

SECTION XXX.

PUBLIC HYGIENE.

§ 1. Introduction.

1. **General.**—Though the safeguarding of the public health as an organised department of administration is of comparatively modern growth, few branches of law have expanded more rapidly than the law relating to public health. The loss of potential wealth incurred through preventable diseases and deaths is of grave concern to the nation, and is a matter which has recently received an increased amount of attention both from the Commonwealth and State Governments and from the Health and other authorities in Australia. Numerous Acts of Parliament have been passed dealing with various aspects of the subject of public hygiene.

2. **State Legislation.**—In the first place there is a number of statutes, passed by the State Legislatures, such as Public Health Acts, Pure Food Acts, and Milk and Dairy Supervision Acts, providing, *inter alia*, for the constitution of Central Health Authorities, vested with definite powers, and furnishing the machinery necessary to enforce these powers. The general effect of this legislation has been to place local sanitary regulations and the execution of the Acts in the hands of the local authorities, subject to a general superintendence by a Government department.

3. **Commonwealth Legislation.**—Secondly, by the enactment of the Commerce (Trade Descriptions) Act 1905, the Quarantine Act 1908, and the Customs Act 1910, the Commonwealth Government has taken the first steps towards the exercise of its constitutional powers for the protection of the public health. All these Acts are administered by the Department of Trade and Customs.

4. **Scope of Enquiry.**—In addition to the statutes already referred to, account should be taken of a large body of legislation which relates more or less indirectly to the subject of public hygiene. It deals with a great variety of subjects and matters, such as factories, conditions of employment, mines, merchant shipping, prevention of fire, buildings, dangerous performances, contagious diseases, and other matters. There is also a number of statutes which have been passed with the object of protecting and supervising infant life. Owing to exigencies of space it is not possible in this section to do more than give a brief description of the scope and results of the legislation relating to public hygiene in its more important aspects.

§ 2. The Public Health Acts.

1. **General.**—The most important statutes relating generally to the subject of public hygiene are the Health Acts which have been passed in each State. While the scope of these Acts differs considerably in some of the States, there is a general similarity in their chief provisions and range of operation. The administration of the Acts is carried on by either a Central Board or a Commissioner of Health under Ministerial control, while their actual execution is imposed on local Boards of Health or on the local authorities.

constituted under the various Local Government Acts. Ordinarily the Central authority has general supervisory powers over local Boards and authorities, and also has power to act in case of default by or in the absence of a local Board or authority as to any duty under the Act, and to recover all expenses incurred. The Central authority may also make regulations, and the central and local Boards may make by-laws for various purposes generally specified in the Health Acts. Generally it may be said that the chief functions of the Central Health authorities are:—(a) the collection and dissemination of useful information relating to health and the prevention of disease, and (b) to control, stimulate, and, where necessary, to supplement the efforts of the local authorities.

Inspectors are sent to make reports on the hygienic conditions of country towns or districts with a view to assisting the local authorities with advice, and keeping the central department posted as to the activity or otherwise of these various bodies.

Rating powers for sanitary purposes are conferred on local authorities by the Local Government Acts.

The general powers of local authorities under the Acts extend to a variety of subjects and matters, including:—sewers and drains, sanitary conveniences, scavenging, cleansing, privies and cesspools, abatement of nuisances generally, offensive trades, public buildings, dwelling-houses and lodging-houses, hospitals, mortuaries, cemeteries and burial grounds, prevention of adulteration of food and drugs, unsound food, pollution of water, supervision of abattoirs and dairies, prevention of infectious diseases, and infant life protection.

2. New South Wales.—The Department of Public Health consists of a Permanent Head, Board and Secretary, together with the various staffs—medical, chemical and clerical; in addition there are five sanitary inspectors working under the medical officers of health and the chief sanitary inspector. The business carried on by the Department embraces public health and the general medical work of the Government. The Board is nominee; it was created in 1881, incorporated in 1894, and is charged with the administration of the following Acts:—Public Health Act 1902, Public Health (Nightsoil Removal) Act 1902, Dairies' Supervision Act 1901, Noxious Trades Act 1902, Cattle Slaughtering and Diseased Animals and Meat Act 1902, Sydney Abattoirs, etc. Act 1902, Quarantine Act 1897, Pure Food Act 1908, and Private Hospitals Act 1908. The Board also possesses advisory powers under the Local Government Act 1906.

