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CHAPTER XII.

PUBLIC HYGIENE.

§ 1. Public Health Legislation and Administration.

1. **General.**—(i) *Commonwealth.* The Commonwealth Department of Health, which was created on the 3rd March, 1921, and commenced its administration as from the 7th March, 1921, is controlled by the Commonwealth Minister of Health. The Department was formed by the extension and development of the Commonwealth Quarantine Service, the Director of Quarantine becoming the Commonwealth Director-General of Health and Permanent Head of the Department.

The functions of the Department are as follows :—

The administration of the Quarantine Act : The investigation of causes of disease and death and the establishment and control of laboratories for this purpose : The control of the Commonwealth Serum Laboratories and the commercial distribution of the products manufactured in those laboratories : The methods of prevention of disease : The collection of sanitary data, and the investigation of all factors affecting health in industries : The education of the public in matters of public health : The administration of any subsidy made by the Commonwealth with the object of assisting any effort made by any State Government or public authority directed towards the eradication, prevention, or control of any disease : The conducting of campaigns of prevention of disease in which more than one State is interested : The administrative control of the Australian Institute of Tropical Medicine : The administrative control of infectious disease amongst discharged members of the Australian Imperial Forces : The study of the behaviour of communicable diseases thoroughout the world and acting as an intelligence bureau for the collection and dissemination of information : The control of venereal disease and infectious diseases in the Mercantile Marine : The inspection of vessels, and the medical inspection of seamen under the Navigation Act : The control of the importation of food and drugs under the Commerce Act : Generally to inspire and co-ordinate public health measures : Any other functions which may be assigned to it.

As noted above, the Department controls the Australian Institute of Tropical Medicine at Townsville, and it directs the campaign in connexion with hookworm disease. These matters, together with the control exercised by the Department over malaria and bilharziasis introduced by returned soldiers and sailors, are dealt with separately in subsequent pages in this chapter (see § 5). Reference to the Commonwealth Serum Laboratories will be found in § 4, 5.

(ii) *New South Wales.* The Department of Public Health is controlled by the Minister of Public Health. The Director-General of Public Health is the chief executive officer, and is assisted by various staffs—medical, bacteriological, chemical, veterinary, dairy inspection, meat inspection, sanitary, pure food, and clerical. The work of the Department extends over the whole of the State, and embraces all matters relating to public health and the general medical work of the Government, the Director-General of Public Health holding the position of Chief Medical Officer of the Government as well as being permanent head of the Department.

The Board of Health has certain statutory duties imposed upon it by various Acts of Parliament, and the Director-General is President of the Board. These duties consist largely in supervision of the work of local authorities (Municipal and Shire Councils), so far as that work touches upon public health matters connected with the following Acts :— Public Health Act 1902, Public Health (Amendment) Acts 1915 and 1921, Dairies Supervision Act 1901, Noxious Trades Act 1902, Cattle Slaughtering and Diseased Animals and Meat Act 1902, Pure Food Act 1908, Private Hospitals Act 1908, and Venereal Diseases Act 1918. The Board further possesses certain powers connected with public health matters under the Local Government Act 1919. The Board of Health is a nominee Board, created in 1881 and incorporated in 1894.

The Director-General of Public Health acts independently of the Board of Health as regards the State hospitals and asylums and the various public hospitals throughout the State which receive subsidies from the Government.

(iii) *Victoria.* In this State the Public Health Acts 1915, 1919, and 1922 are administered by a Commission composed of the Chief Health Officer and six members appointed by the Governor-in-Council. The medical and sanitary staffs of the Commission consist of (*a*) the chief health officer, who is also chairman, (*b*) six district health officers and three assistant health officers, (c) chief sanitary engineer and assistant sanitary engineer, three building surveyors and four building inspectors, and (*d*) twelve health inspectors. The main function of the Commission is to enforce the execution of the Health Acts by the local municipalities, but it has been found advisable to supplement this supervisory function by an active policy of inspection of the sanitary condition of various districts, and the sampling of articles of food. The supervision of the sanitary conditions of milk production is under the Dairy Supervision Branch of the Department of Agriculture, but distribution is supervised by the Commission. Acts administered by the Department of Public Health are:—The Health Acts (in which are now included the Adulteration of Wine Act, the Pure Food Act, the Meat Supervision Act) and the Cemeteries Act, which includes the Cremation Act. The Department administers also the Midwives Act, the Goods Act, the Venereal Diseases Act, the Infectious Diseases Hospital Act, the Heatherton Sanatorium Act, the Masseurs Act, and the Nurses Registration Act.

(iv) *Queensland.* The Public Health Acts 1900 to 1922 are administered by the Commissioner of Public Health under the Home Secretary. The executive staff of the Department includes a health officer, a medical officer for the tuberculosis bureau, two medical officers for venereal diseases, fourteen food and sanitary inspectors, and one staff nurse. There are, in addition, rat squads in Brisbane. Northern offices, in charge of inspectors, are located at Rockhampton, Townsville, and Cairns, whilst another inspector is stationed at Toowoomba. A laboratory of microbiology and pathology, in charge of a medical director, is controlled by the Department, and performs a wide range of microbiological work for the assistance of medical practitioners and the Department.

One function of the Department is to stimulate and advise local sanitary authorities on matters pertaining to the Health Acts, and, where necessary, to rectify or compel rectification, at the cost of the local authority, of sanitary evils produced by local inefficiency or apathy. Its powers and responsibilities were widely increased by the Amending Acts of 1911, 1914, 1917, and 1922.

(v) *South Australia.* The Central Board of Health consists of five members, three of whom (including the chairman, who is permanent head of the Department) are appointed by the Governor, while one each is elected by the city and suburban local Boards and the country local Boards. The Health Act 1898 to 1918 provides that the municipal and district councils are to act as local Boards of Health for their respective districts. There are 188 of these local Boards under the general control and supervision of the Central Board. A chief inspector and one inspector under the Health and Food and Drugs Acts periodically visit the local districts, and see generally that the Boards are carrying out their duties. There is also a chief inspector of food and drugs (under the Food and Drugs Act 1908 to 1922), who, in company with an analyst, visits country districts, and takes samples of milk, which are analysed on the spot. There are three nurse inspectors employed in advising and assisting local Boards in connexion with outbreaks of infectious diseases and in carrying out generally similar duties to those of male inspectors, with the exception of certain work under the Food and Drugs Act. In the outlying districts there are sixteen inspectors directly responsible to the Board. The Venereal Diseases Act 1920, which provides for the prevention and control of venereal diseases, has not yet been proclaimed.

(vi) *Western Australia.* The legislation in this State comprises the Health Act 1911, with the amending Acts of 1912 (2), 1915, 1918, and 1919, which have been partly consolidated and reprinted as " The Health Act 1911–19." Further amending Acts were passed in 1920 and 1921. The central authority is the Department of Public Health, controlled by a Commissioner, who must be a qualified medical practitioner. The local authorities

comprise :—(*a*) Municipal Councils, (*b*) Road Boards where the boundaries of a Health District are conterminous with those of a Road District, and (*c*) Local Boards of Health, composed of persons appointed by the Governor. These local Boards are utilized only where neither Municipal Councils nor Road Boards are available. Generally speaking, the Act is administered by the local authorities, but the Commissioner has supervisory powers, also power to compel local authorities to carry out the provisions of the Act. In cases of emergency, the Commissioner may exercise all the powers of a local health authority in any part of the State.

All the usual provisions for public health legislation are contained in the Act, and, in addition, provision is made for the registration of midwifery nurses, the medical examination of school children, the control of public buildings (*i.e.*, theatres, halls, etc.), the control of food, and the provision of standards therefor. The amending Acts of 1915 and 1918 deal exclusively with venereal diseases.

(vii) *Tasmania.* The office of Director of Public Health was established under the Director of Public Health Act 1920, and the person holding the office of Chief Health Officer under the Public Health Act 1903 at the time of the passing of the first-named Act is the Director of Public Health, and is also the permanent head of the Department. The Mental Diseases Hospital is, moreover, controlled by this Department. The Director has very wide powers, and in the event of the appearance of dangerous infectious disease (small-pox, plague, etc.) in the State, is vested with supreme power, the entire responsibility of dealing with such an outbreak being taken over by him from the local authorities. Local executive is vested in local authorities, who possess all legal requirements for the efficient sanitary regulation of their districts. Controlling and supervisory powers over these bodies are possessed by the Department of Public Health, and many of the powers conferred upon them may be converted into positive duties. One function of the Department is to advise local authorities on matters pertaining to the Health Act, and, where necessary, to rectify sanitary evils produced by local inefficiency or apathy. The Department has four full-time inspectors, who assist and instruct the local sanitary inspectors, but full-time district health officers are not provided for. The number of local authorities under the Public Health Act has been reduced to forty-nine since the Local Government Act 1906 came into force. All parts of Tasmania are now furnished with the administrative machinery for local sanitary government.

The Public Health Acts 1917 and 1918 deal with venereal diseases. Regulations under the Public Health Act 1903, as amended, for checking or preventing the spread of any infectious disease, came into force in February, 1918.

The Places of Public Entertainment Act 1917 is administered by the Director of Public Health under the Minister. This Act provides, *inter alia*, for the licensing and regulation of places of public entertainment, for the appointment of a censor or censors of moving pictures, and for the licensing of cinematograph operators. Comprehensive regulations have been framed under the Act. Inspectors under the Public Health Act 1903 are Inspectors of Places of Public Entertainment under this Act.

§ 2. Inspection and Sale of Food and Drugs.

1. **General.**—Under the Acts referred to later and the regulations made thereunder, the importation of articles used for food or drink, of medicines, and of other goods enumerated, is prohibited, as also is the export of certain specified articles, unless there is applied to the goods a "trade description" in accordance with the Act. Provision is made for the inspection of all prescribed goods which are imported or which are entered for export.

2. **Commonwealth Jurisdiction.**—Under Section 51 (i) of the Commonwealth Constitution Act 1900, the Commonwealth Parliament has power to make laws with respect to trade and commerce with other countries and among the States. By virtue of that power, the Federal Parliament passed the Commerce (Trade Descriptions) Act 1905, to which reference has already been made in Chapter VI., p, 214.

3. **State Jurisdiction.**—The inspection and sale of food and drugs are also dealt with in each State, either under the Health Acts or under Pure Food Acts. This work is carried out in each State by the Executive Officer of the Health Department. There is, in addition, a number of Acts dealing with special matters, such as the adulteration of wine and the oversight of bread and meat supply. The supply and sale of milk are also subject to special regulations or to the provisions of special Acts.

The general objects of these Acts are to secure the wholesomeness, cleanliness, and freedom from contamination or adulteration of any food, drug or article; and the cleanliness of receptacles, places, and vehicles used for their manufacture, storage or carriage. The sale of any article of food or any drug which is adulterated or falsely described is prohibited, as also is the mixing or selling of food or drugs so as to be injurious to health.

Power is given to any authorized officer to enter any place for the purpose of inspecting any article to be used as a food or drug, and also to inspect articles being conveyed by road, rail or water. The officer may take samples for analysis or examination, and may seize for destruction articles which are injurious to health or unwholesome. Special provision is generally made in the Acts with regard to the sale of preservatives and disinfectants.

In every State except Queensland, Advisory Committees have been appointed for the purpose of prescribing food standards, and for making recommendations generally with a view to carrying out the provisions of the Acts. The duty of enforcing these regulations is entrusted to the local authorities.

4. **Food and Drug Standardization.**—Conferences with the object of securing uniformity in these matters were held in Sydney in 1910, and in Melbourne in 1913. The resolutions of the latter conference were submitted to the Premiers' Conference held in Melbourne in March, 1914, and in conformity with the determinations arrived at, each State issued regulations which have had the effect of ensuring uniformity throughout Australia.

5. **Sale and Custody of Poisons.**—In New South Wales, Victoria, Western Australia and Tasmania, the enactments for regulating the sale and use of poisons are administered by the Pharmacy Boards in the respective States. In South Australia, the sale of poisons is provided for by regulations under "The Food and Drugs Act 1908," administered by the Central Board of Health. In Queensland, the sale of poisons is under the control of the Health Department.

In New South Wales, Victoria, and Tasmania the Government formerly subsidized the Pharmacy Board, in order to enable it to carry out the provisions of the Poisons Act. The New South Wales Board does not now obtain a subsidy, as the fees collected are sufficient to defray expenses. The subsidy to the Victorian Board was withdrawn in March, 1921, provision having been made for the payment of a 10s. licence fee under the Poisons Act 1920.

No persons, other than legally qualified medical practitioners and registered pharmaceutical chemists, are permitted to sell poisons, without special licence from the bodies administering the legislation in the respective States. These licences are issued to persons in business distant from four to five miles from a registered chemist, on production of certificates from medical practitioners, police, or special magistrates or justices as to the applicant's character and fitness to deal in poisons. Annual licence fees, ranging from 5s. to 40s., are charged. New poisons regulations were approved in Queensland on the 26th November, 1924, amongst which are stringent restrictions on the sale of cyanide of potassium. A revised list of standard poisons was gazetted in Western Australia in December, 1922.

Special conditions attaching to the sale of poisons were alluded to on p. 1055 of Official Year Book No. 12.

Partial exemptions from the regulations are made in some States in the case of sales of poisons for agricultural, horticultural and photographic purposes, in so far that any person may sell such poisons subject to the restrictions as to the class of container and the manner in which they may be sold. The sale of what are generally known as industrial poisons—such as sulphuric acid, nitric acid, hydrochloric acid, soluble salts of oxalic acid, formalin, etc.—is governed by regulations, as also is the sale of poisons for the destruction

of rats, vermin, etc. Under the existing laws these poisons may, in most of the States, be sold by any one. The Victorian Parliament, in December, 1920, passed an amending Poisons Act, in which the word " wholesale " has for the first time been defined as meaning " sale or supply for the purposes of re-sale," providing for an annual fee of 10s. and the issuing of licences to dealers in exempted poisons. A new principle is introduced into the Victorian Poisons Act of 1920. Certain drugs are declared to be " potent drugs " and may be sold by pharmaceutical chemists only. These drugs include acetanilid, adrenalin, oil of tansy, pituitary extract, thyroid gland preparations, and any serum or vaccine for human use. Under the Victorian " Dangerous Drugs Regulations, 1922," which came into effect on the 1st January, 1923, further restrictions were imposed on the manufacture and sale of abortifacients and of habit-forming drugs such as ergot, morphine, opium, heroin, cocaine, veronal, etc. Regulations regarding dangerous drugs (cocaine, morphia, etc.) are included in the amended Queensland regulations of 26th November, 1924, referred to above.

§ 3. Supervision of Dairies, Milk Supply, etc.

1. **General.**—In Official Year Book No. 12 and preceding issues, allusion is made in general terms to the legislation in force in the various States to ensure the purity of the milk supply and of dairy produce generally, but limits of space preclude the repetition of this information in the present issue.

2. **Number of Dairy Premises Registered.**—The following table shows, so far as the particulars are available, the number of dairy premises registered and the number of cattle thereon. Compulsory registration is not in force throughout the whole area of the various States.

DAIRY PREMISES REGISTERED, AND CATTLE THEREON, 1924.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust. (b)	Tasmania.
Premises registered ..	21,604	21,202	(a)23,000	1,413	929	(c)
Cattle thereon ..	1,013,476	283,634	570,000	8,810	11,079	(c)

(a) Approximate number of dairies operating. (b) For year 1921. (c) Not available.

3. **New South Wales.**—The provisions of the Dairies Supervision Act 1901 extend to the whole of the Eastern and Central Divisions and to all important dairying districts further inland. Other districts are brought under the operation of the Act by proclamation from time to time. Every dairyman, milk vendor, and dairy factory or creamery proprietor is required under penalty to apply for registration to the local authority for the district in which he resides, and also to the local authority of every other district in which he trades. Registration must be applied for prior to commencing trade, and must be renewed annually. The Chief Dairy Inspector is in charge of all inspectorial work under the Dairies Supervision Act 1901, and has assisting him fifteen qualified dairy inspectors, each in charge of a district. During 1924, samples of milk numbering 15,959, and of food and drugs numbering 834 were taken from the vendors for examination, and 12,696 dairy premises were inspected. Where necessary, warnings and prosecutions followed. A sum of over £2,400 was imposed in fines for adulteration, want of cleanliness, etc.

4. **Victoria.**—The registration, inspection and supervision of dairies, dairy farms, dairy produce, milk stores, milk shops, milk vessels, dairy cattle and grazing grounds are provided for by the Dairy Supervision Act 1915, and the Milk Supply Act 1922, administered by the Minister of Agriculture. The supervision of butter and cheese factories is provided for by the Dairy Produce Act 1919. Under the Health Act, however, the Department of Public Health is empowered to take samples of food (including milk, cream, butter, cheese, and other dairy products) for examination or analysis, and to institute prosecutions in case of adulterated or unwholesome food. During the year ended 30th June, 1923, 1,091 samples of milk were analysed by the Public Health Department.

By the end of the year 1923, 117 municipal districts, comprising about one-third of the area of the State, had been brought under the operation of the Dairy Supervision Act. The municipal councils have the option of carrying out the administration of the Act or of deciding that the work should devolve upon the Department of Agriculture; up to the present all the municipalities in which the Act has been proclaimed have elected for Departmental administration.

The Milk Supply Act 1922 provides for the appointment of a Milk Supply Committee with power to issue regulations to govern the milk supply of the metropolis, and to disseminate information concerning the best methods of handling the product.

The Council of any metropolitan municipality, or a group of councils acting together may establish depots at which milk may be bought, treated, and sold. The Committee may, however, issue certificates authorizing persons to sell milk, but, in an area in which there is a municipal depot, no milk may be sold unless it has been treated in a depot or, by approved methods, in a factory. Milk sold in containers must have the grade specified on the label. A laboratory has been established to carry out researches in matters relating to milk.

5. **Queensland.**—The control and supervision of the milk supply, of dairies, and of the manufacture, sale, and export of dairy produce are provided for by the Dairy Produce Act 1920, administered by the Department of Agriculture and Stock. This Act and the regulations made thereunder apply only to prescribed areas which comprise the whole of the coastal district from Rockhampton down to the New South Wales border, and the Darling Downs, Maranoa, Mackay, and Cairns districts. In certain proclaimed areas the sale of milk is restricted to persons licensed under the Milk Sellers' Regulations of 1924. Milk for sale is supervised by inspectors of the Health Department under the Health Acts 1900–1922. During the year ended 30th June, 1924, 525 samples of milk were analysed.

6. **South Australia.**—The Food and Drugs Act 1908, and the Regulations made thereunder, provide for the licensing of vendors of milk, and the registration of dairies, milk stores and milk shops. The Metropolitan County Board carries out the requirements of the metropolitan area. In the country, the majority of local authorities have not made statutory provision for the licensing of vendors of milk and the registration of dairy premises; and, in consequence, the Central Board of Health provides for such under the Act.

7. **Western Australia.**—Under the provisions of the Health Act control of dairies throughout the State is in the hands of the Public Health authorities. The premises of dairymen and milk vendors must be registered by a local authority. The inspectors under the Act supervise the sanitary condition of the premises, the examination of herds being carried out for the Health Department by officers of the Department of Agriculture. Inspection of herds is made at regular intervals, and the tuberculin test is applied in cases of suspected disease.

8. **Tasmania.**—Local authorities are responsible for the dairies in their respective districts. By-laws for the registration and regulation of dairies have been drafted by the Public Health Department, and in the majority of cases have been adopted by the local authorities. The Food and Drugs Act 1917 provides that the municipal council of every city or municipality shall submit for analysis such samples of food or drugs as may be specified by the Chief Officer. The sampling is, in the majority of municipal districts, carried out by the Public Health Department, and particular attention is paid to milk. An Act also provides for the registration and inspection of dairies and other premises where dairy produce is prepared, and regulates the manufacture, sale, and export of such produce.

§ 4. Prevention and Control of Infectious and Contagious Diseases.

1. **General.**—The provisions of the various Acts in regard to the compulsory notification of infectious diseases and the precautions to be taken against the spread thereof may be conveniently dealt with under the headings—Quarantine; Notifiable Diseases, including Venereal Diseases; and Vaccination.

2. **Quarantine.***—(i) *General.* The Quarantine Act is administered by the Commonwealth Department of Health, and uniformity of procedure has been established in respect of all vessels, persons, and goods arriving from oversea ports or proceeding from one State to another, and in respect of all animals and plants brought from any place outside Australia. In regard to inter-state movements of animals and plants, the Act becomes operative only if the Governor-General be of opinion that Federal action is necessary for the protection of any State or States; in the meantime the administration of inter-state quarantine of animals and plants is left in the hands of the States. The Commonwealth possesses stations in each State for the purposes of human and also of animal quarantine.

(ii) *Administration of Act.* The administration of the Act in respect of the general division, *i.e.*, vessels, persons, and goods, and human diseases, is under the direct control of the Commonwealth in all States except Tasmania. A medical chief quarantine officer, with assistant quarantine officers, has been appointed in each State. This officer is charged with responsible duties, and is under the control of the Director-General of Health. In Tasmania, the chief health officer of the State acts as chief quarantine officer, and payment is made to the State for his services. The administration of the Act in the Northern Territory has been combined with that of Queensland under the chief quarantine officer for the North-eastern division. The administration of the Acts and Regulations relating to oversea animal and plant inspection and quarantine is carried out by the officers of the State Agricultural Departments acting as quarantine officers.

(iii) *Chief Provisions of Act.* The Act provides for the inspection of all vessels including air-vessels, from oversea, for the quarantine, isolation, or continued surveillance of infected or suspected vessels, persons, and goods, and for the quarantining and, if considered necessary, the destruction of imported goods, animals, and plants. The obligations of masters, owners, and medical officers of vessels are defined, and penalties for breaches of the law are prescribed. Power is given to the Governor-General to take action in regard to various matters by proclamation, and to make regulations to give effect to the provisions of the Act. Quarantinable diseases are defined as small-pox, plague, cholera, yellow fever, typhus fever, leprosy, or any other disease declared by the Governor-General, by proclamation, to be quarantinable. "Vessel" is defined as "any ship, boat or other description of vessel or vehicle used in navigation by sea or air." "Disease" in relation to animals means certain specified diseases, or "any disease declared by the Governor-General by proclamation, to be a disease affecting animals." "Disease" in relation to plants means "any disease or pest declared by the Governor-General, by proclamation, to be a disease affecting plants." The term "plants" is defined as meaning "trees or plants, and includes cuttings and slips of trees and plants and all live parts of trees or plants and fruit."

