

## **Report of the Director-General of Health / Commonwealth of Australia.**

### **Contributors**

Australia. Department of Health.

### **Publication/Creation**

Canberra : Commonwealth Government Printer, [1954]

### **Persistent URL**

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COMMONWEALTH



OF AUSTRALIA

REPORT  
OF  
THE DIRECTOR-GENERAL  
OF  
HEALTH

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JULY 1, 1954 — JUNE 30, 1956



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COMMONWEALTH



OF AUSTRALIA

# REPORT OF THE DIRECTOR-GENERAL OF HEALTH

JULY 1, 1954

JUNE 30, 1956





## COMMONWEALTH

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Division of Plant Quarantine: Director, Dr. T. H. J. Harrison, D.Sc.Agr. (Sydney), D.I.C. (London).

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JUNE 20 1938 JULY 1 1938

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*Commonwealth of Australia.*

1st July, 1954, to 30th June, 1956.

A. J. METCALFE

*Director-General of Health.*

30th April, 1957.

*Canberra, A.C.T.*



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## **COMMONWEALTH LABORATORIES**

### **COMMONWEALTH SERUM LABORATORIES**

#### **POLIOMYELITIS VACCINE PRODUCTION**

In April, 1955, the world learned for the first time of the dramatic success of the vaccine developed by Dr. Jonas Salk and his associates at the University of Pittsburgh.

Speaking at a scientific meeting at Ann Arbor, Michigan, on April 12, 1955, Dr. Thomas Francis, Jr., reported that the vaccine, taking an average of protection against each of the three known types of poliomyelitis, had been 80 per cent. effective in preventing non-paralytic poliomyelitis in 1954. Dr. Francis placed great emphasis on the fact that the vaccine was tested in areas of high poliomyelitis incidence and that the protection shown was obtained by comparing two groups of children. One of these groups was given vaccine and the other a neutral fluid known to have no protective value.

Dr. Francis's study—by far the most extensive ever given any vaccine, revealed that the Salk vaccine, properly manufactured and tested, was safe and effective. This study involved an analysis of over 144,000,000 facts on machine record cards, and was a milestone in the fight against a disease that must have existed since the beginning of recorded history.

Until comparatively recent times, poliomyelitis has remained a mystery disease. It was not until 1840 that a German-born specialist, Dr. Jacob Heine, learned that symptoms of poliomyelitis result from damaged or destroyed nerve cells and only in 1890 was a comprehensive description of symptoms given, and poliomyelitis called an infectious disease.

In 1908, two Austrian doctors, Karl Landsteiner and Erwin Popper showed that poliomyelitis may be transmitted to monkeys, thus giving scientists an experimental animal in which to study the disease.

Public attention was drawn to the problem in the United States through the 1916 epidemic and that country has played a leading part in the fight against the disease. The National Foundation of Infantile Paralysis was founded in 1938, its purpose being to lead, direct and unify the fight against the disease.

The monkey has been the basic experimental animal for study. Before 1938, many soundly conceived projects for research into poliomyelitis failed to achieve their full possibilities largely because of insufficient resources to purchase the required number of monkeys. The provision of sufficient monkeys was therefore of fundamental importance.

By the late 1940's it was apparent that scientists were dealing with more than one virus capable of causing poliomyelitis. From the co-ordinated efforts of four different university laboratories in the United States, using 17,500 monkeys, came the answer which was the keystone to all future research towards poliomyelitis prevention.

The answer was that all known strains of poliomyelitis virus could be classified into three types referred to as Type I., Type II., and Type III. Infection by one Type gave protection against any other strain of that Type but not against strains of the other two Types. A successful vaccine therefore would have to be designed to protect against the three different Types.



In 1949, Drs. John F. Enders, Thomas H. Weller and Frederick C. Robbins of Harvard University found a way to grow poliomyelitis virus in non-nervous tissue, kept alive in flasks and test tubes. This was an important discovery as there was now a practical means of growing poliomyelitis virus suitable for use in a vaccine. The discovery lent itself to the development of numerous laboratory tests for poliomyelitis virus in which test tubes of tissue culture could replace live monkeys.

Prior to 1952, poliomyelitis virus had been found only twice in the blood stream of poliomyelitis patients. However, in that year, researchers at Yale and the John Hopkins Universities found the virus circulating for brief periods in the blood stream of monkeys and chimpanzees. Later, additional evidence was found indicating that poliomyelitis virus may be present in the blood of human beings prior to the onset of the illness.

A growing body of research seemed to suggest that poliomyelitis virus appeared in the blood before actual paralysis took place in infected persons. If this were so, then one way to prevent paralysis might be to build up antibodies (i.e., disease fighters) to attack the virus in the blood before it had a chance to get to the nervous system.

This became the new line of research. What was needed was something that would make human beings create special antibodies against the poliomyelitis viruses which would persist.

One such material was the poliomyelitis virus itself, but how could it be rendered free from its dangerous qualities and yet retain the power of stimulating antibody production?

At the University of Pittsburgh, Dr. Salk and his associates proceeded on this line of research. They would treat the virus with chemicals which destroy its ability to cause disease, and perhaps if this were carefully done, the inactivated virus would still be able to stimulate the production of antibodies by the blood.

The Salk vaccine of to-day is the result of the painstaking application of this concept.

The vaccine consists of three types of poliomyelitis virus which have been treated with a solution of formalin to make the virus harmless. When injected, the vaccine induces the human body to resist poliomyelitis virus invasions by producing the necessary antibodies. As the antibody level rises, so immunity from paralytic poliomyelitis is built up.

#### **Method of Manufacture of the Vaccine at the Commonwealth Serum Laboratories**

The Salk Vaccine is in fact a mixture of vaccines of the three types of poliomyelitis virus, each treated with a formalin solution to make it harmless. The inactivated virus is contained in a fluid and the vaccine is red in colour.

In making the vaccine, the three types of poliomyelitis virus are grown on cells taken from kidney tissue, nourished by a synthetic fluid of complex chemistry so that a large field of these cells is obtained. Virus is then placed in the cells, which rapidly become infected.

Under controlled conditions of temperature, the virus multiplies and, after eight days, is harvested. The fluid is poured into suitable containers and filtered.



A solution of formalin is then added to the virus-containing fluid. Formalin is a chemical which is capable of inactivating the virus and of destroying its ability to cause disease, but still allows the vaccine to stimulate the human body to produce poliomyelitis antibodies.

The formalin solution remains in contact with the virus for nine days. Checks are made during this period to ensure that the virus is not capable of regrowth.

To make sure that no particles of live virus remain, samples of vaccine are tested in tissue culture and otherwise. Progressive checks are made with quantities of vaccine by adding it to living cells growing in test tubes under controlled conditions.

In all these tests, 15 per cent. of every individual vaccine is tested.

Finally, samples of the vaccine are injected into mice, guinea pigs and rabbits to see if there are any other substances which might cause a harmful reaction. These tests are all made at the Commonwealth Serum Laboratories, Melbourne.

As a further check, however, independent safety checks of samples of the vaccine are made by the Research Section of the Fairfield Hospital, Melbourne and tests are made by the Pathology Department of the University of Melbourne.

No vaccine is released for use unless the searching requirements of the Commonwealth Serum Laboratories, the Fairfield Hospital and the University of Melbourne are fully met.

#### **Vaccine Production in Australia**

The method of manufacture of the vaccine at the Commonwealth Serum Laboratories has been described above. Now let us look briefly at the history of the vaccine production in Australia.

As stated earlier, the successful outcome of the American Field Trial was announced at Ann Arbor, Michigan, United States of America, on April 12, 1955.

Within a few days, the Commonwealth Government had decided to proceed with the production of the vaccine in Australia. This decision was facilitated by the knowledge that Dr. P. L. Bazeley, had been in the United States for the previous two and a half years, and had been working with Dr. Salk on all stages of the development of the vaccine.

Dr. Bazeley returned to Australia on April 29, 1955, and during the next fortnight the necessary steps to give effect to the Government's decision were taken or planned. Dr. Bazeley returned to America on May 10, 1955, to arrange for the purchase and procurement of equipment obtainable only in the United States, and finally returned to Australia on September 9, 1955, to take charge of the production of the vaccine.

Between April 29th and September 9th, the bulk of the construction work for the project was carried out at the Commonwealth Serum Laboratories by the Works Department. This involved the alteration of the wing of a large building to make a production laboratory, together with the construction of a monkey house on the western boundary of the Commonwealth Serum Laboratories. A further two months were necessary to bring the buildings into such condition that vaccine production could actually be commenced and this followed from mid-November.



By mid-1956, the stage was reached where sufficient quantities of the vaccine were available to commence the nation-wide immunization programme and in June, 1956, supplies of the vaccine were despatched to all States and the campaign is now under way.

### **ANTIBIOTICS SECTION**

The rate of penicillin production has been progressively increased over the period. Considerable improvements in the production process were introduced which resulted in further increases in output and reduction in costs.

Improvements effected in the production process were—

- (a) an increase in the number of tank runs;
- (b) the use of an improved fermentation process which involved increased yield per tank; and
- (c) the introduction of an improved method of production for crystalline potassium penicillin, which is the starting material for manufacture of the main line, procaine penicillin.

Another major improvement was the development to pilot scale of procedures for the production of Penicillin V, which is a new type of penicillin having particular advantages for oral administration.

In addition, a large number of smaller items of work were attended to, all aimed at improvements in existing procedures, or the manufacture of new products.

### **The Antibiotics Assay Department**

The Antibiotics Assay Department contributed to this large volume of production and developmental work by the amount of assay and general testing work performed. In addition, they also performed the laboratory and assay work involved in a comprehensive clinical investigation on the absorption of orally administered Penicillin G. The results of this work are to be published and should be of value to the medical profession.

The Officer-in-charge of this department was also sole or co-author of four articles published in the scientific literature.

### **Equipment and Accommodation**

Improvements in equipment and accommodation over the period consisted of—

- (a) The operation of the complete Solvent recovery and rectification plant, which resulted in considerable savings in amyl acetate and costs.
- (b) An 8-inch Micronizer, obtained for grinding procaine penicillin, with resultant savings of labour and a marked improvement in the quality of the product.
- (c) Additional powder sieving and blending equipment to improve methods and product quality.
- (d) A Fitzpatrick comminuting mill and a particle size classifier; and
- (e) The installation of two additional 5,000-gallon fermentation tanks.



## BIOCHEMISTRY SECTION

The activities in this Section have dealt particularly with serum concentration and serum fractionation.

With regard to serum concentration and refinement of antitoxic plasmas and antivenenes, considerable quantities were dealt with in unitages for diphtheria, tetanus, gas-gangrene, dysentery (Shiga) and antivenene.

In 1954-55, a small batch of taipan antivenene was successfully concentrated by the peptic digestion type, and a quantity of staphylococcal anti-toxin, originally concentrated by an older method, was re-processed. This latter product is now required in the treatment of penicillin-resistant staphylococcal infections.

The Cohn ethanol method of processing human serum has been in operation during the past two years.

Fractionation of human plasma has been effected steadily throughout the period, and albumin, gamma globulin and fibrinogen have been made available for issue. Gamma globulin has been used in the prophylaxis of poliomyelitis, infectious hepatitis, rubella in pregnant women, and measles in young and sickly children.

Fractionation of bovine plasma was also undertaken in 1955-56 for the preparation of Bovine Albumin, which reagent was previously only obtainable from the U.S.A.

Developmental work has been concerned with the production of minor fractions, such as anti-haemophilic globulin, isoagglutinins and clotting components, and the improvement of methods of serum and plasma fractionation generally.

## ENDOCRINE SECTION

This Section deals with the production of Insulin, Thyroid, A.C.T.H. and Pituitary Extract (Posterior Lobe); the standardization of endocrine products, and the preparation and testing of Smallpox Vaccine.

### Insulin Department

The following insulins have been produced and dispensed:—Regular Insulin, Protamine Zinc Insulin, N.P.H. or Isophane Insulin, and special Pig Insulin. Protamine Sulphate has been processed as usual from supplies of frozen salmon testes imported from Canada.

Improvements in the yield of Insulin per unit of raw material have been obtained, and a considerable amount of work has been directed towards an increase in the yield of the final product. This work has been based on information received from the Connaught Laboratories, Toronto, but large-scale changes of process have been delayed by inability to obtain plant, and also install plant which has been obtained.

Developmental work has also been concerned with the re-purification of Protamine Sulphate; experimental studies have been effected on the separation of trypsin from pancreas before insulin extraction; and Isophane Insulin (N.P.H.) has been improved in quality as a result of some preliminary work.



### **Pituitary Department**

Regular production of posterior pituitary extracts of the oxytocic and pressor types respectively was continued over the period, and demand did not change appreciably for these products. The demand for A.C.T.H. fell off appreciably during the latter half of the period, but there was some difficulty in obtaining the necessary pituitary glands for production in 1954-55.

A.Z. tests continued to be carried out for medical and veterinary practitioners, and for laboratories which require confirmatory checks on other types of pregnancy test.

### **Smallpox Vaccine**

Investigation into the drying of Calf Lymph (Smallpox Vaccine) in 1954-55 gave promising results. It was found that the average yield of Calf Lymph per animal rose considerably through the use of greater areas of skin, and attention to optimal times for harvesting.

### **Physiological Standardization**

A considerable portion of the activities of this Section is involved in standardization work. All insulins are standardized by biological assay as well as pituitary extracts and A.C.T.H. and a considerable number of assays are required for experimental work on process methods.

The Assay Section has collaborated with the Medical Research Council of Great Britain in work with certain new international standards for Pituitary. Collaborative assays on International Standard Insulin are also being undertaken.

Final-year medical students attend in this Section for instruction in the technique of vaccination; 140 students attended in small groups during the year.

Developmental work has been concerned with preparation of Long Acting Corticotrophin (A.C.T.H.) which is now a stock product. Investigations have also been made on alternative methods of standardization of A.C.T.H. Large-scale process has been used on trypsin preparation and this material has been supplied to the Veterinary Department for use in certain vaccines. Some investigations were also carried out on the preparation of Dried Vaccine Lymph. This work has, however, been limited.

In the Standardization Department biological assay by blood sugar test methods has been used in the routine assay of various insulins. Chemical tests also are included for nitrogen content, zinc, &c. Chemical assays of Thyroid Powder and A.C.T.H. were also dealt with and glucose tolerance tests are carried out for Commonwealth Medical Officers. The standardization of antitoxic sera and toxicity tests are also carried out.

### **MICROBIOLOGY I SECTION**

This Section includes Departments for the production of bacterial vaccines, tuberculins, and protein extracts for the diagnosis and treatment of allergic conditions.

In the Vaccine Department, the demand for the main product, Pertussis Bacillus (Phase I), fell off considerably following the development of Triple Antigen.

In 1955-56, work was initiated on culture maintenance and vaccine potency assays, e.g. in T.A.B., Cholera, and Plague Vaccines. Work was also undertaken on the Assay of Typhoid Vaccine for the World Health Organization.



In the Tuberculin Department, the demand for P.P.D. increased to a significant extent replacing the demand for Old Tuberculin.

Production in the Allergen Department continued at the same level, and plans for the investigation of peptonized extracts, described by Dr. C. T. Piper of Adelaide, were proceeded with.

In the Bottling and Ampoule Departments there have been large increases in the amount of Tetanus Antitoxin and Triple Antigen bottled.

Additional plant and accommodation has been supplied in the majority of Departments.

## **MICROBIOLOGY II SECTION**

Six main Departments are contained in this Section, two of which are general utility Departments: Sterility Test Department and Media Department. The other four: Anti-gas-gangrene Department, Horse Immunization Department, Tetanus Toxin Department and Diphtheria Toxin Department are closely related. Other departments deal with the preparation of toxoids.

### **Sterility Test Department**

This Department carries out the routine sterility tests on products of the Laboratories, and during 1954-55, 12,000 individual tests were undertaken.

### **Media Department**

The Media Department produces a considerable number of different types of media and also attends to sterilization of the apparatus of various departments. Progress has been made towards the issue of media in screw-capped bottles, the demand for which is increasing.

### **Horse Immunization Department**

Produces crude antitoxins for Tetanus, Diphtheria, and Gas-gangrene; and assays of sera for Diphtheria and Tetanus Antitoxin are carried out.

### **Tetanus Toxin and Diphtheria Toxin Departments**

Considerable quantities of Tetanus Toxin for the hyper-immunization of horses, and of the new Purified Tetanus Toxoid for the preparation of mixed prophylactics are prepared in the Tetanus Toxin Department. Similarly, Diphtheria Toxoids and methods of assay of Diphtheria Antitoxin are being studied in the Diphtheria Toxin Department.

Because of the increased demand for products in both these Departments, production has been enlarged; and additional accommodation and equipment is being sought following a large increase in demand for the Tetanus antigens.

Developmental work is centred around culture techniques for the production of toxoids, the establishment of local standards for toxoids in comparison with the World Health Organization standard, and the investigation of discrepancies in unitage of Welchii Antitoxin as shown by *in vivo* and *in vitro* methods.

## **MICROBIOLOGY III SECTION**

This section is limited to the B.C.G. Laboratory and in 1954-55 a changeover was made from fresh "wet" B.C.G. vaccine to a vaccine stabilized by freeze



drying. The fresh "wet" vaccine has a very short useful life and has to be prepared weekly so that it can be distributed and used within ten days of its preparation. The new stabilized vaccine, however, can be used for at least six months after it is made, and full testing for potency and safety may be thoroughly undertaken before issue.

The methods for the preparation of this vaccine were developed at the Laboratories. In addition to Australia, the new vaccine is also being used on a large scale in New Zealand and New Guinea.

In 1955-56, twenty-six batches of vaccine, totalling 382,000 doses were produced in fifty and twenty-dose containers. Eleven batches of saline, comprising forty-one litres in 2.5 and 5.0 ml. volumes, were also prepared.

Development work undertaken in 1955-56 aimed at the production of a vaccine with improved viable count. By using a new method of preparation of the pre-dried suspension, some experimental vaccines were prepared which gave promising results. Clinical trials were carried out on these. Research also included the investigation of different suspending fluids; new methods for viable counts, and methods were tested for quicker approximate determination of viable counts. Conditions influencing the drying of the vaccine were investigated.

The principal raw materials and approximate amounts used in this research were as follows:—

Bovine Albumin Fraction .. .. .	440 grams
Laevo asparagin .. .. .	650 "
Lactose .. .. .	4,000 "
Glycerine .. .. .	8,700 mls
Dry Ice .. .. .	6,700 lb.
Guinea pigs .. .. .	260 "
Cotton Wool .. .. .	145 "
Casitone .. .. .	282 grams
Ampoules .. .. .	10,500 "
Potatoes .. .. .	205 lb.
On gall .. .. .	680 grams

## VIROLOGY SECTION

Production of Influenza Virus Vaccine (Types A + B) amounted to 15,000 cc. in 1955-56. A strain isolated in 1954-55 has been incorporated in this vaccine, in accordance with the modern practice of using the most recently isolated strain.

Production of Anti-typhus Vaccine (Murine and Epidemic) was resumed in May, 1956, at the Broadmeadows Isolation Laboratory, following the completion of repairs at this Laboratory.

Amongst the diagnostic reagents, Typhus Fever Compliment Fixation Reagent was prepared, and Typhus and Q Fever Rickettsial Suspensions were studied but not prepared, because of the unsuitability of accommodation. The production of Lyophilised Guinea Pig Complement has been hampered by the recurrent outbreaks of epizootics amongst the guinea pig colony.

## W.H.O. Influenza Centre

Surveillance for the presence of influenza is maintained on behalf of W.H.O. In 1954-55, a serological survey of specimens received from all States was carried out, and two Australian strains of Influenza (Type A) were isolated and forwarded to W.H.O. Influenza Centre, London.



Research work on Influenza continued in 1955-56, but very few specimens of throat washings from Health Laboratories were received during the period. Examination of some 300 sera in the second half of 1955 revealed only two cases of Type A, three of Type B and one of Type C with haemagglutination inhibition titres, suggestive of recent infection. Serological examination revealed the presence of Influenza Type A in Melbourne, in June, 1956.

### VETERINARY AND DIAGNOSTIC SECTION

Products which have been produced in this Section include bacterial vaccine, living virus vaccine, and anti sera for veterinary use.

Production has been maintained at a higher level over the period, with the exception of Blackleg Vaccine.

A large programme of investigation was carried out. This has mainly been connected with Avianised Distemper Vaccine, Blackleg Vaccine and respiratory diseases in poultry. It was found that in some epidemic infections in poultry, infectious laryngo-tracheitis virus, as well as P.P.L.O. (pleuro-pneumonia-like organism) and pasteurella, are involved.

Developmental work in 1955-56 was also concerned with—

(a) improvements in standardization and methods of manufacture of a number of products, e.g., *Clostridium Welchii*, Type D; conversion of local standards to provisional international standards. This applies particularly to the standardization of Pulpy Kidney Antitoxin;

(b) changes of method to alter diagnostic suspensions of *Br. Abortus*. Work proceeded with CI botulinum and the preparation of trypsinized vaccine of CI *welchii* Type D, involving field tests and examination of commercial preparations.

In the Diagnostic Department, a number of products has been prepared and standardized. Laboratory work has included the examination of faeces from monkeys, guinea pigs, and animal attendants; and blood and serum samples have been examined on behalf of veterinary surgeons. Specimens have been tested for agglutination against *Br. abortus*, and pilot batches of Paul Bunsell materials for absorption, have been prepared and tested.

The range of diagnostic sera has been extended by the preparation of *Salmonella* sera in accordance with the Rauffmann-White Scheme. Work in connexion with these has been done in collaboration with Miss Nancy Atkinson at the Australian *Salmonella* Centre.

**Animal Husbandry (Farm).**—The Farm, which it is hoped to extend in area, accommodates a large animal population, which includes approximately 300 horses. A greater demand has developed over the period, particularly for guinea pigs and horses, the latter largely due to the increased demand for tetanus antitoxin. An addition to the animal population has been the monkeys for polio vaccine production which have been maintained at the farm since the first half of 1955.

Commencement has been made on two Veterinary Virus Laboratories and plans for a new animal house are well advanced. Additional shelter sheds have also been erected.



## RESEARCH SECTION

### General and Reference

Although there is a special Research Section at the Laboratories, a great amount of investigational work is done within the individual Sections; especially in the improvement of present products or the development of new ones.

However, a number of products are prepared in the Research Section, and research connected with both Taipan and Tiger Snake Antivenenes, and blood grouping and related fields, is carried out.

Preparation of the following products was continued to meet increased demand—Staphylococcus Toxoid, Tiger-Snake Antivenene, Taipan Antivenene, various Precipitin Sera, Blood Grouping Sera, Anti-Rh Sera, Coombs Re-agent, Blood Group Substances A and B, Group AB Serum, and Glucose Citrate Solution.

**Snake Venoms.**—A research project was undertaken on the isolation of neurotoxins of Tiger-Snake venom. As a result, the existence of two neurotoxins in the venom of the mainland Tiger-Snake was established. Techniques have been developed which promise well for the isolation of these, and the other pharmacologically important components of the venom.

Research has also been continued into antivenene-venom reactions and their relationship to anatomical classification of snakes. A comprehensive table has been prepared, listing data on the more important Australian snakes and their venoms. This has been included in a United States Handbook of Biological Data.

An article on "Purine Compounds in Snake Venoms", which reported the presence of adenosine, adenosine 3' phosphate, and a guanine compound was published in "Nature", 177, 381 (1956).

It has also been possible over the period, to lift restrictions in the distribution of Taipan Antivenene.

**Blood Grouping and Related Fields.**—Research was continued in this field, in collaboration with the Blood Group Reference Laboratory. Investigations in association with the Walter and Eliza Hall Institute, the Baker Institute, and the Red Cross Blood Transfusion Service were continued, and as a result, several papers have been published.

**Whooping Cough.**—Following his return from overseas, Dr. Fisher resumed his work on problems dealing with immunization against whooping cough and the study of the dextrans. Dr. North continued investigations into the development of a method of biological standardization of whooping cough vaccines, using an intra-nasal method of challenge.

**Conferences.**—The active Scientific Discussion Group of the Commonwealth Serum Laboratories continued to hold monthly meetings, which provided an open forum for discussion on purely technical phases of the work.

A visit by members of the 31st meeting of the Australian and New Zealand Association for the Advancement of Science was made to the Laboratories on August 24, 1956.

An extensive series of lecturettes and demonstrations were provided for the 160 visiting scientists who attended, and the following Sections of A.N.Z.A.A.S. participated:—

- I. Microbiology, Epidemiology and Experimental Medicine.
- L. Veterinary Science;
- N. Physiology and Biochemistry; and
- O. Pharmaceutical Science.



## COMMONWEALTH SERUM LABORATORIES

## Trading and Profit and Loss Account for Year Ended June 30, 1955

To	£	By	£
Products in course of manufacture and finished goods on hand at 1.7.1954 .. ..	677,044	Sales of products, including reimbursement for issues by authority, free of charge, &c. .. ..	1,268,325
„ Materials used .. ..	377,045	„ Discounts and rent received .. ..	662
„ Wages and salaries .. ..	562,526	„ Products in course of manufacture and finished goods on hand at 30.6.1955 .. ..	670,499
„ Manufacturing expenses .. ..	211,669		
„ Administrative and selling expenses .. ..	39,703		
„ Discount allowed .. ..	41,473		
„ Net profit .. ..	30,026		
	<u>1,939,486</u>		<u>1,939,486</u>

## Trading and Profit and Loss Account for Year Ended June 30, 1956

To	£	By	£
Products in course of manufacture and finished goods on hand at 1.7.55 .. ..	670,499	Sales of products, including reimbursement for issues, by authority free of charge, &c. .. ..	1,331,034
„ Materials used .. ..	448,497	„ Discounts and rent received .. ..	324
„ Wages and salaries .. ..	654,161	„ Products in course of manufacture and finished goods on hand at 30.6.1956 .. ..	797,306
„ Manufacturing expenses .. ..	284,111		
„ Administrative and selling expenses .. ..	54,389		
„ Discount allowed .. ..	12,866		
„ Net profit .. ..	4,141		
	<u>2,128,664</u>		<u>2,128,664</u>

## Balance Sheet as at June 30, 1955

Current Liabilities.		Current Assets.	
£	£	£	£
Trade creditors and salaries accrued and unclaimed .. ..	83,421	Cash in hand and in transit .. ..	295,243
		Stock on hand and works in progress .. ..	1,031,108
Funds employed .. ..	3,480,641	Sundry debtors, less provision for discounts .. ..	159,567
	<u>3,480,641</u>		<u>1,485,918</u>
		Fixed Assets.	
		Land and buildings, less provision for depreciation .. ..	1,747,396
		Plant and articles in use, less provision for depreciation .. ..	330,748
			<u>2,078,144</u>
	<u>3,564,062</u>		<u>3,564,062</u>

## Balance Sheet as at June 30, 1956

Current Liabilities.		Current Assets.	
£	£	£	£
Trade creditors and salaries accrued .. ..	70,531	Cash in hand and at bank .. ..	330,677
Funds employed .. ..	4,089,896	Stocks on hand and work in progress .. ..	1,170,959
		Sundry debtors .. ..	195,135
		Fixed Assets.	
		Land and buildings less provision for depreciation .. ..	1,963,991
		Plant, furniture, &c. less provision for depreciation .. ..	499,665
	<u>4,160,427</u>		<u>4,160,427</u>



## COMMONWEALTH X-RAY AND RADIUM LABORATORY

The Commonwealth X-ray and Radium Laboratory serves as a national centre for radiological physics. For some years, because of the increasing demand of the medical profession for physical services, local physical services have been operated by several States. These local physical services carry out purely State functions and prepare radon, using soluble radium made available by the Commonwealth. In December, 1955, a branch of the Laboratory was established in Perth at the University of Western Australia.

### RADIUM SERVICES

Statistical data on Radium Services is summarized in Appendix I.

### RADON SERVICES

Radon is usually issued in containers of capillary tubing of pure gold. Other containers regularly issued by the Laboratory include long-handled "nasal applicators" used in the treatment of the eustachian tube, issued several times each month to doctors in the various States; radon plates used in the treatment of conditions such as conjunctivitis and pterygia and issued once a month; and "industrial sources", issued by arrangement as required.

Statistical data on the radon issues made by the Laboratory and the State local physical services is summarized in Appendix II, Tables 1, 2, and 3.

### OPERATIONS WITH PRECIOUS METALS AND CONSTRUCTION OF RADON CONTAINERS

The Laboratory constructs the necessary gold tubing used by itself, the State physical services and the X-Ray and Radium Laboratory, New Zealand, in the preparation of radon and the construction of needles. The gold tubing issued in 1954-55 and 1955-56 is given in Appendix II, Table 4.

In 1954-55, in addition to the gold tubing, fifty-seven special applicators for irradiating the eustachian tube and sixty-two applicators for industrial radiography were constructed. As the stock of these special applicators was sufficient, no further supplies were constructed in 1955-56.

A second radon plate (eye applicator) has been constructed to cover increasing use.

### X-RAY SERVICES

(a) **X-Ray Therapy:** In 1954-55, three standard dosimeters were calibrated, two otherwise examined and one repaired. In 1955-56, seven dosimeters were calibrated and one repaired.

The method of measurement of the rate at which the potential rises in the determination of the ionization current from the standard free-air chamber has been modified, involving a fifty per cent. reduction in the time taken to do such work. A modification in the method used to calibrate clinical dosimeters has also been devised and is being tested.

In 1954-55, five calibrations of deep therapy equipment and twenty-one of superficial therapy equipment were made by the Laboratory, and in 1955-56, eight calibrations of deep-therapy equipment and fourteen of superficial therapy equipment were made. In addition to the work indicated, other projects have been undertaken—

- (1) The irradiation from time to time of fruit flies for the Department of Zoology in the University of Melbourne. This was part of a project to investigate the mechanism of genetic changes in these flies.



- (2) The irradiation of chemical material for the Tracer Elements Section of C.S.I.R.O., as part of an investigation on radio-chemical change.
- (3) The development of a theory of operation of the Victoreen dosimeter, and the use of this theory to devise systematic tests of dosimeter performance.
- (4) The calculation of depth doses obtained when using a 50-50 lead "sieve" at a public hospital in Melbourne.
- (5) The calculation of the position of the effective centre of a large ionization chamber, when a point source is (a) on the longitudinal axis and (b) on the transverse axis of the chamber.
- (6) The irradiation of other biological material has been carried out for the Departments of Bacteriology and Pathology in the University of Melbourne, and for the Division of Plant Industry, C.S.I.R.O., Canberra.
- (7) The investigation of satisfactory methods of checking the performance of dosimeters has been continued.

**(b) X-Ray Diagnosis:** In a tuberculosis case-finding programme for staff and students at the Melbourne Dental Hospital and for sections of the staff at the Commonwealth Serum Laboratories, 183 and 302 miniature radiographs were taken respectively in 1954-55 and 1955-56. The examination of workers at the B.C.G. Unit of the Commonwealth Serum Laboratories and the Department of Bacteriology in the University of Melbourne resulted in fifty-five direct radiographs being made in 1954-55 and ninety-five in 1955-56.

Further tests have been made of the radiographic performance of mirror cameras manufactured by Odelca and Philips, and different types of 35 mm. and 70 mm. films were tested in photo-fluorographic units. During 1955-56, 140 pairs of intensifying screens were rematched, and samples of most types of intensifying screens available on the Australian market were tested for relative speed and resolving power.

The Laboratory has co-operated with the Department of Anatomy, University of Melbourne, in an investigation of the growth of facial bones. An encephalometer, installed in the Laboratory in 1951 has been used in this investigation, and during 1954-55 and 1955-56, 204 and 543 patients were radiographed respectively.

This encephalometer is also available to orthodontists in private practice, and in 1954-55, eighty-one patients were examined, and in 1955-56, 234 patients.

In 1954-55 and 1955-56, 500 and 253 chickens were radiographed, in the routine tests being conducted on chickens to assess the effectiveness of anti-rachitic drugs.