3. Victoria.—In this State the Public Health Acts are administered by a Board composed of two members nominated by the Governor-in-Council and of seven members elected by the municipal councils. The medical and sanitary staffs of the Board consist of (a) the medical inspector, who is also chairman, (b) two assistant medical inspectors, (c) five port health officers, (d) five engineering inspectors, (e) one sanitary inspector, and (f) nine food inspectors. The main function of the Board 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 inspections as to the sanitary condition of various districts and the sampling of articles of food. The supervision of the sanitary condition of the milk supply is under the Dairy Supervision Branch of the Department of Agriculture. Acts administered by the Department of Public Health are:—The Health Act 1890, the Cemeteries Act 1890, the Cremation Act 1903, the Adulteration of Wine Act 1905, the Meat Supervision Acts 1900 and 1909, and the Pure Food Act 1905.

4. Queensland.—In this State a Department of Public Health was organised in 1901 under the authority of the Health Act 1900. Prior to that time a central authority—the Board of Health—existed, but was without legal power, and the responsibility of sanitary administration was thrown upon the local authorities. The Act of 1900 consolidated and amended prior health legislation and provided for the appointment of a Commissioner of Public Health, charged, under the Home Secretary, with the administration of the Act. The chief functions of the central authority are to advise and stimulate the local authorities on matters pertaining to the Act, and also, where necessary,

to compel the remedying of sanitary evils produced by local inefficiency or apathy. The production and sale of milk and the manufacture, sale, and export of dairy produce, in their hygienic aspects, are controlled by the Department of Agriculture and Stock under the Dairy Produce Acts 1904, 1905, and 1910.

5. **South Australia.**—The Central Board of Health in South Australia consists of five members, three of whom (including the chairman) 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 provides that the municipal and district councils are to act as local Boards of Health for their respective districts. There are 175 of these local Boards under the general control and supervision of the Central Board. A chief inspector periodically visits the local districts and sees 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), and a chief inspector of cattle, and there are nine other inspectors in outlying districts who are directly responsible to the Central Board.

6. **Western Australia.**—In this State the Health Act, 1911—which amended and consolidated the preceding Health Acts of 1898, 1900, 1902, 1904 and 1909—now operates as from 1st June of that year. By this Act the principal authority (under the Minister), the Commissioner of Public Health, who must be a duly qualified medical officer, possesses full power to act as he may deem necessary in relation to any matter concerning public health, and has authority to appoint persons to assist him in carrying out the provisions of the Act. Every municipal district becomes a health district within the meaning of the Act, and the municipal councils thereof become the local health authorities. Each local authority is bound to carry out, within its district, the provisions of the Act. Local Boards of Health must not exceed seven members, who are appointed by the Governor for a term of three years, and are eligible for reappointment. A majority of the members (who must appoint one of their number as chairman), shall form a quorum, and all matters are decided by a majority of the members present, the chairman, in cases of an equality of votes, having a casting one.

7. **Tasmania.**—In this State a Department of Public Health, under the control of a Chief Health Officer, was constituted by the Public Health Act 1903. The department has one inspector, but district health officers are not provided for. The number of local authorities under the Public Health Act has been reduced to fifty-one since the Local Government Act 1906 came into force. All parts of Tasmania are now furnished with the administrative machinery for local sanitary government.

§ 3. Inspection and Sale of Food and Drugs.

1. **Introduction.**—The importance of securing a pure and wholesome supply of food and drugs is recognised by both the Commonwealth and State Parliaments. 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.

(i.) *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 Commerce (Trade Descriptions) Act, 1905, and the Customs Act, 1910, to which reference has already been made in another part of this book (see pp. 599-600), were passed.

(ii.) *State Jurisdiction.* The inspection and sale of food and drugs is also dealt with in each State either under the Health Acts or under Pure Food Acts. There is, in addition, in the several States, a number of Acts dealing with special matters, such as the adulteration of wine and the supervision of meat. The sanitary condition of the milk supply is also subject to special regulations or to the provisions of special Acts; this subject is more particularly referred to in the next succeeding sub-section hereof.