(iv) *Proclamations.* The proclamations so far issued specify the diseases to be regarded as diseases affecting animals and plants; appoint first ports of landing for imported animals and plants, and first ports of entry for oversea vessels; declare certain places beyond Australia to be places infected or as places to be regarded as infected with plague; prohibit the importation (*a*) of certain noxious insects, pests, diseases, germs, or agents, (*b*) of certain goods likely to act as fomites, and (*c*) of certain animals and plants from any or from certain parts of the world; fix the quarantine lines, and define mooring grounds in certain parts of Australia.

(v) *Miscellaneous.* At present, instead of all oversea vessels being examined in every State, as was formerly the case, those arriving from the east and west are now examined only at the first port of call, and pratique is given for the whole of the Commonwealth except in cases of suspicious circumstances, while vessels arriving from the northern routes are examined only at the first and last ports. It is expected that the restrictions placed upon oversea vessels will be further removed as the machinery of quarantine is improved. The present freedom from certain diseases which are endemic in other parts of the world would, however, appear to justify the Commonwealth in adopting precautionary measures not perhaps warranted in the already infected countries of the old world.

3. **Notifiable Diseases.—A. General.**—(i) *Methods of Prevention and Control.* Provision exists in the Health Acts of all the States for precautions against the spread, and for

* From information furnished by the Commonwealth Director-General of Health.

the compulsory notification of infectious diseases. When any such disease occurs, the Health Department and the local authorities must at once be notified. In some States notification need only be made to the latter. The duty of giving this notification is generally imposed, first, on the head of the house to which the patient belongs, failing whom on the nearest relative present, and, on his default, on the person in charge of or in attendance on the patient, and on his default, on the occupier of the building. Any medical practitioner visiting the patient is also bound to give notice.

As a rule the local authorities are required to report from time to time to the Central Board of Health in each State as to the health, cleanliness, and general sanitary state of their several districts, and must report the appearance of certain diseases. Regulations are prescribed for the disinfection and cleansing of premises, and for the disinfection and destruction of bedding, clothing, or other articles which have been exposed to infection. Bacteriological examinations for the detection of plague, diphtheria, tuberculosis, typhoid, and other infectious diseases within the meaning of the Health Acts are continually being carried out. Regulations are provided in most of the States for the treatment and custody of persons suffering from certain dangerous infectious diseases, such as small-pox and leprosy.

(ii) *New South Wales.* The proclamation and notification of infectious diseases are dealt with in Part II. of the Public Health Acts 1902 and 1915. Notification of infectious disease must be made to the local authority by the head of the family, etc., and by the medical practitioner. Provision is made for the disinfection or destruction of premises. Restrictions are placed upon the attendance at school of children suffering from infectious disease or residing in a house in which infectious disease exists. Special provisions have been made with regard to typhoid fever, tuberculosis, small-pox and leprosy, and legislation has been passed dealing with venereal diseases.

(iii) *Victoria.* Under the Health Act 1919 any disease may be declared to be notifiable throughout the State. The occupier of a house containing a case of infectious disease, and also the medical practitioner, must report the fact to the Council. The Medical Officer of Health may order the removal of a patient to a hospital when such is available. The occupier of the house must also inform the head teacher of the school of any child suffering from notifiable disease or residing in an infected dwelling. The notification of venereal diseases is dealt with in the Venereal Diseases Act 1916.

(iv) *Queensland.* Part VII. of the Health Act 1917–1922 stipulates that all cases of infectious disease must be notified by the occupier of the house, and the medical practitioner attending the case. Restrictions are placed on the attendance at school of children suffering from a notifiable disease. Special measures must be taken against typhoid, small-pox, and venereal diseases. Leprosy is dealt with under the Leprosy Act 1892.

(v) *South Australia.* Cases of infectious diseases must be reported to the local board, under the provisions of Part VIII. of the Health Act 1898. The duty of notification rests primarily on the head of the family, and, in addition, the medical practitioner must report the case. Children suffering from or resident with a person suffering from an infectious disease must not attend school till they hold a certificate that there is no risk of infection. Venereal diseases will be dealt with under the provisions of the Venereal Diseases Act 1920 which, however, is not yet in operation.

(vi) *Western Australia.* The Health Acts 1911 to 1922 provide for the notification and control of infectious diseases, including venereal diseases. The occupier of a house containing a case of infectious disease, and the medical practitioner, must report the case to the local authority. Children may not attend school within three months of suffering from any infectious disease unless they possess a certificate of freedom from infection. Special provisions apply to typhoid fever, tuberculosis, and venereal diseases.

(vii) *Tasmania.* The provisions regarding the notification and prevention of infectious diseases are contained in the Public Health Act 1903 and amending Acts. Notification of cases devolves upon the medical practitioner or the occupier of the house. Special measures are provided for dealing with typhoid, small-pox, and venereal diseases.

(viii) *Diseases Notifiable in each State.* In the following statement diseases notifiable in each State are indicated by a cross :—

DISEASES NOTIFIABLE UNDER THE HEALTH, ETC., ACTS IN EACH STATE.

Particulars.	N.S.W.	Vic.	Q'land.	S.A.	W.A.	Tas.
Acute lobar pneumonia	..	..	..	(c)	+	..
Anthrax	..	+	..	+	+	..
Ankylostomiasis	..	+	+	..	..	..
Beri-beri	..	..	..	..	+	..
Bilharziasis	..	+	+	+	+	+
Bubonic plague	+	+	+	+	+	+
Cerebro-spinal fever	+	+	+	+	..	..
Cerebro-spinal meningitis	+	+	+	+	+	+
Chicken-pox	..	..	..	+	..	..
Cholera	..	+	+	+	+	+
Colonial fever	..	..	..	..	+	..
Continued fever	..	..	+	..	+	..
Dengue fever	..	..	..	..	+	..
Diphtheria	+	+	+	+	+	+
Dysentery	..	+	+(a)	..	+	..
Encephalitis lethargica	..	+	..	..	..	+
Enteric fever	+	+	+	+	+	+
Erysipelas	..	..	+	+	+	..
Favus	..	..	..	+	..	..
Hæmaturia	..	..	+	..	+	+
Infantile paralysis	+	+	+	+	+	+
Influenza	..	..	..	+(c)	+	..
Leprosy	+	+	+	+	+	+
Low fever	..	..	..	..	+	..
Malarial fever	..	+	+	+	+	+
Malta fever	..	..	..	..	+	..
Measles	..	..	..	+	..	..
Membranous croup	+	..	+	+	+	..
Pneumonic influenza	..	..	..	+(c)	+	+
Polioencephalitis	..	+	..	..	..	..
Poliomyelitis anterior acuta	+	+	+	+	+	+
Puerperal fever	..	+	+	+	+	+
Pulmonary tuberculosis (phthisis)	+(a)	+	+	+	+	+
Pyæmia	..	..	..	..	+	..
Relapsing fever	..	..	+	+	+	..
Scarlet fever	+	+	+	+	+	+
Scarlatina	+	+	+	+	+	+
Septicæmia	..	..	..	..	+	
Small-pox	+	+	+	+	+	+
Trichinosis	..	..	..	+	..	..
Tuberculosis	..	+	..	+	..	..
Tuberculosis in Animals	..	..	..	+	..	..
Typhoid	+	+	+	+	+	+
Typhus fever	..	+	+	+	+	+
Venereal Diseases :—						
Chancroid (soft chancre)	+	+	+	+(d)	+	+
Gleet	+	..	..	+(d)	+	..
Gonorrhœa	+	+	+	+(d)	+	+
Gonorrhœal ophthalmia	+	..	..	+(d)	+	..
Infective granuloma of the pudenda	+	+	+	+(d)	+	..
Ophthalmia neonatorum	..	+	..	..	+	+
Syphilis	+	+	+(b)	+(d)	+	+
Venereal warts	+	..	+	+(d)	+	..
Whooping cough	..	..	..	+	..	..
Yellow fever	..	+	+	+	+	..

(a) Notifiable in certain areas only. (b) Primary and secondary stages only. (c) In South Australia influenza vera is notifiable, and any febrile toxic-septicæmic condition similar to influenza, including pneumonic influenza. (d) Act not yet in operation.

B. Venereal Diseases.—(i) *General.* The prevention and control of venereal diseases are undertaken by the States. Each State has a Venereal Diseases Act, or provisions in the Health Act govern the working of the measures taken to combat these diseases. In every State notification has been made compulsory. A list of notifiable forms of venereal complaints appears on page 512. Steps have been taken to ensure free treatment by medical practitioners or in subsidized hospitals. Registered pharmaceutical chemists are allowed to dispense prescriptions only when signed by medical practitioners. Clinics have been established, and, in some cases, beds in public hospitals have been set aside for patients suffering from these diseases.

Penalties may be imposed on a patient who fails to continue under treatment. Clauses are inserted in the Acts which aim at preventing the marriage of any patient or the employment of an infected person in the manufacture and distribution of foodstuffs.

The Commonwealth Government has granted a subsidy of £15,000 per annum to the various States to assist in providing hospital treatment and administrative control. The supervision of this work, in so far as it relates to the expenditure of the subsidy, is undertaken by the Commonwealth Department of Health. In February, 1922, a conference was held to consider the means of securing the best results from this subsidy

(ii) *New South Wales.* The Venereal Diseases Act 1918 came into operation on 1st December, 1920. The Act, which is administered by a Commissioner, aims at ensuring that all cases of venereal disease will have immediate and continued treatment. Clinics have been established at subsidized hospitals. Notification is compulsory; a person suffering from the disease is required to place himself under the treatment of a medical practitioner or to attend a hospital within three days of becoming aware of the existence of the disease, and to continue treatment until a cure is effected. During 1924, notifications numbered 6,090. Satisfactory results are being obtained from action taken in cases where patients have been reported for failure to continue treatment as required by the Act. A number of prosecutions—all of which have been successful—has been undertaken for (*a*) sale of drugs prohibited under the Act, (*b*) treatment of venereal disease by a person other than a medical practitioner, and (*c*) for failing to undergo treatment when required.

(iii) *Victoria.* Under the Venereal Diseases Acts 1916 and 1918 the control of venereal disease is undertaken by the Department of Public Health. The Acts provide for compulsory treatment by qualified medical practitioners of all persons suffering from the disease. All hospitals in receipt of State aid treat patients. Three evening and three day clinics have been established at hospitals in Melbourne, and in June, 1918, a special departmental clinic was instituted. Notification of the disease is compulsory, and 5,264 cases were notified in 1924. Between the 17th June, 1918, and 30th June, 1924, 12,811 cases were treated at the special departmental clinic, the attendances numbering 474,576.

(iv) *Queensland.* The Health Act 1900-22 confers power on the Commissioner of Public Health to deal with the prevention and control of venereal disease, and affected persons must place themselves under treatment by a medical practitioner. Persons other than medical practitioners are prohibited from treating the disease. Subsidized hospitals are required to make provision for the examination and treatment of cases reported to them, and clinics have been established in Brisbane and seven towns. Notification is compulsory, and during the year ended 30th June, 1924, 1,521 cases were reported. Visits to the Brisbane clinics numbered 9,146 by males, and 957 by females. Examination of prostitutes is conducted at Brisbane and eight other towns by medical officers appointed under regulation 10 of the Venereal Diseases Regulations of 1923.

(v) *South Australia.* The provisions of the Venereal Diseases Act 1920 (not yet in operation) are to be carried out by the Inspector-General of Hospitals. The Minister administering the Act may arrange with any public hospital to provide free accommodation and treatment, and may also establish hospitals and arrange for free examinations and free supply of drugs. Persons suffering from venereal disease will be compelled to consult a medical practitioner or attend a hospital and place themselves under treatment. No person other than a medical practitioner may attend or prescribe for patients.

(vi) *Western Australia.* The Health Act gives power to the Commissioner of Public Health to deal with venereal diseases, and persons suffering from these diseases must consult a medical practitioner and place themselves under treatment. No treatment may be given except by qualified medical practitioners. Free examination and treatment are given by subsidized hospitals.

(vii) *Tasmania.* The Public Health Act 1917–1918 authorized the Director of Public Health to take steps for the control of venereal diseases, and persons affected must place themselves under the care of a medical practitioner or of a hospital. The State-aided hospitals are required to provide treatment. During 1924, 516 cases were notified by medical practitioners. In accordance with an arrangement entered into by the Commonwealth and State Government, the latter has made provision for the free maintenance and treatment of persons suffering from venereal diseases.

4. **Vaccination.**—(i) *General.* In New South Wales there is no statutory provision for compulsory vaccination, though in all the other States such provision has been made. Jennerian vaccine for vaccination against small-pox is prepared at the Commonwealth serum laboratories in Melbourne. A moderate demand exists for the vaccine in Victoria, but in the other States the normal requirements are small. During the years 1912, 1913, and 1914, the output of the vaccine in doses from the dépôt was respectively 65,000, 570,000, and 146,000. The number of doses issued in 1913 was, however, abnormal, and was due to the epidemic of small-pox which broke out in Sydney at the end of June, this being followed by large numbers of vaccinations in each State.

(ii) *New South Wales.* Although there is no provision for compulsory vaccination, public vaccinators have been appointed. No statistics are available as to the proportion of the population which has been vaccinated, but a report of the Principal Medical Officer of the Education Department states that out of 55,740 children medically examined during 1919, 9,487, or 17 per cent., had been vaccinated.

(iii) *Victoria.* Compulsory vaccination, subject to a "conscience" clause is enforced throughout the State under Part VII. of the Health Act 1919. From the year 1873 up to 31st December, 1918, it is estimated that 72 per cent. of the children whose births were registered were vaccinated. Free lymph is provided. The number of children vaccinated during 1924 was 1,759, or less than 5 per cent. of the births registered.

(iv) *Queensland.* Although compulsory vaccination is provided for under Part VII. of the Health Act 1900–1922, its operation has not been proclaimed. Vaccination thus being purely voluntary, medical practitioners do not notify vaccinations.

(v) *South Australia.* The Vaccination Act 1882, which applies to South Australia and the Northern Territory, is administered by the vaccination officer of the State. Under this Act vaccination was compulsory, but in 1917 an Act to suspend compulsory vaccination was passed. There were only 2 vaccinations reported in 1924.

(vi) *Western Australia.* Vaccination is compulsory under the Vaccination Act 1878, which, however, remains almost a dead letter, seeing that under the Health Act 1911, a "conscientious objection" clause was inserted, which is availed of by the majority of parents. The number of children vaccinated is very small. All district medical officers are public vaccinators, but they receive no fees for vaccinations.

(vii) *Tasmania.* All infants are nominally required under the Vaccination Act 1898 to be vaccinated before the age of 12 months, unless either (*a*) a statutory declaration of conscientious objection is made, or (*b*) a medical certificate of unfitness is received. Information in regard to vaccinations in recent years is not available.

(viii) *Persons Vaccinated, 1920 to 1924.* Information regarding the number of vaccinations in recent years is not available for all States, and in those States for which figures are supplied the returns are incomplete. In Victoria 1,759 children were vaccinated during 1924, the annual average for the last five years being 2,974. In South Australia there were 2 vaccinations recorded in 1924, and the average for the last five years was only 4. Information is not available for the other States.

5. **Commonwealth Serum Laboratories.**—The establishment for the preparation of Jennerian Vaccine situated at Royal Park, near Melbourne, formerly known as the "Calf Lymph Depot" was in 1918 greatly enlarged by the Commonwealth. The remodelled institution is designated the "Commonwealth Serum Laboratories," and forms a division of the Commonwealth Department of Health. The list of bacteriological preparations produced by the laboratories has been extended so as to cover practically the whole range of biological products, thus forming a valuable national provision for the protection of public health.

6. **Health Laboratories.**—The Commonwealth Department of Health has established Health Laboratories at Rabaul, New Guinea, at Bendigo, Victoria, at Townsville, Toowoomba and Rockhampton, Queensland, at Port Pirie, South Australia, and Kalgoorlie, Western Australia, and arrangements are being made for the organization of similar laboratories in other parts of Australia.

The laboratory at Rabaul is carried on in conjunction with the hookworm campaign, and is working in close co-operation with the health organization of the New Guinea Administration.

The Bendigo Laboratory was opened in 1922. Besides carrying on the ordinary diagnostic and educational work of a health laboratory, it is undertaking, by means of an excellent X-ray equipment, the examination, diagnosis and treatment of persons suffering from miner's disease and tuberculosis.

The laboratory at Townsville is carried on in conjunction with the Australian Institute of Tropical Medicine at Townsville. The laboratory at Toowoomba was opened on 18th December, 1923. All of these laboratories are undertaking successfully the diagnostic, educative, and research work for which they were created.

7. **Industrial Hygiene.**—The Industrial Hygiene division of the Commonwealth Department of Health was established in December, 1921. Its objects are the collection of reliable data on which to base guidance and advice; investigation of industrial conditions affecting health; and the issue of advice to employers and employees for the improvement of conditions of work and for the safeguarding of health. Publications have been issued dealing with the scope of industrial hygiene, and with health hazards in industry. Expert advice is available to employers and employees, and it is anticipated that the work of the division will be of great value in guiding the development of industry along hygienic lines, and in improving generally the condition of workers. With a view to the adoption of a concerted scheme of action and a uniform basis for standards and records throughout Australia in connexion with the many important matters safeguarding the health of the industrial worker, conferences of delegates from the State Health and Labour Departments and the Commonwealth Department of Health were held in 1922 and in 1924.

A special article entitled "Industrial Hygiene in Australia" will be found at the end of this chapter.

8. **Sanitary Hygiene.**—A division of sanitary engineering was established in the Commonwealth Department of Health early in 1923. Investigation and inquiry have been made into numerous sanitary engineering problems affecting Australia, including a number referred to the Department by various State Governments. Advice is given generally on the protection of water supplies, drainage, and other engineering questions affecting health.

§ 5. Tropical Diseases.

1. **General.**—The remarkable development of parasitology in recent years, and the increase in knowledge of the part played by parasites in human and animal diseases, have shown that the difficulties in the way of tropical colonization, in so far as these arise from the prevalence of diseases characteristic of tropical countries, are largely removable by preventive and remedial measures. Malaria and other tropical diseases are coming more and more under control, and the improvements in hygiene which science

has accomplished lend an entirely new aspect to the question of white settlement in countries formerly regarded as unsuitable for colonization by European races. In Australia, the most important aspect of this matter is at present in relation to such diseases as filariasis, malaria, and dengue fever, which, although practically unknown in the southern States, occur in many of the tropical and sub-tropical parts.

2. **Transmission of Disease by Mosquitoes.**—(i) *Queensland.* The existence of filariasis in Queensland was first discovered in 1876. The parasite of this disease is transmitted by *Culex quinquefasciatus* (*Culex fatigans*), the mosquito most prevalent in Queensland. The mosquito *Aëdes aegypti* (*Stegomyia fasciata*), conveyor of yellow fever (and probably of dengue fever also), is another common domestic mosquito throughout Eastern Queensland during the summer, but so far has never been infected from abroad. Occasional limited outbreaks of malaria occur in the northern parts of the State; one at Kidston, in 1910, resulted in 24 deaths. The infection was traced to newcomers from New Guinea. Allusion to the efforts made to deal with the mosquito, under the Health Act of 1911, will be found in Official Year Book No. 12, p. 1063. By an Order in Council the local authorities are now responsible for the taking of measures for the destruction and the prevention of breeding of mosquitoes.

(ii) *Other States.* In Western Australia it is stated that malaria is not known to exist south of the 20th parallel, while filariasis has never been discovered. Mosquito-borne diseases are unknown in Victoria, South Australia, and Tasmania, except for very rare sporadic cases, and it is stated that filariasis is uncommon in New South Wales, the only cases known being imported ones. Kerosene and petroleum have been successfully used, both by municipalities and private individuals, to destroy larvæ of mosquitoes at various places in these States.

(iii) *Northern Territory.* While the Territory is conspicuously free from most of the diseases which cause such devastation in other tropical countries, malaria exists, and, although cases rarely end fatally, the Administration is taking measures for the destruction of mosquito larvæ wherever settlements or permanent camps are formed, and precautions are being taken to prevent the collection of stagnant water in such localities.

3. **Control of Introduced Malaria and Bilharziasis.**—(i) *General.* The control of returned sailors and soldiers suffering from malaria and bilharziasis, which was undertaken by the Commonwealth Department of Health at the request of the Departments of Defence and Repatriation, is still being carried out in conjunction with State Health Departments.

(ii) *Malaria.* Steps were taken to have all recrudescences in returned sailors, soldiers and nurses in all parts of Australia notified direct to the Commonwealth Department of Health by the Medical Officers of the Repatriation Local Committees. Malaria is also notifiable to each State Health Department, except in New South Wales, and particulars of such notifications are passed on to the Commonwealth Department of Health.

Treatment on intensive lines has been regularly carried out in connexion with malaria recurrences in returned sailors and soldiers in order to effect a cure as rapidly as possible. Steps were also taken to prevent the settlement of malaria-infected individuals in localities such as irrigation areas, where mosquitoes capable of carrying malaria were known to exist.

From information received, it is evident that in the great majority of cases cure has now been established, and that where recrudescences do occur they have been greatly reduced in severity and frequency. The number of foci of infection has thus been reduced to unimportant dimensions, and the danger of spread of malaria in the community from this source has been practically eliminated.

(iii) *Bilharziasis.* With few exceptions the men who contracted this disease on active service have been brought in from all parts of Australia for expert re-examination and treatment.

Those who have suffered from the disease, and have undergone treatment as indicated above, are still kept under periodical observation, but owing to the success of the measures already taken it is believed that no danger of the spread of infection exists. Action is being taken in the case of a small number of men who have evaded treatment.

