Annual report of the Department of Public Health and the Central Board of Health / South Australia.

SOUTH AUSTRALIA

ANNUAL REPORT

OF THE

Department of Public Health

AND THE

Central Board of Health

FOR THE

Year ended 31st December, 1968

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THE PUBLIC HEALTH

Annual Report of the Department of Public Health and the Central Board of Health to the Minister of Health (Hon. Albert James Shard, M.L.C.)

Sir—We have the honour to submit the report for the Department of Public Health and the Central Board of Health for the year ended 31st December, 1968.

The report is divided into the following sections:

1. Staff and Administration
2. General
3. Environmental Health and Food and Drugs
4. Occupational Health and Air Pollution
5. School Health
6. Epidemiology
7. Tuberculosis
8. Summary and Comments

Sections 2-7 deal with the activities of branches of the Department and have been prepared by the respective officers in charge.

1. STAFF AND ADMINISTRATION

Personnel of the Board—During the year the members of the Board were:—

Chairman—Philip Scott Woodruff, M.D., B.S., D.T.M. & H., F.R.A.C.P.

Members appointed by the Governor—

Sir John Cleland, C.B.E., M.D., CH.M., F.R.A.C.P.

George Hugh McQueen, M.B., B.S., D.P.H., D.T.M., F.R.S.H., F.R.S.T.M. & H.

Member elected by the metropolitan local boards—

Clement Colman.

Member elected by other local boards—

Alfred Bertram Cox, J.P., F.A.S.A., F.C.I.S.

Secretary—

Robert William Laver, A.U.A.

Due to failing eyesight, Sir John Cleland submitted his resignation to take effect from the end of 1968, after having completed 35 years valuable service with the Board. The other members of the Board, staff of the Department, and all who have been associated with Sir John, sincerely regret that his failing vision necessitated this action and it is desired to record the sincere appreciation of all concerned for his long and valued service.

Staff of the Department—As at 31st December, 1968, the principal staff of the Department consisted of the Director-General of Public Health (Dr. P. S. Woodruff), the Assistant Director-General of Public Health (Dr. G. H. McQueen), the Director of Tuberculosis (Dr. T. G. Paxon), the Principal Medical Officer (School Health) (Dr. C. O. Fuller), the Principal Medical Officer (Epidemiology) (Dr. B. H. Jeanes), the Principal Medical Officer (Occupational Health) (Dr. K. J. Wilson), and the Secretary (Mr. R. W. Laver).

The number of employees of the Department as at 31st December, 1968, was 255.

The National Health and Medical Research Council and Committees—The 66th session at Melbourne in May, 1968, and the 67th session at Canberra in October, 1968, were both attended by Dr. P. S. Woodruff as an *ex officio* member of the Council and the Public Health Advisory Committee. Dr. Woodruff is also a member of the Medical Research Advisory Committee, the Standing Grants Committee A, and the Medical Research in Aborigines Sub-committee.

Dr. G. H. McQueen, Assistant Director-General of Public Health, and Dr. K. J. Wilson, Principal Medical Officer (Occupational Health), attended meetings of the Occupational Health Committee and the Radiation Health Committee, respectively, and Mr. R. C. McCarthy, Pharmaceutical Inspector, attended meetings of the Food Standards Committee and Poison Schedules Sub-committee.

Drainage Co-ordinating Committee—This committee which was established in 1967 has continued to provide valuable advice to the Director and Engineer-in-Chief and the Director-General of Public Helth on drainage problems in country towns throughout the State. A survey of the State has been completed by the Committee and recommendations have been made for the appropriate type of system for each of the larger towns of the State with the aim of removing insanitary conditions and protecting water supplies.

Pre-School Medical Examinations—The pre-school medical examination scheme which was instituted in 1966 in association with the Mothers' and Babies' Health Association, the Australian Medical Association and the Australian College of General Practitioners, has now been extended to serve most of the State. Since the inception of the scheme approximately 8,000 children have been examined.

"*Good Health*"—During the year three issues of *Good Health* were published. One of these issues was devoted to the Directory of Social Resources which was the fourth issue of this useful and informative directory of various organizations associated with activities of a social service nature.

Subjects covered in the other issues were—

Dental Health—a new beginning.

Reprints of two of the addresses at the Public Health Conference held in Adelaide, 20-22 Septmber, 1967:

The State Role: Dr. P. S. Woodruff.

The Local Role: Mr. R. W. Arland, Town Clerk, Adelaide.

The Return of Venereal Diseases.

Antiseptics—facts and fancy.

New Adoption Legislation.

Introduction to new Minister of Health.

Know your Alcohol.

Slaughterhouses.

No Rules on How Many Drinks.

Local Boards of Health in South Australia.

Fats in the Fire.

2. GENERAL

(*a*) LEGISLATION

Health Act and Regulations

(1) An amendment to the Health Act was passed by the South Australian Parliament in 1968 covering the following matters—

(*a*) *Control of Vermin Infestations*

These amendments were designed to provide increased powers to local boards of health to disinfest premises and to deal with persons who are infested with vermin. Vermin in this connection is defined as being lice, fleas and mites. The aim of the legislation is to encourage infested persons to seek appropriate treatment as quickly as possible, but provision is made to ensure that the infested person is treated so as not to become a source of infestation to others. The amendments arose from the difficulties experienced in adequately dealing with infestations of head lice in school children where parents, either through ignorance or disinterest, were unwilling to co-operate with the authorities, thereby causing unnecessary discomfort to the children and exposing other children to the risk of infestation. Although school teachers were empowered to exclude infested children from school until the condition cleared up this remedy was not effective and reacted unfavourably on the education of the children concerned.

(*b*) *Fixing of fees for licensing*

The Act was also amended to provide for fees for licensing of private hospitals and rest homes to be fixed by regulation rather than by the Act itself. The purpose of this amendment is to provide greater flexibility in the fixing and alteration of the fees for licensing. Action was also taken to exclude psychiatric rehabilitation hostels established under the Mental Health Act from the definition of "rest homes". The headings of various sections of the Act were reworded to adequately provide for licensing of private hospitals and rest homes and other necessary alterations due to additional provisions in the Act.

(*c*) *Redefinition of an "Institution" for the Purposes of Tuberculosis Provisions*

With the closure of the Morris Hospital as a tuberculosis institution, it was necessary to amend the existing definition of an institution to permit the maintenance and treatment of tuberculosis sufferers at private institutions. The amended section provides for suitable places to be proclaimed as institutions for the purposes of the Act. Other minor amendments provided for cases where compulsion is necessary to ensure that tuberculosis sufferers in an infectious condition and who provide a risk of infection to others are properly cared for.

(2) Action was taken for the consolidation of existing Regulations under the Health Act. These were finalized during the year and were published early in 1969.

Regulations under the Food and Drugs Act, 1908-1962

These regulations were amended in 1968 to incorporate uniform standards recommended by the National Health and Medical Research Council for preservatives, confectionery, fruit products and sugar content of Vienna bread.

The regulations also included consequential amendments necessary to provide for the latest methods and reference books in several methods of analysis.

Provision was also made for a caution statement to be attached to labels for preparations containing phenacetin; for the re-scheduling of carbon tetrachloride in the Poisons List; and for restriction to the Gynaecological Research Unit of the Queen Elizabeth Hospital of the use of Clomiphene, an ovulatory stimulant for use in infertility.

Regulations under the Noxious Trades Act, 1943-1965

Following the hearing of an appeal by the Central Board of Health under the Noxious Trades Act, and on representations of industry, it was decided to recommend to the Government that the trades of "soap and candle-making" be removed from the list of noxious trades as these processes in themselves could no longer be determined as noxious. This recommendation was accepted and the regulation was amended accordingly.

(*b*) VITAL STATISTICS

The following information, supplied by the Deputy Commonwealth Statistician, is included in this report to show changes in the composition of the State's population in relation to the public health and the incidence of diseases reported during the year. Some figures are subject to minor revision. Details for 1967 are shown in parenthesis.

Population—The mean population for the State was 1,126,200 (1,111,675), showing an increase of 1.32 per cent over the previous year.

Births—The number of births registered during 1968 totalled 21,207 (20,386) and comprised 10,949 (10,402) male and 10,258 (9,984) female births.

During 1968, 921 more births were registered than in 1967 and the birthrate of 18.65 per 1,000 of the mean population showed a slight increase from the rate in 1967 instead of the previous downward trend of annual birthrates since 1961. The number of male births for every 100 female births was 106.74. This ratio was 2.55 higher than that for 1967.

Still Births—Two hundred and seventeen (211) still births were registered.

Deaths Registered—There were 9,916 (9,071) deaths registered in 1968. This number exceeds previous records. The death rate of 8.81 (8.16) per 1,000 of the mean population is also a record high rate.

Infant Mortality—A total of 345 (346) infant deaths were recorded in 1968. The resultant infant mortality rate was 16.27 per 1,000 live births, or 0.70 less than the previous record low numbers for 1967 (16.97). There were 256 (242) deaths of children under one month and 89 (104) deaths of children aged from one month to one year. The main causes of infant deaths in 1968 are shown in Appendix 1.

Marriages—The year ended with another record number of marriages registered, totalling 9,652 (9,434). The estimated rate per 1,000 of the mean population in 1968 was 8.57 (8.49). The marriage rate has been increasing since 1960 when it was a very low 6.99. The average age of marriage for bachelors was 24.5 (24.62) years, and for spinsters 21.8 (21.75) years.

The above statistics are summarized in Appendix 2.

(*c*) APPEALS

During the year the following appeals were heard by the Central Board of Health—

(1) An appeal under the Bakehouse Registration Act against a decision of the Noarlunga Local Board of Health not to register premises as a bakehouse. Following the hearing of the appeal (at which the parties were represented by counsel), and an inspection of the premises, the appeal was dismissed and the decision of the Noarlunga Local Board of Health confirmed.

(2) An appeal under the Health Act, 1935-1968, against the refusal of the East Torrens County Board to license premises as a hospital. The parties were also represented by counsel at the appeal. Following consideration the Board dismissed the appeal on the grounds that the staff of the hospital concerned was from time to time inadequate.

(*d*) HEALTH EDUCATION

Although there is no separate section of the Department whose function can be designated as "health education" this important activity is not neglected. All members of the Department are conscious of the need for the education of the public on maintenance of health and prevention of disease through both "on the job education" and the more formal approach to the various sections of the community in seminars, discussion groups, addresses, conferences, and through exhibitions and displays.

A successful Regional Public Health Conference was held at Port Lincoln late in the year. This was the first conference of this nature held outside of Adelaide and was attended by officers of the Department of Public Health and Officers and Members of all local boards of health on Eyre Peninsula. Many matters of public health interest were discussed during the two days of the conference. It is proposed to hold further conferences of this nature in other areas to cover the whole of the State.

(*e*) ROYAL SOCIETY OF HEALTH

At the examination conducted by the Society's South Australian Board of Examiners, 38 candidates sat for the Diploma of Health Inspection and 23 passed. Seven candidates sat for the examination in Meat Inspection and all passed. Fifteen candidates sat for the examination in Food Inspection. All passed the written examination; one failed in the practical examination. Of candidates who sat for the Diploma of Meat and Other Foods Inspection, nine successfully passed all examinations necessary for the Diploma.

(*f*) REPORT OF THE MEDICAL OFFICERS AT THE GAOLS AND PRISONS

Officers of the Department of Public Health provide a full-time service of medical examinations and treatment of prisoners at the Adelaide Gaol and Yatala Labour Prison.

The following statistics relate to the work performed—

	Males	Females	Total
Adelaide Gaol—			
Number of prisoners examined	6,511	1,183	7,694
Of which the new admissions were	4,074	312	4,386
Number of prisoners treated at Outpatients Departments of public hospitals	80	78	158
Number of prisoners admitted to public hospitals	19	14	33

Yatala Labour Prison—	
Number of prisoners given complete medical examination	264
Number of prisoners attending Sick Parades	2,490
Number of prisoners admitted to public hospitals	34
Number of prisoners given minor surgery	30
General anaesthetics given	2
X-rays	136
Deaths	1

3. ENVIRONMENTAL HEALTH AND FOOD AND DRUGS

CHIEF INSPECTOR—D. J. WILSON, E.D., F.A.I.H.S.

SENIOR PHARMACEUTICAL INSPECTOR—R. C. MCCARTHY, A.U.A.

General Inspections—Inspections were made of the areas of 36 local boards of health, 19 in near metropolitan districts, eight in the Port Pirie District, four in the Mount Gambier District, and five in the Loxton District. Specific inspections were made in other areas by officers of this Department when requested by the local board concerned or when important matters of public health arose.

Outdistrict Inspections—Inspections in areas outside local government control were made at Coober Pedy (2), Andamooka (4), Kingoonya, Tarcoola, Leigh Creek, Nepabunna Aboriginal Reserve, and townships along the Broken Hill line to Mannahill. Approximately 8,788 miles were travelled on these inspections.

District Inspectors—During the year the completion of residences in Mount Gambier and Port Pirie enabled the District Inspectors of these districts to take up residence in the area. The Department now has District Inspectors resident in Whyalla (since 1962), Loxton (1967), Port Pirie and Mount Gambier (1968).

Quarterly Meeting of Health Inspectors—Four meetings of health inspectors employed by local authorities were held during the year. The purpose of these meetings is to obtain uniform interpretation and action under the provisions of legislation administered by local authorities. Also, matters of current interest are discussed to keep these officers informed of recent developments in their field. Meetings were held at the offices of the Unley, Lyndoch, Angaston and Prospect Local Boards. Field visits are made to places associated with matters under discussion, so that officers have a chance to observe conditions existing in areas which they would not see in the course of their normal duties. The discussion topics for the year included the following subjects—operation and maintenance of swimming pools, environmental noise, septic tank effluent drainage schemes, and rehabilitation of psychiatric patients.

Microbiological Specimens—Eight hundred and twenty-nine specimens were submitted to the Institute of Medical and Veterinary Science by this Department and on behalf of local boards. These were mainly faecal specimens from persons associated with cases of gastro-intestinal disease. The remainder were samples of various foods.

Details of samples of food and drugs from all sources, analysed at the Department of Chemistry during 1968*:*

Article	No.	Result of Analysis	Action Taken
Apricots, dried	1	Conformed to regulations	—
Bread	63	Thirteen failed to conform; two, identification of mould	Nine prosecuted; four warned; two investigated
Bread, Vienna	19	Five deficient in fats or sugar or dry matter content	Two prosecuted; three warned
Brandy	3	One failed to conform; two conformed to regulations	One prosecuted
Butter	4	Conformed to regulations	—
Celery	1	Excess copper residue	Grower warned
Cheese	6	Two deficient in fat	Two warned
Cream	2	Conformed to regulations	—
Cream, thickened	2	Conformed to regulations	—
Chicken (pieces)	7	One contained formaldehyde	One prosecuted
Food additive	1	One identified as carmoisine	—
Gelatine	1	Conformed to regulations	—
Ice cream	6	Conformed to regulations	—
Jam	1	Conformed to regulations	—
Margarine	2	One excess free fatty acid	One warned
Meat	3	One contained formaldehyde	One warned
Meat (manufactured)	6	One excess preservatives	One prosecuted
Meat, minced	60	Nine excess preservatives	Six prosecuted; one warned; two investigated
Milk	763	Forty failed to conform	Nineteen prosecuted; three warned; 18 investigated
Milk (homogenized)	6	Conformed to regulations	—
Milk (sweet condensed)	3	Conformed to regulations	—
Olive oil	3	Three weight per millilitre deficient and saporification not to standard	Three prosecuted
Pasties	1	Foreign matter too minute for positive identification	Copy analysts report to complainant
Potatoes	1	Conformed to regulations	—
Sauce	1	Conformed to regulations	—
Summer/temperance drinks	13	Conformed to regulations	—
Wine	20	One failed to conform; 19 conformed	One prosecuted
Tea	1	Conformed to regulations	—
Whisky	1	Conformed to regulations	—
Sausages	76	Twenty excess fat or preservatives	Eight prosecuted; seven warned; five investigated

The majority of the above samples have been taken by local authorities under the provisions of the Food and Drugs Act and submitted through the Central Board of Health to the Department of Chemistry.

Private Hospitals and Rest Homes—The Public Health Nurse made 218 visits to private hospitals and rest homes in the metropolitan area and the rest of the State. Follow-up inspections revealed that previous recommendations made are being carried out. The standard of these premises has been improved. A code of practice for the production of sterile water was circulated to licensed hospitals, and as a result there has been an improvement in the preparation of water for various hospital uses.

Child Minding Centres—The Public Health Nurse made 93 visits to Child Minding Centres in the metropolitan and other areas. Improvements are being made to these premises and generally they are conducted satisfactorily in compliance with the By-Law under the Local Government Act and the provisions of the Health Act.

Gonorrhoea and Syphilis—Three hundred and thirty-seven males notified as suffering from gonorrhoea and 29 notified as suffering from syphilis were interviewed to determine their sources of infection and others they may have infected.

Swimming Pools—Twelve public swimming pools were inspected in the metropolitan area and nearby country towns. Generally conditions and water quality were found to be in accordance with present-day concepts for these places.

