOTIFICATIONS FOR THE YEAR ENDED 31ST DECEMBER, 1961

Showing Age, Sex, Form and Stage of Disease

Age Group	Males					Females					Persons					Total
	Pulmonary			N.P. T.B.	Pleur. Effus.	Pulmonary			N.P. T.B.	Pleur. Effus.	Pulmonary			N.P. T.B.	Pleur. Effus.	
	Min.	Mod.	Adv.			Min.	Mod.	Adv.			Min.	Mod.	Adv.			
0– 4	2*	....	....	1	....	....	....	....	2	....	2	....	....	3	....	5
5– 9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
10–14	....	....	....	....	....	1	1	....	....	....	1	1	....	....	....	2
15–19	1	....	1	1	....	1	....	....	3	....	2	....	1	4	....	7
20–24	1	....	2	1	1	2	....	....	....	1	3	....	2	1	2	8
25–29	7	2	1	1	....	4	1	....	2	2	11	3	1	3	2	20
30–34	2	2	1	2	2	4	4	....	7	....	6	6	1	9	2	24
35–39	6	4	3	1	1	3	....	....	....	1	9	4	3	1	2	19
40–44	6	3	3	2	....	5	1	1	....	....	11	4	4	2	....	21
45–49	7	7	2	3	....	4	2	1	....	....	11	9	3	3	....	26
50–54	5	6	1	....	2	2	1	1	2	....	7	7	2	2	2	20
55–59	4	5	3	2	1	....	1	....	....	....	4	6	3	2	1	16
60–64	5	5	3	2	....	2	3	....	2	....	7	8	3	4	....	22
65–69	5	4	3	3	....	1	2	....	....	....	6	6	3	3	....	18
70–74	5	7	3	2	....	1	2	1	....	....	6	9	4	2	....	21
75–	4	9	4	2	1	....	1	....	....	....	4	10	4	2	1	21
N/S	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Total	60	54	30	23	8	30	19	4	18	4	90	73	34	41	12	250

* Primary.

Table 4

ANALYSIS OF REGISTER AS AT 31st DECEMBER, 1961

A. *Pulmonary Tuberculosis*
(excluding Pleural Effusions)

Activity	Number on Register according to present extent of lesions			Total
	Minimal	Moderate	Advanced	
Active	66	111	55	232
Inactive for—				
0–1 year	93	74	18	185
1–2 years	120	85	17	222
2–3 years	147	92	20	259
3–4 years	134	99	21	254
4–5 years	64	84	17	165
5+ years	1	3	....	4
Total	625	548	148	1,321

B. *Pleural Effusions*	28
C. *Non-Pulmonary Tuberculosis*	103
Total (all forms)	1,452

MIGRANTS ON REGISTER

Arrived prior to 1948	288
Arrived since 1948	282
Total	570 (39%)

Note: Pulmonary Tuberculosis:

Non-resection cases	Are removed from Register after 5 years continuous inactivity.
Resection cases (provided all diseased lung is virtually removed)	Are removed from Register after 3 years continuous inactivity.
Pleural effusions	
Non-Pulmonary Tuberculosis	Cases are removed after 2 years inactivity.

Table 5

SHOWING RESULTS OF TUBERCULIN SURVEY OF SCHOOLCHILDREN

Heaf Gun Tests (Using concentrated old tuberculin)—		
Total number tested		11,078
Total number read		10,355
Less number previously vaccinated		77
Number Analysed		10,278
Of Whom—		
Number of negative reactors		9,294
Number of positive reactors—Heaf Gun—Grade I	708	
Number of positive reactors—Heaf Gun—Grade II	191	
Number of positive reactors—Heaf Gun—Grade III	78	
Number of positive reactors—Heaf Gun—Grade IV	7	
Total number of positive reactors		984
X-Rays—		
Number of positive reactors X-rayed		1,049
Number of normal X-rays	1,043	
Number of abnormal X-rays (including 1 case of active pulmonary tuberculosis)	6	

Details of Reactions

Age (yrs.)	No. Analysed	No. Negative	Positive Reactors					
			Grade I	Grade II	Grade III	Grade IV	Total	Per cent.
5 and under	227	226	...	1	...	...	1	0·4
6	427	415	11	1	...	...	12	2·8
7	479	470	8	1	...	...	9	1·9
8	519	498	19	2	...	...	21	4·1
9	581	556	22	3	...	...	25	4·3
10	633	595	29	8	1	...	38	6·0
11	624	581	33	5	5	...	43	7·0
12	912	843	58	10	1	...	69	7·6
13	1,940	1,765	144	20	10	1	175	9·0
14	1,997	1,741	176	51	28	1	256	12·8
15	1,108	927	114	52	14	1	181	16·3
16	537	440	58	24	13	2	97	18·0
17 and over	294	237	36	13	6	2	57	19·4
Total	10,278	9,294	708	191	78	7	984	9·6

Table 6

PULMONARY TUBERCULOSIS—NOTIFICATIONS AMONGST MIGRANTS, 1959-61

Year	Arrived prior to 12/2/48	Arrived Subsequent to 12/2/48				Total Migrants Notified	Percentage of Total Notifications
		British Full-Fare	British Assisted	Aliens	Total		
1959	60	9	15	32	56	116	36·3
1960	73	15	13	29	57	130	43·9
1961	47	14	4	31	49	96	45·9

Per cent. population born outside Australia (1961 Census)—22·3.

Table 7

SHOWING RESULTS OF PERIODICAL EXAMINATION OF MINE WORKERS

Year	Total No. of Examinations	Silicosis Cases Examined	New Cases of Silicosis	Asbestosis Cases Examined	New Cases of Asbestosis	New Cases of Pulmonary Tuberculosis
1950	6,203	349	14	....	....	12
1951	5,721	305	13	....	....	12
1952	5,959	294	9	....	....	12
1953	5,312	356	80	....	....	3
1954	6,179	487	158	....	....	16
1955	5,506	497	70	....	....	5
1956	5,476	474	30	....	....	9
1957	4,811	483	34	....	....	10
1958	6,286	582	54	....	....	8
1959	7,269	569	71	....	....	10
1960	7,385	530	50	....	....	12
1961	7,882	551	57	11	4	7

Table 8

SHOWING PATIENTS FROM WHOM ATYPICAL (ANONYMOUS) MYCOBACTERIA WERE ISOLATED IN 1961

Group	Casual Isolations	Intermittent Isolations	Persistent Isolations	Total Patients
I	....	....	....	....
II	7	....	1	8
III	57	4	15	76
IV	27	1	....	28
Total Patients	91	5	16	112

Table 9

SCHOOLCHILDREN AGED 6–17 YEARS

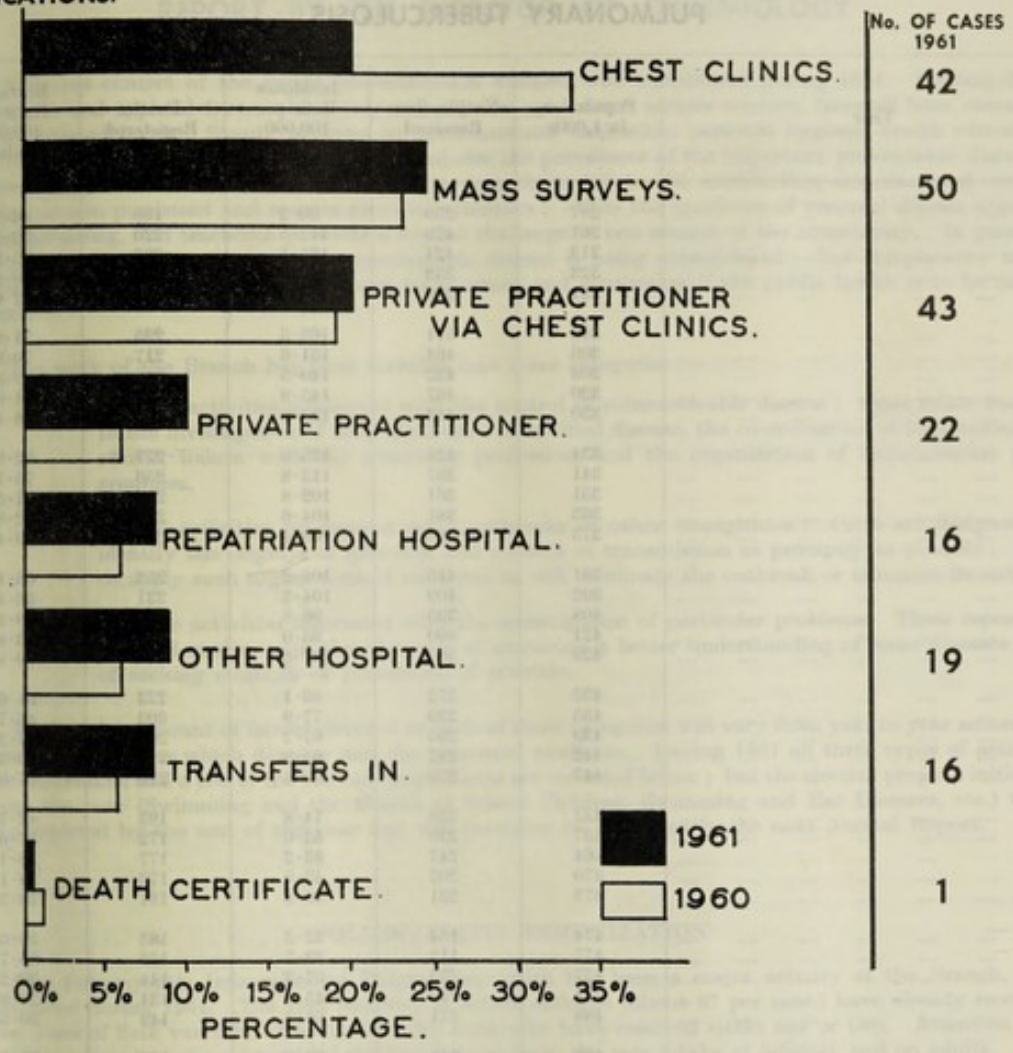
Results of Simultaneous Skin Testing with P.P.D.–S. (5 T.U.) one arm and P.P.D.–B. (5 T.U.) other arm

	Not Born in Australia	Born in Australia	Males	Females	Total
1. Larger reaction to P.P.D.–S.	15	24	32	7	39
2. Larger reaction to P.P.D.–B.	24	366	247	143	390
3. Equal reaction to both	2	6	7	1	8
4. No reaction to either	77	587	416	248	664
Total	118	984	703	399	1,102

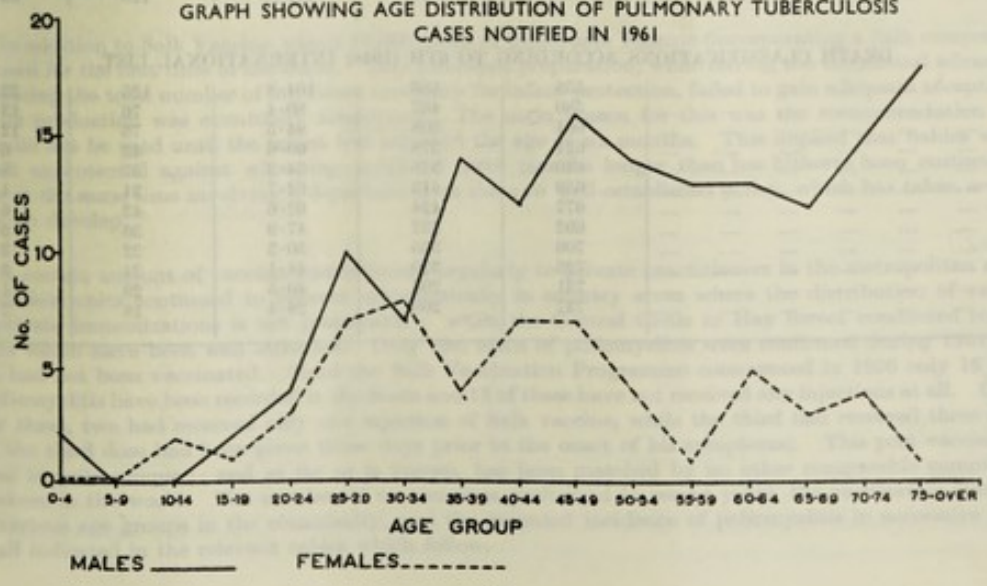
Analysis of Reactions

	Size of x Reaction		
	Under 5 m.m.	5–9 m.m.	10 m.m. and over
1. Those with larger P.P.D.–S. reaction (x = P.P.D.–S.)	2	9	28
2. Those with larger P.P.D.–B. reaction (x = P.P.D.–B.)	8	255	127
3. Those with larger P.P.D.–B. reaction (x = P.P.D.–S.)	368	18	4
4. Those with equal reaction	1	5	2

GRAPH SHOWING THE SOURCE OF NOTIFICATION OF CASES OF PULMONARY TUBERCULOSIS AS PERCENTAGE OF TOTAL NOTIFICATIONS.



GRAPH SHOWING AGE DISTRIBUTION OF PULMONARY TUBERCULOSIS CASES NOTIFIED IN 1961



Appendix IV

Western Australia

PULMONARY TUBERCULOSIS

Year	Population in 1,000s	Notifications Received	Incidence Rate per 100,000 Population	Deaths Registered	Mortality Rate per 100,000 Population
1911	287	259	90·2	190	66·2
1912	301	429	142·5	220	73·1
1913	313	424	135·5	206	65·8
1914	323	353	109·3	229	70·9
1915	321	336	104·7	233	72·6
1916	313	511	163·5	225	71·9
1917	306	464	151·6	217	70·9
1918	308	432	140·5	245	79·5
1919	320	467	145·9	289	91·6
1920	330	442	133·9	259	78·4
1921	334	424	126·9	277	82·9
1922	341	387	113·8	256	75·1
1923	351	361	102·8	216	61·5
1924	363	381	104·6	228	62·8
1925	373	403	108·4	259	69·4
1926	381	415	108·2	252	66·1
1927	392	409	104·3	231	56·4
1928	408	395	96·8	282	69·1
1929	421	400	95·0	245	53·4
1930	429	569	132·6	218	50·8
1931	432	372	86·1	223	51·6
1932	435	339	77·9	203	46·7
1933	439	295	67·2	207	47·2
1934	442	287	64·9	218	49·3
1935	447	270	60·4	210	47·0
1936	452	338	74·8	193	42·7
1937	457	239	53·0	172	37·6
1938	464	247	53·2	177	38·1
1939	470	202	43·0	179	38·1
1940	473	231	48·8	181	38·3
1941	474	154	32·5	185	39·0
1942	477	113	23·7	175	36·7
1943	477	273	57·3	144	30·2
1944	481	219	45·4	134	27·9
1945	488	271	55·5	149	30·5
1946	493	343	69·6	163	33·1
1947	502	372	74·0	128	25·4
1948	515	325	63·1	157	30·5
1949	533	499	93·6	123	23·1
1950	558	586	104·8	129	23·1
DEATH CLASSIFICATIONS ACCORDING TO 6TH (1948) INTERNATIONAL LIST.					
1950	558	586	104·8	125	22·4
1951	580	467	80·4	76	13·1
1952	601	508	84·5	75	12·5
1953	621	378	60·6	43	6·9
1954	640	348	54·3	57	8·9
1955	659	413	62·7	31	4·7
1956	677	424	62·6	43	6·3
1957	692	332	47·9	36	5·2
1958	706	355	50·3	22	3·1
1959	726	320	44·1	24	3·3
1960	731	296	40·5	29	4·0
1961	737	209	28·4	18	2·4

Appendix V

REPORT BY THE DIRECTOR OF EPIDEMIOLOGY

Effective control of the major communicable diseases was maintained during 1961. Poliomyelitis, diphtheria and typhoid fever, which only a few years ago caused serious concern, have all been curtailed to insignificant levels. Steady progress in environmental sanitation, personal hygiene, health education and child immunisation, have combined to minimise the prevalence of the important preventable diseases. Nevertheless, a number of the lesser infections, *e.g.*, those due to the salmonellae, shigellae, and certain viruses remain persistent and require renewed attention ; while the incidence of venereal disease appears to be increasing, and trachoma presents a special challenge in one section of the community. In general, it may be said that the control of communicable disease is being consolidated ; but complacency must be avoided and preventive measures must be constant and continuing if the public health is to be maintained.

The work of the Branch has been divisible into three categories :—

(1) Routine activities connected with the control of communicable disease : these relate mainly to the investigation of individual cases of notified disease, the co-ordination of local authority efforts, liaison with the practising profession, and the organisation of immunization programmes.

(2) Special activities consequent upon outbreaks or other emergencies : these are designed to identify the origin/s of infection and mode/s of transmission as promptly as possible ; and to apply such urgent control measures as will terminate the outbreak or minimise its extent.