4. **Hookworm.**—An investigation made in Papua in 1917 by an officer of the International Board of Health of the Rockefeller Foundation disclosed the fact that half of all natives examined were infected with hookworm disease. In 1918, an investigation was undertaken in Queensland, and the prevalence of the disease and its effects in retarding growth and development were found to be greater than had been supposed. In October, 1919, the Australian Hookworm Campaign was begun. This campaign was supported jointly by the Commonwealth, the International Health Board of the Rockefeller Foundation, the State of Queensland, and the other States in which work in this direction was undertaken. By the end of 1922, the survey of Australia and its dependencies had been completed. The total number of examinations and treatments up to 1st January, 1924, including those in Dr. Waite's survey in Papua and the earlier work in Queensland, was as follows :—

People examined for hookworm disease	347,003
Found to be infected with hookworms	60,441 (17.4%)
Treated free by the Australian Hookworm Campaign ..	273,297*
Found to be cured on re-examination	11,242*

Endemic hookworm infection was found in intermittent areas along the eastern coast of Australia from Cape York to Macksville in New South Wales. The higher summer rainfall in these areas appears to be chiefly responsible for the localization of the infection. It is also found in the vicinity of Broome and Beagle Bay in Western Australia, in the northern part of the Northern Territory, and along the eastern coast of the Gulf of Carpentaria. In the Territory of Papua, 59.2 per cent. of the natives were found to be infected, and in the Territory of New Guinea, 74.2 per cent. There is no endemic hookworm infection in Victoria, South Australia, Tasmania, the interior of Queensland, New South Wales, except the north-eastern part, and Western Australia except the far north.

Metalliferous mines were examined in Victoria, South Australia, New South Wales, Tasmania, and Western Australia, and were found entirely free from hookworm infection. The examination of metalliferous mines in Queensland showed either no infection or a light infection which may have originated chiefly outside the mines. Coal mines in Victoria, Tasmania, and Western Australia were free of infection. Examinations were made in the coal mines of the Newcastle district, and among 1,226 miners examined in about 25 mines only five infected miners were found. In the Ipswich group of coal mines in Queensland, 31.5 per cent. of the miners were infected, and in the Howard-Torbanlea group (Queensland) 75.8 per cent. were infected. Recommendations were made with regard to the correction of the insanitary conditions responsible for these high infection rates.

Wherever operations are carried on by the hookworm campaign, emphasis is placed on the prevention of hookworm disease, in contrast to temporary relief through the curing of existing cases, and much work has been done to improve methods of night-soil disposal, and to teach the people the danger from soil pollution.

In thirteen of the endemic hookworm districts of Queensland in the original survey, 50,939 persons were examined and 7,658 were found to be infected—an incidence rate of 15 per cent. During the re-survey in 1893 of the same districts, 40,867 persons were examined, and 3,858 were found infected—an incidence rate of 9.4 per cent. The value of the measures of the hookworm campaign in regard to treatments and the prevention of soil pollution would thus appear to be demonstrated.

In the latter part of 1922, the scope of the campaign was widened to include a malaria and filaria survey in co-operation with the Division of Tropical Hygiene, Commonwealth Department of Health.

Up to the 1st January, 1924, 261 persons had been examined for malaria, of whom 40 were found infected. The endemic areas as indicated by this survey, would appear to be round Cooktown, Cairns, Palm Island and possibly the western portion of Northern Queensland.

In the same period, 11,028 persons were examined for filariasis, of whom 309 were found to be infected. The endemic area of this disease is apparently practically the whole of the Cape York Peninsula and a narrow strip along almost the entire coast of Queensland.

* Only part of the people treated were re-examined to find out whether they were cured. The total number cured was, therefore, much larger than shown.

On 30th September, 1924, the Australian Hookworm Campaign completed its five years' work. Arrangements had, in the meantime been made between the Commonwealth Government and the States of New South Wales and Queensland for the work to be carried on for a further period of three years under the direction of the Commonwealth Department of Health.

5. **Institute of Tropical Medicine, Townsville.**—The Australian Institute of Tropical Medicine was founded at Townsville in January, 1910. Since 7th March, 1921, the Institute has been administered by the Commonwealth Department of Health. A full account of the activities of this Institute will be found in Official Year Book No. 15, pp. 1010–1012.

6. **Royal Commission on National Health**—Towards the end of 1924, the Commonwealth Government appointed a Royal Commission to investigate and make recommendations to secure the most economical and efficient results in regard to the following matters:—The distribution of responsibility in Health matters between Commonwealth, State and Local Authorities; a common standard and uniformity in the control of food and drugs; the pollution of surface waters in the great river basins; the control of puerperal morbidity and mortality; cancer, tuberculosis and infectious diseases; and the developments in industrial hygiene.

§ 6. Medical Inspection of School Children.

1. **General.**—The health of school children is now recognized as a fundamental concern of modern Education Departments, and the medical branches have proved their value both to children and parents.

Medical inspection of school children is carried out more or less thoroughly in all the States. Medical staffs have been organized, while in some States travelling clinics have been established to deal with dental, ocular, and other defects.

2. **New South Wales.**—A system of medical inspection of school children was organized in 1913, and arrangements have been made, by means of triennial examinations, to examine each child at least twice during the period of school attendance (compulsory between the ages of 7 and 14 years). For this purpose, the staff attached to the Education Department consists of 19 Medical Officers, 19 Dentists (including 8 part-time Dentists), 8 Nurses, 15 Dental Assistants, and a clerical staff of 12.

Parents are notified of their children's defects, and are urged to have them treated. In the metropolitan district, children may be treated as out-patients at hospitals (general and special), or at the two School Dental Clinics. During 1923, the second School Dental Clinic was established at the out-patient department, Children's Hospital, chiefly to obtain strict oral and dental cleanliness before operations on the nose and throat.

In the country, in remote and sparsely-settled districts, defects of vision are provided for by two School Oculists. One of these is in charge of the Travelling Hospital, which now includes on its staff two Dental Officers, one Nurse, and one Dental Assistant. During 1923, the number of children examined by the staff of the Travelling Hospital was 3,598; 3,187 were treated for all defects, 2,853 of which were dental. The remaining nine Travelling Dental Clinics treated 14,614 children, and the School Dental Clinics in Sydney 6,465 (5,316 at the Metropolitan Clinic, and 1,149 at the Children's Hospital).

Of the 102,256 examined during 1923, 98,658 were seen during the routine medical inspection. Of these latter, 49,599 (50.2 per cent.) were notified for treatment of various defects, and of those notified, 26,712 (53.8 per cent.) were treated. This does not include the Travelling Hospital's returns, which are shown above, nor does it include the majority of those treated for dental defects by Departmental Officers, who carried out dental treatment for 23,932 children—17,467 rural and 6,465 city—or approximately 30 per cent. rural and 10 per cent. city of the children of the areas visited.

Eliminating dental defects, unremedied medical defects were found in 25 per cent. of children. In rural areas, 36 per cent. of those notified were treated by "outside" doctors or hospitals. In the city, 45 per cent. to 51 per cent. were treated for various types of defect. Much of this improvement is due to the excellent following-up work of the School Nurses.

During the three triennial periods ended 1922, 612,414 children were examined, and 355,765 (58 per cent.) were found to be suffering from physical defects requiring treatment. Only about 46 per cent. of these cases received treatment, but the parents or guardians of the remaining 54 per cent. made no attempts to secure alleviation.

In the triennium ended 1922, 185,770 children were medically examined (inclusive of those dealt with by the Travelling Hospital, but excluding those examined by the travelling dental clinics). Of this total 96,764 (52 per cent.) were recorded as defective. The chief defects were :—Dental, 74,476 cases ; nose and throat, 25,152 cases ; vision, 10,598 cases ; and hearing, 5,029 cases. The number of children treated subsequently for any defect was 52,065.

In addition to the routine examination of primary school children, the examination of over 1,000 delinquent boys at the Metropolitan Children's Shelter is carried out by a Specialist Officer, and a physical and mental estimate provided for use of the Magistrate of the Children's Court.

The health supervision of High School girls in the Sydney and Newcastle districts is allotted to a special woman Medical Officer ; while another woman Medical Officer is attached to the Teachers' College. Every teacher, on entering the College, is medically examined, and any defects found must be remedied. The teaching of hygiene is reinforced by the course of thirty lectures which each student receives at the Teachers' College.

No more interesting example of the demonstration of the importance of health exists than the work of the Infant Departments in teaching the "health game," and one very popular item of this is the regular monthly weighing of the scholars and the school feeding of milk now carried out for over 5,000 children.

During recent years, regular surveys are being made of the district incidence of such diseases as goitre, ophthalmia, and hookworm (School Medical Officers assisting in this latter campaign). A survey has been completed in regard to tuberculosis in school children, and surveys of mentally deficient and of crippled children are in progress.

3. **Victoria.**—The system of medical inspection aims at examining the child three times in its school life, but in the High Schools the students are examined every two years. After the examination, the parents are notified of defects and are advised to obtain treatment from their own doctor or dentist, and in the metropolitan area two nurses follow up these cases. Attached to the department is a dental centre which deals with about 600 children each month from the metropolitan schools.

During the year ended 30th June, 1924, 16,388 children were medically examined, and 6,337 received dental treatment. In addition, the nurses of the Bush Nursing Association examine the school children in their districts and report to the medical officers of the Education Department who, in their turn, advise whether medical attention is necessary.

The staff of the medical branch consists of four medical officers, two dentists, three dental attendants, and two school nurses. It is proposed to appoint an oculist.

4. **Queensland.**—In matters affecting the general administration of the medical branch of the Department of Public Instruction, the Department acts on the advice of the Commissioner of Public Health. There is no permanent professional officer in charge of the work, the medical inspection being carried out by part-time local medical practitioners who examine a large number of children each year, and advise parents of physical defects calling for medical attention. A staff of ten dentists carries out dental inspection and treatment. Particular attention is paid to diseases of the eyes and tonsils. In the Western Districts, where ophthalmic diseases formerly were rife, the medical officers in charge of district hospitals are employed to treat cases promptly and thereby prevent the spread of infection

In 1924, 31,553 children were medically examined, of whom 5,237 were found to be suffering from physical defects. The departmental dentists examined 19,496 children. Extractions numbered 18,394, fillings 18,967, and other gratuitous treatments 8,053.

5. **South Australia.**—Medical inspection embraces the examination, three times in their school life, of all children attending the primary schools, and on entrance to a high or technical school, and the report to parents of defects likely to interfere with educational progress. The staff consists of one principal medical officer, five medical

inspectors, three dentists, five trained nurses, and a disinfecting officer. The dentists attend remote country schools and treat children. There is also a Dental Clinic where children from the metropolitan schools receive treatment. The Medical Inspector meets the parents after the examination of the children, reports any defect, and recommends treatment. It is found that a personal talk is of greater value than any written notice. A trained psychologist is attached to the medical branch.

Children to the number of 3,181 were examined by the medical officer, and a considerable number of defects was disclosed. The school dentist gave treatment to 1,887 children in the outback districts of the State.

6. Western Australia.—Under the Public Health Act 1911–1920, the medical officers of health appointed by the local authorities became medical officers of schools and school children. In the Health Department there is one medical officer for schools, whose duty it is to conduct medical examinations. During 1924, 6,037 children were examined.

7. Tasmania.—To Tasmania belongs the credit of being the first State in Australia to provide for the systematic medical inspection of State school children. As far back as 1906, 1,200 children from the Hobart State schools were examined. At the present time two part-time medical officers conduct examinations of school children in Hobart and Launceston. There are also four nurses, whose chief duty is to visit the homes to advise the parents as to the treatment of any defects disclosed by the medical examination. Country schools are inspected by two whole-time medical officers. Two dentists have been appointed to visit the country schools.

§ 7. Supervision and Care of Infant Life.

1. General.—The number of infantile deaths and the rate of infantile mortality for the last five years are given in the following table, which shows that during the period 1920 to 1924 no less than 41,519 children died before reaching their first birthday. With the exception of New South Wales and Tasmania for the year 1921, the rate of mortality in the metropolitan area has in every case been consistently greater than that for the remainder of the State. Further information regarding infantile mortality will be found in Chapter XXV.—Vital Statistics :—

INFANTILE DEATHS AND DEATH RATES, 1920 TO 1924.

State.	Metropolitan.					Remainder of State.				
	1920.	1921.	1922.	1923.	1924.	1920.	1921.	1922.	1923.	1924.
NUMBER OF INFANTILE DEATHS.										
New South Wales ..	1,693	1,437	1,292	1,431	1,299	2,051	1,981	1,665	1,846	1,866
Victoria	1,616	1,381	1,101	1,345	1,289	1,053	1,201	835	1,011	927
Queensland ..	446	382	347	362	367	835	719	660	716	644
South Australia ..	459	452	347	388	337	351	332	223	317	258
Western Australia..	321	318	247	258	232	217	293	205	184	182
Tasmania ..	120	119	120	105	94	256	330	204	220	202
Australia (*b*) ..	4,655	4,089	3,454	3,889	3,618	4,763	4,856	3,792	4,294	4,079
RATE OF INFANTILE MORTALITY.(*a*)										
New South Wales ..	74.03	62.38	57.68	63.26	57.18	66.01	63.01	50.81	58.70	60.22
Victoria	83.82	73.82	58.25	71.18	66.32	62.18	71.13	48.03	59.54	55.49
Queensland ..	70.39	61.81	57.10	57.89	57.76	59.98	50.82	44.96	52.15	48.22
South Australia ..	74.57	73.64	58.23	66.70	56.45	59.77	56.89	36.73	53.96	45.89
Western Australia..	76.14	80.55	58.27	61.24	53.13	55.17	75.93	52.67	50.54	46.26
Tasmania ..	74.81	75.17	71.94	66.00	61.32	61.89	79.09	49.17	54.11	52.47
Australia (*b*) ..	76.99	68.62	58.33	65.48	59.92	62.78	63.48	48.50	56.69	54.79

(*a*) Number of deaths under one year per 1,000 births registered. (*b*) Exclusive of Territories.

During recent years greater attention has been paid to the fact that the health of the community depends largely on pre-natal as well as after care in the case of mothers and children. Government and private organizations are, therefore, taking steps to provide instruction and treatment for mothers before and after confinement, while the health and well-being of mother and child are looked after by the institution of baby health-centres, baby clinics, crèches, visitation by qualified midwifery nurses, supervision of milk supply, etc.

2. **Government Activities.**—In all the States Acts have been passed with the object of supervising and ameliorating the conditions of infant life and reducing the rate of mortality. Government Departments control the boarding-out to suitable persons of the wards of the State, and wherever possible the child is boarded-out to its mother or near female relative. Stringent conditions regulate the adoption, nursing and maintenance of children placed in foster-homes by private persons, while special attention is devoted to the welfare of ex-nuptial children. (See also in this connexion Chapter XI.—Public Benevolence.) Under the provisions of the Maternity Allowance Act 1912, a sum of five pounds is payable to the mother in respect of each confinement at which a living or viable child is born. Further particulars regarding Maternity Allowance are given in Chapter VIII.—Finance.

3. **Nursing Activities.**—(i) *General.* In several of the States, the Government maintains institutions which provide treatment for mothers and children, while, in addition, subsidies are granted to various associations engaged in welfare work.

(ii) *New South Wales.* Baby health centres were established by the Government in 1914. Attached to each centre is an honorary medical officer and a staff of trained nurses who instruct mothers in matters pertaining to the care of themselves and their children. At the 30th September, 1924, there were 50 centres in operation, of which 28 were in the metropolitan area and the remainder in important industrial and rural centres. During 1924 the attendances at the clinics numbered 165,489, and the nurses paid 77,575 visits to homes. No charge is made for attention or advice.

The Royal Society for the Welfare of Mothers and Children has two training schools where nurses may receive post-graduate training in infant hygiene and mothercraft, and it conducts two welfare centres in the metropolis. The Day Nursery Association maintains three nurseries where working mothers may leave their children during the day.

The Bush Nursing Associations aim at providing fully-qualified nurses in country districts throughout Australia. Centres may be formed in any district where the residents can enrol sufficient members to guarantee the salary of a nurse. As the greater part of the nurses' work is that of midwifery, the nurses must be registered midwives. In January, 1924, there were 30 bush-nursing centres in New South Wales.

(iii) *Victoria.* The first Baby-Health Centre was opened in 1917. At the latest available date the Victorian Baby-Health Centres' Association had 53 centres in operation, 38 in the metropolitan area, and 15 in country towns. The Association receives subsidies from the State Government and the local municipal councils. During the year ended 30th June, 1924, attendances at the centres numbered 111,384, while 49,276 visits were paid by the nurses to patients in their own homes. The Society for the Health of Women and Children also maintains five centres in the industrial suburbs of the metropolis. There are, in addition, crèches where children may be left while the mothers are at work.

The Bush Nursing Association had in March, 1925, 46 centres in operation in the country districts. In connexion with this association there are three cottage hospitals in operation and others are in process of preparation.

(iv) *Queensland.*—Baby Clinics were established in Brisbane by the Government in 1918, and others have been formed in seven of the larger provincial centres. A training school has been organized to train nurses for welfare work. For the year 1924 attendances at the clinics numbered 52,876, in addition to which the nurses paid 13,926 visits in connexion with the after care of mothers and infants.

There are in the metropolitan area five kindergartens and five crèches where children may be left during the day. The Playgrounds' Association aims at providing playgrounds for children in the populous parts of towns and cities.

The Bush Nursing Association has seven nurses stationed in the country districts.

(v) *South Australia.* A School for Mothers is situated in Adelaide, and there are several branches in the suburbs, and at Port Pirie and Renmark. These schools receive a Government and municipal grant. During the year ended 31st July, 1924, the nurses paid 1,500 visits to expectant mothers and 21,096 to young babies. In August, 1921, baby clinics were established, to which in 1923–24 23,354 babies were brought for examination, advice and information being given where necessary to the mothers. There is a crèche at West Adelaide for the benefit of the children of women obliged to earn their own living.

The District Trained Nursing Society has over 30 branches, of which about half are in the metropolitan area. The nurses of this society paid 64,009 visits to homes. Nursing homes have been established by the Australian Inland Mission at Beltana and Oodnadatta in the far north of South Australia, and at three places in the Northern Territory.

(vi) *Western Australia.* The organizations which aim at improving the conditions of infant life include an ante-natal clinic established by the Government at the King Edward Maternity Hospital, a day nursery where children may be left and cared for while the mothers are away at work, and the Infant Health Association, which is subsidized by the government and local authorities, and which controls five centres, with a specially trained nurse in charge of each.

The Bush Nursing Trust maintains a rest-house for expectant mothers, and the Australian Inland Mission has nursing homes at Hall's Creek and Port Hedland.

(vii) *Tasmania.* There are three baby clinics in Hobart and two in Launceston controlled by Child Welfare Associations. During the year 1924, the nurses visited 7,265 homes, and attendances at the clinics for the same period numbered 11,498. The number of individual babies visited by nurses or attending the clinics was considerably greater than the total births in Hobart and Suburbs, and included the children of several country residents.

The Bush Nursing Association, which is subsidized by the Health Department, the Red Cross Fund, and municipal councils, has stationed nurses in twelve country districts.

INDUSTRIAL HYGIENE IN AUSTRALIA.*

§ 1. Introduction.

1. **Health Risks Associated with Industry.**—For centuries past certain physical and economic evils have been associated with labour and industry. Practically every kind of production has its peculiar health risk. Lead-poisoning is found among the workers of many trades. The chemical trades are characterized by obnoxious and poisonous fumes. Chemical compounds used in the manufacture of explosives give rise to serious skin and systemic effects. Miners, leather-workers, textile operatives, and workers in numerous other industries are liable to special risks, not the least of which are diseases of the lungs and respiratory tracts.

These dangers are recognized, but other insidious diseases sap the vitality of workers in occupations regarded as harmless. Any of the following conditions are definitely known to injure the health of the worker, provided exposure be sufficiently prolonged :— intense heat: sudden changes in temperature: glare: darkness: defective lighting: noise: speeding: heavy lifting: continuous sitting or standing: stagnant air: dampness. The dusts, gases and vapours generated, and the poisons used in the many trade processes also adversely affect the health of the worker, while danger to life and limb is involved in occupations where certain classes of machinery are operated.

2. **Industry as a Factor in Causation of Disease and Death.**—It is claimed that industry in general is one of the greatest factors in the causation of illness and premature death. Rusher, in an address in 1922 to the Royal Statistical Society on the subject of occupational morbidity drew the following conclusions :—(i) Age has the greatest influence on the rate of sickness, and next to this occupation ; (ii) Occupation has more influence than has either locality or density of population, but the influence of these latter cannot be statistically dissociated from that due to occupation.

* Contributed by D. G. Robertson, M.D., D.P.H., Director, Division of Industrial Hygiene, Commonwealth Department of Health.

3. **The Prevention of Sickness and Accidents.**—The prevention of sickness and accidents among industrial workers, therefore, represents an important phase of public health, and, as with other public health problems, success calls for the co-operation of all parties concerned. It does not lie in merely imposing regulations upon the manufacturers, or in imposing varying sets of conditions upon the worker, but in the sensible observance of the facts and teachings of physiological science. The aim is to advance and develop the physical fitness and well-being of each individual.

To attain these ends the following measures are essential:—(i) Scientific enquiries into conditions of labour; (ii) Governmental legislation and enforcement; (iii) Employers' voluntary health measures; (iv) Education.

§ 2. Scientific Inquiries into Labour Conditions.

1. **General.**—In Australia, various Royal Commissions, committees, and individuals have made exhaustive researches into the questions of the effects of occupation on the health of the worker, and of discovering ways and means whereby these effects may be limited.

2. ***Lead Poisoning, Broken Hill, 1893***—An inquiry, presided over by Dr. J. Ashburton Thompson, was held in 1893 into the causes and means of prevention of lead poisoning at Broken Hill. This inquiry led to the inclusion under the Mines Inspection Act of 1901 in New South Wales of special regulations aiming at the prevention of plumbism amongst miners and smelter employees.