Mosquito Control—Following consistent complaints of mosquito nuisance in the Port Adelaide, Taperoo, St. Kilda and Salisbury areas, a detailed field survey to determine mosquito breeding places was commenced in October. It is anticipated the survey will show which is the most suitable method to control mosquito breeding in these areas.

Public Health Exhibits—Public health exhibits depicting immunization, dental health, occupational health and smallpox were erected at Whyalla and Adelaide to aid Service Clubs.

Caravan Parks—Seventy-one caravan parks were inspected throughout the State. Many of these were not of the standard expected in all respects. A code of practice aimed at setting a better standard for caravan parks has been prepared.

Buffalo Meat—During the year 1,073,116 lb. of certified buffalo meat came into South Australia from the Northern Territory.

Food Handling—Following an outbreak of food-borne infection at Whyalla, a course of lectures supported by films was given to kitchen staff at Whyalla, Iron Knob and Iron Baron.

Reconstituted Milk—As in previous years, some milk producers found difficulty in maintaining the non-fat solids component of milk at the standard of 8.5 per cent. The Central Board of Health issues, as required, permits in terms of the Regulations under the Food and Drugs Act for the addition of skim milk powder for the reconstitu-

tion of milk to the required standard. During 1968, five companies were granted permits to add skim milk powder to milk and label the product "Pasteurized Milk". One million, eight hundred and seventy-seven thousand, two hundred and forty-nine gallons of milk were reconstituted, using 27,175 lb. of skim milk powder.

Pet Meat—Nineteen premises were inspected where pet meat is prepared or processed for sale. Generally the standard of construction and cleanliness of the premises was unsatisfactory. Through the action of local boards of health and this Department, 11 premises were brought to a satisfactory standard. Of the remaining premises, five are in the process of completing improvements and the others have ceased business.

Poultry Processing Premises—Twenty premises were inspected where poultry is processed. Generally the larger processing plants were satisfactory. The smaller plants lacked proper premises and attention to cleanliness. The method of processing was not in accordance with present-day concepts. Through the efforts of local authorities and of this Department, 13 premises are in the process of effecting improvements and seven have ceased business.

Supervision of Wines and Spirits—Three hundred and thirty-two licensed premises including hotels, wine saloons, clubs and stores were visited in the metropolitan and country areas. A total of 8,734 tests were made of the contents of opened bottles of wines and spirits for sale at these premises. Sixteen samples were purchased for official analysis.

The Central Board of Health subsequently authorized legal proceedings under the Food and Drugs Act for misrepresentation against two licensees of the hotel premises concerned.

Forty-seven warnings were issued for minor breaches of the Food and Drugs Act.

Frozen Prawns—During 1968, five shipments of deep-frozen prawns imported into South Australia from overseas countries were sampled by this Department. One shipment was imported from Red China, one shipment from Malaya and three shipments from Japan. Bacteriological examinations proved satisfactory in each case.

Septic Tanks—Two thousand, two hundred and ninety-five plans of septic tank systems were examined and approved. Approximately 70 per cent of septic tank systems were installed in the outskirts of the metropolitan area. Resident country- and Adelaide-based District Inspectors have carried out regular septic tank inspections in country areas.

Departmental officers have continued to act in an advisory capacity supplying technical information to inquirers with regard to plumbing, septic tank systems and effluent disposal.

The Central Board of Health, under the provisions of section 528 of the Local Government Act, has approved resolutions passed by local government authorities requiring the compulsory installation of septic tanks at Bordertown, Port Elliot, Tumby Bay and Saddleworth.

New materials approved for use in conjunction with septic tank systems include fibre glass septic tanks and unplasticised poly-vinyl chloride (rigid P.V.C.) drainage pipe and fittings.

Septic tank effluent and liquid waste disposal systems have been designed and technical assistance has been supplied to provide for the construction of satisfactory systems at Kalyra Hospital Belair, Memorial Hospital Mount Barker, Wardang Island Development, Streaky Bay Caravan Park, Wallaroo Holiday Camps, Gidgealpa Temporary Camps, South Australian Housing Trust projects, Wilpena Pound Chalet, Public Buildings, and various piggery establishments.

Subdivisions—Twenty subdivisions were inspected for the purpose of advising the State Planning Office of the suitability of the building allotment sizes for the satisfactory disposal of septic tank effluent and domestic waste water within the confines of each allotment.

The subdivisions concerned varied from half an acre to 74 acres in area. Nine of the subdivisions were located in or near the metropolitan area whilst the others were located in the following towns—

Murray Bridge, Victor Harbour, Kingston (South-East), Millicent, Lyndoch, Ceduna, Goolwa, Renmark, Streaky Bay, Padthaway and Mount Gambier.

Common Effluent Collection Drains—Since 1960 various local government authorities in South Australia have made applications to the Central Board of Health for assistance in designing systems for 64 townships in their areas.

At the beginning of the year, six townships in country areas had been provided with common effluent drainage systems, with 35.2 miles of gravitational drains installed at a cost of $299,800. In addition, approximately 50 miles of gravitational drains have been installed in the near metropolitan area.

During 1968 further common effluent drainage systems were completed at Renmark, Waikerie, Nuriootpa and Eudunda, and an extension to the existing system at Berri. These installations of 44.2 miles of gravitational drains cost $533,500.

Officers of the Department of Public Health have carried out the supervision and recording of all installed work.

Construction of common effluent drainage has been commenced in the townships of Port Elliot, Cleve, Bordertown and Kapunda.

Final designs have been completed, plans and specifications prepared and supplied to local government authorities for drains in the townships of Meadows, McLaren Vale, Kapunda, Streaky Bay and Cleve. At Bordertown and Port Elliot, designs were prepared by private consultants.

Final designs of common effluent collecting systems are currently being drawn and prepared for the townships of Mount Pleasant, Mount Barker, Burra and Meningie. Preliminary surveys and tentative designs have been prepared for the townships of Riverton, Lameroo, Parilla, Parndana and Paringa.

Central Board of Health officers have visited 14 areas, attending meetings of local boards of health, councils, ratepayers and drainage committees to explain and demonstrate the plant and materials used in the construction of common effluent drainage systems. These visits have proved successful and have assisted councils to assess drainage problems and make decisions relating to construction, as well as creating a greater awareness of aesthetics and healthful environmental conditions.

Plans and specifications of common effluent drainage systems prepared by private consulting engineers have been submitted to the Central Board of Health for approval, for the townships of Clare, Saddleworth, Bordertown and Port Augusta (South Australian Housing Trust Area).

Survey work has been carried out and plans and specifications prepared for enlarged oxidation lagoons at Berri and Barmera.

Occupational Health and Air Pollution—Officers attended the following functions at the University of Adelaide—

(1) a Noise Symposium conducted by the Department; and

(2) a course of lectures of one week's duration on Occupational Hazards in Industry, conducted by the Occupational Health Unit of the School of Public Health and Tropical Medicine of the University of Sydney.

Inspectors have assisted other officers of the Department by participating in hearing conservation programmes operating in metropolitan and country areas. They have also assisted in new programmes commenced at other premises following the assessment of noise levels at the request of either management or unions.

Complaints of noise at eight premises affecting either workers or adjacent residents have been investigated.

Sampling for the presence of chemicals and dusts in the atmosphere was conducted at 10 industrial premises. These chemicals and dusts included carbon monoxide, perchlorethylene, hydrofluoric acid, welding fumes, iron oxide, lead and ozone.

Surveys of the use of carbon tetrachloride, methyl chloride, isocyanates, trichlorethylene and asbestos lagging were carried out.

Deposit gauge contents were collected at regular monthly intervals and the results of analyses recorded.

The operation of sulphur dioxide monitoring stations was also continued.

Seven complaints were received and investigated concerning atmospheric fall-out and air pollution contaminants such as foundry fumes, smoke and dust, paint spraying, burning of waste electrical wiring with plastic coverings, motor car bodies, factory wastes, and smoke from a bitumen mixing plant.

The survey of X-ray units in the State was continued and radio-isotopes used as limit switches, bin-level indicators, density moisture meters, fluid density gauges and thickness gauges were also monitored.

Whyalla District—The near completion of the installation of sewers in Whyalla has reduced the demand for septic tank approvals in the town. However in the rest of the district, 93 septic tank inspections were made and 191 permits to use septic tanks were issued.

The district contains areas not under local government control that supply milk and meat to Whyalla. These activities were supervised. Improved slaughtering methods were adopted at the abattoirs for sheep and lambs.

Relief during periods of sickness and recreation leave of 25 and 15 days respectively was provided for the Meat Inspectors at Whyalla and Port Augusta Abattoirs.

Occupational health matters investigated at the shipyard included the use of asbestos-type board, phosphorous bronze welding rods, and the extent of asbestos use in shipbuilding.

Food-borne infection attributed to salmonella organisms affecting 58 hostel residents was investigated and food-handling techniques were assessed.

Port Pirie District—The District Inspector took up residence in the district in January.

General inspections were made of the local board areas of Orroroo, Crystal Brook, Gladstone, Hallett, Hawker, Carrieton, Peterborough Town and Peterborough District.

This district also contains areas not under local government control. Areas North of Eyre Peninsula were visited to check the preparation of kangaroo meat in the field. Subsequently a code of practice for the preparation of kangaroo meat was issued to interested parties.

The Parachilna, Blinman and Wilpena areas were visited. With the increased tourist activity, greater attention to environmental hygiene is needed in these areas.

Five hundred and sixty-five septic tanks inspections were made and permits issued to use 355 systems.

Twenty-nine persons were interviewed as contacts of persons notified as suffering from gonorrhoea or syphilis.

All the piggeries in the immediate area of Port Pirie were surveyed as some of these were the cause of complaint by persons in nearby residential areas.

Mount Gambier District—The District Inspector took up residence in Mount Gambier in February.

His first activity was to visit all local board offices and acquaint local board officers with the services now available.

The 740 outstanding septic tank systems were then inspected and 528 permits to use the systems issued. Approvals to proceed with 139 new systems were granted. Inspections were made of situations where septic tanks had been installed without prior approval and persons concerned were advised of the necessary procedures.

Proposals for common drainage schemes for four small industrial groups were investigated.

Attention has been given to disposal of liquid trade wastes, and persons advised on quality of water obtained from shallow and deep bores for domestic use.

Proposed land subdivisions at Kingston and Millicent were assessed for effluent disposal purposes.

The deposit-gauge stations at Mount Gambier have been regularly serviced. Repeated inspections of the premises of a battery manufacturer were needed to ensure that his children were removed from a potentially hazardous lead exposure.

Attention was given to fish and poultry dressing establishments and the distribution of both pasteurized and unpasteurized milk.

Loxton District—The year 1968 was the first full one of operation with the District Inspector residing in the district.

General inspections of the five local board areas of Morgan, Lameroo, Pinnaroo, Browns Well and East Murray were made.

Field work was carried out in connection with common drainage schemes at Pinnaroo and Berri.

Attention has been given to industries discharging liquid waste to the River Murray. Two distilleries ceased discharging waste to a brackish backwater; this discharge was the source of complaints associated with consequent generation of hydrogen sulphide gas.

The production and distribution of milk in the area has been assessed with particular attention to unpasteurized milk supplied to school children as certified milk.

Six persons notified as suffering from gonorrhoea and syphilis were interviewed to determine their contacts and sources of infection.

The methods of distributing and storing contaminable pesticides were surveyed and the necessary steps were taken to ensure that they are suitably handled.

A land subdivision in the Renmark area was assessed for effluent disposal purposes.

Assistance was given to other departmental officers investigating noise levels, and pollution and X-ray equipment.

Poison Regulations—No major changes were made to the Schedules during the year; the fertility drug Clomiphene was restricted in use to the Research Unit at the Queen Elizabeth Hospital.

Reports of the abuse of the amphetamine group of drugs continued to be received.

There were five prosecutions for drug offences in connection with the prescribed drugs under the Police Offences Act.

Dangerous Drugs—Seven addicts were added to the Register, with a net increase of two, bringing the total number to 35. There were 179 cases of notified long-term treatment with narcotic drugs.

There were four prosecutions during the year for offences in connection with dangerous drugs.

4. OCCUPATIONAL HEALTH AND AIR POLLUTION

PRINCIPAL MEDICAL OFFICER (OCCUPATIONAL HEALTH)—K. J. WILSON, M.B., B.S., D.P.H.

General Activities—Increasing use of the services and facilities of the Branch for assessment and control of occupational hazards has been made during the year by industrial management, labour organizations, Government Departments and official organizations, and members of the public. This has been manifested by the number of requests for advice, information or investigation relating to possible hazardous occupational or environmental conditions.

Investigations involving technical assessment by Branch Officers (but excluding routine radiation surveys) have originated from the following souces:

Industrial management		18
Labour organizations	13	
Waterside Workers Federation (through Australian Stevedoring Industry Authority)	9	
	—	22
Department of Labour and Industry		18
Other Government Departments		14
Commonwealth Departments		5
Local Boards of Health		1
Departmental Surveys—		
Lead	80	
Noise	40	
Others	53	
	—	173
Hearing Conservation Programmes—		
Continued	9	
New	7	
	—	16
Accidents and Illnesses—		
Dermatitis	15	
Others	18	
	—	33
Miscellaneous		9
		309

Whilst many of these investigations were of well-recognized hazardous agents, for example, lead, solvents, dusts and noise, there was an increased number directed towards assessment of hazards associated with the use of compounds and processes not previously encountered by the staff. Investigations of this type are very time-consuming and involve devising methods of sampling and detailed study of published literature, or correspondence with interstate or overseas centres for information on toxicity, so that the hazard may be correctly evaluated. Such investigations will continue to occupy much of the time of the scientific staff due to constant technological change in industrial methods.

Increased concern for the hazards of exposure to asbestos dust and noise was shown by both management and workers during the year. This was in part due to two conferences, the First Australian Pneumoconiosis Conference (Sydney) and the Symposium on Noise in Industry (Adelaide), which aroused Australia-wide interest. Conferences of this type have an important role in a continuing educational effort to promote optimum occupational conditions to safeguard the health of workers. The resulting increase in inquiries and requests for investigations are welcomed as a measure of success of the efforts of those concerned in organizing these functions.

To promote a basic understanding of industrial hazards and of recent advances in knowledge of occupational health, a five-day lecture course on "Occupational Hazards in Industry" was organized by an *ad hoc* committee composed of representatives from the Branch, the Department of Labour and Industry, the Safety Engineering Society of Australia (South Australian Branch) and the National Safety Council of Australia, South Australian Division. The course, held in May, was attended by over 260 delegates from all classes of industry. The scope was very comprehensive, covering most aspects of occupational health, but excluding somatic injury. The majority of the lectures were delivered by lecturers from the School of Public Health and Tropical Medicine, Sydney, with support on some specialized subjects from local speakers.

The course was very successful in terms of attendance and reception. Nevertheless it is realized that such educational efforts generally fail to attract representatives from small industries, that is, those employing less than 100 workers, whose total employees make up a large proportion of the State work force. There are many firms in this section of industry which, through ignorance or indifference or for reasons of economy, lack understanding of occupational hazards and of optimum working conditions. These firms would benefit greatly from exposure to such courses or from the services of the Branch. The *ad hoc* committee referred to above is continuing to explore further educational programmes and methods of presentation which may attract representatives from these smaller industries.

Conferences and Interstate Visits—Dr. K. J. Wilson attended the "Business Administration Course for Public Service Senior Executives"—1968, a course of 20 lectures held at the School of Business Administration, South Australian Institute of Technology. The knowledge gained from the lectures and the sharing of experiences of other members make such courses extremely valuable.

The First Australian Pneumoconiosis Conference, held in Sydney in February, 1968, was attended by Dr. K. J. Wilson and Mr. R. G. Stafford. Sponsored by the Joint Coal Board and the Commonwealth Department of Health, it was attended by over 250 delegates representing the mining industry, labour organizations, State Health and Labour Departments, safety organizations, manufacturing industries and insurance companies. The conference promoted the exchange of knowledge and experiences of dust diseases of the lung, dust control, dust sampling procedures, and debate on permissible dust standards in Australian industry. The presence and contributions of experts from South Africa and the United States of America added greatly to the success of the conference.

Dr. K. J. Wilson attended the 1968 New South Wales Industrial Safety Convention and the Third Australian Medical Congress, held in Sydney in August. Papers on medical aspects of noise exposure were delivered by him at both conferences.

The Occupational Health Committee and the Radiation Health (Standing) Committee of the National Health and Medical Research Council held two meetings each during the year, attended by Dr. G. H. McQueen and Dr. K. J. Wilson, respectively. In addition, the latter was convenor of a sub-committee established to draft a Code of Practice for the Safe Use of X-ray Analysis Units. Two meetings of this sub-committee were held in Melbourne and two in Adelaide.

The Department has been represented on the Standards Association of Australia Sub-Committee No. 1—Hearing Conservation AK/3 by Mr. R. G. Stafford at its first meeting in Sydney in September, and by Dr. K. J. Wilson at the second meeting in Melbourne in December. Dr. E. F. Harben has represented the Department at meetings of the South Australian Branch, Standards Association of Australia, when various draft standards have been discussed.