(a) *General Objects of Acts.* The general objects of the Acts dealing with the inspection and sale of food and drugs are to secure the wholesomeness, cleanliness, and freedom from contamination or adulteration of any food, drug, or article, and for securing 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 are the mixing or selling of food or drugs so as to be injurious to health.

(b) *Inspection and Analysis.* Power is given to any authorised officer to enter any place for the purpose of inspecting any article intended to be used as a food or drug and also to inspect articles being conveyed through the streets, by water or by rail. He may take samples for examination or analysis, and may seize for destruction articles which are injurious to health or unwholesome. Chemical analyses and bacteriological examinations are made by qualified officers. Special provision is generally made in the Acts with regard to the sale of preservatives and disinfectants.

(c) *Advisory Committees.* In New South Wales, Victoria, and South Australia 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, but it is stated that up to the present comparatively few of the local councils seem to have realised the importance of guarding the food supplies of the people.

2. **New South Wales.**—Provisions as to the sale of food and drugs in New South Wales are contained in the Pure Food Act 1908 and in the regulations made thereunder. The administration and enforcement of these provisions are primarily duties of the Board of Health, but may, by direction of the Governor, be left to local authorities. Analyses are made by the Department of Public Health free of charge.

(i.) *Special Provisions.* The Act contains a number of special provisions. Drugs must comply with tests specified in the British Pharmacopœia, and packages of food must be labelled with description, weight, or measure of their contents. The advertising or sale of any injurious or useless food, drug, or appliance may be prohibited, as also may the sale of any substance as a disinfectant or preservative. A person selling prohibited articles may not be liable to penalties under the Act if he prove that he purchased such articles with a guarantee in writing that they were not adulterated or falsely described, that he had no reason to believe that the same were adulterated or falsely described, and that he sold them in the same state as when he purchased them. The person giving the guarantee must be a resident in New South Wales, or, if a company, must have a registered office in New South Wales. The Board of Health may require the council of any local authority to submit for analysis during each year not less than three samples of foods or drugs for each thousand persons of the population of its area.

(ii.) *The Advisory Committee.* The Pure Food Act 1908 provides for the constitution of an Advisory Committee on whose recommendation the Board of Public Health may make regulations prescribing food standards, prohibiting the manufacture or sale of food, or the use of appliances containing any specified substances, and for generally carrying out the purposes of the Act.

3. **Victoria.**—In this State the prevention of the adulteration of food and of the sale of unwholesome food are provided for by the Health Act 1890, as amended by the Adulteration of Wine Act 1900 and the Pure Food Act 1905 and regulations made thereunder. While differing considerably in detail, the general provisions of these Acts are in many respects similar to those of the New South Wales Act of 1908. The Meat Supervision Acts 1900 and 1909 specially deal with the supervision of the slaughtering of animals and the sale of meat in Victoria. The Pure Food Act provides, *inter alia*, for the establishment of a specially qualified Foods Standard Committee charged with the functions of formulating standards of purity, quality, and composition for articles of food and drugs. Various regulations as to both food and drugs have been made by this Committee. The Act requires explicit labelling of packages, and provides for the punishment, where possible, of the actual adulterator. The retail vendor is not penalised if it is clear that he has no guilty knowledge, and that he has taken reasonable precautions against committing an offence. A warranty or invoice may be available as a defence to any proceedings under the Acts, but if given by a person resident outside the State the defendant must prove that he had taken reasonable grounds to ascertain and did in fact believe in the accuracy of the statements contained in the warranty or invoice.

4. **Queensland.**—By Part VI. of the Health Act 1900 and by regulations made thereunder, provision is made for the inspection of food, and for the supervision of the sale of food and drugs by local authorities. The inspection and examination of food stuffs has, however, been almost entirely undertaken by the Department of Public Health, and it appears that very few of the local authorities make any attempt to carry into execution the provisions of the Health Act relating to food. Considerable activity was shewn by the Department during the year 1908-9 in carrying out a pure-food crusade, both in Brisbane and in provincial towns. Seventy prosecutions were carried through the courts in accordance with the food sections of the Act of 1900, and in sixty-three cases, fines were inflicted. During the year 1910-11 twenty-five prosecutions were undertaken and fines were imposed in every case. In any prosecution for selling adulterated food or drugs no person may be convicted if he prove that he did not know of the adulteration, and that he could not, with reasonable diligence, have obtained that knowledge. It is also open to a defendant to prove that he purchased the goods with a written warranty from some responsible person carrying on business in Queensland.