The Laboratory continues to advise on the purchase of new X-ray equipment and on the condition of existing equipment. The Laboratory continues to purchase X-ray equipment and accessories under the Tuberculosis Agreement and for use in Immigration Centres, and in the latter case its operation is still supervised.

#### **RADIOACTIVE ISOTOPE SERVICES**

Artificial radioactive isotopes used in Australia are obtained from Great Britain, Canada or the United States of America. Their importation is restricted under Customs (Prohibited Imports) Regulations, approval for importation being given through the Laboratory by the Director-General of Health after it has been established that the isotope will be used safely and usefully. Consequent to the conditions governing the supply of radioactive isotopes by arrangement, the Laboratory acts as a central procurement authority for them.



Up to May, 1955, the Australian Scientific Liaison Offices in London and Washington, through which applications for radioactive isotopes were sent to the supplying authorities, played an important part in establishing the procurement procedures and overcoming some of the early problems of despatch. The procedure has now been modified, with the Laboratory making direct application to the supplying authorities, and with the High Commissioner's Office in England and the Office of the Consul-General in U.S.A. being responsible for payment of accounts.

All shipments of isotopes are sent directly to the Laboratory which arranges Customs clearance and collection. After inspection (and when necessary subdivision and measurement) the radioactive isotopes are forwarded to users with the necessary technical information. Radioactive isotopes used for medical purposes are procured in bulk supplies at regular intervals and individual doses are dispersed for patients, on receipt of requests approved by the various State Therapeutic Trials Committees, which function through the Standing Committee on Radio-Isotopes of the National Health and Medical Research Council.

For 1954-55, 176 orders for thirty different radioactive isotopes were delivered to the Laboratory for distribution. Of these, five isotopes were required for medical purposes and the remainder for use in research and industry. For 1955-56, 203 orders for thirty-six different isotopes were delivered to the Laboratory, and of these, five were for medical purposes and the remainder for research and industry.

Statistical data on the use made of radio-isotopes is shown in Appendix III.

**Isotopes for Medical Purposes Only.**—Of the radio-isotopes imported for medical purposes, phosphorus-32 and iodine-131 continue to be most in demand. Other isotopes finding increased use in medicine are gold-198 in the treatment of peritoneal and pleural effusions associated with malignancies, and chromium-51 in haematological studies.

Small quantities of radio-iodinated human serum albumin have also been imported for special studies. Phosphorus-32 in isotonic saline solution of orthophosphate has been obtained for haematological studies and strontium-90 in the form of plates for use in the treatment of superficial lesions. In 1955-56, the Laboratory also obtained a quantity of colloidal gold-197 (a stable isotope) for the dilution of gold-198 in tracer studies of a preliminary nature.

The number of Australian centres using radio-iodine and radio-phosphorus for medical purposes has also increased steadily.

In 1954-55 and 1955-56, 271 and 244 individual doses of phosphorus-32 and 1,401 and 2,963 individual doses of iodine-131 were issued respectively. Details of these issues are given in Appendix III, Table 2.

In 1954-55, the total quantity of phosphorus-32 issued increased by 10 per cent., whereas the total quantity of iodine-131 increased by 23 per cent., and whereas the individual doses of phosphorus-32 increased by only 7 per cent. approximately, the number of individual doses of iodine-131 increased by 27 per cent. The number of tracer doses was trebled and the number of therapy and non-medical doses nearly doubled. In 1955-56, the total quantity of phosphorus-32 used remained almost stationary, whereas the total quantity of iodine-131 increased by 80 per cent. The amount of phosphorus-32 used for treatment purposes increased by 22 per cent. (c.f. 8 per cent. previous year) but this has been offset by the decline in demand for research purposes. The increase noted in 1954-55 for individual doses of iodine-131 has been maintained. The total number of doses handled has more than doubled: therapy doses have increased by 500 per cent., and tracer doses by 136 per cent.



In 1954-55, five cases of carcinoma of the thyroid with metastases were treated with radio-iodine, and in 1955-56 patients from four States were treated. After each such therapeutic dose, the iodine-131 excreted in the urine in the first twenty-four hours after administration, may be reclaimed and re-administered. With experience the method of recovery was shown to be 98 per cent. efficient and this method has been used by the physical services in each State.

The increase in the use of iodine-131 for the treatment of proven cases of diffuse toxic goitre has been maintained and is expected to continue.

The Laboratory has continued to co-operate with the Royal Melbourne Hospital in the programme, initiated some years ago, for the use of iodine-131 in investigations of various forms of thyroid dysfunction. Equipment and staff are provided, and the following types of tests now made:—

- (i) Tracer studies of suspected cases of thyroid dysfunction. The protein bound iodine-131 is used as one criterion of toxicity and correlated with the clinical assessment and biochemical determination of protein-bound iodine.
- (ii) Tracer studies of retro-sternal, sub-sternal and sub-lingual masses to determine the presence of thyroid functioning tissue.
- (iii) Determination of the ability of secondary deposits from carcinoma of the thyroid to take up iodine.

In haematological studies using chromium-51, the Laboratory has continued to assist St. Vincent's Hospital, Melbourne, by supplying equipment. Advice and assistance with equipment and staff have been provided to the Royal Melbourne Hospital in a similar project.

Injection apparatus was designed and assistance given for the intra-peritoneal administration of gold-198 to one patient in Melbourne. Valuable information on the distribution of gold in the body, and on the doses received by personnel during the treatment, was obtained during this work.

During 1955-56, assistance was given in several projects involving the autoradiography of carbon-14 or iodine-131.

Strontium-90, in the form of plates similar to radium plates, is being used with increasing frequency for the treatment of superficial lesions. The Laboratory now holds a small stock of these plates which are available on loan to hospitals on conditions similar to those which apply to the loan of radium plates. The movement of strontium-90 in this form was forty-five millicuries for 1955-56.

The Launceston General Hospital became independent in routine thyroid tracer studies in 1954-55.

The Laboratory has also provided practical assistance to the Departments of Biochemistry, Physiology and Botany in the University of Melbourne; to the Clinical Research Units at the Walter and Eliza Hall Institute, the Baker Institute and the Alfred Hospital, in projects using radio-active materials.

**Isotopes for Industrial and Research Purposes.**—When used for industrial radiography, both radium and radon have the disadvantage that it is not possible to vary the quality of the radiation to suit the work in hand. There is therefore little control (other than the choice of film and of processing conditions) over the diagnostic quality of the resulting radiograph. With the development of the various atomic energy research projects overseas, a wide range of radioactive isotopes has become available. Caesium-137 (Cs137, half life 33 years) was imported for the first time in 1954, when three sources of six, two, and two curies respectively were obtained. This radioactive material along with iridium-192 and cobalt-60, is now used in Australia by laboratories and firms carrying out radiographic inspection.



## PROTECTION SERVICES

During 1954-55, protective materials to be incorporated in two departments intended for X-ray therapy and in four departments intended for X-ray diagnosis were specified. In 1955-56, specifications were prepared for the installation of protective materials in fifteen X-ray departments, of which three were intended for therapy, eleven for medical diagnosis and one for industrial radiography. In 1954-55 also, the Laboratory was consulted by one hospital about the possibility of installing a cobalt-60 therapy unit in an existing room.

The "background" radiation was measured in eleven diagnostic departments, six industrial and three research laboratories during 1954-55. Two centres requested measurements of the dose received on the skin of patients undergoing diagnostic examinations, to ensure that this dose is kept within safe limits. In 1955-56, background radiation was measured in five diagnostic departments, two therapy departments, six industrial laboratories and one research centre.

In 1955-56, a total of 9,977 films worn by people working with radiation was received for processing and assessment of exposure from ninety-seven centres; the corresponding figures for the previous year were 8,743 films and eighty-eight centres. The number of films received annually has increased greatly in recent years. When an excessive exposure is indicated by a film, the cause of such exposure is sought with a view to preventing repetitions.

Protection services are also provided for lead rubber articles, X-ray machines in shoe stores and to those who use radioactive paint in luminizing instrument dials.

The increasing use of radio-isotopes has led to the wider use of survey and monitoring instruments for detecting contamination by these materials. Various types have been submitted to the Laboratory for examination and comment.

## ADVISORY SERVICES

The Laboratory provides advisory services on physical problems arising from the use of radium, radon, X-rays and radio-isotopes.

In addition, a survey is made of the scientific and technical literature as it appears, and of the reports dealing with radiation and its histological effects, which come in. In some cases, also, particular ad hoc problems require experimental investigation at the Laboratory.

Two members of the Laboratory staff now are members of the Conjoint Board of the College of Radiologists of Australia and the Australian Institute of Radiography.

## APPENDIX I RADIUM SERVICES 1950-51 to 1955-56

Item.	Amount.					
	1950-51.	1951-52.	1952-53.	1953-54.	1954-55.	1955-56.
1. Total movement of Commonwealth radium (mgm.)	331	444	847	2,065	1,138	1,112
2. Quantity of radium measured (mgm.) ..	123	178	146	327	400	65
3. Number of radium containers tested ..	19	13	4	34	63	16
4. Number of Beta Ray Applications measured ..	7	5	15	6	17	12



## APPENDIX II

## RADON SERVICES

1950-51 to 1955-56

Table 1—Radon Services. C.X.R.L.

Quantities of radon issued are those at time of use.

Item.	Amount.					
	1950-51.	1951-52.	1952-53.	1953-54.	1954-55.	1955-56.
1. Radon issued for all purposes .. ..	101,770	100,001	104,014	99,454	94,774	91,353
2. Radon issued for treatment purposes only (including radon re-issued in nasal applicators) .. ..	71,278	72,857	74,310	75,942	76,403	84,212
3. Radon issued to hospitals (including radon re-issued in nasal applicators) (mc.)	56,217	56,758	52,591	52,768	52,231	56,388
4. Location of hospitals to which radon was issued—						
Metropolitan .. ..	7	8	6	7	7	8
Country .. ..	5	6	5	4	4	8
Interstate .. ..	5	6	5	5	5	4
5. Radon issued to private practitioners (including radon re-issued in nasal applicators) (mc.) ..	15,061	16,099	21,719	23,174	24,172	27,824
6. Location of private practitioners to whom radon was issued—						
Metropolitan .. ..	11	13	13	11	11	12
Country .. ..	4	3	4	1	2	3
Interstate .. ..	5	2	2	3	6	4
7. Containers issued (including only implants, needles and tubes of all classes) ..	4,570	5,173	3,667	4,839	5,583	7,228
8. Nasal applicators—						
Number issued .. ..	36	36	36	36	36	36
Total radon (mc.) ..	37,604	46,938	52,185	51,358	52,681	53,073
Total patients treated ..	1,890	2,281	2,131	2,375	2,725	2,597
9. Eye applicators—						
Number issued .. ..	1	24	15	..	11	31
Total radon (mc.) ..	425	1,344	932	..	901	3,152
10. Radon vaseline—						
Number of issues .. ..	..	..	..	..	10	..
Total radon (mc.) ..	..	..	..	..	3.5	..
11. Industrial sources—						
Number issued .. ..	80	72	88	59	34	11
Total radon (mc.) ..	29,171	25,979	28,785	20,407	12,574	4,910
12. Radon issued for research purposes (mc.) .. ..	1,321	1,165	919	1,441	5,797	2,231
13. Number of purifications ..	230	246	262	229	211	191
14. Total radon extracted from solution (mc.) .. ..	102,163	103,584	102,555	98,019	92,605	100,311
15. Total radon at time of use (mc.) .. ..	71,428	68,023	69,399	65,531	60,838	55,657
Item 15						
15. Ratio $\frac{\text{Item 15}}{\text{Item 14}} \times 100$ ..	69.8	65.7	67.6	66.9	65.7	55.5



## APPENDIX II.—continued

**Table 2—Radon Services. Other Centres**  
Quantities of radon used are those at time of use.

Item.	Amount.					
	1950-51.	1951-52.	1952-53.	1953-54.	1954-55.	1955-56.
<b>(a) Sydney.</b>						
1. Radon issued—						
Hospitals (mc.) ..	8,757	7,832	7,451	8,882	5,361	6,688
Private Practitioners (mc.) ..	4,248	3,825	3,112	2,303	4,546	3,565
Research purposes (mc.) ..	150	340	910	..	478	535
2. Total radon extracted from solution (mc.) ..	..	28,260	25,620	26,701	26,034	25,909
3. Total radon at time of use (mc.) ..	..	11,977	11,473	11,185	10,385	10,788
Item 3						
4. Ratio $\frac{\text{Item 3}}{\text{Item 2}} \times 100$ ..	..	42.4	44.7	41.9	40.0	41.6
5. Number of purifications ..	..	85	70	66	70	79
<b>(b) Adelaide.*</b>						
1. Radon issued—						
Hospitals (mc.) ..	5,068	5,455	3,193	525	..	..
Private Practitioners (mc.) ..	124	130	120	1,390	..	..
2. Total radon extracted from solution (mc.) ..	..	9,601	5,530	..	..	..
3. Total radon at time of use (mc.) ..	..	3,313	1,915	..	..	..
Item 3						
4. Ratio $\frac{\text{Item 3}}{\text{Item 2}} \times 100$ ..	..	34.5	346	..	..	..
5. Number of purifications ..	..	72	30	..	..	..
<b>(c) Brisbane.</b>						
1. Radon issued—						
Hospitals (mc.) ..	21,019	18,988	15,097	21,537	19,201	17,546
Private Practitioners (mc.) ..	424	722	567	1,174	235	443
Research purposes (mc.) ..	1,528	661	410	527	812	..
2. Total radon extracted from solution (mc.) ..	..	..	..	41,149	39,069	34,593
3. Total radon at time of use (mc.) ..	..	..	..	23,238	20,248	17,989
Item 3						
4. Ratio $\frac{\text{Item 3}}{\text{Item 2}} \times 100$ ..	..	..	..	56.5	51.8	52.0
5. Number of purifications ..	..	..	..	282	273	298

\* The Adelaide radon centre was closed in June, 1954. Supplies of radon are obtained as required from the Commonwealth Laboratory and distributed through the Local Physical Service.



## APPENDIX II.—continued

Table 3—Useful Radon Yield

Millicuries of total radon issued per milligram of radium in solution.

Year.					Radium in Solution. (mgm.)	Radon Issued. (mc.)	Useful Yield. (mc./mgm.)
<b>Melbourne</b>							
1950-51..	..	..	..	..	2,420†	101,770	42.0
1951-52..	..	..	..	..	2,420†	100,001	41.3
1952-53..	..	..	..	..	2,420†	104,014	43.0
1953-54..	..	..	..	..	2,420†	99,454	41.1
1954-55..	..	..	..	..	2,615‡	94,774	36.3
1955-56..	..	..	..	..	2,615‡	91,353	34.9
<b>Sydney</b>							
1950-51..	..	..	..	..	877	13,155	15.0
1951-52..	..	..	..	..	877	11,997	13.7
1952-53..	..	..	..	..	877	11,473	13.1
1953-54..	..	..	..	..	877	11,185	12.7
1954-55..	..	..	..	..	877	10,385	11.8
1955-56..	..	..	..	..	877	10,788	12.3
<b>Adelaide</b>							
1950-51..	..	..	..	..	445	6,403	14.4
1951-52..	..	..	..	..	445	6,955	15.6
1952-53..	..	..	..	..	445	6,517	14.7
1953-54..	..	..	..	..	445§	2,521	5.7
1954-55*	..	..	..	..	..	..	..
<b>Brisbane</b>							
1950-51..	..	..	..	..	950†	22,971	24.2
1951-52..	..	..	..	..	950†	20,371	21.4
1952-53..	..	..	..	..	950†	16,074	16.9
1953-54..	..	..	..	..	950†	23,238	24.5
1954-55..	..	..	..	..	967†	20,248	21.3
1955-56..	..	..	..	..	933†	17,989	19.3

\* See note to Table 2. † Includes 300 Milligrams, the property of the Queensland Radium Institute.  
 ‡ Includes 550 Milligrams, the property of the Department of Supply. § This radium was transferred to Melbourne in June, 1954.



## APPENDIX II.—continued

**Table 4—Gold Tubing Issued to Radon Centres 1954-55 and 1955-56**  
Length in feet.

Radon Centre.	Gold Capillary 0.3 mm. pt. eq.		Gold Capillary 0.5 mm. pt. eq.		Gold Casing for Needles. 0.8 mm. pt. eq.	
	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.
Melbourne .. ..	564	508	..	..	30	13
Sydney .. ..	71	55	53	66	12	6
Adelaide .. ..	..	..	..	..	3	3
Brisbane .. ..	52	22	390	418	7	..
Christchurch .. ..	..	..	9	97	..	10
Totals .. ..	687	585	452	581	52	32

## APPENDIX III.

## RADIO-ISOTOPE SERVICES

**Table 1—Isotopes delivered to the Laboratory**

1/7/54 to 30/6/55.

In the case of isotopes required for medical use the quantities given are those at time of arrival at the Laboratory; in all other cases, the quantities given are those at time of despatch from the overseas centre.

Isotope.	No. of Orders.	Quantity. (mc)	Use.*	Remarks.
Au <sup>198</sup> .. ..	6	1,190	M	
Au <sup>197</sup> .. ..	1	(Stable)	M	
Ba <sup>140</sup> + La <sup>140</sup> .. ..	1	2	R	
C <sup>14</sup> .. ..	41	34	R	Twenty-two different compounds
Co <sup>60</sup> .. ..	3	2,115	I	Industrial radiography
Co <sup>60</sup> .. ..	4	226	R	
Cr <sup>51</sup> .. ..	3	7	M	
Cr <sup>51</sup> .. ..	1	400	R	
Cs <sup>137</sup> .. ..	3	10,800	I	Industrial radiography
Cs <sup>137</sup> .. ..	1	0.03	R	
Cl <sup>36</sup> .. ..	2	0.02	R	
Eu <sup>154</sup> .. ..	1	1	R	
Fe <sup>55</sup> .. ..	3	0.03	R	
Fe <sup>59</sup> .. ..	3	0.16	R	
H <sup>3</sup> .. ..	2	100	R	Includes three targets absorbed on a Zirconium layer
Hf <sup>181</sup> .. ..	1	10	R	
I <sup>131</sup> .. ..	32	3,380	M	
I <sup>131</sup> .. ..	2	20	M	As diiodo-Fluorescein
Ir <sup>192</sup> .. ..	12	61,580	I	Industrial radiography
Li <sup>6</sup> .. ..	1	(Stable)	R	Two targets
Na <sup>22</sup> .. ..	1	1	R	
Nd <sup>147</sup> .. ..	2	0.30	R	
O <sup>18</sup> .. ..	1	(Stable)	R	
P <sup>32</sup> .. ..	26	1,195	M	
	1	10	..	Polythene sheet
	9	45	R	Three different compounds
Po <sup>210</sup> .. ..	1	5	R	
Ra-Be .. ..	1	10	R	Neutron Source
Rb <sup>86</sup> .. ..	1	28	I	
Sr <sup>90</sup> .. ..	1	7.5	R	
S <sup>35</sup> .. ..	2	14	R	
Sn <sup>113</sup> .. ..	1	0.5	R	
Th <sup>228</sup> .. ..	1	0.1	R	
Tm <sup>170</sup> .. ..	2	235	R	
Zn <sup>65</sup> .. ..	3	6	R	

\* Use—I: Industrial; M: Medical; R: Research.



## APPENDIX III.—continued

Table 1 (a)—Isotopes Delivered to the Laboratory

1/7/55 to 30/6/56.

Isotope.	No. of Orders.	Quantity. (mc)	Use.*	Remarks.
Au <sup>198</sup> .. ..	28	3,745	M	Thirty-one compounds
C <sup>14</sup> .. ..	47	29	R	
Ce <sup>144</sup> .. ..	1	5	R	
Cl <sup>36</sup> .. ..	5	0.242	R	
Co <sup>60</sup> .. ..	6	3,090	I	Industrial radiography
Co <sup>60</sup> .. ..	8	28	R	
Cr <sup>51</sup> .. ..	9	32	M	Industrial radiography
Cs <sup>134</sup> .. ..	2	3.5	R	
Cs <sup>137</sup> .. ..	2	6,300	I	
Cs <sup>137</sup> .. ..	5	27	R	
Fe <sup>55</sup> .. ..	2	0.055	R	
Fe <sup>59</sup> .. ..	2	0.71	R	
Fe <sup>55</sup> + Fe <sup>59</sup> ..	2	0.26	R	
I <sup>131</sup> .. ..	36	4,735	M	
I <sup>131</sup> .. ..	4	10	M	Iodinated human serum albumin
I <sup>131</sup> .. ..	1	18	R	
Ir <sup>192</sup> .. ..	14	96,690	I	Industrial radiography
Na <sup>22</sup> .. ..	2	1	R	
Nd <sup>147</sup> .. ..	1	0.154	R	
P <sup>32</sup> .. ..	26	1,560	M	
P <sup>32</sup> .. ..	4	8	M	
P <sup>32</sup> .. ..	1	1	R	
P <sup>32</sup> .. ..	1	18.8	R	Di-isopropyl-fluoro-phosphate
Po <sup>210</sup> .. ..	2	4	R	
Pr <sup>143</sup> .. ..	1	0.15	R	mgm-radium chloride mgm-neutron source
Ra <sup>226</sup> .. ..	1	0.10	R	
Ra-Be .. ..	1	20	R	
Ra D .. ..	2	0.425	R	
Ru <sup>106</sup> .. ..	1	5	R	Neutron source Plates
S <sup>35</sup> .. ..	7	32.1	R	
Sb-Be .. ..	1	1,000	R	
Sr <sup>90</sup> .. ..	7	315	M	

Table 1 (b)—Isotopes Delivered to the Laboratory as Irradiation Units

1/7/55 to 30/6/56.

Isotope.	No. of Orders.	Quantity. (gm)	Use.*	Remarks.
Ag <sup>110</sup> .. ..	1	2	R	a-ray source Each 250 ml. of solution 25 cm. of foil
Ag <sup>110</sup> -Ag <sup>109</sup> ..	1	10	R	
Hg <sup>203</sup> .. ..	3	3.5	R	
Ni <sup>63</sup> .. ..	1	5	R	
Pu .. ..	..	..	R	
Ra <sup>226</sup> .. ..	8	..	R	
Ra <sup>226</sup> .. ..	1	..	R	
Sb <sup>124</sup> .. ..	1	1	R	
Sn <sup>113</sup> .. ..	1	5	R	
Ur .. ..	..	1	R	
Zn <sup>65</sup> .. ..	2	11	R	

\* Use—I: Industrial; M: Medical; R: Research.



## APPENDIX III—continued

**Table 1 (c)—Stable Isotopes Delivered to the Laboratory**  
1/7/55 to 30/6/56.

Isotope.	No. of Orders.	Use.*	Notes.
Au <sup>197</sup> .. ..	1	M	100 ml.
B <sup>10</sup> .. ..	2	R	Delivered to Australian Scientific Liaison Officer in London
C <sup>13</sup> .. ..	1	R	Two targets
N <sup>15</sup> .. ..	1	R	Two targets

\* Use—M: Medical; R: Research.

**Table 2—Distribution of Phosphorus-32, Iodine-131, Chromium-51 and Gold-193**

Element.	Distribution.	Use.	1954-55.		1955-56.	
			No. of Doses mc. at Use.		No. of Doses mc. at Use.	
Phosphorus - 32	All States ..	Medical—Therapy	199	655	182	799
	Vic., N.S.W., Q'land, A.C.T.	Non-medical ..	72	278	62	166
		Total ..	271	933	244	965
Iodine-131 ..	.. ..	Medical—				
	All States ..	Therapy, General	199	2,162	267	2,158
	Vic. N.S.W., Q'land, S.A. ..	Therapy, Thyroid Carcinoma ..			30	1,817
	All States ..	Tracer ..	1,098	58	2,587	118
	All States, A.C.T.	Non-medical ..	104	141	79	133
		Total ..	1,401	2,361	2,963	4,226
Chromium-51 ..	Vic., N.S.W., W.A. ..	Medical—Tracer ..	..	..	96	16
Gold-198 ..	Vic., N.S.W., Q'land, S.A. ..	Medical—Therapy	..	..	31	3,640

## COMMONWEALTH ACOUSTIC LABORATORIES

During 1954-55, a completely new one-piece Calaid with enclosed batteries was developed. This Calaid is of the three-transistor type, the transistor being a new electronic element which takes the place of valves, and uses batteries costing only about one-tenth of that for batteries for the valve aid. Besides saving greatly in battery cost, the three-transistor aid enables considerable saving in maintenance cost, and saving also occurs by the use of parts from discontinued old valve aids for maintenance of the remaining valve aids.

In 1955-56, the small one-piece transistor Calaid came into full production and became the only type of aid being fitted to all new patients. In addition, a



start was made on converting all older type valve aids to the new one-piece transistor type. This is being done over a number of years, old valve aids being returned.

During 1955-56 also, an additional model of the transistor, known as Type 5TA, was introduced. This is a low-powered transistor Calaid, used mainly for those with small degrees of hearing loss, who do not require the higher powered aids. This aid is manufactured at a smaller cost and is cheaper to maintain than the original transistor Calaid.

Following further reduction in the price of transistors the cost of the transistor Calaid was during this year reduced to the price of the original valve Calaid.

The changeover to transistor Calaids from valve Calaids is in this way being carried out within the annual vote for the Laboratories, and the rate at which the changeover is being carried out has been adjusted to keep the annual vote during the changeover period, at a constant figure.

This much smaller one-piece transistor aid has also assisted greatly in fitting Calaids to very young children, where the weight of the previous batteries was a disadvantage. Calaids are now often fitted to children under two years of age.

Provision of Calaids generally to children has further assisted Education Departments in South Australia and Queensland in setting up special classes for partially deaf children. As many of the children are now leaving school, investigations are being made in conjunction with the Department of Labour and National Service regarding the best vocational placement for these children.

In 1955-56, an arrangement was entered into with the Department of the Army under which serving members could attend the Laboratories for examination and tests, and if recommended for a hearing aid, be fitted with a Calaid; the cost of fitting and maintenance being reimbursed to the Health Department by the Department of the Army. This service is expected to assist the Department of the Army by retaining in the Service, members who have been sufficiently rehabilitated by the provision of a hearing aid to continue in the Service.

During 1954-55, 2,100 children attended the Laboratories throughout Australia: 384 children were fitted with Calaid hearings aids, 163 of these being the new one-piece transistor type. Ex-service personnel tested at the Laboratories by arrangement with the Repatriation Department numbered 1,166; 584 of these ex-servicemen were fitted with Calaids, 230 being of the new one-piece transistor type.

During 1955-56, 2,765 children attended the Laboratories throughout Australia, 1,079 ex-service personnel through the Repatriation Department, and 871 miscellaneous cases from hospitals, E.N.T. Specialists, and other sources.

One thousand and nine transistor Calaids were fitted to ex-servicemen and 803 transistor Calaids to children. About 40 per cent. of the Calaids fitted were to new cases and the other 60 per cent. were conversions from older obsolete valve aids.

The six monthly tests for licensed air crew required under the Department of Civil Aviation Regulations were carried out on 1,942 Air Crew in 1954-55 and 2,037 Air Crew in 1955-56. The practical test for "listening in noise" recommended for adoption at the International Civil Aviation Organization Conference in Paris in 1955 is being standardized for possible application about the end of 1956.



Laboratory staff during a visit to the Northern Territory in 1954-55 conducted screening tests of school children, and administered methods by which the school medical service may in future carry out routine screen testing. Visits have been made to outlying centres, particularly in Northern Queensland, with a view to establishing Laboratory facilities for distant country cases to obviate the necessity for high travelling charges to the capital city laboratory.

Due to the large distances which Repatriation patients and children have to travel to attend the Laboratories in some States, Laboratory personnel in the various States visited the Commonwealth Health Laboratories at regular intervals in 1955-56. Regular visits were paid to Health Laboratories at Cairns, Rockhampton, Townsville, Bendigo, Launceston, Port Pirie and Kalgoorlie. Investigations have also been made at the Health Laboratories at Lismore, Toowoomba, Tamworth and Albury with a view to possible extension of visits to these places later. Regular visits are now paid to Newcastle, using a room provided by the Repatriation Department.

These visits to country area centres resulted in considerable savings to the Repatriation Department, as well as to the parents of children. In addition, many cases of deaf children, who would otherwise be without assistance because of the high cost of travel to the capital city in some large States, have been discovered and assisted.

Further research has been carried out into the incidence and types of deafness in children, in conjunction with the E.N.T. Consultant at the Sydney laboratory. This has shown that most of the cases of deafness in children, sufficient to require a hearing aid, are congenital or occur very early in infancy. Although many of these cases are not picked up until the school period, it is apparent that the essential thing is the screening of children for deafness at an early age. The most useful age at which children can be tested is being investigated in conjunction with the School Medical Services in Canberra.

Work in conjunction with industrial deafness generally has continued and research to date indicates that the real answer to these problems may well be the setting up of hearing conservation programmes in the various noisy industries.

The major emphasis of investigations into noise effects is now being concentrated on work at R.A.A.F. air stations where exposure of personnel to the high level noise from jet aircraft is a serious problem. Measurements in jet aircraft and on the ground indicate that the level of noise suffered by air crew is reduced in jet aircraft and that the problem is largely one of protecting the ground crew.

Research into protective measures, including ear plugs, ear muffs and helmets, is continuing in order to determine the most efficient and effective method of protection for personnel exposed to various levels of high noise likely to cause deafness.

Due to the irregular manner in which air crew are exposed to noise from jet aircraft and engines, it is apparent that in most cases a routine measurement of personnel for hearing loss will be necessary at R.A.A.F. stations, to discover the personnel suffering from hearing loss and to check that methods of protection are, in effect, sufficient. By concentrating initially on the work for the R.A.A.F. around jet aircraft, it is hoped to find methods of protection which will be applicable generally to noisy industry at a later date.



## COMMONWEALTH BUREAU OF DENTAL STANDARDS STANDARDS

The importance of specifications or standards for dental materials has now received wide recognition and the Bureau of Dental Standards has maintained its work in this field. Through the Standards Association of Australia the following Australian Dental Standards were published in 1956:—

Australian Standard T.6—Dental Modelling Compounds (Revised).

“ “ T.12—Dental Inlay Casting Golds.

“ “ T.14—Dental Inlay Wax.

The following have been approved for publication and are expected to be printed soon:—

Australian Standard T.9—Wrought Golds for Dental purposes.

“ “ T.10—Dental Sticky Wax.

“ “ T.13—Denture Casting Gold.

Standards T.11 for Denture Base Acrylic Resin, T.15 for Irreversible Hydrocolloidal Impression Material (Alginate Type) and T.16 for Reversible Hydrocolloidal Impression Material (Agar Type) await final consideration.

Revised drafts on modelling wax, local anaesthetic solution and impression paste are to be considered and preliminary drafts on gold solder, silver solder, stainless steel wire, and synthetic resin teeth have been prepared.

## TESTING

Check-tests have been conducted on all certified products accredited by the Australian Dental Association. In 1954-55 and 1955-56, tests were carried out respectively on 266 and 292 products as follows:—

Products.	1954-55.	1955-56.
Mineral products .. .. .	22	30
Cements .. .. .	8	9
Waxes and impression materials .. .. .	19	44
Synthetic resin materials .. .. .	67	56
Metals and alloys .. .. .	101	108
Instruments .. .. .	10	16
Surgical and therapeutic materials .. .. .	39	29

When classified according to client, the statistics are:—

Client.	1954-55.	1955-56.
Public instrumentalities .. .. .	15	50
Private firms—		
Australia .. .. .	213	206
Overseas .. .. .	33	26
Internal reports .. .. .	5	10

## RESEARCH

In addition to the investigation of testing methods and requirements carried out for the purpose of preparing Australian Dental Standards, work has continued on various old and new projects.



Assistance was given to local manufacturers in both years, particularly in regard to the production of amalgam alloys, denture base resin, acrylic teeth and gypsum products.