(3) Elective activities associated with the investigation of particular problems. These represent planned studies with the objective of acquiring a better understanding of some diseases and of seeking methods of prevention if possible.

The relative amount of labour devoted to each of these categories will vary from year to year according to the circumstances which develop and the personnel available. During 1961 all three types of activity were undertaken and a few of the relevant experiences are recorded below ; but the elective projects initiated during the year (Swimming and the Health of School Children, Swimming and Ear Diseases, etc.) were not completed by the end of the year and will therefore be described in the next Annual Report.

POLIOMYELITIS IMMUNIZATION

The Poliomyelitis Immunization Programme, which has been a major activity of the Branch, was maintained during 1961. The vast majority of school children (about 87 per cent.) have already received three doses of Salk vaccine, while most of the remainder have received either one or two. Attention was therefore concentrated on pre-school children (particularly the new intake of infants), and on adults. The reduced number of inoculations (about 50,000) administered during the year was largely due to a prolonged interruption in supplies of vaccine caused by production difficulties at the Commonwealth Serum Laboratories in Melbourne.

In addition to Salk Vaccine, about 10,000 doses of Quadruple Vaccine (incorporating a Salk component) was used for the first time in the State. This combined preparation, while having the theoretical advantage of reducing the total number of injections necessary for infant protection, failed to gain adequate acceptance, and its production was eventually abandoned. The main reason for this was the recommendation that it should not be used until the infant had attained the age of six months. This implied that babies would be left unprotected against whooping cough for three months longer than has hitherto been customary ; while at the same time involving a departure from the now well-established policy, which has taken several years to develop.

A certain amount of vaccine was delivered regularly to private practitioners in the metropolitan area ; but mobile units continued to operate systematically in country areas where the distribution of vaccine for private immunizations is not practicable ; while the Central Clinic in Hay Street conducted regular clinics which have been well attended. Only two cases of poliomyelitis were confirmed during 1961, and both had not been vaccinated. Since the Salk Vaccination Programme commenced in 1956 only 16 cases of poliomyelitis have been recorded in the State and 13 of these have not received any injections at all. Of the other three, two had received only one injection of Salk vaccine, while the third had received three doses (but the third dose had been given three days prior to the onset of his symptoms). This post vaccination record is quite unique ; and as far as is known, has been matched by no other comparable community anywhere in the world. The number of vaccinations performed in recent years, the vaccination status of the various age groups in the community, and the recorded incidence of poliomyelitis in successive years are all indicated in the relevant tables which follow.

ANNUAL SALK VACCINATIONS

(Since 1/7/56 when Salk Vaccination began)

Year	No. of Separate Injections Given
1956 (July-December)	224,466
1957	415,166
1958	273,017
1959	309,914
1960	140,590
1961	49,830*
Total	1,412,983

* In addition, 10,134 doses of Quadruple Vaccine (which included a Salk Vaccine component) was used during the year on infants.

SALK VACCINATION STATUS: W.A.

(From 1/7/56 when Vaccination began, to 31/12/61)
Ages adjusted to 31/12/61

Age Group	Population 1961 Census	Three Injections	One or Two Injections	One, Two or Three Injections
0–4	81,916	60,356 (74%)	....	....
5–9	80,752	67,097 (83%)	....	....
10–14	77,041	64,525 (84%)	....	....
Under 15	239,709	191,978 (80%)	33,150 (14%)	225,128 (94%)
15–19	57,739	50,420 (87%)	....	....
20 and over	439,181	187,322 (43%)	....	....
Over 15	496,920	237,742 (48%)	44,456 (9%)	282,198 (57%)
All Ages	736,629	429,720 (58%)	77,606 (11%)	507,326 (69%)

POLIOMYELITIS INCIDENCE

(Since Salk Vaccination)

Year	Not Vaccinated		Vaccinated		Total
	Non-Paralytic	Paralytic	Non-Paralytic	Paralytic	
1956 (July-December)	1	1	....	....	2
1957	....	3	....	....	3
1958	....	1	....	....	1
1959	....	2	....	3	5
1960	....	3	....	....	3
1961	....	2	....	....	2
Total	1	12	....	3*	16

* Two had received only one injection; one had received all three (but the third dose was given only three days prior to the onset of symptoms).

SMALLPOX VACCINATION

It is over 20 years since smallpox occurred in a West Australian ; although there have been several occasions on which a ship has arrived at Fremantle with a smallpox patient on board. The exclusion of smallpox from the State may be attributed to the highly efficient surveillance exercised by the Commonwealth Quarantine Service. Nevertheless, the increasing speed and popularity of air travel, and the recurrence of smallpox in neighbouring countries, together with recent outbreaks caused by travellers in Britain, have focussed attention on the constant possibility of smallpox virus being introduced into this State. The main personal safeguard against this infection is vaccination ; and because the proportion of West Australians who have been vaccinated against this disease was not known, a survey was conducted during the winter among metropolitan school children. Questionnaires were distributed to the parents of over 80,000 school children ; and 75,000 records were returned. Analysis disclosed that *only* 13 *per cent. of Perth school children had been vaccinated against smallpox and about three-quarters of these were children from immigrant families who had been vaccinated prior to their arrival in Australia.* This information suggests that in the event of smallpox being introduced into the State, the health services would be confronted with a formidable task of emergency vaccination. There are good reasons for encouraging the routine vaccination of young children against this disease :—

(1) The elimination of smallpox from countries close to Australia is unlikely in the foreseeable future.

(2) Despite existing precautions, the possibility of the virus being introduced into the State exists.

(3) Primary vaccination in childhood is safer and less inconvenient than in adult life.

(4) Vaccination against smallpox is an obligatory international requirement for persons travelling abroad, and an increasing number of Australians are doing so.

While the measure of the hazard does not justify a special campaign, every effort should be made to encourage mothers to have their infants vaccinated prior to their commencing schooling, and the co-operation of the Infant Health Service and of the medical profession has been sought for this purpose.

VENEREAL DISEASE

There was some increase in the number of notifications during 1961 (136 as opposed to 93 in the preceding year). It is difficult to say whether this is due to more complete reporting or whether it represents a real increase. In any event, increases in the prevalences of venereal disease in other States and in other parts of the world indicate that greater attention to this problem will be necessary henceforward.

During the year steps were taken to reorganise the investigation and control of this group of infections. A special circular covering all aspects of venereal disease was distributed to general practitioners. The system of notification of defaulters and suspected sources of infection was revised. A special officer was assigned to the task of ensuring a closer liaison between all those persons and agencies concerned with treatment and prevention ; and efforts to neutralise the origins of infection were increased. Nevertheless, venereal disease, for obvious reasons, is extremely difficult to control. Adequate powers exist within the Health Act but these need to be exercised with the utmost discretion in order that the public health may be protected with a minimum of embarrassment to those involved.

VENEREAL DISEASES NOTIFIED

Year	Syphilis (all types)	Gonorrhoea	Granuloma (Inguinale)	Chancroid (Soft Sore)	Total
1951	66	261	10	1	338
1952	39	173	4	2	218
1953	43	189	2	1	235
1954	21	188	1	2	212
1955	14	188	1	....	203
1956	12	188	....	....	200
1957	14	217	1	....	232
1958	5	148	....	1	154
1959	8	72	....	1	81
1960	6	87	....	....	93
1961	17	119	....	....	136

DRUG ADDICTION

Drug addiction and regular treatment for more than two months with addiction-producing drugs have been notifiable in Western Australia since early 1960. Drug addiction is defined as " a state of periodic or chronic intoxication produced by the repeated consumption of a drug, which state is often characterised by a desire to continue taking the drug, a tendency to increase the dose and a psychic and physical dependence on the effect of the drug."

Addiction-producing drugs are specified as follows :—

Adanon	Omnopon
Coc. Opth. Tabs.	Paracodin
Cotussate	Papaveret
Dromoran	Pethedine
Dilaudid	Physeptone
Dicodid	Synthanal
Heptalgin	Tuscodin
Hycodin	Ticarda
Lucodin	Tr. Opii
Methadon	Ext. Opii
Cocaine	Liq. Opii Sed.
Codein Phos	Pulv. Opii (and preparations)
Codein Pur	Tr. Anod & Nepent
Dionine	Tr. Canabis Indica
Morphia (and preparations)	Pholcodine
M.S.A.	Calcidrine
M. & A.	

Since the advent of obligatory notification by medical practitioners early in 1960 (and up to September 30, 1962), 94 reports of one or other kind have been received. Of these, 18 have been for frank addiction, and the remaining 76 for prolonged treatment with drugs capable of causing addiction.

The 18 addiction notifications include six true addicts (three cocaine and three morphia), six other patients (three pethedine and three morphia) in which addiction was associated with some major medical or surgical condition, and six persons who were dependent upon drugs not specifically included in the declared list (three barbiturate, two " Doriden " and one benzedrine).

The 76 patients being treated for longer than two months with drugs capable of inducing addiction were made up approximately as follows :—

Cancer (inoperable or terminal)	27
Bone and joint diseases, such as spondylitis, osteo-arthritis, Paget's disease and Sarcoma	15
Cardio-vascular disease	8
Chronic bronchitis	6
Neuralgia	5
Miscellaneous diseases	15
	76

The main drugs used in order of popularity appeared to be :—

Morphia and its derivatives	24
Pethedine	19
Physeptone	15
Codeine	6
Various other drugs	12
	76

TRACHOMA

The following report is based on material provided by Dr. Allen, who assumed responsibility for supervision of the Trachoma Control Programme early in the year, in consultation with two part-time ophthalmologists associated with the Branch.

The Trachoma Control Unit maintained its detection-treatment campaign during 1961, concentrating on the aboriginal and part-aboriginal sections of the community, to which the trachoma problem is largely confined. The various missions, camps and other native groups throughout the southern part of the State were visited at regular intervals ; and those individuals showing evidence of the disease in an active form were treated.

Of the 5,305 coloured persons examined during the year about 51 per cent. showed evidence of active trachoma ; while most of the remainder presented some degree of scarring indicative of healed infection. The findings in the various age groups are indicated in the accompanying table and it will be seen that the disease is restricted mainly to pre-school children and the younger school children. The relatively high prevalence of the active disease disclosed, indicates that past efforts to control this disease through the use of short-acting sulfonamides of various kinds has not been successful.

TRACHOMA INCIDENCE

Age Group	Number Examined	Number and Proportion with Active Trachoma
0–4	1,327	1,129 (85%)
5–9	1,644	1,029 (63%)
10–14	1,184	365 (31%)
15 and over	1,150	187 (16%)
All Ages	5,305	2,710 (51%)

A long-acting sulfonamide (sulpha-methoxy-pyridazine) was used for routine treatment throughout the year in a dosage of 3 grammes spread over five days for children of school age, and half this dosage for pre-school children. It will not be possible to analyse the precise effect of this system of treatment until all groups have been re-examined later ; but provisional findings indicate that at least a proportion of those treated have been cured.

Meanwhile an attempt was made to evaluate the influence of this drug in the dosage mentioned, in a group of 50 coloured children with active trachoma, living in a semi-closed community under supervision. These children were re-examined every month over a period of six months and of 44 who were available for final assessment, 23 were regarded as cured, 9 improved and 12 unchanged. In other words, about 50 per cent. of the subjects treated appear to have been cured.

The influence of re-infections in sustaining a high prevalence of trachoma is disturbing ; for although full data is not yet available, there are many indications that the problem of re-infection is vitiating present efforts at trachoma control through the use of sulfonamide preparations. More accurate information will be available during the ensuing year and a clearer assessment of the problem will then be possible ; but it is already evident from local experience and from overseas reports that sulfonamides alone will not enable trachoma to be controlled, let alone eradicated. Encouraging reports concerning the use of antibiotic ointment for brief periods each month for several months are now being examined ; and if the indications warrant it, appropriate trials will be conducted.

In any event, it would seem that the long-term solution to the trachoma problem is an elevation in the standard of living of native groups ; and that all that can be accomplished in the meantime is the prevention of the more disabling complications of the disease, and some small reduction in its overall prevalence.

DESICCATED COCONUT

As reported in the previous Annual Report, it became necessary to exercise special surveillance over desiccated coconut from Ceylon last year. Routine sampling (on the basis of 10 per cent. of all bags in each consignment) has been carried out since July, 1960. Altogether, during the period July, 1960–March, 1962, inclusive, a total of 46 consignments of desiccated coconut were landed in Western Australia (30 from Ceylon and 16 from the Philippines). By special arrangement with local importers, all these consignments were withheld from distribution pending sampling and bacteriological examination.

The 30 consignments from Ceylon comprised 8,224 bags, of which 1,280 were sampled ; and 200 of these were found to contain salmonellae (representing 24 distinct sero-types). The 16 consignments from Manila comprised 2,229 bags of which 315 were sampled ; and 87 found to contain salmonellae (all S. senftenberg). The frequency of sero-types isolated is shown in the accompanying list.

FREQUENCY OF SALMONELLA SERO-TYPES ISOLATED
(Desiccated Coconut in W.A. : 1/7/60 to 31/3/62)

		Ceylon	Philippine
1.	S. paratyphi B	31	....
2.	S. ferlac	31	....
3.	S. perth	22	....
4.	S. chittagong	22	....
5.	S. bareilly	21	....
6.	S. waycross	14	....
7.	S. typhi-murium	14	....
8.	S. senftenberg	8	87
9.	S. kotte	8	....
10.	S. angoda	8	....
11.	S. newport	7	....
12.	S. thompson	4	....
13.	S. chingola	4	....
14.	S. solna	3	....
15.	S. hvittingfoss	3	....
16.	S. nchanga	2	....
17.	S. java	2	....
18.	S. simsbury	2	....
19.	S. muenster	2	....
20.	S. rubislaw	1	....
21.	S. butantan	1	....
22.	S. oranienberg	1	....
23.	S. stanley	1	....
24.	S. chester	1	....
		213	87

Ceylon total includes 13 double contaminations.

DIPHTHERIA

Early in the year an unimmunized New Australian schoolboy in a large country town (where the general immunization rate was very high) was found to be suffering from mild diphtheria. Ten household and other intimate contacts were examined and swabbed in the hopes of identifying the source of infection. Of these, two were found to be harbouring *C. diphtheriae*. One was a brother of the patient ; his throat was clinically clear and he had been immunized. The other was a playmate next-door ; he had not been immunized and had suffered from a recurrent sore throat and was thought to be the carrier involved. The 42 classmates of the latter were then swabbed by the local doctor (presumably to detect early infections) and two further positives were revealed. Nine other domestic contacts were then swabbed with negative results. All those found positive were isolated in hospital and treated with antitoxin and antibiotics. This experience illustrates the epidemiology of diphtheria in a compact, highly immunized child community quite well.

In any event emergency immunization clinics were set up to ensure that the immunity of all the children in the town was quickly re-inforced ; and some 2,000 inoculations were administered over a period of about three days. No further cases were reported.

The use of multiple or combined antigens in recent years has somewhat complicated the problem of emergency boosters, but the following immunization policy was adopted in this situation :—

(1) Under 4 years : Triple Antigen.

(2) 4–6 years : C.D.T. (0·5 ml.).

(3) 6–16 years :

(a) If inoculated within preceding three years—P.T.A.P. (0·25 ml.).

(b) If inoculated more than three years previously—C.D.T. (0·5 ml.).

(4) 17 years and over : Moloney Skin Test (0·1 ml. Diluted P.T.A.P. intradermally) ; re-examined in 24 hours ; if no local reaction : C.D.T. (0·5 ml.).

Of about 1,600 inoculated with C.D.T. about 10 developed swollen arms (almost all over the age of 14 years). Only two of 144 who were Moloney-tested in the age group 17 and over showed severe local reactions (erythema and/or induration exceeding 4 cms. in diameter).

VENEREAL DISEASE IN WESTERN AUSTRALIA

	Male		Female		Total	
	1960	1961	1960	1961	1960	1961
Syphilis—						
Primary	1	5	....	1	1	6
Secondary	2	1	1	1	3	2
Tertiary	1	6	1	3	2	9
Congenital	....	....	....	....	....	....
Total Syphilis	4	12	2	5	6	17
Gonorrhoea	69	109	18	10	87	119
Granuloma	....	....	....	....	....	....
Chancroid	....	....	....	....	....	....
Grand Total	73	121	20	15	93	136

Appendix VI

REPORT OF MATERNAL MORTALITY COMMITTEE FOR YEAR 1961

The Maternal Mortality Committee of Western Australia, which was established by an Amendment to the Health Act assented to on 11th October, 1960, completed the first full year of its activity at the end of 1961.