The annual meeting of the Scientific Officers engaged in the field of Occupational Health was attended by Mr. G. F. Sweetapple in Sydney in August, 1968. There were representatives from each State and from a Commonwealth Department. Most delegates presented short papers or contributed some items to the conference. The subjects discussed included dust sampling, dust exposure and legislation, episodes of industrial poisoning, improved methods of sampling and of analysis, calibration and efficiency of direct-reading air-monitoring apparatus, interpretation of recommended maximum allowable concentrations for occupational exposure, new processes and chemical applications, personal protection, heat stress and physical fitness. Papers on sampling equipment calibration and a method of sampling and analysis of oil mist were contributed by Mr. Sweetapple.

Mr. R. G. Stafford attended the International Acoustics Symposium held in Sydney in September. Papers were presented by Australian and overseas delegates on many aspects of industrial and environmental noise assessment and control. This conference was of great practical value and the information acquired will assist the Branch in the evaluation of noise surveys and treatment of noise problems.

In addition to the above, officers of the Branch attended the Symposium on Noise in Industry and the Course of Lectures on Occupational Hazards, organized by the Department, and the 1968 South Australian Industrial Safety Convention, organized by the Department of Labour and Industry.

Lectures and Addresses—Lectures or addresses were given to several organizations by officers of the Branch during the year, as follows:

Institute of Mining and Metallurgy—Address on "Medical Aspects of Dust Exposure and Prevention"—Dr. K. J. Wilson.

South Australian Institute of Foundrymen—Address on "Industrial Noise"—Dr. K. J. Wilson.

Symposium on Noise in Industry—

Address on "Hearing Conservation Programmes"—Dr. K. J. Wilson.

Address on "Evaluation of Auditory Hazards in Secondary Industry"—Mr. R. G. Stafford.

Lecture Course on Occupational Hazards—Lectures on "Noise—Medical Aspects" and "Legislation in South Australia"—Dr. K. J. Wilson.

Third Australian Australian Medical Association Congress—Address on "Hearing Conservation Programmes"—Dr. K. J. Wilson.

New South Wales Industrial Safety Convention—Address on "Industrial Noise—Hearing Conservation and Medical Aspects"—Dr. K. J. Wilson.

Port Adelaide District Industrial Safety Group—Address on "Occupational Hazards"—Dr. K. J. Wilson.

Pest Control Operators (Certificate Course)—Two lectures on "Safe Handling of Pesticides"—Dr. K. J. Wilson.

Dental Nurses (Certificate Course of Australian Dental Association)—Lecture on "Radiation Hazards"—Dr. K. J. Wilson.

Nurses of Royal Adelaide Hospital—Nine lectures on "Community Health"—Dr. K. J. Wilson.

Joint Meeting, New South Wales and Victorian Sections of Occupational Medicine—Address on Occupational Medicine in South Australia—Dr. K. J. Wilson.

Museums Association of Australia—Address on "The Potential Hazards of Solvents, Fumigants, Repellants and Pesticides"—Dr. E. F. Harben.

Quarterly Meeting of Health Inspectors—Address on "Environmental Noise"—Mr. R. G. Stafford.

Institution of Engineers of Australia, Graduates and Students Section—Adelaide and Port Augusta Groups—Address on "The Technical Aspects of Clean Air in South Australia"—Mr. W. E. Lilburn.

Publications—In addition to the publication of several of the above addresses in the appropriate journals or proceedings, the following papers were published:

"Hazards Encountered in the Use of Mercury", G. F. Sweetapple—Proceedings of the Royal Australian Chemical Institute (Volume 35, No. 9, September, 1968).

"Noise in Industry", R. G. Stafford—*The Australian Manufacturer*, March, 1968.

New Equipment—The following major items of equipment were purchased during the year for use in technical investigations:

(1) *Beckman Mercury Vapour Meter*—This portable instrument monitors mercury vapour instantaneously. The concentration is read directly and considerable time is saved in sampling and analysis.

(2) *Mine Safety Appliances Carbon Monoxide Meter*—This instrument is also portable and direct-reading. It gives more satisfactory results than the detector-tube method of estimating carbon monoxide.

(3) *Akai Tape Recorder Model* 707.

Advisory Committee on Noise—The committee met on six occasions during 1968. In addition, the members, constituting the Organizing Committee of the Symposium on Noise in Industry, met on several occasions during the first quarter of the year. Organization of the Symposium demanded much time and effort from the members, and the Branch is grateful for the significant contributions made by the private members and those of other Government Departments.

Dr. J. Mannam, Mechanical Engineering Department, University of Adelaide, was appointed to the Committee in September in place of Mr. R. B. King, who resigned from the University to enter private industry. In view of Mr. King's wide experience and valuable contributions to the work of the Committee, it was considered desirable to retain his services. He accepted an appointment as Consultant to the Committee on engineering noise control.

The committee continued to direct its attention to effective avenues of education of industrial personnel in the hazards of excessive noise exposure. Planning was commenced for publication, as an issue of *Good Health*, of summarized versions of some of the papers presented at the Symposium together with the data relating to industrial noise surveys and audiometric results from the 1967 Committee Report—"Noise Surveys and Hearing Conservation Programmes". It is expected that this booklet will be printed early in 1969, when it will be widely distributed throughout industry.

Consideration was given to a report by Branch officers on the adoption of 90 decibels, measured on the 'A'-weighting scale, as the damage risk criterion for continuous noise exposure. This criterion was recommended by the International Standards Organization in place of the criterion based on Noise Rating (NR85). The Branch had carried out a study by data processing to confirm the equivalence of these two criteria, based on results obtained in noise surveys in South Australian industries. Seven hundred and sixty-four octave band analyses were converted from Noise Rating to dB(A) and the correlation derived. The result indicated that the damage risk criterion of NR85 could be stated also as 90dB(A) $\pm$2.5dB(A) standard deviation. The committee agreed that 90dB(A) was an acceptable criterion for hearing conservation, but recommended that any industrial noise level in excess of 87dB(A) should be further investigated by means of octave band analysis.

Symposium on Noise in Industry—Sponsored by the Departments of Public Health and Labour and Industry, with the active support of a number of private industries, this two-day Symposium was held in February in collaboration with the University of Adelaide. The members of the Advisory Committee on Noise formed the Organizing Committee of the Symposium.

Papers were given by local and interstate speakers on the physiological and psychological aspects of noise, the theories of vibration and sound, damage risk criteria, engineering control of noise, evaluation of the hazards of noise in primary and secondary industry, and hearing conservation programmes. The keynote address was delivered by Dr. Aram Glorig, Director of The Callier Hearing and Speech Centre, Dallas, United States of America, who also gave a Public Address, entitled "Industrial Noise" in Bonython Hall. As the principal guest lecturer, Dr. Glorig, whose extensive knowledge and experience in this field is widely acknowledged, played an outstanding part in the Symposium and contributed greatly to its success.

Over 250 delegates from all States attended the Symposium, representing management and labour organizations of primary and secondary industry, medical practitioners, engineers, architects, State Health and Labour Departments, Commonwealth Government Departments and local government authorities. The Proceedings were published and made available to delegates and by sale to any other interested persons.

The Organizing Committee considers that this Symposium achieved its aim—to arouse interest in and broaden understanding of industrial noise by all who may be exposed to its hazards or concerned in its control. This conclusion is supported by the subsequent number of inquiries for further information and for assistance, the wide distribution of the Proceedings and by favourable comments from local and interstate industrialists, industrial medical officers and union representatives.

Medical Examinations—Examination of applicants for permanent appointment in the South Australian Public Service and for acceptance by the South Australian Superannuation Fund, and for other specific purposes, were carried out by medical officers as follows:

(1) Permanent Appointment and/or Superannuation Fund—	
Public Service Board	330
Superannuation Board	505
State Bank	21
Medical examinations carried out elsewhere (checked by the Department)	123
(2) Special Examinations—	
Cadets	57
Housing Loan Redemption Fund	12
South Australian Harbors Board (Pilots)	11
Entry to Aboriginal Reserves (Mines and Lands Departments)	33
Miscellaneous (invalidity, job suitability, etc.)	9
	1,101

Hearing Conservation Programmes—Following the stimulus provided by the Symposium on Noise in Industry, the Branch received several requests for assessment of occupational noise exposure. It also re-approached industries in which previous noise surveys had revealed a hazardous noise environment, but where no action had been taken by management.

Due to financial problems, fear of litigation, costs, labour turnover, and disbelief, results have not been as good as had been anticipated. It was encouraging to note however that four Government Departments have accepted hearing conservation. In these establishments, at least, there is optimism that all exposed employees will eventually be protected with ear muffs in areas where engineering control is impracticable at present.

These efforts have resulted in the establishment of a further seven programmes during the year, making a total of 16 programmes directly supervised by the Branch for at least some part of the year. The number of employees examined and tested for hearing acuity was 509. The importance of a thorough understanding by both management and employees of the hazards of excessive noise exposure and methods of control has been stressed in each industry. No programme was introduced without personal interview with a representative of top management, followed by an explanatory address to employees, films, slides and free discussion. Details of this aspect of the work of the Branch is given in Appendix 3.

Industrial Dermatitis—Forty-two lost time cases of industrial dermatitis were reported by the Department of Labour and Industry during the year. Fifteen cases were investigated. The causative agents ranged from wood dust, brine, soluble oils, pressing oils, fibre glass, kerosene, TMT, "DPG" and "MR" paste for washing of hands, detergents, resins and formalin. Lack of personal hygiene or failure to use protective equipment appear to be the main reasons for these problems in industry.

Lead—Investigations into conditions in factories (battery production) were carried out during the year and regular blood-lead estimations of employees in certain factories maintained. The greatest danger to lead exposure appears to lie in the small family-operated backyard-type of workshop, and in one instance the whole family were found to have high blood-lead levels. Recommendations for improved ventilation and handling practices were made, and surveillance is continuing.

The source of lead poisoning in an Italian male was traced to a bath tub in which grapes had been crushed for home-made wine. The "Devonshire" colic of England, and the early problems of lead poisoning in Europe seem likely to become problems in this State, and the extent of the use of the "old bath tub" in home wine-making requires further investigation.

Trichlorethylene—Complaints of persons losing consciousness while working near "trichlor" baths have been investigated and action taken to modify degreasing equipment to eliminate hazards to employees.

Pentone—Some operators in the vicinity of capsule-packing machines producing pentone capsules, complained of nausea, vomiting or drowsiness. Improvements to the exhaust ventilation rectified this problem. Willingness by management to co-operate, coupled with imagination and improvization, showed how much could be achieved. The very small costs were compensated by the increased production.

Pneumoconioses—

Silicosis—One case was reported during the year, and though the actual work carried out was dust free (wet process), investigations revealed that occupational environmental factors on building construction sites, such as unloading of sand, chipping and sweeping operations, could have exposed him to silica dust.

Asbestosis—The hazards of excessive exposure to asbestos dust—asbestosis, mesothelioma and increased risk of lung cancer—have received wide publicity in both the medical and lay press and news media. The interest of both management and labour organizations has been stimulated, resulting in many inquiries for information and assessment of risk. Investigations have been made in various industries manufacturing or using asbestos products, such as in ship-building, insulation, building materials and building construction. The assistance of the Branch was given to a Board of Reference, Commonwealth Conciliation and Arbitration Commission, to determine the risk to members of a particular union engaged in ship construction.

Information is difficult to obtain on the prevalence of disease due to asbestos dust in workers in South Australia. A prospective study of all registered cases of lung cancer and mesothelioma has been commenced to check the occupational history for possible significant exposure.

Miscellaneous—Advice and opinions have been given throughout the year on medical aspects of first-aid provisions, working conditions, medical surveillance programmes, Regulations under the Industrial Code, use of laser beams in industry and various Codes of Practice. Medical examinations have been carried out on various individual workers at the request of medical practitioners seeking opinions on occupational causes of illness.

An interesting investigation involved the use of ultra-violet lamps in the detection of false bank notes. The lamps emitted ultra-violet light of wave lengths predominantly below 2,800°A, which minimized the risk. Besides direct shielding, employees were advised to wear ordinary glasses with side shields.

Investigations of Chemical Hazards—

Lead Survey—Follow-up inspections were made of the premises of the smaller metropolitan battery manufacturers and repairers. The number of personnel and production quantities were found to be practically unchanged since the last series of inspections. It is considered that the inspections achieved good public relations and kept the operator's attention drawn to the danger of lead. In addition, air sampling to determine the effectiveness of control equipment was carried out at a small battery manufacturer's premises in a country town.

Following notification of a case of lead poisoning in an employee of a small metropolitan battery manufacturer, air sampling was carried out. Although mechanical ventilation was not provided for processes in which lead was used, air concentrations of lead dust or fume were not excessive, and it was considered that poor personal hygiene was the most probable cause.

A series of air samples was taken during various operations involving type metal at seven printers within the metropolitan area. The results were satisfactory. Sales of lead oxide by a contractor in the city were investigated. A number of industries were found to use this material for a variety of purposes, one of which was in preparation of special cements. It was considered that although lead oxide was a hazardous substance, the infrequent use and the small quantity involved did not constitute an occupational risk provided reasonable precautions were taken.

In a railway workshop high lead-in-air concentrations were measured during the rebuilding of rail wagons previously used for the carriage of lead concentrates. Appropriate recommendations to be used when welding or oxy-cutting was carried out, were made. Lead-in-air sampling was carried out at the same railway workshop during manufacture of white metal bearing material. Conditions were found satisfactory.

The danger of lead absorption from lead alkyls in motor spirit where this material was used as a solvent was investigated. At some motor repair shops relatively large quantities were used. Recommendations to use an alternative solvent without lead were made. It is proposed to air sample to assess occupational exposure.

Air sampling was carried out at a factory in which fishing sinkers were manufactured from scrap lead. Conditions were not very satisfactory and appropriate recommendations for improvement were made.

A number of other industries including public utilities which used small amounts of lead were visited. Most operators were well aware of the hazardous danger of lead. Due to this and other factors, little occupational hazard was considered to exist.

Survey: Other Toxic Substances—An investigation was made to determine whether an occupational hazard was likely to arise from the re-use of metal drums previously employed as containers for isocyanates. It was found that the larger users effectively decontaminated these drums and that very few used by a smaller firm were reconditioned. Suitable recommendations to avoid hazards were made.

Potentially hazardous conditions found at one firm, due to decanting methyl chloride for refrigeration, led to inspections of all wholesalers. Compliance with the Regulation prohibiting refilling refrigerators with the substance after 30th June, 1968, was also investigated.

The survey initiated in the latter part of 1967 into uses of carbon tetrachloride was continued at organizations servicing carbon tetrachloride fire extinguishers. An example of ignorance and the need for continual industrial safety education was seen at one firm where an operator was using an ineffective dust mask to prevent inhalation of this dangerous substance. Through the efforts of the Branch, at least in part, the South Australian Fire Brigade agreed to discontinue carbon tetrachloride in fire extinguishers in the latter part of the year.

Artificial Fertilizers—Following the installation of new equipment by a large Adelaide fertilizer factory, air sampling to determine occupational exposure to fluoride fumes was carried out. Conditions previously considered unsatisfactory were found to be acceptable. Inspections were made at two country fertilizer factories and air sampling will be carried out.

Foundry Fumes—Following investigations carried out in previous years in foundries employing consumable polystyrene patterns and conventional sand moulds, further air sampling was conducted at a foundry which employed powdered coal in its moulds. Polycyclic hydrocarbons were not generated in significantly higher concentrations than in foundries where either of the other types of mould material was used.

Welding—Further air sampling was carried out at a large shipyard to determine occupational exposure during welding on pre-primed surfaces with a variety of electrodes. The results of investigation showed that occupational exposure was more a function of the ventilation than the electrode material or the type of covering over the steel plate. It was stressed that where welding was carried out in confined spaces, adequate ventilation was imperative.

A considerable number of air samples was taken during all types of welding at a large railway workshop. Apart from welding on the steel work of lead ore concentrate trucks and during the use of stainless steel electrodes in which chromium fumes were produced, there did not appear to be a great problem.

Sampling was also carried out at another Government workshop following illness of a welder alleged to have been caused by fumes from a particular welding rod. Conditions were found to be satisfactory.

Solvents—The occupational exposure to perchlorethylene during dry cleaning was assessed at a large laundry. Due to a mechanical fault the operator was exposed to heavy concentrations of the solvent. Following rectification of the fault, conditions were found to be satisfactory.

Further solvent concentrations were measured in two laboratories. Conditions were found to be satisfactory in one, but in the other, where carbon tetrachloride was used, recommendations were made to change to a safer solvent.

Service to the Australian Stevedoring Industry Authority—Six requests for assistance involved irritating odours and the remainder unknown substances or spillages. In one instance, chlorine gas contamination was due to a former spillage of trichlorocyanuric acid. In all cases recommendations for protection of workers were made.

Exhaust Gases—A request was received from the owner of a large Adelaide car park for an investigation into the occupational exposure to exhaust gases of motor vehicles. Carbon monoxide levels were found to be excessive and recommendations for improved ventilation were made.