Research on amalgam testing and investigation progressed during 1954-55 and several papers were published on this subject. The objective methods of preparing amalgam specimens have proved useful in studying the effect of manipulative variables on the properties of amalgam fillings, which together with orthodontic wires were the subject of post-graduate research in 1955-56.

Subjects under investigation during 1954-55 included the hygroscopic expansion of investments, the direct determination of the compensation offered by investments, the efficiency of vacuum investing equipment, the wear resistance of artificial teeth, porosity and other defects in acrylic teeth, the properties of the recently introduced rubber-base impression materials, the toxicity of local anaesthetic solutions and the structure of amalgam alloys.

During 1955-56, hygroscopic expansion of casting investment and research on some of the fundamental problems relating to the setting of gypsum plasters was commenced. Other investigations included the following subjects:—cavity varnish, preparation of acrylic mouldings, local anaesthetic solutions, hypodermic needles, root canal paste, denture lining materials, denture laminating material, porcelain teeth silicone and synthetic rubber base impression materials, failure of amalgam fillings and orthodontic helical spring wire.

### INFORMATION

The Bureau has been consulted by dentists, manufacturers, distributors and Government Departments on a wide range of topics involving dental and allied materials. Assistance has also been given through lectures, demonstrations and papers for both the under-graduate and graduate training of dentists in the properties and handling of materials.

In 1954-55, material was supplied to the N.S.W. Branch of the Australian Dental Association for a display at a Country Convention in Orange, N.S.W., and in connexion with the Dental Health Week Exhibition in Sydney.

Members of the staff also prepared five displays illustrating the proper choice and use of materials as well as some of the research work being carried out at the Fourteenth Australian Dental Congress held in Melbourne in March, 1956. During the Congress the Bureau was open to visiting dentists, and many, including some from overseas availed themselves of this opportunity to see the work at first hand and to discuss problems associated with materials.

In addition to "Dental Materials—Current Notes" which are regularly included in the three Australian Dental Journals the following papers were published:—

### PUBLICATIONS

1954-55

#### THE EFFECT OF MANIPULATIVE VARIABLES ON DENTAL AMALGAM:

Part 1—Objective Methods of Testing, *Aust. J. Dent.* 58 : 283-7 (1954).

Part 2—Dimensional Change, *Aust. J. Dent.* 58 : 355-60 (1954).

Part 3—Mechanical Properties, *Aust. J. Dent.* 167-70 (1955).

MAKING THE MOST OF YOUR MATERIALS, *Dent. J. Aust.* 26 : 199-202 (1954).

Reprinted in *J. Dent. Assoc. Sth. Africa* 10 : 105-9 (1955).



1955-56

**Papers**

KNEADING OF MODELLING COMPOUNDS, *Aust. J. Dent.* 59 : 225-9 (1955).

THE STORY OF DENTAL AMALGAM AND ITS PRESENT DAY USE, *Health* 5 : 81-4 (1955).

TWENTY YEARS OF DENTAL MATERIALS RESEARCH IN AUSTRALIA, *Aust. J. Dent.* 59 : 378-89 (1955).

MATERIALS RESEARCH AND THE DEVELOPMENT OF DENTAL STANDARDS, *Aust. Dent. J.* 1 : 33-41 (1956).

**Lectures**

ACRYLIC RESIN AS A RESTORATIVE MATERIAL, ACRYLIC RESIN AS A PROSTHETIC MATERIAL, QUESTIONS AND ANSWERS; to the A.D.A. North West Country Group, Mildura.

DENTAL AMALGAM, SILICATE CEMENT, ACRYLIC RESIN, SELF-CURING FILLING MATERIALS, DENTURE RESIN, CASTING TECHNIQUE, USE OF PLASTER, STONE AND INVESTMENTS; to the dentists (and their mechanics) at Broken Hill.

SILVER-TIN AMALGAMS; to the Australasian Institute of Mining and Metallurgy, Broken Hill Branch.

THE EFFECT OF SURFACE AREA ON THE HYGROSCOPIC SETTING EXPANSION AND STRENGTH OF INVESTMENTS, THE RELATIONSHIP OF HYGROSCOPIC TO NORMAL SETTING EXPANSION OF INVESTMENTS; read at International Association for Dental Research Materials Group Annual Meeting, St. Louis, U.S.A.

MATERIALS FOR THE INDIRECT INLAY TECHNIQUE; to the Adelaide Study Group.

CARE IN HANDLING DENTAL MATERIALS; to dental mechanics, Adelaide.

**Clinics**

THE USE AND ABUSE OF GYPSUM PRODUCTS, WHAT DENTAL STANDARDS ARE DOING FOR YOU, ACCURACY WITH DENTAL MATERIALS, HYGROSCOPIC EXPANSION TECHNIQUE FOR CASTING INVESTMENTS, THE BEHAVIOUR OF DENTAL AMALGAMS; at the 14th Australian Dental Congress, Melbourne.

**COMMONWEALTH HEALTH LABORATORIES**

The Health Laboratories constitute a division which has been in operation since 1920 and which was instituted firstly to facilitate the workings of the Quarantine Services. Since this time, however, although some of the laboratories such as the ones at Port Pirie, Cairns and Townsville still assist in direct quarantine services, the majority of the work of these laboratories has been concerned with bacteriological and biochemical examinations, C.M.O., C.M.R. and M.I.S. clinical examinations, investigations of disease outbreaks in surrounding districts and the distribution of C.S.L. products.

In the two years under review, however, two functions are noticeable, which are concerned only with two post-war developments, the Blood Transfusion Services and the nation-wide Anti-tuberculosis Campaign. A number of these laboratories are being moved to the same building as the district hospital and closely attached, where present, to the thoracic units of these hospitals. The total volume of the work of these laboratories has increased and greater use is being made by local medical practitioners of the facilities provided.



Laboratories are situated now at Albury, Bendigo, Cairns, Canberra, Darwin, Hobart, Kalgoorlie, Launceston, Lismore, Port Pirie, Rockhampton, Tamworth, Toowoomba and Townsville. The laboratory at Wollongong was closed on 17th June, 1955.

The number of pathological examinations done at each laboratory during 1954-1955 and 1955-56 to June 30, 1956, was as follows:—

	1954-55.	1955-56.
Albury .. .. .	22,570	26,300
Bendigo .. .. .	17,513	25,264
Cairns .. .. .	33,726	43,828
Canberra .. .. .	53,379	63,901
Darwin .. .. .	15,075	18,549
Hobart .. .. .	24,418	23,240
Kalgoorlie .. .. .	18,510	23,131
Launceston .. .. .	41,894	33,463
Lismore .. .. .	37,712	41,089
Port Pirie .. .. .	12,423	11,587
Rockhampton .. .. .	20,513	23,437
Tamworth .. .. .	19,771	23,322
Toowoomba .. .. .	45,516	47,313
Townsville .. .. .	50,037	59,297
Wollongong .. .. .	52,570	..

**Albury:** Infective hepatitis and mononucleosis have been endemic in this area and in 1954-55, 208 cases of the former disease were dealt with. This is no actual indication of the incidence of the disease, however, as many cases were not investigated by the Laboratory. It has been noted that though the clinical picture for this disease has not changed, the recovery period is being prolonged, many cases still showing appreciable liver damage after three months.

The first cases of infective mononucleosis presented an encephalitic syndrome which led to some confusion with anterior poliomyelitis, the incidence of this disease however has been low during the period.

In 1955-56, there was an outbreak of rubella in both school children and adults and a few cases of malaria were seen in soldiers returning from duty overseas, whilst worm infestation was noticed in some migrants who have settled. No cases of enteritis were seen, which is interesting in view of the persistence of hepatitis in the unsewered districts.

It was also noted that the number of penicillin resistant *Staphylococci* isolated has increased.

The control of antibiotic therapy and fluid electrolyte balances still proves to be of major consideration: it has been noted that more and more practitioners rely entirely on the Laboratory's guidance in these matters.

Also, by the collection of convalescent blood, the Laboratory was able to assist the Red Cross in replenishing their stocks of immune sera.

A T.B. clinic has been established within the hospital, and since its inception the Laboratory has conducted all the necessary examinations of arrested cases and contacts.

**Cairns:** The Health Laboratory at Cairns was moved into the Thoracic



Annexe of the general hospital on July 25, 1954. There has been a very great increase in the routine bacteriological examination of suspected cases of T.B. This follows the opening of the Thoracic Annexe and the visit to the district of the mobile x-ray unit in 1954-55.

Greater use has been made of the bacteriological services by local practitioners. Sensitivity tests on pathogenic organisms showed 62 per cent. of pathogenic staphylococci isolated are resistant to penicillin. A few are resistant to all the common antibiotics except penicillin. Routine blood culture for leptospirosis showed that from 140 cultures of this nature, leptospirosis was isolated from twenty.

Very full blood examinations are done on pregnant women including Group and Rh, haemoglobin and haematocrit, serum protein and Klein. Much experience has been gained in exchange transfusions, one case requiring three exchange transfusions in three days.

Work has also been done on checking haemoglobin levels, serum proteins and gamma globulin values, and also on blood sedimentation rates in the district.

A paper on 'Haemoglobin Values of Pregnant Women' was prepared for the 1955 Medical Congress in Sydney, and two papers "Prothrombin Depressant and Sodium Fluoracetate in Rat Control" and "Blood Sedimentation Rates of Various Races in North Queensland" were presented (by Dr. Horsfall, M.O.I.C.), at the North Queensland Medical Conference held in Cairns in June, 1956.

Quarantine services include the development of Warfarin as a rat poison, the control of foot and mouth disease on migrant ships and the spraying of aeroplanes with aerosol insecticides.

A minor epidemic of dengue fever occurred in the summer of 1955-56.

**Darwin:** Several cases of typhoid and locally contracted malaria were diagnosed during 1954-55 and at the end of the wet season in 1955-56 cases of malaria were again diagnosed, especially from the Katherine area.

**Hobart:** Bacteriological tests are performed for the Hobart City Council Water Supplies, for the State Health Department, and for the State T.B. Division of Southern Tasmania. Blood typing and blood examinations are carried out for employees of the Hydro-electric Commission handling radio-active isotopes, and routine examinations of blood film are made for evidence of lead poisoning in employees at the Electrolytic Zinc Works.

**Kalgoorlie:** The control of the x-ray section of this Laboratory was transferred to the State Government Hospital on November 12, 1954. The transfer was finally completed on July 18, 1955.

The T.B. Chest Clinic constitutes a major portion of the bacteriological investigations. The number of cases confirmed in 1954-55 was twenty-four.

There has been a continued demand for blood counts, haemoglobin estimations, blood grouping and cross matching of blood for transfusion. This is due mainly to the increasing inquiry for ante-natal blood examinations and the existence of a blood bank at the district hospital. The Laboratory carries out all the technical procedures in connexion with this bank and during 1955-56, 400 pints of blood were cross-matched for 185 recipients.

**Port Pirie:** In addition to its normal laboratory functions, the Laboratory here is responsible for Commonwealth Medical Examinations and all ship inspection work under the Quarantine Act and Regulations.



The industrialization of this part of South Australia led to an almost doubling of the number of examinations between 1953-54 and 1954-55, though in 1955-56 there was no further increase as a number of examinations were sent to Adelaide.

**Rockhampton:** In 1954-55 a further outbreak of mononucleosis occurred after the rainy season, in conjunction with dengue fever, which together with other evidence suggests the former disease is insect borne. Minor outbreaks of diphtheria also occurred. In 1955-56, one case of Meningococcal Meningitis and several cases of Influenza Meningitis occurred.

A continuous survey of the inhabitants of the Woorabinda Aboriginal Settlement showed a high percentage were infected with hookworm and ascaris. A survey of children at Yeppoon has shown lead poisoning in a number of cases.

**Tamworth:** The increase in the volume of work at this Laboratory has been due mainly to the establishment of a Blood Bank, the activities of the local Chest Clinic and T.B. surveys, the demand for rapid Antibiotic Sensitivity Tests on organisms, and a considerable increase in histological material. In 1955-56 also, several specimens of blood were received for liver function tests, following an outbreak of Infectious Hepatitis.

For the past two years small laboratories which have provided a measure of relief of work on the main laboratory have been established at Armidale, Glen Innes and Inverell.

**Toowoomba:** The Laboratory is to be transferred from the present building to the new tuberculosis annexe and laboratory, in the grounds of the Toowoomba General Hospital by the end of 1956 or early 1957.

**Townsville:** This Laboratory, which acts as the pathology centre for Townsville General Hospital and for district hospitals, was transferred to the Thoracic Annexe at the main hospital in July, 1955. The new Animal House was also occupied in December, 1954.

In 1954-55, an unusual case of a new-born child affected by erythroblastosis foetalis due to the presence of anti-c was detected.



## MEDICAL RESEARCH & TEACHING INSTITUTIONS

### THE NATIONAL HEALTH AND MEDICAL RESEARCH COUNCIL

The members of the National Health and Medical Research Council at the forty-first session held on May 24, 1956, were—

Dr. A. J. Metcalfe (Chairman), Dr. F. G. Morgan and Professor E. Ford (Commonwealth), Dr. H. G. Wallace (New South Wales), Dr. K. Brennan (Victoria), Dr. A. Fryberg (Queensland), Dr. A. R. Southwood (South Australia), Dr. L. Henzell (Western Australia), Dr. J. Edis (Tasmania), Professor B. T. Mayes (Australian Regional Council of the Royal College of Obstetricians and Gynaecologists), Professor S. Sunderland (Australian Universities having Medical Schools), Sir Harold Dew (Royal Australasian College of Surgeons), Dr. J. G. Hayden (Royal Australasian College of Physicians), Professor A. J. Arnott (Australian Dental Association), Dr. W. F. Simmons (The Federal Council of the British Medical Association), Sir Norman Nock (Layman appointed by the Commonwealth) and Matron G. N. Burbidge (Laywoman appointed by the Commonwealth).

Matron G. N. Burbidge replaced Matron A. M. Walsh in November, 1955.

The following Committees are at present operative and report to the Council:—

Medical Research Advisory, Public Health, Epidemiology and Control of Epidemic Disease, Poliomyelitis, Radio-active Isotopes, Radio Therapy Advisory, Industrial Hygiene, Antibiotics, Tropical Physiology and Hygiene, Maternal and Child Welfare, Nutrition, Dental Research Advisory, Nursing, Health Education, Ultrasonics, Rh Factor, and Staphylococcal Infection.

The resolutions adopted at the 38th, 39th, 40th and 41st sessions of the Council are listed below.

### THIRTY-EIGHTH SESSION

Held at Canberra, A.C.T., 18th and 19th November, 1954

#### Resolution 1—Uniformity of Food Legislation

The Council, having considered the recommendation of the Public Health Committee for achieving uniformity in food legislation affecting overseas and interstate trade recommends to the Minister that—

The Prime Minister be asked to invite the Premiers of the States to send representatives to an Officers' Conference which will discuss means whereby the interests of each State may most readily be consulted, and model uniform regulations acceptable to all States may most conveniently and speedily be drafted.

#### Resolution 2—National Health and Budgetary Survey

The Council recommends that every effort should be made to incorporate a Health Survey in any Household Budgetary Survey which is conducted.

#### Resolution 3—Paint Containing Lead

The Council having considered the report of the Industrial Hygiene Committee recommends State Governments to provide legislation requiring that where paint



contains lead it be shown on the label together with the percentage of lead contained therein, and draws attention to the "Paints Regulations of 1954" introduced in Queensland on October 1, 1954.

#### **Resolution 4—Clinical Research—Analysis of Repatriation Department Records**

The Council desires to inform the Minister for Health that an unrivalled opportunity for clinical research is available by adequate investigation and assessment of the medical records of the Repatriation Department and recommends that an adequate filing system with a cross index of diseases be established and that a statistician and a medical research officer be employed by the Department.

#### **Resolution 5—Rh Factor Blood Examination**

The Council considers Rh factor blood examinations of such importance that it urges the Commonwealth Government to review its policy and to discuss with the Federal Council of the British Medical Association the desirability of medical benefits being paid to women who have their blood examined during pregnancy, irrespective of where it is done.

### **THIRTY-NINTH SESSION**

**Held at Sydney, N.S.W., 19th and 20th May, 1955**

#### **Resolution 1—Importation of Poliomyelitis Vaccine**

The Council having considered the report of the Public Health Committee resolved that—

Import Licences should not be issued to any agency for the importation of poliomyelitis vaccine unless the vaccine complies with the standards laid down by the Commonwealth Department of Health.

### **FORTIETH SESSION**

**Held at Sydney, N.S.W., 24th and 25th November, 1955**

#### **Resolution 1—Narcotic Drugs**

The Council resolved—

(i) That the Chief Health Officers of the States should study and discuss, with other authorities concerned, the memorandum of Australia's obligations under the International Drug Conventions submitted by the Commonwealth Department of Trade and Customs. Special attention should be given to ascertain in what particular, if any, the narcotic drug legislation of the State is inadequate to permit the ready and complete discharge of the obligations imposed by the Conventions.

(ii) That officers of the State Authority administering the Dangerous Drug Legislation in each State collaborate with the Collector of Customs in a study of this legislation to determine what deficiencies, if any, exist which are likely to prevent ready and complete discharge of the obligations imposed by the Conventions.

(iii) That the Council directs the attention of the Commonwealth Government to the fact that narcotic drug control in Australia is not uniformly satisfactory. At present the Commonwealth Department of Trade and Customs, without assured legal powers, is undertaking measures of control which would more properly be the subject of State legislation and administration.



- (iv) That the Council recommends to the Commonwealth Government that State Governments be asked to review the Dangerous Drug Legislation in each State with a view to assuring its adequacy for the discharge of Australia's obligations under the International Conventions and, where necessary, to effect amendment to provide for the closest integration of narcotic drug administration with the Health Authority.

#### **Resolution 2—Lead Paint**

That legislation should be introduced in every State to prohibit the use on toys of paint containing more than 1 per cent. of lead.

The Council approves the recent Queensland legislation relating to the use of lead paint and recommends that the other States study the legislation with a view to its ultimate adoption throughout the Commonwealth.

#### **Resolution 3—Morbidity Statistics**

That each State ascertain and record as a routine, the causes of admissions and length of stay in hospitals. This information should be tabulated by the State Statistician.

#### **Resolution 4—Public Health Nursing**

That State Health Authorities undertaking the in-service training of nurses in Public Health should maintain close liaison with the Australian College of Nursing and the New South Wales College of Nursing in order that curricula of training throughout Australia may be reasonably uniform.

#### **Resolution 5—Eclampsia**

That Eclampsia be proclaimed a notifiable condition in all States. For this purpose Eclampsia should be defined as a toxæmia of pregnancy characterized by one or more convulsions and coma.

#### **Resolution 6—Accident Rate In School Children**

That each State Health Department organize within the State a system of inquiry into accidents of childhood whether fatal or otherwise.

#### **Resolution 7—Poliomyelitis Vaccine**

The Council, believing that the intended methods of manufacture and checking will ensure a safe and effective product, recommends—

- (i) That the Commonwealth Serum Laboratories proceed with the manufacture and issue of Salk type poliomyelitis vaccine.
- (ii) That the Council agrees with the suggestion of the Director of the Commonwealth Serum Laboratories that before the Commonwealth Serum Laboratories' product is issued for purposes of public vaccination it should, if this can be arranged, be submitted to a final check by an independent authority not directly associated with the Commonwealth Serum Laboratories.
- (iii) That the Council expects that active research will continue in Australia and elsewhere to develop an avirulent or attenuated strain of each of the three types of poliomyelitis virus at present proposed to be used in the vaccine. Should strains be developed which can be shown by responsible authority to be potentially less virulent to humans, to possess adequate antigenicity and in all other respects to be acceptable for the production of vaccine, the opportunity should be promptly taken to substitute these for the fully virulent strains in current use.



### Resolution 8—Poliomyelitis

(i) The Commonwealth Serum Laboratories should proceed with the production of approximately 440,000 doses of vaccine monthly. This monthly production should be allocated to the States on a proportional basis determined by the ratio of the 0-14 age group in each State to the Commonwealth total of that age group.

The States for their part should plan for the issue and complete use of the allocation within the month in organized immunization campaigns for the age group 0-14 and for pregnant women.

(ii) Beyond the recommendation that the immunization of the age group 0-14 should be the first objective, the Council is of the opinion that no specific age or other category for immediate inoculation should be demanded. In certain States it may be considered preferable on the ground of administrative practicability, accessibility, or epidemiological indication, to undertake as an exclusive first priority the immunization of one or other year of age, or one or other quinquennial age group within the 0-14 population. In other States, on the contrary, these very considerations may demand rejection of any such discrimination, if not throughout, at least in part of the State. The decision regarding priorities for immunization within the 0-14 group should be left to the State Health Authority as the anticipated monthly supply of vaccine will be sufficient to complete the initial protection of the 0-14 age group throughout Australia within twelve months.

(iii) Poliomyelitis control is a major public health problem in Australia and the issue of poliomyelitis vaccine should therefore be restricted to State Health Authorities until the projected mass immunization programme and its associated evaluation studies have been completed.

(iv) In the planning of any poliomyelitis vaccination programme early consideration must be given to the immunization of pregnant women owing to the special risks confronting mother and child during epidemics of poliomyelitis. The Council is of the opinion that pregnant women should be included with the 0-14 age group in the immediate priority category. However, in making any arrangements for immunization during the pre-natal period State authorities must take cognizance of the Commonwealth-State agreement which imposes upon the State the responsibility of the cost of inoculation.

(v) The Commonwealth Department of Health should obtain from the National Foundation for Infantile Paralysis in the United States copies of its public relations pamphlets relating to Salk vaccine, and on the basis of these prepare a suitable pamphlet, designed to inspire parental co-operation, which may be distributed by State Health authorities with the consent cards.

(vi) Once mass immunization with poliomyelitis vaccine has been commenced, emphasis must be laid upon the desirability of prompt notification of poliomyelitis to facilitate speedy investigation of the immunization history. The Council recommends, therefore, that State Health authorities consider the desirability of requiring telegraphic or telephonic notification of poliomyelitis once immunization campaigns have commenced.

(vii) The Victorian Health Department panel of metropolitan diagnostic Consultants, under the chairmanship of Dr. H. McLorinan, should be invited to prepare and supply as soon as possible a statement of diagnostic criteria to assist in achieving the uniform recording of poliomyelitis throughout Australia, particularly in association with the immunization programme.



(viii) Each State Health Authority should accept responsibility for the completion and maintenance of a readily accessible individual vaccination record in respect of every subject receiving the vaccine. This record must include the following personal information: the name of the subject, date of birth, sex and address. It must provide also for the following information regarding each of at least three and possibly six doses of vaccine: the site, route, dose, batch number, date of inoculation, the clinic in which inoculated, and remarks.

(ix) On the notification of the suspected occurrence of poliomyelitis in a vaccinated subject, or in a household contact of a vaccinated subject, the State Health authority will forward full clinical notes to the Commonwealth Serum Laboratories and the Director-General of Health, Canberra. In addition, an immediate serum sample and a faecal specimen from the patient will be sent direct to the Commonwealth Serum Laboratories or to another laboratory appointed by the Commonwealth Serum Laboratories. A further blood sample will be collected in the 6th-8th week and sent to the Commonwealth Serum Laboratories (or other appointed laboratories). It is understood that the Commonwealth Serum Laboratories will endeavour to develop and provide a standard pack to facilitate prompt and safe despatch of these specimens.

(x) State poliomyelitis officers should check the vaccination history of every case of poliomyelitis reported after the commencement of any immunization campaign.

(xi) The Commonwealth Department of Health is requested to collect as much information as possible regarding the indications for continuance or cessation of poliomyelitis vaccination during epidemics of poliomyelitis.

(xii) The value of gammaglobulin in the prophylaxis of poliomyelitis and in the control of certain types of outbreak is again emphasized. Since the development of the Salk vaccine there has been a tendency to overlook or disregard the place of gammaglobulin in poliomyelitis control. The Council directs attention to the value of gammaglobulin in the protection of persons who have been exposed to infection with poliomyelitis in the immediate past, and who it is considered unsafe for that reason to vaccinate.

(xiii) The Council considers the prevention of poliomyelitis to be a public health problem of high importance. The use of the Salk vaccine in Canada and other countries has demonstrated that the vaccine, when prepared under strict supervision and scientific control, is a safe and effective prophylactic agent.

#### **Resolution 9—Staphylococcal Infection of the New Born**

The Council resolves—

(i) That every State Health authority in association with the Hospital Authority should set up a special organization for the collection of information concerning the incidence, and the dissemination of information dealing with the control of these infections; to conduct a study of hospital practice in respect of them, and to set out and supervise the application of routine measures of nursing and management directed towards their effectual control.

Each Committee should give immediate attention to a means of fully informing the medical and nursing professions of the importance of this problem and to devising a practicable and effective system of notification appropriate to the special requirements and circumstances of the individual State.



(ii) That studies directed towards improving knowledge regarding the transmission and management of these infections should be conducted simultaneously in all States and preferably in more than one locality in each State, so that without delay the widest possible publicity may be given to the problem and to recommend measures of prophylaxis.

(iii) That study should be directed into—

(a) "Rooming in" as a means of controlling Staphylococcal and other infections of the new born. Such an investigation must be carefully planned and controlled over a period of probably at least two years, and an essential prerequisite for its success would be the assured and unremitting co-operation of the medical and nursing staff and the Hospital Authority throughout the continuance of the study. The Committee recommends that a study of this type be instituted in each State by the Health and Hospital Authorities in collaboration.

(b) Further investigation of possible means of eradicating Staphylococci from the upper respiratory tract of the carrier, and a critical assessment of the value of these.

(c) Clinical and bacteriological features of epidemics and Staphylococcal infection of the new born to be investigated by teams of clinicians, bacteriologists, and nurses as a means of assessing the value of various measures applied for the control of such epidemics.

#### **Resolution 10—Routine Estimation of Rh Anti-body Titres in Pregnancy**

(i) That the determination of the ABO group and Rh status (D positive or D negative) is an essential part of pre-natal care.

The determination of ABO group and Rh status is considered practicable but may require extension of general Laboratory facilities in some localities, especially in the country. This extension is commended for favorable consideration to the authorities concerned with hospital administration in the States.

(ii) That the blood of all D negative pregnant women should be examined for the presence of Rh anti-bodies if the pregnancy is a second or later one or if the woman has had a transfusion. This examination should be made at the first pre-natal visit and again late in pregnancy—usually at the 34th-36th week.

(iii) The Council considers that it is of scientific interest but at present not generally regarded as essential to practical management that the titre of any Rh anti-body detected be determined.

(iv) The detection of Rh anti-bodies, and the identifications of their type are practical procedures. These, and if required, the determination of anti-body titre should be undertaken by a pathologist experienced in this work, or by one of the reference Laboratories available in every State.

(v) That in considering the availability of Laboratory facilities for these purposes the Council takes the opportunity to emphasize that in its view Haemoglobin estimation should be performed on every pregnant woman at least at the time of her first pre-natal visit and at twenty-eight weeks. Usually laboratory facilities sufficient to fill this need will be associated with organized pre-natal care and it should not be difficult to arrange for the performance of the other tests advocated.



## FORTY-FIRST SESSION

Held at Sydney, N.S.W., on 24th May, 1956

### Resolution 1—Hydatid Disease

This Council resolves that each State Health Department will confer with the appropriate Department of Agriculture with a view to devising means for the better control of hydatid disease in dogs and for the education of the public in the eradication of the infestation from dogs. In particular, attention will be given to the issue of informative pamphlets at the time of registration of the dog, to devising organized methods of treating dogs at risk at regular intervals and to preventing the feeding of dogs with possibly infected material.

## SCHOOL OF PUBLIC HEALTH AND TROPICAL MEDICINE

The functions of the School of Public Health and Tropical Medicine include teaching at both post-graduate and under-graduate levels; and research into problems of tropical medicine and hygiene, and of public health. The School also maintains a close liaison with numerous Public Health Agencies and health and educational bodies, especially those pertaining to public health and tropical medicine; and is a centre for the provision of information and advice on subjects within its field.

### TEACHING

**Post-graduate:** The diploma in Public Health Course was taken by two candidates in 1954, four in 1955 and five in 1956. Two students from Formosa, and one from the Philippines attended on W.H.O. Fellowships in 1956.

For the Diploma in Tropical Medicine and Hygiene, there were eight candidates in 1954, six in 1955 and thirteen in 1956.

Post-graduate courses were given in both years, in Public Health and Preventive Medicine, and in Bacteriology. These courses were for nurses studying for the New South Wales College of Nursing Sister Tutor's Diploma and Nursing Administration Diploma. Asian candidates, studying under the Colombo Plan, were also included in these classes.

During the period under review, the staff of the School also gave lectures for the Diplomas in Clinical Pathology and in Dermatological Medicine; and in 1956 in Diagnostic Radiology.

**Undergraduate:** The principal undergraduate teaching consisted of lectures in Public Health and Preventive Medicine, delivered to students in Medicine V: 153 in 1955 and 169 in 1956.

During both years, courses of lectures were also given to the following undergraduates in the subjects listed:—

Medicine IV	..	..	..	Helminthology
Science III	..	..	..	General Microbiology
Architecture III	..	..	..	Hygiene
Social Studies I	..	..	..	Biology and Social Hygiene.

The course in Tropical Medicine for missionaries and others proceeding to the tropics was given as usual in June, July and August, for 1955 and 1956.

Special courses were arranged in both years, in Tropical Hygiene for Northern Territory school teachers with the Commonwealth Office of Education; and on common New Guinea diseases and their control, for cadets at the Australian School of Pacific Administration.



Instruction was also provided for individual officers from various departments and institutions, proceeding to the Northern Territory, Cocos Islands and other tropical areas; and also to Army personnel.

## RESEARCH

**Bacteriology and Pathology:** The following investigational work was initiated or continued, during the period under review:—

1954-55—

- (a) Investigation of leptospirosis in the Territory of Papua and New Guinea.
- (b) Serological surveys relating to leptospirosis, brucellosis and fever in human beings in New South Wales.
- (c) Investigation and evaluation of a slide technique for leptospiral agglutination tests.
- (d) Extension of a serological survey of bovine, porcine, ovine and equine leptospirosis in New South Wales.
- (e) A serological investigation of natives in British Solomon Islands Protectorate and the Northern Territory was commenced. This was continued during 1956.

1955-56—

- (a) A survey of animal reservoirs of leptospirosis in cattle, sheep and pigs in New South Wales was virtually completed.
- (b) A survey of occupational groups of workers exposed to leptospiral infection was commenced, in association with the Director of Industrial Hygiene, New South Wales State Health Department.
- (c) In parallel with the tests for leptospirosis, complement fixation tests for Q fever have been carried out on the human and animal sera.
- (d) Whenever the opportunity offered, investigation of aetiological factors in atypical pneumonitis was continued.
- (e) The diagnosis of three additional cases of psittacosis in the Sydney area was also established during the year.

**Chemistry:** Work was continued on the determination of mercury in biological materials, on the oral toxicity of mercury compounds, and on experimental mercurialism in animals. This work forms part of a study of the aetiology of pink disease, and the possible causal relationship of mercury salts to this disease.

**Entomology:** Researches on the insect transmission of disease have centred on myxomatosis and fowlpox. Virus of these diseases has been recovered from three species of mosquito, hitherto unrecorded as vectors in Australia. The biology and behaviour of a variety of mosquitoes and sandflies has been studied in relation to the transmission of these diseases, and a considerable amount of new information unfolded.

The investigation into myxomatosis transmission was continued during 1955-56 and the field study was resolved into a search for an explanation of the characteristic autumnal incidence in the eastern portion of its range.

Researches were also carried out on the sources of blood meals of engorged mosquitoes and sandflies; using the precipitin technique for the identification of blood samples; and also on the oviposition responses of certain mosquitoes. Field work on sandflies was also extensively undertaken in the Sydney area.