Briefly, the provisions of the Act (Part XIIIA of the Health Act of Western Australia) now require :—

(a) the immediate reporting of every maternal death in Western Australia to the Commissioner of Health ;

(b) the appointment of an investigator, who is a specialist in Obstetrics, to undertake a det iled investigation of every such maternal death ;

(c) the establishment of a Maternal Mortality Committee consisting of three permanent members and two provisional members (selected from a panel of six, according to the circumstances of the case) ;

(d) that after due consideration (with the addition of specially co-opted medical practitioners or nurses if necessary) the Committee shall determine whether the death under review might have been avoided ;

(e) that the determination of the Committee shall include such constructive comments as may be of value for the future assistance and guidance of medical practitioners and nurses ;

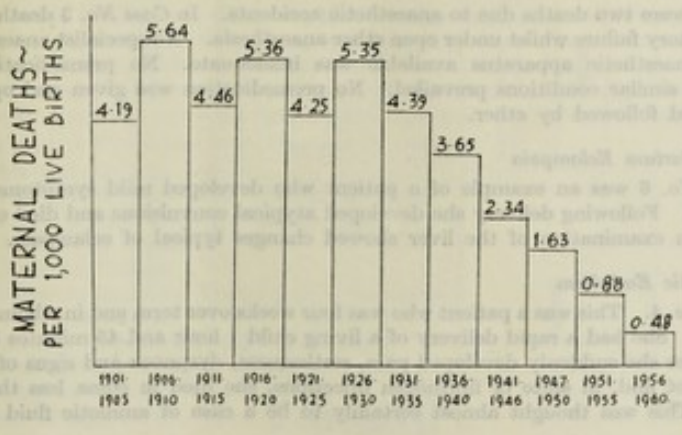
(f) that the decision of the Committee shall be notified in writing to the practitioner concerned by the Chairman of the Committee, together with any constructive comments that may be of future assistance or guidance ;

(g) that none of the information or records considered by the Committee shall be admissible in any court or action, or shall be divulged in whole or in part by any person connected with the enquiry, except as provided for by the Act (always providing that there shall be no prejudice to any of the provisions of the Coroner's Act in relation to indictable offences, etc.) ;

(h) that for teaching and educational purposes the information and knowledge accumulated by the Committee may be imparted from time to time to medical practitioners, medical students, nurses and trainee nurses, for their assistance and guidance in avoiding and preventing maternal morbidity and mortality (provided, of course, that every reasonable step shall be taken to preclude disclosure or identification of the individuals concerned in the case reports).

The present Act, therefore, provides for a full investigation of each maternal death with the double object of establishing the cause as accurately as possible and of deriving further knowledge which it is hoped will lead to the future prevention of all " avoidable " causes of maternal mortality.

Detailed records as to the causes of Maternal Mortality in Western Australia are available from 1897 onwards, and in Table No. 1, which is appended to this report, the general trend of the Mortality Rates in five-year plateaux from 1901 to 1960 inclusive is shown. The progressive improvement from a maternal mortality of 5·35 per thousand live births during the period 1926–1930 to a figure of 0·48 for the period 1956–1960 illustrates the remarkable progress which has taken place in combatting the risk to maternal life not only in Western Australia but in nearly every part of the civilised world. This reduction of maternal mortality during the course of less than three decades to a figure less than one-tenth of the original size has been due principally to the control of infection as a cause of death. During the five-year period 1926–1930, when the overall maternal mortality rate was 5·35 per thousand, there were 74 deaths from puerperal septicaemia out of a total of 234. This represented a proportion of over 30 per cent. for septicaemia alone, and when the deaths from septic abortion and conditions such as phlegmasia alba dolens were added to this the toll taken by infection was about 44 per cent. of the total deaths (or a mortality rate of 2·35 per thousand). By contrast there was only one death from puerperal septicaemia out of a total of 41 maternal deaths during the period 1956–1960. This represented a death rate from septicaemia of slightly more than 0·01 per thousand out of a total average mortality figure of 0·48 for that period.



The actual mortality figures for the years 1956–1960 are as follows :—

TABLE No. 2.—MATERNAL MORTALITY IN WESTERN AUSTRALIA, 1956-1960

Year	Live Births	Puerperal Septicaemia	Other Puerperal Infections	Abortions	All Other Complications of Pregnancy and Puerperal State	Total Deaths	
						No.	Rate
1956	16,916	....	....	2	7	9	0·53
1957	16,924	....	....	3	8	11	0·65
1958	16,731	....	....	1	7	8	0·48
1959	17,111	....	....	1	4	5	0·29
1960	16,926	1	....	3	4	8	0·47
Totals	....	1	....	10	30	41	0·48

It will be noted that abortion accounted for approximately 25 per cent. of the deaths, the cause of death being principally due to either infection or haemorrhage. The other complications include, among the main groups, the toxaemias of pregnancy, antepartum and post-partum haemorrhage, and the accidents accompanying delivery, including anaesthetic accidents.

MATERNAL MORTALITY IN 1961

During the year 1961 seven cases of maternal mortality were investigated. The first of these cases was a death which took place at the very end of 1960, so that the actual mortality list for 1961 was limited to six cases.

The total number of live births for 1961 was 17,066, so that, with six maternal deaths, the *maternal mortality rate was* 0·35 *per thousand live births.* This is the lowest rate yet recorded except for 1959, when the rate was 0·29.

The following list of the causes of death is of interest :—

(1) *Bacteraemic Shock*

There were two cases of death due to overwhelming infection. In *Case No.* 1 (which belonged to the year 1960) no causative organism was demonstrated, but the patient (whose pregnancy was illegitimate) probably introduced the infection herself by rupturing her membranes with a knitting needle. On admission she was draining offensive liquor and had a temperature of 102°F. and a pulse of 120. Shortly after delivery there was a leucocytosis of 45,000 and the patient became hypotensive, developed a pulse rate of 140 and a temperature of 105°F. and died 60 hours after delivery.

In *Case No.* 2 the patient, a schizophrenic aboriginal girl, also with an illegitimate pregnancy, developed a rapid pulse rate, hypotension and jaundice with some enlargement of the liver, and abdominal distension shortly after she gave birth to a stillborn macerated foetus. She was gravely ill, and died 48 hours after delivery. Blood culture revealed Escheria Coli and Aerobacter Aerogenes, and the organisms were also present in the urine.

(2) *Infected Abortion*

In *Case No.* 7 abortion took place eight weeks after a pelvic operation. The patient developed a pseudo-monas infection, which became complicated by a suppurative meningitis due to the same organism, from which she died.

(3) *Anaesthetic Deaths*

There were two deaths due to anaesthetic accidents. In *Case No.* 3 death was due to cardiac and respiratory failure whilst under open ether anaesthesia. No specialist anaesthetist was present, and the anaesthetic apparatus available was inadequate. No premedication was given. In *Case No.* 5 similar conditions prevailed. No premedication was given and open chloroform was administered followed by ether.

(4) *Post-Partum Eclampsia*

Case No. 6 was an example of a patient who developed mild symptoms of toxaemia prior to delivery. Following delivery she developed atypical convulsions and died eighteen hours later. Postmortem examination of the liver showed changes typical of eclampsia.

(5) *Amniotic Embolism*

Case No. 4. This was a patient who was four weeks over term and in whom labour was induced by pitocin. She had a rapid delivery of a living child 1 hour and 45 minutes later. A little over an hour later she suddenly developed pain, restlessness, dyspnoea and signs of shock. The blood failed to clot and, in spite of fibrinogen injections, she died in coma less than five hours after delivery. This was thought almost certainly to be a case of amniotic fluid embolism.

AVOIDABILITY OF DEATHS

After giving full consideration of every available detail of the seven cases just considered, the Committee concluded that *three of the deaths were unavoidable* (the two deaths from bacteraemic shock, and the death from amniotic embolism).

Three of the deaths were unavoidable, with reservations (the deaths from septic abortion and post-partum eclampsia, and one of the anaesthetic deaths).

One death was avoidable (the remaining anaesthetic death).

In each case a letter was written to the practitioner who was caring for the patient, giving the opinion of the Committee together with any constructive advice or criticism which seemed to be called for.

With regard to the importance of antenatal care, it is of interest that in one case there was no antenatal care at all, in two others the care was manifestly inadequate, and in three others the care was adequate except for the fact that no haemoglobin or blood grouping examinations were done.

EDUCATIONAL VALUE OF ENQUIRIES

The enquiries carried out during the year brought out a number of interesting and valuable points.

The two deaths from bacteraemic shock emphasised the importance of this condition, which had previously received rather scant recognition. At the request of the Committee a memorandum was produced on Puerperal and Post-Abortal Infection, which was publicised among the profession in Western Australia through the medium of the Monthly Bulletin of the British Medical Association.

Another memorandum was also prepared on the subject of Ergometrine and Hypertension, and the possible danger of using ergometrine in patients with severe hypertension, particularly if there has been a previous history of pregnancy toxaemia.

POSTMORTEM EXAMINATIONS

Postmortem examinations were carried out in six of the seven cases. Deaths in the rural areas present a special problem in that it is not always possible to obtain the services of a specialised pathologist and the examination may be lacking in important details. It is the opinion of the Committee that in every case the postmortem examination should be carried out by a practitioner who specialises in pathology.

GORDON KING,
Chairman, Maternal Mortality Committee of Western Australia.

Appendix VII

DERBY LEPROSARIUM

WESTERN AUSTRALIA

Admissions and Discharges for the Year 1961, compiled from the Monthly Returns of the Superintendent

Month	Admissions							Discharges											Inmates Remaining in Leprosarium		
	Males			Females			Total Admitted	Males					Females					Total Discharged			
	Admitted	Re-Admitted	Total Males	Admitted	Re-Admitted	Total Females		Discharged Cured	Deceased	Absconded	Discharged Non-Infectious	Total Males Discharged	Discharged Cured	Deceased	Absconded	Discharged Non-Infectious	Total Females Discharged		Males	Females	Total Remaining
January	....	1	1	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	96	64	160
February	1	1	2	....	3	3	5	....	....	....	....	....	....	....	....	....	....	....	98	67	165
March	3	....	3	....	1	1	4	....	1	....	....	1	....	....	....	....	....	1	100	68	168
April	....	1	1	....	1	1	2	....	....	....	....	....	....	1	....	....	1	1	101	68	169
May	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	1	1	101	67	168
June	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	101	67	168
July	....	....	....	....	....	....	....	5	1	....	....	6	3	....	....	....	3	9	95	64	159
August	2	1	3	1	....	1	4	....	....	2	....	2	2	....	....	....	2	4	96	63	159
September	....	....	....	....	3	3	3	....	....	....	....	....	....	....	....	....	....	....	96	66	162
October	1	1	2	1	....	1	3	....	....	....	....	....	....	....	....	....	....	....	98	67	165
November	1	2	3	....	....	....	3	1	1	....	....	2	....	....	....	....	....	2	99	67	166
December	....	4	4	....	....	....	4	1	....	....	....	1	....	....	....	....	....	1	102	67	169
Total	8	11	19	2	8	10	29	7	3	2	....	12	6	1	....	....	7	19	....	....	....

Analysis of Admissions and Discharges During 1961

Inmates as at 31st December, 1960	159
Admissions for period ended 31st December, 1961	29
Discharged for period ended 31st December, 1961	13
Deaths for period ended 31st December, 1961	4
Absconded for period ended 31st December, 1961	2
Total Remaining at Leprosarium, 31st December, 1961	169

Appendix VIII

REPORT FROM THE PUBLIC HEALTH AND MEDICAL DEPARTMENT'S LIBRARY

To the Commissioner of Public Health

I have the honour to submit a report on the work of the Library for the year 1961. Statistics for that year when compared with previous years tell a considerable part of the story.

Item	1959	1960	1961
General—			
Non-journal publications received	658	575	778
Additional Journals received	21	34	24
Total Journals received	335	369	393
Average monthly journal routing	300	528	616
Borrowing (excludes routine journals)—			
From all other Libraries	275	352	420
From W.A. Libraries	242	343	380
From Medical Library	168	248	295
From Libraries outside W.A.	35	49	40
Lending (excludes routine journals)—			
To all other Libraries	247	273	259
To Medical Library	89	89	77
Number of Organisations to whom loans made	21	27	21

In addition to the above, the Library regularly borrows and lends journals for routine circulation. Borrowings covered 30 journals, 29 from the Medical Library and one from the Department of Agriculture Library. Loans for routine circulation (excluding those between one sub-library and another) covered 35 journals, making 47 loans, 17 such loans being to the Medical Library, nine to the Government Chemical Laboratories, eight to the Mental Health Services, five to the School of Occupational Therapy, two to the Department of Agriculture, one to each of the University Pre-clinical Library, University Department of Child Health, the Education Department's Guidance and Special Branches, the School for the Deaf, Royal Perth Hospital Biochemistry Laboratory, Parents' and Citizens' Federation.

It is clear from the above figures that the total of the Library's routine work increased considerably due largely to (1) increased routing of journals, (2) increased publications received and (3) increased borrowing by the Library. All this indicates much greater usage of Library material and services. One of these services includes the supply of photocopies of articles, reports, schedules, maps, etc. In 1960, 1,135 of these were requested and in 1961 a total of 1,238—also an increase.

It is fitting that this increased usage should have occurred. In the 1960 report it was stated that if the accommodation problem could be overcome the Library hoped to at least maintain and if possible improve its services. During 1961 the Library was provided with expanded accommodation which while still far from perfect, at least permitted maintenance of existing standards. During May and June, 1961, the Library moved to an area on the same floor as its previous room but with approximately double the floor space. This permitted adequate shelving to be installed but did not allow space for a reading area. In addition wall shelving was installed in the Board Room which, serving as stacks for old material not much used currently, meant that a considerable amount of borrowed store-room space in corridors, basements, etc., could be freed for its proper usage.

The shelving and workspace situation in the new Library accommodation is now adequate and would seem likely to remain so for a further two or three years but no longer. There is still however great need for a reading area. The Board Room can be and is, used to meet this need to some extent but there are a great many times when it is not available.

During the year the Library was able to take advantage of the several library interchange schemes at present functioning. The most useful of these were probably the National Library of Australia Clearing Centre, W.H.O's International Exchange of Duplicate Medical Literature and the exchange work done by the Medical Section of the Library Association of Great Britain. Through these several schemes the Library received and gratefully acknowledges wanted material from the following sources :—

Royal Faculty of Physicians and Surgeons of Glascow.
Royal Veterinary College, London.
London School of Hygiene and Tropical Medicine.
Medical School House Library, Cardiff.
National Library of Australia.
Sydney Technical College.
Animal Research Institute, Yeerongpilly, Queensland.
University of Queensland.
Central Library, Government Offices, Adelaide.
State Library of Tasmania.
State Library of Western Australia.
Department of Agriculture, Western Australia.

Apart from the routine handling of journals, texts and other publications and normal library duties the Library has some special functions. It has never been considered that the Library's work is merely to acquire, hold, store or circulate technical information. Rather it must as well take active steps to bring important parts of the steady stream of informative literature that flows into the Library to the attention of officers and staff to whom it is relevant. To this end almost all the incoming material is carefully scanned. Articles, new journals, new books likely to be valuable to individual officers are drawn to their attention. Selected materials in certain areas—for example child health, health education, mental health education—are incorporated into technical circulars or abstracted for large groups. In two of these services the series Selected Readings in Health Education and Children's Health Information Series, the Library works in close liaison with the Health Education Council. The selected readings is a new venture which started during the year under consideration. It was initially circulated widely to doctors, dentists, nurses, teachers, health inspectors, etc., with a covering letter and request card which had to be returned if it was desired to continue receipt of the series. Several thousand were sent out at the beginning of the scheme, as yet it is far too early to know definitely how many will finally want the readings regularly, but the circulation list at present stands at almost 250.

Similar services for other large groups are under consideration and to the limits of the capacity of its staff the Library plans to encourage the fullest possible awareness and use of the literature that it receives.

JOHN F. WOOLCOTT, M.B., Ch.B.

Appendix IX

ANNUAL REPORT ON THE INFANT HEALTH SERVICE

To the Commissioner of Public Health

I have the honour to submit to you the report on the work done by the Infant Health Service, including Pre-School Health, for the year 1961.

During 1961 14,637 birth notifications were received by the Infant Health Service in this State and there was the following attendance in the three areas :—

Metropolitan area	82%	75% average
Country area	78%	
Correspondence Section	67%	

It is noted that while attendances in the Metropolitan and Country areas remain more or less stationary the response in the Correspondence Section is gradually rising.

Analysis of Work Done in Infant Health Centres

The gross attendance of babies at Infant Health Centres	221,989
The gross attendance of Pre-School Children at Infant Health Centres	8,775
Grand Total	230,764
Individual attendances at Infant Health Centres	29,331
Number of first visits to homes	10,116
Number of subsequent visits to homes	11,576
Total	21,692
Number of mothers visited in hospital	16,292
Grand Total of all Visits	37,984
Advice by letter	437
Advice by telephone	8,346
Children referred to doctors	2,618
Mothers referred to doctors	301
Expectant mothers seen at Infant Health Centres	859
Mothercraft lectures by Country Sisters	258
Group demonstrations by Country Sisters	32

Infant Health Centres in the State at the end of 1961

	Main Centre	Sub-Centre	Stopping Places
Metropolitan	38	94	....
Country	25	185	....
Caravans	4	....	114

There are now 130 Infant Health Buildings which meet the standard required. There are still a great many sub-standard buildings being used for Infant Health work and they are not included in this figure.