5. **South Australia.**—The inspection and sale of food and drugs is now chiefly contained in the Food and Drugs Act 1908, and in the regulations made thereunder; certain special matters, such as water and meat supplies, are dealt with in Part VII. of the Health Act 1898. An important provision of the Food and Drugs Act is the constitution of the metropolitan area as a single district, so that the sale of food and drugs generally, as well as the inspection and supervision of dairy premises and cattle in the metropolis, is under the control of one central body—the Metropolitan County Board. Another important provision of the Food and Drugs Act is the appointment of an Advisory Committee to fix standards of foods and drugs, and to draw up necessary regulations. In addition to dealing with the supervision of the milk supply and dairies, the Act provides for the inspection and analysis of foods, drugs, chemicals, spirituous liquors, patent medicines, and proprietary articles, for the inspection and examination of all animals offered for sale or slaughter, and for the licensing of ice cream and aerated waters manufacturers. A warranty given by a person resident in South Australia is available as a defence to any proceeding under the Act, if the defendant prove that he bought the article in the same state as sold. Proof of absence of knowledge of adulteration is a sufficient defence if the defendant could not by analysis or other adequate test have obtained that knowledge.

6. **Western Australia.**—The adulteration of food and unwholesome food is now dealt with under Part VIII. of the Health Act 1911. Each local authority (now constituted by this Act the local health authority) may, and when required by the Commissioner of Health must, appoint its own analyst, inspectors, and other officers necessary

to carry out the provisions of the Act. Under the previous Health Act of 1898, fairly systematic inspection of various articles of food was carried on within municipal districts, the samples submitted for analysis consisting chiefly of milk, and it was found that the effective supervision of imported tinned meats requires constant attention. Inspection of alcoholic beverages is carried out by spirit inspectors appointed under the Licensing Acts.

7. Tasmania.—Though provision existed under the Public Health Act 1903 for the inspection and supervision of food and drugs, it would appear that prior to 1911 no systematic attempt at enforcement of food purity was made in Tasmania. The statutory powers which existed under the 1903 Act left these matters wholly in the hands of local authorities, and the Department of Public Health had no power to take samples for examination or analysis. In any action under that Act a defendant had to be discharged if he could prove absence of knowledge or that he bought the article in the same state as sold, and with a warranty. Under the Food and Drugs Act 1910, which came into force on the 1st of March, 1911, food and drug regulations are now placed under control of the Department of Public Health. The Act authorises the appointment of inspectors of food and drugs acting under the Chief Health Officer, or in the case of an inspector being a member of the police force, then under the Commissioner of Police, and any local authority may, and when called upon by the Chief Health Officer must, appoint food and drug inspectors. Prosecutions have already taken place under this Act, but it is stated that its efficacy is likely to be seriously minimised by the lightness of the penalties imposed.

8. Food and Drug Standardisation.—With the object of securing uniformity of food and drug standards of the principal manufactured products sold in the Commonwealth, a conference, which was attended by representatives of the Commonwealth and all the individual States except Western Australia, was opened in Sydney on 8th June, 1910. The result of this conference was that several adoptions of standards of food and drugs, and labelling of articles for consumption were made, so as to obtain uniformity in the several States. The recommendations of the conference deal with a variety of matters and are too lengthy for inclusion in this publication. Among the most important may be mentioned the following:—(a) The addition to articles of food of preservative substances, being other than common salt, sugar, spice, wood-smoke, vinegar, and acetic acid, should be prohibited as far as possible, and should be permitted only in minimum proportions. (b) The addition to any form of milk of any preservative (except sugar) should be prohibited. (c) The addition of foreign or artificial colourings or flavourings should be avoided as far as possible, and when permitted should be declared.

§ 4. Milk Supply and Dairy Supervision.

1. Introduction.—Milk is pre-eminently the food which needs most careful protection at each successive stage of its production, carriage, storage, and delivery, from exposure to infection from extraneous matter. The problem of obtaining a pure and clean milk supply has accordingly, during the last few years, demanded an increasing amount of attention from the Health authorities, and in each State special laws and regulations have been passed governing the supervision of dairy farms and dairies.