In 1954-55, a special investigation of the blood sources of mosquitoes of the Townsville Common was undertaken. This was in relation to the possible transmission of dengue or related viruses among wild hosts. Also, in November-



December, 1955, a survey of mosquitoes and sandflies attacking flying foxes was undertaken in the Townsville area as a part of the Commonwealth Serum Laboratories project on dengue fever.

### Industrial Hygiene

(a) Periodical medical examinations were undertaken on groups of persons in Government Departments who are exposed or likely to be exposed to special risks, as under:—

Postmaster-General's Department (lead works), Works Department (persons using pesticides), Garden Island Naval Dockyard (lead workers, welders, industrial radiographers), Explosives Factory, St. Mary's (employees exposed to trinitotulene, tetryl and radium), Defence Standards Laboratories (industrial radiographers using X-Ray equipment and isotopes), C.S.I.R.O. (persons using radio-isotopes).

(b) In addition, examinations were carried out on persons using isotopes for industrial radiography in a private concern, and on others using them in research projects in the University.

(c) A report was prepared on compensation aspects of silicosis and pulmonary disability for the information of the Government of South Africa.

(d) A survey of the fume exposure and health risks associated with electric welding was commenced and is still in progress.

(e) Procedures were investigated for the estimation of uranium in the urine of persons exposed to uranium in the Northern Territory.

(f) Advice on a variety of health problems in industry was given to Government Departments, industrial concerns and other organizations or individuals.

### Parasitology

*Schistosome Dermatitis*: Studies were continued on the causal agents of *Schistosome Dermatitis* (Surfer's Itch) including cercarial types occurring in *Pyrazus australis*.

*Filariasis*: Infection experiments with various mosquito intermediaries were carried out, using a native of New Caledonia as donor of microfilariae. The mosquitoes used were, *Aedes scutellaris*, *Aedes pseudoscutellaris*, *Aedes katherinensis*, *Aedes polynescensis*, *Aedes vigilax*, *Aedes albopictus*, *Culex fatigans* and *Wuchereria bancrofti*.

These experiments were performed for the South Pacific Commission, with the co-operation of Dr. A. R. Woodhill of the Department of Zoology, University of Sydney and form the subject of a technical circular which has been issued by the Commission.

*Amoebiasis*: Culture work was continued with *in vitro* experiments, using antibiotics. These experiments appear to confirm the statements that penicillin and streptomycin favour the multiplication of amoebae in cultures by keeping bacteria in check, while terramycin and tetracycline both act inimically to the amoeba as well as to most of the accompanying flora.

As part of this work, a number of additional antibiotics were studied for their *in vitro* effect, both on the amoebae and their bacterial associates. A paper on this subject was prepared as a contribution to the Medical Congress in August, 1955.



*Dientamoeba fragilis*: A strain of this amoeba was grown from a New Guinea resident, under treatment for amoebiasis. The strain has been maintained for teaching and experimental purposes and during the period, the question of its possible pathogenicity was reviewed.

### **Tropical Medicine**

(a) A study of *Plasmodium benghei* infection in mice was continued during 1955.

(b) Experimental work on larvicidal malaria control by village communities in the Trobriand Islands, Papua, was continued.

(c) An investigation was commenced, and is continuing on the effect of Primaquine on South West Pacific strains of relapsing *vivax* malaria.

(d) Work is also continued on the preparation of a monograph on *Malaria in the South Pacific*.

(e) Dr. R. H. Black opened the discussion on the subject of malaria research in Asia and the Western Pacific, at the Second Asian Malaria Conference (W.H.O.), held in Philippines in November, 1954.

### **Vital Statistics**

Dr. H. O. Lancaster continued his studies of Australian vital statistics.

### **Virology**

Mr. J. J. Lawrence has been engaged on work in the complement fixation of Smallpox.

## **CONFERENCES**

The Director, Professor E. Ford, attended the Ninth World Health Assembly held in Geneva in May, 1956, as leader of the Australian delegation.

In April, 1955, Dr. H. O. Lancaster attended a conference on statistical methods, in Melbourne. This was held in connexion with the visit of Professor M. G. Kendall of London.

Dr. R. H. Black participated in a symposium conducted for the Royal Australian Academy at Brisbane, in May, 1956, on "Man and Animals in the Australian Tropics".

Dr. R. E. Murray attended the centenary meeting of the Society of Medical Officers of Health in London during April, 1956.

## **CO-OPERATION WITH PUBLIC HEALTH AGENCIES**

A close liaison exists between the School and other Commonwealth Departments, the Medical Directorates of the Armed Service, the Health Departments of the various States and Territories, the World Health Organization and the South Pacific Commission.

A consultant service in pathological histology is provided for Commonwealth Health Laboratories, and numerous serological and bacteriological tests are done for public hospitals, health laboratories, medical practitioners and veterinarians. The latter were with regard to leptospirosis, Q fever, psittacosis, brucellosis, typhus fever, group and lymphogranuloma venereum. Examination of faecal specimens with unusual helminth ova are made for various hospitals and examinations of urine for uranum.

The industrial Health Unit has instituted a service for the assessing of radiation doses by workers exposed to ionising radiation.



The School's Library also provides a microfilm service to approved libraries and institutions; and information for research and other purposes to research workers, medical practitioners, Government departments and organizations. Co-operation was also continued with C.S.I.R.O. in the production of the General Supplement to the second edition of the Union Catalogue of Scientific Periodicals in Australian Libraries.

## PUBLICATIONS

DEAFNESS DUE TO RUBELLA, by H. O. Lancaster. *Med. J. Aust.*, Vol. 2, 1954, pp. 323-324.

SCHISTOSOME DERMATITIS IN SALT WATER, by A. J. Bearup (Correspondence). *Med. J. Aust.*, Vol. 2, 1954, pp. 372-73.

THE BLOOD SOURCES OF SOME AUSTRALIAN MOSQUITOES, by D. J. Lee, K. J. Clinton and A. K. O'Gower. *Aust. J. Biol. Sci.*, Vol. 7, 1954, pp. 282-301.

AGING IN THE AUSTRALIAN POPULATION, by H. O. Lancaster. *Med. J. Aust.*, Vol. 2, 1954, pp. 548-554.

A SEROLOGICAL SURVEY OF CATTLE IN NEW SOUTH WALES FOR Q FEVER INFECTION: A PRELIMINARY REPORT, by B. R. V. Forbes, J. C. Keast and J. S. Wannan. *Aust. Vet. J.*, Vol. 30, 1954, pp. 266-268.

THOMAS JAMISON AND THE BEGINNING OF MEDICAL JOURNALISM IN AUSTRALIA, by Edward Ford. *Med. J. Aust.*, Vol. 2, 1954, pp. 624-626.

THE EFFECT OF THE INTRAVANEOUS ADMINISTRATION OF SODIUM THIO-SULPHATE ON BLOOD LEAD CONTENT AND ON THE EXCRETION OF LEAD IN URINE AND FAECES IN CASES OF LEAD POISONING, by D. O. Shiels, W. C. Thomas, G. R. Palmer, P. Cornish and E. Kearley. *Med. J. Aust.*, Vol. 2, 1954, pp. 773-782.

A MALARIA SURVEY OF THE PEOPLE LIVING ON THE MINJ RIVER IN THE WESTERN HIGHLANDS OF NEW GUINEA, by R. H. Black. *Med. J. Aust.*, Vol. 2, 1954, pp. 782-87.

MALARIA RESEARCH IN THE SOUTH-WEST PACIFIC, by R. H. Black. (Roneoed Report), WHO/Mal/104. *Malaria Conference for the Western Pacific and South-East Asia Regions*. 1954.

OBSERVATIONS ON THE BEHAVIOUR OF *Anopheles farauti*, A MALARIA VECTOR IN THE TERRITORY OF PAPUA-NEW GUINEA, by R. H. Black. (Roneoed Report) Un-numbered, *Malaria Conference for the Western Pacific and South-East Asia Regions*. WHO, 1954.

STABLE V.F.O. OPERATION AT 144 Mc, by R. H. Black. *Amateur Radio*, Dec., 1954.

*Wuchereria bancrofti* FROM NEW CALEDONIA IN RELATION TO CERTAIN *Scutellaris* GROUP MOSQUITOES, by T. C. Backhouse and A. R. Woodhill. *South Pacific Commission, Technical Information Circular* No. 11 1954, pp. 9.

MEASUREMENT OF LIVER ENLARGEMENT (Correspondence), by R. H. Black. *Trans. Roy. Soc. Trop. Med. & Hyg.*, Vol. 48, 1954, pp. 441-42.

THE DE ARTE GYMNASTICA OF MERCURIALE, by Edward Ford. *Aust J. Physiotherapy*, Vol. 1, 1954, pp. 30-32.

CARBOHYDRATE TOLERANCE IN PREGNANCY, by J. F. C. C. Copley and H. O. Lancaster. *Med. J. Aust.*, Vol. 1, 1955, pp. 171-75.

THE EPIDEMIOLOGY OF DEAFNESS DUE TO MATERNAL RUBELLA, by H. O. Lancaster. *Acta Genet. Stat. Med.*, Vol. 5, 1954, pp. 12-24.

144 MC. HETERODYNE FREQUENCY METER, by R. H. Black. *Amateur Radio*, Vol. 23, pp. 7.



AUSTRALASIAN CERATOPOGONIDAE (DIPTERA, NEMATOCERA). PART VII. NOTES ON THE GENERA ALLUAUDOMYIA, CERATOPOGON, CULICOIDES AND LASIOHELEA, by D. J. Lee and E. J. Reye. *Proc. Linn. Soc. N.S.W.*, Vol. 79, 1954, pp. 233-46.

THE INFLUENCE OF THE PHYSICAL PROPERTIES OF A WATER CONTAINER SURFACE UPON ITS SELECTION BY THE GRAVID FEMALES OF *Aedes scutellaris* (WALKER) FOR OVIPOSITION (DIPTERA, CULICIDAE), by A. K. O'Gower. *Proc. Linn. Soc. N.S.W.*, Vol. 79, 1954, pp. 211-218.

DEATHS FROM MALARIA ON THE AUSTRALIAN MAINLAND, by R. H. Black. *Med. J. Aust.*, Vol. 1, 1955, pp. 387-88.

COMPARISON OF THE LIVER AND SPLEEN SIZES IN A COMMUNITY IN NETHERLANDS NEW GUINEA SUFFERING FROM MALARIA OF A HIGH DEGREE OF ENDEMICITY, by R. H. Black. *Trans. Roy. Soc. Trop. Med. & Hyg.*, Vol. 49, 1955, pp. 62-3.

LEPTOSPIRAL INFECTION IN NATIVES OF THE TERRITORY OF PAPUA AND NEW GUINEA, by B. R. V. Forbes and J. S. Wannan. *Asian. Ann. Med.*, Vol. 4, 1955, pp. 64-69.

AUSTRALIA AND THE GREAT PLAGUES, by Edward Ford. *Sydney University Engineering Club, Twenty-fourth Annual Memorial Lecture*, October, 1953 (published 1955), pp. 6.

THE OCCURRENCE OF ANTIBODIES FOR THE *Leptospira grippotyphosa* SERO GROUP IN THE BOVINE SERA IN NEW SOUTH WALES, by B. R. V. Forbes, J. C. Keast, J. S. Wannan and J. J. Lawrence. *Aust. Vet. J.*, Vol. 31, 1955, pp. 69-75.

PUBLIC HEALTH—THE SECOND ASIAN MALARIA CONFERENCE OF THE WORLD HEALTH ORGANIZATION, by R. H. Black (Unsigned). *Med. J. Aust.*, Vol. 1, 1955, pp. 620-22.

RURAL MALARIA CONTROL IN THE S.W. PACIFIC, by R. H. Black. *S.P.C. Quarterly Bull.*, Vol. 5, 1955, pp. 7 and 16.

MALARIA CONTROL AND RESEARCH IN NETHERLANDS NEW GUINEA, by R. H. Black. *South Pacific Commission, Tech. Paper No. 80*, 1955, pp. 16.

MALARIA IN THE SOUTH-WEST PACIFIC, by R. H. Black. *South Pacific Commission, Tech. Paper No. 81*, 1955, pp. 56.

THE LYSIS OF LEPTOSPIRES BY ANTISERUM, by J. J. Lawrence. *Aust. J. Exp. Biol. & Med. Sci.*, Vol. 33, 1955, pp. 91-102.

OBSERVATIONS ON THE BEHAVIOUR OF *Anopheles farauti* LAVERAN, AN IMPORTANT MALARIA VECTOR IN THE TERRITORY OF PAPUA-NEW GUINEA, by R. H. Black. *Med. J. Aust.*, Vol. 1, 1955, pp. 949-955.

A SCHISTOSOME LARVA FROM THE MARINE SNAIL *Pyrazus australia* AS A CAUSE OF CERCARIAL DERMATITIS IN MAN, by A. J. Bearup. *Med. J. Aust.*, Vol. 1, 1955, pp. 955-60.

THE GEOGRAPHICAL DISTRIBUTION OF MALARIA IN THE SOUTH-WEST PACIFIC, by R. H. Black. *Aust. Geographer*, Vol. 6, 1955, pp. 32-35.

OBSERVATION AND EXPERIMENT IN MEDICINE, by H. O. Lancaster. Presidential Address, *Statistical Society, N.S.W. Bulletin No. 13*, June, 1955.

RAPID SLIDE AGGLUTINATION BY LEPTOSPIRAL ANTIBODIES, by J. S. Wannan. *Med. J. Aust.*, Vol. 2, 1955, pp. 161-164.

THE MORTALITY IN AUSTRALIA FROM CANCER FOR THE PERIOD 1946 TO 1950, by H. O. Lancaster. *Med. J. Aust.*, Vol. 2, 1955, pp. 235-239.

DETERMINATION OF MERCURY IN URINE, WITH RESULTS IN CASES OF PINK DISEASE, by F. R. Barrett. *Med. J. Aust.*, Vol. 2, 1955, pp. 411-414.



RELATIONSHIPS BETWEEN THE FLYING FOX (GENUS *Pteropus*) AND ARTHROPODBORNE FEVERS OF NORTH QUEENSLAND, by J. L. O'Connor, L. C. Rowan and J. J. Lawrence. (Correspondence) "Nature". Vol. 176, 1955, pp. 472.

*In vitro* EFFECTS OF ANTIBIOTICS ON MULTIPLICATION OF *E. histolytica*, by T. C. Backhouse. *Med. J. Aust.*, Vol. 2, 1955, pp. 654-55 (Abridged).

TRANSMISSION OF FILARIASIS WITH SPECIAL REFERENCE TO PACIFIC AREAS, by T. C. Backhouse. *Med. J. Aust.*, Vol. 2, 1955, pp. 687 (Abridged).

DISEASE AND DEVELOPMENT IN NORTH AUSTRALIA, by A. H. Baldwin. *Med. J. Aust.*, Vol. 2, 1955, pp. 683 (Abridged).

THE PRESENT STATUS OF MALARIA CONTROL IN THE SOUTH-WEST PACIFIC AREA, by R. H. Black. *Med. J. Aust.*, Vol. 2, 1955, pp. 689 (Abridged).

SOME CURRENT PROBLEMS IN OCCUPATIONAL HEALTH, by G. C. Smith. *Med. J. Aust.*, Vol. 2, 1955, pp. 533 (Abridged).

MATERNAL RUBELLA DURING PREGNANCY AS A CAUSE OF DEAF-MUTISM. SOME ASPECTS OF ITS INCIDENCE IN AUSTRALIA, by H. O. Lancaster. *Health*, Vol. 5, No. 2, June, 1955, pp. 56-58.

MOSQUITO BEHAVIOUR AND ECONOMIC DEVELOPMENT IN NEW GUINEA, by R. H. Black. *Health*, Vol. 5, No. 3, 1955, pp. 89-90.

GEOGRAPHICAL ASPECTS OF MELANOMA, by H. O. Lancaster. (Letters to the Editor), *Lancet*, Vol. 2, 1955, pp. 929.

THE MORTALITY IN AUSTRALIA FROM SYPHILIS, by H. O. Lancaster. *Med. J. Aust.*, Vol. 2, 1955, pp. 895-897.

MALIGNANT TUMORS IN MELANESIANS, by T. C. Backhouse. *Med. J. Aust.*, Vol. 2, 1955, pp. 1061-1063.

THE MORTALITY IN AUSTRALIA FROM LEUCHAEMIA, by H. O. Lancaster. *Med. J. Aust.*, Vol. 2, 1955, pp. 1064-1065.

A SEROLOGICAL RELATIONSHIP BETWEEN *Shigella flexneri* AND SOME STRAINS OF *Bacterium coli*, by J. J. Lawrence. *Journal of Pathology & Bacteriology*, Vol. 70, 1955, pp. 250-252.

LEPTOSPIRAL SEROTYPES IN AUSTRALASIA, by J. S. Wannan. *Aust. Vet. J.*, Vol. 31, 1955, pp. 297-301.

BASIC PRINCIPLES OF MOSQUITO ABATEMENT, by David J. Lee. *Health*, Vol. 5, 1955, pp. 107-111.

SEROLOGICAL SURVEY OF PIGS IN NEW SOUTH WALES FOR LEPTOSPIROSIS AND THE INCIDENCE OF SWINE ABORTION, by J. C. Keast, B. R. V. Forbes and J. S. Wannan. *Aust. Vet. J.*, Vol. 32, 1956, pp. 11-16.

THE RATE OF DIGESTION OF HUMAN BLOOD BY CERTAIN SPECIES OF MOSQUITOES, by A. K. O'Gower. *Aust. J. Biol. Sciences*, Vol. 9, 1956, pp. 125-29.

THE AGING POPULATION OF MODERN TIMES, by H. O. Lancaster. (Current Comment) (unsigned). *Med. J. Aust.*, Vol. 1, 1956, pp. 471-72.

THE PRESENT STATUS OF MALARIA CONTROL IN THE SOUTH-WEST PACIFIC AREA, by R. H. Black. *Med. J. Aust.*, Vol. 1, 1956, pp. 498-501.

THE ASEXUAL MULTIPLICATION OF THE "MALARIA PARASITE" OF AUSTRALIAN FLYING FOXES, by J. J. Lawrence. *Aust. J. Sci.*, Vol. 18, 1955, pp. 61-62.

THE AUSTRALASIAN DIPTERA OF J. R. MALLOCH, by D. J. Lee, Mabel Crust and C. W. Sabrosky. *Proc. Linn. Soc. N.S.W.*, Vol. 80, 1955, pp. 289-342.

THE MORTALITY IN AUSTRALIA FROM DISEASES OF THE ALIMENTARY SYSTEM, by H. O. Lancaster. *Med. J. Aust.*, Vol. 1, 1956, pp. 787-89.



FILARIASIS IN AUSTRALIA. THE NEED FOR FURTHER INVESTIGATION OF VECTORS, by T. C. Backhouse. *Health.*, Vol. 6, 1956, pp. 7-8.

AUSTRALIA AND DIPHTHERIA IMMUNIZATION, by H. O. Lancaster (Correspondence). *Med. J. Aust.*, Vol. 1, 1956, pp. 1060.

SOME GEOGRAPHICAL ASPECTS OF THE MORTALITY FROM MELANOMA IN EUROPEANS, by H. O. Lancaster. *Med. J. Aust.*, Vol. 1, 1956, June 30, pp. 1082-87.

AN INEXPENSIVE, EASILY-CONSTRUCTED, CONTROLLED TEMPERATURE AND HUMIDITY ROOM FOR MAINTAINING INSECT COLONIES, by T. C. Backhouse and A. K. O'Gower. *Bull. Ent. Res.*, Vol. 47, 1956, pp. 69-71.

FURTHER STUDIES ON THE HOSPITALITY OF SOME *Scutellaris* GROUP AND OTHER MOSQUITOES TOWARDS *Wuchereria bancrofti* FROM NEW CALEDONIA, by T. C. Backhouse and A. R. Woodhill. *South Pacific Commission Technical Information Circular*, No. 17, May, 1956, pp. 4.

THE MALARIA PROBLEM. PRESENT RESEARCH AND PROBLEMS REQUIRING ATTENTION IN THE AUSTRALASIAN TROPICS, by R. H. Black. *The Australian Academy of Science. Symposium on Man and Animals in the Tropics*, Brisbane, 1956 (mimeographed), pp. 8.

TUBERCULOSIS IN MELANESIAN NATIVES: A SUMMARY OF AUTOPSY FINDINGS FROM THE PRE-WAR ERA (1922 TO 1940), by T. C. Backhouse. *Med. J. Aust.*, Vol. 2, 1955, pp. 62-65.

A G.P. LOOKS AT MEDICINE, by G. C. Scott (unsigned). *C.A.B.* Vol. 18, 1955, pp. 67-79.

CONTROL MEASURES FOR *Aedes aegypti*. SURVEYS IN NORTHERN AUSTRALIA, by A. K. O'Gower. *Health*, Vol. 6, 1956, pp. 40-42.

INFANT MORTALITY IN AUSTRALIA, by H. O. Lancaster. *Med. J. Aust.*, Vol. 2, 1956, pp. 100-108.

MICRO-DETERMINATION OF MERCURY IN BIOLOGICAL MATERIALS, by F. R. Barrett. *Analyst.*, Vol. 81, 1956, pp. 294-98.

## INSTITUTE OF CHILD HEALTH

The activities of the Institute of Child Health continued along the main lines of teaching and research. The scope of both these fields, however, has been extended, and as well as increased teaching activity, the period 1954-56 has marked the commencement, continuation and conclusion of many important research projects.

### TEACHING

(a) **Undergraduate:** The usual clinical demonstrations, lectures and discussions were given to undergraduate students in both Clinical Paediatrics and Child Development.

(b) **Post-graduate:** (i) In June, 1955, a course of two weeks' duration in Social and Preventive Paediatrics was held for Hospital Registrars. Attendance was limited to twelve, and participants came from Melbourne, Sydney and Newcastle. This was the first of its kind to be held in Australia, and discussion included the problems of the blind, deaf and handicapped child, living in the community either inside or outside hospital.

(ii) During 1955, study groups in various phases of child health were conducted regularly for paediatricians and others.



(iii) Special demonstrations and discussions in Clinical Paediatrics were given in 1955 to about thirty visiting doctors.

(iv) For the period 1954-55, lectures by various members of the staff were given at the School of Public Health and Tropical Medicine, the Dental Hospital and Royal Prince Alfred Hospital for the Diploma of Gynaecology and Obstetrics to the Advanced Course in Medicine and to the General Practitioners Revision Course.

(v) Contributions to discussion were made by members of the staff at the British Medical Association Congress, and the annual meetings of the Australian Paediatric Association and Australasian Association of Psychiatrists, during 1956, and also to the annual meeting of the Australian Paediatric Association in 1955.

(vi) Regular lunch hour medical discussion groups were held twice weekly throughout the year and other occasional meetings, usually involving a short case presentation followed by open and informal discussion were conducted during 1955-56. These meetings were attended by members of the honorary medical and resident staff and by other post-graduates.

(c) **Extra-mural Teaching:** The Director in both years attended congresses, lectures, demonstrations and discussions at Brisbane, Kiama, Perth, Canberra, Newcastle, Wollongong, Coff's Harbour and Grafton.

During 1955, Dr. F. W. Clements of the Institute staff gave a series of lectures on Nutrition and Family Living, to the Department of Home Economics, and on Applied Nutrition to Colombo Plan students in the Department of Food Technology, both at the University of Technology.

The Universities of Queensland and Western Australia invited the Director of the Institute in 1956 to visit them and advise on the planning and organization of Paediatric departments, and associated research and teaching.

Dr. F. W. Clements delivered the Luis Gererro Memorial Lecture at the University of Santo Tomas in the Philippines in November, 1955.

(d) **Overseas Students:** Two Colombo Plan students from Indonesia, Dr. Goepito and his wife, Dr. Chasanah Goepito, studied child psychiatry and clinical and social paediatrics at the Institute, during 1955.

## RESEARCH

### **Study of the Aetiology, Diagnosis and Prevention of Acute Rheumatic Fever in Children.**

This study, a long-term research project, has been in progress for four years and has as its main objective the early diagnosis, prevention and control of rheumatic fever. By the end of 1955, 600 children suffering from rheumatic fever or chorea had been either interviewed or examined. A group of 60 children who had suffered from rheumatic fever received continuous oral penicillin as a prophylactic measure, and a control group of 200 children were studied who did not receive penicillin prophylaxis.

This long-term research project is still continuing and has already led to increased knowledge of the clinical pattern of rheumatic fever during childhood, and the value of certain measures of prevention.

The study of emotional, social and environmental factors in the history of children suffering from this disease was continued by Miss Grave (Social Worker). During 1954-55, an additional 58 Rheumatic children were investigated and 107



children who did not suffer from rheumatic fever, but who had attended the Outpatients' Department of the Royal Alexandra Hospital for Children for other causes were studied as a control group.

In conjunction with the study being undertaken by Miss Grave, an investigation of psychological "stress" in children suffering from this disease has been undertaken by Dr. F. W. Clements and Dr. J. Kerridge (Psychiatrist).

This new study commenced in 1955, and investigations were made on 58 children suffering from rheumatic fever, and 58 controls who were matched for age, sex and duration of illness. The purpose of this investigation was to compare the degree of stress undergone by each group, and the emotional adjustment of the children in each group. To this end, psychometric and projection tests were made, both parent and child interviewed by the psychiatrist and the home visited by the Social Worker.

As well, a survey was begun in 1955 in association with the School Medical Service, New South Wales Department of Public Health, of several hundred school children who were found to have cardiac murmurs on routine examination by School Medical Officers. When necessary, X-rays and electrocardiographs have been made. The investigators have been able to classify the children examined into three main groups—

- (i) Those with innocent murmurs whose hearts are apparently normal.
- (ii) Those suffering from congenital heart disease.
- (iii) Those suffering from rheumatic heart disease.

#### **Febrile Convulsions in Infancy**

This survey, commenced in 1953, is still being continued. The investigation of those children who suffered from convulsions at some time in the past was completed and a prospective study of another 150 children begun.

#### **Study of Female Pseudohermaphroditism**

The results of this study have demonstrated the value of cortisone in the treatment of a certain form of masculinity which may affect girls during infancy and childhood. Thirteen such cases were treated and investigated during 1955, and fourteen were the subject of special study during 1956.

Attention has recently been directed to three children suffering from an anomaly of the clitoris, and a series of congenital malformations which may constitute a hitherto undescribed syndrome.

#### **Survey of Accidents in Childhood**

This long-range survey, referring particularly to accident proneness and prevention during infancy and childhood is still continuing. Four articles on the problem were published in 1955, and the analysis of data collected in 1952 and 1953 about the accident pattern of 23,000 children is still continuing.

#### **Endemic Goitre**

It has been concluded from this study that the significant cause of the high incidence of goitre in parts of Tasmania has not been caused by an iodine deficiency but by the feeding of milking cows with chou-mollier (a form of Brassica), which contains a substance producing goitre in children who consume this milk.

#### **Investigation into Maternal Efficiency and Child Health**

This study was completed during 1954-55 and the report submitted for publication.



### **Effects of Stress in Pre-school Children upon Growth, Development and Physical Health**

This study was commenced in 1954-55 and continued during the following year, in association with the Lady Gowrie Child Centre, Sydney. The hypothesis being investigated is that emotional "stress" caused by the environment of the home, or the quality of the mother-child relationship has a marked influence on the physical and mental health of pre-school children. To this end 78 children have been studied over two years. Particular attention has been paid to their family life and the degree of security and affection. This has been correlated with a two-year study of the growth, development and physical health of these children.

### **Pink Disease**

Following three years' laboratory estimation of the mercury content of the urine of children suffering from pink disease, it has been confirmed that mercury probably plays an important part in its causation. As the usual source of such mercury is the popular "teething" powder purchased from the local chemist, State action is being taken to prohibit the sale of such "teething" powders and other medicines containing mercury, which are used during infancy.

### **Cases of Gastro-enteritis at the Royal Alexandra Hospital for Children**

A retrospective survey of acute gastro-enteritis was undertaken by Dr. Goepito, the Indonesian Colombo Plan student, who investigated various features of 250 infants suffering from this disease.

### **Other Studies during 1954-56**

(i) An investigation of chronic chest infections (including bronchitis and bronchiectasis) during infancy and childhood with particular reference to causation, prevention and treatment.

(ii) Clinical of Nephrosis (a kidney disorder).

### **TRAVELLING SCHOLARSHIPS**

Dr. J. Beveridge of the Institute staff was awarded a Wunderly Travelling Scholarship, to continue his study of chronic chest infections during infancy and childhood abroad for twelve months.

### **PUBLICATIONS**

Clements, F. W. (1954). ENDEMIC GOITRE IN AUSTRALIA, NEW ZEALAND AND MELANESIA, *Bull. W.H.O.*, 10 : 105-111.

Clements, F. W. (1954). WHAT IS MENTAL HEALTH? *Syd. Univ. Med. J.*, 44 : 46-51.

Clements, F. W. (1954). MENTAL HEALTH IN CHILDHOOD, *Quart. Bull. Sth. Pacific Seminar*, 4 : 1, 23-24.

Dods, L. F. (1954). AN HONOUR FOR MARGARET HARPER, *Med. J. Aust.*, II : 599

Dods, L. F. (1954). RICKETTSIAL INFECTIONS, *Paediatrics for the Practitioner*, Vol. 3, 119 : 367-370.

Dods, L. F. (1954). LEPTOSPIROSIS, *Paediatrics for the Practitioner*, Vol. 3, 122 : 458-460.

Dods, L. F. (1954). OBITUARY, JAMES CALVERT SPENCE, *Med. J. Aust.*, II : 41-42.



Clements, F. W. (1954). THE RELATIONSHIP OF THYROTOXICOSIS AND CARCINOMA OF THE THYROID GLAND TO ENDEMIC GOITRE, *Med. J. Aust.*, II : 894-897.

Clements, F. W. (1954). PROBLEMS OF THE DEAF CHILD: INCIDENCE AND INSTITUTIONS, *Med. J. Aust.*, II : 328-329.

Clements, F. W. (1955). ACCIDENTAL INJURIES IN PRE-SCHOOL CHILDREN: I. A GENERAL SURVEY, *Med. J. Aust.*, I. 348-352.

Clements, F. W. (1955). ACCIDENTAL INJURIES IN PRE-SCHOOL CHILDREN: II. TRAFFIC ACCIDENTS, *Med. J. Aust.*, I. 388-391.

Clements, F. W. (1955). ACCIDENTAL INJURIES IN PRE-SCHOOL CHILDREN: III. BURNS AND SCALDS, *Med. J. Aust.*, I. 421-424.

Clements, F. W. (1955). THE TEETH AND FOOD, The Eighth Annie B. Cuning Lecture on Nutrition delivered before the Royal Australasian College of Physicians in Sydney in November, 1954, *Med. J. Aust.*, I. 297-302.

Cary, W. H. (1955). FEBRILE CONVULSIONS IN INFANCY, *Bull. Post-Grad. Comm. Med.*, II : 1, 18-23.

McDonald, J., and Dods, L. F. (1955). EOSINOPHILIC GRANULOMATOSIS, *A'sian Annals Med.*, 3 : 5-17.

Clements, F. W. (1955). INFANT FEEDING IN AUSTRALIA, *Quart Rev. Paed.* 10 : 153-156.

Dods, L. F. (1955). THE USE AND ABUSE OF HORMONES IN PAEDIATRIC PRACTICE, *Med. J. Aust.*, II : 535.

Clements, F. W., and Harris, R. (1955). PROBLEMS ASSOCIATED WITH THE IMPLEMENTATION OF RESTRICTED CARBOHYDRATE DIETS, *Dent. J. Aust.*, 27 : 209-215.

Clements, F. W. (1955). A THYROID BLOCKING AGENT AS A CAUSE OF ENDEMIC GOITRE IN TASMANIA: PRELIMINARY COMMUNICATION, *Med. J. Aust.*, II : 369-371.

Dowd, B. T. (1955). SOME PROBLEMS IN THE MANAGEMENT OF THE RHEUMATIC CHILD, *Med. J. Aust.*, II : 649.