Metropolitan Centres were visited by Medical Student s, Student Nurses from the Royal Perth Hospital, King Edward Memorial Hospital, the Government School of Nursing and Fremantle Hospital and by Student Dietitions from Royal Perth Hospital. Dr. G. Hewitt gave demonstrations at Infant Health Centres to Medical Students and Ngal-a Trainees. (Ngal-a Trainees do a full month at a Country Centre.)

New Buildings

The following new buildings were opened in 1961 :—

Nollamara.
Walpole.
Dalwallinu (with Quarters).
Hamilton Hill.
Lockyer (renovations to a building bought by Albany Council).

Centres it is Hoped to Build in 1962

Dianella.
Woodlands
Brunswick Junction.
Thornlie
Queens Park.
Beachlands (with Quarters).
Kojonup (with Quarters).

Wyalkatchem was closed for part of 1961, owing to the sickness of the Sister and the lack of a reliever but was re-opened in August. Dalwallinu (with quarters) was opened and a new district thus created from parts of North Midlands, Midlands and Wyalkatchem Districts. In these three districts the Sisters covered large areas and it made the work very hard, especially as they have often to keep appointments with mothers waiting at the roadside with their babies and so must work to a strict timetable.

Staff

Full-time Sisters at end of 1961—76.

Temporary Relieving Staff—6.

Long Service Leave

Sister Torckler, who has been a Caravan Sister since she joined the Service, proceeded on long service leave.

Resignations

Sister Weir (returned to the Eastern States).

Sister Nelson (married).

Retirements

Sisters Perryman and V. Smith retired after having given many years of excellent service to Infant Health.

Re-joined the Infant Health Service

Sister E. Fry (after a year's service with " Save the Children Fund " in Korea).

Sister B. Doran (*nee* Kennerley) (following her husband's sudden death).

Additions to Staff

In May a fourth Mothercraft Lecturer and in July a fourth full-time Correspondence Sister joined the Staff. A part-time Sister was employed at the Kalgoorlie Centre to assist the over-worked full-time Sister.

Twelfth Quadriennial I.N.C. (Melbourne)

Leave with pay was granted to Sisters Boylson, Hedges, Jury, Nelson and Terry in order that they could be present at this Conference.

Pre-school Service

The two full-time Pre-school Sisters have been re-absorbed into general staff as combined Infant Health and Pre-school in Centres was found to be more satisfactory than Pre-school alone.

One Sister worked full-time in Pre-school for eight months and the other one worked for four months of the year, with the following results :—

Total number seen	1,370
Individuals	1,264
Home visits	44
Expectant mothers	72
Broadcasts prepared	24

A 10-week Pre-school Health Course was taken by seven Infant Health Sisters, all of whom were very experienced in the handling of mothers and children. This means that 21 Sisters are now qualified to conduct Pre-school Clinics at Infant Health Centres.

Pilot Pre-school Health Scheme

This Scheme, which was begun in 1960, was evaluated in August, 1961. The results were so gratifying that it was resolved to launch the Scheme in October, 1961, in as many districts in the metropolitan area as there were qualified Pre-school Sisters to participate in the work. It is hoped to conduct a Pre-school Health Course in 1962 which will include one Country Sister so that gradually every Infant Health Sister both in the town and country will be able to participate in this work.

Kindergarten Section

Dr. Ethel Roberts and Sister Rogers had another busy and successful year. The numbers of kindergartens and the numbers of children attending them are increasing so rapidly that it will be necessary very soon to increase the staff in this Section.

Dr. Roberts pointed out the high incidence of upper respiratory infection in this age group which frequently leads to hearing loss. There was a high incidence of hearing loss of varying degrees found in the country. There were many children with untreated squints in country areas, a small proportion of children were not immunised and the majority of these were new Australians. Over 800 parents were interviewed.

Metropolitan area (one visit)	108
Metropolitan area (two visits)	28
Country visits	37
Total number of visits to kindergartens	145
Total number of children examined	3,656
Number of metropolitan children examined	2,680
Number of country children examined	976
Number of male children examined	1,852
Number of female children examined	1,804
Referred for medical attention	656
Referred for home attention	427
Referred for dental attention	868
Number of children not immunised	65
Underweight children	56
Pediculosis	563
Country parents interviewed	249
Home visits	327

Medical Conditions Found

Upper respiratory infections	224
Hearing loss	112
Visual defect	48
Speech defect	29
Heart murmur	18
Chest condition	20
Inguinal hernia	5
Undescended testicle	9

Caravans

The four Caravans (114 stopping places) continue to give good service in the outer metropolitan areas. Unfortunately they are becoming more and more subject to breakdown especially the No. 2 Caravan (Midland) and the No. 4 Caravan (Armadale). This causes great inconvenience to the Mothers besides being a great expense to the Public Health Department. These vehicles are very cumbersome to drive and are becoming more and more difficult to staff. An endeavour must be made as soon as possible to find a suitable vehicle which is less difficult to drive but just as suitable for Infant Health work. Eventually it is hoped that there will be no need for Caravans but they will have to be used for many years yet.

Correspondence Section

The work of this Section continues to increase. Another Sister and another typiste were appointed to the staff during the year. A third film "Baby's Bath" (in colour) was made, which will be used for instruction in the North-West, Murchison, Kimberleys, Eastern Goldfields and in the South-West Missions, as well as for the teaching of the many children, both white and coloured, who visit Infant Health Headquarters from School Camps during the year. The scripts for all the films were written by Sister M. Philbin who is the Senior Sister in the Correspondence Section. Visitors from South East Asian Countries have commented very favourably on the other two films which have been made by the Correspondence Section. The third film is still in the processing stage.

Extensive country trips were made during the year. The following places were visited during 1961 :—

Gnowangerup, Tambellup, Cranbrook, Marribank, Katanning, Narrogin, Wandering, Geraldton, Carnarvon, Mt. Magnet, Cue, Meekatharra, Shark Bay, Broome, Derby, Fitzroy Crossing, Gogo, Hall's Creek, Marble Bar, Port Hedland, Cockatoo Island, Sunday Island, Wyndham, Kununurra, Kimberley Research, Ivanhoe Station, Forrest River, Onslow, Roebourne, Point Samson, Wittenoom, New Norcia, Mogumber, Pumping Stations, Menzies, Kookynie, Gwalia, Warburtons, Cosmo Newbery, Laverton, Bandya Station, Mt. Margaret, Mt. Ida, Leonora, Albion Downs, Kathleen Valley, Wiluna, New Springs, Thadoona Mines, Cunyu Station, Ned's Creek Station, Doolgunna Station, Three Rivers Station, Weelarrana Station, Meekatharra, Jigalong, Nullagine, Liveringa Station, Camballin, Balgo Mission, Kalumburu, Yalgoo, Payne's Find, Annean Station, Karalundi, Tuckenarra, Nannine.

Sisters Philbin and McGaffin made an arduous trip to the Warburton Ranges accompanied by Dr. Ian Lewis from the Child Health Department of the University, a Health Inspector and the Native Affairs Officer for the district.

During 1961 Dr. Raju, Assistant to the Professor of Paediatrics, Madras, India, was attached to the Infant Health Staff for five weeks. Dr. Raju travelled widely over the State with the Infant Health Sisters observing the work being done in the Infant Health Service.

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Annual Figures
Births Reported	197	265	223	150	*835
New Babies	125	254	222	176	777
Requests for Advice *re* Babies	863	1,389	1,138	1,170	4,560
Individual Babies	434	664	580	476	1,288
Pre-School—Advice *re* Children	134	396	351	242	1,123
Pre-School—Individual Children	126	359	327	230	991
Expectant Mothers—Advice *re*	47	76	58	61	242
Expectant Mothers—Individual	33	48	38	39	115
Extra People Seen on Trips—Eyes, etc.	27	520	570	278	1,395
Weigh Centres—Attendances	387	582	513	551	2,033
Letters Received—					
Mothers	299	369	356	283	1,307
Others	164	193	149	138	644
School Children	458	2,335	2,635	2,357	7,785
School Children Lessons	457	2,381	2,710	2,385	7,933
Letters Sent—					
Mothers	1,173	1,330	1,267	1,156	4,926
Others	346	324	266	256	1,192
School Children	392	1,312	1,377	1,359	4,440
School Children Lessons	1,704	2,855	3,025	2,030	9,614
Visits to Homes—Country	64	40	54	112	270
Visits to Hospitals—Country	2	23	10	12	47
Visits to Centre—Country Visitors—					
Babies	81	62	53	35	231
Pre-School Children	28	20	21	5	74
Expectant Mothers	9	4	5	5	23
School Children	179	19	83	110	391
School Teachers	27	8	....	10	45
Others (in connection with Correspondence work)	80	40	63	34	217
Groups Shown over Centre (*e.g.*, no Film or Lecture given by Correspondence)	1	6	....	2	9
	Attend-ance	Attend-ance	Attend-ance	Attend-ance	Attend-ance
Lectures and Demonstrations	8 (249)	9 (705)	11 (595)	5 (138)	33 (1,687)
Number of Children Doing Mothercraft Course	163	353	378	397	487
Mothercraft Pupils Visited in Country Schools	66	185	186	77	514
Telephone Consultations—Inward—Country Mothers	15	27	14	17	73
Telephone Notifications—*re* Babies and Pre-School	92	105	32	36	265
Country Trips Made during Year	....	....	....	....	10
Motion Picture Made during Year	....	....	....	....	1

* Includes 225 from closed Centres.

Mothercraft Section

It was found necessary to employ another full-time Mothercraft Sister from May, 1961, because of the increased demands for Mothercraft Teaching both from Schools and from Expectant Mothers.

Sister Kerr completed her monthly Infant Health Clinic Demonstrations on Channel 2. It is proposed to have a weekly talk on T.V.W. Channel 7 in 1962, which will be conducted by Sister Hardy and will reach quite a different section of the public.

Sister Kerr visits Carnarvon each month to hold Clinics and to lecture to the senior girls at the High Schools and the Convent. Dr. Raju accompanied Sister Kerr on a very successful trip to Carnarvon and Shark Bay.

Work still continues with the delinquent girls at the Home of the Good Shepherd.

Summary of Lectures Given

Schools—	No. of Classes	No. of Lectures	No. of Girls
Metropolitan :			
Private	104	93	315
High Schools		525	1,422
Perth Technical College		39	86
Country :			
High Schools	32	234	689
Private			
Home of Good Shepherd	....	32	39
Girls' Clubs	....	18	107
Teachers	....	24	22
Individual Groups	9	9	160
Grand Total	145	974	2,840

Parentcraft Classes	No. of Classes	No. of Lectures	No. of Attended
Evening—Perth	3	31	118
Fremantle	3	34	126
Daytime—Perth	3	31	90
Fremantle	8	45	50
Individual Daytime—Perth	....	12	12
Individual Evening—Manning Park	2	2	31
Grand Total	19	155	427

Transline Trips

Four Tea and Sugar Train Trips were undertaken by Sisters from the Mothercraft Staff. Professor Ida Mann and Dr. Raju accompanied the Sisters on one trip. Professor Mann did an ophthalmic survey across the Transline on this occasion.

TRANS LINE "TEA AND SUGAR" TRAIN TRIPS FOR 1961

		0-2 Years		3-6 Years		7-14 Years		Expectant Mothers		Others		Individuals Seen		Vaccines		Total Number People
		Outward	Return	Outward	Return	Outward	Return	Outward	Return	Outward	Return	Outward	Return	Salk	Others	
February-March	W.A.	29	13	45	4	68	2	....	....	192	3	285	22	....	2	372
	S.A.	29	31	34	38	50	43	....	1	126	133	239	246	....	....	497
	Total	58	44	79	42	118	45	....	....	....	....	....	....	....	....	....
		0-1 Year		1-5 Years		6-14 Years										
May	W.A.	9	9	17	7	4	4	3	2	5	7	38	29	....	5	114
	S.A.	2	14	2	23	....	5	....	1	2	12	6	55	....	4	106
August-September	W.A.	14	8	23	13	7	3	2	3	14	6	60	33	26	6	174
	S.A.	10	11	14	28	....	5	1	2	2	12	27	58	8	9	164
November-December	W.A.	13	11	25	15	9	3	1	3	14	1	62	34	39	10	172
	S.A.	3	5	11	40	....	7	....	7	3	7	17	66	60	6	159
	Total	51	57	92	126	20	27	7	19	358	181	734	543	133	42	1,758
												1,277				

February-March Trip .... Professor Mann, Dr. Raju, Sisters Parnell and Brady.
May Trip .... Sisters Campbell and Brady.
August-September Trip .... Sisters Parnell and Brady.
November-December Trip .... Sisters Jury, Parnell and Brady.

Annual Refresher Course

The Refresher Course for 1961 was held from 31st July to 4th August and all the Sisters attended except the part-time Sister from Esperance. The Refresher Course is of great benefit to the Infant Health Sisters. Besides giving valuable information, the contact with their colleagues and the lively discussions which take place concerning common problems send them back to their Centres stimulated, refreshed and ready to tackle their work with renewed enthusiasm. The Refresher Course was opened by the Hon. the Minister for Health, Mr. Ross Hutchinson, Dr. L. Henzell, Commissioner of Public Health, acted as Chairman on the inaugural session.

Infant Health Headquarters

The Headquarters Staff is still divided—Correspondence and Administration at 1118 Hay Street and Kindergarten and Mothercraft at 6 Ord Street. Plans were prepared for a proposed extension to Infant Health Headquarters but the cost involved was so heavy that it seemed advisable to choose a more suitable site and construct a building which will meet the needs of the Infant Health Service for many years to come. It is hoped that a site and plans will be ready by 1963.

Broadcasts

One Mothercraft broadcast each week is given from Perth, Geraldton and Kalgoorlie. A monthly clinic-of-the-air is broadcast once a month over the Flying Doctor Network from Carnarvon. The Sisters in their trips up to the North-West, the Kimberleys and Eastern Goldfields speak to outback Mothers from the Flying Doctor Bases. The response is very good.

Ngal-a Trainees

The Infant Health Training School is proving very satisfactory as it is providing much needed staff for the Infant Health Service. There are now eight Ngal-a Graduates on the Staff and usually a number from each class wish to join the Infant Health Service as vacancies occur.

Visitors to Infant Health Headquarters during 1961

Dr. B. A. Wright—University of Kansas, Lawrence, Kansas, U.S.A.

Professor M. Wright—University of Kansas, Lawrence, Kansas, U.S.A.

Dr. V. B. Raju—Paediatric Physician and Reader, Madras Medical College of Government General Hospital, Madras, India.

Dr. Claire Isbister—Royal North Shore Hospital, Sydney, N.S.W.

Professor C. C. de Silva—Professor of Paediatrics, University of Ceylon.

Professor Neil Hallman—Professor of Paediatrics, University of Helsinki, 11 Stenbuckstri, Helsinki, Finland.

Mr. J. Daire—Theatre Staff, S. N. Hospital and Medical College, Agra, India.

Mr. S. Bharos—Hospital for Diseases of the Chest, Mabarastra, Poona, India.

Dr. Edna H. Stern—City Health Department, Cape Town.

Mrs. Anderson—President, Infant Health Association, Tasmania.

Dr. Fuller—South Australia.

Mr. Mutton—South Australia.

Mr. Davies—Education Department, Perth, W.A.

Lotteries Commission

Infant Health is very much indebted to the Lotteries Commission for all the help it so generously gives to Infant Health projects.

Infant Health Committees

There are many Committees throughout the State who still work hard to help to provide buildings, furnishings and extra amenities.

The Infant Health Service is again indebted to Professor W. B. Macdonald for his sound and helpful advice during 1961. Special thanks must also be given to Miss J. Malden and Dr. C. Harrold for all their valuable work during the 1961 Pre-School Course and to all the other Lecturers who participated in that Course and in the Refresher Week Programme.

Conclusion

In conclusion I wish to record my appreciation and thanks to the Medical, Nursing and Clerical Staff for another year of loyal and conscientious service to Infant Health in this State.

ELIZABETH M. GIBSON,
Medical Supervisor of Infant Health.

Appendix X

SCHOOL MEDICAL REPORT

Many country schools are now up to date on a two-year inspection schedule and all have been examined within three years.

A total number of 58,012 children were examined of whom 21,607 were in the country. The parents of 19,238 were notified of some defect or other, including dental defects, 5,562 were referred for medical attention. Table II shows a good response by the parents in obtaining this medical attention.