Irritant Gases—Concentrations of formaldehyde in one factory and of ozone in another factory were measured, and appropriate recommendations for reducing occupational exposure were made. In a Government laboratory, hydrofluoric acid concentrations in air were estimated and found to be excessive. Suitable recommendations were made.

Isocyanates—Air sampling was carried out for organic isocyanates at two factories which produced polyurethane foams for the insulation of refrigerators. In one factory where suitable precautions were taken conditions were found to be satisfactory. Although a pre-reacted isocyanate was employed at the second factory, few precautions were taken. Occupational exposure in this case was excessive. Isocyanate levels were measured at a research establishment where this material admixed with other substances was used as a propellant. In some instances isocyanate in air concentrations were excessive. Suitable recommendations to reduce occupational exposure were made.

Ventilation—Measurement of ventilation rates within several spray booths were made and appropriate advice given. Advice was also given on ventilation for a fumigation chamber to be operated in a Government building and on the requirements for extraction ventilation in a factory to discharge the products of combustion of a dryer to atmosphere.

Miscellaneous—Apart from those listed above, a wide variety of investigations was made following requests from many sources. Recommendations for safe handling of substances were made, information relating to toxicity or potential hazards was supplied, and opinions given of the extent of the hazards involved.

Investigations of Physical Hazards—

Survey of Irradiating Apparatus—During the year a total of 569 units of irradiating apparatus were examined by the Branch for compliance with the Radio-active Substances and Irradiating Apparatus Regulations and with recommended radiation protection standards.

The number of units examined includes those used for research and industrial applications, and it is the first time that these units have been included in the annual survey of irradiating apparatus. As was the case in 1967, all information gathered during the survey was processed using the CDC 3200 Computer at the Automatic Data Processing Centre. The print-outs available from the various computer programmes are now being used as work-sheets for subsequent surveys and have provided a most useful aid in this work.

The classification and number of irradiating apparatus for which radiation protection details are now available are as follows:

Classification	Numbers of Irradiating Apparatus	
	1967	1968
Dentists	171	191
Hospitals	153	175
Medical practitioners	98	113
Chiropractors	12	17
Veterinary surgeons	5	10
Industrial	*n.i.*	26
Research	*n.i.*	37
Totals	439	569

The total number of irradiating apparatus registered under the Radio-active Substances and Irradiating Apparatus Regulations under the Health Act, 1935-1961, during 1968 was 562. Registration forms have been forwarded to the owners of apparatus which were examined and found unregistered and followed up to ensure registration.

Survey of Radio-isotope Limit Indicators—A total of 92 such limit indicators were examined in industrial plants in South Australia and this figure represents an increase of 20 indicators in 1968. Each installation examined was found to comply with the Radio-active Substances and Irradiating Regulations in regard to level of leakage radiation from the source housing, adequate shutters and control for primary beam radiation, and appropriate labelling of the radio-isotope container.

No indicator that had been previously examined was found to show signs of deterioration or increased value of leakage radiation.

Radiation Protection Design—Radiation protection specifications for the X-ray Departments in the Modbury and Meningie Hospitals were completed and forwarded to the architects involved.

Radiation protection specifications were completed for two industrial X-ray installations. At completion, these installations were inspected and found to comply with the given specifications.

Film Badge Monitoring—The Commonwealth X-ray and Radium Laboratories continued to assess film badge monitors for radiation workers in South Australia. A copy of all assessments is sent to the Department. Investigations of 13 reported excessive doses were made during the year. The employees of one industrial radiography firm were placed on weekly film badge monitoring because of unsatisfactory explanations of excessive doses. The assessed doses of these employees have since remained within acceptable limits.

Noise—Forty noise surveys were completed during the year, covering employees engaged in such occupations as teaching, ship-building, dredging, shipping, motor vehicle building, computing and wood-working.

Some typical overall noise levels and associated octave band analyses as recorded during the above investigations are shown in Appendix 4.

Noise Specifications—Several noise surveys were conducted by the Branch in order to determine whether or not noise specifications in various projects had been complied with. It was found that in general noise specifications for new equipment, plant and buildings are poorly stated and lead in many cases to insoluble conflict between owners and contractors.

The Branch has corresponded with the National Bureau of Standards, United States Department of Commerce, on the following subjects—

(*a*) sound insulation and noise control requirements in buildings;
(*b*) land use zoning ordinances;
(*c*) the control of noise produced by machinery, equipment and plant;
(*d*) noise control in multi-family dwellings;
(*e*) acceptable noise levels within schools.

This liaison with overseas workers in the field of noise has proved to be most rewarding and a real aid in the solution of several local problems.

Ultrasonic Cleaning Tanks—Investigations into several complaints made by personnel exposed to the noise from ultrasonic cleaning tanks were conducted during the year. The complaints were of subjective effects such as fatigue, headache, nausea and tinnitus. Some workers merely found the noise unpleasant and switched off their units whenever possible.

It has been shown that these effects are due to exposure to the higher frequencies present in the noise, audible to the young ear, and not to the ultrasonic frequencies themselves. Auditory damage is unlikely due to exposure to the levels measured.

Asbestos—Following an investigation into the intermittent production of asbestos fire-proof doors, it was found that the risk of employees contracting asbestosis would be negligible, provided that all employees involved in the fabrication of asbestos doors were supplied with half-face respirators and twin dust cartridges, to be worn when asbestos is being machined. A suitable arrangement would be the Protector mask RQ200 fitted with high efficiency dust cartridges type RC74.

Dolomite—Using the Owens Dust Counter a series of dust samples was collected in an Offset Printing establishment. Microscopic examination of the samples obtained indicated that the operators were exposed to concentrations of dolomite in air greater than 700 particles/cc. of air; this concentration being the threshold limit values of mineral dust in air for occupational exposure (National Health and Medical Research Council 1964).

To reduce the dust concentrations in the offset printing operators' breathing zones to an acceptable level, it was recommended that a satisfactory form of extraction ventilation system be installed to serve the operators' position of each press. This system was to be exhausted to atmosphere through a suitable filter medium.

Air Pollution—During the year, the investigatory and advisory aspects of this field were most prominent. Investigations were made of complaints received, equipment requirements, plant requirements, control measures, pollution sources and effects. Appropriate advice was given to those concerned including local boards of health, Government Departments, industry and commerce, equipment manufacturers and suppliers, the Clean Air Committee, and other organizations and individuals.

Liaison with Government agencies and other groups concerned with aspects of air pollution control was maintained and extended as needed.

As well as general investigations continually made into various aspects of air pollution and its control, some 48 individual inquiries requiring specific advice were received.

Evidence was given to the Commonwealth Government Senate Select Committee on Air Pollution during its inquiries in South Australia.

Measurements were made of smoke density and of sulphur dioxide at the eight Adelaide metropolitan stations and at Port Pirie. At Port Augusta the monitoring was carried out until the 24th September, when it was decided to cease sampling.

The 1968 monthly averages and the corresponding highest daily readings for smoke density expressed as Coefficient of Haze Units, and for sulphur dioxide expressed as parts per hundred million, for the metropolitan and country stations are given in Appendices 5 and 6.

Appendix 7 shows details of results of analysis of deposits of particulate matter collected in gauges located in various parts of the metropolitan and country areas.

Due to continued complaints of hydrogen sulphide air pollution generated by the running of industrial wastes into Salt Creek at Renmark, air samples at various sites along the creek were taken. The maximum concentration of two parts per million was found. It was anticipated that pre-treatment of the wastes and flushing of the creek by winter rains would largely eliminate the problem.

5. SCHOOL HEALTH

PRINCIPAL MEDICAL OFFICER—DR. C. O. FULLER, M.B., B.S., D.P.H.

During 1968 the Senior Medical Officer was absent on leave without pay, one medical officer was in Sydney studying for the Diploma of Public Health, and another was overseas. The appointment of temporary medical officers to cover the absence of these officers was possible for most of the year and despite the back-log of work from 1967, the current programme was almost completed by the end of the year.

The total Education Department enrolment for 1968, which includes the Northern Territory, was 229,678 and the enrolment for South Australia only was 221,999.

(*a*) MEDICAL SECTION

Examinations Carried Out for Education Department Schools—The number of children examined in 450 Education Department schools visited during 1968 was 97,880.

The parents of 27 children requested that their children be exempted from medical examinations.

Details of medical examination and communicable diseases notified in Education Department schools are shown in Appendices 8, 9 and 10.

Examinations Carried Out by School Health Branch Staff at 158 Rundle Street, Adelaide—

(1) *Medical Examinations of School Children Seen Previously at Schools*—Children may be asked to attend head office for further assessment of a particular defect before being referred to their family doctor, hospital or eye specialist. Teachers and parents occasionally bring children to head office for advice and assessment of a particular problem. During 1968, children numbering 198 were seen for additional assessment.

(2) *Medical Examinations Apart from School Children*—Three thousand, one hundred and seventy-four students entering or leaving the Teachers Colleges, or applying for Teaching Scholarships, Junior Teaching positions and Laboratory Assistantships, were medically examined in 1968.

Teachers referred by the Education Department were seen before returning to duty from sick leave. Applications from teachers for invalidity pensions referred by the Education Department were considered and where necessary the applicants were examined. A total of 694 teachers were seen during 1968. Twenty children travelling interstate with cricket, basketball and football teams were medically examined.

The total number of examinations carried out by the School Health Branch at head office was 4,086.

Health Education Lectures—With the introduction of a three-year diploma course for Primary Teachers Colleges, a reduction in the time available for health and physical education lectures became necessary. Dr. C. O. Fuller gave a shortened course of lectures to each College, viz.—

1st Term—Western Teachers College—4 lectures/week (for three weeks)

2nd Term—Adelaide Teachers College—8 lectures/week (for four weeks)

3rd Term—Wattle Park Teachers College—5 lectures/week (for two weeks)

As in previous years Dr. Fuller again lectured nurses at the Adelaide Children's Hospital.

Paediatric Refresher Week—Medical officers attended the refresher week at the Adelaide Children's Hospital.

Mothers Clubs—The demand for speakers continued and despite the shortage of medical officers, eight metropolitan and country Mothers Clubs, School Committees or Parents Groups were addressed by Branch officers.

Follow-up Work—This has been discontinued temporarily due to staff shortages.

Defect Notices—Under an arrangement approved by the Australian Medical Association, 2,446 forms SHB5 (advice to parents of a defect) were returned by doctors and specialists to whom children were taken by parents. Their co-operation is gratefully acknowledged as it enables departmental records to be completed and the progress of these children followed.

SHB5 Forms returned—

Metropolitan	1,883
Country	563
	2,446

(*b*) DEAFNESS GUIDANCE CLINIC

The Deafness Guidance Clinic completed its tenth year with a total of 2,981 attendances.

New cases were referred from the following sources—

	Per Cent
Officers of the School Health Branch	82.5
Family doctors	7.7
Parents	4.8
Others (Kindergarten Union, teachers, Psychology Branch)	5.0

The liaison with the Education Department through the Advisory Panel for Deaf and Hard of Hearing Children has been maintained.

The monthly lists of all children discovered to have a significant loss have been continued and 265 were made the subject of specific letters. Of these 156 were discovered at the initial test.

In addition to children, tests were carried out on student teachers, scholarship applicants and public servants.

Screen Testing in the Field—Audiometric testing was conducted in Education Department and private schools and pre-school kindergartens associated with the Kindergarten Union of South Australia Incorporated.

A total of 12,670 children had pure tone audiometer tests. Of these 493 were found to have some hearing oss at the time of testing. Parents were notified accordingly and, where possible, further testing was carried out n the Deafness Guidance Clinic.

Audiometers supplied and maintained by the Commonwealth Acoustic Laboratory were used for all field work.

Appointments at Deafness Guidance Clinic—To avoid patients overlooking appointments, reminder notices are sent and this is responsible for maintaining a high attendance rate.

The figures for New Cases, Retests and Disposal are given in Appendices 11 and 12.

(*c*) DENTAL SECTION

SUPERINTENDENT, SCHOOL DENTAL SERVICE—MR. H. D. KENNARE, B.D.S.

The year was marked by the inauguration of the clinical training programme for the first group of Dental Therapists and by the design of modest research projects in dental public health.

(1) *Education Division*—

During the year two full-time Tutor Dental Officers, three part-time Tutors, and a second Tutor Sister on loan from the New Zealand Division joined the tutorial staff.

Several dentists on the field staff attended the school to receive inservice training to familiarize them with the role of dental therapists in the service.

The second course of 16 students commenced in February, whilst the first group commenced clinical training when structural alterations and installation of the equipment in the clinic were completed in July, 1968. Because of delays in the clinic becoming available, the period of training of the first group has been extended into 1969. One of the trainees in this group resigned and another relinquished her training because of a visual defect.

The results of examinations held at the end of 1968 were—

Senior Group—

Five girls passed with credit.

Eight girls passed.

One girl was not graded as she was unable to do clinical work for several weeks towards the end of the last term in 1968 following an injury.

Junior Group—

One girl passed with credit.

Ten girls passed.

Five girls were granted supplementary examinations to be held in February, 1969.

The modification of the lecture notes to bring them up to date continued and two additional courses were introduced with the co-operation of the Adelaide Teachers College—

(i) The Human Relations course which includes lectures and demonstrations in "Methodology of Teaching, Psychology and Communications" proved successful and will be expanded in 1969 to include "English Language, Written and Spoken" and "The Needs of Children requiring Special Education".

The students made several visits to Klemzig Primary and Prospect Demonstration Schools where they observed and then took charge of their own lessons in Dental Health Education.

(ii) All students attended gymnasium classes twice per week.

In addition to the activities at Klemzig and Prospect Schools Senior Dental Officers of the Department delivered 30 lectures in Dental Health Education to students at the Adelaide, Wattle Park and Western Teachers Colleges and several lectures were delivered to Parents and Friends Associations and School Welfare Clubs. Lectures were also given on Dental Public Health to final-year undergraduates at the University of Adelaide Dental School.

All members of the staff and students attended the Dental Health Conference conducted by the Australian Dental Association in October.

To assist in the clinical training of the School Dental Therapists, children attending East Adelaide Primary and Infant Schools and Norwood Primary School were offered treatment. The children were transported from the school to the clinic at Hindmarsh Square in a small bus purchased during the year.

Details of the treatment provided in the Training School Clinic are—

Children offered treatment	1,246
Children who accepted treatment	978
Children who attended clinic	864
Number of restorations completed	3,547
Number of extractions	353

(2) *Field Service Division*—

From a strength at the beginning of the year of seven dental officers working with chairside assistants in mobile clinics, the field staff was reduced by two resignations and one transfer to the tutorial staff of the Dental Therapists Training School. Four new graduates from the studentship scheme joined the service in December.

Because of a shortage of suitable applicants only 12 of the available fifteen studentships in Dentistry at the University of Adelaide were awarded.

Sites were selected, building plans were finalized and equipment specifications were approved for eight static dental clinics to be built during 1969. These will be located at the following Primary and Infant Schools—

Whyalla—
Nicholson Avenue
Scott Street

Port Augusta—Willsden
Port Pirie—
Port Pirie
Solomontown
Peterborough
Renmark
Murray Bridge

Children from the undermentioned areas were treated during the year—

Kangaroo Island (Parndana, Kuralta and Penneshaw)
Murray Mallee (Lameroo, Pinnaroo and Gurrai)
Northern (Wilmington, Hawker and Quorn)
Peterborough and the Broken Hill line

West Coast—

1. (Kimba, Iron Knob and Pinkawillinie).
2. (Streaky Bay, Minnipa, Wudinna and Lock).
3. (Elliston, Mount Wedge, Port Kenny, Haslam, Wirrila and Poochera).

Summary of Work Carried Out in Country Schools During 1968—

Children examined	3,744
Children offered treatment	3,088
Children who accepted treatment	2,878
Visits for treatment	8,841
Fillings	15,489
Extractions	1,694
Other treatments	7,299
Number of schools visited	26

Children in primary grades were offered comprehensive treatment and an emergency service was again offered to pre-school children, secondary school children and adults as in the past.

The number of children whose parents consented to their being treated was 93 per cent, an increase on previous year by 1.7 per cent.

Average treatments per child required overall was as follows:

Fillings	5.6
Extractions	0.6
Other treatments	2.6

A service was also offered to Institutions under the control of the Department of Social Welfare. Institutions visited during the school holidays were—

Glandore Boys' Home
McNally Training Centre
Locheil Park Boys' Training Centre
Seaforth Children's Home
Vaughan House
Brookway Park

Summary of work carried out in Social Welfare Institutions—

Examinations	776
Fillings	1,882
Extractions	179
Other treatments	529
Visits for treatments	1,006

(3) *Research Projects*—

The following research projects have been commenced by Mr. D. M. Roder, B.D.S., M.P.H., F.A.C.D.S.:

(i) *Dental Health Education*

A survey of the dental knowledge, behaviour and health of 1,000 Adelaide school children provided base-line information for the evaluation of the effectiveness of future programmes in dental health education. The material obtained in this survey was used as a guide in planning questionnaires that will be used by Dental Therapists in dental health education.

(ii) *School Canteens*

The management committees of three schools in the Adelaide metropolitan area have decided to remove from the food items for sale to children those which are most conducive to dental caries. Comparisons will be made with the children of three other schools where cariogenic foods remain on sale. Comparisons will be made in the incidence of dental caries and in the estimated costs of treatment necessary and the profitability of the different food items stocked.