Vines, R. H., and Dods, L. F. (1955). LETTER TO EDITOR, *Med. J. Aust.*, II : 873.

Cary, W. H. (1956). FACTORS IN CHILDHOOD AFFECTING MENTAL HEALTH, *Med. J. Aust.*, I : 5-7.

Kerridge, J. (1956). FACTORS AFFECTING MENTAL HEALTH IN CHILDHOOD, *Med. J. Aust.*, I : 7-11.

Clements, F. W. (1956). ACCIDENT PREVENTION IN CHILDHOOD, *J. Trop. Med.*, I : 227.

Clements, F. W. (1956). ACCIDENTAL POISONING IN CHILDHOOD, *Med. J. Aust.*, I : 211-213.

Beveridge, J. (1956). ACCIDENTAL POISONING IN CHILDHOOD, *Med. J. Aust.*, I : 216-218.

Dowd, B. T. (1956). SOME ASPECTS OF THE NATURAL HISTORY OF RHEUMATIC FEVER, *Med. J. Aust.*, I : 247.

Clements, F. W. (1956). STRESS IN CHILDREN: THE STUDY OF A GROUP OF PRE-SCHOOL CHILDREN, *Med. J. Aust.*, I : 357-361.

Goepito, H. (1956). GASTRO-ENTERITIS IN INFANCY AND CHILDHOOD. A REVIEW OF 235 CASES, *Med. J. Aust.*, I : 836-840.

Beveridge, J. (1956). PRE-OPERATIVE AND POST-OPERATIVE CARE OF THE NEW-BORN, *Med. J. Aust.*, I : 316-318.

Dods, L. F. (1956). PHYSICAL CHANGES OF PUBERTY AND ADOLESCENCE, *Supplement to Paediatrics for the Practitioner*, pp. 3-10.

Beveridge, J. (1956). THE PRACTICAL MANAGEMENT OF INTRAVENOUS FLUID THERAPY IN INFANCY AND CHILDHOOD, *Med. J. Aust.*, I : 875-877.



## QUARANTINE

### ANIMAL QUARANTINE AND VETERINARY HYGIENE

#### Legislation

During the two years ended June 30, 1956, a number of important alterations to legislation were effected as follows:—

(a) By Proclamation 55A of September 30, 1954, cattle shipments from the United States of America were restricted to the months of February to May and the United States of America ports of shipment were reduced to exclude Gulf and East Coast ports. The object was to reduce the risk of introducing Bluetongue of sheep, the virus of which may be carried for a limited period by cattle.

(b) By Statutory Rule No. 10 of January 28, 1955, Quarantine (Animals) Regulations were amended—

- (i) to provide a more satisfactory health certification of cattle imported from New Zealand, particularly regarding Johnes' Disease and an alternative to the Brucellosis test in the case of certain female cattle which had been inoculated with strain 19 vaccine;
- (ii) the certification of cattle from Great Britain, Northern Ireland and the Republic of Ireland was similarly treated;
- (iii) a blood inoculation test for Bluetongue of cattle from the United States of America was prescribed;
- (iv) a test for Brucellosis of goats from New Zealand was prescribed;
- (v) a special certification of freedom from Scrapie of sheep from New Zealand was prescribed;
- (vi) a blood test for leptospirosis of dogs from Great Britain, Northern Ireland and the Republic of Ireland was added to prescribed certification;
- (vii) other amendments of a minor nature were made and redundant provisions were deleted from the Regulations.

(c) By Proclamation 56A of June 23, 1955, the importation of urinary bladders (including those containing goods) was prohibited following the report that certain cheeses of foreign origin were being enclosed in unsterilized bladders for export to Australia. Calves vells were prohibited from all countries except New Zealand. Canada was again included in the list of countries from which straw packing and used bags may be admitted without treatment on arrival or without certification.

(d) Quarantine (Animals) Regulations, and Proclamations and Regulations were consolidated and reprinted as in force October 31, 1955.

(e) By Proclamation 57A, Animal Casings from the United States of America were again permitted to be imported, and by amendment to the Regulations (Stat. Rule No. 36 of 1956) additional health certification of casings was prescribed.

Previously, in August, 1953, casings from the United States of America were prohibited because of the widespread incidence of Vesicular Exanthema of Swine in the United States of America, but with the vastly improved position regarding this disease in the United States of America, importations were again permitted.



### Importations Subject to Quarantine

#### ANIMALS

The principal importations were—

#### DOMESTICATED ANIMALS

—	From—							
	Great Britain.		United States of America.		New Zealand.		Total.	
	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.
Horses .. ..	52	46	..	..	481	334	533	380
Cattle .. ..	82	125	81	48	1,513	75	1,676	248
Sheep .. ..	..	..	..	..	208	4,937	208	4,937
Goats .. ..	1	..	..	..	..	..	..	..
Dogs and Cats ..	257	231	..	..	121	83	378	314

Animals from Great Britain and the United States of America were subjected to the usual detention in an animal quarantine station.

Of the large number of cattle from New Zealand in 1954-55, 1,433 were Aberdeen Angus imported by the Tasmanian Land Settlement.

A special importation of eighteen cattle for scientific investigation was made from Papua-New Guinea by the Council for Scientific and Industrial Research. These were *Bos indicus* presented by the Pakistan Government and kept under stringent Quarantine and subjected to numerous tests for two years before admission to Australia.

Laboratory Animals: During the two-year period approximately 200 small laboratory animals were imported by scientific institutions.

In addition some 3,600 monkeys were imported for the manufacture of Salk Poliomyelitis Vaccine at the Commonwealth Serum Laboratories, Melbourne. Permits were issued for these to be transported by aircraft and all were accompanied by health certificates.

Zoological and Other Animals: The usual importations for registered zoos and circuses, mainly carnivores and primates, continued. Queen bees and aquarium fish were also imported.

#### GOODS

Approximately fifty different kinds of goods subject to animal quarantine control were imported, the major items being hides and skins, carpet wool, sausage casings and foodstuffs of animal origin.

Most items were subjected to treatment as prescribed, to eliminate possible infections.

#### Exports Subject to Quarantine

The principal animal exports were—

—	1954-55.	1955-56.
Horses .. ..	467	445
Cattle .. ..	6,396	7,611
Sheep .. ..	98,936	107,588
Goats .. ..	97	34
Pigs .. ..	910	..
Dogs and Cats ..	434	503
Poultry .. ..	98,689	82,394
Miscellaneous (including birds, fish and other species) ..	42,882	28,083



In addition to dairy cattle and stud stock, most of the cattle exported went to the Philippines for slaughter, from Queensland and Western Australia. Practically all the sheep were sent to Singapore from Western Australia for slaughter.

Appropriate tests and examinations were carried out and health certificates issued to meet the requirements of importing countries.

#### **Miscellaneous Quarantine Matters**

Large numbers of small items of quarantine risk continued to arrive with migrants or through postal channels addressed to New Australians and Asian visitors. These are detected by customs searchers or passed to Quarantine Officers for incineration. The main items in this category were meat and uncooked meat products, cheese, eggs and straw packing.

#### **Foot and Mouth Disease**

Following representations by this Department, the Australian Agricultural Council at its meeting in July, 1952, appointed a Special Committee to report on the threat to the livestock industry of the possible introduction of foot and mouth disease into Australia.

Substantial progress has been made by the Committee under the Chairmanship of the Director of Veterinary Hygiene. Plans have been prepared for the eradication of a possible future outbreak and agreement has been reached between the Commonwealth and all States regarding contributions to the expenses of eradication irrespective of where an outbreak might occur in Australia. The final stage of planning is now in progress, viz., the drafting of legislation for administering a fund for the eradication of the disease and the payment of compensation to stock owners.

#### **Cattle Tick Eradication**

The Director of Veterinary Hygiene is Chairman of the Commonwealth Cattle Tick Commission, other members being the principal veterinary officers of the Departments of Agriculture of New South Wales and Queensland.

**1954-55:** During the year, further preparations were effected by the Cattle Tick Control Commission leading up to the eradication project in the West Richmond and Kyogle areas of the Tick Quarantine Area in New South Wales, to commence in January, 1956.

Early in the calendar year 1955 some ticks were discovered on cattle on a property adjoining the Queensland border at Cullendore—an area not then in quarantine. This necessitated an extension of the West Richmond Quarantine to include an area surrounding the infested property. All stock in the area will be required to undergo eradication treatments.

**1955-56:** The eradication campaign duly commenced on January 9, 1956, and regular fortnightly dipping of all cattle in the areas known as West Richmond and Kyogle was carried out by a large staff of men and the owners of the stock; this regular dipping went on for thirty dippings and therefore the main part of the campaign involving the dipping treatments extended until the end of March, 1957.

The Commonwealth contribution to New South Wales for Cattle Tick Eradication and Control for the year 1954-55 was £250,000 and for 1955-56 £551,750.



## HUMAN QUARANTINE

### QUARANTINABLE AND NON-QUARANTINABLE DISEASES

The Quarantine Service authorized under the *Quarantine Act* 1908-1950 was maintained during the years ended June 30, 1956.

It was necessary to order into quarantine, two vessels arriving from overseas ports.

The R.M.S. "Strathaird" arrived at Fremantle on August 7, 1954, from Bombay (July 30) and Colombo (July 30), after having previously wirelessly reported that there was a case of smallpox on board. The "Strathaird" carried a crew of 499 and 1,245 passengers in one class divided as follows:—

76 for Fremantle.

286 for Adelaide.

240 for Melbourne.

643 for Sydney.

On arrival at Fremantle the vessel was ordered into quarantine and the usual procedures of quarantine were applied.

The S.S. "Jersey Mist" arrived at Fremantle on March 21, 1955, after leaving Calcutta on March 9. An engine room rating had reported sick on March 19 with a rash. The vessel did not carry a surgeon but the Master suspected smallpox, isolated the case and cared for it personally. On arrival at Fremantle the diagnosis of smallpox was confirmed and the patient, the Master, and two cabin mates of the patient were transferred to the Quarantine Station. The remainder of the crew was vaccinated and the seamen's quarters on the vessel were disinfected. The vessel was released from Quarantine after five days and the contacts were released after eleven days when the vessel sailed from Fremantle overseas. The patient was treated with Terramycin which appeared to have a beneficial effect on the pustular stage and to counteract some of the toxæmia. He was discharged from Quarantine on April 23 cured, though pitting of the face remained evident.

Unfortunately in this case although the whole crew of 55 carried International Vaccination Certificates, many were incomplete. None contained information as to whether the vaccination was primary or not and some did not bear the date of vaccination. These deficiencies were reported to the World Health Organization.

As a result of the decrease in the number of cases of Foot and Mouth Disease in Holland it was possible during the year to remove restriction on the travel by air of rural migrants from that country. The restriction is still maintained on other European countries where the disease is endemic or epidemic. Owing to what was regarded as insufficient thoroughness at Piræus the acceptance of certificates from that centre was suspended. The procedure of disinfection of rural migrants is now restricted to treatment of working boots and other apparel or implements which might be affected. The bathing of migrants themselves is no longer required.

Cases of non-quarantinable infectious disease continue to be met—mainly at the port of Fremantle. Details of the cases reported during the year appear in Table III.

#### Deratting of Vessels

Deratting of both Australian and overseas vessels was maintained during both years.



TABLE No. I  
Vessels Boarded and Cleared

Port.	1954-55.					
	Surface.			Air.		
	Craft.	Crew.	Passengers.	Craft.	Crew.	Passengers.
Sydney .. .. .	514	50,835	40,595	454	6,578	9,900
Newcastle .. .. .	56	2,929	157	..	..	..
Port Kembla .. .. .	45	1,954	139	..	..	..
Total (N.S.W.) ..	615	55,718	40,891	454	6,578	9,900
Melbourne .. .. .	419	53,041	93,857	..	..	..
Geelong .. .. .	124	7,969	5,375	..	..	..
Portland .. .. .	8	570	255	..	..	..
Total (Vic.) .. ..	551	61,580	99,487	..	..	..
Port Adelaide .. ..	196	20,060	21,919	..	..	..
Port Pirie .. .. .	10	576	20	..	..	..
Wallaroo .. .. .	7	311	1	..	..	..
Port Augusta .. ..	1	33	..	..	..	..
Cape Thevenard .. ..	1	41	..	..	..	..
Whyalla .. .. .	1	40	..	..	..	..
Total (S.A.) .. ..	216	21,061	21,940	..	..	..
Brisbane .. .. .	243	15,511	5,486	23	201	652
Maryborough .. ..	..	..	..	..	..	..
Bundaberg .. .. .	..	..	..	..	..	..
Bowen .. .. .	13	676	113	..	..	..
Gladstone .. .. .	9	388	7	..	..	..
Rockhampton .. ..	2	86	..	..	..	..
Mackay .. .. .	2	83	..	..	..	..
Townsville .. .. .	34	1,782	233	29	240	275
Cairns .. .. .	30	1,716	1,169	2	34	2
Thursday Island .. ..	8	382	..	..	..	..
Total (Qld.) .. ..	341	20,624	7,008	54	475	929
Fremantle .. .. .	461	61,291	103,977	..	..	..
Albany .. .. .	21	1,474	271	..	..	..
Broome .. .. .	1	98	84	..	..	..
Bundaberg .. .. .	26	1,194	8	..	..	..
Busselton .. .. .	..	..	..	..	..	..
Carnarvon .. .. .	3	294	239	..	..	..
Derby .. .. .	5	488	334	..	..	..
Esperance .. .. .	4	180	..	..	..	..
Geraldton .. .. .	18	872	394	..	..	..
Onslow .. .. .	..	..	..	..	..	..
Port Hedland .. ..	2	73	..	..	..	..
Wyndham .. .. .	1	34	..	3	5	..
Yampi .. .. .	16	527	..	..	..	..
Perth .. .. .	..	..	..	76	665	2,222
Pearce .. .. .	..	..	..	3	35	..
Total (W.A.) .. ..	558	66,525	105,307	82	705	2,222
Hobart .. .. .	16	1,329	918	..	..	..
Burnie .. .. .	3	124	11	..	..	..
Bell Bay .. .. .	4	147	..	..	..	..
Launceston .. .. .	..	..	..	..	..	..
Beauty Point .. ..	..	..	..	..	..	..
Total (Tas.) .. ..	23	1,600	929	..	..	..
Darwin .. .. .	15	657	3	720	6,404	18,629
Total (N.T.) .. ..	15	657	3	720	6,404	18,629
Totals (All States) ..	2,319	227,765	275,565	1,310	14,162	31,680



TABLE No. II  
Vessels Boarded and Cleared

Port.	1955-56.					
	Surface.			Air.		
	Craft.	Crew.	Passengers.	Craft.	Crew.	Passengers.
Sydney .. .. .	500	55,755	45,042	512	4,436	13,255
Newcastle .. .. .	67	2,700	128	..	..	..
Port Kembla .. .. .	43	1,794	30	..	..	..
Botany Bay .. .. .	36	2,141	..	..	..	..
Total (N.S.W.) .. .. .	646	62,390	45,200	512	4,436	13,255
Melbourne .. .. .	401	57,227	105,390	1	10	24
Geelong .. .. .	174	8,331	258	..	..	..
Portland .. .. .	1	56	..	..	..	..
Total (Vic.) .. .. .	576	65,614	105,648	1	10	24
Port Adelaide .. .. .	174	15,230	15,143	..	..	..
Port Lincoln .. .. .	4	157	..	..	..	..
Port Pirie .. .. .	9	607	37	..	..	..
Whyalla .. .. .	1	34	2	..	..	..
Wallaroo .. .. .	3	136	6	..	..	..
Cape Cleveland .. .. .	4	132	..	..	..	..
Total (S.A.) .. .. .	195	16,296	15,188	..	..	..
Brisbane .. .. .	271	15,856	2,621	11	97	200
Maryborough .. .. .	10	438	..	..	..	..
Bundaberg .. .. .	..	..	..	..	..	..
Bowen .. .. .	9	360	1	..	..	..
Gladstone .. .. .	4	168	..	..	..	..
Rockhampton .. .. .	2	123	..	..	..	..
Mackay .. .. .	7	350	..	..	..	..
Townsville .. .. .	42	2,383	437	19	156	349
Cairns .. .. .	36	2,066	1,544	2	21	..
Thursday Island .. .. .	7	236	..	..	..	..
Total (Qld.) .. .. .	388	21,980	4,603	32	274	549
Kwinana .. .. .	159	7,539	..	..	..	..
Fremantle .. .. .	495	62,146	136,785	..	..	..
Albany .. .. .	24	1,237	169	..	..	..
Broome .. .. .	..	..	..	..	..	..
Bunbury .. .. .	13	560	43	..	..	..
Busselton .. .. .	..	..	..	..	..	..
Carnarvon .. .. .	6	458	267	..	..	..
Derby .. .. .	9	836	509	..	..	..
Esperance .. .. .	..	..	..	..	..	..
Geraldton .. .. .	10	437	24	..	..	..
Onslow .. .. .	..	..	..	..	..	..
Port Hedland .. .. .	1	56	..	..	..	..
Wyndham .. .. .	..	..	..	..	..	..
Yampi .. .. .	..	..	..	..	..	..
Perth .. .. .	..	..	..	78	842	3,137
Pearce .. .. .	..	..	..	..	..	..
Total (W.A.) .. .. .	717	73,269	137,797	78	842	3,137
Hobart .. .. .	20	816	8	..	..	..
Burnie .. .. .	7	257	14	..	..	..
Bell Bay .. .. .	4	223	..	..	..	..
Launceston .. .. .	1	46	..	..	..	..
Inspection Head .. .. .	1	69	10	..	..	..
Port Huon .. .. .	1	48	..	..	..	..
Total (Tas.) .. .. .	34	1,459	32	..	..	..
Darwin .. .. .	36	843	36	794	7,103	15,799
Total (N.T.) .. .. .	36	843	36	794	7,103	15,799
Totals (All States) .. .. .	2,592	241,851	308,504	1,417	12,665	32,764



TABLE No. III  
Infectious Diseases on Overseas Vessels Arriving in Australia—  
July 1, 1954—June 30, 1956

Disease.	No. of Cases 1954-55.	No. of Cases 1955-56.
Measles .. .. .	158	30
Rubella .. .. .	6	22
Chickenpox .. .. .	45	41
Whooping Cough .. .. .	17	1
Mumps .. .. .	40	12
Glandular Fever .. .. .	3	..
Leprosy .. .. .	..	1
Infective Hepatitis .. .. .	..	2
	269	109

TABLE No. IV  
Inspections and Examinations at Australian Ports—July 1, 1954—June 30, 1956

Port.	Number of Vessels Inspected.						Number of Seamen Examined.	
	Primary Inspections.		Annual Re-inspections.		Special Inspections.		1954-55.	1955-56.
	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.		
Sydney .. .. .	3	7	52	53	..	25	..	778
Newcastle .. .. .	..	2	29	29	4	7	310	529
Melbourne .. .. .	4	4	22	23	12	46	104	663
Brisbane .. .. .	1	..	4	5	..	..	258	216
Cairns .. .. .	..	..	..	..	..	..	21	39
Townsville .. .. .	..	..	..	..	..	..	..	25
Port Adelaide .. .. .	..	..	16	8	..	..	138	159
Wallaroo .. .. .	..	..	..	..	..	..	1	..
Whyalla .. .. .	2	1	..	..	1	..	5	3
Port Pirie .. .. .	..	..	..	..	..	..	19	9
Fremantle .. .. .	..	420	6	75	3	..	221	62,146
Kwinana .. .. .	..	157	..	2	..	..	..	7,539
Albany .. .. .	..	20	..	4	..	..	..	1,237
Bunbury .. .. .	..	7	..	6	..	..	..	560
Carnarvon .. .. .	..	4	..	2	..	..	..	458
Derby .. .. .	..	7	..	..	..	..	..	615
Geraldton .. .. .	..	10	..	..	..	..	..	437
Port Hedland .. .. .	..	1	..	..	..	..	..	56
Hobart .. .. .	1	..	..	4	1	3	240	10
Devonport .. .. .	2	..	..	..	..	..	3	..
Launceston .. .. .	3	..	..	1	..	..	..	..
Ulverstone .. .. .	..	..	..	1	1	..	..	..
Total .. .. .	16	638	129	281	22	81	1,320	75,413



TABLE No. V  
Deratization Operations on Overseas Vessels during the Two Years ended June 30, 1955 and June 30, 1956

State.	No. of Vessels Dealt With.		Fumigated.						Trapped or Poisoned.					
			No. of Vessels.		No. of Rats Obtained.		Average No. of Rats per Vessel.		No. of Vessels.		No. of Rats Obtained.		Average No. of Rats per Vessel.	
	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.
New South Wales ..	1,134	982	27	20	360	841	16.9	101	46	58	213†	151	4.7	5
Victoria ..	402	343	23	17	119	398	7	47	5	5	41	69	19	27.7
Queensland ..	24	281	..	..	..	..	..	..	23	7	755	128	141.16	38
South Australia ..	600	411	5	9	104	227	20.8	25	10	13	43	125	4.3	9
Western Australia ..	380	6	2	2	..	2	..	1	1	4	..	23	..	5.75
Tasmania ..	102	134	..	..	..	..	..	..	..	3	..	4	..	1.3
Total ..	2,642	2,217	57	48	583	1,468	44.7	174	85	90	1,052	349	151.16	81.75

\* No. of vessels inspected as distinct from total of vessels fumigated, trapped or poisoned.

† No Opportunity for searching 2 vessels at Newcastle.



TABLE No. VI  
**Deratization Operations on Australian Vessels (Interstate and Coastal) during the Two Years ended June 30, 1955,  
 and June 30, 1956**

State.	No. of Vessels Dealt With.*		Fumigated.						Trapped or Poisoned.					
			No. of Vessels.		No. of Rats Obtained.		Average No. of Rats per Vessel.		No. of Vessels.		No. of Rats Obtained.		Average No. of Rats per Vessel.	
	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.
New South Wales ..	1,111	287	56	32	391	258	11.3	24	8	14	11	47	3.6†	7
Victoria ..	85	69	33	27	3	89	0.1	70.3	4	3	5	2	1.25	1
Queensland ..	352	526	7	3	3	3	1	1	..	21	..	750	..	95.3
South Australia ..	200	55	5	4	38	6	9.5	6	6	..	28	..	4.6	..
Western Australia ..	190	44	37	32	202	253	21.84	7.9	3	..	11	..	5.5	..
Tasmania ..	106	152	Fumigation carried out on mainland						..	..	2	..	..	1
Northern Territory ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total ..	2,844	1,133	138	98	637	609	43.74	109.2	21	40	55	801	14.41	104.3

\* No. of vessels inspected as distinct from total of vessels fumigated, trapped or poisoned.

† No Opportunity for searching 6 vessels.



TABLE No. VII

**No. of overseas vessels fumigated, trapped or poisoned in Australian Ports during the years ended June 30, 1955, and June 30, 1956, and from which more than ten rats were obtained during any one operation**

State.	No. of Vessels Dealt with During the Year.		No. of Rats Obtained.		No. of Vessels Dealt with More than Once.		No. of Vessels Dealt with Once.	
	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.
New South Wales	16	22	144	876	..	5	16	17
Victoria.. ..	3	12	138	441	1	1	2	11
Queensland ..	22	7	747	148	..	..	22	7
South Australia ..	7	10	202	306	..	1	7	9
Western Australia	..	1	..	15	..	..	..	1
Tasmania ..	..	..	..	..	..	..	..	..
Northern Territory	..	..	..	..	..	..	..	..
Total ..	48	52	1,831	1,886	1	7	47	45

TABLE No. VIII

**No. of Australian (Interstate and Coastal) Vessels fumigated, trapped or poisoned during the two years ended June 30, 1955, and June 30, 1956, and from which more than ten rats were obtained**

State.	No. of Vessels Dealt with During the Year.		No. of Rats Obtained.		No. of Vessels Dealt with More than Once.		No. of Vessels Dealt with Once.	
	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.
New South Wales	8	12	225	256	..	2	8	10
Victoria.. ..	..	4	..	52	..	1	..	3
Queensland ..	18	13	1,170	818	4	3	14	10
South Australia ..	5	2	70	37	..	..	1	2
Western Australia	2	12	56	159	1	..	1	12
Tasmania ..	..	..	..	..	..	..	..	..
Northern Territory	..	..	..	..	..	..	..	..
Total ..	33	43	1,521	1,322	5	6	24	37



TABLE No. IX  
Overseas Vessels applying for Exemption under Regulation 23 of the Quarantine (General) Regulations

Applications Received.		Applications Approved Without Further Action.		Applications Approved by Vessels Trapped or Poisoned.		Vessels Fumigated.			
						No. of Vessels.		No. of Rats.	
1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.
354	353	335	302	14	24	10	26	13	651

TABLE No. X  
Australian Vessels (Interstate and Coastal) Exempted from Fumigation

Applications Received.		Applications Approved Without Further Action.		Applications Approved by Vessels Trapped or Poisoned.		Vessels Fumigated.			
						No. of Vessels.		No. of Rats.	
1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.	1954-55.	1955-56.
135	50	115	89	14	19	6	44	24	235



## PLANT QUARANTINE

Active precautions against the importation of plant pests and diseases were a major activity over the period. The volume of imported plant material has increased considerably, along with the number of people travelling. Much of this increase in travel has been by air, with a consequent increase in risk associated with the transfer of insect pests and diseases into Australia.

During 1954-55, the following major precautions were taken:—

- (a) The inspection of timber in whatever form it arrived from overseas, was intensified. The result was that several thousands of crates and cases were found to be infected. These were either treated by fumigation under plastic sheets with Methyl Bromide, or were destroyed.
- (b) As a precautionary measure against the Cotton Boll Weevil and related insects, cotton from the Americas going direct to the port of Brisbane, was fumigated under vacuum with Methyl Bromide.
- (c) Plants imported under Nursery Stock Regulations were carefully checked upon arrival, and later check-inspected in post-entry quarantine. This system has proved advantageous in the interception of serious pests and diseases.
- (d) The pre-flight inspection at Honolulu, of all aircraft and of the luggage of passengers and crew bound for Australia, has continued. This has so far proved effective in preventing the introduction of the Oriental Fruit Fly.

A small-scale fumigation unit for use with methyl bromide was manufactured in 1955-56. This has been supplied to each of the main ports of entry in Australia.

In 1955-56 also, certain limited supplies of bean seed were permitted entry into Australia, following negotiations with the United States Government to ensure that the seed was held, inspected and certified to be from crops free from disease.

## CONFERENCES

The Director of Plant Quarantine attended as Australia's delegate at—

- (a) a meeting of technical representatives of countries in South-East Asia, held in Singapore in December, 1954. This Conference was held, with the object of formulating a plan for international co-operation in Plant Quarantine problems of common interest.
- (b) a Conference of Plant Quarantine Experts, called by the Food and Agricultural Organization, and held in Rome in September, 1955. The purpose of this Conference was to review the International Plant Protection Convention and to suggest ways for its improvement.

A Conference was held at which all Chief Quarantine Officers (Plants) from the States and, other Commonwealth and State representatives having an interest in Plant Quarantine, met the Director and staff at the Central Office, to discuss problems of Plant Quarantine having an Australia-wide application.

## STAFF

The staff at the Central Office has been strengthened over the period by the addition of three Senior Research Officers, with specialist knowledge of Botany and Horticulture, Entomology, and Plant Pathology, respectively.



## EXPERIMENTAL WORK

Experiments in the treatment of seed against internally born seed pathogens was commenced in 1955-56. The object of this work is to find a treatment which will kill the pathogen without injuring the vitality of the seed.

Work in Tasmania towards controlling *Sirex* in isolated outbreaks in that State, was continued. Experimental work has shown that some insecticides were promising, and that fumigation with Methyl Bromide was thoroughly effective in killing all *sirex* wasps in timber.

## REVISION OF REGULATIONS

A revision of the Regulations, designed to improve the efficiency of the Plant Quarantine Service, was also introduced in 1955-56.

## PLANT QUARANTINE PUBLICITY CAMPAIGN

The Plant Quarantine Publicity Campaign was maintained over the period by continuing the exhibition at Royal Shows in all capital cities; the wide distribution of appropriate and attractive posters; the production and wide circulation of special films; and the use wherever possible of radio and newspaper publicity channels. Special emphasis was given in 1955-56 to the intra-state and interstate aspects of Plant Quarantine, with particular attention to Fruit Fly.

The Australian Agricultural Council has affirmed the necessity for continuing this campaign, with the object of acquainting the travelling public with the continued need for care in introducing or distributing plant material.



## PUBLIC HEALTH

### IMMIGRATION MEDICAL SERVICE

The Department continues to conduct the Hospitals of the Immigration Medical Service in Migrant Reception Centres, controlled by the Department of Immigration. Nine hospitals, with 770 beds, cots and bassinets were in use at the beginning of the period. Stuart and Cairns, which had been closed since December, 1952, were re-opened in August, 1954, and May, 1955, respectively. Eleven hospitals were in use by June, 1955, but Stuart and Cowra were closed in January, 1956.

Over the period, the numbers accommodated in the Centres declined from 7,946 to 4,645, and the total number of beds installed was reduced firstly to 599 and then to 485 by the end of the period.

Seventy-nine babies in 1954-55 and 64 in 1955-56 were born in the Centre Hospitals, and a further 93 and 174 respectively were born to Centre residents in local public hospitals.

During 1954-55, a total of 7,150 in-patients covering 61,007 bed-days were treated and 152,911 out-patient treatments given. During 1955-56, a total of 5,404 in-patients, covering 37,854 bed-days were treated, and 130,515 out-patient treatments given.

In-patients included 979 in 1954-55 and 796 in 1955-56 cases of infectious disease, chiefly measles, mumps and whooping cough. Respectively, 978 and 1,347 immunizations were also effected.

Surgery was carried out in both years, in only three Centres. Seven major and 192 minor operations took place in 1954-55 and 20 major and 155 minor operations took place in 1955-56.

Staff figures during the period were—

—	June 30, 1954.	June 30, 1955.	June 30, 1956.
Medical Officers .. .. .	6	6	4
Matrons and Sisters .. .. .	31	31	25
Male Orderlies .. .. .	28	26	23
Female Orderlies .. .. .	126	121	98
Other .. .. .	112	111	89

## NATIONAL FITNESS

### STATE NATIONAL FITNESS COUNCILS

State National Fitness Councils in all States directed their activities towards voluntary leader training, camping and hostelling, the co-ordination and promotion of the work of amateur sports organizations, and advisory services to community, voluntary youth, and amateur sports organizations.



There has been a trend in all States for the wider field of youth leadership to be the responsibility of individual organizations, with assistance from appropriate National Fitness staff. At the same time, while Councils still provide youth leadership training courses as required, they are tending to direct their own leader training programmes more into the field of physical recreation. There has also been increased activity in the planning for recreation areas, in co-operation with local governing and town-planning authorities, and several surveys on recreation needs have been made.

It is proposed to increase the number of National Fitness Camps to twenty in the near future, three more camps being planned in Western Australia, Victoria and Queensland. Camping has proved a valuable and popular form of activity, and in spite of high maintenance costs, National Fitness camps are a valuable asset. Five camps in Queensland were insured for £33,630 in 1955.

During 1954, 347 groups and 8,248 campers used the seventeen camps now in existence, and during 1955 they were used by 399 groups and 14,252 individual campers. Use of these camps is mainly by voluntary youth organizations and for school camps organized by State Education Departments or National Fitness Councils.

Youth Hostelling continues to be a popular form of recreation activity. National Fitness Councils own or lease hostels in most States, and provide assistance in other ways to State Youth Hostel Associations now established in all States. Development in the provision of new hostel buildings or the extension of those existing has occurred in both South Australia and Tasmania. The Tasmanian Council now owns eight hostels and leases three, and six hostels are owned by the South Australian Council.

Assistance has been given to amateur sports organizations either by grants or through services, such as the organization of sports training, coaching and "learn-to-play" courses. One important development in this field has taken place in New South Wales, where the National Fitness Council and Education Department have co-operated in making available to youth groups after school hours, the pre-fabricated gymnasias which are being built in secondary schools.