A total number of 101,847 children were examined for pediculosis (Table III) and the number notified as infected was 354. Re-visits to ensure that effective treatment has been carried out brought the total number of heads inspected up to 104,350.

The general health and nutrition of the children remain good.

Table I

EXAMINATION OF METROPOLITAN AND COUNTRY SCHOOL CHILDREN, 1961

	Number Examined	Number Notified	Number Referred for Medical Attention	Number Referred for Home Attention and Observation	Number Requiring Dental Attention	Skin Complaints		Nutrition			Eyes Medical Attention	Tonsils Medical Attention
						Number	Per cent.	3	Under 3	Over 3		
Metropolitan Schools												
Boys	18,674	5,674	1,524	1,676	3,252	799	....	17,362	290	1,022	744	67
Girls	17,731	5,487	1,490	1,539	3,146	684	....	16,051	357	1,323	802	105
	36,405	11,161	3,014	3,215	6,398	1,483	4·21	33,413	647	2,345	1,546	172
Country Schools												
Boys	10,952	4,149	1,292	1,264	2,234	557	....	10,270	156	526	744	107
Girls	10,655	3,928	1,256	1,161	2,095	625	....	9,667	180	808	660	67
	21,607	8,077	2,548	2,425	4,329	1,182	5·47	19,937	336	1,334	1,404	174
State Total												
Boys	29,626	9,823	2,816	2,940	5,486	1,356	....	27,632	446	1,548	1,488	174
Girls	28,386	9,415	2,746	2,700	5,241	1,309	....	25,718	537	2,131	1,462	172
	58,012	19,238	5,562	5,640	10,727	2,665	4·59	53,350	983	3,679	2,950	346

Table II

HOME VISITS BY SCHOOL NURSES, 1961

Total Visits re Medical Attention	Received Attention	Promised Attention	Disinterested	Out or Left District	Visit to Cases Referred for Home Attention	Parents Phoned or Called at Office
3,464	1,664	876	82	654	89	126

Country Areas : 784 visits made.

Table III

HYGIENE INSPECTION BY NURSES FOR PEDICULOSIS

	No. of Children Examined	Number Notified	Percentage
Metropolitan	79,486	78	·09
Country	22,361	276	1·23
Total	101,847	354	·34

Including Re-visits to above a total number of 104,350 heads were examined or re-examined.

Appendix XI

REPORT BY SENIOR DENTAL OFFICER

Commissioner of Public Health

Following is my report for the year ending 31st December, 1961.

Staff

Nominal establishment is 15 which includes the administrative officer. We commenced the year with eight working dentists but in March recruited two others and also added three graduate bursars to the staff. However, during the year one of the bursars bought himself out and there was an age retirement so we finished the year with an effective 11.

In order to help us cover the isolated areas we were fortunate enough to engage on a temporary basis a retired dentist and he spent several months in the Murchison districts.

Figures for the School Dental Service

Number of country schools visited	110
Number of metropolitan schools visited	13
Number of native missions visited	8
Number of orphanages visited	6
Number of children examined	9,732
Number of children treated	5,902
Number of children needing no treatment	2,973
Number of children who were to receive treatment by private dentists	203
Number of children whose parents did not bother to reply to notices sent out	654

Details of treatment given—

Silver amalgam fillings	10,253
Copper amalgam fillings	318
Cement fillings	741
Porcelain fillings	579
Silver nitrate treatments	1,214
Gold inlays	4
Other conservative treatments	3,872
Prophylaxis	1,056
Extractions	9,134
Dentures	2
Orthodontic treatment	14
Pulp (nerve) treatment	12

On a number of occasions talks were given to P. and C. Associations and upper classes of children and appropriate films shown.

The following work was done for Kimberley (Derby centre) people, apart from children :—

Number of native adults attended	325
Fillings for native adults	54
Extractions for native adults	310
Dentures	3
Repairs to dentures for native adults	1
Other treatments for native adults	5
Number of white free list patients (adult)	82
Fillings for white free list patients	89
Extractions for white free list patients	105
Dentures for white free list patients (adult)	14
Repairs to dentures, white free list patients	6
Other treatments, white free list patients	12
Number of paying patients	550
Fillings for paying patients	257
Extractions for paying patients	689
Dentures for paying patients	83
Repairs to dentures for paying patients	59
Other treatments for paying patients	56

Fees debited to paying patients, £2,018 13s.

A. G. McKENNA,
Senior Dental Officer.

Appendix XII

REPORT BY THE CHIEF INSPECTOR

Commissioner of Public Health

I have the honour to submit a report on the activities of the Inspection Branch for the year 1961.

ENVIRONMENTAL SANITATION

The number of applications received for the installation of domestic bacteriolytic treatment tanks remains fairly constant. A total of 8,340 plans were examined and approved, 48 per cent. of these applications were for installations providing treatment for both sewage and sullage wastes.

One hundred and twenty-seven systems using six-pint flushes and eight using two-pint flushes were approved for installation in areas with restricted water supplies. Permits for five "dry type" systems was also given.

The examination and testing of pedestal pans and cisterns in connection with these restricted water supply units is increasing in numbers. During the year 376 six-pint cisterns and 659 six-pint pedestal pans were examined and approved.

General inspections and investigations carried out by the staff were as follows :—

Country Towns	93
Housing Sub-divisions	396
Hospitals	18
Appeals (Section 37 of the Health Act)	14
Miscellaneous	148
	669

The number of water samples collected for bacteriological examination show a considerable increase over the previous year's figures and comprised :—

Swimming Pools	422
River Water	50
Drinking Water Supplies	82
Ocean Samples	1,468

Twenty-two samples were submitted for chemical analysis.

Vermin and insect control in government institutions required 404 visits by departmental pest control officers.

Officers of the Branch are still actively engaged in work associated with the disposal of rubbish in the metropolitan area and the control of house flies.

These activities are undertaken in conjunction with the Metropolitan Rubbish Disposal Planning Committee and the Metropolitan Fly Control Committee.

With the increase of work in the metropolitan area it is becoming increasingly difficult to maintain a satisfactory number of visits to country areas. The decrease is indicated by the following figures from the previous reports :—

1959	120
1960	104
1961	93

FOOD AND MEAT INSPECTION

The number of animals submitted for inspection by departmental inspectors at metropolitan abattoirs was 1,179,466.

Details of slaughtering for home consumption and the causes of condemnation are shown in Appendix XXII.

Imported fish inspected at Fremantle Wharf amounted to 1,215·5 tons.

Food samples taken were greatly in excess of the usual number, this was because of the need to sample all imported desiccated coconut. The total number of food samples taken was 1,659 (coconut 1,124).

Four prosecutions were instituted for under standard food products. A conviction was obtained in each case.

General food surveillance during the year was not really adequate in view of the increasing variety of food now available to the public. There is a growing need for specialist food inspectors for this work.

PUBLIC BUILDINGS

Officers of the Branch continued to keep a check on all public buildings both new and old. Plans for 126 new buildings were approved together with 85 plans for alterations and additions to existing buildings. Complete electrical re-wiring of 11 buildings was also approved.

PESTICIDES

Ninety-one applications for the registration of pesticides were considered by the Pesticide Advisory Committee. Ninety registrations were granted. Two pesticides previously registered were cancelled making the present total number of pesticides registered with this Department, 981.

HEALTH INSPECTORS' CONFERENCE

Mainly for the benefit of country inspectors the duration of the Annual Health Inspectors' Conference was increased to three days and was held from 27th to the 29th September, 1961.

The Conference was opened by the Minister for Health, Hon. Ross Hutchinson, M.L.A., and was followed by an address by the Deputy Commissioner of Public Health, Dr. W. S. Davidson.

The following addresses were also given :—

Recent Developments in Communicable Diseases Control (Dr. D. J. R. Snow).

The Control of Tuberculosis (Dr. F. G. B. Edwards).

Health Education in Schools (Dr. J. F. Woolcott).

Modern Standards of Cottage Plumbing (Mr. F. Lindsey).

Progress with Municipal Refuse Disposal (Inspector J. Slattery).

The Fly Campaign (Inspector W. Moyle).

Radiation in Foodstuffs (Dr. W. S. Davidson).

The Conference concluded with a visit to the Kwinana Oil Refinery.

C. E. FLOWER,
Chief Inspector.

Appendix XIII

NURSING SECTION ANNUAL REPORT 1961

Commissioner of Public Health

HOSPITAL STAFFING

It has been possible to maintain reasonable staff establishment at most hospitals, both Departmental and Board, though, as ever, there are certain areas that do not appeal and while the demand for Trained Nurses and Enrolled Nursing Aides exceeds the supply, the situation will not alter. There is no doubt that the Country Service Allowances and the Medical Department's Bonus for Trained Nurses employed in Country Hospitals have been effective in not only making appointments in the first instance but in bringing about some stability in the profession.

There have been no changes in senior nursing appointments during the year.

NURSING BURSARIES

Applications received	118
Accepted for Bursary	70
Withdrawn	24
Unsuitable	24

1961 *Trainee Bursars*—

	120
14	Passed June Finals
7	Passed October Finals
	141

Bursars Staff Nursing during 1961—

	28
+ 12	withdrawals during 1961
	40

The Bursary Awards are now exercising a more marked influence on staffing country hospitals. During the year appointments have been made in General Training Schools, Nursing Aide Training Schools and the larger Country Hospitals.

SCHOLARSHIPS AWARDED FOR POST-GRADUATE STUDY AT COLLEGE OF NURSING, AUSTRALIA
(February, 1961)

Miss D. Daly	Nursing Administration
Miss J. Gilbert	Nursing Administration
Miss A. Noonan	Nursing Administration
Mr. H. Harris	Tutor Course.

MISS M. C. MORRISSEY

Miss M. C. Morrissey was appointed a member of the Organization and Methods Team associated with the Hospital Work Study Project. The special knowledge she acquired has been availed of in many hospital situations, particularly in respect of organizing of Departments, Staff Duties, Staff Establishments, Rosters, etc.

PRIVATE HOSPITALS AND MATERNITY HOMES

Routine inspections of Private Hospitals and Maternity Homes were carried out during the year 1961.

Number of Inspections

"A" Class	25
"C" Class	120
Maternity Homes	28

New Registrations of "C" Class Hospitals in 1961

	No. of Beds
Glendalough, Mt. Hawthorn	57
Morris-Zeffert Memorial Home, Mt. Lawley	10
Embleton Hospital, Embleton	30
Salvation Army Eventide Home, Nedlands	9
St. Paul's Hospital, Attadale	16
Ferndale, West Perth	22
Elinor Merle, Mt. Lawley	25
	169

There are now 61 registered "C" Class Hospitals providing 1,065 beds.

NURSE TRAINING

Recruitment—1961

Main Senior High Schools in the Metropolitan and Country Districts have been visited and talks given to students with regard to obtaining the maximum education, preferably the Leaving Certificate for General Training.

The Bursary and the Nursing Aide Course have also been discussed.

The advantage of higher educational standard for nursing, still requires publicity.

Visits to General and Nursing Aide Training Hospitals

District Hospital—	Visits
Kalgoorlie	1
Northam	1
Geraldton	1
Merredin	1
Busselton	1
Katanning	2
Collie	1
Albany	2
Narrogin	3
Mt. Henry Home	1

General Nurses in Training in 1961

Commenced Training	66
Completed Training	47
Passed Final Examination	44
Failed	3
Resignations	25
Transferred Nursing Aide	5

Nursing Aides Training—1961

Completed Training	106
Terminated	12
Resignations	8

P. F. LEE,
Principal Matron.

Appendix XIX

NURSES' REGISTRATION BOARD

Commissioner of Public Health

I submit herewith a report on the activities of the Nurses' Registration Board, for the year ending 31st December, 1961.

The constitution of the Board at the 31st December, 1961, was as follows :—

Chairman—

Dr. Linley Henzell, Commissioner of Public Health—*Ex officio* member.

Members—

Dr. D. W. Moynagh, Inspector General Mental Health—*Ex officio* member.

Miss P. F. Lee, Principal Matron Public Health—*Ex officio* member.

Dr. L. E. LeSouef, Medical Practitioner—Nominated by the British Medical Association.

Dr. Roland Nattrass, Obstetrician—Nominated by the British Medical Association.

Dr. W. D. Neal, Specialist in Education—Nominated by the Minister for Education.

Miss G. A. Siegele, General Nurse—Nominated by the Minister for Health.

Miss A. J. Mattinson, Midwifery and Infant Health Nurse—Nominated by the Minister for Health.

Mrs. W. Green, Mental and General Nurse—Nominated by the Minister for Health.

*Mr. J. K. Brett, Tutor—Nominated by the Minister for Health.

Miss V. Steel, General Nurse—Elected by the Registered General Nurses.

†Mr. W. Bailey, Mental Nurse—Elected by the Registered Mental Nurses.

Miss B. Grant, Midwifery Nurse—Elected by the Registered Midwifery Nurses.

* From 15/3/61, *vice* Miss A. F. Pollitt, resigned.

† From 1/4/61, *vice* Mr. W. T. Highet, term expired.

Officers—

‡Mrs. G. I. Smith, Secretary.

Miss D. H. Bailey, Education Officer.

‡ Resigned, 7th July, 1961.

There were 11 full meetings of the Board, and 16 committee meetings.

REGISTRATIONS

The following table sets out the number of initial registration enrolments effected during the year and the source of the qualifications of the persons registered :—

Division of the Register	By Examination in this State	By Examination outside W.A.	Total
General Nurse	305	225	530
Childrens Nurse	2	....	2
Mental Health Nurse	11	8	19
Midwifery Nurse	91	109	200
Nursing Aides	133	27	160
Mothercraft Nurse	18	5	23
Dental Nurse	8	....	8
Tuberculosis Nurse	42	....	42
Infant Health Nurse	17	9	26

EXAMINATIONS

The Board conducted 27 separate sets of examinations during the year involving the services of 316 examiners. All examiners are employed full time in the Medical and Nursing profession and the services performed for the Board, place an additional call on their time for which nominal fees are prescribed.

The First Year Examinations conducted in addition to those mentioned above were :—

Division of the Register—	Successful Candidates
General Nurses First Professional	379 (Inc. 16 Pt. 1 only)
Mental Health Nurses First Year	26

Narrogin Hospital

Narrogin Hospital was approved as a training school for Nursing Aides.

Psychiatric Day Hospital Diploma

The Board noted with approval the course conducted by the Graylands Day Hospital. Although the Board is precluded from registering such courses, it was agreed that persons holding such a Diploma would be allowed a reduction in their Mental Health training under certain conditions.

Maternity Nurse Pilot Courses

The report as presented from the Education Committee, was adopted and the Board resolved to plan the integration of Maternity Nursing within the general training.

Royal Perth Hospital Theatre Course

The Board noted with approval the introduction of this course. However, as the Board does not have the power to register this or similar courses, no official recognition could be given.

DES. WARNER,
Acting Secretary.

Appendix XV

OCCUPATIONAL HEALTH

As in previous years the work has followed the pattern of systematic surveys of occupational hazards, investigations of current problems and of education.

STAFF

This year, because of the increase in volume and scope of the work it has been necessary to augment the staff. In May, Mr. W. H. Moyle, Health Inspector, was appointed to part-time work in Occupational Health and in September, Sister Margaret P. O'Sullivan was appointed as part-time Sister, Occupational Health.

Because noise in Western Australia, as in other parts of the world, is the most common occupational health problem, an Ear, Nose and Throat Consultant, Dr. D. A. Clements, was appointed to the Department.

SYSTEMATIC SURVEYS OF INDUSTRIAL HAZARDS

(a) Continued from 1960

Silicosis

Place of Work	No. Visited 1961	1st X-Ray 1961	Silicosis Present	Total 1st X-Rays	Total Silicosis	Re-X-Ray
Foundries	15	98	2	743	16	95
Quarries	1	18	....	88	5	5
Ore and Rock Crushing	2	18	....	41	1	1
Potteries and Brickworks	4	71	1	82	1	1
Sandblasting Co.	1	3	....	14	....	....
	23	208	3	968	23	102

Of particular interest was a case of an Italian migrant who was working in a brickworks. He presented with advanced Silico Tuberculosis. A survey of his work place indicated, in the main, low dust counts. His occupational history in Italy included six or more years of significant exposure to silica.

Most of the 70 x-rays of pottery and brick workers cited above were of his fellow workers, not one of whom showed evidence of silicosis or of tuberculosis.

Asbestosis

X-rays, 17 in. x 14 in., were taken of 21 employees in a factory which manufactures asbestos lagging for water pipes. One case of asbestosis was found. Total figures to 31st December, 1961, are :—

Place of Work	Number Visited	Number of Employees 17 in. x 14 in. Chest X-Rays	Evidence of Asbestosis
1. Manufacturer of Asbestos Products	1	9	3
2. Packing Asbestos Fibres in Insulation	1	4	....
3. Asbestos Lagging	1	21	1
	3	34	4

Noise

Seven industrial establishments were surveyed by the Commonwealth Acoustic Laboratory and found to produce noise above the hearing conservation level. Audiograms of employees were made and ear plugs fitted.