(iii) *Fluoridation of Adelaide's Water Supply*

A programme has been designed to establish base-line data on the prevalence of dental disease amongst school children and to evaluate the long-term benefits to dental health that will accrue following fluoridation scheduled for late 1969. The survey will commence during 1969.

6. EPIDEMIOLOGY

PRINCIPAL MEDICAL OFFICER—B. H. JEANES, M.B., B.S., D.P.H.

Nineteen sixty-eight saw the first full year of operation of the Epidemiology Branch. Begun in 1967, it was envisaged that the Branch should supervise the control of communicable disease throughout the State, gradually extend its interest in epidemic non-communicable diseases, and take over the immunization services previously provided by the Poliomyelitis and Public Health Branches.

In February a Public Health Nurse was appointed to supervise the investigations into syphilis and gonorrhoea.

We were also fortunate in obtaining the services of a young graduate interested in Social Medicine as a career who accepted a temporary appointment in this Department to gain experience in public health work. He was able to undertake projects which would not otherwise have been possible, and to fill in wherever necessary. Although he worked for periods in all Branches, most of his time was spent in the Epidemiology Branch.

In April the Headquarters of the Branch were transferred from Norwood, the traditional home of the Poliomyelitis Branch, to the new Departmental offices in Rundle Street.

A survey taken during the year showed that most of the mothers attending the Clinic would be equally willing to visit a Clinic in the city area if parking were available, but were overwhelmingly in favour of retaining the Immunization Clinic at Norwood unless parking could be guaranteed at a city Clinic. Because of this, no action was taken to transfer the Clinic.

Immunization—The Clinics at Norwood and the Children's Hospital continue to function and regular visits continue to be paid to the Group Laundry, but the number of immunizations done here is now much fewer as the vast majority of the employees are fully immunized.

A summary of the injections (other than poliomyelitis) given at these centres is as follows—

Immunizing Agents	Number of Injections and Vaccinations		
	Norwood	Adelaide Children's Hospital	Group Laundry
Triple Antigen	1,432	617	—
C.D.T.	177	175	—
Tetanus toxoid	—	—	74
Smallpox	—	—	86
Influenza	—	—	165
Total	1,609	792	325

Visits were made to the settlements along the Broken Hill railway line, the Far West Coast, Iron Knob and Iron Baron, and the areas north of Port Augusta. In all these areas, there is a decreasing demand for immunizing injections, mainly as a result of an improved rate of immunization in the preceding three or four years. Nevertheless, it is essential that these trips be maintained, or enthusiasm will wane, records of immunization will be lost, the immunization status will decline, and it will be necessary to start again.

Immunizing Agents	Number of Injections and Vaccinations				
	Broken Hill Line	Far North	West Coast	Iron Knob/ Iron Baron	Flinders Ranges
Triple Antigen	25	21	18	5	5
C.D.T.	75	139	43	25	14
Tetanus toxoid	45	199	88	32	37
Smallpox	65	29	26	17	—
Totals	210	388	175	79	56

It is interesting to note the continuing demand for smallpox vaccination. This trend seems to be particularly noticeable at the static clinics where mothers are now bringing their babies for routine vaccination. Friday afternoons are now set aside for this purpose at Norwood.

Following an approach to the Police Department, Police Cadets at the Largs Academy are now vaccinated. Serving policemen are also vaccinated at the Norwood Clinic. This is a really worthwhile procedure as, in the event of a smallpox outbreak, the police would be greatly involved. It is hoped that during 1969 it will be possible to vaccinate police in at least the larger country centres.

The announcement in October that the Commonwealth Government will make measles vaccine available free of cost to the States opens new vistas for preventative immunization. The appearance of vaccine against measles has been long awaited and its successful introduction will be welcomed.

The activities of the Poliomyelitis Section continued virtually unchanged. Vaccine is distributed under the same conditions as previously, and a summary of the work of this Section is given in Appendices 13 and 14.

During the year, a course of lectures was arranged for the nursing staff of the Department. The aim was to broaden their knowledge of public health matters, and in so doing, to give them a greater interest in the functioning of the Department and to provide them with greater opportunity for transfer between the various Branches.

Control of Communicable Disease—Infectious and notifiable diseases in the 2nd and 3rd Schedules of the Health Act, except gonorrhoea and syphilis, are notifiable to local boards of health. Tuberculosis, gonorrhoea and syphilis are notifiable directly to the Central Board of Health. Details are shown in Appendix 15.

It became apparent early in the year that much of the work of the Branch was going to be centred around the control of syphilis and gonorrhoea. In February, 1968, copies of the new forms for notification were sent to all doctors, and the response to these was immediate. The number of cases notified for the year compared with those of the previous years were:

	1966	1967	1968
Gonorrhoea	256	399	497
Syphilis	7	21	51
Syphilis and gonorrhoea	—	—	1

This increase in notification, plus the appointment of a Public Health Nurse, meant that not only was there an increasing number of reports, but an increasing efficiency in investigation, and a growth in the number of examinations done by officers of the Department, which in turn disclosed new cases and set further series of investigations in motion. At some periods, the work generated by the Department was almost sufficient to keep the Branch fully occupied in this work alone.

Some educational lectures were undertaken at Vaughan House, Home of the Good Shepherd and Sussex Street Aboriginal Hostel. They have been well received by the persons attending the lectures who, however, have displayed a distressing lack of knowledge about sexually transmitted disease.

This lack of knowledge has also been demonstrated by both males and females interviewed by departmental officers. This may be a contributing factor in the high number of cases occurring in the young of both sexes (see Appendices 16 and 17).

Rubella—A total of 442 cases of rubella were notified during the year, the majority of these during the latter months. One case was investigated in a young man who had recently been vaccinated. A sharply rising titre of rubella antibodies over the period of his illness was indicative that the infection was a coincidental one.

There is a considerable interest overseas in the commercial development of a vaccine against rubella. It will be interesting to see how soon a satisfactory vaccine is commercially available, for while the disease itself is not severe in most instances, the effects on the foetus of an expectant mother catching the disease early in pregnancy make protection highly desirable.

Hepatitis—The number of cases notified was considerably less than either of the two preceding years, and this is consistent with the cyclical nature of the disease. Although there was not a great increase in notification, there was a considerable increase in the number of inquiries made to the Department from all sources during the last quarter of the year. The diverse geographic origins were indicative that the disease was a great deal more wide-spread than the notifications would indicate. Many inquiries came from schools and a notice was inserted in the Teachers' Gazette advising measures to be taken if a case were known to have occurred in the school. In particular the indications for the use of gamma globulin were laid down.

There has been no confirmation of earlier laboratory reports of growing a virus causing hepatitis, a necessary prerequisite to production of a vaccine.

One case of homologous serum jaundice was notified in 1968.

Typhoid Fever—1968 saw an increase in the number of cases of typhoid fever. The following were typical cases—

Case 1—A young boy, in whom the source of infection was traced to his grandfather who had had typhoid some 30 years ago. Because of the carrier's frail health, cholecystectomy was not undertaken, but he was maintained on suppressive doses of ampicillin. Tests taken at regular intervals, after a short period off ampicillin, show that he is still excreting the organism.

Case 2—A 20-months old boy from a migrant family. The disease was diagnosed at laparotomy, and an extensive study of a family group was undertaken by the Port Adelaide Local Board of Health, to whom a great deal of credit is due for their assiduity and persistence. Lack of knowledge of English in the family presented them with considerable problems, but ultimately nine of the family were found to be excreting *S. typhi*. The original source was thought to be a young woman who failed to respond to ampicillin therapy, and subsequently had a diseased gall bladder removed. The remainder of the family responded to ampicillin, although some required prolonged courses.

Case 3—An Italian migrant, whose wife was subsequently shown to be a carrier. The children were also found to be infected.

Case 4—This was a middle-aged woman who had suffered from typhoid fever in 1942. She was admitted to hospital with peritonitis and at laparotomy was found to have a ruptured gall bladder. *S. typhi* was cultured from the peritoneal exudate, so presumably she had been excreting ever since her original attack.

It was very satisfying to be able to trace the source of infection in each case. In previous years, vigorous attempts to trace sources of infection have not always met with success.

Gastro-Intestinal Infection—Two hundred and forty cases of salmonellosis, 204 cases of shigella infection, and 10 of infantile infective diarrhoea were notified during the year. The majority of these were sporadic, although a relatively high number occurred in Aboriginals.

At Easter there was a sharp outbreak of gastro-enteritis in Whyalla. Approximately 70 people were treated at the hospital with symptoms of pyrexia, abdominal pain, vomiting and diarrhoea. As soon as the extent of the outbreak became evident, investigations were undertaken by the Resident District Inspector of the Department. All of the early cases occurred in men living at a hostel, and the source of infection was traced to a curried egg sandwich filling used in the preparation of cut lunches.

In the meantime, the organism was identified as *Salmonella hessarek*, a strain only once before isolated in South Australia. The eggs used in the filling were traced to a hatchery which proved to be the source of the previous isolation. Egg pulp prepared at the hatchery, but in cold storage at Adelaide, was found to be infected, and destroyed, although no eggs in shell were found to be infected. It was not until some time after the epidemic that the organism was isolated at the hatchery.

The outstanding feature of the outbreak was the degree of co-operation of all parties concerned. Without this, the source may not have been discovered. The incident serves as an example of the possibility of further widespread outbreaks of food poisoning as the result of large-scale food processing practices.

Although some of those affected were actually ill, all made good recoveries and no carriers evolved.

Leprosy—After a considerable period without any notification, two cases of leprosy were reported during 1968.

The first was an Indonesian seaman who presented at a general practitioner's surgery, and was subsequently confirmed to have leprosy by the Institute of Medical and Veterinary Science. He was admitted to the Northfield Infectious Diseases Hospital, and subsequently to the Torrens Island Quarantine Station. He was later repatriated to his home country.

The second case was in a young male student, who was seen by a dermatologist. Nasal scrapings and skin lesions were positive for *M. leprae*, and the patient was admitted to Northfield Infectious Diseases Hospital for treatment.

Future Prospects—It can be seen that at least for the present the most pressing problem which has been outlined above is in the control of syphilis and gonorrhoea. There may be exotic diseases such as smallpox and cholera introduced from overseas which could provide problems of diagnosis and control.

Probably the greatest rewards are to be obtained from successful control of non-communicable diseases such as lung cancer, degenerative heart disease and road trauma. As yet there has been no opportunity to initiate close liaison with the other bodies working in these fields. This is necessary as it must be the role of the Department to take an active interest in these major health problems.

It is anticipated that, with the introduction of measles vaccine, a further boost will be given to immunizing in general, but great care will need to be taken with three live viruses (Sabin, Vaccinia and Measles) in common use. The possibility of reactions to one or other of these must be kept in mind.

7. TUBERCULOSIS

DIRECTOR OF TUBERCULOSIS—T. G. PAXON, M.D., M.R.C.P.

South Australia continues to have results from its Tuberculosis Campaign which compare more than favourably with results in the other Australian States. This is clearly seen from the figures in Appendix 18.

These excellent results are a tribute to the consistent work carried out in the Tuberculosis Services Branch of the Department over the years.

New Notifications—Appendix 19 lists the new notifications according to age, sex and the extent of their disease at the time of diagnosis. New notifications for 1968 were 110 (pulmonary 90, non-pulmonary 20), compared with 141 in 1967. In addition there were seven notifications because of transfer-in from other States (three more than in 1967) and 13 notifications of re-activated cases (Appendix 22) (compared with 14 in 1967). This makes a total of 130 individuals added to the Tuberculosis Register during the year. With these additions to the register, and the numbers taken off the register because they had been inactive for three years after the cessation of chemo-therapy, or because of transfer interstate or overseas, or because of death, the number of cases on the active register at 31st December, 1968, was 868. New notifications, excluding transfers-in and re-notifications for the past five years have shown a satisfactory downward trend, the figures being—

	Pulmonary	Non-Pulmonary	Total
1964	147	30	177
1965	127	29	156
1966	106	25	131
1967	120	21	141
1968	90	20	110

Details of notifications from the various local board of health areas are shown in Appendix 20.

Age and Sex Variations—Of the new pulmonary cases notified, just over 50 per cent are in the age group 40 years and over, and in this age group there is a 3 : 1 preponderance of males to females, the respective figures being 45 and 14. There were six cases of primary pulmonary tuberculosis notified, four in males and two in females. Although this is a gratifying fall from 13 primary cases notified in 1963, the figures should be further reduced by meticulous case findings among adults. In this way adult source cases can be found in an early stage of their disease, before they infect their child contacts.

Four of the six cases of primary tuberculosis are known to have had recent close contact with patients who had active tuberculosis. In one further case there had been less close contact with a neighbourhood case of tuberculosis.

Non-Pulmonary Tuberculosis—As can be seen from Appendix 19 there were 20 cases of non-pulmonary tuberculosis. Genito-urinary tuberculosis is the most common form of extra-pulmonary disease encountered and was found in 13 cases. The comments made in the Annual Report for 1967 are pertinent, and unless this disease is searched for in patients with renal tract symptoms, cases will be diagnosed only at a late stage of their disease. Difficulties occur in arranging and following up the chemo-therapy of patients with renal tuberculosis, because some of their follow-up involves specialized investigation at a urology clinic and the patients do not like to attend the Chest Clinic also for their drug supplies. Close regular supervision of their chemo-therapy for a prolonged period of time is essential however, and this can be arranged only through the facilities that exist in a Tuberculosis Services Clinic.

Migrants—In 1968, 40.9 per cent of all new notified cases (excluding transfers-in and re-notifications) were in people not born in Australia. The estimated proportion of persons born outside Australia is only approximately 25 per cent or 281,700 of the South Australian population of 1,136,400. Only approximately half of these patients are recent arrivals however, because 21 out of the 45 migrants notified had been in Australia for 10 years or over. Of the 45 cases, 17 were British migrants and 28 non-British migrants. The screening of migrants (both those with assisted passages and the non-assisted) from the tuberculosis aspect is satisfactory now before their arrival in Australia. Re-examination at a later date, even with the compulsory chest X-ray system, is very difficult however, because many more from place to place in their first year or two after their arrival and many are not enrolled as electors. It is therefore impossible to ensure that they attend for compulsory chest X-rays.

Re-notifications—Appendix 22. The rate of re-notification is the cause of some concern and in 1968 was approximately 10 per cent of the total notified cases. Of the 13 re-activations, five had their first treatment before 1952 (when isoniazid became available) and two others in the first half of the 1950's. None of these seven patients can be considered to have had effective initial treatment by today's standards. Two other patients originally treated later, had not taken a full course of treatment initially. The importance of efficient initial chemo-therapy in preventing subsequent breakdown is stressed.

Mass Radiography—Appendices 23, 24, 25 and 26. Compulsory chest X-ray surveys have continued during 1968 of all persons on the electoral roll in certain specified areas. The areas proclaimed have been chosen in such a way that there is an interval of approximately five years between successive compulsory surveys in any particular locality.

A total of 82,406 individuals were examined at the mass radiography mobile vans during the year; 58,482 of these in country areas and 17,280 by mobile vans in metropolitan districts. In addition 33,421 attended the City Static Unit for a micro chest X-ray, including 6,644 who attended voluntarily apart from the mass X-ray survey and 5,251 referred by doctors. The overall rate of active tuberculosis found as a direct result of mass radiography was 0.32 per 1,000 X-rays if the volunteers (most of whom attended because of symptoms or concern about their chest condition) and those referred by their own doctors (again, mostly because of symptoms) are excluded. For these latter two groups, 11,895 X-rays were taken and 11 cases of active tuberculosis were found—a rate of 0.92 per 1,000 X-rays.

It is noted therefore that when patients develop symptoms and are referred by their own doctors or attend at an X-ray unit themselves because of the symptoms, the yield of active cases of tuberculosis is considerably higher than in routine mass surveys of symptomless individuals. The number of patients referred to the city static unit by their private doctors has remained remarkably constant over the last five years, averaging 5,500 a year. This close contact with private practitioners must be maintained and the continued education of doctors and medical students about the necessity for a chest X-ray when a patient has what may appear to be only trivial symptoms, is most important. Particularly is this so now that the interval between compulsory surveys has been extended to five years.

Contact Examination, Skin Testing and B.C.G. Vaccination—Appendices 27, 28 and 29. Examination of contacts of cases of tuberculosis has continued and three cases of active tuberculosis were discovered during the year among the 3,421 contacts of new cases examined.

Routine tuberculin skin testing in Grade I of metropolitan primary schools has continued but 99.7 per cent of 11,642 children were negative when tested with 10 T.U. of Old Tuberculin.

In the 10-14 years age group, which included the children tested in the first year of secondary school, 14,454 children were tested with 10 T.U. of Old Tuberculin and 98.6 per cent were negative. The percentage of positive reactors in this age group has declined from 4 per cent in 1963 to 1.4 per cent in 1968, a very satisfactory figure indeed. Negative reactors in this age group are offered B.C.G. vaccination.