During 1954 also, special research projects were conducted in Western and South Australia into the playing area needs of amateur sports.

State National Fitness Councils, where required, continued to assist in the conduct of vacation play centres (New South Wales, Victoria and Tasmania); courses of training for play centre supervisors (New South Wales), and special vacation play centres at Migrant Hostels and Immigration Centres in Queensland, New South Wales, Victoria and South Australia. In Victoria and Queensland also, special combined summer camps were arranged in 1955 for migrant and Australian children.

#### **STATE EDUCATION DEPARTMENTS**

The Commonwealth grant to State Education Departments continues to stimulate physical education in schools and teachers' colleges. New methods and techniques have been incorporated into programmes, following the return in 1955 of several personnel from overseas study leave.

There has been an increase in the number of physical education field staff specialists in high schools in New South Wales, Queensland, South Australia and



Tasmania and courses for the specialist, general teacher, and teacher's college student show a steadily increasing attendance. In 1955, 272 specialist and supervisory staff attended in-service training courses, 5,795 general teachers were enrolled in schools of instruction and training camps, and 2,107 students attended instructional camps and courses.

During 1955, 300-400 teachers in four States had the direct advantage of special demonstrations in Basic Movement given by Miss Doris West, a lecturer in physical education from Goldsmith's Teacher's College, London, who was on a year's teaching exchange with the Victorian Education Department.

The allocation of special bursaries in Tasmania, South Australia and Western Australia in 1954 has enabled State Education Departments to release one or two teachers each year for specialist training in University Courses.

In New South Wales, Tasmania and Western Australia, school camps are held as part of the regular school programmes. In 1955, a number of weekend and vacation camps for school children were held in Queensland, and in Western Australia as well as the very successful combined white and aboriginal children's camp, which has become a regular annual feature, a camp was organized for 77 children from the Eastern Goldfields. During 1955, a total of 156 national fitness camps for 7,043 children were held.

Education Departments in New South Wales have embarked on a programme for providing high schools with pre-fabricated gymnasia, and in Queensland, 24 swimming pools have now been provided at schools.

## UNIVERSITIES

The development of University courses in physical education and enrolments during 1955 showed a definite advance on 1954. The total number of students in all courses enrolled in 1954 was 267, whereas in 1955 it was 318.

Four Universities, Melbourne, Queensland, Sydney (Teachers' College) and Adelaide provide Diploma Courses in Physical Education. In addition, the Universities of Queensland and Western Australia provide a major course in physical education as part of a degree course. It is hoped that a Course at degree level will be provided soon at Melbourne University.

Four Universities are allocated an annual grant of £100 for the provision of recreation activities for the general student body.

Adequate facilities for physical education are now being provided at the University of Melbourne, with the building of the Beaurepaire Physical Education Centre. The Centre is to be completed by the end of 1956 and will provide accommodation for the new degree course, including general offices, gymnasia and swimming pool. At both Queensland and Sydney Universities, sites have been set aside and plans made for the building of suitable facilities for the Department of Physical Education.

The five-year research project at Queensland on "Basic Physical Skills of Primary School Children" has now been completed. No other research projects have been undertaken.

The Adelaide Student Health Centre carried out medical examinations for 802 students in 1955. This is still the only student health centre to be established.



## AUSTRALIAN CAPITAL TERRITORY

In 1954, £1,256 and in 1955, £907 was allocated to sports and youth organizations in the A.C.T. for the purchase of equipment, development of coaching schemes and the extension of club and camp facilities.

The usual allocation of £250 per annum was made to the Department of the Interior for the conduct of Holiday Play Centres, and £375 per annum each to the Y.M.C.A. and Y.W.C.A.

In 1956, approval was given for the allocation of £10,000 to the Y.M.C.A. from the accumulated balances of the A.C.T. National Fitness Fund. The subsidy, to be used towards the erection of a central indoor recreation centre, will be made on a £-for-£ basis subject to the fulfilment of certain conditions as to the adequacy and general suitability of the building.

The centre is to be made available for the use of all youth and sports organizations in the A.C.T.

## NATIONAL HEALTH EDUCATION SEMINAR

The first Australian Seminar in Health Education took place in Canberra from 11th-21st January, 1955. The Seminar was organized on a Commonwealth-State basis, sponsored by the Commonwealth Department of Health in co-operation with the Western Pacific Regional Office of the World Health Organization.

Participants at the Seminar included personnel from State Health and Education Departments and University Departments of Physical Education.

Assistance in the organization of the Seminar was given by the Commonwealth National Fitness Officer, and funds were made available from the Central National Fitness Fund.

## ALLOCATION OF COMMONWEALTH NATIONAL FITNESS GRANTS

### TOTAL, £72,500 per year

	£
State National Fitness Councils .. .. .	36,954
State Education Departments .. .. .	17,000
Universities .. .. .	12,400
Central Administration .. .. .	3,396
Australian Capital Territory .. .. .	2,750
	<u>72,500</u>

## ALLOCATIONS TO STATE AGENCIES

£66,354

State.	Councils.	Universities.	Education Departments.	Totals.
New South Wales .. .. .	7,243	2,000	2,834	12,077
Victoria .. .. .	7,243	2,100	2,834	12,177
Queensland .. .. .	5,742	2,100	2,833	10,675
South Australia .. .. .	5,742	2,100	2,833	10,675
Western Australia .. .. .	5,742	2,100	2,833	10,675
Tasmania .. .. .	5,242	2,000	2,833	10,075



**DETAILS OF ALLOCATIONS TO STATE AGENCIES**  
**State National Fitness Councils—£36,954**

Item.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.
	£	£	£	£	£	£
1. Salaries and travelling expenses, Director and Assistant Director	1,750	1,750	1,500	1,500	1,500	1,500
2. Services to Associated Groups ..	2,000	2,000	1,500	1,500	1,500	1,500
3. Grants to voluntary Youth Organizations .. .. .	500	500	438	438	438	258
4. Subsidies to local National Fitness Committees .. .. .	750	750	654	654	654	384
5. Services to sports organizations ..	243	243	150	150	150	100
6. Development of camps and hostels	2,000	2,000	1,500	1,500	1,500	1,500
	7,243	7,243	5,742	5,742	5,742	5,242

**State Education Departments—Total, £17,000**

Item.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.
	£	£	£	£	£	£
1. Training of general teachers in physical education—						
(a) Short courses .. .. .	500	500	500	300	300	300
(b) Residential courses ..	500	500	500	500	500	500
2. Provision of bursaries to enable selected teachers to undertake university courses .. ..	..	..	..	600	600	600
3. Development of health and physical education in practising schools and Teachers' Colleges—						
(a) Equipment .. .. .	300	300	300	200	200	200
(b) Camps for teachers' college students .. .. .	250	250	250	150	150	150
4. Publications, films, records, &c. ..	484	484	484	483	483	483
5. Development of school camping and hostelling—						
(a) Equipment of camps and schools .. .. .	500	500	400	400	400	400
(b) School camping hostelling	300	300	200	200	200	200
Totals .. .. .	2,834	2,834	2,833	2,833	2,833	2,833

**Universities £12,400**

The six grants to the Universities for the conduct of specialist training courses are now the same for each University, viz. £2,000 per annum. With the appointment of a lecturer in physical education at the University of Tasmania, the Grant to that University was raised from £1,000 to £2,000 per annum. In addition four Universities, Melbourne, Queensland, Adelaide and Western Australia, continue to receive the special grant of £100 per annum for the development of activities for the general student body.

The Sydney Course is conducted as a Diploma Course at the Sydney Teachers' College, and not as a University Course. Therefore no special grant for activities for the general student body is allocated.



### Australian Capital Territory, £2,750

Development of activities in the Australian Capital Territory, £2,000.

Grant to Y.M.C.A. and Y.W.C.A., Canberra, £750.

## NURSING

### Study of Domiciliary Nursing, 1955

At the Thirty-eighth Session of the National Health and Medical Research Council held in Canberra 18th-19th November, 1954, a resolution arising out of the recommendation of the Public Health Committee was carried that the Commonwealth Department of Health undertake in each State a special study to assess—

- (a) The extent to which domiciliary nursing is employed, and the need and opportunity for expanding existing services and the probability of their future development or otherwise;
- (b) the extent to which these nurses are at present trained in social services and preventive medicine;
- (c) the scope of special training in social services, and preventive medicine required or desirable in these matters.

The study was commenced in February, 1955, and an interim report was submitted to the Public Health Committee of the National Health and Medical Research Council, May, 1955.

### Survey of Nursing Services—Repatriation Commission, 1955

At the request of the Chairman of the Repatriation Commission on January 12, 1955, the services of the Principal, Division of Nursing, were made available to conduct a survey into certain aspects of the nursing service of that Department. The fields covered in this survey were as follows:—

- (i) Recruitment.
- (ii) Staffing, particularly in regard to the use of nurses, and nursing aides, male and female.
- (iii) Organization.
- (iv) Training.
- (v) Accommodation.
- (vi) Consideration of a home nursing service.

A report was submitted to the Chairman of the Repatriation Commission on September 26, 1955.

### Committee on Nursing

At the Thirty-eighth Session of the National Health and Medical Research Council held in Canberra on November 18, 1954, a Committee on Nursing was established to study nursing problems. The Committee held its first meeting 27th-28th October, 1955, the second on 12th-13th April, 1956, and its third on 30th-31st August, 1956.

Following each meeting a report has been submitted to the National Health and Medical Research Council.



### Programmes of study arranged for Colombo Plan and W.H.O. Students

During the years 1954-55 and 1955-56, programmes of study have been arranged for graduate and under-graduate nurses coming to Australia under the Colombo Plan and the World Health Organization. For some of the graduate nurses, two formal courses of study have been arranged during the years 1955-56, as well as hospital experience. Hospital experience has been arranged for others following formal courses. The number of graduate and under-graduate nurses who have commenced study programmes during 1954-55 and 1955-56 are as follows:—

—			1954.	1955.	1956.	Total.
Graduate Nurses (Colombo Plan)	..	..	..	30	18	48
Under-graduate (Colombo Plan)	..	..	..	14	41	55
Graduate Nurses (W.H.O.)	..	..	3	5	1	9

### Survey of Nursing Services—Canberra Community Hospital, 1956

On November 28, 1955, the Chairman, Canberra Community Hospital Board, requested that the services of the Principal, Division of Nursing, be made available to conduct a survey into nursing services at the Canberra Community Hospital. The fields covered in this survey were as follows:—

- |                  |                     |
|------------------|---------------------|
| (i) Recruitment. | (iv) Organization.  |
| (ii) Staffing.   | (v) Food Service.   |
| (iii) Training.  | (vi) Accommodation. |

This survey was carried out during the period January 16 to July 31, 1956, and a report was submitted to the Chairman of the Hospital Board.

## INSTITUTE OF ANATOMY

The Institute has had constructed eight travelling display cases for the display of material in various exhibitions throughout the Commonwealth. The first of these travelling exhibits was one relating to dental health, displayed at the Dental Health Week held in Sydney during 1955; at the Festival of Youth, Cootamundra; and at Health Week Exhibition, Tamworth, 1956.

Progress has also been made with the design and construction of a Hearing and Speech exhibit at the Institute itself. This exhibit will include apparatus by means of which visitors to the Institute can test their own hearing efficiency.

The Northern Museum, which was re-arranged by the late Professor F. Nadel and Mrs. Nadel, now displays part of the collection of bark paintings collected by Mr. Mountford during the Joint National Geographic-Australian Government Expedition to Arnhem Land in 1948. The total collection of paintings, which numbers 273, has been photographed in 5" x 4" colour transparencies which are filed at the Institute. One hundred and forty-four paintings of this collection have been handed over to the Art Galleries Association of Australia, for allocation to art galleries in each of the States of the Commonwealth.



## NUTRITION

Work carried out in the field of nutrition by the Nutrition Section of the Department during the years 1954-56 included the following:—

- (a) A new edition of "Tables of Composition of Australian Foods" was compiled and printed.
- (b) Analyses of the sodium and potassium content of a large number of Australian foods were made, as well as a survey of the protein content of Australian rice. Analyses of a number of samples of salt produced in New Guinea villages were also made for mineral constituents, including iodine.
- (c) Field investigations into certain aspects of nutrition in the Territory of Papua and New Guinea were carried out.
- (d) Pamphlets relating to nutrition were prepared and printed. (See list.)

The Medical Officer-in-charge is also a member of the following committees of the National Health and Medical Research Council:—Nutrition Committee; Goitre Sub-committee; Fluoridation Advisory Panel of the Dental Research Advisory Committee; Health Education Committee.

### METABOLIC STUDIES—BILE STEROIDS

Studies are proceeding on the nature and properties of steroid hormones and their metabolites secreted in bile. It has been found that bile both from pregnant cows and from steers contains steroidal material which appears to have sodium-retaining properties when injected into groups of adrenalectomised rats. Preliminary work indicates that the sodium-retaining activity of bile may be due to a steroid with -ketol and -unsaturated ketone groupings, which when isolated by paper chromatography has a mobility in the toluol-propylene glycol system, one-third the rate of hydrocortisone. Further work is in progress to establish the chemical identity of the steroid or steroids responsible for this sodium-retaining activity. As there is ample opportunity for the reabsorption of bile components (including steroids), it is possible that material of biliary origin may have physiological significance, and that the extent of the reabsorption may be influenced by dietary factors.

A parallel study is being carried out into the nature of the changes in the -unsaturated, -ketolic steroids (mineralocorticoids) in the blood during pregnancy.

### PUBLICATIONS

Commonwealth of Australia, Department of Health.

FOOD AND NUTRITION NOTES AND REVIEWS (1955) 12: Nos. 7-12.

Ibid. (1956) 13: Nos. 1-6.

Commonwealth of Australia, Department of Health (1955).

KEEP FIT WITH FOOD (pamphlet).

Ibid. (1956).

HEALTHY TEETH FOR YOUR CHILDREN (reprint pamphlet).

NOTES ON SPECIAL DIETS FOR USE IN HOSPITALS (booklet).

SIMPLIFIED FOOD COMPOSITION TABLES (booklet).

SODIUM RESTRICTED DIETS AND THE SODIUM CONTENT OF FOODS (booklet).

CHEMICAL COMPOSITION OF NEW GUINEA NATIVE SALT SAMPLES (report).



Hipsley, Eben H. (1955), A NEW METHOD FOR PREVENTING GOITRE IN CANBERRA—THE USE OF IODISED SALT IN BREAD BAKING. *Med. J. Aust.*, March 31, page 532.

Hipsley, Eben H. (1955), SMOKING AND LUNG CANCER. *Health*, vol. 5, number 2, page 53.

Hipsley, Eben H. (1956), THE USE OF MEASUREMENTS OF SKINFOLD THICKNESS. *Food and Nutrition Notes and Reviews*, vol. 13, page 41.

Hipsley, Eben H. (1956), ADRENOCORTICAL METABOLISM IN NORMAL AND TOXAEMIC PREGNANCY—WITH AN INVESTIGATION OF THE EXCRETION OF ADRENOCORTICAL HORMONES AND RELATED COMPOUNDS IN BOVINE BILE. (Thesis.)

Osmond, Anita, and Wilson, Winifred (1955), TABLES OF COMPOSITION OF AUSTRALIAN FOODS, Edit. 2. Commonwealth Department of Health.

Wills, Pamela A., and Wilson, Winifred (1956), THE PROTEIN CONTENT OF AUSTRALIAN RICE. *Aust. Journ. of Science*, vol. 18, page 161.

Wills, Pamela A. (1956), SODIUM AND POTASSIUM IN AUSTRALIAN FOODS. *Aust. J. Exper. Biol. & Med. Sc.* 34: page 165.

Wilson, Winifred (1955), REPORT OF NUTRITION INVESTIGATIONS IN TERRITORY OF PAPUA AND NEW GUINEA CARRIED OUT 8TH JUNE-7TH AUGUST, 1955. Commonwealth Department of Health.

## RESEARCH INTO DIABETES AND ENZYMES

During the year 1955, research has been continued on the subjects outlined in the previous report. It has been firmly established that rats which are fed dinitrophenol (DNP) lose weight and excrete excessive amounts of nitrogen. The increased excretion of nitrogen indicates that breakdown of protein exceeds synthesis of new protein. Injection of insulin alone into DNP poisoned rats brings about fatal and uncontrollable hypoglycemia, but combined treatment with insulin, glucose and hypophyseal growth hormone will bring about an increase in body weight comparable to that shown by normal controls. This increase in body weight is accompanied by positive nitrogen balance, indicating synthesis of new protein. DNP is known to uncouple respiration from esterification of inorganic phosphate to high energy organic phosphates, and since high energy organic phosphates such as adenosine triphosphate provide energy for endergonic metabolic syntheses such as protein synthesis, it has been concluded that insulin and growth hormone increase the rate of esterification of inorganic phosphate.

This portion of the work is now complete and has been accepted for publication by the Royal Society of London.

The second line of research mentioned in the previous report has yielded fruitful results. It was reported that uric acid could be oxidized by the peroxidase activity of cytochrome C under acid conditions. It was thought that the end-product under these conditions might be the diabetogenic substance alloxan, but the product identified was non-diabetogenic allantoin. A few months ago a report appeared in Sweden to the effect that when uric acid is oxidized with hydrogen peroxide as the hydrogen acceptor and the pH is lowered to 1.0-2.0, the primary intermediate formed is decomposed to alloxan. I have confirmed this observation with the cytochrome C peroxidase system. However in view of the very low pH needed to decompose the primary oxidation product it



seems unlikely that alloxan could be formed in the somatic tissues of the body. However the stomach is a possible site of formation of alloxan since pH as low as 1.0 is regularly encountered there. The enzymes necessary for formation of alloxan from uric acid occur in uncooked food such as milk, fresh vegetables, fruit, &c. For example, milk contains xanthine oxidase, which converts xanthine to uric acid and hydrogen peroxide, and lactoperoxidase which can transfer hydrogen from uric acid to the hydrogen peroxide. The pH of the gut would then convert the oxidized uric acid to alloxan. Furthermore it is known that alloxan is effectively diabetogenic when fed by mouth. Such a mechanism could conceivably operate over a long period and produce diabetes in a subject susceptible to alloxan; one with low blood glutathione for example.

This hypothesis is being tested at present in rats fed a diet calculated to lower blood glutathione, and to form alloxan from xanthine in the manner outlined above.

During 1956 further work on the interrelationship of insulin and oxidative phosphorylation has been carried out in collaboration with Dr. Gilmour, an officer of the C.S.I.R.O. This has involved a study of the effect of 2-4 dinitrophenol on myosin, the enzyme responsible for muscular contraction, and of the effect of insulin on dinitrophenol. The different behaviour of the enzyme at 0° C. and 25° C. under the influence of these two compounds has led to the theory that the enzyme is polymerized to form a large molecule at 25° but at low temperature the enzyme is depolymerized. It is considered that the 25° C. enzyme is an artefact and that the 0° enzyme approximates the in-vivo enzyme. Further studies are in progress.

## PUBLICATIONS

(1) GROWTH PROMOTING EFFECTS OF INSULIN IN HYPOPHYSECTOMISED AND DIETHYLSTILBOESTROL-TREATED RATS, AND IN RATS FED 2-4 DINITROPHENOL. *Proc. Roy. Soc., Sec. B.*, London, 1956.

(2) DIABETOGENIC PROPERTIES OF OXIDATION PRODUCTS OF URIC ACID. (In preparation.)

## THERAPEUTIC SUBSTANCES

The commencing date for the operation of the *Therapeutic Substances Act* 1953 and Regulations, Parts I, III and IV thereof, was February 1, 1956. Part II of the Regulations was subsequently brought down on August 1, 1956.

The purpose of the Act is to control standards of therapeutic substances imported into Australia, traded interstate, or exported from Australia. Also, to control the standard of therapeutic substances supplied in the form of pharmaceutical benefits, and to the Commonwealth Government.

The standards to be adopted are those fixed by the British Pharmacopoeia, the British Pharmaceutical Codex or by Regulation.

The Regulations are in relation to packaging and labelling, the appointment of laboratories, power of authorized officers to enter and take samples, and also the constitution of various committees. One committee is the Therapeutic Substances Advisory Committee. This committee consists of the Director-General of Health, the Commonwealth Analyst and six members of various trade organizations. The other is the Therapeutic Substances Standards Committee



which shall advise the Minister on technical details. The Director-General of Health is Chairman. Other members are the Commonwealth Analyst and four members appointed by the Minister.

## EPIDEMIOLOGY

Collections of epidemiological information have continued from the source indicated on page forty-six of the report for the year ended June 30, 1954. Statistical tables are set out below:

TABLE I

Diseases notifiable in each State and Territory of Australia and number of cases reported during the year ended 31st December, 1955

Disease.	N.S.W.	Victoria.	Q'land.	S.A.	W.A.	Tas.	A.C.T.	N.T.	Aust.
Acute Rheumatism	202	127	178	16	39	*	..	5	567
Amoebiasis ..	*	3	5	1	9	1	..	2	21
Ancylostomiasis ..	18	3	265	1	1	..	..	25	313
Anthrax ..	*	..	..	..	..	..	..	..	..
Bilharziasis ..	*	..	..	..	..	..	..	..	..
Brucellosis ..	5	23	4	3	5	1	..	..	41
Chorea ..	25	16	*	1	4	*	..	..	46
Dengue ..	..	..	*	..	..	*	..	..	..
Diarrhoea, Infantile	277	690	222	7	30	3	31	8	1,268
Diphtheria ..	140	167	68	26	480	3	..	8	892
Dysentery, Bacillary	*	137	206	63	127	12	3	2	550
Erythema Nodosum	..	21	2	6	..	..	..	..	29
Encephalitis ..	30	49	4	29	..	2	1	..	115
Filariasis ..	*	..	..	..	..	..	..	..	..
Homologous S. Jaundice ..	*	..	*	..	..	*	..	..	..
Hydatid ..	*	11	*	..	1	16	..	..	28
Infective Hepatitis..	2,489	3,770	*	502	254	27	17	17	7,076
Lead Poisoning ..	*	..	24	3	3	*	..	..	30
Leprosy ..	..	2	6	..	29	..	..	2	39
Leptospirosis ..	2	..	191	..	..	*	..	..	193
Malaria ..	..	12	..	..	5	..	..	56	73
Meningococcal Infection ..	128	105	53	10	13	18	..	1	328
Ophthalmia ..	*	*	*	..	35	..	..	..	35
Ornithosis ..	1	2	*	..	..	*	..	..	3
Paratyphoid ..	5	2	..	..	4	..	..	..	11
Poliomyelitis ..	222	235	190	182	33	7	1	4	874
Puerperal Fever ..	43	4	48	1	5	1	..	..	102
Rubella ..	*	2,345	14	179	227	*	2	..	2,767
Salmonella Infection	*	*	*	4	58	*	..	6	68
Scarlet Fever ..	619	1,003	716	289	68	14	..	..	2,709
Tetanus ..	*	20	25	5	9	*	..	2	61
Trachoma ..	*	2	*	..	1,471	*	..	..	1,473
Trichinosis ..	*	*	*	..	..	*	..	..	..
Tuberculosis ..	1,909	967	748	327	440	163	2	46	4,602
Typhoid Fever ..	12	14	10	1	13	2	..	5	57
Typhus (flea, mite or tick borne) ..	7	..	55	1	22	..	..	..	85

\* Not notifiable.

NOTE.—No case of Cholera, Plague, Smallpox, Epidemic Typhus or Yellow Fever.



TABLE II  
TUBERCULOSIS STATISTICS—AUSTRALIA  
Source of Report  
1954-55 and 1955-56

Source.	Number.		Source.	Number.	
	1954-55.	1955-56.		1954-55.	1955-56.
<i>New South Wales</i>			<i>Western Australia</i>		
Private Practitioner ..	250	495	Mass Survey ..	205	215
Chest Clinic ..	482	136	Private Practitioner via P.C.C. ..	86	64
Sanatorium ..	41	8	Private Practitioner ..	68	47
Other Hospitals ..	179	196	Repatriation Hospital ..	37	18
Death Certificate ..	141	136	Other Hospitals ..	57	42
Repatriation ..	150	47	Transfers In ..	..	23
Mass Survey ..	839	684	Sanatorium ..	2	1
Other ..	5	81	Clinic ..	10	7
	2,087	1,783	Post-mortem ..	..	1
			Death Certificate ..	5	6
			Mental Hospital ..	..	12
				470	436
<i>Victoria</i>			<i>Tasmania</i>		
State Clinics and Institutions (other than Mass X-ray Surveys) ..	526	332	Private Practitioner ..	25	25
Mass X-ray Surveys ..	288	278	Chest Clinic ..	28	30
Public Hospitals ..	88	123	Public Hospital ..	80	54
Private Practitioners ..	97	99	Mass X-ray Survey ..	57	84
Repatriation ..	68	102	Repatriation Hospital ..	2	10
	1,067	934	Government Medical Officer	1	3
				193	206
<i>Queensland</i>			<i>Australian Capital Territory</i>		
Chest Clinic ..	221	235	Health Department ..	2	4
General Hospital ..	285	231	Private Practitioner ..	1	3
Repatriation ..	29	38	Canberra Hospital ..	2	..
Private Practitioner ..	85	76		5	7
Thursday Island ..	22	9			
Sanatorium ..	30	45			
Death Certificate ..	43	29			
Post-mortem ..	6	21			
Palm Island ..	..	1			
Cherbourg Aboriginal ..	4	..			
	725	685			
<i>South Australia</i>			<i>Northern Territory</i>		
Chest Clinic ..	144	168	Health Department ..	71	47
Private Practitioner ..	37	32		71	47
Mass X-ray Survey ..	66	47			
Sanatorium ..	23	15			
Hospitals ..	25	35			
Repatriation Hospital ..	21	23			
Registrar of Deaths ..	6	2			
	322	322			



TABLE IIA  
TUBERCULOSIS STATISTICS 1954-1955  
New Cases Notified

Age Group.	New South Wales.		Victoria.		Queensland.		South Australia.		Western Australia.		Tasmania.		Northern Territory.		Australian Capital Territory.		Commonwealth.		Total.
	Males.	Fe- males.	Males.	Fe- males.	Males.	Fe- males.	Males.	Fe- males.	Males.	Fe- males.	Males.	Fe- males.	Males.	Fe- males.	Males.	Fe- males.	Males.	Fe- males.	
0-4	7	30	20	17	9	11	8	4	12	5	3	4	1 (1)	..	..	..	60	71	131
5-9	4	8	17	13	4	4	6	2	4	2	1	1	2 (2)	1 (1)	..	..	38	31	69
10-14	5	3	9	7	3	2	2	1	1	2	2	3	..	2 (2)	..	..	22	20	42
15-19	21	33	23	39	12	10	4	15	7	12	10	8	1 (1)	1 (1)	..	..	78	118	196
20-24	53	74	50	52	17	27	12	18	10	14	8	12	4 (3)	5 (4)	..	..	154	202	356
25-29	85	106	60	60	25	25	18	11	20	23	14	11	2	3 (3)	2	..	226	239	465
30-34	101	91	69	53	41	32	21	24	30	16	8	9	5 (4)	2 (2)	..	..	275	227	502
35-39	125	110	62	35	31	32	14	11	27	14	9	9	5 (2)	..	..	..	273	211	484
40-44	119	64	58	22	41	24	25	15	37	15	10	3	6 (3)	..	1	..	297	143	440
45-49	132	66	66	19	37	13	15	9	30	10	6	7	3 (1)	1 (1)	..	..	289	125	414
50-54	144	32	69	10	43	12	16	8	45	11	13	4	1	1	..	..	331	78	409
55-59	144	31	67	10	49	14	13	4	29	9	7	4	3 (1)	..	2	..	314	72	386
60-64	141	36	55	6	42	9	12	1	30	4	4	1	3	3 (2)	..	..	287	60	347
65-69	102	26	30	10	42	10	12	4	20	1	7	4	5 (2)	..	..	..	218	55	273
70-74	86	20	27	9	30	3	5	3	10	2	3	3	1	1 (1)	..	..	162	41	203
75 ..	68	8	14	3	22	2	7	2	8	5	2	3	..	..	..	..	121	23	144
Not stated	6	6	2	4	37	10	..	..	3	2	..	..	6 (4)	3 (3)	..	..	54	25	79
Total ..	1,343	744	698	369	485	240	190	132	323	147	107	86	48	23	5	..	3,199	1,741	4,940
	2,087		1,067		725		322		470		193		71		5		4,940		

Figures in brackets are Aboriginal native patients.



TABLE IIb  
TUBERCULOSIS STATISTICS 1955-56  
New Cases Notified

Age Group.	New South Wales.		Victoria.		Queensland.		South Australia.		Western Australia.		Tasmania.		Northern Territory.		Australian Capital Territory.		Commonwealth.	
	Males.	Fe- males.	Males.	Fe- males.	Males.	Fe- males.	Males.	Fe- males.	Males.	Fe- males.	Males.	Fe- males.	Males.	Fe- males.	Males.	Fe- males.	Males.	Fe- males.
0-4	27	20	13	7	8	6	8	16	5	7	2	1	1 (1)	..	..	..	63	58 (1)
5-9	6	6	11	13	3	1	5	4	3	4	4	1	1 (1)	..	..	..	33 (1)	30
10-14	4	9	9	7	..	3	1	7	..	1	1	1	2 (2)	..	..	1	17 (2)	29
15-19	23	28	17	36	3	10	6	9	4	4	10	12	..	..	..	..	63	101 (2)
20-24	41	49	37	27	11	15	12	16	10	14	13	13	3 (2)	..	..	1	127 (2)	138 (3)
25-29	79	78	49	57	30	31	12	20	26	16	15	8	1 (1)	..	..	..	212 (1)	212 (1)
30-34	86	76	64	35	30	36	19	13	22	18	12	10	1 (1)	..	..	..	234 (1)	188
35-39	108	68	58	27	27	26	15	12	20	15	5	5	3 (2)	..	2	..	238 (2)	153
40-44	132	57	63	34	45	21	22	4	25	14	7	8	..	..	1	..	295	139 (1)
45-49	128	44	58	15	43	11	19	9	35	13	11	3	3 (1)	..	..	..	297 (1)	95
50-54	123	32	77	14	45	13	18	6	41	10	14	4	..	..	..	..	318	81 (1)
55-59	134	25	52	13	52	6	14	7	25	12	7	3	1	..	..	..	285	66
60-64	118	24	45	4	53	6	16	1	17	4	6	4	4 (1)	..	..	..	259 (1)	44 (1)
65-69	109	13	33	3	45	10	11	..	22	7	5	4	2	..	1	..	228	37
70-74	50	18	18	2	26	10	9	2	15	3	6	3	1	..	1	..	126	38
75 and over	47	20	22	7	21	8	5	4	19	3	6	2	..	..	..	..	120	44
Not stated	1	..	..	..	25	5	..	..	1	1	..	..	..	..	..	..	27	6
Total	1,216	567	626	301	467	218	192	130	290	146	124	82	22 (11)	13 (11)	5	2	2,942 (11)	1,459 (11)
	1,783		927		685		322		436		206		35 (22)		7		4,401 (22)	

Figures shown ( ) represent numbers of aboriginal and half-caste cases included in totals.