3. **Pneumoconiosis, Tuberculosis, and Pneumonia, 1902 to 1904.**—Many of these investigations have been made on the subject of the prevalence of pneumoconiosis and tuberculosis. In 1902, a Sewerage Ventilation Board in New South Wales inquired into the conditions under which miners were employed in sewerage works in and around Sydney, where deep tunnels and trenches were dug out of the sandstone, which was found to consist of from 81 per cent. to 94 per cent. silica. In 1904, a Royal Commission on Ventilation and Sanitation of Mines in Western Australia investigated the working conditions of the mines in that State, and though very few cases of miner's phthisis were recorded, the Commission considered it important to commence preventive measures, and suggested the appointment of a Mines Regulation Board to investigate health conditions.

4. **Tuberculosis at Bendigo, 1906.**—In 1906 Dr. Walter Summons investigated the ventilation of the Bendigo mines and the prevalence of tuberculosis in that city. The number of deaths among miners from tuberculosis was found to be six times as great as among adult males in Victoria generally.

5. **Various Investigations, 1907 to 1911.**—In 1907 another Sewerage Works Ventilation Board was appointed in Sydney. There followed in quick succession four separate inquiries into the mining industry, two Royal Commissions appointed in Western Australia in 1910 and 1911, a Royal Commission in Queensland in 1911, and an investigation by Dr. Purdy in Tasmania in 1910.

6. **Pneumonia at Broken Hill, 1912.**—In December, 1912, Dr. W. G. Armstrong, Senior Medical Officer of Public Health, New South Wales, made a local study of an epidemic of pneumonia which was said to exist at Broken Hill, and he reported that the death rate from pneumonia amongst underground miners at Broken Hill during the years 1910–1912 was 6.5 per thousand—nearly four times as great as the death rate from the same disease amongst all males in the State—while the death rate amongst females at Broken Hill during the same period was but slightly above that of all females in the State from the same cause. He also reported that the excessive mortality from pneumonia at Broken Hill was almost entirely amongst males, and chiefly amongst the silver miners, in whose work and habits of life the cause should, therefore, be sought.

7. **Royal Commission on Mining Industry at Broken Hill, 1914.**—On the 6th June, 1914, a Royal Commission was appointed to inquire into certain matters concerning the mining industry at Broken Hill, and, in its report, the conclusion was drawn that pneumonia was much more prevalent amongst miners than any other class in Broken Hill or in the State, and that it attacked miners more severely than any other classes of the community. With reference to pneumoconiosis, the Commission found it was practically unknown in

Broken Hill, but found also that tuberculosis was a disease to which miners at Broken Hill, as elsewhere, were peculiarly subject.

8. **Board of Trade Inquiry, N.S.W., re Health of Metalliferous Miners, Rock Choppers, etc., 1918.**—(i) *General.* In 1918 the New South Wales Board of Trade, at the request of the Government, inquired into the matter of the health of employees engaged in metalliferous mining and in the rock-chopping and sewer-mining industries, as well as in ore-treatment, refining and reduction works, and issued a full and comprehensive account of the ideas on the subject in the United States of America, Europe, South Africa, and Australia. The Board recommended the appointment of a Technical Commission of Inquiry to report on the question of dust, to examine air samples, and to study the cause of the disease, especially by radiographic methods.

(ii) *Inquiries by Technical Commission, 1919 to 1922.* This Technical Commission commenced its inquiry in December, 1919, and did not conclude until June, 1922. Complete physical examinations, including radiographic studies, were made of 6,538 persons who had been employed in or about the mines at Broken Hill. The Commission found that 266 persons showed signs of pneumoconiosis, 113 being in the first stage, 51 in the second stage, and 102 having pneumoconiosis complicated with tuberculosis ; in addition 107 persons were found to be suffering from uncomplicated pulmonary tuberculosis. In 443 cases there was evidence of an altered state of the heart, kidney, or blood vessels, while 61 persons gave a history of having suffered from the effects of lead, and, on medical examination, furnished proof of injury to their health.

(iii) *Bureau of Medical Inspection, N.S.W.* The New South Wales Department of Labour and Industry established a Bureau of Medical Inspection to follow up the work of the Commission, the work of this Bureau comprising examinations under the Workmen's Compensation (Broken Hill) Act 1920, and the examination of applicants for employment in the Broken Hill mines.

In the two years ended 30th June, 1924, the Bureau found 142 new cases of either pneumoconiosis or tuberculosis or both, comprising 61 in the first stage, and 4 in the second stage of pneumoconiosis, 8 with tuberculo-fibrosis, and 69 with uncomplicated pulmonary tuberculosis. Under the Workmen's Compensation (Lead Poisoning—Broken Hill) Act 1922, the medical officer in charge of the Bureau acts as chairman of a Medical Board to deal with all applications for compensation for lead poisoning. The medical referee dealt with 46 cases up to the time the Board was constituted (May, 1923). Out of 22 referred to the Bureau for an opinion as to the presence of plumbism, 10 were found to have signs and symptoms. Up to June, 1924, the Board considered 99 cases; of these 37 were certified as being disabled by lead, 1 as susceptible, and 2 as having died from plumbism.

9. **Tuberculosis at Bendigo, 1920.**—In 1920 an inquiry into the prevalence of tuberculosis at Bendigo was made by Dr. D. G. Robertson, who found a greater incidence there than in other parts of Victoria, the preponderance to a great extent being due to the large proportion of the mining population suffering from the disease.

10. **Pulmonary Disease amongst Silica Workers, N.S.W., 1924.**—In 1924 the New South Wales Board of Trade, in conjunction with the Commonwealth Department of Health, conducted an inquiry into the prevalence of pulmonary disease amongst the workers engaged in silica in the Sydney Metropolitan District. A thorough physical examination with a radiographic study of the chest was made on every worker attending. Altogether 716 workmen were examined, and of these 123 were found to exhibit signs of silicosis, 47 being in the first stage, 38 in the second stage, and 38 with silicosis complicated with tuberculosis. In addition, 16 were found to be suffering from simple pulmonary tuberculosis.

11. **Lead-poisoning at Port Pirie, 1910.**—With regard to occupations other than mining or silica processes, in 1910, Dr. W. Ramsay Smith, Chairman of the Central Board of Health, South Australia, in accordance with a resolution of that Board, held an inquiry under "The Health Act 1898" into the occurrence and causes of lead-poisoning at Port Pirie. In his report, he stated that, as the disease was not a notifiable one, no complete statistics of the extent of the occurrence of lead-poisoning were available, but he estimated that during the three years 1907, 1908, and 1909, 150 to 200 cases of lead-poisoning occurred amongst people working in the smelting-works and amongst painters and those handling lead on the wharves.

12. **Lead-poisoning in Painting Industry, N.S.W., 1921.**—The New South Wales Board of Trade in 1921 conducted an inquiry into the dangers following the use of white lead in the painting industry. They found that lead-poisoning had a frequency of 16 per 1,000 deaths among painters as against 0.4 per 1,000 in the case of Australian breadwinners generally. The number of deaths per 1,000 from anæmia, diseases of the nervous system, Bright's disease, and diseases of the genito-urinary group, was greater among painters than among other Australian breadwinners.

13. **Royal Commission on Labour Conditions, N.S.W., 1912.**—In 1912 the New South Wales Government appointed a Royal Commission, with Mr. A. B. Piddington, K.C., as sole Commissioner, to inquire into the conditions of labour of women and juveniles in factories and shops in New South Wales.

14. **Report on Conditions in Clothing Trade, Melbourne, 1920.**—In 1920, at the request of Mr. Justice Higgins, President of the Commonwealth Arbitration Court, Mrs. Ethel Osborne conducted an investigation into the clothing trades in Melbourne. Her report dealt mainly with the question of hours and fatigue.

15. **Report on Conditions in Printing Trade, N.S.W., 1924.**—In 1924, Professor H. G. Chapman and Dr. S. A. Smith made an examination of 115 men engaged in the printing trade, and in their evidence before the Court of Industrial Arbitration, New South Wales, stated that the results of these examinations evidenced no signs of any specific risk in the printing trade.

16. **Report on Conditions in Flour-Milling Industry.**—(i) *Victoria, 1920 to 1922.* At the request of the Flour Mills Owners' Association, Dr. Walter Summons, in the years 1920-1922, conducted an inquiry into the healthiness or otherwise of the flour-milling industry in Victoria. One hundred and nine mill and 38 store employees were examined. He concluded, as a result of this inquiry, that flour-milling as carried on in Victoria with the aid of modern machinery has extremely little occupational hazard.

(ii) *Western Australia, 1922.* In 1922, at the request of the West Australian Flour Mill Owners' Association, Dr. D. M. McWhae conducted a similar inquiry in that State. He found that there was undoubtedly a tendency in mill workers to a catarrh of the upper air passage, but no evidence of a tendency to tuberculosis or fibrosis and emphysema of the lungs.

17. **Industrial Hygiene.**—(i) *New South Wales.* In 1923 the New South Wales Department of Health appointed a Medical Officer of Industrial Hygiene. This officer has already conducted several valuable investigations, and his evidence has been found of great assistance to the Judges of the New South Wales Court of Industrial Arbitration in determining the question of hours in industries in which definite risks to health have been proved to exist.

(ii) *Victoria.* The State Health Department of Victoria has placed the services of one of their medical officers at the disposal of the Labour Department, to whom all questions affecting the health of the worker may be referred.

(iii) *Commonwealth.* (*a*) *General.* The Commonwealth Department of Health in 1921 created a Division of Industrial Hygiene. In 1922 an inquiry was made by this Division through the Health Laboratory, Bendigo, which is equipped with a modern X-ray plant, into the prevalence amongst the miners there of pulmonary disease as disclosed by X-ray examination. The Division assisted in the work of the New South Wales Silicosis Commission, 1924.

Since its creation, the Commonwealth Division of Industrial Hygiene, with the assistance of Mr. Chas. H. Wickens, F.I.A., F.S.S., Commonwealth Statistician, has been engaged in the collection and study of the morbidity statistics of various government departments and private industries, in order to secure knowledge of the risks to health of the various occupations, and to permit comparison on a scientific basis with other similar callings.

(*b*) *Health of Victorian State School Teachers. Inter alia,* an inquiry was made into the health of Victorian State School teachers during the years 1914, 1920, 1921, and 1922. The number of teachers studied varied between 2,126 males and 3,223 females in 1914

and 2,276 males and 4,202 females in 1922, making about 6,000 in all each year. The following facts were deduced :—

(1) The average number of working days lost yearly through sickness by each teacher was 7.62 ; by each male teacher 5.00, and by each female teacher 9.09.

(2) The principal disease groups causing sickness were the epidemic, endemic and infectious diseases, the diseases of the nervous system and organs of sense, and the diseases of the digestive system.

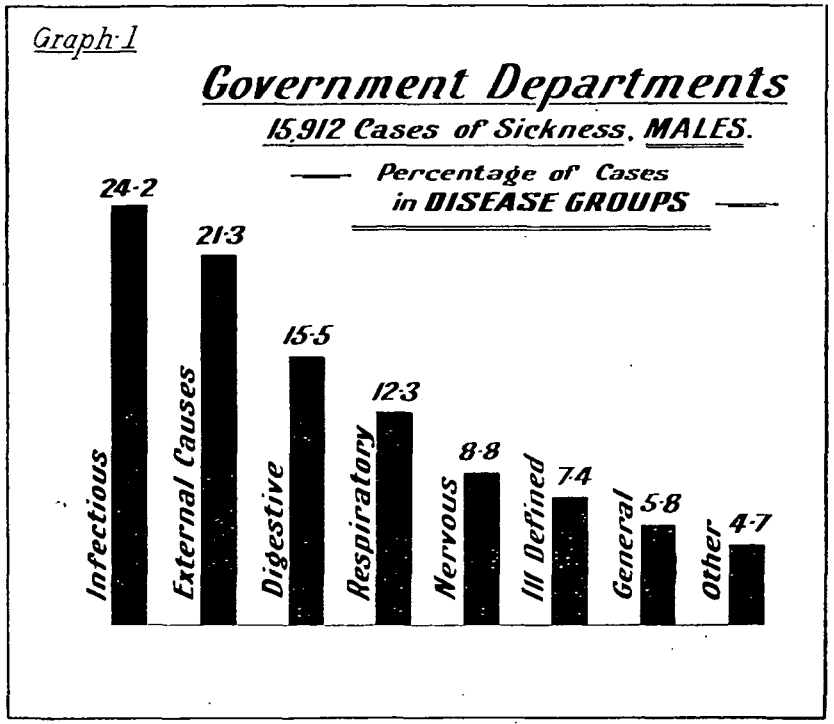
(c) *Morbidity Statistics in Taxation, Postal, and Railway Departments.* Another investigation made was a study of the morbidity history of the Central and Victorian Taxation Branches of the Treasury, and of the Victorian Postal Department. The 4,826 officers concerned in these three Departments had 51,167 days' sick leave in 1921, averaging 10.6 days per officer per annum. Females showed a considerable excess over males in amount of sickness. Respiratory diseases were accountable for as many as 8,659 days of sickness, or 16.9 per cent. of the total, but neurasthenia headed the list of individual diseases, being responsible for 5,306 days, or 10 per cent. A survey was also made of the sickness records during 1921 of the Victorian Railway employees (25,821 men). The total number of days' sick leave granted to these employees was 159,076, or 6.16 days per worker, and the average duration of sick leave was 17.26 days. The epidemic, endemic and infectious diseases accounted for 20,666 days, or 13 per cent. of the total, nervous diseases 17,186 days, or 11 per cent., and respiratory affections 16,928 days, or 10 per cent. Influenza was responsible for 9 per cent. of the total, and neurasthenia for 8 per cent. Accidents caused 45,096 days of absence, or 28 per cent. of the total, and of these nearly one-half were due to injuries of the lower limbs.

The following table gives a summary of the sickness analyses of the various government departments during the years 1920-1923 :—

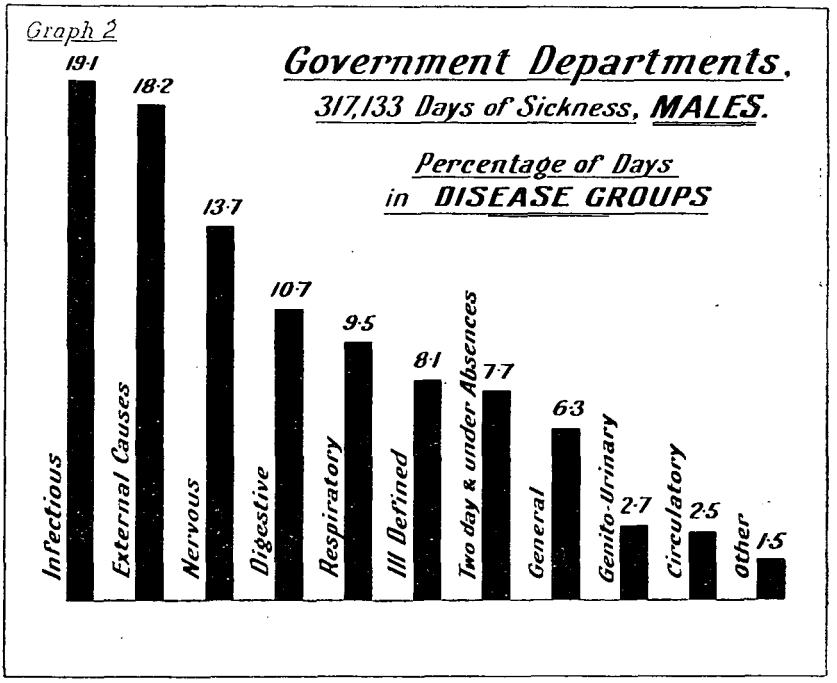
SICKNESS RETURNS—GOVERNMENT DEPARTMENTS, VICTORIA, 1920 TO 1923.

Year.	Number of Employees Examined.	Number of Employees Sick.		Total Days Lost.	Average Days Lost per Employee per annum.
		Number.	Percentage on Total Employees.		
MALES.					
1920	5,114	1,025	20	23,673	4.6
1921	41,362	14,024	34	268,237	6.5
1922	2,276	466	20	15,899	7.0
1923	21,989	13,244	60	171,876	7.8
1920–23 ..	70,741	28,759	40	479,685	6.8
FEMALES.					
1920	7,434	2,560	34	68,240	9.2
1921	9,481	4,176	44	108,427	11.4
1922	4,202	1,474	35	54,569	13.0
1923	3,386	2,785	82	46,441	13.7
1920–23 ..	24,503	10,995	45	277,677	11.3
PERSONS.					
1920	12,548	3,585	29	91,913	7.3
1921	50,843	18,200	36	376,664	7.4
1922	6,478	1,940	30	70,468	10.8
1923	25,375	16,029	63	218,317	8.6
1920–23 ..	95,244	39,754	42	757,362	7.9

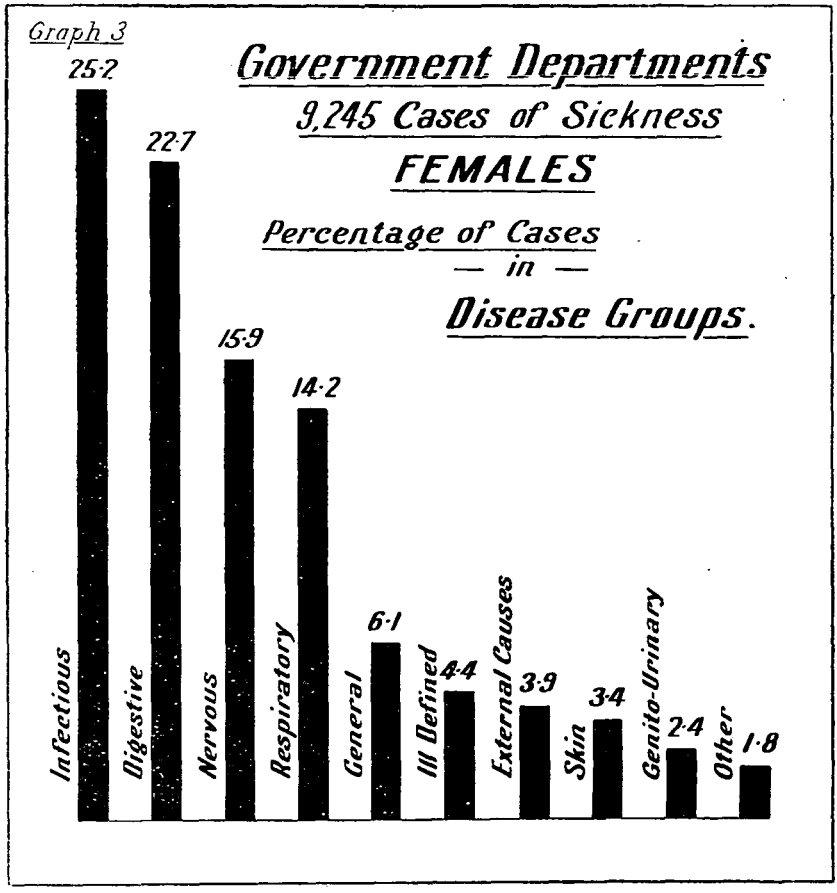
Graphs Nos. 1 to 4, herewith, give an analysis of the disease-groups responsible for certain of the absences of the officers in these Government Departments.



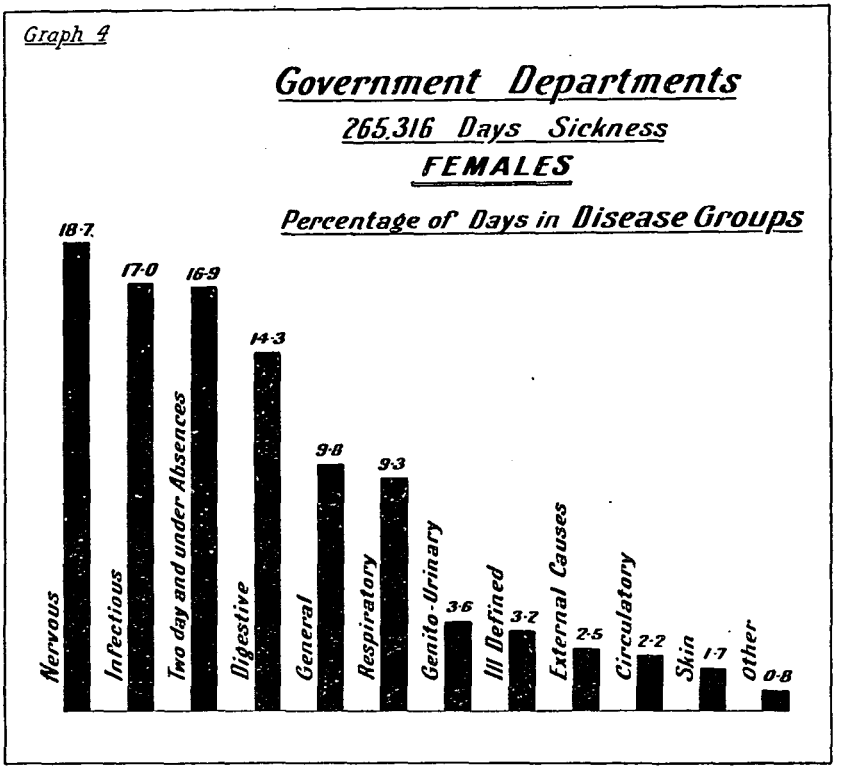
Graph 1 gives the percentages of 15,912 male cases of sickness in disease groups. Epidemic, endemic and infectious diseases were responsible for 24.2 per cent., external causes (injuries) for 21.3 per cent., diseases of the digestive system for 15.5 per cent., respiratory diseases 12.3 per cent., and diseases of the nervous system 8.8 per cent.



Graph 2 gives the percentages of the 317,133 days sickness in disease groups lost by the 15,912 cases referred to in Graph 1. Epidemic, endemic, and infectious diseases and external causes accounted for 19.1 per cent. and 18.2 per cent. respectively of the number of days lost. Diseases of the nervous system were responsible for 13.7 per cent. Two-day absences and under caused 7.7 per cent. of the total absences.



Graph 3 gives the percentages of 9,245 female cases of sickness in disease groups. Epidemic, endemic, and infectious diseases caused 25.2 per cent. of the cases, diseases of the digestive system 22.7 per cent., nervous diseases 15.9 per cent., and respiratory diseases 14.2 per cent.