Unfortunately it has not been possible to carry out skin testing or B.C.G. vaccination programmes at country schools or at Aborigine settlements.

It is understood that the Commonwealth Serum Laboratories is producing a new standard P.P.D. for skin testing purposes. It is anticipated that when it is available, it will be used instead of Old Tuberculin in South Australia and no doubt throughout Australia. This will have many advantages in that skin test results here will be more comparable with those in other States and other countries and conclusions about the epidemiology of tuberculosis based on the tuberculin skin test reaction rates will be more reliable.

Hospital Beds and Treatment of Tuberculosis—From 31st October, 1968, the tuberculosis wards at the Morris Hospital were closed. Patients requiring in-patient treatment for tuberculosis are usually admitted to the Kalrya Sanatorium, parts of which are being modernized and rebuilt by mutually satisfactory arrangements between the James Brown Trust and the Commonwealth and State Governments under the terms of the Commonwealth/States Tuberculosis Agreement. Some beds are available at Frome Ward of the Royal Adelaide Hospital for patients with tuberculosis who require special supervision, treatment or consultation at a general hospital, and the facilities and patients in Frome Ward are used for teaching medical students. It is essential that beds for tuberculosis be available at the Royal Adelaide Hospital for these special purposes and it is anticipated that suitable arrangements for this will be made when the present old Frome Ward is no longer used. Children with tuberculosis who require hospital treatment are usually nursed at the Adelaide Children's Hospital.

There has been over the year gradual reduction in the length of time patients are treated in hospital and it seems evident that in many cases domiciliary treatment after an initial short stay in hospital will be the usual routine. Increasing emphasis therefore will be placed on the necessity for strict supervision of chemo-therapy in patients receiving domiciliary treatment, to ensure that the drugs ordered are actually used as prescribed. Difficulties are experienced in this regard in supervising efficiently the treatment of country patients. Consideration will be given to re-establishing regular chest clinic visits to certain large country centres. This will also ensure more adequate supervision of contacts of patients in those areas.

Details of deaths from all forms of tuberculosis are shown in Appendix 30.

The results of the Tuberculosis Campaign in South Australia are very gratifying. There must be no complacency however, until the numbers of new cases of tuberculosis each year are reduced to negligible proportions, and intensive methods of case finding must be pursued so that active cases can be found at an early stage before they infect others in the community.

8. SUMMARY AND CONCLUSIONS

Details have been given earlier in this report of the comprehensive and varied activities of the Department and comments have been made on many matters of considerable interest and importance. It is not necessary to reiterate all of the important matters raised, but specific comment could be made here on some particular items mentioned in the branch reports.

As the Department does not have a section devoted solely to health education, this aspect of the Department's activities is often overlooked. Apart from arranging seminars, conferences and other formal meetings and preparation and publication of various publicity media, a considerable amount of unobtrusive work in this field is undertaken by each officer during the course of his normal duties. In many cases this form of health education is the most effective method and favourable comments have been received on the manner in which departmental officers undertake their duties.

The very successful Symposium on Noise in Industry reflected the effort put into this function by our officers and members of the Advisory Committee on Noise. Increased interest in noise in industry generally followed and resulted in greater demands on the Department for the commencement of hearing conservation programmes.

The training of School Dental Therapists reached an important stage during the year with the commencement of clinical training of the first group of trainees. Several metropolitan primary schools provided young patients to enable the trainees to gain the essential clinical experience. There is an important added advantage of being able to provide properly planned dental care for some children who may not otherwise have this necessary but frequently neglected care. In addition to the treatment of children in remote areas, through the use of mobile dental units, the Dental Services have instituted several important research projects.

The control of communicable disease still remains an important, though perhaps less dramatic, part of the Department's activities. In the absence of large epidemics the importance of this work tends to be overlooked, but there is a need for constant attention to combat complacency and maintain a satisfactory rate of immunization. It is still possible to report that poliomyelitis has not been reported since 1963. There has been a continuous substantial reduction over the last five years in the number of cases of tuberculosis and it is pleasing to note that South Australia has by far the lowest rate of notification in Australia. On the other hand, notifications of gonorrhoea and syphilis continue to increase causing a considerable growth in the work of investigation to trace contacts and sources of infection of persons known to be suffering from the disease with a view to controlling its spread. Although the number of notified cases of hepatitis dropped sharply, illustrating the cyclical nature of this disease, there was a rise in the number of gastro-enteric diseases notified. This points to the need, by inspection and education, to ensure the adoption and maintenance of proper hygiene practices.

In the general area of environmental health it is pleasing to note continued activity in assistance given to local authorities in the installation of common effluent drains. At the end of the year septic tank effluent drainage systems had been installed in 11 country towns and a number of drains had been completed in the near metropolitan area. This constitutes a substantial contribution to the health of the community by removal of a serious source of pollution through the adoption of economical and effective means of sewage disposal.

During the year further steps were taken to decentralize the Department's activities by the opening of further district offices. District Inspectors are now stationed at Whyalla, Port Pirie, Loxton and Mount Gambier.

The Central Board of Health wishes to express its thanks to all local boards of health, its own officers and the staff of the Department of Public Health for their efforts and continued co-operation during the year. The assistance of other Government Departments and the Institute of Medical and Veterinary Science is also appreciated.

The Board also desires to express its appreciation to the Honourable R. C. De Garis, who was Minister of Health during the year under review, for his interest and support, and to you, Sir, we offer our congratulations on your resumption of the portfolio of Minister of Health.

P. S. WOODRUFF, Chairman
G. H. McQUEEN
H. J. N. HODGSON
C. COLMAN
A. BERTRAM COX
} Members

R. W. LAVER, Secretary.
Adelaide, 23rd June, 1970.

APPENDIX 1—INFANT DEATHS (UNDER ONE YEAR OF AGE), SOUTH AUSTRALIA, 1968

Principal Causes	Number	Percentage of Total
Congenital anomalies	82	23.77
Maternal disease or condition	23	6.67
Difficult labour	13	3.77
Conditions of placenta and cord	24	6.96
Haemolytic disease	12	3.48
Anoxic and hypnoxic conditions not elsewhere classified	50	14.49
Immaturity, unqualified	25	7.25
Diarrhoeal disease	6	1.74
Pneumonia	17	4.93
Other	93	26.95
Total	345	100.00

APPENDIX 2—BIRTHS, MARRIAGES AND DEATHS: NUMBERS REGISTERED AND RATES 1964 TO 1968

Period	Births Registered		Marriages		Deaths Registered			
					Total		Infants	
Year	No.	Rate(*a*)	No.	Rate(*a*)	No.	Rate(*a*)	No.	Rate(*b*)
1964	20,866	20.16	7,765	7.50	8,906	8.61	397	19.03
1965	20,891	19.63	8,680	8.16	8,788	8.26	385	18.43
1966	20,319	18.62	9,051	8.29	9,323	8.54	356	17.52
1967	20,386	18.34	9,434	8.49	9,071	8.16	346	16.97
1968	21,207	18.65	9,652	8.57	9,916	8.81	345	16.27

(*a*) Per 1,000 of Mean Population.
(*b*) Per 1,000 live births registered.

APPENDIX 3—HEARING CONSERVATION PROGRAMMES, 1968

	Foundries	Timber Joinery	Quarries	Concrete Products	Timber Mills	Printing	Cotton Mills	Miscellaneous	Total
At 1st January, 1968	1	1	1	1	2	2	—	1	9
Commenced in and supervised through 1968	—	1	—	1	4	—	—	1	7
Withdrawn/closed down	1	—	1	1	1	—	1	—	5
Total Programmes at 31st December, 1968	—	2	—	1	5	2	—	2	12
Under consideration by management	2	—	—	—	1	—	1	1	5
Not interested	3	—	—	1	2	—	1	—	7

Total number of firms visited 26
Total number of employees involved 509

APPENDIX 4—TYPICAL OVERALL NOISE LEVELS AND ASSOCIATED OCTAVE BAND ANALYSES RECORDED DURING INVESTIGATIONS

Noise Source	Overall S.P.L.	Midfrequency of Octave Band (cps)								N.R.*
		62.5	125	250	500	1,000	2,000	4,000	8,000	
Dredge engine room	110	92	98	107	105	104	98	93	87	104
Tug engine room	109	96	96	105	107	101	93	99	96	105
Asbestos cutter	91	85	83	81	82	81	83	78	76	85
Grinding asbestos	105	80	82	84	87	88	95	97	103	97
Arc welding	79	53	67	75	69	74	74	66	53	76
Band saw	88	67	70	73	75	79	81	86	83	83
Circular saw	82	56	56	64	64	65	70	78	74	72
Pedestal grinder	90	62	70	74	74	75	80	90	82	82
Lecture theatre	63	58	60	55	45	40	32	23	18	43
Ultrasonic cleaner	105	71	79	77	75	70	64	69	98	73
Addressograph machine	80	67	68	69	73	78	75	74	74	78
Billing machine	76	72	70	71	71	69	70	70	70	72

*Occupational exposure to noise having a rating of N.R.85 or above, for five hours/day, five days/week, is accepted as likely to cause hearing loss.

APPENDIX 5—AIR POLLUTION—SMOKE DENSITY, 1968

Site		Coefficient of Haze Units per 1,000 linear feet											
		Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Adelaide Metropolitan Area—													
Thebarton	Av.	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.1
	H.D.	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.4	0.3	0.3	0.3	0.3
Fort Largs	Av.	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	*0.1	0.1
	H.D.	0.2	0.5	0.3	0.5	0.3	0.4	0.7	0.4	0.2	0.2	0.2	0.2
Woodville North	Av.	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.1	0.1	0.1
	H.D.	0.2	0.2	0.2	0.4	0.4	0.4	0.9	0.4	0.3	0.2	0.3	0.3
Richmond	Av.	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.2
	H.D.	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.5	0.4	0.4	0.3	0.4
Birkenhead	Av.	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.1
	H.D.	0.2	0.3	0.3	0.6	0.3	0.4	0.8	0.3	0.3	0.2	0.3	0.2
Rosewater	Av.	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1
	H.D.	0.2	0.3	0.3	0.4	0.4	0.6	0.7	0.5	0.3	0.4	0.2	0.3
West Terrace	Av.	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.2	0.2	0.1	0.1
	H.D.	0.3	0.3	0.2	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3
Hindmarsh	Av.	0.1	0.2	0.2	0.2	0.2	0.3	0.4	0.2	0.2	0.2	0.2	0.2
	H.D.	0.3	0.3	0.4	0.4	0.5	0.8	0.6	0.5	0.4	0.3	0.4	0.4
Country Areas—													
Port Augusta West	Av.	*0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	—	—	—
	H.D.	0.1	0.1	0.1	0.2	0.2	0.3	0.1	0.1	0.1	—	—	—
Port Augusta	Av.	*0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	—	—	—
	H.D.	0.2	0.4	0.3	0.2	0.1	0.2	0.2	0.1	0.1	—	—	—
Port Pirie	Av.	*0.1	*0.1	*0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	*0.1
	H.D.	0.2	0.1	0.1	0.1	0.2	0.3	0.5	0.2	0.3	0.3	0.2	0.1

Av. = Average H.D. = Highest Day * = less than

APPENDIX 6—AIR POLLUTION—SULPHUR DIOXIDE CONCENTRATIONS, 1968

Site		Parts per One Hundred Million											
		Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Adelaide Metropolitan Area—													
Thebarton	Av.	1.3	0.8	1.2	0.4	0.5	0.9	1.6	1.0	1.3	0.5	0.4	0.4
	H.D.	8.1	4.1	3.7	1.2	1.7	2.1	6.3	4.4	3.8	2.2	1.6	1.7
Fort Largs	Av.	2.6	1.5	1.5	1.3	0.8	0.8	0.8	0.9	1.1	1.2	0.8	0.9
	H.D.	14.2	9.8	4.4	2.9	2.0	2.4	4.0	6.0	4.9	1.9	2.3	2.0
Woodville North	Av.	0.8	1.7	2.0	0.4	0.6	0.4	0.4	0.6	0.5	0.9	0.1	0.4
	H.D.	2.1	21.3	23.6	2.2	1.6	2.0	1.2	2.3	2.7	4.5	1.0	1.3
Richmond	Av.	2.6	2.8	1.6	1.3	0.5	0.4	0.4	0.7	0.7	0.4	0.4	0.6
	H.D.	6.5	10.8	6.4	5.8	3.2	1.5	1.9	2.1	1.6	1.5	1.1	2.0
Birkenhead	Av.	0.5	1.6	0.4	0.2	*0.1	0.5	0.6	0.1	0.6	0.1	0.1	0.1
	H.D.	1.5	13.8	1.7	1.1	0.8	2.1	3.0	1.0	2.8	0.9	0.5	0.6
Rosewater	Av.	1.2	1.1	0.8	0.9	0.2	0.3	1.5	0.7	0.5	0.3	0.4	0.5
	H.D.	3.5	3.1	3.0	4.7	0.9	0.9	3.4	2.7	1.8	1.9	4.2	2.1
West Terrace	Av.	2.5	3.4	4.1	2.4	1.1	0.9	1.0	1.4	1.3	0.8	1.1	1.5
	H.D.	5.3	8.0	12.8	7.6	8.7	3.1	2.8	5.3	7.5	4.1	3.3	17.5
Hindmarsh	Av.	0.8	1.5	1.4	1.0	0.2	0.4	0.6	0.9	1.2	1.0	0.5	0.5
	H.D.	4.9	6.3	4.3	2.6	1.0	2.1	1.7	2.9	3.0	4.3	1.3	3.9
Country Area—													
Port Augusta West	Av.	1.5	2.8	2.0	1.0	0.4	0.5	0.7	0.5	0.9	—	—	—
	H.D.	6.4	12.6	5.1	3.1	1.0	1.8	1.9	3.1	2.5	—	—	—
Port Augusta	Av.	2.7	4.1	4.6	2.2	1.3	0.9	1.6	1.2	2.3	—	—	—
	H.D.	6.9	12.2	12.1	4.6	5.0	2.1	4.2	2.9	4.1	—	—	—
Port Pirie	Av.	0.4	2.1	1.1	2.9	2.0	2.8	1.7	1.3	2.1	1.2	0.6	0.9
	H.D.	3.4	5.1	9.4	20.5	16.0	18.1	5.7	5.9	10.9	5.4	†4.4	4.3

Av. = Average H.D. = Highest Day * = Less than † = 48 hour sample

APPENDIX 7—AIR POLLUTION—DEPOSIT GAUGE RESULTS, JANUARY TO DECEMBER, 1968

Location of Gauge	Tons Per Square Mile Average Rate Per Month			
	Insoluble Matter	Combustible Matter	Ash	Soluble Matter
Adelaide Metropolitan Area—				
Adelaide	14.2	3.2	10.7	4.7
Beverley	10.5	2.8	7.4	5.0
Beverley	13.9	3.6	10.0	6.0
Birkenhead	7.7	2.3	5.2	6.6
Birkenhead	7.6	2.4	5.0	5.8
Birkenhead	9.4	2.4	6.8	7.0
Birkenhead	13.6	2.7	10.8	6.4
Black Forest	7.9	2.8	5.0	8.3
Black Forest	14.8	5.2	9.4	8.1
Black Forest	7.9	2.6	5.2	6.1
Black Forest	7.9	2.1	5.6	5.3
Black Forest	7.2	2.2	4.8	5.2
Black Forest	8.1	2.5	5.3	6.1
Black Forest	6.7	3.1	3.4	5.1
Clarence Gardens	8.0	2.2	5.6	5.1
Clarence Park	9.6	3.3	5.9	4.7
Colonel Light Gardens	7.8	2.4	5.1	5.0
Findon	7.9	1.5	6.1	4.6
Flinders Park	7.1	1.7	5.2	4.9
Hammersmith	7.9	2.1	5.7	5.5
Hammersmith	11.2	0.1	7.4	7.6
Hammersmith	8.3	2.6	5.5	7.3
Hammersmith	10.2	4.3	5.7	10.9
Islington	15.4	2.8	12.3	5.0
Kent Town	13.5	4.0	8.9	4.8
Largs Bay	11.1	2.6	8.2	6.9
Linden Park	7.3	2.5	4.5	4.4
Mansfield Park	8.7	2.1	6.2	8.2
North Adelaide	14.3	2.7	11.3	5.3
North Adelaide, Lower	11.9	2.8	8.8	5.4
Port Adelaide	8.0	2.5	5.2	5.5
Prospect	6.6	1.8	4.5	4.4
Wayville	11.3	2.4	8.7	5.0
Woodville North	9.5	1.8	7.4	5.3
Port Stanvac Area—				
Christies Beach	10.5	2.9	7.5	6.5
Christies Beach	7.6	2.0	5.5	6.6
Hallett Cove	5.4	2.3	3.0	5.9
Morphett Vale	5.8	1.5	4.1	5.7
Morphett Vale	6.5	2.3	4.0	6.6
Morphett Vale	4.9	1.9	2.9	5.5
O'Halloran Hill	11.5	5.3	6.0	10.6
O'Sullivans Beach	9.8	4.4	5.2	8.9
Reynella	12.0	6.4	5.0	7.8
Reynella	7.9	3.3	4.4	6.3
Reynella	4.7	1.8	2.8	5.1
Salisbury Area—				
Parafield	10.6	2.0	8.4	5.1
Salisbury	19.2	8.7	10.0	8.8
Salisbury	7.2	1.7	5.3	3.9
Salisbury	6.8	2.4	4.2	3.8
Angaston Area—				
Angaston	29.2	7.1	21.6	4.6
Angaston	13.4	3.7	9.5	7.5
Angaston	21.4	3.7	17.4	5.2
Angaston	22.0	4.3	17.3	7.3
Angaston	10.4	3.2	7.0	5.1
Mount Gambier Area—				
Mount Gambier	7.6	4.4	4.1	7.4
Mount Gambier	16.5	5.6	10.7	19.7
Mount Gambier	31.6	9.0	10.9	24.6
Mount Gambier	14.3	4.5	9.7	13.4
Mount Gambier	15.5	6.2	9.1	10.1