TABLE III  
POLIOMYELITIS STATISTICS—AUSTRALIA  
Showing Age and Sex, Type of Disease, year ended June 30, 1955

Age Group,	Paralytic.				Non-Paralytic.		Bulbar.				Nature not Stated.	Total.
	Respirator.		No Respirator.		Fatal.	Not Fatal.	Respirator.		No Respirator.			
	Fatal.	Not Fatal.	Fatal.	Not Fatal.			Fatal.	Not Fatal.				
Males												
0-1	..	..	..	10	1	4	..	..	..	2	2	17
1-4	..	..	1	126	..	36	..	..	..	1	2	168
5-9	..	1	1	91	..	68	..	..	..	5	2	168
10-14	..	1	1	58	..	35	..	..	..	1	4	100
15-19	..	..	..	35	..	12	..	..	..	..	3	50
20-24	..	3	1	29	..	15	..	1	..	..	2	51
25-29	..	2	1	34	..	16	..	..	..	..	1	56
30-34	..	..	1	21	..	3	..	..	..	..	2	27
35-39	..	1	..	17	..	3	..	..	..	..	..	21
40-44	..	1	..	10	..	3	..	..	..	1	..	15
45	..	..	..	5	..	5	..	1	..	..	..	11
Not stated	..	..	..	3	..	..	..	..	..	..	3	6
Total	..	4	7	439	1	200	..	2	3	7	21	690
Females												
0-1	..	..	..	12	..	2	..	..	..	..	..	14
1-4	..	..	..	89	..	17	..	..	..	2	3	114
5-9	..	2	1	57	..	18	..	1	3	4	1	88
10-14	..	1	..	41	..	18	..	..	..	..	2	62
15-19	..	..	..	40	..	12	..	..	..	1	2	55
20-24	..	1	..	33	..	10	..	1	..	..	..	46
25-29	..	2	2	39	..	10	..	..	3	..	1	57
30-34	..	..	..	35	..	6	..	..	1	..	2	46
35-39	..	1	..	12	..	..	..	..	1	..	..	14
40-44	..	..	..	4	..	1	..	..	..	..	..	5
45	..	..	..	2	..	1	..	..	..	..	..	3
Not stated	..	..	..	5	..	..	..	..	..	..	..	5
Total	..	4	8	369	..	95	..	1	10	7	11	509
Total all Cases	..	8	15	808	1	295	1	3	13	14	31	1,199



TABLE IIIA  
**POLIOMYELITIS STATISTICS**  
**Total all Persons 1954-1955**

Age Group.				Number.
0-1	..	..	..	31
1-4	..	..	..	282
5-9	..	..	..	256
10-14	..	..	..	162
15-19	..	..	..	105
20-24	..	..	..	97
25-29	..	..	..	113
30-34	..	..	..	73
35-39	..	..	..	35
40-44	..	..	..	20
45 ..	..	..	..	14
Not stated	..	..	..	11
Total	..	..	..	1,199

TABLE IIIb  
**POLIOMYELITIS STATISTICS**  
**Summary**

State.				Males.	Females.	Total.
New South Wales	..	..	..	162	103	265
Victoria	..	..	..	276	190	466
Queensland	..	..	..	135	112	247
South Australia	..	..	..	85	75	160
Western Australia	..	..	..	21	23	44
Tasmania	..	..	..	10	6	16
Australian Capital Territory	..	..	..	1	..	1
Northern Territory	..	..	..	..	..	..
Total	..	..	..	690	509	1,199



## TERRITORY HEALTH

### AUSTRALIAN CAPITAL TERRITORY

#### PUBLIC HEALTH

In the two years under review, the water supply was kept under constant supervision. Forty-four chemical and 100 bacteriological samples were taken for analysis in 1954-55 and thirty-two chemical and 104 bacteriological samples in 1955-56.

Milk delivery and treatment was also constantly supervised. Tests made, included 281 (1954-55) and 193 (1955-56) samples for chemical investigation and 444 (1954-55) and 280 (1955-56) for bacteriological examination.

Inspections were made regularly of shops, cafés, boarding houses and hotels.

Infectious diseases which were notified during the two years included:—

Infectious Diseases.						1954-55.	1955-56.
Acute rheumatism	..	..	..	..	..	..	1
Diarrhoea Infantile	..	..	..	..	..	30	23
Infective Hepatitis	..	..	..	..	..	57	40
Meningococcal infection	..	..	..	..	..	1	1
Poliomyelitis	..	..	..	..	..	2	13
Rubella	..	..	..	..	..	7	2
Scarlet fever	..	..	..	..	..	1	10
Pulmonary tuberculosis	..	..	..	..	..	4	4
Bacillary dysentery	..	..	..	..	..	12	..
Puerperal fever	..	..	..	..	..	2	..
Diphtheria	..	..	..	..	..	3	..

#### CHILD HEALTH

##### Medical Examinations

School: During 1954-55 and 1955-56 respectively, 2,510 and 2,193 school children were examined. Of these, 195 required treatment for defects in 1954-55 and 267 in 1955-56.

Pre-school: 466 (1954-55) and 505 (1955-56) pre-school children were also examined. Children were accompanied by parents and guardians, and verbal advice regarding the supervision of defects was undertaken.

Infants and Toddlers: 236 (1954-55) and 227 (1955-56) interviews were given at baby health centres.

##### Diphtheria Immunization

School: Diphtheria immunization was introduced in schools in October, 1954. Between then and March, 1955, 2,304 children were immunized; this included first treatment and "booster". In 1955-56 sixty-seven children were initially immunized and 348 children were given "booster" doses.

Pre-school: In 1954-55, 172 children under the age of five were immunized at Infant Welfare Centres.



**Infants and Toddlers:** Since March, 1955, Triple Antigen has been available, and during 1955-56, 395 infants and young children were given Triple Antigen at Baby Health Centres.

### Dental Services

Over 4,000 children were examined in 1954-55. This increased to 4,700 in 1955-56, during which year a new clinic was put into operation in Yarralumla.

### Free Milk

Over 4,000 children in 1954-55 and just over 5,000 in 1955-56 attending 19 schools in the A.C.T. received one-third of a pint of milk per day.

### Mothercraft Centres and the District Nursing Service

Seven main suburban Mothercraft Centres and nine subsidiary centres have been in operation over the last two years. These centres are now staffed by six Sisters.

Home visiting covers new born babies, country families and miscellaneous cases. The following work was recorded for the two years:—

	1954-55.	1955-56.
Home visits .. .. .	2,721*	3,497
Children under 2 years .. .. .	1,866	2,105
Expectant mothers .. .. .	209	197

\* 668 of these to new-born babies.

### DISTRICT NURSING SERVICE

The following work was done by the Canberra District Nursing Service:—

Year.	No. of Patients.	No. of Visits.
1954-55 .. .. .	2,507	9,816
1955-56 .. .. .	3,412	13,354

### VETERINARY SERVICES

During 1955-56, many of the field problems which required the veterinary services of the Department were directly or indirectly related to the very high rainfall and particularly cold weather experienced firstly in August, 1955, and more recently in June, 1956.

Foot ailments were particularly bad, and contagious footrot was introduced into many properties. While the land remained waterlogged the usual cure used to eradicate this disease, was unsuccessful. In all cases where the condition



of the stock would permit, stock owners who had this complaint diagnosed, were advised to send their infected stock to the abattoirs for slaughter. Other forms of lameness which occurred during this wet year included, foot abscess, shelly hoof and also scald.

Lamb losses were heavy in August, 1955, and again, with those who lambed early, in June, 1956, due to exposure and pneumonia. Losses also occurred through sheep being unable to move about because of the prevalent crippling diseases, and thus developing pregnancy toxæmia as lambing approached.

Seasonal conditions also favoured the development of wool rot, mycotic dermatitis, and internal parasites with serious loss from haemonchosis continuing well into May.

### **Veterinary Extension Services**

During both years veterinary advice was given to stock owners on well proven, as well as recent developments in prophylactic stock and herd treatments for sheep, cattle and poultry diseases occurring endemically in this region, along with appropriate remedial measures for affected herds and flocks as needed.

Many visits were made to properties to ascertain the nature of disease or the cause of mortalities, and pastures and stock were inspected preparatory to giving advice on sheep, cattle and poultry feeding. Advice and treatment was provided to the Commonwealth Security Services Alsatian Kennels and talks were given on veterinary matters, to Security Service Officers attending the Dog Handlers' Courses.

A number of field days held on hydatids, liver fluke and foot rot were well attended. In 1955-56, a film on "Footrot and Foot Abscess" was shown, followed by practical demonstrations on affected sheep. A larger audience was also reached through the several radio broadcasts which were given on hydatids and footrot.

### **Notifiable Diseases**

Diagnosis and advice were given for the following diseases:—Actinomycosis, Blackleg, psittacosis, tuberculosis, contagious footrot, contagious mastitis, mycotic dermatitis, entero-toxæmia, infestations with sheep ked, sheep lice and psorergates ovis.

### **Mortalities**

Advice was given to stockowners concerning mortalities from the following causes:—

1954-55: Coccidiosis, ascaridiasis, avitaminosis, neurolymphomatosis, gas gangrene, renal calculi, black disease, traumatic pericarditis, wheat engorgement, heliotrope poisoning and lamb losses.

1955-56: Hypocalcaemia, pregnancy toxæmia, heliotrope and copper syndrome poisoning, bloat, haemonchosis, trichostrongylosis, acute fluke, clover induced prolapse, exposure, pneumonia in ewes, boggabri poisoning, stagger weed poisoning, rock fern poisoning, coccidiosis, and black head in fowls and turkeys, staphylococcal septicaemia in canaries (suspected psittacosis) and leucosis in fowls.



### Dairy and Piggery Control

Inspections were made of dairies and piggeries within the Australian Capital Territory to ensure that a high standard of cleanliness was maintained.

Dairy stock were examined periodically and diseased animals were isolated from the herds. All bovines on registered dairies, being 3,975 in 1954-55 and 2,756 in 1955-56, were tuberculin tested. Of these, only two animals in each year had a positive reaction. All female calves, 326 in 1954-55 and 374 in 1955-56, were inoculated with Strain 19, *Brucella abortus* vaccine.

### Examination of Milk

Five hundred and forty-six (1954-55) and 317 (1955-56) samples of milk were collected by Veterinary Officers during dairy inspections and by Health Inspectors from dairy cans, milk depot vats and cans, vendors' containers, &c. These samples were subsequently bacteriologically examined, and the following tests performed:—

Direct Microscopic Individual and Clump Counts, Standard Plate Count, Coliform Count, Laboratory Pasteurization, and Methylene Blue Test.

### Abattoir

Plans for the extension of the Canberra Abattoir, which is the source of chilled meats for both the Australian Capital Territory and surrounding areas of New South Wales are still in progress. When planned additions are completed the capacity of the Abattoir will be approximately doubled. The number of stock slaughtered in the two years were—

No. of Stock.							1954-55.	1955-56.
Oxen .. .. .	..	..	..	..	..	..	6,754	6,011
Cows .. .. .	..	..	..	..	..	..	478	920
Calves .. .. .	..	..	..	..	..	..	1,476	1,198
Pigs .. .. .	..	..	..	..	..	..	4,799	4,295
Lambs and Sheep .. .. .	..	..	..	..	..	..	67,787	69,451

All meat is inspected by qualified Meat Inspectors in accordance with Commonwealth standards. Total condemnations remained low, but liver condemnations remained high due to the persistence of liver fluke and hydatid cysts in this area.

By-products which are a major source of revenue for the Abattoir were produced in the two years. They included, osatein stock feeding meal, blood and bone fertilizer, sterilized bone meal, tallow, horns, hooves, hair, sinews, sausage runners and glue pieces.

### Survey of the Incidence of Hydatids

In association with the Faculty of Veterinary Science, University of Sydney, a survey was carried out on the incidence of hydatid tape worms in rural dogs within the Australian Capital Territory. This work confirmed that in spite of appropriate propaganda over the past thirty years, there has been no diminution in the incidence of hydatids in sheep, and rural dogs are at least as great a danger to humans to-day, as they were then.



## CANBERRA COMMUNITY HOSPITAL

Details of the activities of the Canberra Community Hospital are given in the annual report of the Chairman of the Board. A statistical summary of the activities for the two years ended June 30, 1955, and June 30, 1956, is given below:—

### STATISTICAL SUMMARY

	1954-55.	1955-56.
Total number of daily occupied beds .. .. .	51,245	54,174
Daily average number of patients .. .. .	140	154
Total number of births .. .. .	869	1,008
Total number of deaths .. .. .	94	118
Total number of major operations.. .. .	483	559
Total number of minor operations .. .. .	2,921	3,718
Out-patients—		
Total number of out-patients treated .. .. .	7,661	5,383
Total number of treatments .. .. .	18,406	12,709
X-ray Department—		
Number of examinations .. .. .	7,626	10,061
Number of examinations (miniature machine) .. .. .	..	6,200
Ambulance Service—		
Number of calls attended .. .. .	1,831	1,418
Number of miles travelled .. .. .	20,935	16,523
Physiotherapy Department—		
Number of patients .. .. .	1,620	2,207
Number of treatments .. .. .	9,879	13,868
Dental Clinic—		
Number of patients treated .. .. .	454	3,141
Number of treatments .. .. .	2,528	3,141
Pre-and post-natal Clinic—		
Number of patients attending .. .. .	878	768
Number of attendances .. .. .	5,429	4,940

## NORTHERN TERRITORY

The Commonwealth Department of Health occupies a unique position with regard to the Northern Territory. It has been the responsibility of the Department since 1939, except for the six-year period during the war, to build up a comprehensive and efficient range of hospital, medical and health services in line with the development and population of the Territory.

In the short period from 1954 to 1956 the population of the Territory increased from 16,452 at June 30, 1954, to 18,297 at June 30, 1956. This marked increase in population parallels the increase in activity resulting from the further discovery of deposits of uranium and other minerals of economic significance in the Northern Territory.

The rate of development over the last two years has required the extension and development of the health services and commitments in the Territory and has brought new medical problems in its wake.



## **HOSPITAL AND MEDICAL SERVICES**

### **Hospitals**

The Department maintains four hospitals in the Northern Territory, at Darwin, Alice Springs, Tennant Creek and Katherine. In addition, the Department staffs the small Batchelor Hospital built by private enterprise at the Rum Jungle project, and the native hospital attached to the Bagot Native Compound, Darwin.

The Batchelor Hospital, built by Territory Enterprise Pty. Ltd., was occupied by the Department on January 24, 1955. Structural additions which have been commenced at the other hospitals include an Obstetrics Block and Out-patients Department at Darwin, a new Nurses Home at Alice Springs, a Native Ward at Katherine and an Obstetric Unit at Tennant Creek.

Charges for hospitalization were introduced in Northern Territory hospitals in October, 1955.

The Table on the following page shows in detail the work done and the health services provided at the four main hospitals, and comparison with similar figures for 1953-54.

### **Medical Services**

As well as the services provided at the hospitals, medical officers undertake a routine scheduled service by car and aeroplane to the outlying areas of the Territory. A fully qualified surgeon specialist is attached to the Darwin Hospital who is available to proceed to other centres in the Territory when necessary, but in general and because of the efficient ambulance service patients are brought to the base hospital in Darwin.

In 1956, two medical practitioners commenced private practice in partnership. They have been appointed Visiting Medical Officers to the Darwin Hospital and have filled the need for domiciliary visiting. The Darwin Medical Society was formed in Darwin, also in 1955, following the success of the regular clinical meetings which had been held by the Medical staff. Regular meetings have been held since then and these have been well attended.

In 1955, a Schools' Medical Officer and Schools' Dental Officer were appointed.

### **Aerial Medical Service**

The aerial section of the Northern Territory Medical Service consists of three Drovair aircraft which are available as ambulance transport, for epidemiological survey work and medical and dental patrols throughout the Territory. This service is linked by wireless and telegraph with the remote areas of the Northern Territory, and so rapid access is given to the medical and dental services at the main centres.

During 1954-55, 239 trips were made, 329 patients carried and 107,812 miles flown, and in 1955-56, 208 trips were made, 249 patients carried and 107,812 miles flown. These flights were for emergency calls, routine medical inspections, immunization campaigns, and dental, T.B., anæmia, leprosy and malaria surveys.

### **INFANT WELFARE CLINIC**

The Infant Welfare Clinic continues to function at Darwin, while sub-centres have been maintained at the R.A.A.F. Station and Berrimah.







In March, 1956, the Darwin Infant Welfare Association was convened to promote the interest and work of Infant Welfare in the Northern Territory. It is already a vigorous organization with 200 members.

## DENTAL CLINICS

### Darwin

A new system of mobile duty was introduced in January, 1956. Two road mobiles were initiated and one aerial mobile, with a dentist accompanying the doctor on routine aerial visits to the large cattle stations, missions and settlements.

These trips are run in conjunction with the School Dental Clinic, using the same officer. The school clinic gives continuous treatment to infant schools, and operates an emergency service in primary and high schools. In 1956, treatment was commenced on the 150 children at the three pre-school centres in Darwin.

### Batchelor

In 1955, a Dental Officer visited Batchelor Hospital to carry out any necessary dental work, and in May, 1956, with the provision of a dental unit and chair, a permanent dental clinic was established.

### Alice Springs

Dental officers examined children at the Junior, Primary, Secondary and also the Convent School. Treatment as required was done at the Clinic.

The following figures indicate the volume of work done at the two main clinics:—

	Darwin.			Alice Springs.		
	1953-54.	1954-55.	1955-56.	1953-54.	1954-55.	1955-56.
Examinations ..	1,489	1,674	1,306	1,663	1,847	1,631
Extractions ..	2,563	2,948	2,735	1,547	1,554	1,480
Fillings ..	2,521	2,642	4,255	1,842	2,199	2,780
Other treatment ..	5,735	6,049	5,522	2,756	2,677	2,406
	12,308	13,313	13,818	7,808	8,277	8,297

## PUBLIC HEALTH

### Food

Inspection of all food preparation and food selling establishments is carried out regularly by Health Inspectors.

### Water Supplies

The testing of water supplies whether from dams or bores has resulted in further chlorination treatment for some supplies.

### Nightsoil Disposal

The Darwin sewerage scheme is not yet completed and new private buildings are now required to install septic tanks or chemical closets where sewerage is not available. Other towns in the Territory, such as Katherine, Rum Jungle and Batchelor Townships, Pine Creek, Tennant Creek and Alice Springs use septic tanks or deep pits which are either the responsibility of the municipal authority or of the individual.

Periodical visits were made by Health Inspectors to mining fields, pastoral properties, native and mission settlements, and particular attention was paid to those areas from which malaria has been reported. Hygiene and sanitation of the various settlements is kept under control.



## MEDICAL SERVICES TO NATIVES

Three Surveys Medical Officers have been conducting examinations and survey work in the Northern, Central and Southern parts of the Territory among mission and native settlements. In addition, in 1955-56 a trained nurse carried out trachoma and hookworm treatments and the inoculation of natives with Triple Antigen against whooping cough, diphtheria and tetanus, on central cattle stations.

Survey officers, apart from assessing the incidence of various diseases and advising on general health and hygiene carried out Mantoux and B.C.G. campaigns, and vaccinations with Triple Antigen.

In addition medical officers at Darwin and Alice Springs conducted routine monthly flying visits on circuits covering settlements, missions and cattle stations.

In 1955-56, a dentist accompanied the Medical Officer on alternate flights. It is considered that these monthly flying visits to outback areas adequately replace the previous overland mobile units.

Environment conditions in the Northern Territory make it essential that careful attention is given to the special problem of tropical diseases, without the control of which the settlement of the Northern Territory would be an impossibility.

Mining development in new areas has increased the risk of transmission of tropical disease between the white and coloured components of the population. The most serious and extensive problem lies in the combination of hookworm disease and an ill-balanced diet of high carbo-hydrate and low protein content in the native. The resulting anaemia and subnormal health leave him ill-protected when he comes into contact with an infectious disease. This problem is being dealt with by the Medical Officers.

Amongst the native population itself, the incidence of hookworm disease is high, and although its intensity was once confined to the Northern areas, it is now spreading south.

Following a long and heavy wet season in 1954-55 and unusually humid weather throughout the dry season of 1955, with occasional heavy showers, the transmission of malaria reached a peak not experienced since serious outbreaks in the early 1930's. All cases were of the vivax type. Clinical cases numbered 128 and 51 cases were confirmed by blood film. Primaquine treatment was used to eradicate latent extra-erythrocytic parasites, and fogging of infected areas and areas at risk with 10 per cent. D.D.T. was carried out. In an effort to reduce the carry over of infection, mass treatment of all persons at Yirrkala and Roper River Missions was carried out. This preventive measure appears to have been successful as no cases have been reported from Yirrkala for 1956.

Trachoma is a serious problem in the Southern dry areas and an approach has been made to engage an Ophthalmologist.

There has been a significant decrease in yaws, due to the efficiency of Penicillin as a specific form of remedy. Leprosy which was neglected during the years of army occupation now appears to be coming under control. New cases continue to be discovered but these now are reported less frequently as medical survey coverage tends to be complete.

The Tuberculosis X-ray survey carried out in the Northern missions in 1954-55 has shown that this disease has not become widespread throughout native areas.

## EAST ARM SETTLEMENT

In July, 1955, the new Leprosarium at East Arm was completed and handed over to the Department. The settlement is twelve miles by road from Darwin, and this eliminates the difficulties of sea transport. It is supplied with water and electricity from the main Darwin supplies, and is provided with a modern hospital, school, messing facilities and a full scale sewerage system.



## **WORLD HEALTH ORGANIZATION**

### **EIGHTH WORLD HEALTH ASSEMBLY**

The eighth World Health Assembly was held at University City, Mexico, from 10th to 27th May, 1955. It was attended by seventy-six Member States and Associate Members, representatives of the United Nations and its specialized agencies, and observers for twenty-five inter-governmental and non-governmental organizations concerned with public health.

The Australian delegation at the Assembly consisted of Dr. G. M. Redshaw, Senior Medical Officer, Commonwealth Department of Health; Mr. A. P. Renouf, Australian Embassy, Washington; and Mr. L. Corkery of the Permanent Delegation to the European Office of the United Nations, Geneva.

In presenting his report on the work of W.H.O. in 1954, the Director-General Dr. G. M. Candau, concentrated particularly on the number of factors apt to play a major role in the future development of the Organization. He called attention especially to the need for a change in strategy in the Organization's malaria control programme, and the importance to the Organization of peaceful uses of atomic energy and the possible implications which this new field may have for the work of W.H.O.

Of the forty-seven resolutions adopted by the Assembly, the following were among the more significant:—

#### **Malaria eradication**

A world fund to assist national programmes for the eradication of malaria was established. This fund, to be administered by W.H.O., will consist of voluntary contributions from governmental and private sources. It will be used for research and for the provision of supplies, equipment, and services to governments requiring such aid.

#### **Atomic energy**

The Assembly approved the action and the proposals of the Director-General relative to the Organization's responsibilities with regard to atomic energy in relation to medicine and public health. W.H.O.'s chief functions will be to collect and disseminate information, to give aid in the training of technical personnel, and to provide expert advice. For the moment, the Organization will be primarily concerned with (a) the protection of populations against radiation, this including problems involved in the location of atomic energy plants, contamination of water, soil, food, &c., and the disposal of atomic waste material; and (b) the international aspects of training personnel for work in the medical and public health applications of atomic energy.

#### **Poliomyelitis**

The basic network of poliomyelitis laboratories which has been set up by W.H.O. is to be enlarged. The laboratory centres, in addition to studying the various strains of polio-virus, will prepare and distribute standard laboratory reagents to facilitate the work of national poliomyelitis centres and will train virus specialists in tissue-culture technique.

### **INTERNATIONAL SANITARY REGULATIONS**

The provisions concerning yellow fever were given particular consideration in this Assembly's review of the operation of the International Sanitary Regulations, and additional regulations were adopted. The Regulations were



amended so that the quarantine restrictions regarding yellow fever should apply only to infected local areas, instead of to yellow fever endemic zones. "Infected local area", in reference to yellow fever means (a) a local area where there is a non-imported case of the disease, or (b) a local area where activity of yellow fever virus is found in vertebrates other than man.

For the second successive year, the topic of the technical discussions held in conjunction with, but not subject to official action by the World Health Assembly was "Public Health Problems in Rural Areas". The discussions were marked by a programme of field visits arranged by the Government of Mexico, which together with background information served as the basis for the discussions.

### **NINTH WORLD HEALTH ASSEMBLY**

The Ninth World Health Assembly took place in Geneva from 8th to 25th May, 1956. The delegates of seventy-six Member States and Associate Members were present, as were also representatives of the United Nations and its specialized agencies of seven inter-governmental and thirty-four non-governmental organizations in official relations with W.H.O., and observers from several non-member States.

The Australian delegation consisted of Professor E. Ford, Director of School of Public Health and Tropical Medicine, Sydney; Dr. J. B. Mathieson, Senior Medical Officer at Australia House, London; Mr. G. A. Jokl, Australian Consul-General in Geneva; Mr. Neil Currie as alternative delegate; and Miss L. M. Avery, Secretary-General, Royal Australian Nursing Federation.

For 1957, a programme has been planned to give more attention at the international level to the increasing incidence of cardiovascular diseases; to consider the holding of an inter-regional conference to discuss the control of leprosy in countries having similar epidemiological, social and administrative problems, and to draw the attention of Governments to the need to intensify their malaria control programmes "with a view to ultimate economy in expenditure and to obviate the potential danger of development of resistance to insecticides in anopheline vector species".

### **The Peaceful Uses of Atomic Energy**

The Assembly also approved the relevant programme of activities being carried out by W.H.O. for the peaceful uses of atomic energy. A proposal was also approved that "in every national, bilateral, or multilateral project concerned with the peaceful uses of atomic energy, planning and implementation of such projects should be made in close contact with the responsible public health authorities".

### **Revision of the International Lists of Diseases and Causes of Death**

On the recommendations of the Conference for the Seventh Revision of International Lists of Diseases and Causes of Death, held in Paris in 1955, certain changes were made in the Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death which was published in 1948 and contains the sixth revision of the Lists. Additional Regulations amending the Nomenclature Regulations 1948 were also adopted.

### **International Sanitary Regulations**

The Assembly also agreed that the special sanitary control measures applied during the Mecca Pilgrimage were no longer necessary. It therefore abrogated the relevant provisions of the International Sanitary Regulations and adopted additional Regulations which will come into force on January 1, 1957.



The Assembly also accepted certain government reservations to the amended yellow fever clauses of the Sanitary Regulations which would come into force on October 1, 1956. It also amended the provisions of the Regulations concerning the form of the International certificate of Vaccination or Revaccination against Smallpox.

### Technical Discussions

"Nurses: their education and their role in health programmes", was the subject for the technical discussions at the Assembly. Dame Elizabeth Cockayne, Chief Nursing Officer, Ministry of Health for England and Wales, acted as Chairman. The discussions centred around the three major topics of the education of the nurse, the role of the nurse in health programmes, and the administration and effective utilization of nursing services.

### NATIONAL SEMINAR IN HEALTH EDUCATION

The first Australian Seminar in Health Education, held in Canberra from January 11th-21st 1955, was sponsored by the Commonwealth Department of Health and assisted by the Health Education Section of the World Health Organization.

Through the co-operation of the World Health Organization, the consultant services of Miss A. Helen Martikainen, Chief, Health Education of the Public Section, Geneva, and Mr. Lynford Keyes, Health Education Adviser for the Western Pacific Region, were made available.

Australian staff members included Dr. F. W. Clements and Miss K. M. Gordon of the Commonwealth Department of Health, Dr. Morven Brown, Director of the School of Social Work, University of Sydney and Miss K. Kinane of the Youth Education Department, Australian Broadcasting Commission.

Members from outside Australia were Dr. Derek Taylor from New Zealand, Dr. Guy Loison of the South Pacific Commission, Noumea; and Dr. J. Refshauge and Miss M. McLachlan from the Administration of Papua and New Guinea.

Australian members were drawn from State Departments of Health and Education, the Commonwealth Office of Education, the Australian Dental Association, the British Medical Association, University Departments of Physical Education, the nursing profession, the health services of the Australian Capital Territory and the Medical Journal of Australia. Altogether forty-four key people, in Australia, representing every field—public health, education, nutrition, dental and nursing services, and publicity, attended this seminar, where new methods and techniques in this important field of public health were discussed.

The Seminar was opened by Dr. A. J. Metcalfe, Commonwealth Director-General of Health, and was conducted through a series of plenary sessions and group discussions.

The subjects dealt with in this way and the members who introduced them were as follows:—

The Social Basis of Learning—Dr. Morven Brown.

The Needs and Aims of Health Education—Miss A. Helen Martikainen and Dr. D. Snow (W.A.).

Methods in Health Education—Mr. Lynford Keyes.

Organization for Health Education—Dr. Derek Taylor, Dr. G. S. Hayes (Qld.) and Miss L. Martin (Tas.).

Evaluation—Mr. P. Pentony (A.C.T.).

Personnel Recruitment and Training—Mr. R. Gray (W.A.).



## **HEALTH AND NUTRITION EDUCATION SEMINAR, MANILA**

A joint Seminar in Health and Nutrition Education, sponsored by Food and Agriculture Organization and World Health Organization for the countries of the Western Pacific Region, was held at Baguio City in the Philippines from October 10 to November 4, 1955.

Australian members included Dr. F. W. Clements of the Commonwealth Department of Health and the Institute of Child Health, University of Sydney, who acted as Director of the Seminar, Miss K. M. Gordon, Commonwealth National Fitness Officer, and Miss W. Wilson, Senior Nutritionist, both of the Commonwealth Department of Health, and Mr. W. S. Sloan of the Queensland Department of Agriculture. In addition, two anthropologists, Miss A. M. McArthur and Mr. C. Valentine, from the Australian National University, were members of the participating staff.

Participating staff and observers were drawn from the head-quarters of F.A.O. (Rome) and W.H.O. (Geneva), the Regional Offices of the Western Pacific (F.A.O., Bangkok) (W.H.O., Manila) and from United Nations and its specialized agencies.

Countries represented included Australia, Burma, Ceylon, China, Federation of Malaya, Hong Kong, India, Indonesia, Japan, New Zealand, Thailand, Philippines, Netherlands New Guinea and Territory of Papua and New Guinea.

A wide field of subjects was discussed which included problems of rural health, nutrition and nutrition education in relation to social and cultural patterns, techniques in health and nutrition education, the training of health workers concerned with these and the evaluation of programmes, including visual aids.

## **SEMINAR IN NURSING EDUCATION**

Fifty-one nurses from twenty different countries and territories of the Western Pacific attended the Second Nursing Education Seminar of W.H.O. held in Suva, Fiji Islands, from 4th to 28th July, 1955.

Australian participants at the Seminar included Miss P. Chomley, Director of the College of Nursing, Australia; Miss E. V. Pitts, Tutor Sister at Royal Melbourne Hospital, Victoria, Miss C. Fall, Matron of King George V. Hospital, Sydney and Miss W. McDonald, President of New South Wales College of Nursing and Matron of the Anti-Tuberculosis Association of New South Wales.

In the Report from this Seminar, Dr. Fang, Regional Director, Western Pacific Region of World Health Organization, suggested that in addition to Member Governments and the participants themselves, the Report should be of interest to nursing leaders, professional nursing associations, schools of nursing, and to individuals in key positions in education and the administration of hospitals and health services.



## NATIONAL HEALTH BENEFITS

Expenditure on the various National Health activities is made under the following acts:—

- (a) *The National Health Act 1953-1956*, which provides for the Medical Benefits Scheme, the Hospital Benefits Scheme, the Pensioner Medical Service, Pharmaceutical Benefits and Pharmaceutical Benefits for Pensioners.
- (b) *The Tuberculosis Act 1948*.
- (c) *State Grants (Milk for School Children) Act 1950*.
- (d) *State Grants (Mental Institutions) Act 1955*.

Table I on page 101 sets out the total Commonwealth expenditure on these activities for each year since July 1, 1945. Tables II to XXI on pages 102-114 show detailed information regarding each of the various benefits.

### (A) Hospital Benefits

During the two years ended June 30, 1956, there has been no new legislation affecting the payment of hospital benefits. The amounts shown in Table I on page 101 for hospital benefits, are made up of the Commonwealth ordinary hospital benefit of 8s. per day, the Commonwealth additional hospital benefit of 4s. per day and hospital benefit of 12s. per day paid in respect of pensioners, and patients in certain hospitals to which Part IV of the South Australian Hospital Act 1934-1951 applies.