Graph 4 gives the percentages of 265,316 days sickness in disease groups experienced by the 9,245 cases referred to in Graph 3. Nervous diseases caused 18.7 per cent. of the absences, infectious diseases 17.0 per cent., two-day absences and under 16.9 per cent. and digestive diseases 14.3 per cent.

(*d*) *Morbidity Statistics in Private Industries.* Returns of the sickness experience of their employees have, through the courtesy of the managements, been received by the Division of Industrial Hygiene from private industries in the States of New South Wales, Tasmania, and South Australia. Difficulty has been met with in the matter of the compilation of accurate statistics, and, until recently, when standard morbidity forms were supplied to the companies to enable records to be kept uniformly, the information obtained was, with one or two exceptions, of comparatively slight value.

The next table gives an analysis of the sickness and accident experience of the employees of a Smelting and Refinery Company, a Confectionery Factory, and a Municipal Council.

SICKNESS AND ACCIDENT RETURNS—VARIOUS NON-GOVERNMENT INSTITUTIONS.

Group of Employees.	Period.	Average Number of Employees.	Cases of Sickness and Accident.		Working Days Lost through Sickness and Accident.	
			Number.	Number per 100 Employees.	Number.	Average Number per Employee per annum.
MALES.						
Smelting and Refinery Co.	11.8.23–9.8.24	394	370	94	3,905	9.9
Confectionery Factory	Nov., 1923–Oct., 1924	281	291	103	1,259	4.5
Municipal Council ..	1923	3,536	2,081	58	30,179	8.5
FEMALES.						
Confectionery Factory	Nov., 1923–Oct., 1924	410	901	220	1,561	3.8
Municipal Council ..	1923	63	49	78	348	5.5

(*e*) *General Conclusions* re *Morbidity.* From the data available it appears that at least 6 days per annum are lost on the average by the breadwinner in Australia. This is equivalent to an incapacity of 2 per cent.—that is to say, out of the 2,340,000 breadwinners, 46,000 are incapacitated throughout the entire year. From the data given previously, it has been shown that a large percentage of this illness is due to preventable causes, and if, by the application to industry of the laws of hygiene, this amount of sickness could be reduced only by 1 day per worker per annum, a saving to the nation of the equivalent of the services of over 7,000 workers would result.

§ 3. Industrial and Health Legislation.

1. **General.**—The Australian States have closely followed the example set by English legislation, although in many respects they have lagged behind, and, as will be shown later, have not in some respects kept the legislation sufficiently advanced to conform with the requirements of modern medical knowledge.

2. **Victoria.**—(i) *Public Health Act of 1854.* "The Public Health Act of Victoria 1854" makes the first reference to factories, Section XI. giving power to Local Boards of Health to require occupiers of factories or buildings in which more than 20 in number are gathered to provide a sufficient number of water closets or privies.

(ii) *The Factories Act of 1873.* Victoria was the first colony in Australia to undertake manufacturing on anything like a large scale, and in 1870, 20,000 persons were so engaged. Under the stimulus of a protective tariff this number showed a large increase each year. No corresponding provision was made, however, for the accommodation of the new workers, and there existed a general disregard of cleanliness, a lack of sanitation, and, in many trades, an overworking of women and children. This state of affairs gave rise to serious public consideration, and in 1873 the Victorian Parliament passed "The Supervision of Workrooms and Factories Statute" (37 Victoria No. 466). The principal provisions of this Act were as follow :—

> "The words 'factory' or 'workroom' shall mean any factory or workroom in which not less than 10 persons are engaged by an employer to work for hire or reward in preparing or manufacturing articles for trade or sale. No person or persons shall employ in any factory or workroom any female for more than 8 hours in any one day in preparing or manufacturing articles for trade or sale.
>
> For the purpose of carrying out the provisions hereof any person authorized by the central or local board of health . . . . may enter and inspect any factory or workroom at any time during working hours. And the central or local board of health may from time to time make regulations (subject to the approval of the Governor in Council) respecting factories or workrooms, for the purpose of determining the maximum number of persons to be employed in any one room, also for enforcing provision for the necessary warmth, ventilation, and cleanliness therein, and further to order that all factories and workrooms shall be provided with proper sanitary requirements."

This Act was not found satisfactory.

(iii) *Royal Commission of 1883.* Following on a strike of tailoresses in 1882, the Melbourne press, through their reporters, made an examination of the factories in that city, and published accounts giving a vivid and fearless exposure of the evil conditions existing. It was shown that men were frequently compelled to toil for as many as eighteen hours and women for sixteen hours a day, and that the condition of outworkers was very undesirable. The Government thereupon appointed a Royal Commission to inquire into the working of the 1873 Act, and the inquiry began in 1883 and was completed in the following year. In its Report the Commission stated, amongst other things, that while considerable improvement had been made in the hygienic conditions of some of the factories, there was urgent need for more widespread effort in this direction, particularly as regards overcrowding, faulty ventilation, and the mixing of the sexes. Pointed attention was also drawn to the evils arising from the "sweating" system.

(iv) *The Factories and Shops Act of 1885.* The Report of the Commission referred to above was shortly followed by the introduction of a comprehensive measure entitled "The Factories and Shops Act 1885", which was on the lines of the English Act of 1878. It reduced the number of persons technically required to form a factory to 6, including apprentices, and made provision for ensuring cleanliness, air space, sanitation, and the requirements of decency, and for maintaining the health of the workers and their safety in life and limb. The employment of children under the age of 13 years was prohibited. A 48-hours week for females and males under 16 was prescribed, but this number of hours could be extended under special permission. The Act also required certificates of fitness to be obtained by persons under the age of 16 years before employment in factories, such certificates to be granted by certifying medical practitioners. The employment of persons under certain ages in certain factories and workrooms was prohibited, and without special permission boys under 14 years of age and girls under 16 years of age were not permitted to work in any factory or workroom between the hours of 6 p.m. and 6 a.m. Provision was made for the registration of factories, inspectors were appointed, and the administration of the law was placed under a special division of the Chief Secretary's Department. Notices of accidents of a specified severity were required to be sent to the inspector, and to the certifying medical practitioner of the district. The occupiers of factories were liable to a penalty of not more than £100 in cases where persons were injured by want of fencing to machinery, &c., the whole or any part of which penalty might be applied to the benefit of the injured person. This, however, did not deprive the injured persons of the right to recover damages in any Court of competent jurisdiction. The occupiers of factories were required to keep a record of all outside work done for them.

This Act dealt not only with factories, but with the hours during which shops might remain open for the sale of goods, and required seating accommodation or intervals of rest to be provided. Amending Acts were passed in 1887, 1890, and 1893, the last reducing the number of persons constituting a factory to four.

(v) *The Factories and Shops Act of 1896.* The Victorian Factories and Shops Act 1896 made a number of important amendments in the law, and introduced a number of entirely new provisions. It extended and amplified the legislation upon all the above-mentioned subjects. The term "factory" was extended to include every place in which furniture was manufactured, every place in which Chinese were engaged in laundry work, and all laundries where four persons were employed, excepting those carried on by charitable institutions. Ample powers were given to inspectors of factories who were authorized, when they found a factory or workshop in an unsanitary condition, to prosecute the responsible person, the chief inspector being given power also to condemn any factory or workroom which he considered dilapidated, unsafe, or unfit for use. The regulations governing the employment of children and young persons were made more stringent, females of any age, and boys under 16 years of age, were not permitted to be employed for more than 10 hours in a day, or after nine o'clock at night. The provisions of the English Act of 1888 for the protection of workers against accidents were in the main adopted. The names and addresses of outside workers were required to be registered with the chief inspector. The Act also dealt with the novel subject of regulating the wages of employees, whether engaged within or without a factory, and made large inroads upon the common law principle of freedom of contract. A minimum wage for the employment of any person in a factory was fixed, and the method for the fixing of the minimum wage to be paid for a maximum number of hours in any particular trade or industry to employees of different ages and experience was provided for in the power given to the Governor in Council to appoint Special Boards to determine such matters. (These provisions followed an experiment of the Parliament of New Zealand, which in 1894 passed an Industrial Conciliation and Arbitration Act creating a compulsory Court of Arbitration with power to make awards, including the fixing of wages and hours of labour. Provision was also made for District Boards of Conciliation, whose special function was to endeavour to bring about agreements in the earlier stages of trade disputes, and at the same time they were empowered to draw up recommendations for the settlement of all points at issue, including the duration of labour and rates of payment, such recommendations being subject to review by the Arbitration Court on the complaint of any party to the dispute.) A weekly half-holiday for shop assistants was also provided for, and a limitation upon the hours of work in shops imposed.

This important Act was, however, only placed upon the Statute Book as a temporary measure. Its provisions were renewed from time to time by further Acts, which also made a number of minor amendments in the law, in some cases extending the previous legislation, in other cases remedying defects in it. The Act of 1900 limited the working time of all males employed in shops to 52 hours per week, carters, porters, and night-watchmen alone being excepted. All these temporary measures came to an abrupt termination in 1902, when the sudden dissolution of Parliament rendered their provisions and the various acts done under them of no effect.

(vi) *Factories and Shops Continuance Act of 1902.* The new Parliament, however, speedily set matters right by the "Factories and Shops Continuance Act 1902." It continued the effects of all rules, regulations, orders, determinations, etc., made under the previous Acts, and revived the effects of those Acts themselves.

(vii) *Factories and Shops Acts of 1903-4-5.* The Act of 1902 was followed by the "Factories and Shops Act 1903," which continued the legislation to the end of the year 1905, and established a Court of Industrial Appeals, to consist of a Judge of the Supreme Court to hear appeals from and references by the Minister of Labour as to determinations of Special Boards. An amending Act was passed in 1904, and in 1905 all the previous Acts were repealed, and a consolidating Act, the "Factories and Shops Act 1905" enacted. An amending Act, the "Factories and Shops Act 1905, No. 2" made some alteration in the law chiefly with reference to the closing of shops and holidays to shop employees, and covered a number of defects in the previous Act.

(viii) *Legislation since 1905.* Sixteen further Acts have been passed since the Act of 1905 (No. 2). These Acts are as follows :—Factories and Shops Act of 1907 and 1909 ; Metropolitan Saturday Half Holiday Act ; Factories and Shops Act 1909 (No. 2), 1910, 1910 (No. 2), 1912, 1912 (No. 2), 1914, and 1915 ; White Phosphorus Matches Prohibition Act 1916 ; Factories and Shops Act 1919, 1920, 1920 (No. 2), 1922,(Fruit Shops) Act 1922.

(ix) *Provisions of Latest Acts in regard to Hygiene.* As regards hygiene, the principal features of these latest Acts are as follow :—

The Act of 1907 made provision for preventing or decreasing the danger or injury to health arising out of any process of manufacture, particularly as regards women, or persons under 21 years of age.

The Act of 1909 altered the interpretation of child from a person under the age of 13 years to persons under the age of 14 years for all male children, and 15 years for female children.

In the Act of 1909, No. 2, the definition of the term " factory " was widened, and the powers of inspectors increased. The ventilation of warehouses and shops was dealt with, and the use of white or yellow phosphorus in the making of matches prohibited.

In the Act of 1909, No. 2, provision was made for permission to be given to female children 14 years of age not required to attend school under the Education Act to be employed in factories.

In the Act of 1915 reference to the Board of Health for making regulations was deleted. The keeping of first-aid ambulance chests was made obligatory in factories where machinery is used. Girls under the age of 18 years were not permitted to lift or carry a weight greater than 25 pounds.

In the Act of 1919, it was enacted that the Minister may require the occupier of any factory, shop, or place to provide a dining-room for the use of employees, a bath-room for the use of employees, and a rest-room for female employees.

In the Act of 1922 the occupiers of factories may be called on by the Minister to provide suitable seating accommodation. The penalty for not providing guards, etc., for machinery was maintained, but the clause stating that this penalty may be used for the benefit of the injured person was deleted.

(x) *The Health Act of 1919.* The Victorian Health Act of 1919 gives power to the Governor in Council on the recommendation of the Health Commission to make regulations governing dangerous occupations. In 1923 the Dangerous Trades (Occupational Illnesses Notification) Regulations were made under this Act. These Regulations require every medical practitioner on becoming aware of any person suffering from certain occupational illnesses to forthwith send notification of the fact to the Chief Health Officer.

3. **South Australia.**—Although in some, if not in all, the other States, the need of factory and shop legislation was as urgent as in Victoria, the next State to pass a Factory and Shops Act was South Australia in 1894. This Act defined the number of employees necessary to constitute a factory as 4, it absolutely prohibited the employment of children under 13 years of age, and of any young person (boy or girl between the ages of 13 and 16 years) unless medically certified as physically fit. No young person or woman might be employed more than 5 hours at a stretch without being given an opportunity of obtaining a meal, nor might such be employed for more than 48 hours per week, except by arrangement with the factory inspector who might permit an extension to a maximum of 60 hours. The Act regulated the accommodation to be provided for employees, the safeguarding of machinery, the ventilation and cleanliness of workrooms and factories, and the prevention of overcrowding. An Early Closing Act came into force in South Australia in 1900.

4. **New South Wales.**—(i) *Report of Select Committee, 1876.* New South Wales was much slower than Victoria in taking steps to regulate the inspection of factories. In 1876 a Select Committee of the New South Wales Assembly was appointed to inquire into the employment of young persons " in trades . . . . unsuited to their years ". In the report the Committee stated that young persons were to be found employed in brick-making working 10 hours a day excluding meal times, and that many of them were under 14 years of age. They also stated that there were boys and girls in factories working 10 hours daily in an unhealthy atmosphere, and that boys of 13 to 15 years were employed at the collieries. The Committee advised that legislation should be passed defining the

age at which children should be permitted to work at paid employments. The inspection of places where children were employed was also recommended. The Government ignored the Committee's report.

(ii) *Census and Industrial Returns Act of 1890.* In 1890 a "Census and Industrial Returns Act" was passed, under which the Government Statistician was empowered to report on the condition of factory and other employment in the colony. An exhaustive examination of the factories and workshops in all the centres of population was made during 1891 and 1892, the chief abuse found to exist being the almost uniform absence of provision for sanitation and for the preservation of decency. No immediate action followed on the reports issued by the Statistician.

(iii) *Factories and Shops Acts of 1896 and 1899.* In 1896 a Factories and Workshops Act on the lines of the Victorian Act, 1885, was passed. An Early Closing of Shops Act was introduced in 1899.

5. **Queensland.**—The Queensland Government appointed in 1890 a Commission of Inquiry into the condition of the workshops and factories, and this investigation disclosed an urgent need for legislation. A Factories Act was passed in 1896, closely resembling that of New South Wales. In 1900 a comprehensive Factories and Shops Act was passed which made provision with regard to early closing of shops, and embodied the most recent legislation of Great Britain and Victoria so far as it could be locally applied.

6. **Western Australia.**—Western Australia passed an Act for the Regulation of Factories, and an Early Closing Act in 1897. In the Factories and Shops Act Amendment Act 1923 certain provisions are made for regulating factories where lead, mercurial, or chemical preparations are manufactured. Power is given to the Governor to make regulations requiring periodical medical examinations of persons engaged in factories where lead, arsenic, or other poisonous substances are used, every employee to notify the occupier forthwith as to any symptoms which lead such employee to believe that he has contracted poisoning of any kind; the occupier to record such notification in a health register in the factory, and the occupiers of factories to take certain precautions, such as the provision of overalls, cloak rooms, etc., to protect the worker. In 1924 the administration of the Factories Acts was separated from the Health Department.

7. **Tasmania.**—In 1884 the Parliament of Tasmania passed the "Employment of Women and Children in Workrooms and Factories Act," which was modelled on the 1873 Victorian Act. Amending Acts were passed in 1900 and 1905. Under these Acts inspection was placed in the hands of police and health officials. In 1907 a Royal Commission recommended the introduction of factory legislation, and in 1910 the first Factories Act was enacted, and a Shops Closing Act in 1911. The administration of the Factories Acts was divorced from the Health Department in 1916.

8. **Commonwealth Division of Industrial Hygiene.**—(i) *General.* The Commonwealth Government, in establishing the Division of Industrial Hygiene, gave expression to its wish that all practicable means by which avoidable sickness or disablement can be prevented should be brought universally into operation in Australia. A study of the existing State legislation showed that in connexion with many important matters safeguarding the health of the worker there was considerable diversity in standards and practice.

(ii) *Conference with States, 1922.* In September, 1922, at the invitation of the Prime Minister, a conference of delegates from the State Health and Labour Departments and the Commonwealth Department of Health met in Sydney in an endeavour to arrive at a concerted basis of action and a uniform basis for standards and records.

The Agenda paper was as follows:—

1. Child Labour—Legislative provisions for the protection of young persons industrially engaged. Minimum age for employment. Certificates of fitness. Physical examination and re-examination of youthful workers. Certifying factory surgeons.
2. Female Labour—Restrictions against employment of females in certain specified trade processes. Restrictions against employment of females prior to and after confinement. General legislative safeguards.
3. Occupational Diseases—Notification of occupational diseases by medical practitioners.
4. Morbidity Statistics—Stimulation and standardization of morbidity statistics and accident statistics.
5. Hygienic Standards—Formulation of minimum hygienic standards.
6. Factory Hygiene and Inspection—Educational facilities for factory inspectors. Provision for medical inspectors of factories.
7. Medical Supervision of Persons Engaged in Industry.

The Conference adopted the following resolutions :—

(1) That all persons employed in factories and workshops should be medically examined before employment and in each year of employment until the person has completed his or her eighteenth year.

That a certificate of fitness should be furnished on initial employment in each case at or under the minimum statutory age for employment.

That medical examinations should be made more frequently than annually if the medical examiner considers this necessary in any individual case.

That all medical examinations should be made by specially authorized medical officers.

(2) That standardized record cards for every examination performed should be kept by the medical examiners, and these records should be available at each re-examination.

(3) That the medical records of the Educational Departments should be available to the authorized medical inspectors in respect of any child seeking employment in factory or workshop.

(4) That it is desirable that the legislation in all the States prescribing the minimum age for employment be made uniform.

(5) That the minimum age for employment in factories and workshops be not under 14 years for boys and 15 years for girls.

(6) That the Division of Industrial Hygiene of the Commonwealth Department of Health take steps to acquire all available information necessary to enable recommendations to be furnished in regard to—

(i) The advisability of the reform and extension of the State Factories and Shops Acts in the following directions :—(*a*) The adoption of uniform restrictions against employment of females in specified trade processes ; (*b*) The adoption of uniform restrictions against employment of females prior to and after confinement ; (*c*) The adoption of uniform restrictions against heavy weight-lifting by females. The encouragement of labour-saving devices ; (*d*) The provision of adequate seating, rest, and dressing-room accommodation for female employees ; (*e*) The furnishing of returns indicating female labour turnover and absence from work.

(ii) The advisability of the appointment of female medical inspectors or other means of securing a more thorough supervision over female workers individually and collectively.

(7) That it is desirable that each State should have in effective operation legislation controlling occupations dangerous to the health of those employed therein.

(8) That all occupational diseases should be notifiable by medical practitioners, and that notifications should be made direct to the Health Department of the State.

(9) That factory medical inspectors should be appointed.

(10) That it is very desirable that there should be a collection of morbidity and accident statistics upon uniform lines, and that the Commonwealth Statistician be asked to draft a uniform scheme.

(11) That it is desirable that a committee should be appointed to draw up standards of qualification for factory inspectors and the nature of the course of study necessary before such qualification can be obtained.

(12) That the provisions of the Factories and Workshops Acts should extend to factories carried on or conducted by the Government or by any Local Authority as well as to factories otherwise carried on or conducted.

(13) This Conference considers that in view of the importance, as a phase of public health administration, of systematic medical supervision of the health of individual industrial employees, and of the valuable information and results which have been obtained from the introduction by private employers of a medical service for their establishments, all employers, including Governments, should be encouraged to provide an efficient and regular medical service which shall keep under review the health of the workers and shall inquire as to any relation between variations in health and conditions of employment. Moreover, in order to secure the greatest amount of public benefit from this measure, records of work done should be kept in a standardized method.

(14) That the Division of Industrial Hygiene of the Commonwealth Health Department, together with Mr. Murphy, Secretary, Department of Labour, Victoria, should be the committee to deal with the resolution relating to qualifications of factory inspectors.

(15) That the formulation of Hygienic Standards in industry be referred to the Division of Industrial Hygiene of the Commonwealth Department of Health.

(16) That all information obtained by the Division of Industrial Hygiene or by a committee in accordance with previous resolutions be submitted to a future conference for further discussion and for the formulation of recommendations in regard thereto.

It will be noted that certain matters were referred to committees, the information obtained to be submitted to a future conference for consideration.

(iii) *Conference with States, 1924.* A second conference was held in Melbourne in August, 1924, to consider the reports of these committees. The Agenda Paper read as follows: —

Report of the Division of Industrial Hygiene of the Commonwealth Department of Health on the following subjects :—

1. The advisability of the reform and extension of the State Factories and Shops Acts in the following directions :—
   (*a*) The adoption of uniform restrictions against employment of females in specified trade processes.
   (*b*) The adoption of uniform restrictions against employment of females prior to and after confinement.
   (*c*) The adoption of uniform restrictions against heavy weight-lifting by females. The encouragement of labour-saving devices.
   (*d*) The provision of adequate seating, rest, and dressing-room accommodation for female employees.
   (*e*) The furnishing of returns indicating female labour turnover and absences from work.
2. The advisability of the appointment of female medical inspectors or other means of securing a more thorough supervision over female workers individually and collectively.
3. The formulation of standards on the following subjects :—Ventilation ; Dust prevention (exhaust systems) ; Lighting ; Dining-room accommodation ; First-aid facilities.

Report of the Committee on the standards of qualification for factory inspectors, and the nature of the course of study necessary before such qualifications can be obtained.

The collection of morbidity and accident statistics upon uniform lines.

The legislative control of dangerous and unhealthy industries.

The notification of and payment of compensation for industrial diseases.

Consideration of the draft conventions and recommendations adopted by the International Labour Conferences.