Dr. D. A. Clements assisted by the Sister, Occupational Health plans to undertake a follow-up in one of these establishment with a view to establishing a working procedure for future surveys.

Lead

In Kalgoorlie, Dr. J. McNulty, Chest Physician, arranged for the urinary lead estimations of 45 men exposed to lead in the assay sections of the gold mines. Two men with high urinary lead concentrations were examined and were not suffering from lead poisoning. On Dr. McNulty's advice, protective measures (extensive in one case) were introduced into several assay rooms.

Phosphine

By the end of 1961, 27 million bushels of wheat had been treated by Co-operative Bulk Handling Ltd., and there was no case of poisoning.

(b) *Investigations Undertaken in* 1961

Under the direction of the Physician, Occupational Health, surveys were made of :—

(1) The use of pesticides in the metropolitan area.

(2) Occupational dermatitis.

1. *Pesticides*

(1) Manufacture and Formulation, by Dr. B. D. Worsam.

The important finding is :—

(i) Lack of appreciation in many instances by Management and staff of the hazards involved in the handling of pesticides.

The other findings follow from this :—

(ii) Often there are no, or inadequate, attempts to reduce dust from pesticides.

(iii) In most cases protective clothing and equipment is inadequate and there is a strong tendency to ignore equipment when it is available.

Enquiries revealed no evidence of poisoning from pesticides.

(2) Use in Market Gardens, by Mr. W. M. Moyle, Health Inspector.

Two cases of organic phosphate poisoning occurring in market gardeners were followed up by investigation of working conditions. This revealed that the users had little or no knowledge of the dangers of parathion and other organic phosphates. In one case skin exposure was gross and careless handling of concentrates was also evident.

It is hoped that a full time Field Officer, Occupational Health, will be appointed in 1962. His duties would be chiefly those of investigating and, as far as possible, of controlling the use of pesticides.

2. *Dermatitis*

The incidence of occupational dermatitis in Western Australia is highest in the cement and lime industry ; in the handling of detergents and in the petroleum industry. This accords with experience in other parts of the world

(1) *Cement and Lime*

A survey was undertaken by Dr. J. G. Wheeler. The incidence of dermatitis was found to be higher in those exposed to lime (including slaked lime), for example, plasterers. Forty-eight people had a history of skin lesions ; 30 of these had been off work for periods varying from one week to two years. At least two plasterers have had to abandon their trade for occupations less skilled and less well paid.

The period of exposure before onset varied between three weeks and forty years. Both onset and exacerbation of dermatitis appear to be greater during the summer months.

The undertaking of such preventive measures as were available, was either inefficient or ignored.

(2) *Detergents*

A survey was undertaken by Dr. Barbara M. Watson. Sixty-one places of work were visited ; most were small restaurants and tearooms ; hotels and cafeterias, laundries and dairies, soap manufacturers were also included, as was a hospital. Of approximately 400 people using detergents, 55 (46 women and 9 men) complained of skin lesions present or past ; 7 suffered from paronychia ; 19 had had time off, varying from two days to seven weeks.

The incidence appears to be higher in the winter. The basic causes of dermatitis were thought to be in relation to the detergents :—

(i) Excessive amounts.

(ii) Prolonged exposure.

(iii) Inadequate removal from the hands.

(iv) Failure to protect the skin.

Occupational dermatitis causes more lost time in industry than does any other occupational disease. It is considered that there is a real need for the appointment of a Consultant Dermatologist to help with this problem.

INVESTIGATIONS OF CURRENT PROBLEMS

These, as in previous years, resulted from exposure of employees to toxic gases, vapours or dust ; to noise ; to skin irritants ; visits were also made to sources of ionising radiation.

Visits

In all, 93 first and 24 follow-up visits were made by the Physician, Sister and Inspector.

Ionising Radiation

The Physician has acted during the year as Secretary to both the Radiological Advisory Council and to the Medical Committee of that Council.

During the year, five inspectors were appointed under the Radioactive Substances Act ; four of them from the State X-Ray Laboratory. Fifty-three licences were granted and 47 were renewed.

EDUCATION

Lectures or addresses were given by the Physician to fifth year medical students, to members of the Industrial Safety Course, to the Institute of Management, factory employees and health inspectors. One medical post-graduate lecture was also given.

Twelve items were contributed to meetings of the Occupational Health Committee of the National Health and Medical Research Council. Circulars, one on Phosphine and another on Organic Phosphates were sent to all medical practitioners.

POISONS REGISTER

The Department has commenced the compilation of a Poisons Register, the purpose of which is to record the contents of all products likely to be considered poisonous, and to which people might be exposed. It is anticipated that the Register will be used in a Poisons Centre, from which information on poisons will be readily available at any time.

Close liaison with other Government Departments has continued. This Department appreciates the increasing volume of investigatory work undertaken for Occupational Health by the Government Chemical Laboratories.

The Department is also grateful for the valuable surveys undertaken by Doctors Worsam, Wheeler and Watson.

In conclusion, this is an appropriate opportunity to express to you Sir, deep and warm appreciation of your encouragement and wise counsel during this and many previous years.

D. D. LETHAM,
Physician, Occupational Health.

Appendix XVI

ANNUAL REPORT OF THE PUBLIC HEALTH DEPARTMENT OF MEDICAL PHOTOGRAPHY

To the Commissioner of Public Health

I have the honour to report on activities for the year ending 31st December, 1961.

Photographic Services were continued at the following establishments :—

(1) Public Health Department.
(2) Public Health Laboratory Service.
(3) Princess Margaret Hospital.
(4) Fremantle Hospital.
(5) King Edward Memorial Hospital.
(6) Perth Chest Hospital.
(7) University Department of Child Health.
(8) Health Education Council for W.A.
(9) University Departments resident in the Perth Chest Hospital.
(10) Claremont Hospital.
(11) Institute of Radiotherapy.

Photographic assistance was also given to the Slow-Learners' Group, the Royal Perth Hospital Experimental Operating Theatre and to St. John of God Hospital.

A total of 1,394 requests for photographic services was received and illustrations and charts were prepared for specialised purposes, and a work increase of 31 per cent. was shown over the previous year.

Early in the year, a new filing system was introduced, after an investigation made by Head Office staff in association with a representative from the Public Service Commissioner's Office. In addition to this, a system of stores accounting was commenced to meet the requirements of the Departmental Accountant.

A document copying box made in this Department was loaned to the Pathology Department at Fremantle Hospital and is giving satisfactory service, and a similar apparatus has been loaned to the Laboratories in the Perth Chest Hospital.

In June I proceeded on Long Service Leave to the United Kingdom and visited departments of Medical Illustration carrying out functions similar to the work done by this Department.

In September I attended the Annual Congress of the Institute of British Medical Photographers at Cardiff University, at which over 80 Senior Medical Photographers from the United Kingdom attended, and presented a paper on Photography of the Uterine Cervix, which is to be published in the coming year. Figs. 1 and 2 show the apparatus and a typical photograph reproduced from a colour transparency.

The organised basis for the profession of Medical Photography in the United Kingdom is to be greatly envied since it is responsible for the free interchange of ideas and techniques and the production of new specialised apparatus. The Institute of British Photographers also controls the London School of Medical Photography which trains and produces medical photographers of a high calibre. Trained medical artists occupy a position of prominence in the larger departments and their skill considerably broadens the scope of the illustrations produced.

In July Mr. K. J. Locke of this Department was successful in obtaining an Associateship in Medical Photography from the Royal Photographic Society of Great Britain.

The very limited accommodation available in the Perth Chest Hospital is a strictly limiting factor with regard to facility for working, photographing patients and chemical processing. The increasing complexity of modern photography now extends into the field of electronics and occupies more space. The resultant overcrowding of staff and equipment renders the task of maintaining a high quality photographic product increasingly difficult.

I wish to thank the Director of Laboratory Services for his help over the past years.

R. PLUMMER, F.R.P.S., F.R.M.S.,
Senior Medical Photographer

Appendix XVII

Royal Perth Hospital, Fremantle Hospital and Princess Margaret Hospital

ALL PATIENTS DISCHARGED, 1961, IN AGE GROUPS

Age Group	Cases			Total Days Stay in Hospital			Average No. Days in Hospital	
	Male	Female	Per cent. of Total	Male	Female	Per cent. of Grand Total	Male	Female
0–14	4,280	2,715	31·02	30,018	20,356	15·34	7·14	7·50
15–19	614	627	5·50	7,979	5,725	4·17	12·10	9·13
20–29	849	1,080	8·56	11,829	9,834	6·60	13·93	9·11
30–39	812	1,036	8·20	12,859	12,065	7·59	15·77	11·65
40–49	834	968	7·99	14,858	14,499	8·94	17·82	14·98
50–59	1,133	1,012	9·51	23,411	20,057	13·23	20·66	19·82
60–69	1,279	1,347	11·65	25,779	28,955	16·66	20·16	21·49
70 and over	1,894	2,067	17·57	41,363	48,873	27·47	21·84	23·64
Total	11,695	10,852	100·00	168,096	160,364	100·00	14·37	14·78
Total Male and Female	22,547			328,460			14·57	

Daily Bed Average : 899·9

OPERATION CASES IN AGE GROUPS, 1961

Age Group	Cases			Total Days Stay in Hospital			Average No. Days in Hospital	
	Male	Female	Per cent. of Total	Male	Female	Per cent. of Grand Total	Male	Female
0–14	1,536	974	11·13	12,113	7,673	6·02	7·89	7·84
15–19	317	251	2·52	4,696	2,522	2·20	14·81	10·05
20–29	398	542	4·17	7,104	4,713	3·60	17·85	8·70
30–39	344	525	3·85	7,493	6,295	4·20	21·78	11·99
40–49	342	458	3·55	8,100	7,149	4·64	23·68	15·61
50–59	434	451	3·94	10,877	9,137	6·12	25·06	20·31
60–69	525	603	5·00	13,276	13,930	8·28	25·29	23·10
70 and over	805	753	6·91	21,454	22,891	13·50	26·65	30·40
Total	4,701	4,557	41·07	85,113	74,316	48·56	18·09	16·31
Total Male and Female	9,258			159,423			17·22	

Daily Bed Average : 437

ROYAL PERTH HOSPITAL, FREMANTLE HOSPITAL AND PRINCESS MARGARET HOSPITAL

PATIENTS DISCHARGED DURING 1961

Item	Disease	International Classification Categories	Number of Cases		Number of Days in Hospital		Per cent. of Grand Total	Average Number Days in Hospital		Average Age of Patients		Results*					
			Male	Female	Male	Female		Male	Female	Male	Female	Sex	1	2	3	4	5
1	Tuberculosis, all forms	001–019	25	23	537	517	·32	21·5	22·5	46	37	M.	....	12	12	....	1
												F.	2	10	10	....	1
2	Syphilis, Gonorrhoea and Other Venereal Diseases	020–039	12	10	722	179	·27	60·2	17·9	50	39	M.	....	7	4	....	1
												F.	1	8	1	....	....
3	Other Infectious Diseases	040–138	419	354	4,003	3,638	2·33	9·6	10·3	15	16	M.	54	341	10	....	14
												F.	42	296	10	1	5
4	Malignant Neoplasms including those of Lymphatic and Haematopoietic Systems	140–205	661	627	13,863	13,919	8·46	20·9	22·2	62	60	M.	32	346	123	5	155
												F.	30	340	146	5	106
5	Benign and Unspecified Neoplasms	210–239	131	207	2,392	2,501	1·49	18·3	12·1	43	42	M.	13	88	25	....	5
												F.	55	122	20	....	10
6	Allergic Disorders	240–245	147	180	1,128	1,526	·81	7·7	8·5	24	31	M.	4	137	3	....	3
												F.	7	166	4	....	3
7	Diseases of Thyroid Gland	250–254	12	44	139	853	·30	11·6	19·4	44	44	M.	1	8	3	....	....
												F.	5	33	3	2	1
8	Diabetes Mellitus	260	71	107	1,965	2,419	1·34	27·7	22·6	53	62	M.	4	54	10	....	3
												F.	....	87	16	....	4
9	Diseases of Other Endocrine Glands	270–277	14	15	151	215	·11	10·8	14·3	37	38	M.	....	7	7	....	....
												F.	....	8	5	1	1
10	Avitaminosis and Other Metabolic Diseases	280–289	46	26	799	650	·44	17·4	25·0	44	51	M.	1	37	4	....	4
												F.	1	19	6	....	....
11	Diseases of Blood and Blood-forming Organs	290–299	121	116	1,349	1,829	·97	11·1	15·8	44	52	M.	3	65	41	1	11
												F.	2	85	19	3	7
12	Mental, Psychoneurotic and Personality Disorders	300–326	393	589	5,530	9,943	4·71	14·1	16·9	39	40	M.	5	241	145	....	2
												F.	5	446	136	1	1
13	Vascular Lesions affecting Central Nervous System	330–334	189	207	7,050	7,855	4·54	37·3	37·9	64	69	M.	....	102	36	....	51
												F.	1	105	31	....	70
14	Inflammatory and Other Diseases of Central Nervous System	340–357	219	182	4,009	4,367	2·55	18·3	24·0	32	41	M.	7	130	68	3	11
												F.	7	116	47	1	11
15	Diseases of Nerves and Peripheral Ganglia	360–369	36	49	790	620	·43	21·9	12·7	55	44	M.	3	24	8	....	1
												F.	6	38	4	1	....
16	Diseases of the Eye	370–389	372	380	4,742	4,742	2·89	12·7	12·5	39	43	M.	23	321	28	....	....
												F.	23	319	35	....	3
17	Diseases of Ear and Mastoid Process	390–398	191	146	1,819	1,383	·97	9·5	9·5	14	13	M.	15	168	8	....	....
												F.	10	124	12	....	....
18	Rheumatic Fever and Chronic Rheumatic Heart Disease	400–416	53	71	1,244	1,745	·91	23·5	24·6	29	31	M.	....	39	9	....	5
												F.	3	51	14	....	3
19	Diseases of the Heart and Arteries, including Hypertension and Arteriosclerosis	420–456	613	537	13,463	11,943	7·73	21·9	22·2	62	67	M.	10	390	83	1	129
												F.	4	351	60	1	121
20	Diseases of Veins and Other Diseases of Circulatory System	460–468	151	204	2,647	3,506	1·87	17·5	17·2	48	44	M.	31	104	10	....	6
												F.	36	148	13	1	6
21	Diseases of Respiratory System	470–527	1,444	998	11,305	7,477	5·72	7·8	7·5	22	22	M.	248	1,094	46	....	56
												F.	204	737	27	....	30