In Table II on page 102 the Commonwealth hospital benefit has been shown under three main headings, Public Hospitals, Private Hospitals and Additional Hospital Benefit; Public Hospitals has further been divided into Ordinary Hospital Benefit and Pensioner Hospital Benefit. The ordinary benefit shown under this heading represents the Commonwealth Benefit of 8s. per day in respect of public hospitals. Payments at the rate of 12s. per day for Part IV, hospitals in South Australia, has been shown separately in this column.

Those amounts shown for Private Hospitals represent the Commonwealth ordinary hospital benefit of 8s. per day in respect of private hospitals.

Table III on page 103 shows the number of organizations registered for the purpose of paying the Commonwealth additional benefit of 4s. per day. The membership and coverage figures illustrate the considerable growth which took place in this scheme during the two years under review.

Table IV on page 104 sets out the position State by State with regard to claimants who received fund benefit as well as Commonwealth additional benefit, and those who received Commonwealth benefit only.

### (B) Medical Benefits

No amendments of major importance were made to legislation governing the payment of Commonwealth medical benefit during the two years under review.

The figures shown in Table I on page 101 under this heading include both "fee for service" and contract service payments.

Table V on page 105 shows the number of organizations registered for the purpose of paying the Commonwealth medical benefit, the membership and coverage of those organizations and the total payments made to contributors from contributors' funds for the years ended June 30, 1955, and June 30, 1956.



### (C) Pensioner Medical Service

The amending *National Health Act 1955*, assented to on November 4, 1955, brought about an important change in the Pensioner Medical Service. The effect of this amendment, in regard to age, invalid and widows' pensions, is that a person to whom a pension is granted, commencing from a date subsequent to October 31, 1955, will not be eligible for the Pensioner Medical Service if by reason of income at the time of the grant, including income derived from property, he or she would not have been eligible for the maximum rate of pension under the social services income means test in force on December 31, 1953. Eligibility will not be affected by the capital value of property.

The amounts shown in Table I on page 101 represent payments to doctors for services of a general practitioner nature provided to eligible pensioners and their dependants.

Table VI on page 106 indicates the number of services rendered for which contributors received benefit, the average number of services per contributor and how the cost of the services was met. The percentage of general practitioner services to the total number of services is also shown in this table.

Table VII on page 107 gives details of the pensioners and dependants participating in the Pensioner Medical Service at June 30, 1955, and June 30, 1956.

Table VIII on page 108 deals with the number of doctors who have indicated their willingness to participate in the scheme and shows the payments made by the Commonwealth to these doctors for medical services and mileage.

A break-up of the types of services performed by participating doctors together with the number of mileage claims submitted in the two years ended June 30, 1955, and June 30, 1956, is shown in Table IX on page 109.

Table X on page 110 sets out the activities of the various State Committees of Inquiry which were established under Part VIII of the *National Health Act 1953-1956* to inquire into alleged irregularities by participating doctors.

### (D) Pharmaceutical Benefits

Pharmaceutical Benefits provided fall into two categories—

- (a) General pharmaceutical benefits.
- (b) Pensioner pharmaceutical benefits.

There was considerable revision of the lists of benefits available under these schemes during the two years under review.

The means test which has been applied to pensioners for the purposes of the Pensioner Medical Service (see C above) also applies to the Pharmaceutical Benefits for Pensioners Scheme.

In Table I on page 101 the figures shown for Pharmaceutical Benefits General represent payments to chemists, approved doctors, approved hospital authorities, Bush Nursing Centres, the Royal Flying Doctor Service and other miscellaneous payments. In the case of chemists the amounts are for doctors' bag order forms (since July 1, 1954) and prescriptions, whilst in the case of approved doctors the amounts are for prescriptions.

The activities of the various State Committees of Inquiry, since they were established to investigate alleged irregularities by chemists and doctors, are set out in Table XVI on page 112.



Tables XI, XII and XIII on page 111, dealing with General Pharmaceutical Benefits, show the payments made under this scheme and the number of prescriptions written since its commencement.

The amounts shown in Table I on page 101, under Pharmaceutical Benefits for Pensioners, represent payments made to chemists and approved doctors in respect of medicines supplied to pensioners.

Tables XIV and XV on page 112, dealing with Pensioner Pharmaceutical Benefits, show the payments made under this scheme and the number of prescriptions written since its commencement.

### **(E) Tuberculosis**

During the two years under review, the Commonwealth and the six States have continued to conduct their joint campaign against tuberculosis.

The Commonwealth has played its agreed part in the national campaign, by co-ordinating this combined effort to eradicate tuberculosis, and by providing the finance and advice necessary for the conduct of an effective campaign. The States, with the assistance of voluntary bodies, have continued to carry out the field work in the campaign.

The figures shown in Table I on page 101 under the heading of Tuberculosis represent total expenditure since July 1, 1945, under the *Tuberculosis Act* 1945-46 and under the *Tuberculosis Act* 1948. This expenditure includes reimbursements to the States of maintenance and capital expenditure, payment of Tuberculosis allowances to sufferers, the cost of campaigns in the Territories, the expenses associated with the carrying out of surveys and other minor items. Payments out of Departmental votes representing reimbursements to the States for Administration are excluded from this table but are included in Table XVIII.

Tables XVII and XVIII on page 113 show the extent to which the Commonwealth has provided finance by way of reimbursement to the States in respect of capital expenditure (provision of chest hospitals, clinics, X-ray and other equipment, &c.) and maintenance expenditure (running costs of hospitals, clinics, laboratories, mass X-ray surveys, &c.).

The Commonwealth continued to pay tuberculosis allowances to sufferers with the object of encouraging them to give up work and undergo treatment, and thus minimize the spread of infection. Expenditure, since the scheme of tuberculosis allowances was introduced in July, 1950, is shown in Table XIX on page 113.

The number of persons receiving allowances has dropped from 5,774 in June, 1954, to 5,557 in June, 1955, and to 4,427 in June, 1956.

Table XX on page 114 shows variations which have been made from time to time in the rates of allowances payable to sufferers.

### **(F) Free Milk for School Children**

There have been no changes in legislation affecting the supply of free milk to school children during the two years under review.



Table XXI on page 114 shows the estimated number of children receiving free milk, and the reimbursements made to the States for the cost of the scheme in these two years.

The total expenditure by the Commonwealth on the Free Milk Scheme since its commencement in 1950-51 is shown in Table I on page 101. The amounts shown in Table I are exclusive of reimbursements to the States of 50 per cent. of capital and incidental expenditure. (Total for Commonwealth 1955-56 was £6,099.) This item has, however, been included in the figures shown in Table XX.

### **(G) Mental Institutions**

In 1946, when the Commonwealth Hospital Benefits were introduced for patients in public hospitals, no provision was made for patients in mental institutions. However, to help meet the cost of maintaining patients in mental institutions, the Mental Institutions Benefits Act was passed by Federal Parliament in 1948.

Under the Agreements ratified by this Act, it was provided that—

- (a) the Commonwealth would pay the States a benefit equal to the amount then being collected by the States from the relatives of mental patients by the way of charges for maintenance; and
- (b) the States would cease making charges for the maintenance of mental patients.

These Agreements operated for five years, and terminated in the latter half of 1954. The amount contributed by the Commonwealth during this period approximated one shilling per day for each patient, and amounted to approximately £250,000 per year.

The Government considered that when these Agreements terminated, a complete review of the situation of mental patients in mental institutions was necessary. To this end, Dr. Alan Stoller, of the Victorian Mental Health Authority, was commissioned to undertake an Australia-wide survey. His report on "Mental Health Facilities and Needs of Australia" was released in May, 1955.

The most significant fact revealed by the Report was the serious overcrowding and lack of accommodation and facilities which existed in the majority of mental institutions in Australia. The provision of beds for patients was the most urgent need, but other accommodation and rehabilitation facilities were also required.

The appraisal made in the Report was that the immediate shortage could only be made good by providing 10,000 beds at a cost of £3,000 each. This meant an immediate capital expenditure of £30 million.

This aspect of the Report prompted the Commonwealth Government to propose a new Agreement whereby capital expenditure by State Governments could be accelerated. An amount of £10 million was made immediately available on the basis of the provision of £1 by the Commonwealth for every £2 spent by the States. It was therefore designed that a total capital expenditure of £30 million would be effected.

In November, 1955, the States Grants (Mental Institutions) Act was passed by Federal Parliament. The purpose of this Act was to make available immediately an amount of £10 million to State Governments to help alleviate the overcrowding, and improve conditions of patients in mental institutions.

Details of the expenditure for each year are shown in Table I on page 101.



TABLE I  
NATIONAL HEALTH  
Commonwealth Expenditure

Year Ended.	Hospital Benefits.	Medical Benefits.	Pharmaceutical Benefits General.	Pharmaceutical Benefits Pensioners.	Pensioner Medical Service.	Tuberculosis.	Free Milk.	Mental Institutions.	Total.
	£	£	£	£	£	£	£	£	£
30th June, 1946 ..	1,111,292	..	..	..	..	..	..	..	1,111,292
30th June, 1947 ..	4,380,296	..	..	..	..	109,603	..	..	4,489,899
30th June, 1948 ..	4,448,015	..	..	..	..	27,590	..	..	4,475,605
30th June, 1949 ..	5,885,446	..	149,037	..	..	151,079	..	..	6,185,562
30th June, 1950 ..	6,320,164	..	304,689	..	..	180,658*	..	255,586	7,651,168
30th June, 1951 ..	6,535,628	..	2,930,163	..	75,511	590,071	35,775	405,664	12,665,490
30th June, 1952 ..	6,683,106	..	7,327,414	357,632	1,036,225	4,613,154	814,806	517,780	21,350,117
30th June, 1953 ..	7,223,241	..	6,486,651	728,658	1,739,953	6,168,289	1,521,394	522,552	24,390,738
30th June, 1954 ..	8,330,053	1,434,166	8,218,633	1,010,780	2,115,539	6,959,130	1,999,312	494,833	30,562,446
30th June, 1955 ..	9,320,603	4,209,495	9,444,631	1,294,836	2,516,077	7,366,728	2,237,425	225,586†	36,615,381
30th June, 1956 ..	9,552,944	5,413,320	10,379,474	1,507,960	2,874,364	7,454,255	2,405,349	773,149	40,360,815
Total ..	69,790,788	11,056,981	45,240,692	4,899,866	10,357,669	36,303,306	9,014,061	3,195,150	189,858,513

\* This amount and those shown for previous years represent amounts expended under the *Tuberculosis Act 1945-46*. Subsequently amounts represent payments under the *Tuberculosis Act 1948*.

† This amount and amounts shown for previous years are payments made under the *Mental Institutions Benefits Act 1948*. The amount shown for 1955-56 represents payments made during that year under the *State Grants (Mental Institutions) Act 1955*.







TABLE III  
HOSPITAL BENEFITS

Membership of Registered Organizations and Fund Payments to Contributors, years ended 30th June, 1955, and 30th June, 1956

State.	Number of Organizations.		Membership.		Coverage (Including Dependents).		Percentage Population Covered.		Fund Benefit Paid.	
	As at 30.6.55.	As at 30.6.56.	As at 30.6.55.	As at 30.6.56.	As at 30.6.55.	As at 30.6.56.	As at 30.6.55.	As at 30.6.56.	As at 30.6.55.	As at 30.6.56.
New South Wales	28	28	942,800	985,666	£ 2,168,440	£ 2,335,158	62	65	£ 2,404,398	£ 2,743,953
Victoria..	56	55	618,865	641,143	1,647,149	1,690,345	66	65	670,025	701,713
Queensland	3	2	152,474	177,110	392,754	458,210	30	36	324,618	455,359
South Australia	16	16	161,944	181,944	343,166	380,355	42	45	250,226	353,742
Western Australia	14	13	174,040	182,927	415,991	436,960	64	65	339,402	386,412
Tasmania	11	10	61,192	78,423	153,777	198,286	49	62	155,049	217,599
Commonwealth	128	124	2,111,315	2,247,213	5,121,277	5,499,314	56	59	4,143,718	4,858,778

Hospital Benefit Organizations have not established offices of payment in the Australian Capital Territory or the Northern Territory.







TABLE V

## MEDICAL BENEFITS

## Membership of Registered Organizations and Fund Payments to Contributors, 30th June, 1955, and 30th June, 1956

State.	Number of Organizations.		Membership.		Coverage.		Percentage Population Covered.		Fund Benefit Paid.	
	As at 30.6.55.	As at 30.6.56.	As at 30.6.55.	As at 30.6.56.	As at 30.6.55.	As at 30.6.56.	As at 30.6.55.	As at 30.6.56.	As at 30.6.55.	As at 30.6.56.
New South Wales	24	25	733,934	855,772	£ 1,688,048	£ 2,092,742	48	58	£ 2,217,657	£ 3,009,192
Victoria ..	21	22	413,651	447,145	1,183,989	1,245,013	47	48	968,334	1,245,286
Queensland ..	7	7	163,498	192,356	446,305	513,168	34	38	430,716	602,276
South Australia ..	9	9	152,385	170,058	336,515	377,378	41	45	410,628	525,819
Western Australia ..	9	9	156,231	171,654	384,366	427,003	59	63	534,057	677,619
Tasmania ..	10	10	45,825	63,700	114,880	150,719	37	47	86,787	143,584
Commonwealth ..	80	82	1,665,524	1,900,685	4,154,103	4,806,023	45	51	4,648,179	6,203,776

Medical Benefits Organizations have not established offices in the Australian Capital Territory or Northern Territory.



TABLE VI  
MEDICAL BENEFITS

Membership of Registered Organizations and Particulars of Claims, Years ended 30th June, 1955, and 30th June, 1956

State.	Membership.		Number of Services.		Average Number of Services per Contributor.		Total Cost of Services.		Percentage of Total Cost met by—						Percentage of G.P. Services to Total Services.	
									Fund.		Commonwealth.		Contributor.			
	1955.	1956.	1955.	1956.	1955.	1956.	1955.	1956.	1955.	1956.	1955.	1956.	1955.	1956.	1955.	1956.
New South Wales ..	733,934	855,772	4,160,011	5,543,465	5.67	6.48	£ 6,244,226	£ 8,124,403	35.4	37.0	29.7	30.1	34.9	32.9	68	70
Victoria ..	413,651	447,145	2,405,062	2,944,861	5.81	6.59	3,418,032	4,303,706	28.0	28.7	31.3	30.1	40.7	41.2	73	72
Queensland ..	163,498	192,356	890,907	1,194,971	5.45	6.21	1,200,053	1,632,763	35.9	36.9	33.0	32.3	31.1	30.8	73	75
South Australia ..	152,385	170,058	933,224	1,119,653	6.12	6.58	1,225,853	1,558,126	33.5	33.7	32.5	31.5	34.0	34.8	71	72
Western Australia ..	156,231	171,654	897,557	1,206,135	5.75	7.03	1,247,087	1,627,231	42.1	41.0	32.8	32.5	25.1	26.5	68	69
Tasmania ..	45,825	63,700	166,219	249,705	3.63	3.92	249,465	391,972	33.4	35.3	28.6	28.4	38.0	36.3	59	55
Total ..	1,665,524	1,900,685	9,452,980	12,258,790	5.68	6.45	13,584,716	17,638,201	33.9	35.0	30.9	30.6	35.2	34.4	70	71

\* G.P. Services consist of surgery consultations and home visits by general practitioners.

For the purposes of this table the membership figure used is the maximum total membership of all registered organizations during the year. Organizations have not established offices of payment in the Australian Capital Territory or Northern Territory.



TABLE VII

## PENSIONER MEDICAL SERVICE

Pensioners and Dependants Enrolled in Pensioner Medical Service as at 30th June, 1955 and 30th June, 1956

State.	1955.					1956.				
	Number of Pensions and Allowances Current.	Current Entitlement Cards.	Pensioners Enrolled (In- cluding Pen- sioner Wives).	Total Number Pensioners and Dependants Enrolled.		Number of Pensions and Allowances Current.	Current Entitlement Cards.	Pensioners Enrolled (In- cluding Pen- sioner Wives).	Total Number Pensioners and Dependants Enrolled.	
New South Wales	240,316	203,098	237,296	268,496		252,126	209,228	244,240	276,360	
Victoria	140,556	134,153	140,389	158,389		152,852	141,193	147,738	166,668	
Queensland	86,671	69,651	81,813	98,213		91,895	72,283	85,445	102,535	
South Australia	49,834	40,809	48,341	54,241		53,015	42,989	50,784	56,974	
Western Australia	39,839	29,464	35,094	39,794		41,609	31,324	36,753	41,713	
Tasmania	18,933	15,667	17,946	21,096		20,454	17,272	20,405	23,985	
Commonwealth	576,149	492,842	560,879	640,229		611,951	514,289	585,365	668,235	

Australian Capital Territory figures included in those shown for New South Wales.

Northern Territory figures included in those shown for South Australia.



TABLE VIII  
PENSIONER MEDICAL SERVICE

Payments to Participating Doctors, Years Ended 30th June, 1955, and 30th June, 1956

State.	1955.			1956.		
	Number of Participating Doctors.	Payments to Doctors.		Number of Participating Doctors.	Payments to Doctors.	
		Medical Services.	Total.		Medical Services.	Total.
New South Wales	1,905	£ 1,180,041	£ 1,190,145	1,892	£ 1,341,055	£ 1,351,769
Victoria	1,249	571,790	583,787	1,354	655,028	668,029
Queensland	556	304,578	309,323	570	343,155	347,460
South Australia	417	218,901	222,170	439	251,018	253,955
Western Australia	329	163,241	164,586	353	197,023	198,243
Tasmania	111	42,845	46,066	122	51,640	54,907
Commonwealth	4,567	2,481,396	3,990	4,730	2,838,919	2,874,363

Australian Capital Territory figures included in those shown for New South Wales. Northern Territory figures included in those shown for South Australia.



TABLE IX  
**PENSIONER MEDICAL SERVICE**  
**No. of Services and Mileage Claims, Years Ended 30th June, 1955 and 30th June, 1956**

State.	1955.				1956.			
	Number of Services.			Number of Mileage Claims.	Number of Services.			Number of Mileage Claims.
	Surgery.	Domiciliary.	Total.		Surgery.	Domiciliary.	Total.	
New South Wales	1,160,113	1,086,024	2,246,137	11,340	1,287,474	1,163,807	2,451,291	11,184
Victoria	489,607	590,792	1,080,399	11,297	550,258	635,550	1,185,808	11,787
Queensland	344,825	244,472	589,297	5,749	390,086	249,777	639,863	4,823
South Australia	162,098	245,660	407,758	3,078	181,201	267,399	448,600	2,830
Western Australia	171,066	144,262	315,328	1,362	205,293	157,103	362,396	1,202
Tasmania	47,591	34,971	82,562	2,586	55,194	40,093	95,287	2,849
Commonwealth	2,375,300	2,346,181	4,721,481	35,412	2,669,516	2,513,729	5,183,245	34,675
Australian Capital Territory figures included in those shown for New South Wales.								
Northern Territory figures included in those shown for South Australia								



TABLE X  
PENSIONER MEDICAL SERVICE  
State Committees of Inquiry, Years Ended 30th June, 1955 and 30th June, 1956

State.	1955.						1956.					
	Number of Days Committee Met.	Number of Cases Submitted.	Number Finalized.	Number Deferred.	Number Unresolved.		Number of Days Committee Met.	Number of Cases Submitted.	Number Finalized.	Number Deferred.	Number Unresolved.	
New South Wales	10	49	26	23	..		12	114	91	16	..	
Victoria	3	47	47	..	..		9	57	42	3	..	
Queensland	8	17	17	..	..		12	13	10	..	..	
South Australia	3	20	20	..	..		11	48	23	2	..	
Western Australia	12	22	16	6	..		10	32	22	..	4	
Tasmania	1	..	1	..	..		3	10	6	..	..	
Commonwealth	37	155	127	29	..		57	274	194	21	4	



## GENERAL PHARMACEUTICAL BENEFITS

TABLE XI

Payments for each State per annum—Chemists and Doctors

Year.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Australian Capital Territory.	Total.
	£	£	£	£	£	£	£	£
1948-49..	15,235	21,903	3,875	4,783	12,224	8,228	20	66,268
1949-50..	50,704	54,400	8,806	14,385	23,515	21,485	46	173,341
1950-51..	986,807	799,710	357,232	284,215	227,425	64,925	6,465	2,726,779
1951-52..	2,610,314	2,070,477	769,559	674,368	446,398	126,419	14,612	6,712,147
1952-53..	2,452,123	1,834,691	739,307	602,588	433,378	121,522	16,175	6,199,784
1953-54..	2,877,692	2,067,187	842,340	646,310	556,537	147,684	22,436	7,160,186
1954-55..	3,353,410	2,228,853	992,526	721,403	596,569	155,851	*	8,048,612
1955-56..	3,837,929	2,544,731	1,059,459	737,585	589,034	168,473	*	8,937,211

\* Included in New South Wales total.

TABLE XII

Payments to Hospitals, Bush Nursing Centres, Flying Doctor Services, &amp;c.

Year.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Australian Capital Territory.	Total.
	£	£	£	£	£	£	£	£
1948-49..	..	..	74,808	..	..	3,244	4,717	82,769
1949-50..	..	..	86,542	10,777	11,177	14,917	7,935	131,348
1950-51..	..	..	106,383	17,616	20,409	16,995	41,981	203,384
1951-52..	400,000	..	91,834	21,106	26,303	9,085	66,940	615,268
1952-53..	..	..	114,858	32,995	72,000	16,662	50,352	286,867
1953-54..	252,339	431,451	91,920	68,172	78,360	58,643	77,562	1,058,447
1954-55..	494,466	325,000	200,709	84,693	85,237	48,616	49,987	1,288,708
1955-56..	448,606	332,949	279,073	58,764	124,942	30,022	74,573	1,348,929

The figures shown for each State are payments for general pharmaceutical benefits supplied by public hospitals only. The figures for the Australian Capital Territory include bush nursing centres, &c., which are scattered throughout the Commonwealth.

TABLE XIII

Statement Showing Number of Prescriptions

Year.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Australian Capital Territory.	Total.
1948-49..	66,480	97,347	18,235	20,139	42,518	35,904	96	280,719
1949-50..	124,173	169,558	28,560	38,360	62,018	61,386	155	484,210
1950-51..	1,365,080	1,166,562	529,194	340,642	260,997	87,309	8,838	3,758,622
1951-52..	2,515,965	1,987,658	828,225	603,912	428,542	137,282	16,699	6,518,283
1952-53..	2,650,944	2,001,481	938,803	628,787	456,187	160,288	19,218	6,855,708
1953-54..	2,751,578	2,033,299	940,287	635,715	487,478	175,466	20,790	7,044,613
1954-55..	3,726,011	2,571,753	1,234,229	844,569	677,919	213,888	*	9,268,369
1955-56..	3,751,459	2,447,217	1,142,861	794,364	633,811	200,711	*	8,970,423

\* Included in New South Wales total.



## PENSIONER PHARMACEUTICAL BENEFITS

TABLE XIV

## Payments Per Annum for Each State

Year.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Australian Capital Territory.	Total.
	£	£	£	£	£	£	£	£
1951-52..	186,814	60,721	40,320	32,988	29,448	6,980	361	357,632
1952-53..	364,240	139,166	96,613	65,185	48,590	14,149	715	728,658
1953-54..	502,402	200,163	135,990	88,424	62,967	19,711	1,123	1,010,780
1954-55..	618,904	262,807	188,142	117,694	82,304	24,985	*	1,294,836
1955-56..	708,947	313,659	223,177	137,144	95,553	29,480	*	1,507,960

\* Included in New South Wales total.

TABLE XV

## Number of Prescriptions

Year.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Australian Capital Territory.	Total.
1951-52..	879,125	291,461	175,942	139,584	128,500	34,900	1,699	1,651,211
1952-53..	1,344,886	547,538	373,986	248,324	171,494	53,059	2,860	2,742,147
1953-54..	1,674,673	717,002	479,965	316,743	215,887	68,560	4,211	3,477,041
1954-55..	2,063,007	901,059	673,941	403,522	286,274	90,858	*	4,418,661
1955-56..	2,475,489	1,093,627	781,271	473,084	325,889	104,672	*	5,254,052

\* Included in New South Wales total.

TABLE XVI

## PHARMACEUTICAL BENEFITS

## State Committees of Inquiry

State.	Number of Meetings held from June, 1954 to June, 1956.	Number of Cases Referred.
New South Wales ..	6	58
Victoria ..	6	55
Queensland ..	5	16
South Australia ..	3	13
Western Australia ..	3	12
Tasmania ..	2	4
Total ..	25	158



**TABLE XVII**  
**TUBERCULOSIS REIMBURSEMENTS TO STATES**  
**Re-imbursement of Maintenance Expenditure**

State.	1949-50 to 1953-54.	1954-55.	1955-56.	Total.
	£	£	£	£
New South Wales .. .. .	2,670,849	1,315,000	1,508,452	5,494,301
Victoria .. .. .	3,866,164	1,110,616	1,119,487	6,096,267
Queensland .. .. .	965,969	482,826	575,397	2,024,192
South Australia .. .. .	689,709	333,887	293,260	1,316,856
Western Australia .. .. .	1,360,441	383,103	403,029	2,146,573
Tasmania .. .. .	572,061	175,146	150,956	898,163
<b>Total .. .. .</b>	<b>10,125,193</b>	<b>3,800,578</b>	<b>4,050,581</b>	<b>17,976,352</b>

**TABLE XVIII**  
**Re-imbursement of Capital Expenditure**

State.	1949-50 to 1953-54.	1954-55.	1955-56.	Total.
	£	£	£	£
New South Wales .. .. .	855,456	821,775	864,200	2,541,431
Victoria .. .. .	1,124,291	45,755	68,964	1,239,010
Queensland .. .. .	1,176,988	573,411	467,479	2,217,878
South Australia .. .. .	110,414	54,119	121,644	286,177
Western Australia .. .. .	282,669	197,509	215,647	695,825
Tasmania .. .. .	195,007	18,243	9,788	223,038
<b>Total .. .. .</b>	<b>3,744,825</b>	<b>1,710,812</b>	<b>1,747,722</b>	<b>7,203,359</b>

**TABLE XIX**  
**TUBERCULOSIS ALLOWANCES**  
**Expenditure**

State.	1950-51 to 1953-54.	1954-55.	1955-56.	Total.
	£	£	£	£
New South Wales .. .. .	2,767,701	878,431	651,067	4,297,199
Victoria .. .. .	1,923,524	418,870	413,236	2,755,630
Queensland .. .. .	772,918	266,652	276,274	1,315,844
South Australia .. .. .	645,256	160,051	162,570	967,877
Western Australia .. .. .	458,915	105,857	111,295	676,067
Tasmania .. .. .	338,724	74,606	75,332	488,662
<b>Total .. .. .</b>	<b>6,907,038</b>	<b>1,904,467</b>	<b>1,689,774</b>	<b>10,501,279</b>



TABLE XX  
TUBERCULOSIS ALLOWANCES—continued.  
Variations in Rates of Allowances

Category.	Original Rate 13.7.50.	Rate from 1.11.51.	Rate from 2.10.52.	Rate from 29.10.53.	Rate from 27.10.55.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. Married person rate .. ..	6 10 0	8 5 0	9 0 0	9 2 6	9 12 6
2. Sufferer without dependants—					
(a) Whilst not in hospital ..	a 3 12 6	5 0 0	5 10 0	5 12 6	6 2 6
(b) Whilst receiving treatment in an approved institution free of charge .. ..	b 2 12 6	3 0 0	3 7 6	3 10 0	4 0 0
3.* Sufferer with no dependent wife but with a dependent child or children .. ..	3 12 6	5 0 0	5 10 0	5 12 6	6 2 6
4. Each dependent child of a sufferer	0 9 0	0 9 0	0 10 0	0 10 0	0 10 0

N.B.—The means test was relaxed from 14.10.54 when the allowable income was raised for sufferers without dependent wives from £2 to £3 10s. per week and for married sufferers from £4 to £7 per week.

TABLE XXI  
FREE MILK FOR SCHOOL CHILDREN

State.	No. of Children Participating.		Payments.	
	As at 30th June, 1955.	As at 30th June, 1956.	1954-55.	1955-56.
New South Wales .. ..	388,000	400,000	980,589	1,042,173
Victoria .. ..	269,000	280,000	498,000	540,000
Queensland .. ..	148,000	160,000	323,341	308,000
South Australia .. ..	88,000	102,000	156,000	184,000
Western Australia .. ..	79,000	104,000	127,014	137,211
Tasmania .. ..	44,000	44,000	145,695	185,000
Australian Capital Territory ..	5,000	5,800	10,760	14,048
Northern Territory .. ..	200	200	921	1,016
Total .. ..	1,017,200	1,096,000	2,242,320	2,411,448



## COMMONWEALTH GRANTS

### LADY GOWRIE CHILD CENTRES

The Commonwealth grant to the Australian Pre-school Association for the administration of the Lady Gowrie Child Centres was reviewed by Cabinet on May 30, 1956. Subsequently, the annual allocation for the Centre was increased to £33,500 and in addition an extra £1,500 was made available for a two-year programme of research, thus bringing the total Grant to £35,000 per annum for the next two years.

### RED CROSS BLOOD TRANSFUSION SERVICE

The Australian Red Cross Society conducts a Blood Transfusion Service in all States.

Prior to 1952-53 the cost of the Red Cross Blood Transfusion service was borne by the Red Cross Society with assistance from the State Governments. In 1952, the Commonwealth agreed to make an amount of £50,000 available to the Red Cross Society through the State Governments. During the year 1953-54 the Commonwealth also made available a grant of £44,000. The States were to continue to assist the Society at the same level as previously and made arrangements with the Society to share any deficit still remaining.

The Commonwealth recognized that the proper maintenance of a Blood Transfusion Service was of the utmost importance to the welfare of the community and that the service was one eminently suited for operation by the Australian Red Cross Society. Hence, in March, 1954, the Commonwealth offered each State Government a grant equal to 30 per cent. of the certifiable operating expenses incurred by the Society in the conduct of the blood transfusion service in that State. The grant was to be made subject to the condition, that the Government of the State concerned agreed to meet 60 per cent. of the cost of operating the service in that State, leaving the Society to meet the remaining 10 per cent. of the cost. All States accepted this proposal, thus the maintenance of this important service at the proper level of efficiency was assured.

The grants made by the Commonwealth in pursuance of this arrangement have been:—

State.	1954-55.					1955-56.				
	(Based on Expenditure for Year ended June 30, 1954.)					(Based on Expenditure for Year ended June 30, 1955.)				
	£					£				
New South Wales .. .. .	..	..	..	..	..	25,252	..	..	..	26,627
Victoria .. .. .	..	..	..	..	..	17,724	..	..	..	21,861
South Australia .. .. .	..	..	..	..	..	..	..	..	..	9,160
Queensland .. .. .	..	..	..	..	..	16,263	..	..	..	16,758
Western Australia .. .. .	..	..	..	..	..	9,646	..	..	..	11,429
Tasmania .. .. .	..	..	..	..	..	..	..	..	..	1,958
	68,885					86,793				



## ROYAL FLYING DOCTOR SERVICE

On July 1, 1954, the Commonwealth annual grant towards maintenance, to the Royal Flying Doctor Service of Australia, was increased from £12,500 to £20,000 per annum. The Commonwealth grant towards capital expenditure was also increased from £10,000 to £15,000 per annum for three years. This capital expenditure grant is to be made on a £1 for £1 basis in respect of approved projects.

The Commonwealth also meets the cost of the contents of standard medicine chests, which are used throughout the various centres of the Royal Flying Doctor Service. These chests contain basic drugs which can be used when medical advice is given by doctors by radio. Each chest contains instructions as to the application and use of the drugs, medical supplies and First Aid Book placed inside.

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State		1953-54 (Based on 1953-54 figures for year ended June 30, 1953)	1954-55 (Based on 1954-55 figures for year ended June 30, 1954)
New South Wales		10,437	12,121
Victoria		21,864	17,724
South Australia		9,160	
Queensland		16,724	16,267
Western Australia		11,420	9,046
Tasmania		1,928	
		60,533	65,858