The following recommendations were adopted :—

1. That the employment of females and young persons be restricted as follows :—

Occupation.	Persons to be Excluded.	
	Males.	Females.
1. Process of silvering of n irrors by mercurial process	Under 18 years ..	Under 18 years
2. Process of making white lead	Under 18 years ..	All
3. Continuous casting from molten lead in printing establishments	Under 16 years ..	All, except conditionally
4. Making of lead-headed nails	Under 18 years ..	All, except conditionally
5. Type-setting in printing office	Under 16 years ..	All, except conditionally
6. Lead glazing of pottery	Under 18 years, except conditionally	All, except conditionally
7. Casting of brass	Under 18 years ..	All
8. Manufacture of india-rubber and of articles and goods made wholly or partially of india-rubber	Under 16 years ; under 18 years, except conditionally	Under 18 years ; over 18 years, except conditionally
9. Process of bronzing	Under 16 years ..	Under 16 years
10. Dry grinding in metal trade	Under 16 years ..	Under 16 years
11. Process of melting and annealing glass ..	Under 16 years ..	Under 18 years
12. Cleaning machinery in motion	Under 18 years ..	All
13. Offensive trades (except soap and candles) ..	.. .. ..	Under 16 years
14. Making or finishing bricks or tiles, not being ornamental tiles	.. .. ..	Under 16 years
15. Making or finishing salt	.. .. ..	Under 16 years
16. Dipping of lucifer matches	Under 16 years ..	Under 16 years
17. Fustian cutting or in any grinding in the metal trade other than dry grinding	Under 16 years ..	Under 16 years
18. Laundry (machinery)	Under 16 years ..	Under 16 years
19. Manufacture of chromate and bichromate of potassium and sodium	Under 18 years ..	All
20. Wet spinning	Under 18 years, except conditionally	All, except conditionally
21. Processes which the Minister may notify as unhealthy .. .. (These should include all occupations with a definite lead hazard)	Under 18 years ..	All
22. Humid textile processes in which a humid atmosphere is continuously used	Under 16 years ..	Under 16 years

2. That no woman or girl shall work, and no occupier of a factory or workshop shall permit or require any woman or girl to work inside or outside any factory during the six weeks following her confinement.

3. That no woman or young person employed in a factory or workshop shall be permitted or required to lift or carry by hand a greater weight than is set forth in the following scale :—

Males—	
Under 16	30 lb.
Under 18	40 lb.
Females—	
Under 16	20 lb.
Under 18	25 lb.
18 and over	35 lb.

4. That :—(*a*) Every occupier of a factory or shop shall cause to be provided, when the work can be done as well sitting as standing, suitable seats for the use of all persons employed in his factory or shop while at work :—(*b*) Every occupier of a factory or shop shall cause to be provided, when the work can only be done standing, suitable seating accommodation for all persons employed in his factory or shop in the proportion of one seat to every three persons employed. Such seating accommodation shall be conveniently situated for the use of the persons for whom the same is provided, and the occupier shall allow every person employed to use such seating accommodation at all reasonable times during the day, when such use would not necessarily interfere with the proper discharge by such person of his or her duties. (*c*) Such work seats, from the point of view of physiological benefit to the employee, and suitability for the particular work to be done, shall have been approved by the Chief Inspector of Factories.

(5) That a rest-room should be provided where there are 25 or more females employed, and for a less number if required by the Chief Inspector of Factories. If the room is intended for the temporary use of female employees needing a rest of an hour or two, and if it is not likely that there will be more than two or three occupants at the same time, the cubic space should be not less than 2,400 cubic feet, and a couch and two arm-chairs should be provided.

(6) That the occupier of any factory or shop where a change of the dress of any females employed is rendered necessary by the work to be done shall, if so required by the Chief Inspector of Factories, provide suitable dressing-room accommodation for such females.

The following provisions shall be observed with regard to the dressing-room accommodation :—(*a*) The dressing-room shall have at least 6 square feet floor space for each female so employed, and shall be situated adjacent to washing facilities. (*b*) Provision shall be made for the accommodation of—(i) Clothing put off during working hours ; (ii) Overalls and other protective clothing worn while at work. (*c*) Adequate arrangements shall be made for drying the clothing if wet. (*d*) If hooks or pegs are provided for hanging clothes, there shall be not less than two for each female employed, and they shall not be less than 18 inches apart ; if lockers are provided, there shall be not less than one for each female employed, they shall be at least 5 feet in height, 1½ feet in width, and 1 foot in depth, and ventilated at the top and bottom : such arrangements shall be approved by the Chief Inspector of Factories.

(7) That every occupier of a factory or workshop shall make such reports and furnish such returns as the Department of Labour may require for the purpose of collecting and compiling statistical information. The said occupier shall make such reports and furnish such returns within the specified time, and shall certify to the correctness of the same.

(8) That female medical inspectors of factories should be appointed.
(9) That the standards of ventilation tentatively submitted by the Division of Industrial Hygiene together with kata-thermometer observations, form the basis of an inquiry to be made in each State in the ensuing two years, and that the information so obtained be submitted to the next conference on industrial hygiene.

The Conference agrees that the study of air movement is of the greatest importance; and recommends the investigation of the various industries with a view to laying down suitable standards by the use of the kata-thermometer, or other means.

(10) That the recommendations of the British Factory Committee for the Statutory Regulation of Lighting in Factories and Workshops be adopted by all States.

(11) (*a*) When the number of employees in a factory exceeds six, the occupier shall, if required by the Chief Inspector of Factories, provide a separate room in which they may take their meals. (*b*) The lunch-room shall be of such a size and of such standards of cleanliness, lighting, heating, and ventilation as are approved by the Chief Inspector of Factories. (*c*) The lunch-room shall be provided with suitable tables and separate chairs for each employee. (*d*) Means of warming food and supplying hot water shall be provided. (*e*) That "factory" shall include Government factories and workshops.

(12) That each State adopt legislation requiring provision of ambulance and first-aid arrangements similar to those laid down in the Home Office Welfare Orders.

(13) (*a*) That all States agree to adopt a uniform standard of qualification for factory inspectors, and that the necessity for such a qualification be ensured by legislation or regulation wherever necessary. (*b*) That a biennial conference of Commonwealth and State representatives be instituted which could of itself, or by a Committee, determine and revise from time to time the qualifications and necessary courses of instruction.

(14) That all accidents occurring in factories should be reported to the Chief Inspector of Factories in the State concerned, and that in the annual report of the Chief Inspector of Factories the statistics as recommended by the International Conference of Labour Statisticians, Geneva, 1923, be furnished.

(15) That (*a*) a section, similar to that of the Act of Great Britain, be inserted in the Factories and Shops Acts giving power to make regulations for the safety of persons employed in dangerous trades, and prescribing the procedure for making such regulations. (*b*) Regulations, modelled on the British, be made for the specific industries concerned.

(16) That every State should adopt regulations requiring notification of industrial diseases. The diseases which should be adopted as notifiable are:—Poisoning by—Lead, Mercury, Arsenic, Phosphorus, Other minerals, Benzol or its nitro and amido derivatives (dinitro-benzol, aniline, and similar substances); Carbon Bisulphide, Nitrous Fumes, Carbon Monoxide, Cyanogen Compounds; Septic Poisoning; Chrome Ulceration; Dermatitis; Cancer (occupational); Compressed Air Illness; Mining—Nystagmus, Pneumoconiosis, Phthisis (miner's), Beat Hand, Beat Elbow, Beat Knee, Synovitis (wrist), Dermatitis.

(17) That every Australian State should afford compensation for industrial diseases, and that the diseases for which compensation is paid should be:—Poisoning by—Lead, Mercury, Arsenic, Phosphorus, Other Minerals, Benzol or its nitro and amido derivatives (dinitro-benzol, aniline, and similar substances), Carbon Bisulphide, Nitrous Fumes, Carbon Monoxide, Cyanogen Compounds; Septic Poisoning: Chrome Ulceration, Dermatitis; Cancer; Compressed Air Illness; Trade spasms and Cramps; Anthrax; Zymotic Diseases; Mining—Nystagmus, Pneumoconiosis, Miner's Phthisis, Beat Hand, Beat Knee, Beat Elbow, Synovitis (wrist), Dermatitis, Ankylostomiasis.

(18) That in view of the fact that the Railway Departments of the several States are the largest individual employers of labour, they should be on a similar footing to all other employers of labour in the Commonwealth in respect to the recommendations of this Conference.

9. State Activities since 1922.—(i) *Victoria.* In 1923, under power given in the "Health Act 1919," the "Dangerous Trades (Occupational Illnesses Notification) Regulations" were made. These have been referred to previously. Since 1922 the part-time services of one of the medical officers of the Health Department have been placed at the disposal of the States Labour Department. In 1925 the Labour Department appointed a female Medical Inspector of Factories and Shops, her duties being defined as follows:—(*a*) To investigate the effect of industrial conditions in factories and shops on the health of female workers, and, where necessary, to suggest remedial measures. (*b*) Where considered necessary, to examine female applicants under fifteen years of age for permits to work in factories. (*c*) To furnish reports when required, and to recommend action necessary to secure the health and well-being of female workers.

(ii) *New South Wales.* In 1923 the State Department of Health appointed a full-time Medical Officer of Industrial Hygiene, whose duties are to assist the State Department of Labour and Industry and the Court of Industrial Arbitration in matters concerning the health of the worker. In 1924 regulations under the Public Service Act were gazetted, prescribing certain educational qualifications for cadets and factory inspectors. These are referred to later under the heading of "Administration of Labour Legislation."

(iii) *Western Australia.* In the "Factories and Shops Act Amendment Act 1923," provision is made for the proper regulation, including periodical medical examination and occupational disease notification, of factories where lead, mercurial or arsenical preparations are manufactured. At the time of writing there is a Bill before Parliament to afford compensation to persons suffering from certain industrial diseases.

(iv) *Tasmania.* During the 1924-25 Session of Parliament, a Select Committee was appointed to investigate and formulate a scheme in connexion with the mining and metallurgical industries whereby those suffering from occupational diseases would be brought under the operations of the Workers' Compensation Act. This Committee made certain recommendations, and the Government has stated its intention of bringing forward legislation to give effect thereto.

10. Regulation of Wages and Terms of Contract.—Two systems, based upon different principles, exist in Australia for the regulation of wages and general terms of contract for employment. A "Wages Board" system exists in Victoria and Tasmania and at the Seat of Government of the Commonwealth of Australia, and an Industrial Arbitration Court in Western Australia and the Northern Territory. In the industrial legislation of New South Wales, Queensland, and South Australia both systems are embodied, Industrial Wages Boards as well as Industrial Courts being instituted. There is also the Arbitration Court of the Commonwealth, which has power, however, to deal only with matters extending beyond the limits of a single State. The chief aims of a Wages Board System are to regulate hours, wages, and conditions of labour and employment by the determination of a Board usually brought into existence for any specified industry or group of industries by petition or application. Under the "Industrial Arbitration Court System," an industry does not technically come under review until a dispute has actually arisen. The powers of the court are both numerous and varied; it hears and makes awards upon all matters concerning employers and employees.

The Court of Industrial Arbitration, New South Wales, has recently made two interesting awards. Certain hygienic standards have been prescribed, and working hours are reduced in establishments failing to comply with the conditions set forth. The awards in question deal with compositors and textile workers. An award made by the Arbitration Court of Western Australia in August, 1924, also sets forth certain hygienic precautions which must be observed in the trades of painting and signwriting.

The following awards indicate the breadth of jurisdiction of the Courts:—The Grave Diggers and Cemetery Labourers (Cumberland) Award, October, 1924, specifies "Each employee shall be entitled to sick pay during the period of his illness. Provided that in no case shall the total allowance in any year exceed twelve days' pay, and provided further that in all cases the employer may require the employee concerned to produce a medical certificate that he is unable to work, and, if such request is made and not complied with, the employer shall not be liable to make payment under this clause."

Rest-periods are prescribed under many awards. An example may be taken from the Brickmakers, etc., Northumberland, Award, November, 1924, where it is specified: "All females shall be granted a break of 10 minutes each morning between 9 a.m. and 10 a.m. for tea, and all female employees shall be allowed 10 minutes for washing and changing before knocking-off time. An interval of 7½ minutes in the morning and 7½ minutes in the afternoon shall be allowed to all employees engaged in brickmaking as "smoke-oh" in the employees' own time and not as part of their working time."

11. Employers' Liability and Workmen's Compensation Acts.—(i) *General.* In each of the States Acts have been passed allowing compensation as regards workers who have been killed or injured while engaged in industrial occupation. Two Commonwealth Acts have also been enacted, one providing for compensation to all workers employed by the Commonwealth, and the other to all seamen working on ships registered in Australia.

The Employers' Liability Acts imposed on the employer liability for accidents causing injury or death brought about by defects in works, plant, or machinery due to the employer's negligence, or negligently left unremedied by him, or caused by the similar negligence of his servants.

The Workmen's Compensation Acts impose a liability upon the employer to pay compensation to an injured workman, or to his dependents in case of death, independently of negligence on the part of the employer or of any one employed by him. The Acts of five of the States and of the Commonwealth specify that compensation shall be paid if in any employment personal injury by accident arising thereout in the course of the employment is caused to any worker. The Queensland Act provides that compensation shall be paid to all workers—or to their dependents in the case of death—who are injured by accident, whether at the place of employment or on the journey to or from such place or (being in the course of employment or while under employers' instructions) away from the place of employment. The Commonwealth Government has passed an Ordinance relating to Workmen's Compensation in the Northern Territory.

It is surprising that in the past little attention has been given in Australia to the collection and analysis of the facts of accident frequency in the different trades. Statistics have been available for some years in certain States regarding the number of fatal and

other accidents occurring among mining and factory employees, but the figures published represent but a tenth of the actual numbers injured and receiving compensation under the Workmen's Compensation Acts. Western Australia and Tasmania, in their annual reports on the operations of their respective Factories and Shops Acts, furnish no particulars whatsoever as regards accidents. Even with respect to injuries dealt with under Workmen's Compensation Acts, the statistical information available is very meagre. For example, the Government Statist of Victoria is unable to publish information regarding the number of claims and payments for accidents and industrial diseases in connexion with each occupation included in returns received from Insurance Companies transacting workmen's compensation business, without the consent of the Accident Underwriters' Association and the State Insurance Commissioner, nor in the returns he receives is the number of employees in each occupational group stated—the number injured, premiums received and payments made only being given. In Queensland, the employers are not required to state the number of their employees, as premiums are assessed on the wages paid; consequently the State Insurance Commissioner has no statistics as to the number of persons covered in the different occupational groups.

The collection of accident statistics upon uniform lines is an urgent necessity, and it is to be hoped that the recommendations of the International Conference of Official Labour Statisticians, Geneva, 1923, on this subject will soon be adopted in all States.

(ii) *Workers Injured and Compensation Paid.* (*a*) *General.* In the following table particulars are given as to the number of injuries and payments made under their respective Workmen's Compensation Acts, in the Commonwealth of Australia, and the States of Victoria, New South Wales, and Queensland.

(*b*) *Commonwealth.* Returns relating to numbers injured and compensation paid under the Act of 1912 for years 1913 to 1923 are given hereunder :—

COMMONWEALTH WORKMEN'S COMPENSATION ACT 1912—RETURNS 1913 TO 1923.

Year.	Number Injured.	Compensation Paid.	Year.	Number Injured.	Compensation Paid.
		£			£
1913 ..	240	1,056	1920 ..	851	10,755
1914 ..	370	5,724	1921 ..	708	11,066
1915 ..	1,218	6,917	1922 ..	707	9,021
1916 ..	846	7,805	1923 ..	845	7,090
1917 ..	834	6,532			
1918 ..	774	7,566			
1919 ..	739	6,944	Total ..	8,132	80,476

(*c*) *Victoria.* The consent of the members of the Accident Underwriters' Association of Australia and of the State Insurance Commissioner having been given, the Government Statist has supplied the following information regarding injuries and payments made under the Victorian Workers' Compensation Act for the years 1920 to 1923 :—

WORKERS' COMPENSATION ACT, VICTORIA—RETURNS, 1920 TO 1923.

Year.	Number Injured.	Compensation Paid.
		£
1920	11,646	108,009
1921	11,410	104,854
1922	11,907	108,154
1923	12,822	147,852

(*d*) *New South Wales.* The Department of Labour, New South Wales, has issued the following table giving a comparison of the number of accidents occurring and the compensation paid under the Workmen's Compensation Act during the period 1913 to 1923 :—

WORKMEN'S COMPENSATION ACT, NEW SOUTH WALES—RETURNS, 1913 TO 1923.

Year.	Employees Covered.			Accidents.		
	Males.	Females.	Total.	Death.	Disablement.	Total.
1913	77,088	3,774	80,862	52	6,217	6,269
1914	120,707	2,384	123,091	65	6,386	6,451
1915	94,046	3,782	97,828	52	5,854	5,906
1916	83,825	6,399	90,224	52	5,277	5,329
1917	95,006	15,325	110,331	34	4,787	4,821
1918	126,333	25,824	152,157	69	11,708	11,777
1919	190,109	28,658	218,767	115	11,987	12,102
1920	188,563	28,826	217,389	104	13,133	13,237
1921	202,164	32,476	234,640	120	16,267	16,387
1922	198,484	36,679	235,163	101	17,258	17,359
1923	204,224	37,906	242,130	90	18,860	18,950
1913–23 ..	1,580,549	222,033	1,802,582	854	117,734	118,588

Year.	Compensation.			Percentage of Accidents to Employees.		
	Death.	Disablement.	Total.	Accidents Resulting in Death.	Accidents Resulting in Disablement.	Total.
	£	£	£			
1913	4,797	39,237	44,034	0.06	7.6	7.7
1914	15,256	38,201	53,457	0.05	5.1	5.2
1915	12,073	32,498	44,571	0.05	5.9	6.0
1916	12,431	39,671	52,102	0.05	5.8	5.9
1917	12,724	39,634	52,358	0.03	4.3	4.3
1918	22,314	95,070	117,384	0.04	7.6	7.7
1919	41,206	117,027	158,233	0.05	5.4	5.5
1920	38,407	133,283	171,690	0.05	6.0	6.1
1921	39,762	224,872	264,634	0.05	6.9	7.0
1922	39,672	250,168	289,840	0.04	7.3	7.3
1923	34,067	256,778	290,845	0.04	7.8	7.8
1913–23 ..	272,709	1,266,439	1,539,148	0.05	6.5	6.6

(e) *Queensland.* The following figures regarding the operation of the Queensland Workmen's Compensation Act are given in the annual reports of the State Government Insurance Office :—

WORKMEN'S COMPENSATION ACTS, QUEENSLAND—RETURNS, 1916–17 TO 1922–23.

Year.	Number of Accidents.			Compensation.
	Fatal.	Permanent Injury.	Temporary Injury.	
				£
1916–17	122	314	6,148	117,291
1917–18	147	416	7,816	165,358
1918–19	156	411	8,219	172,782
1919–20	152	430	8,967	215,400
1920–21	152	513	9,513	222,327
1921–22	231	498	8,589	260,963
1922–23	146	501	10,824	273,385
Totals 1916–23..	1,106	3,083	60,076	1,427,506

12. **Economic Loss by Accidents.**—In Victoria and New South Wales employers are not liable to pay compensation for injuries which incapacitate for less than one week, and in Queensland for injuries disabling for less than three days. In the preceding tables, such accidents have not been included, but it would appear that in Australia at least 6 per cent. per annum of all workers covered by the provisions of the Workmen's Compensation Acts receive disabling injuries entitling them to compensation.

This represents a huge annual economic loss to the nation, as each industrial accident means that at least one of its producing units is converted temporarily or permanently into a non-producer.

The amount paid in compensation does not represent the only financial loss through accidents. The employer, through his premiums, is compelled to bear practically the whole cost of the working of the Compensation Acts, and, in addition, he has to defray any legal expenses involved. The employee with temporary injuries has to suffer a reduction in income, and, in cases of permanent injuries, is deprived of earning power. Apart from the pain and suffering involved, and the hardships so frequently inflicted on the family of the injured, everything possible should be done to lessen or obviate entirely the causes of injury, as compensation after all is a poor substitute for health and physical ability.

With the exception of "The Workers' Compensation Acts of 1912 to 1920" of Western Australia, which allow medical attendance up to £1, the injured worker is not reimbursed the cost of medical and hospital fees entailed by reason of his accident.

13. Workers' Compensation in the United States of America.—In increasing numbers the States of America are amending their compensation laws to afford the relief just mentioned to the workers, and the position in this respect at the end of 1922 is shown in the next table.

It will be noted that many of the States hedge these benefits with limits ranging from 2 weeks to 90 days in time, or from 50 to 300 dollars in amount, while in others the payments are not restricted. The payment of medical and hospital fees incurred by the injured worker has been an undoubted factor in improving the medical service rendered. Many insurance companies have established clinics for the treatment of injuries, and employ the highest surgical or medical talent available. They have found that skilled service promptly given more than pays for itself by cutting short the period of disability and preventing the need of reconstructive surgery later. Furthermore, many industrial concerns have been enabled to engage the full-time services of competent medical men to take charge of the surgical treatment of injuries, the medical attention of occupational diseases occurring in their plants, and the other duties carried out by an industrial physician, without any expense to themselves, the rebate on the compensation premiums being more than sufficient to cover the entire cost.

MEDICAL SERVICE UNDER WORKMEN'S COMPENSATION ACTS, UNITED STATES.