22	Diseases of Buccal Cavity and Oesophagus	530–539	90	91	661	804	·45	7·3	8·8	26	33	M.	26	59	4	....	1
												F.	17	66	8	....	....
23	Diseases of Stomach and Duodenum	540–545	255	127	4,513	2,211	2·05	17·7	17·4	54	58	M.	27	205	14	1	8
												F.	17	99	9	....	2
24	Appendicitis	550–553	230	180	2,097	1,600	1·13	9·1	8·9	25	28	M.	119	108	1	....	2
												F.	78	98	2	2	....
25	Hernia of Abdominal Cavity	560–561	227	120	2,648	1,473	1·25	11·7	12·3	45	51	M.	87	123	16	....	1
												F.	37	72	9	....	2
26	Other Diseases of Intestines and Peritoneum	570–578	346	372	4,517	4,836	2·85	13·1	13·0	28	40	M.	61	253	14	....	18
												F.	53	264	22	1	32
27	Diseases of Liver and Gallbladder	580–586	112	242	2,215	5,212	2·26	19·8	21·5	59	57	M.	13	78	15	....	6
												F.	67	142	17	2	14
28	Diseases of Pancreas	587	37	22	514	516	·31	13·9	23·5	33	41	M.	3	26	5	....	3
												F.	1	16	2	....	3
29	Nephritis and Nephrosis	590–594	62	47	996	944	·59	16·1	20·1	24	29	M.	....	43	6	....	13
												F.	....	38	4	....	5
30	Other Diseases of Urinary System	600–609	223	256	3,406	3,347	2·06	15·3	13·1	51	44	M.	25	158	30	2	8
												F.	40	180	24	1	11
31	Diseases of Male Genital Organs	610–617	311	....	5,735	....	1·75	18·4	....	57	....	M.	80	200	14	....	17
												F.	....	....	....	....	....
32	Diseases of Breast	620–621	5	33	90	272	·11	5·0	8·2	57	35	M.	....	4	....	....	1
												F.	4	25	4	....	....
33	Diseases of Female Genital Organs, Uterus, Ovary, Fallopian Tubes, Parametrium	622–637	....	573	....	5,613	1·71	....	9·8	....	42	M.	....	....	....	....	....
												F.	149	291	128	4	1
34	Complications of Pregnancy	640–649	....	96	....	567	·17	....	5·9	....	28	M.	....	....	....	....	....
												F.	27	63	6	....	....
35	Abortion	650–652	....	435	....	1,691	·51	....	3·9	....	28	M.	....	....	....	....	....
												F.	324	107	3	1	....
36	Delivery Complications and Complications of Puerperium	660–689	....	11	....	128	·04	....	11·6	....	23	M.	....	....	....	....	....
												F.	3	6	2	....	....
37	Diseases of Skin and Cellular Tissue	690–716	385	311	4,494	4,880	2·85	11·7	15·7	33	32	M.	41	304	29	1	10
												F.	39	261	9	....	2
38	Arthritis and Rheumatism except Rheumatic Fever	720–727	99	151	3,302	5,170	2·58	33·4	34·2	46	54	M.	3	77	16	2	1
												F.	2	128	17	....	4
39	Osteomyelitis and Other Bone and Joint Diseases	730–738	136	89	2,677	2,051	1·44	19·7	23·0	22	35	M.	6	116	13	....	1
												F.	7	70	12	....	....
40	Other Diseases of Musculo-skeletal System	740–749	75	140	948	1,737	·82	12·6	12·4	29	44	M.	8	59	8	....	....
												F.	24	107	9	....	....
41	Congenital Malformations	750–759	266	194	3,069	2,256	1·62	11·5	11·6	8	10	M.	19	170	58	....	19
												F.	14	126	46	....	8
42	Birth Injuries, Infections of Newborn	760–776	66	50	630	569	·37	9·5	11·4	1	1	M.	3	57	1	....	5
												F.	6	40	3	....	1
43	Symptoms referable to Systems or Organs	780–789	464	514	3,494	4,790	2·52	7·5	9·3	31	39	M.	30	380	42	5	7
												F.	37	390	73	5	9
44	Ill-defined Diseases	790–795	221	114	4,315	1,282	1·70	19·5	11·2	48	48	M.	25	152	33	1	10
												F.	1	82	26	1	4
	Total	....	8,930	9,240	129,968	133,776	80·30	....	....	....	....	....	2,421	12,567	2,056	56	1,070
45	Fractures of Skull and Face Bones	N800–N804	224	57	2,962	603	1·09	13·2	10·6	24	26	M.	15	186	14	....	9
												F.	1	49	3	1	3
46	Fractures and Dislocations of Vertebral Column	N805–N806	50	12	4,172	567	1·44	83·4	47·3	35	57	M.	....	42	4	....	4
												F.	....	7	3	....	2

Royal Perth Hospital, Fremantle Hospital and Princess Margaret Hospital

PATIENTS DISCHARGED DURING 1961—*continued*

Item	Disease	International Classification Categories	Number of Cases		Number of Days in Hospital		Per cent. of Grand Total	Average Number Days in Hospital		Average Age of Patients		Results *					
			Male	Female	Male	Female		Male	Female	Male	Female	Sex	1	2	3	4	5
47	Other Fractures of Trunk, Sternum and Larynx	N807–N809	62	39	1,674	1,128	·85	27·0	28·9	48	51	M.	4	53	....	....	5
												F.	2	34	1	....	2
48	Fractures of Upper Limb	N810–N819	207	154	1,179	767	·59	5·7	4·9	17	33	M.	5	198	3	....	1
												F.	8	141	5	....	....
49	Fractures of Lower Limb	N820–N829	337	298	11,522	14,728	7·99	34·2	49·4	38	61	M.	14	310	4	3	6
												F.	14	251	12	....	21
50	Dislocation without Fracture	N830–N839	57	17	642	153	·24	11·3	9·0	28	38	M.	9	46	2	....	....
												F.	1	16	....	....	....
51	Sprains and Strains	N840–N848	15	13	111	98	·06	7·4	7·5	33	27	M.	....	15	....	....	....
												F.	....	13	....	....	....
52	Head Injury, excluding Skull Fracture	N850–N856	547	230	4,506	1,830	1·93	8·2	7·9	23	25	M.	46	476	11	1	13
												F.	24	193	5	....	8
53	Internal Injury of Chest, Abdomen, Pelvis	N860–N869	52	9	571	103	·21	10·9	11·4	32	28	M.	15	35	....	....	2
												F.	1	8	....	....	....
54	Lacerations, Contusions and Superficial Injuries	N870–N929	529	210	4,080	1,698	1·76	7·7	8·1	21	23	M.	39	480	10	....	....
												F.	25	181	4	....	....
55	Effects of Foreign Body entering through Orifice	N930–N936	76	79	222	186	·13	2·9	2·6	23	33	M.	10	62	4	....	....
												F.	14	62	3	....	....
56	Burns	N940–N949	159	81	2,663	1,385	1·23	16·7	17·1	15	13	M.	13	138	3	....	5
												F.	7	65	1	....	8
57	Injury to Nerves and Spinal Cord without Bone Injury	N950–N959	18	2	184	4	·06	10·2	2·0	23	16	M.	....	16	2	....	....
												F.	....	2	....	....	....
58	Effects of Poisons	N960–N979	208	233	891	1,267	·66	4·3	5·4	14	23	M.	11	184	9	....	4
												F.	27	195	10	....	1
59	Effects of Exposure and Unspecified Injuries and Reactions	N980–N999	173	143	2,507	1,847	1·32	14·5	12·9	41	43	M.	26	132	11	....	4
												F.	29	103	9	....	2
	Total (N Categories)	....	2,714	1,577	37,886	26,364	19·56	....	....	....	....	....	360	3,693	133	5	100
60	Investigations, Observations and After-Care	Y00–Y10	51	35	242	224	·14	4·7	6·4	16	36	M.	2	37	7	5	....
												F.	....	12	11	11	1
	Total (Y Categories)	....	51	35	242	224	·14	4·7	6·4	16	36	....	2	49	18	16	1
	Grand Total	....	11,695	10,852	168,096	160,364	100·00	....	....	....	....	....	2,783	16,309	2,207	77	1,171

* Results : 1 = Cured
2 = Improved
3 = Unchanged
4 = Investigation only
5 = Death.

Royal Perth Hospital, Fremantle Hospital and Princess Margaret Hospital

OPERATION CASES DISCHARGED, 1961

Item	Operation	Code of Surgical Operations	Number of Cases		Number of Days in Hospital		Per cent. of Total Oper'n Beds *	Average Number Days in Hospital		Average Age of Patients		Results					
			Male	Female	Male	Female		Male	Female	Male	Female	Sex	1	2	3	4	5
1	Neurosurgery, Brain and Cerebral Meninges	001–019	110	53	5,133	1,399	4·10	46·7	26·2	33	35	M.	5	74	16	....	15
												F.	3	31	9	....	10
2	Neurosurgery, Spinal Cord and Spinal Meninges	020–029	35	26	1,301	534	1·15	37·2	20·5	42	37	M.	3	22	9	....	1
												F.	3	16	4	....	3
3	Neurosurgery, Peripheral Nerves and Sympathetic System	030–049	35	22	802	398	·75	22·9	18·1	47	45	M.	2	30	2	1	....
												F.	4	17	1	....	....
4	Thyroid and Parathyroid	070–079	4	26	50	451	·31	12·5	17·3	52	41	M.	1	3	....	....	....
												F.	6	17	1	1	1
5	Adrenals	080–084	....	5	....	187	·12	....	37·4	....	47	M.	....	....	....	....	....
												F.	....	1	1	....	3
7	Ophthalmic Operations	100–199	325	301	4,555	4,409	5·62	14·0	14·6	37	43	M.	17	302	6	....	....
												F.	17	278	5	....	1
8	Ear, Nose, Throat, Pharynx, Tongue, Palate, Buccal Cavity	200–249 and 260–299	624	474	5,450	4,108	5·99	17·9	20·1	46	49	M.	125	453	31	....	15
												F.	102	347	18	....	7
9	Teeth and Gums	250–259	53	38	550	254	·50	10·4	6·7	20	28	M.	22	30	1	....	....
												F.	9	28	1	....	....
10	Heart and Pericardium and Intra-thoracic Great Vessels	300–329	68	61	971	930	1·19	14·3	15·2	22	20	M.	....	40	25	....	3
												F.	3	41	13	....	4
11	Lung, Bronchus, Mediastinum and Collapse Therapy	330–354	87	58	1,548	1,160	1·70	18·2	20·0	42	37	M.	9	55	12	1	10
												F.	2	37	13	....	6
12	Operations on Breast	380–389	6	88	97	1,835	1·21	16·2	20·9	57	57	M.	....	6	....	....	....
												F.	9	69	7	....	3
13	On Abdominal Wall	400–419	301	213	4,918	4,190	5·71	16·3	19·7	47	50	M.	106	161	10	....	24
												F.	64	108	16	....	25
14	On Stomach	420–439	110	44	2,474	927	2·13	22·5	21·7	47	49	M.	27	73	5	....	5
												F.	13	25	1	....	5
15	On Appendix	440–449	236	186	2,127	1,753	2·43	9·0	9·4	24	27	M.	121	111	2	....	2
												F.	80	101	4	1	....
16	On Intestines except Appendix and Rectum	450–469	77	86	1,473	2,077	2·23	19·1	24·2	49	57	M.	13	57	3	....	4
												F.	11	57	8	1	9
17	On Rectum and Anus	470–499	82	74	1,392	1,442	1·78	16·9	19·5	45	53	M.	22	52	4	....	4
												F.	23	47	4	....	....
18	On Liver and Bile Ducts	500–529	52	155	1,437	3,933	3·37	27·6	25·4	60	57	M.	14	29	4	....	5
												F.	68	81	3	....	3
19	On Pancreas	530–539	....	1	....	24	·02	....	24·0	....	64	M.	....	....	....	....	....
												F.	....	1	....	....	....
20	On Spleen	540–549	15	3	191	176	·23	12·7	58·7	30	35	M.	7	5	2	....	1
												F.	1	2	....	....	....
21	On Kidney and Ureter	600–639	53	42	1,581	866	1·53	29·8	20·6	49	43	M.	14	30	6	1	2
												F.	5	33	3	....	1
22	On Bladder and Urethra	640–669	279	106	4,876	1,305	3·88	17·5	12·3	56	55	M.	11	199	53	2	14
												F.	20	59	23	2	2

OPERATION CASES DISCHARGED, 1961—*continued*

Item	Operation	Code of Surgical Operations	Number of Cases		Number of Days in Hospital		Per cent. of Total Oper'n Beds *	Average Number Days in Hospital		Average Age of Patients		Results					
			Male	Female	Male	Female		Male	Female	Male	Female	Sex	1	2	3	4	5
23	On Prostate and Seminal Vesicles	670–679	248	....	7,279	....	4·61	29·4	....	73	....	M.	71	153	4	....	20
												F.	....	....	....	....	....
24	Other Male Genital Organs	680–699	123	....	1,231	....	·77	10·0	....	19	....	M.	20	100	3	....	....
												F.	....	....	....	....	....
25	On Ovary and Fallopian Tubes	700–719	....	73	....	745	·47	....	10·2	....	35	M.	....	....	....	....	....
												F.	26	29	18	....	....
26	On Uterus and Supporting Structures	720–739	....	373	....	4,128	2·59	....	11·1	....	45	M.	....	....	....	....	....
												F.	98	201	69	3	2
27	On Vagina, Vulva and Perineum	740–759	....	254	....	3,037	1·90	....	11·9	....	47	M.	....	....	....	....	....
												F.	103	100	50	1	....
28	Obstetric Operations (D. and C.)	760–799	....	393	....	1,464	·92	....	3·7	....	29	M.	....	....	....	....	....
												F.	284	103	5	1	....
29	Orthopaedic Surgery	800–899	835	715	19,190	21,533	25·53	22·9	30·1	33	49	M.	54	742	20	2	17
												F.	66	605	19	....	25
30	On Peripheral Blood Vessels and Lymphatic System	900–929	106	113	2,921	2,392	3·33	27·6	21·2	44	43	M.	12	54	29	3	8
												F.	15	72	15	1	10
31	On Skin and Subcutaneous Tissue	930–949	721	469	11,274	6,923	11·41	15·6	14·8	28	29	M.	100	598	16	2	5
												F.	64	392	8	....	5
32	Other Surgical Procedures	950–999	116	105	2,292	1,730	2·52	19·8	16·5	36	46	M.	3	96	10	....	7
												F.	3	77	20	....	5
	Total	....	4,701	4,557	85,113	74,310	100·00	....	....	....	....	....	1,881	6,453	612	23	292

* Operation Cases occupied one-half of the total bed days. To find the percentage of total beds occupied by the various types of operation cases, divide the percentage figure in Column 6 by 2.

ACCIDENTS, POISONINGS AND VIOLENCE, 1961

Accident	"E" Code	Number of Patients	Days in Hospital	Percentage of Hospital Beds Occupied	Average Age of Patients	Number Died
Railway Accidents	800–802	17	517	·16	37	....
Motor Vehicle Traffic Accidents	810–825	1,111	20,540	6·25	28	34
Motor Vehicle Non-traffic Accidents	830–835	31	825	·25	26	1
Other Road Vehicle Accidents	840–845	80	580	·18	14	....
Water Transport Accidents	850–858	4	144	·04	28	....
Aircraft Accidents	860–866	1	5	·001	19	....
Accidental Poisoning	870–895	297	1,081	·33	13	1
Accidental Falls	900–904	992	20,953	6·38	40	34
Accidents Caused by Hot Substance, Corrosive or Steam	917	139	1,959	·60	12	5
Other Accidents	910–936	1,141	12,266	3·73	24	16
Medical and Surgical Complications and Therapeutic Misadventures	940–959	221	3,126	·95	48	3
Late Effects of Injury	960–965	35	360	·11	56	....
Suicide and Self-inflicted Injury	970–979	138	1,131	·34	35	4
Homicide and Assault	980–985	72	716	·22	36	1
Total	....	4,279	64,203	19·54	....	99

Appendix XVIII

INCIDENCE AND MORTALITY OF NOTIFIABLE DISEASES

Diseases Notifiable	1958			1959			1960			1961		
	Cases Reported	Amend. Diagnosis	Deaths	Cases Reported	Amend. Diagnosis	Deaths	Cases Reported	Amend. Diagnosis	Deaths	Cases Reported	Amend. Diagnosis	Deaths
Acute Rheumatism	21	21	(A) 3	15	15	(A) 7	14	14	(A) 7	10	10	(A) 3
Amoebiasis	1	1	....	1	1	1	5	5	....	2	2	....
Ankylostomiasis	1	1	....	1	1	....	....	....	....	....	....	2
Brucellosis	....	....	....	8	8	....	7	7	....	5	5	....
Chorea	1	1	....	2	2	1	3	3	....	....	....	....
Dengue Fever	....	....	....	1	1	....	....	....	....	....	....	....
Diphtheria	26	24	....	49	48	1	5	5	....	15	15	....
Dysentery (Amoebic)	1	1	....	1	1	1	5	5	....	5	5	....
Dysentery (Bacillary)	121	121	....	188	188	2	104	104	....	117	117	3
Encephalitis Lethargic	....	....	....	....	....	....	....	....	....	2	2	....
Erythema Nodosum	2	2	....	1	1	....	1	1	....	....	....	....
Hydatid	....	....	....	....	....	1	1	1	....	....	....	....
Infantile Diarrhoea	12	12	(B) 22	26	26	(B) 12	30	30	(B) 10	48	48	(B) 23
Infective Hepatitis	396	396	1	142	142	2	256	256	4	262	262	4
Lead Poisoning	1	1	....	2	2	1	2	2	1	1	1	....
Leprosy	38	38	....	18	18	....	18	18	....	15	15	....
Leptospirosis	....	....	....	2	2	....	9	9	....	13	13	....
Malaria	2	2	....	3	3	....	4	4	....	2	2	....
Meningococcol Infection	9	9	2	3	3	4	4	4	2	2	2	1
Ornithosis	....	....	....	....	....	....	2	2	....	2	2	....
Paratyphoid	2	2	....	....	....	....	5	4	1	6	6	....
Poliomyelitis	3	1	....	3	3	....	14	7	....	3	3	....
Pleural Effusion	5	5	....	13	11	1	14	14	1	19	12	....
Puerperal Fever	1	1	....	3	3	....	1	1	1	3	3	....
Purulent Ophthalmia	30	30	....	50	50	....	67	67	....	29	29	....
Rubella	3,059	3,059	....	221	221	....	127	127	....	264	264	2
Salmonella Infection	45	45	....	40	40	....	28	28	....	43	43	....
Scarlet Fever	191	190	....	60	60	....	38	38	....	45	45	....
Tetanus	11	11	4	5	5	2	8	8	6	5	5	2
Trachoma	364	364	....	1,149	1,149	....	437	437	....	369	369	....
P.T.B.	388	350	23	345	309	24	322	28	28	246	197	18
Other T.B.	27	24	4	35	34	....	37	34	2	43	41	1
Typhoid Fever	22	22	2	8	8	1	1	1	....	4	4	....
Typhus Fever	5	5	....	6	6	....	....	....	....	4	4	....