APPENDIX 8—CHILDREN EXAMINED IN EDUCATION DEPARTMENT SCHOOLS

	1966	1967	1968		
			Metropolitan	Country	Total
Schools visited	367	282	207	243	450
Children examined	89,040	40,312	69,903	27,977	97,880
Defects found—					
Vision (excluding spectacles)	6,731	4,813	4,224	1,496	5,720
Wearing spectacles	6,473	4,895	4,787	1,470	6,257
Hearing	2,848	2,689	2,440	979	3,419
Nose and throat	1,097	755	908	195	1,103
Heart	937	574	436	171	607
Skin	1,479	1,023	2,812	701	3,513
Lungs	252	188	92	62	154
Epilepsy	89	98	63	36	99
Allergies	3,521	3,883	3,533	1,645	5,178
Others, including postural defects, colour blindness, enuresis	13,883	8,548	7,831	3,881	11,712
Teeth—seen by medical officers only and excluding children under dental treatment	15,471	9,988	5,919	4,428	10,347
Total defects	52,781	37,454	33,045	15,064	48,109

APPENDIX 9—DEFECTS PER 10,000 CHILDREN EXAMINED

Year	Vision	Hearing	Nose and Throat	Heart	Epilepsy	Allergies	Teeth*
1962	615	211	113	52	11	398	1,687
1963	730	306	140	47	13	537	1,500
1964	817	308	121	68	15	496	1,093
1965	723	284	129	73	11	423	1,637
1966	757	320	123	105	10	395	1,738
1967	1,194	667	187	142	24	963	2,478
1968	584	349	113	62	10	529	1,056

*This figure does not represent the total decay rate. These were children examined by medical officers and found to have sufficient decay present to warrant the issuing of a dental notice. Children already under private dental supervision and children examined by departmental dental officers are not included.

APPENDIX 10—INFECTIONS IN SCHOOL CHILDREN—NUMBERS OF COMMUNICABLE DISEASES REPORTED TO TEACHERS IN STATE SCHOOLS

Year	Diphtheria	Scarlet Fever	Measles	Rubella	Whooping Cough	Chicken Pox	Mumps	Polio-myelitis	Infective Hepatitis	Other Conditions
					COMMUNICABLE DISEASES					
1964	1	200	2,488	985	54	1,997	1,618	—	85	85
1965	2	122	1,283	639	27	1,737	892	—	126	118
1966	—	113	1,391	360	108	1,566	1,495	—	361	88
1967	—	53	2,162	1,398	39	1,619	2,537	—	448	115
1968	—	35	987	808	39	1,356	1,076	—	172	63
					COMMUNICABLE DISEASES PER 10,000 CHILDREN ENROLLED					
1964	—	10.0	124.8	49.2	2.7	99.8	80.9	—	4.3	4.3
1965	—	5.8	61.0	30.4	1.3	82.7	42.5	—	6.0	5.6
1966	—	5.1	63.2	16.4	4.9	71.2	67.9	—	16.4	4.0
1967	—	2.4	99.6	64.4	1.8	75.0	117.0	—	20.5	5.3
1968	—	1.6	45.9	36.7	1.8	61.7	48.9	—	7.8	2.9

APPENDIX 11—ATTENDANCES AT THE DEAFNESS GUIDANCE CLINIC

	New Cases			Retests		
	Male	Female	Total	Male	Female	Total
Pre-school—						
Metropolitan	33	22	55	13	8	21
Country	6	—	6	2	1	3
Primary School—						
Metropolitan	614	441	1,055	527	364	891
Country	127	82	209	72	57	129
Secondary School—						
Metropolitan	120	74	194	215	93	308
Country	27	11	38	30	23	53
Government Departments and others	7	2	9	7	3	10
Total	934	632	1,566	866	549	1,415

APPENDIX 12—DISPOSAL AFTER ATTENDANCE AT THE DEAFNESS GUIDANCE CLINIC

	New Cases	Retests
Referred to family doctor	636	361
Referred to specialists or hospitals	31	28
Returning for further testing	714	916
Discharged	185	110

APPENDIX 13—NUMBER OF DOSES OF POLIOMYELITIS VACCINE GIVEN IN 1968 BY LOCAL BOARDS OF HEALTH

	Doses Given
Metropolitan—	
Adelaide	451
Brighton	788
Colonel Light Gardens	197
East Torrens County	6,507
Enfield	4,439
Glenelg	578
Henley and Grange	999
Hindmarsh	1,330
Marion	4,395
Mitcham	1,552
Port Adelaide	2,104
Prospect	846
Thebarton	796
Unley	1,507
Walkerville	140
West Torrens	2,092
Woodville	7,533
Total	36,254
Country—	
Angaston	868
Balaklava	216
Barmera	363
Barossa	130
Berri	709
Blyth	162
Burra	316
Cleve	388
Coonalpyn Downs	159
Crystal Brook	179
Dudley	92
East Torrens	112
Elliston	282
Eudunda	132
Franklin Harbour	149
Freeling	78
Gawler	333
Georgetown	133
Gladstone	414
Gumeracha	344
Hallett	157
Hawker	52
Jamestown Town and District	233
Kadina	442
Kapunda	234
Karoonda	276
Kimba	324
Kingscote	283
Lacepede	282
Lameroo	250
Laura	113
Le Hunte	331
Lincoln	386
Loxton	643
Lucindale	608
Mallala	139
Mannum	401
Marne	65
Meadows	346
Meningie	725
Millicent	1,265
Minlaton	375
Moonta	154
Morgan	113
Mount Barker	208
Mount Gambier	3,183
Mount Pleasant	143
Munno Para	2,026
Murat Bay	315
Murray Bridge	1,202
Naracoorte	1,189
Noarlunga	2,498
Orroroo	125
Onkaparinga	526
Owen	161
Penola	628
Peterborough	372
Pinnaroo	224

	Doses Given
Country—	
Port Augusta	1,590
Port Broughton	61
Port Elliot	164
Port Germein	92
Port Lincoln	1,352
Port Pirie	2,124
Quorn	75
Redhill	48
Renmark	873
Riverton	141
Robe	104
Robertstown	85
Saddleworth	72
Salisbury	8,774
Sedan	124
Snowtown	71
Spalding	29
Stirling	527
Strathalbyn	281
Streaky Bay	462
Tanunda	338
Tatiara	890
Tea Tree Gully	3,060
Tumby Bay	880
Upper Wakefield	72
Victor Harbour	429
Waikerie	501
Wallaroo	137
Warooka	98
Whyalla	2,033
Willunga	297
Wilmington	13
Yankalilla	284
Yorke Peninsula	497
Yorketown	353
Total	53,487
Metropolitan total	36,254
Country total	53,487
Grand Total	89,741

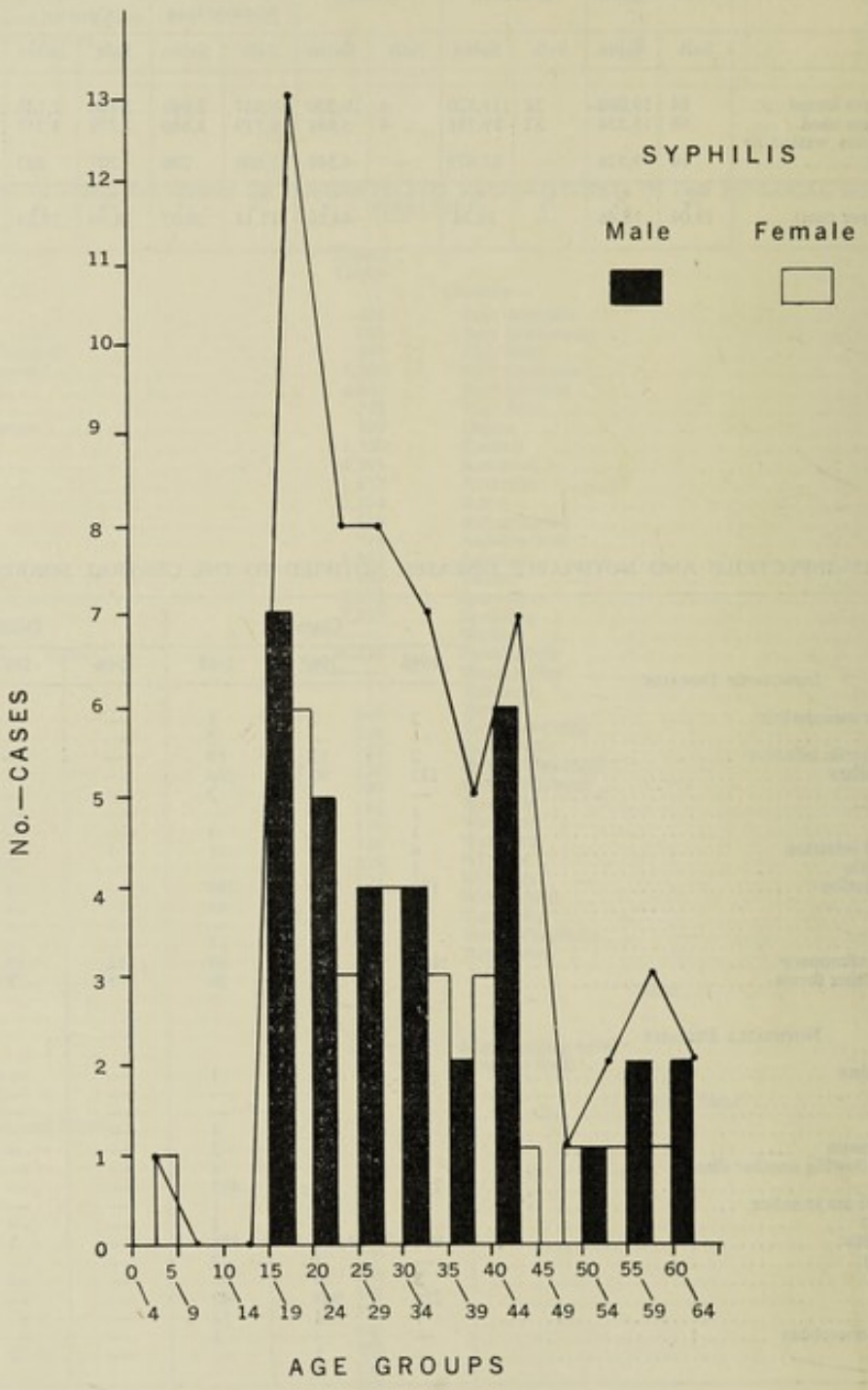
APPENDIX 14—USAGE AND WASTAGE OF POLIOMYELITIS VACCINE IN SOUTH AUSTRALIA IN 1968 BY VARIOUS AGENCIES

Agency	Department of Public Health		Local Boards of Health		Special Groups		Medical Practitioners				Total	
							Metropolitan		Country			
Vaccine	Salk	Sabin	Salk	Sabin	Salk	Sabin	Salk	Sabin	Salk	Sabin	Salk	Sabin
Number of doses issued	84	19,080	22	111,820	4	10,200	10,547	2,640	2,466	2,140	13,123	145,880
Number of doses used	68	15,554	22	89,741	4	5,654	8,739	1,846	2,259	1,557	11,092	114,352
Number of doses wasted or unaccounted	16	3,526	—	22,079	—	4,546	1,808	794	207	583	2,031	31,528
Wastage rate (per cent)	% 19.04	% 18.48	% —	% 19.74	% —	% 44.56	% 17.14	% 30.07	% 8.39	% 27.24	% 15.47	% 21.61

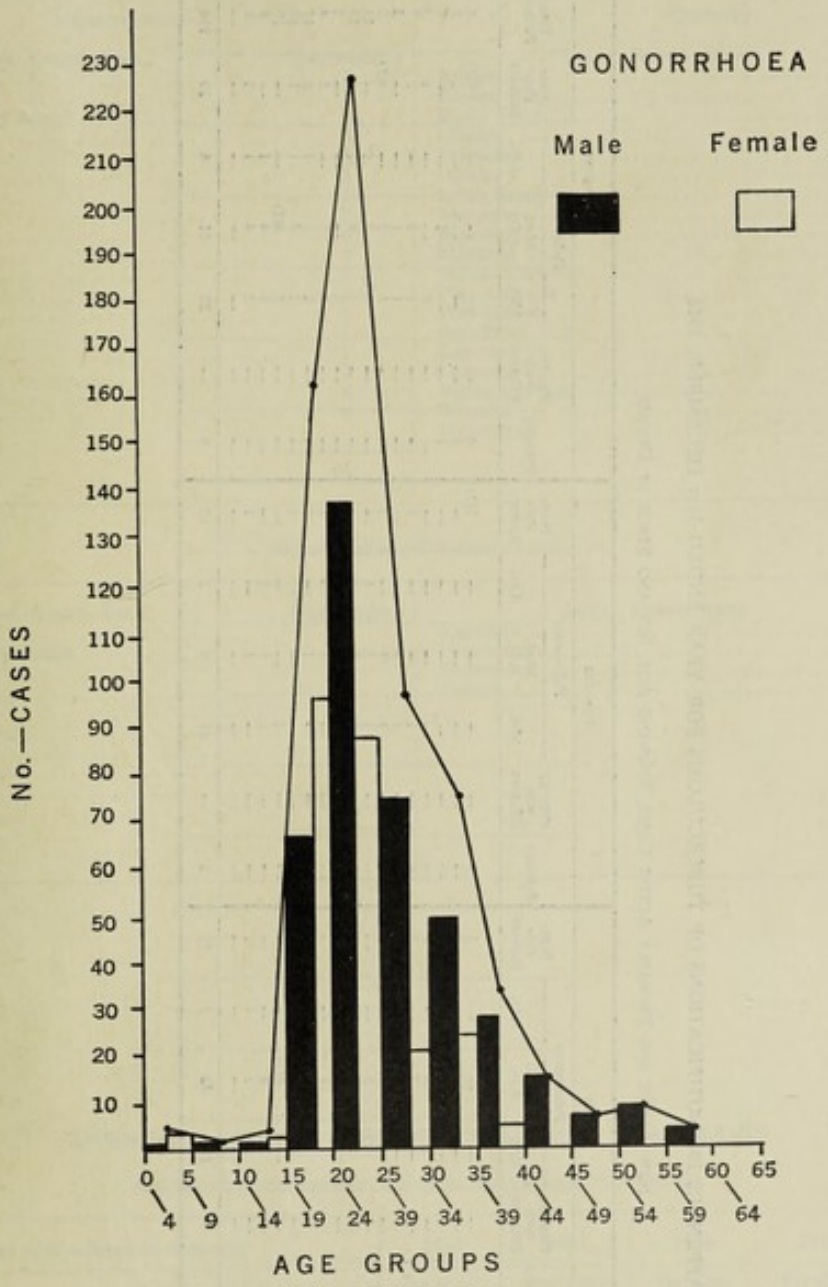
APPENDIX 15—INFECTIOUS AND NOTIFIABLE DISEASES, NOTIFIED TO THE CENTRAL BOARD OF HEALTH

	Cases			Deaths		
	1966	1967	1968	1966	1967	1968
Infectious Diseases						
Acute infective encephalitis	2	7	1	—	—	—
Amoebiasis	—	—	2	—	—	—
Diarrhoea, infantile infective	2	12	10	—	—	—
Dysentery bacillary	135	92	204	—	—	—
Leprosy	—	—	2	—	—	—
Leptospirosis	1	1	—	—	—	—
Malaria	1	1	4	—	—	—
Meningococcal infection	6	5	11	1	—	—
Puerperal pyrexia	1	1	—	—	—	—
Salmonella infection	120	110	240	—	1	—
Scarlet fever	57	70	44	—	—	—
Trachoma	1	—	—	—	—	—
Typhoid fever	1	1	13	—	—	—
Tuberculosis, pulmonary	106	120	90	12	15	10
Tuberculosis, other forms	25	23	20	1	1	2
Notifiable Diseases						
Acute rheumatism	8	—	1	—	—	—
Brucellosis	1	3	—	—	—	—
Chorea	—	1	—	—	—	—
Eclampsia	—	—	1	—	—	—
Erythema nodosum	3	8	3	—	—	—
Encephalitis following another disease	7	13	4	—	—	—
Gonorrhoea	256	399	497	—	—	—
Homologous serum jaundice	—	—	1	—	—	—
Hydatid disease	—	—	1	—	—	—
Infective hepatitis	978	1,299	558	—	3	—
Lead poisoning	—	1	2	—	—	—
Ophthalmia	3	13	—	—	—	—
Rubella	226	969	442	—	—	—
Syphilis	7	21	51	—	—	—
Syphilis and Gonorrhoea	—	—	1	—	—	—
Tetanus	—	1	—	—	2	—