State.	Time.	Amount.	State.	Time.	Amount.
Alabama ..	60 days ..	$100	New Jersey ..	(a)	(a)
Arizona ..	No provisions		New Hampshire ..	No provisions	
California ..	(a)	(a)	New Mexico ..	14 days ..	$50
Colorado ..	60 days ..	$200(b)	New York ..	(a)	(a)
Connecticut ..	(a)	(a)	North Dakota ..	(a)	(a)
Delaware ..	30 days ..	$100(c)	Ohio	(a)	$200(g)
Georgia ..	30 days ..	$100	Oklahoma ..	60 days ..	$100(g)
Idaho	(a)	(a)	Oregon ..	(a)	$250(i)
Illinois	8 weeks ..	$200(d)	Pennsylvania ..	30 days	$100(j)
Indiana ..	30 days(e)	(a)	Rhode Island ..	8 weeks ..	$200
Iowa	4 weeks ..	$100(f)	South Dakota ..	12 weeks	$150
Kansas	50 days ..	$150	Tennessee ..	30 days ..	$100
Kentucky ..	90 days ..	$100	Texas	2 weeks ..	(a)
Louisiana ..	(a)	$150	Utah	(a)	$150
Maine	30 days (g)	$100(g)	Vermont ..	14 days ..	$100
Maryland ..	(a)	$300	Virginia ..	60 days ..	(a)
Massachusetts ..	2 weeks(g)	(a)	Washington ..	During period of comp. payment	
Michigan ..	90 days ..	(a)			
Minnesota ..	90 days ..	$100(g)	West Virginia ..	(a)	$150(k)
Montana ..	2 weeks ..	$100	Wisconsin ..	90 days(g)	(a)
Nebraska ..	(a)	(a)	Wyoming ..	(a)	$200
Nevada ..	90 days (h)	(a)			

(a) Signifies unlimited service. (b) Also $100 for dental service. (c) Additional service upon application approved by the Board. (d) Necessary additional expense in hospital cases. (e) Additional 30 days may be allowed by the Board. (f) Additional $100 in exceptional cases. (g) Limits extended at discretion of Commission in unusual cases. (h) May be extended to one year by Commission. (i) Limits $100 for hospital accommodation, $100 for medical and surgical service, and $50 for medicines and supplies, including transportation. (j) In addition to the cost of hospital service for 30 days. (k) Increased to $300 in special cases.

14. **Occupational Diseases and Compensation, Australia.**—Two of the States of the Commonwealth—Western Australia and Tasmania—have not as yet provided for the payment of compensation to sufferers from occupational diseases, nor is this provision made in the Commonwealth Workers' Compensation Act.

OCCUPATIONAL DISEASES FOR WHICH COMPENSATION IS PAYABLE—AUSTRALIA, 1924.

NOTE.—Diseases compensated marked X.

Disease (or Poisoning by)—	State.			
	New South Wales.	Victoria.	Queensland.	South Australia.
Anthrax	x	x	x	x
Lead	x	x	x	x
Mercury	x	x	x	x
Arsenic	x	x	x	x
Copper	x	..	x	..
Zinc	x	..	x	..
Phosphorus	x	x	x	x
Other Mineral	..	..	x	..
Septic Poisoning (Handling Meat)	x	x	x	..
Zymotic Diseases (Hospitals)	..	..	x	..
Baker's Phthisis	..	..	x	..
Miller's Phthisis	..	..	x	..
Benzene, Nitro and Amido Derivatives	x	..	..	..
Carbon Bisulphide	x	..	..	..
Nitrous Fumes	x	..	..	..
Nickel Carbonyl	x	..	..	..
African Boxwood	x	..	..	..
Chrome Ulceration	x	..	..	..
Dermatitis	x	..	..	..
Cancer (Pitch or Tar)	x	..	..	..
Cancer (Chimney-Sweep's)	x	..	..	..
Glanders	x	..	..	..
Caisson	x	..	x	..
Mining—				
Nystagmus	x	..	x	..
Silicosis	x	..	x	..
Beat Hand	x	..	x	..
Beat Knee	x	..	x	..
Beat Elbow	x	..	x	..
Synovitis (wrist)	x	..	x	..
Dermatitis	..	..	x	..
Itch (Miner's or Copper)	..	..	x	..

New South Wales has in addition three other Acts relating to workmen's compensation, viz., "The Workmen's Compensation (Silicosis) Act 1920," the "Workmen's Compensation (Broken Hill) Act 1920," and "The Workmen's Compensation (Lead Poisoning—Broken Hill) Act 1922."

15. **Occupational Diseases, New South Wales.**—Returns regarding diseases, occupation, cases, and compensation, for the period 1920-23, are set out hereunder.

OCCUPATIONAL DISEASES—RETURNS, NEW SOUTH WALES, 1920-1923.

Disease.	Employment.	Number of Cases.	Compensation.
			£
Lead Poisoning	Building	15	2,529
,, ,, ...	Manufacturing ..	20	1,669
,, ,, ...	Mining	263	64,859
,, ,, ...	Transport	3	184
	Professional and Shop Workers	1	1,000
	Public Utility Services..	1	444
	Total	303	70,685
Dermatitis	Chemical	2	22
Nystagmus	Mining	42	6,889
Anthrax	Transport	1	28
,, ...	Grazing	1	16
	Total	2	44
Arsenic Poisoning ..	Smelting	1	3
GRAND TOTAL	.. .. ..	350	77,643

16. **Occupational Diseases, Victoria.**—Returns regarding disease, cases, and compensation for the period specified are given hereunder.

OCCUPATIONAL DISEASES—RETURNS, VICTORIA, 1918-1923.

Disease.	Number of Cases.	Compensation.
		£
Anthrax	4	523
Lead Poisoning	12	654
Arsenic Poisoning	2	22
Septic Poisoning	88	759
Total	106	£1,958

17. **Occupational Diseases, Queensland.**—The number of claims presented under the various diseases is set out in the following table :—

OCCUPATIONAL DISEASES—CLAIMS, QUEENSLAND, 1918-19 TO 1922-23.

Disease.	Claims.	Disease.	Claims.
Mineral Poisonings ..	93	Mining Diseases—	
Anthrax	3	Phthisis	539
Septic Poisoning	4	Cellulitis	8
Typhoid Fever	2	Caisson	20
Influenza	50	Dermatitis	3
Total	152	Total	570
		GRAND TOTAL	722

18. **Mining Legislation.**—(i) *General.* Acts governing the conditions of employment in mines are in force in each of the States. The employment underground of all females and of boys under 14 years of age is prohibited. A minimum age, usually 17, is fixed for employment as lander or braceman at plats and landing places. No lander, braceman, underground worker, or man in charge of motive power may be employed more than 8 hours a day. Various provisions for the protection of the lives and health of miners are contained in the Acts. These provisions include measures for the adequate ventilation of mines, for dust control, lighting, sanitation, the provision of ambulance chests and stretchers, and the reporting of accidents.

Provision is made to enable injured persons or the relatives of persons killed to recover damages if the injuries result from a breach of the regulations, while inspection of the mines is fully provided for. In two of the States reduction of hours where the working conditions are unfavourable to health is provided for.

(ii) *New South Wales.* The "Workmen's Compensation (Broken Hill) Act 1920" requires the medical examination of all mine workers. (The Western Australian Government in 1922 passed an Act for the physical examination of all metal miners and for the exclusion of tuberculous miners from underground work. This Act has not yet been placed into effect.)

"The Mine Inspection Act 1901" of New South Wales gives power to the Governor to make regulations for the prevention of lead poisoning, and regulations have been made accordingly.

Following the example set by English legislation, "The Mines Accident (Rescue and Aid) Act 1913," a Mines Rescue Bill was placed before the New South Wales Assembly on the 12th November, 1924. The Bill proposes to provide for rescue operations in coal and shale mines by the establishment, equipment, and maintenance of rescue stations and rescue corps. The mine owners shall pay brigade-members for time taken up in training and duties at not less than the rate of pay for first class shiftmen at the mine concerned. The Governor may, under the provisions of the Bill, define mining areas, and establish central rescue stations towards the establishment and maintenance of which mine owners shall contribute on the basis of not more than one penny a ton on all coal won in the mines. At the time of writing this measure had not yet been passed by the New South Wales Assembly.

(iii) *Tasmania.* Under "The Mines and Works Regulation Act 1915," regulations are prescribed for smelting works, whether carried on in connexion with mining operations or otherwise. The provisions are on similar lines to the regulations under "The Mine Inspection Act, 1901" of New South Wales.

19. **Workmen's Accommodation and Workers' Homes Acts.**—(i) *Shearers' Accommodation Act, N.S.W.* In 1901 the Parliament of New South Wales passed the "Shearers Accommodation Act," which provided for the proper and sufficient accommodation of persons employed in or about shearing sheds in the shearing of sheep or in work connected therewith. This accommodation included sleeping accommodation in buildings separate from the shearing shed, a dining room, proper cooking and washing vessels, a good drinking water supply, and latrines. This Act was adopted later by the other States.

(ii) *Workers' Accommodation Acts, Queensland.* In Queensland, the "Workers' Accommodation Acts" of 1915 to 1921 apply not only to shearing sheds, but also to construction works, meat works, pastoral occupations, sawmills, sugar works, and such works as the Governor in Council may from time to time by order in council declare.

(iii) *Workers' Homes Acts.* With the exception of New South Wales and South Australia, the States have passed Workers' Homes Acts providing for advances out of monies voted by Parliament, on prescribed securities to persons in receipt of an income below a prescribed sum for the purpose of enabling them to erect dwelling houses. The Commonwealth Government under the power conferred by the Northern Territory Acceptance Act 1910 and the Northern Territory (Administration) Act 1910 adopted the "Workmen's Dwellings Ordinance 1919."

20. **Unemployment Insurance Act, Queensland.**—In 1922 the Queensland Government passed "The Unemployed Workers' Insurance Act," which established an "Unemployment

Insurance Fund" to which contributions are made by the workers, employers, and the Government. Measures having for their object the remedying of unemployment are also prescribed.

21. **The Commonwealth of Australia Navigation Act, 1912-1920.**—The Australian Navigation Act represents an important advance in the field of industrial hygiene. The Accommodation Division of the Act requires in vessels of the Australian mercantile marine the provision of 140 cubic feet with a minimum floor space of 18 square feet for each man who lives in the space, irrespective of the space provided for mess-rooms and bath-rooms. Standards for ventilation, lighting, bunks, mess-rooms, sanitary arrangements—including properly constructed bath-rooms with washhand basins and showers, to which hot and cold fresh water are made available, and hospitals—have been prescribed. As a result, the conditions on board Australian ships have been brought into line with modern ideas of sanitation. The responsibility of examining the vessels concerned and specifying the alterations necessary in each case to bring the conditions into conformity with statutory requirements has been undertaken by officers of the Commonwealth Department of Health, who for the purpose have been appointed Medical Inspectors under the Navigation Act.

Under the "Health" Division of the Navigation Act, the examination of seamen by Medical Inspectors has been arranged. Scales of medical stores and books of instruction suitable for different classes of ships and voyages have been prescribed. Provision has been made that where a seaman or apprentice belonging to a ship registered in Australia is left on shore in any place in Australia owing to illness or injury in service of the ship, he shall be entitled, if landed at his home port, to wages during his illness and for one week after recovery, with a maximum of 3 months' wages in all. If landed at a port other than his home port, he is entitled to maintenance, medical expenses, and a free passage with wages to his home port. Other sections place the liability on the owners of British vessels for medical attendance, medicine, and maintenance of the master, seaman, or apprentice should he—(*a*) receive any hurt or injury or contract disease in the service of the ship; or (*b*) suffer from any illness which is not a venereal disease, and not due to his own wilful act or default, or to his own misbehaviour.

Foreign-going ships, or Australian trade ships on a voyage between consecutive ports of call which exceeds the prescribed distance (650 miles), and which have on board 100 or more persons, are required to carry as part of their complements a duly qualified medical practitioner. Where the number on board is less than 100 but more than 10, then if a medical practitioner is not carried, a person competent to render "first aid" must form one of the ship's complement.

The scale of provisions to be provided to every member of the crew is set out in the schedule.

22. **Administration of Labour Legislation.**—(i) *New South Wales.* The Department of Labour and Industry administers the Acts, and has charge of the matters specified in the statement hereunder:—Agreements Validating Act 1902: Apprentices Act 1901 and Apprentices (Amendment) Act 1915: Early Closing Acts (Principal and Amending) No. 38, 1899, 81, 1900, 29, 1906 (Hairdressers), 23, 1910, 64, 1915 (Butchers), No. 49, 1919: Eight Hours Act 1916: Eight Hours (Amendment) Act 1920: Electric Light and Gas Emergency Act 1917: Industrial Arbitration (Further Amendment) Act 1918: Industrial Arbitration (Amendment) Act 1919: Industrial Arbitration (Amendment) Act 1920: Municipal Council of Sydney Electric Lighting (Amendment) Act 1920: Returned Soldiers and Sailors Employment Act 1919: Saturday Half-holiday Act 1910: Scaffolding and Lifts Act 1912: Factories and Shops Act 1912: Gas Act 1912: Gas (Amendment) Act 1918: Gas (Amendment) Act 1920: Industrial Arbitration Act 1912: Industrial Arbitration (Amendment) Act 1916: Industrial Arbitration (Amendment) Act 1918: Shearers' Accommodation Act 1901: Supply of Electricity (Variation of Agreements) Act 1920: Trade Unions Re-registration Act 1920: White Phosphorus Matches Prohibition Act 1915, No. 1: Workmen's Compensation Act 1916: Workmen's Compensation (Silicosis) Act 1920: Workmen's Compensation (Amendment) Act 1920: Workmen's Compensation (Broken Hill Act) 1920: the reception and investigation of complaints alleging non-compliance with industrial laws: the regulation of industries by the enforcement of all subordinate legislation under the Industrial Arbitration Acts: the maintenance of a centre of public intelligence with regard to industrial law, and certain economic features of industries: the publication of the *Industrial Gazette*: the social problem of

unemployment: the regulation of private labour agencies, and the control of State-aided immigration: State agencies for—general labour exchange purposes, the provision of labour for Government works, the training of youths for rural employment, the relief, shelter, and provision of temporary occupation for the unemployed and for workers suffering from disabilities.

For the purpose of discharging its responsibilities the Department is organized in the following sections:—(1) Ministerial: (2) New South Wales Board of Trade: (3) Special Commissioner for Conciliation: (4) Industrial Registrar: (5) State Labour Exchange and Immigration: (6) Chief Inspector of Factories and Investigation Officer: (7) Departmental Engineer and Chief Inspector of Scaffolding and Lifts: (8) Gas Examiner.

Country offices are located at the undermentioned centres:—Broken Hill, Goulburn, Lismore, Newcastle, Orange, Tamworth, Wagga Wagga, Wollongong.

In the Factories Department there are 35 inspectors, i.e., 29 males and 6 females, of whom 25 males and 5 females are engaged as factory inspectors and 5 as early closing and industrial inspectors.

(ii) *Victoria.* The Labour Department administers the Factories and Shops Acts, the Servants' Registry Offices Acts, the Lifts Regulations Act, and the Footwear Regulations Act.

The Metropolitan area is divided into 17 Districts, and the Country area into 9 Districts, with head-quarters at Bendigo (2 Inspectors), Ballarat, Geelong (2 Inspectors), Warrnambool, Dandenong, Seymour, Maryborough.

There are 31 male and 7 female full-time inspectors, including 2 inspectors of lifts, and 1 inspector of machinery, who control the whole of the State, and 1 inspector who supervises the carters and drivers. No special qualifications are required of inspectors before appointment. The duties of the inspectors are to inspect factories and shops, and to see that the provisions of the Factories and Shops Act and Regulations and Determinations of Wages Boards are complied with.

In the country districts 273 police officers have been appointed as Inspectors of Factories, and receive a gratuity of £6 to £12 per annum, based according to population.

Before a certificate of registration is issued for a factory, approval must be given by the local council, and thus the assistance of the council's officers is obtained.

In special cases the assistance of professional officers of the Public Health Commission is obtained.

(iii) *Queensland.* The Department of Labour administers the "Labour Employees Act of 1915," the "Factories and Shops Acts 1900 to 1922," the "Industrial Arbitration Act of 1916," the "Workers' Accommodation Acts 1915 to 1921," the "Trade Unions Act of 1915," and the "Unemployed Workers' Insurance Act of 1922."

The administrative districts are of two classes, viz.:—(*a*) those under the whole of the provisions of the Acts, and (*b*) those subject to the provisions of the Acts relating to the early closing of shops only. There are 14 whole Act districts and 111 early closing districts. The whole Act districts are as follows:—Brisbane, Bundaberg, Charters Towers, Cairns, Dalby, Gympie, Ispwich, Maryborough, Mackay, Mt. Morgan, Rockhampton, Townsville, Toowoomba, Warwick. The number of inspectors is—Brisbane, 12 male, 3 female; Country Districts, 16 male, 2 female.

There is no prescribed standard of qualifications for inspectors. In addition to being inspectors of factories and shops, these officers are industrial inspectors. In Brisbane the majority of them have some particular trade knowledge, and supervise industrially that trade and allied trades.

Male inspectors inspect all factory and shop premises as to sanitation, ventilation, general cleanliness, and generally as to compliance with the requirements of the Factories and Shops Acts; they also examine wages rolls, time-sheets, etc., in order to satisfy themselves that all awards under "The Industrial Arbitration Act" are being strictly observed. The wages rolls and employees' cards are inspected to insure that the requirements of the Unemployed Workers' Insurance Act are being observed, reports on breaches or irregularities are furnished, prosecutions are conducted, and conferences held with employers regarding disputes, matters of interpretations of awards, etc. Senior country inspectors also act as Labour Agents and administer the Labour Exchanges Act. Female inspectors do practically the same work as male inspectors, but act exclusively in relation to female employment.

In country districts, where there is not a full-time inspector, the local officer in charge of police holds the appointment of Inspector of Factories and Shops, but this applies in early-closing districts only, there being full-time inspectors in all whole-Act districts. Ten inspectors under "The Workers' Accommodation Act" also nominally hold the appointment of Inspector of Factories and Shops and Industrial Inspector.

(iv) *South Australia.* The Factories and Steam Boilers Department administers the following Acts:—The Industrial Code 1920: the Early Closing Acts 1911–1923: the Steam Boilers and Engine-drivers Acts 1911–1923: the Lifts Regulations Acts 1908: the Scaffolding Inspection Act 1908: the Employees Registry Offices Act 1915: the Footwear Regulation Act 1920.

The Industrial Code 1920 is at present applicable to the metropolitan area only, and for departmental convenience this area has been sub-divided into districts.

The Early Closing Acts 1911–1923 are applicable to certain proclaimed districts in the State, and also to the metropolitan shopping district, whose boundaries are the same as those of the metropolitan area. The metropolitan shopping district is also sub-divided for departmental reasons.

The list of inspectors comprises—One Chief Inspector: five male Inspectors of Factories and Steam Boilers: one male Inspector of Factories and Lifts: three male Inspectors of Factories and Shops: two female Inspectors of Factories and Shops: one Inspector of Factories and Shops and Acting Scaffolding Inspector: one Inspector of Scaffolding.

In addition, there is one Inspector of Factories and Steam Boilers resident at Kadina, but this officer acts only as Inspector of Boilers except when he may be required to take some action under the provisions of the Industrial Code 1920.

The duties and qualifications prescribed for Inspectors of Factories and Steam Boilers are as follow:—To inspect, advise necessary repairs, determine the working pressure, and keep records of boilers inspected; to assist steam users in the economical use of steam. Applicants should possess a general mechanical knowledge and sufficient training to be able to advise proper safeguards for machinery, and be competent to examine and report on applications for Enginedrivers' Certificates. The successful applicants must not be more than 40 years of age.

The duties and qualifications of Inspectors of Factories and Shops are:—To inspect non-machinery factories and shops under the provisions of the Industrial Code and Early Closing Acts, and to administer Industrial Court Awards and Industrial Board Determinations. Applicants should possess a reasonable amount of experience of working conditions in factories and shops, considerable tact in dealing with employers and employees, keen observation, and be able to write accurate reports.

The Inspectors of Factories and Steam Boilers are appointed after an examination pursuant to the provisions of the Steam Boilers and Engine-drivers Acts.

Officers administering the Industrial Code 1920 administer all its provisions over which an inspector has jurisdiction, such as the clauses relating to the provisions of the Industrial Court Awards and Industrial Boards Determinations, sanitation, ventilation and lighting of factories, fire appliances and means of egress, safeguarding of machinery, overtime restrictions and working hours of boys and females, and all similar provisions.

The administration of the Early Closing Acts in country districts does not require the services of a whole-time officer, therefore certain Government officials stationed in the district have been appointed registrars and inspectors. The majority of these officials are police officers, while, in the larger districts, the clerks of the local court act as registrars and inspectors.

Where, in the ordinary course of the duty of an inspector, a flagrant breach of the Health Acts is observed, the Health Authorities are advised accordingly.

(v) *Western Australia.* The Department of Labour administers "The Factories and Shops Act," "The Employment Brokers Act," "The Shearers Accommodation Act," and it is probable that "The Inspection of Scaffolding Bill," which at the time of writing was before Parliament, will also be placed under its charge.

All that portion of the State which is north of 26° of South latitude is exempted from the operations of the Factories and Shops Act 1920. The remainder of the State is divided into "Shop Districts," which in some instances comprise Electoral Districts, in others Municipal and Road Districts combined, and in others Road Districts only.

Four male and one female full-time inspectors are at present employed, but it is hoped that two additional male inspectors will be appointed at an early date.

No special qualifications for inspectors are prescribed, but candidates are required to demonstrate, before appointment, that they possess a knowledge of hygiene and sanitation and of the various industrial laws administered by the Department. Two inspectors were appointed as a result of competitive examination, and the others hold either one or more certificates of the Royal Sanitary Institute of Great Britain.

The duties of male inspectors are (*a*) To examine premises or buildings which are used or intended to be used as a factory, and to report on their suitability or otherwise from the points of view of stability, general construction and layout, ventilation, lighting, drainage, general sanitation, fire escapes and fire prevention, and compliance generally with the various requirements of the Factories and Shops Act and of Acts relating to public health; (*b*) To inspect periodically, and report on factories in which male workers are employed, with the object of securing compliance with all the requirements of the laws above referred to; (*c*) To advise and assist occupiers of factories on matters relative to the introduction or adoption of means or methods tending to secure the health and comfort of and improve the efficiency of workers in factories; (*d*) To investigate complaints and enforce compliance with Awards and Industrial Agreements made under the provisions of the "Industrial Arbitration Act 1912" in so far as they apply to factories, shops, and warehouses; (*e*) To inspect shops and warehouses with the object of securing sanitary and hygienic conditions of employment for workers therein; (*f*) To secure compliance with the provisions of "The Employment Brokers Act 1909," "The Shearers Accommodation Act 1917," and "The Footwear Regulation Act"; (*g*) To institute and conduct proceedings in the police courts for offences against any of the Acts administered by the Department.