Deaths include full-blood aboriginals.

(A) Rheumatic Fever.

(B) Gastro-Enteritis and Colitis (except ulceration) under two years and Diarrhoea of the new born.

Appendix XIX

MATERNAL MORTALITY

Period	Average Live Births	Average Maternal Deaths	Average Rate
1901–1905	6,681	28·0	4·19
1906–1910	7,691	43·4	5·64
1911–1915	8,844	39·4	4·46
1916–1920	7,726	41·4	5·36
1921–1925	8,056	34·2	4·25
1926–1930	8,748	46·8	5·35
1931–1935	8,062	35·4	4·39
1936–1940	8,877	32·4	3·65
1941–1945	10,408	24·4	2·34
1946–1950	13,130	21·4	1·63
1951–1955	15,724	13·8	0·88
1956–1960	16,922	8·2	0·48

Year	Live Births	Deaths From									
		Puerperal Septicaemia		Other Puerperal Infections		Abortion		All other Complications of Pregnancy and of the Puerperal State		All Complications of Pregnancy and the Puerperal State	
		No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
1943	10,481	2	0·19	1	0·10	3	0·29	17	1·62	23	2·19
1944	10,870	2	0·18	2	0·18	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	1	0·08	1	0·08	8	0·62	22	1·71	32	2·49
1948	12,981	2	0·15	4	0·31	1	0·08	13	1·00	20	1·55
1949	13,511	....	....	2	0·15	3	0·22	11	0·81	16	1·18
1950	14,228	....	....	2	0·14	1	0·07	12	0·70	13	0·91
1951	14,794	....	....	2	0·14	3	0·20	11	0·74	16	1·08
1952	15,413	....	....	3	0·19	3	0·19	12	0·78	18	1·17
1953	15,862	....	....	....	....	1	0·06	8	0·50	9	0·57
1954	15,928	....	....	....	....	5	0·31	7	0·44	12	0·75
1955	16,623	....	....	....	....	1	0·06	13	0·78	14	0·84
1956	16,916	....	....	....	....	2	0·12	7	0·41	9	0·53
1957	16,924	....	....	....	....	3	0·18	8	0·47	11	0·65
1958	16,731	....	....	....	....	1	0·06	7	0·42	8	0·48
1959	17,111	....	....	....	....	1	0·06	4	0·23	5	0·29
1960	16,926	1	0·06	....	....	3	0·18	4	0·24	8	0·47
1961	17,078	....	....	....	....	2	0·12	5	0·29	7	0·41

All Rates per thousand live births

Place	1959	1960	1961
Western Australia	0·29	0·47	0·41
New Zealand (*a*)	0·49	0·34	0·33
New South Wales	0·67	0·69	....
Victoria	0·26	0·25	....
Queensland	0·59	0·68	....
Tasmania	0·02	0·45	....
South Australia	0·30	0·62	....

(*a*) Non-Maori.

Appendix XX

STILLBIRTH AND INFANT MORTALITY RATES

Year	Total Births including Stillbirths	Stillbirth Rates	Neo-Natal Rates		Total Mortality Rates under One Year	Other Post Natal Rates Over One Month and Under One Year
			Under One Week	Under One Month		
1941	10,375	24·6	15·1	18·1	34·4	15·7
1942	10,109	20·6	17·1	20·3	36·2	15·9
1943	10,759	25·8	17·1	21·0	31·8	10·8
1944	11,144	24·8	18·6	21·0	32·0	11·0
1945	10,896	20·6	18·0	20·0	28·9	8·9
1946	12,398	23·1	17·1	20·6	30·3	9·6
1947	13,178	23·2	16·9	19·4	30·2	13·2
1948	13,197	20·5	16·9	18·7	25·0	8·4
1949	13,779	19·4	16·2	19·0	25·9	6·8
1950	14,468	16·6	16·2	18·0	26·7	8·6
1951	15,091	19·7	16·2	19·7	28·2	8·5
1952	15,697	18·1	15·5	17·7	24·5	6·8
1953	16,130	16·6	13·4	16·2	23·4	7·3
1954	16,198	16·7	14·2	15·8	22·2	6·4
1955	16,862	14·2	13·3	15·8	22·1	6·3
1956	17,142	13·2	13·0	15·7	22·4	6·7
1957	17,169	14·3	13·6	14·9	20·8	5·9
1958	16,956	13·3	12·8	14·2	21·2	7·1
1959	17,336	13·0	12·3	13·6	19·9	6·3
1960	17,152	13·2	13·9	15·7	21·3	5·7
1961	17,318	13·9	10·3	12·6	19·4	6·8

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

INFANT MORTALITY

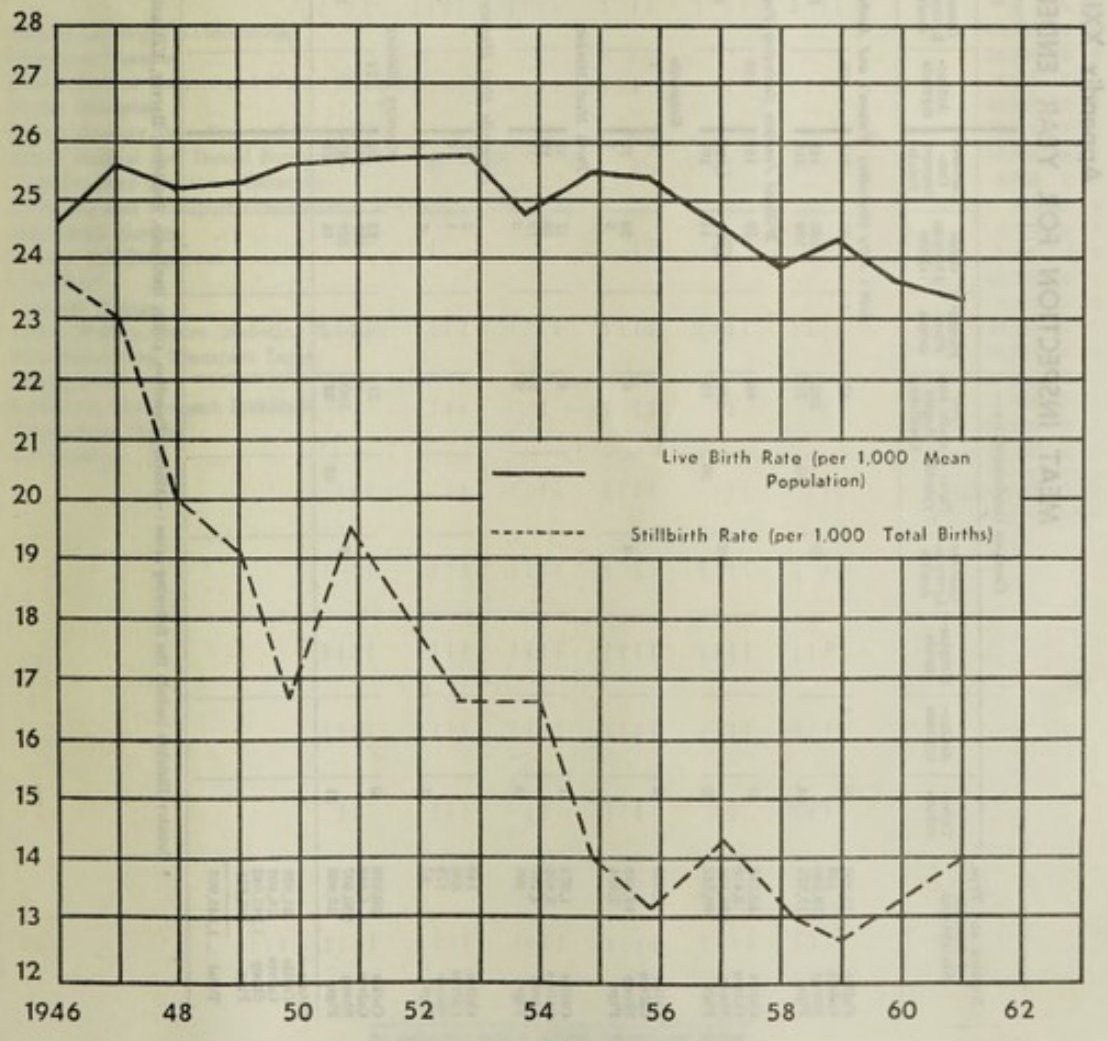
Year	Births	Infant Mortality per 1,000 Live Births
1941	10,118	35·28
1942	9,901	36·86
1943	10,481	32·63
1944	10,870	32·57
1945	10,672	29·52
1946	12,105	31·06
1947	12,874	30·92
1948	12,931	25·60
1949	13,511	26·42
1950	14,228	27·13
1951	14,794	28·73
1952	15,413	24·91
1953	15,862	23·83
1954	15,928	22·54
1955	16,623	22·44
1956	16,916	22·70
1957	16,924	21·09
1958	16,731	21·52
1959	17,111	20·16
1960	16,926	21·62
1961	17,078	19·67

Appendix XXI

WESTERN AUSTRALIA – STILLBIRTH AND BIRTH RATES

Year	Mean Population*	Live Births		Stillbirths	
		Number	Rate per 1,000 Mean Population*	Number	Rate per 1,000 Total Births
1946	492,771	12,105	24·57	293	23·63
1947	502,951	12,874	25·60	304	23·07
1948	514,621	12,931	25·13	266	20·16
1949	532,603	13,511	25·37	268	19·45
1950	557,878	14,228	25·50	240	16·59
1951	580,317	14,794	25·49	297	19·68
1952	600,615	15,413	25·66	284	18·09
1953	621,034	15,862	25·54	268	16·62
1954	639,963	15,928	24·89	270	16·67
1955	657,323	16,623	25·29	239	14·17
1956	674,459	16,916	25·08	226	13·18
1957	687,448	16,924	24·62	245	14·27
1958	699,915	16,731	23·90	225	13·27
1959	711,737	17,111	24·04	225	12·98
1960	722,900	16,926	23·41	226	13·18
1961	737,367	17,078	23·16	240	13·86

* Adjusted in accordance with the preliminary results of the 1961 Census.



Appendix XXII

MEAT INSPECTION FOR YEAR ENDED 31ST DECEMBER, 1961

Number and Type of Animals Slaughtered		Carcases Condemned for—									Part Carcases Condemned for—						Organs Condemned for—					
		Tuberculosis	Actinomycosis	Piroplasmosis	Caseous Lymphadenitis	Para-Typhoid	Traumatic and Septic Conditions	Pleuro-Pneumonia	Other Abnormalities	Carcases Condemned Totals	Actinomycosis	Caseous Lymphadenitis	Tuberculosis	Arthritis	Other Abnormalities	Part Carcases Condemned Totals	Actinomycosis	Echinococcosis	Pleuro-Pneumonia	Tuberculosis	Other Abnormalities	Organs Condemned Totals
Robb's Jetty (including Watson's and Anchorage Butchers)																						
Cattle	15,896	30	1	....	....	....	87	1	95	214	109	....	....	2	58	169	157	41	....	30	495	723
Calves	526	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sheep	279,980	....	....	....	20	....	262	....	160	442	....	543	....	560	17	1,120	....	229	....	....	17,422	17,651
Pigs	118,275	44	....	....	....	65	70	....	139	318	....	....	1,214	26	8,205	9,445	....	12	....	3	34,098	34,113
Midland Junction (including Foggitt's)																						
Cattle	42,731	57	....	....	....	....	65	....	59	181	198	....	82	2	59	341	252	142	....	84	962	1,440
Calves	3,410	....	....	....	....	....	....	....	....	....	....	....	....	....	1	1	....	....	....	....	....	....
Sheep	658,106	....	....	....	132	....	291	....	1,300	1,723	....	512	....	822	21	1,355	....	416	....	....	65,524	65,940
Pigs	60,542	20	....	....	....	30	13	....	44	107	....	....	117	351	88	556	....	33	....	4	10,885	10,922
Kalgoorlie																						
Cattle	2,626	2	....	....	....	....	....	....	....	2	7	....	....	....	....	7	....	2	....	....	49	51
Calves	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sheep	49,963	....	....	....	3	....	6	....	20	29	....	47	....	66	5	118	....	....	....	....	2,395	2,395
Pigs	2,654	....	....	....	....	....	....	....	2	2	....	....	12	1	3	16	....	....	....	....	110	110
Perth Meat Markets																						
Cattle	1,074	1	....	....	....	....	4	....	17	22	....	....	....	....	....	....	....	27	....	....	27	54
Calves	5,950	....	....	....	....	....	....	....	98	98	....	....	....	....	....	....	....	....	....	....	52	52
Sheep	4,107	....	....	....	....	....	1	....	12	13	....	....	....	....	....	....	....	5	....	....	134	139
Pigs	395	4	....	....	....	....	2	....	3	9	....	....	....	....	....	....	....	8	....	....	1	9
Fremantle Meat Markets																						
Cattle	189	....	....	....	....	....	....	....	2	2	....	....	....	1	4	5	....	....	....	....	3	3
Calves	880	....	....	....	....	....	....	....	4	4	....	....	....	....	....	....	....	....	....	....	4	4
Sheep	179	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Pigs	87	1	....	....	....	....	....	....	3	4	....	....	3	....	....	3	....	....	....	....	....	....
**Country Districts*																						
Cattle	30,010	9	....	....	....	....	21	....	22	52	74	....	35	10	81	200	84	94	....	32	668	878
Calves	5,642	....	....	....	....	....	8	....	177	180	....	....	....	....	....	....	....	....	....	....	24	24
Sheep	250,607	....	....	....	18	....	190	....	229	437	....	194	....	240	158	592	....	1,146	....	....	8,990	10,136
Pigs	13,666	11	....	....	....	13	32	....	16	72	....	....	99	47	68	214	....	19	....	27	1,876	1,922
Totals—																						
Cattle	91,926																					
Calves	16,408																					
Sheep	1,242,042																					
Pigs	195,619																					
Total	1,545,995																					

* Country Districts include the following areas :—Albany, Busselton, Collie, Dardanup, Geraldton, Harvey, Katanning, Merredin, Mandurah, Manjimup, Narrogin, Northam Shire Council, Wagin, Waroona.

Appendix XXIII
REVENUE AND EXPENDITURE FOR THE YEAR 1961

REVENUE

	£	s.	d.
Licence Fees	331	15	0
Meat Inspection Fees	20,469	5	5
Fish Inspection Fees	895	13	3
Pathological Laboratory	5,626	5	6
Sanitation Refunds	117	8	0
Inspection of Plans (Septic Tanks)	17,171	18	10
Miscellaneous	7,016	14	11
Nurses' and Midwives' Registration and Examination Fees	2,797	17	6
T.B. Diagnosis (Generally)	447,827	7	10
T.B. Diagnosis—			
Wooroloo	1,600	10	0
Perth Chest Hospital	15,753	13	6
Health Supervision Charges	....		
Baby Patterns	3	7	6
Hospital Benefits—Lepers	233	4	0
Supplementary and Organisation Benefits—Lepers	496	4	0
Poliomyelitis After-care	84	16	0
Immunised Diphtheria	403	10	0
Infectious Diseases	17,109	11	0
Pesticide Registration	232	0	0
T.B. Laboratory Fees	38,177	15	0
	£576,348	17	3

EXPENDITURE

	£	s.	d.
Salaries (including Tuberculosis)	662,707	14	9
Infectious Diseases	38,280	13	6
School Medical Doctors and Nurses Travelling	6,649	3	8
Dental Bursaries	10,188	2	1
School Dentists Travelling and Expenses	5,704	1	7
School Medical and Dental Services—Other Expenditure	13,637	18	9
Travelling and Transport Generally	4,554	1	8
Travelling and Transport Commissioner and Medical Officer	891	15	9
Ophthalmic Survey	1,439	19	4
Postage and Telephones	2,630	3	4
Laboratory	51,589	14	5
Venereal Diseases	3,761	1	2
Infant Welfare Centre (including Salaries)	118,874	6	6
Maintenance and Transport Lepers	28,332	7	3
Poliomyelitis	20,499	4	7
Sanitation, Government Buildings	14,558	15	1
Tuberculosis Clinics	231,587	8	4
Miscellaneous	25,235	8	8
	£1,241,122	0	5

By Authority: ALEX S. DAVIES, Government Printer

Appendix XXIII

REVENUE AND EXPENDITURE FOR THE YEAR 1951