APPENDIX 16—PREVALENCE OF SYPHILIS IN SOUTH AUSTRALIA, 1968



APPENDIX 17—PREVALENCE OF GONORRHOEA IN SOUTH AUSTRALIA, 1968



APPENDIX 18—NUMBER OF NEW CASES OF TUBERCULOSIS, 1968

State	Population as at 31/12/68	New Cases of Tuberculosis			
		All Forms	Rate Per 100,000	Pulmonary	Rate Per 100,000
South Australia	1,136,400	100	9.7	90	7.9
Australian Capital Territory	117,200	14	11.9	13	11.1
Tasmania	386,000	51	13.2	44	11.4
Victoria	3,357,000	535	15.9	445	13.3
Western Australia	930,900	151	16.2	114	12.2
New South Wales	4,430,200	850	19.2	747	16.9
Queensland	1,751,800	479	27.3	435	24.8
Northern Territory	64,000	43	67.2	38	59.4
Commonwealth	12,173,500	2,233	18.3	1,926	15.8

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APPENDIX 19—NOTIFICATIONS OF TUBERCULOSIS FOR YEAR ENDED 31st DECEMBER, 1968

New Active and Probably Active Cases, Showing Age, Sex and Stage of Disease

Age Group (Years)	Males						Females						Persons							
			Pulmonary						Pulmonary						Pulmonary					
	Primary	Pleurisy with Effusion	Min.	Mod. Adv.	Adv.	Non-Pulmonary	Primary	Pleurisy with Effusion	Min.	Mod. Adv.	Adv.	Non-Pulmonary	Primary	Pleurisy with Effusion	Min.	Mod. Adv.	Adv.	Non-Pulmonary	Total Persons	Per Cent of each Age Group
0-4	2	—	—	—	—	1	2	—	—	—	—	1(1)	4	—	—	—	—	2(1)	6	5.46
5-9	1	—	—	—	—	2	—	—	—	—	—	—	1	—	—	—	—	2	3	2.73
10-14	1	—	—	1	—	—	—	—	—	—	—	—	1	—	—	1	—	—	2	1.82
15-19	—	—	2	—	—	1	—	—	—	—	—	—	—	—	2	—	—	1	3	2.73
20-24	—	—	—	3	—	2	—	—	1	—	—	1	—	—	1	3	—	3	7	6.36
25-29	—	—	—	1	—	—	—	—	1	—	—	—	—	—	1	1	—	—	2	1.82
30-34	—	—	—	1	—	1(1)	—	—	1	1	—	3	—	—	1	2	—	4(1)	7	6.36
35-39	—	—	4(1)	5	—	—	—	—	1	2	1	—	—	—	5(1)	7	1	—	13	11.82
40-44	—	—	1	6	—	1	—	—	2	2	1	—	—	—	3	8	1	1	13	11.82
45-49	—	—	1	—	—	—	—	—	1	—	—	—	—	—	2	—	—	—	2	1.82
50-54	—	—	1	1	—	—	—	—	—	1	—	1	—	—	1	2	—	1	4	3.63
55-59	—	—	2	4	1	1	—	—	—	1	—	2	—	—	2	5	1	3	11	10.00
60-64	—	—	2	6	1	—	—	—	—	—	—	1	—	—	2	6	1	1	10	9.09
65-69	—	—	—	8(1)	—	—	—	—	2	—	—	—	—	—	2	8(1)	—	—	10	9.09
70-74	—	—	2	3	—	—	—	—	1	1	1	—	—	—	3	4	1	—	8	7.27
75 and over	—	—	2	3	1	1	—	—	—	1	—	1	—	—	2	4	1	2	9	8.18
Not stated	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	4	—	17	42	3	10	2	—	10	9	3	10	6	—	27	51	6	20	110	100.00

APPENDIX 20—SOUTH AUSTRALIA LOCAL BOARD OF HEALTH ORIGIN, FOR THE YEAR ENDING 31st DECEMBER, 1968

Pulmonary Tuberculosis

Metropolitan

Local Board Area	Notifications
Adelaide	2
Brighton	1
East Torrens County Board	8
Elizabeth	4
Enfield	4
Glenelg	3
Henley and Grange	1
Marion	2
Mitcham	6
Port Adelaide	3
Prospect	3
Salisbury	7
Stirling	1
Tea Tree Gully	1
Thebarton	1
Unley	3
West Torrens	6
Woodville	8
	64

Country

Local Board Area	Notifications
Angaston	3
Broken Hill	1
Burra Town	1
Clinton	1
Freeling	1
Gawler	1
Leigh Creek	1
Mannum	1
Meningie	1
Millicent	1
Mount Gambier	1
Port Augusta	1
Port Lincoln	3
Port Pirie	2
Renmark	1
Tanunda	1
Victor Harbour	1
Whyalla	3
Woomera	1
	26

Non-Pulmonary Tuberculosis

Local Board Area	Notifications
Adelaide	1
East Torrens County Board	3
Elizabeth	1
Henley and Grange	1
Mitcham	2
Salisbury	2
Thebarton	1
Unley	1
Walkerville	1
Woodville	3
	16

Local Board Area	Notifications
Kapunda	1
Noarlunga	1
Snowtown	1
Tatiara	1
	4

APPENDIX 21—NOTIFICATION OF TUBERCULOSIS IN MIGRANTS

Comparative Percentage Between British and Non-British

Period of Residence in Australia	1964	1965	1966	1967	1968
	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
British—					
Within 1 year	2.0	4.5	6.6	6.8	2.2
From 1-5 years	9.0	4.5	13.4	20.5	11.1
From 5-10 years	5.0	—	3.3	—	13.3
Over 10 years	15.0	14.0	20.0	18.2	11.1
Non-British—					
Within 1 year	4.0	9.0	—	13.6	6.7
From 1-5 years	9.0	11.0	10.0	9.1	4.4
From 5-10 years	18.0	18.0	16.0	6.8	15.6
Over 10 years	38.0	39.0	30.0	25.0	35.5

Comparative Figures for Assisted and Non-Assisted Migrants

Year	Assisted		Non-Assisted		Percentage of Total Notifications
	Number	Per Cent	Number	Per Cent	Per Cent
1964	41	75	14	25	31
1965	29	66	15	34	28
1966	26	87	4	13	23
1967	26	59	18	41	31
1968	31	68.8	14	31.2	40.9

APPENDIX 22—RE-ACTIVATED CASES OF TUBERCULOSIS FOR YEAR ENDED 31st DECEMBER, 1968

SHOWING AGE, SEX AND STAGE OF DISEASE

Age Group (Years)	Males				Females				Persons				
	Min.	Mod. Adv.	Adv.	Non-Pulmonary	Min.	Mod. Adv.	Adv.	Non-Pulmonary	Min.	Mod. Adv.	Adv.	Non-Pulmonary	Total Persons
0–4	—	—	—	—	—	—	—	—	—	—	—	—	—
5–9	—	—	—	—	—	—	—	—	—	—	—	—	—
10–14	—	—	—	—	—	—	—	—	—	—	—	—	—
15–19	—	—	—	—	—	—	—	—	—	—	—	—	—
20–24	—	—	—	—	—	—	—	—	—	—	—	—	—
25–29	—	—	—	—	—	1	—	—	—	1	—	—	1
30–34	—	—	—	—	—	—	—	—	—	—	—	—	—
35–39	—	—	—	—	—	—	—	—	—	1	—	—	1
40–44	—	1	—	—	—	—	—	—	—	1	—	1	2
45–49	—	—	—	1	—	1	—	—	—	1	—	—	2
50–54	1	1	—	—	—	—	—	—	1	—	—	—	—
55–59	—	—	—	—	—	—	—	—	—	—	—	—	—
60–64	—	—	—	—	1	—	—	—	1	—	—	—	1
65–69	—	1	1	—	—	1	—	—	—	2	1	—	3
70–74	—	—	—	—	—	—	—	—	—	—	—	—	—
75 and over	—	1	—	—	1	1	—	—	1	2	—	—	3
Not stated	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	1	4	1	1	2	4	—	—	3	8	1	1	13

APPENDIX 23—MASS X-RAY SURVEYS

YEAR ENDED 31st DECEMBER, 1968

Age (Years)	Number X-rayed	Active Cases		Suspect Active at 31st Dec.		Inactive Cases		Other Conditions Requiring Investigation
		Number	Rate per 1,000	Number	Rate per 1,000	Number	Rate per 1,000	
	COUNTRY AREAS							
0–14	39	—	—	—	—	—	—	—
15–19	3,195	1	0.31	—	—	1	0.3	18
20–24	6,625	—	—	—	—	4	0.6	20
25–29	7,244	—	—	—	—	6	0.8	50
30–34	7,350	—	—	—	—	12	1.6	80
35–39	7,174	4	0.56	—	—	9	1.2	118
40–44	6,926	—	—	—	—	25	3.6	146
45–49	5,830	—	—	—	—	28	4.8	131
50–54	4,162	2	0.48	2	0.48	33	7.9	116
55–59	3,218	2	0.62	—	—	31	9.6	91
60–64	2,290	2	0.87	—	—	21	9.1	59
65–69	1,712	—	—	—	—	15	8.7	65
70–74	1,220	1	0.82	—	—	9	7.4	24
75 and over	1,497	—	—	1	0.67	9	6.0	38
Totals	58,482	12	0.21	3	0.05	203	3.4	956

APPENDIX 24—MASS X-RAY SURVEYS

YEAR ENDED 31st DECEMBER, 1968

Age (Years)	Number X-rayed	Active Cases		Suspect Active at 31st Dec.		Inactive Cases		Other Conditions Requiring Investigation
		Number	Rate per 1,000	Number	Rate per 1,000	Number	Rate per 1,000	
	METROPOLITAN AREAS							
0–14	18	—	—	—	—	—	—	—
15–19	839	—	—	—	—	6	7.2	1
20–24	1,634	—	—	—	—	3	1.8	9
25–29	1,034	—	—	—	—	2	1.9	6
30–34	1,006	—	—	—	—	—	—	9
35–39	1,397	1	0.71	1	0.71	2	1.4	17
40–44	2,190	—	—	2	0.96	5	2.3	53
45–49	2,295	—	—	—	—	21	9.1	57
50–54	1,885	—	—	—	—	11	5.9	53
55–59	1,587	—	—	1	0.63	18	11.3	52
60–64	1,166	—	—	—	—	18	15.4	62
65–69	812	1	1.23	—	—	7	8.6	33
70–74	541	—	—	—	—	8	14.8	23
75 and over	876	—	—	—	—	6	6.8	30
Totals	17,280	2	0.11	4	0.23	107	6.2	405

APPENDIX 25—MASS X-RAY SURVEYS

YEAR ENDED 31ST DECEMBER, 1968

Age (Years)	Number X-rayed	Active Cases		Suspect Active at 31st Dec.		Inactive Cases		Other Conditions Requiring Investigation
		Number	Rate per 1,000	Number	Rate per 1,000	Number	Rate per 1,000	
	CITY UNIT METROPOLITAN AREAS							
0–14	698	2	2.86	—	—	50	71.6	19
15–19	6,814	—	—	1	0.14	25	3.7	35
20–24	5,279	1	0.19	—	—	30	5.6	33
25–29	3,151	—	—	—	—	22	6.9	51
30–34	2,752	—	—	—	—	27	9.8	84
35–39	2,495	5	2.00	—	—	32	12.8	93
40–44	2,544	4	1.57	1	0.39	49	19.2	146
45–49	2,076	1	0.48	—	—	66	31.7	123
50–54	1,610	—	—	1	0.62	83	51.5	142
55–59	1,484	2	1.34	1	0.67	98	66.0	145
60–64	1,639	4	2.44	—	—	99	60.3	154
65–69	1,447	2	1.38	2	1.38	111	76.7	175
70–74	649	1	1.54	1	1.54	56	86.2	93
75 and over	783	2	2.55	—	—	65	83.0	85
Totals	33,421	24	0.718	7	0.20	713	21.3	1,378

APPENDIX 26—CITY X-RAY UNIT EXAMINATION, 1968

Categories	Number Examined	New Active T.B. X-rayed Current Year	Active Rate per 1,000 Examined	Active T.B. X-rayed Previous Year
Contacts	2,058	3	1.5	—
Probationer nurses, police recruits, etc.	2,650	—	—	—
Referred by private doctor	5,251	8	1.5	—
Migrants (new arrivals)	5,843	2	0.3	1
Commonwealth Government employees	2,037	—	—	—
State Government employees	721	—	—	—
Industrial groups	487	—	—	—
Pensioners	1,869	—	—	—
Volunteers	6,644	3	0.4	—
Teachers Training College	3,070	—	—	—
University students	1,165	—	—	—
Positive Mantoux children and contacts	546	1	1.8	—
Inactive previous surveys re-examined scars	1,080	1	1.0	5
	33,421	18	0.5	6

APPENDIX 27—EPIDEMIOLOGICAL TUBERCULIN TESTS

TYPE OF SURVEY—CONTACTS

Year Ended 31st December, 1968

Age (Years)	Number Tested	Type of Test		Positive				Negative	
		Mantoux 10 Tu of OT	Heaf OT	Not Previously Vaccinated with B.C.G.		Previously Vaccinated with B.C.G.			
				No.	Per Cent	No.	Per Cent	No.	Per Cent
0–4	406	406	—	4	1.45	130	32.02	272	90.85
5–9	412	412	—	5	1.67	114	27.67	293	98.32
10–14	261	261	—	5	3.35	112	42.91	144	96.64
15–19	234	234	—	10	9.17	125	53.42	99	90.82
20–24	248	248	—	11	9.09	127	51.21	110	90.90
25–29	214	214	—	28	22.40	89	41.59	97	77.60
30–34	247	247	—	59	35.54	81	32.79	107	64.45
35–39	224	224	—	66	36.26	42	18.75	116	63.73
40–44	314	314	—	93	37.50	66	21.02	155	62.50
45–49	259	259	—	92	43.81	49	18.92	118	56.19
50 and over	602	602	—	210	44.30	128	21.26	264	55.69
Totals	3,421	3,421	—	583	—	1,063	—	1,775	—

APPENDIX 28—EPIDEMIOLOGICAL TUBERCULIN TESTS

TYPE OF SURVEY—SCHOOL CHILDREN, NURSES, POLICE RECRUITS, ETC. (EXCLUDING CONTACTS)

Year Ending 31st December, 1968

Age (Years)	Number Tested	Type of Test		Positive				Negative	
		Mantoux 10 Tu of OT	Heaf OT	Not Previously Vaccinated with B.C.G.		Previously Vaccinated with B.C.G.			
				No.	Per Cent	No.	Per Cent	No.	Per Cent
0–4	163	163	—	2	1.32	12	7.36	149	98.6
5–9	11,642	11,642	—	31	0.26	113	0.97	11,498	99.7
10–14	14,454	14,454	—	183	1.36	1,079	7.46	13,192	98.6
15–19	2,765	2,765	—	54	4.40	1,538	55.62	1,173	95.6
20–24	470	470	—	38	15.57	226	48.09	206	84.4
25–29	201	201	—	34	26.56	73	36.32	94	73.4
30–34	196	196	—	49	37.97	67	34.18	80	62.0
35–39	187	187	—	70	48.75	44	23.53	73	51.0
40–44	175	175	—	92	59.74	21	12.00	62	40.2
45–49	120	120	—	51	48.11	14	11.67	55	50.8
50 and over	369	369	—	169	48.98	24	6.50	176	51.0
Totals	30,742	30,742	—	773	—	3,211	—	26,758	—

APPENDIX 29—RE-TESTING OF B.C.G. VACCINATIONS FOR YEAR ENDING 31ST DECEMBER, 1968

	Re-tested	Post B.C.G. Positive	Per Cent Positive	Post B.C.G. Negative	Per Cent Negative
3 months after B.C.G.	1,253	1,062	84.76	191	15.24
12 months after B.C.G.	421	311	73.87	110	26.13
2 years after B.C.G.	152	127	83.55	25	16.45
3 years after B.C.G.	105	81	77.14	24	22.86
4 years after B.C.G.	184	159	86.41	25	13.59
5 years after B.C.G.	248	187	75.40	61	24.60
6 years after B.C.G.	138	106	76.81	32	23.19
7 years after B.C.G.	94	71	75.53	23	24.47
8 years after B.C.G.	706	533	75.50	173	24.50
	3,301	2,637	79.88	664	20.12

APPENDIX 30—DEATHS FROM TUBERCULOSIS (ALL FORMS), FOR YEAR ENDING 31ST DECEMBER, 1968

Age at Death (Years)	Male	Female	Total
55–59	—	1	1
60–64	1	—	1
65–69	—	—	—
70–74	1	—	1
75–79	2	1	3
80–84	3	2	5
85–89	—	—	—
90–94	1	—	1
	8	4	12