The duties of the female inspector are similar to those of the male inspector, with the exception that her activities are confined to establishments in which females are employed, and she does not conduct prosecutions.

Assistance in administering the Acts specified is rendered by police officers (principally in country districts), and in a minor degree by sanitary inspectors employed by local Health Authorities.

(vi) *Tasmania.* The Industrial Department is charged with the administration of the following Acts:—The Factories Acts 1910–1917; the Wages Board Act 1920; the Shops Closing Acts 1911–1913; the Footwear Act 1918; the Workers' Compensation Acts 1918–1921.

The Department also conducts Labour Bureaux at Hobart and Launceston.

The State is not divided into districts for administrative purposes, but is administered as a whole. The Department, however, has a branch at Launceston, and towns adjacent thereto are inspected by the officers from that branch.

There are 3 full-time inspectors, namely, 1 senior inspector and 2 inspectors.

There is no standard of qualification required for appointment.

The duties of the inspectors are:—To make examination and inquiry to ascertain whether the provisions of the Factories, Wages Boards, Shops Closing, Footwear, and Workers' Compensation Acts and Regulations thereunder and all Health laws are complied with, and any other duties they may be called upon to perform by the direction of the Chief Inspector of Factories.

The Local Authorities assist in inspecting factories in their municipalities, and members of the police force also enforce the provisions of the Shops Closing Act.

(vii) *Mining Acts.* The Mining Acts in the different States are administered by Departments of Mines, each of which maintains a staff of inspectors.

In New South Wales, the Mine Inspection Act 1901 prescribes that every inspector shall hold a certificate of competency or of service as manager granted under this Act or approved by the board of examiners of managers. The Coal Mines Regulation Act 1912 states "every inspector shall hold a first-class certificate of competency or service, as provided in this Act with regard to managers."

Under the Mine Inspection Act 1901 the subjects of the examination for a certificate of competency for mining manager are as follow:—(*a*) The laying-out and construction of shafts, chambers, main drives or levels, adits, uprises, and stopes; (*b*) The timbering of shafts, adits, main drives or levels, passes, stopes, and generally the system of timbering mines and filling up old workings; (*c*) The ventilation of mines; (*d*) Tapping water in

mines, and the mode of constructing dams in underground workings to keep water back; (*e*) Blasting, and the use of explosives; (*f*) Pumping appliances, and the drainage of mines; (*g*) Haulage in shafts, and on underground planes; also the strength of haulage ropes and chains; (*h*) The effect that faults, slides, and mullock bars have on lodes and how to ascertain the direction of slides and heaves; (*i*) A knowledge of underground surveying, and of making plans of underground workings, showing the dip or inclination and strike of the reef or lodes; (*j*) A knowledge of the different rocks in which gold, silver, copper, zinc-blende, tin, lead, antimony, and precious stones are found; (*k*) Ore dressing, sampling, mill and battery work; (*l*) Arithmetic; (*m*) A knowledge of the Mines Inspection Act 1901 (oral).

Under the Coal Mines Regulation Act 1912 the subjects of the examination for first-class certificates as manager are as follow:—(*a*) Arithmetic, the elementary rules, use of decimals and vulgar fractions, and extraction of square root; (*b*) Surveying and levelling, use and care of dumpy level and theodolite, construction of plans and use of scales, principles and practice of mine surveying; (*c*) Geology, elements of, and knowledge of the coal measures in the candidate's district; (*d*) Machinery, boilers, and other structures in use at coal mines, systems of haulage, pumping and sinking, practical elementary electricity; (*e*) Theory and practice of ventilation, and nature of and properties of gases met with in mines, and of the precautions against danger from the firing of coal-dust; (*f*) The winning and working of coal and shale; (*g*) Knowledge of the Coal Mines Regulation Act 1912 and Amending Acts; (*h*) Knowledge of "First Aid to Injured" in regard to treatment of fracture, arrest of bleeding, restoration of apparently drowned or suffocated, and the proper conveyance of the injured.

23. **International Labour Conference, Geneva.**—(i) *Resolutions.* The following resolutions were passed at the Fifth Session of the International Labour Conference, Geneva, 1923:—

> "That, in view of the complexity of modern industrial processes and machinery, of the character of the executive and administrative functions entrusted to the inspectors in connexion with the application of the law, and of the importance of their relations to employers and workers and employers' and workers' organizations and to the judicial and local authorities, it is essential that the inspectors should in general possess a high standard of technical training and experience, should be persons of good general education, and by their character and abilities be capable of acquiring the confidence of all parties."
>
> "That inspectors on appointment should undergo a period of probation for the purpose of testing their qualifications and training them in their duties, and that their appointment should only be confirmed at the end of that period if they have shown themselves fully qualified for the duties of an inspector."

(ii) *Action taken in Australia.* With the exception of New South Wales, the States of Australia have not enforced standards in accord with the foregoing resolutions.

In 1924 Regulations were issued under the Public Service Act of New South Wales. Mr. W. I. Taylor, Chief Inspector of Factories, and Investigation Officer, New South Wales, in an article "Educational and Technical Status of Inspectors," appearing in *Health* of November, 1924, describes these regulations as follow:—

> "It was decided to reorganize the inspectorate to allow of each inspector being rendered competent to properly perform most, if not all, of the manifold tasks which would confront him in his daily round, proper provisions being made for the appointment, in due course, of experts in certain callings, e.g., chemistry, hygiene, and architecture. Considerable time and thought were devoted to the matter, and eventually regulations were framed and gazetted, comprising a standard, which, if properly followed, must, in a few years, advance factory inspection methods in this State to a standard equal to anything elsewhere.
>
> "To begin with, the cadet system was established, and applicants for appointment as cadets must have passed the Intermediate Certificate Examination, and have completed a term of apprenticeship at an engineering, electrical engineering, or other satisfactory and appropriate trade, or hold the Technical College Certificate in at least one of the above subjects (coupled with workshop experience), or in architecture, building construction, or industrial hygiene. Applicants must

not be more than 23 years of age, and successful applicants are appointed at a commencing salary of £250 per annum. The Intermediate Certificate Examination referred to is that enjoined upon students after three years' work in a Secondary or High School, and embraces Latin, French, English, history, physics, chemistry, business principles, arithmetic, algebra, geometry, and elementary trigonometry, etc.

"It may, therefore, be safely considered that the educational status for even the primary grade of inspectorship is satisfactorily provided for. After gaining this qualification, a full term of apprenticeship at one of the specified trades will provide a technical status, which experience has proved to be absolutely necessary for the work. Alternatively, the Technical College Diploma of this State can only be gained after thorough study and much practical work, and the budding inspector can qualify in one of the professions or trades outlined. Upon this sure foundation he commences his training in the internal practice and procedure of the Department. Later, he will accompany a senior inspector upon his daily rounds, and commence his examination of factory plants and processes. Then he will begin to mingle theory and practice, and will be able to note factory construction and fire prevention, hygiene in all its branches, and to learn something about toxins. If he has embraced that part of the curriculum involving engineering, he will soon be at home in the science of safeguarding machinery, and, if he has trained in one of the professions, he will soon add to such knowledge, by experience, the most efficient methods of rendering the machinery safe to the operatives. By adding experience to his educational status, he will thus more readily become fully competent to advise in problems of industry.

"It will, of course, take time to receive the value of the cadet system, and, meantime, vacancies that may occur must be filled to keep the inspectorate at normal strength, and this contingency is provided for by a further regulation, which provides that no person shall be permanently appointed to the inspectorial staff unless he or she has the qualifications set out hereunder—(*a*) *Male Applicants:* A First or Second Class Board of Trade Marine Engineer's Certificate, or approved Technical College Certificate in Engineering or Electrical Engineering, or satisfactory qualification (by examination) in architecture, chemistry, or industrial hygiene; (*b*) *Female Applicants:* A Technical College Certificate in Industrial Hygiene and Sanitation, or an approved equivalent, and must have had satisfactory experience in factory organization and management or welfare work.

"The commencing salary of an inspector shall be—Males (other than cadets), £342 16s. 6d. per annum; Females, £240 per annum.

Exception may be made in the case of appointments requiring special technical qualifications, or of an officer transferred from another Department of the Service.

"Here, again, will be noted the opportunity to select, as circumstances warrant, suitable males trained in the specified profession or trades. Holding closely to the principle, and for the reasons hereinbefore stated, that training in the engineering sections provides the best material to work upon, it will be possible to recruit the staff from persons skilled in such trades. Educational advantages, personality, and intelligence will, of course, be necessary adjuncts, and these qualifications, plus the technical knowledge, will clothe an applicant with a status which can be amplified steadily in the training process which will follow appointment. The new appointee's initial training will follow the lines indicated for cadet inspectors. Having assimilated departmental indoor practices, he will commence inspection work in company with a senior inspector, and, later, when considered competent, he will be given charge of a factory district.

"Similar opportunity is provided to appoint a male officer qualified in architecture, chemistry, or industrial hygiene. In the nature of things, such appointment would be for special work, and such appointee would be available to assist other inspectors in the particular professions in which he had qualified. Conversely, when not engaged upon special work, he would have opportunity of acquiring knowledge in the phases of inspection work with which he was not conversant, the aim being, as stated, to have each inspector trained, as nearly as possible, to an all-round standard.

"The duties of female inspectors are similar to those of male officers, save with respect to machinery and requirements in building construction, with which they have no vital concern, save to report to the male officer for the district any obvious non-conformity with the Act. The number of female officers is limited, but additional female officers appointed must have satisfactory educational and technical qualifications.

"Both male and female appointees are required, after serving about two years in the inspectorate, to pass a departmental examination before progressing beyond a certain salary point, and such examination is directly applicable to their every-day work.

"Before senior rank can be attained, a severe higher grades' examination must be passed by males in the subjects of industrial hygiene, building practice, mechanics, machine construction and drawing, economics (Clay), and the modern factory (Price). Females are also required to pass an additional examination in departmental practice and procedure. Obtaining senior rank entitles a male inspector to proceed beyond a salary of £432, and a female inspector beyond £330. No further restrictions are imposed, and inspectors may proceed to salaries allotted by either the Salaries Committees or the Public Service Board.

"The work of the inspectors is overlooked by superintending inspectors, of whom there are two, one principally employed "inside" and the other "outside," the office. By these means a complete oversight is established, and assistance rendered, where necessary, to allow the inspectorate being, in every sense, composite and self-contained."

§ 4. Health Measures Provided by Employers.

1. **Need for Industrial Medical Services.**—It has been proved that on every working day of the year at least 2 per cent. of the workers are absent through sickness, a large proportion of which is due to preventable causes. This sickness is responsible, therefore, for a substantial overhead charge in all industrial establishments. For example, the salary list for permanent Commonwealth Government officers for the financial year ended 30th June, 1923, amounted to nearly £6,000,000; of this sum no less than £132,000 represented payment for sick leave. There are, therefore, sound national reasons why industry should bear its share in raising the country's standard of health, and industrial medical service affords a way without undue meddling or interference with individual rights, or restrictions of liberty. There are, of course, many influential factors causing ill health that cannot be controlled within the place of work, but it is well within the powers of employers to insure a high standard of health within their own organization.

2. **Provision of Medical Service by Employers.**—(i) *General.* Employers are compelled under the various labour laws to comply with certain specified hygienic standards for working conditions. Inspection of the larger industrial establishments in Australia proves that the managements fully realize their responsibilities in this direction, and in numerous instances the standards observed are far superior to those required by the law. Further than this, in increasing numbers Australian employers are providing medical service to their employees, believing that the health, comfort, and contentment of the worker are vital factors in production, and in the development of a stable, efficient, working force. They recognize that the prevention of sickness and accidents is good business management, since workers physically or mentally below par cannot be expected to yield full value for a full day's wage.

In 1922–23, only 660 out of the 19,173 factories in Australia—or 3.4 per cent.—engaged over 100 hands, but in these 660 factories 169,867 persons, or 41 per cent. out of a total of 412,410 were employed. It follows, therefore, that if every establishment engaging over 100 hands instituted a system of medical service, two-fifths of the persons employed in factories would be kept under surveillance.

(ii) *Response to Questionnaire forwarded by Commonwealth Health Department.* In October, 1924, a questionnaire was addressed by the Commonwealth Department of Health to the larger employers of labour throughout Australia asking for particulars regarding their systems of medical service, if any, for the benefit of their employees.

From the replies received, and other sources of information, it would appear that the position in Australia with respect to this matter at the beginning of 1925 was as follows :—

The full-time services of 8 physicians are engaged by 5 establishments, a department store employing 1, a government railways 1, another government railways 3, a water supply and sewerage board 1, and the Commonwealth Government 2 (1 in Melbourne and 1 in Sydney).

Thirty other establishments engage physicians to attend at their institutions at certain fixed times during the day. These establishments comprise the following :— 2 water supply and sewerage boards ; 4 biscuit or confectionery factories ; a clothing factory ; 3 department stores ; 2 gas companies ; 2 lead works ; a meat works ; 2 mining companies ; a motor-body building works ; a newspaper office ; a photographic supplies factory ; 3 government railways ; 2 rubber works ; 3 municipal tramways ; a refining and smelting company, and a cordite factory.

Thirty-three establishments employ full-time nurses, 23 of these being fully-trained female nurses. Seventeen of these establishments also engage full-time or part-time physicians, and are included in the above ; the 16 organizations that have a nurse only comprise a boot factory, a clothing factory, a match factory, a motor-body building works, a piano-maker, 2 printing works, 2 tobacco factories, a timber company, a gas company, a department store, a woollen mills, 2 banks and an insurance company.

The duties of the physicians included one or more of the following :—The physical examination of applicants for employment, 14 establishments ; periodical examination of employees, 7 establishments ; hygienic supervision of working places, 10 establishments ; lectures on first aid, 5 establishments ; treatment of sickness and accident, 23 establishments. The duties of the nurses comprised one or more of the following :—The treatment of sickness and accident, 32 establishments ; the keeping of statistical records of sickness and accident, 5 establishments ; interviewing applicants for employment, 2 establishments ; sanitary inspection, 2 establishments ; recommendations re dentists, hospitals, etc., 1 establishment ; permits to employees for relief of duties on account of sickness, 1 establishment ; other duties, such as librarian, etc., 3 establishments.

Forty-two additional establishments employ persons qualified in first aid.

Eighteen establishments provide both an ambulance room and a dispensary. An " ambulance room " may be defined as a special room where immediate treatment of injuries may be obtained, and a " dispensary " a room where the usual remedies are kept for medical cases. These establishments include 3 biscuit or confectionery factories, a boot factory, a bank, 2 clothing factories, 4 department stores, a match factory, 2 motor-body building works, 3 railways, and a spinning mill.

Forty establishments provide an ambulance room. These include 3 biscuit or confectionery factories, 2 cement works, a chemical works, a manufacturing chemist, a department store, an electric supply company, 7 engineering works, 2 gas companies, a felt hat maker, a lead-works, a match factory, 2 meat works, 6 mining companies, a paper and pulp mill, a photographic supplies factory, a printing works, a railway, 2 rubber factories, 2 smelting and refining works, a timber company, and 2 tobacco factories.

The following five establishments provide a dispensary :—A manufacturing chemist, an insurance company, a printing works, a soap and glycerine factory, and a timber and joinery works.

Two department stores and a railway provide both a house ward and a rest room. By " house ward " is meant a special room in which one or more beds are provided for the use of employees in cases of sickness, and by " rest room " a room containing simply arm-chairs, with perhaps a sofa or lounge.

Fifty-three other establishments provide rest rooms.

Six companies—a boot factory, a cement company, 2 department stores, a smelting and refining works, and a timber company—arrange for the care of their employees during convalescence from illness.

§ 5. Education in Industrial Hygiene.

1. **General.**—The importance of industrial hygiene in the field of preventive medicine has not yet received recognition in the medical schools of Australia. The subject is practically ignored in the ordinary curricula, and facilities are not available for post-graduate work.

2. **New South Wales.**—The Department of Sanitation and Hygiene, Technical Education Branch, Department of Education, New South Wales, offers courses of training in Industrial Hygiene to meet the requirements of factory inspectors, welfare workers, or supervisors and others engaged in cognate work. The classes are also available to students who desire to study any of the special subjects dealt with.

The following course can be completed within one year by those who wish to qualify as "Factory Inspector":—Practical Sanitation: Sanitary Law: Industrial Hygiene (First Term); Safety First (second term): Machine Fencing (third term): Construction and Drawing for Sanitary Inspectors, or 1st Year Building Construction and Drawing.

The subjects dealt with under the heading Industrial Hygiene are as follow:—The history and rise of industrial hygiene; its scope; conditions of health and work: Effect of industrial revolution on distribution, increase, and health of population: Factory history; types of modern factories; sites; ventilation; recent research on harmful effects of stagnant air; high temperature and humidity; perflation—natural and mechanical: Industrial physiology—the human machine; industrial activity and fatigue in relation to health; rhythm in industry; overtime; overwork; output; rest; day and night work; the workers; women in industry; child labour: Personal hygiene—standards for toilet; drinking and washing facilities; disposal of factory wastes; clothing; care of teeth and skin: Occupational diseases—dusty trades; silicosis; pneumoconiosis; tuberculosis problem: Causation and prevention of industrial accidents; the personal factor in accident causation; relation to age, sex, ignorance, over-crowding, poor illumination, physical unfitness, unsuitable clothing, defective machinery and structures, monotony of work: Organization for safety; safety committees; the duty of the employer and employee; safety devices for the worker: Nurses; welfare supervisors: Sociology of industry; baths; restaurants; recreational activities; community and home conditions; reclaiming the cripples of industry: Review of occupational legislation; maternal mortality; infant mortality; organization of health and community centres; health propaganda: First aid and ambulance work (one term): Safety First and machine fencing (one term).

The course of instruction on Safety First is as follows:—

I. *General.*—Meaning and object. Origin. Grades of accidents: Statistics and work done in U.S.A. and England: Cause of accidents; carelessness, ignorance, noise, unsuitable clothing, unsuitable light, want of mechanical guards, temperament, fatigue: Responsibility for an accident generally complex: Prevention of accidents; education: Accidents in homes: Cost of an accident to employer and country: Factory and traffic inspectors: Workmen's Compensation Acts: Objections raised to Safety First.

II. *Travelling.*—Pedestrian: Vehicular: Rules of the road; turns, limited view ahead, pay attention to signals and signs, look where going, be vigilant at all times: Horse vehicles; harness and gear in good order, securing horse when left, brakes, locking wheels: Trams; getting on and off while in motion or on wrong side, crossing legs, luggage in passage way: Railways; doors insecurely fastened or left open, luggage badly piled: Motor-cars and bicycles; speed limit, ease up at crossings, railway gates: Water; learn to swim and rescue from drowning, nets under gangways, beware of open hatches, sufficient life belts on boat and learn how to adjust them: Lifts; doors, locks, signals, non-slip at entrance, side protection.

III. *Handling and Transport.*—Lifting weights by hand: Cranes; factor of safety, jib, overhead, warning of danger: Tackle; ropes, sockets, hooks, pulleys: Roads; grades, curves, culverts, bridges; Stacking goods: elbow room: Packing on vehicles and making them secure; overloading.

IV. *Construction.*—Correct use of tools: Ladders: Scaffoldings: Design: Stairs: Wrecking.

V. *Illumination.*—The eye: Kinds of Light; natural and artificial (fixed and portable), infra red, ultra violet: Glasses; glare; reflected light: Quantity of light; candle power, foot candle: Distribution of light; direction of light, diffusion, shades, blinds.

VI. *Fires.*—Bush, buildings, ships, mines, various (sawdust, coal-heaps, oil-tanks): Causes of; smoking, live matches, sparks from engines, ignition of escape of gas or some inflammable substance, short circuiting of electric wires, stacking rubbish against buildings: Fire alarms: Fire escapes; fire doors, fire-proof buildings: Means of extinguishing fires; water, earth, foamite, fire extinguishers, sprinklers.

3. **United States of America.**—All the medical schools in the United States of America which have courses in hygiene and public health give 8 to 10 lectures dealing with industrial hygiene and the more dangerous occupations. In 1918, Harvard University, the first institution in the world to do so, established a course of instruction and research leading to degrees in industrial hygiene. The courses leading to the Certificate of Public Health in Industrial Hygiene include :—Applied physiology of industry; methods of air-analysis; industrial toxicology; vital statistics; industrial sanitation; preventive medicine and hygiene; industrial health administration; employment management; workmen's compensation and the legal aspects of industrial disease; nutrition; industrial surgery and medicine; orthopædic surgery. For the degree of Doctor of Public Health in Industrial Hygiene a second year must be devoted to an investigation into some phase of industrial health. An Occupational Disease Clinic has been established at the Massachusetts General Hospital, and is available to the students of industrial medicine.

4. **Europe.**—(i) *Germany.* In Europe industrial museums of safety have been established in 22 cities. The Charlottenburg Museum (Berlin) is a typical example. Safety appliances for machinery, and appliances for the removal of dusts and injurious gases are shown in practical operation. The latest methods for diminishing the risks to health in the more dangerous occupations are illustrated by models and descriptive tests. The latest and best types of respirators, wire masks, goggles, first-aid kits, rescue appliances, etc., are on view. Special lectures and demonstrations are given on Sundays or by request at any convenient time to those interested.

(ii) *Italy.* In 1910 an Occupational Disease Clinic was established in Milan for the following purposes :—To study scientifically the causes of occupational diseases and to spread its clinical knowledge among physicians; to gather in the clinic all workmen apparently or decidedly affected by occupational diseases, whether in incipient or advanced stage, for the purpose of diagnostical and therapeutical experiments, and to examine systematically the health conditions of workmen engaged in industries of all kinds, and especially those working in unhygienic occupations.

(iii) *The European Universities.* Several of the European Universities have established laboratories for the development of experimental hygiene, and certain of the more important cities offer courses for industrial physicians and factory inspectors.

5. **The Need for Development in Australia.**—Australia might with advantage follow the examples set by the countries referred to, and introduce courses of study in the subject of industrial hygiene, not only for the medical student, but for the graduate in medicine. This could be done as part of a comprehensive system of public health training at a School of Public Health attached to each of the existing medical schools.