(i.) *General Provisions of Acts and Regulations.* In general, it may be said that it is not lawful to sell or offer for sale any milk which is not fresh or wholesome, or which has been watered, adulterated, reduced, or changed in any respect by the addition of water or any other substance, or by the removal of cream. Regulations made under the Acts provide for the carrying-on of dairy farms, dairies, factories, and creameries, under proper and wholesome conditions; and supervisors and inspectors are appointed to enforce these provisions. Generally, the execution and enforcement of the Acts is left to the local authorities.

(ii.) *Registration of Dairymen and Milk Vendors.* Dairymen, milk vendors, and dairy-factory or creamery proprietors are required, under penalty, to be registered. In some States registrations must be applied for before commencing to trade; in other States they must be applied for within a specified time after the premises are first used.

(iii.) *Inspection of Premises.* Dairy inspectors employed by the central departments traverse the principal dairying districts, and inspect dairy premises, dairy herds, appliances, and utensils, and ascertain in what fashion the various local authorities carry out the duties imposed on them. Regulations and instructions are issued by the central departments for the information and guidance of local authorities, dairymen, milk vendors, and others, as to precautions to be observed in order to protect milk from contamination, and to ensure cleanliness as to the structural arrangements, dimensions and ventilation of premises, and as to the care and health of dairy cattle. If an inspector is satisfied that any premises or apparatus used therein are unclean, or unfit for the purposes of dairy produce, he may require the owner to put the same in a proper and wholesome condition.

(iv.) *Notification of Diseases.* Every dairyman or milk vendor is required to report immediately any case of certain prescribed infectious diseases occurring in any human being engaged at or residing on his premises. It is the duty of the local authority to take care that communication between all persons belonging to the infected household and the milk business in all its details is prevented. Cases of notifiable diseases occurring in animals at a dairy farm or dairy must also be reported immediately, and the owner must at once isolate the diseased animal. The sale of milk from an infected cow is prohibited, and, under certain circumstances, an inspector may order an infected animal to be branded or destroyed.

(v.) *Analysis of Dairy Produce.* The local authority generally has power to enter premises and to take away samples of the milk, cream, butter, or cheese there found, and of the water supply therein, for the purpose of examination or analysis.

2. Number of Dairy Premises Registered.—The following table shews the number of dairy premises registered and the number of cattle thereon in each State during the year 1910-11:—

NUMBER OF DAIRY PREMISES REGISTERED AND CATTLE THEREON, 1910-11.

Particulars.	N.S.W.	Victoria.*	Q'land.	S. Aust.*	W. Aust.	Tas.
Premises registered ...	20,604	11,581	11,276	244	481	654
Cattle thereon ...	854,452	97,623	289,868	2,137	6,610	†

* Figures are for year 1909-10. † Not available.

3. New South Wales.—The provisions of the Dairies Supervision Act 1901 extend to the whole of the Eastern and Central Divisions of this State 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 dairymen, 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. Registrations must be applied for before commencing to trade and must be renewed annually.

4. Victoria.—The inspection and supervision in Victoria of dairies, dairy farms, dairy produce, milk stores, milk shops, milk vessels, dairy cattle, and grazing grounds are provided for by the Milk and Dairy Supervision Act 1905, administered by the Minister of Agriculture. Under the Health Act 1890 and the Pure Food Act 1905, 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. By

the end of the year 1909, eighty-seven municipal districts, comprising about one-sixth of the area of the State, had been brought under the operation of the Milk and Dairy Supervision Act. The municipal councils have the option of carrying out the execution of the Act themselves or of electing for execution by the Department of Agriculture; up to the present all the municipalities in which the Act has been proclaimed have elected for Departmental execution.

5. **Queensland.**—The control and supervision of the milk supply and of dairies and the manufacture, sale, and export of dairy produce in Queensland are provided for by the Dairy Produce Acts 1904 and 1905, administered by the Department of Agriculture and Stock. These Acts and the regulations made thereunder apply only to prescribed districts, which comprise the whole of the coastal district from Rockhampton down to the New South Wales border and the Darling Downs, Maranoa, and Cairns districts.

6. **South Australia.**—The licensing and registration of dairies, milk stores, and milk shops, and the licensing of milk vendors are now provided for by the Food and Drugs Act 1908, which came into force on the 1st June, 1909. Regulations for registration under this Act were in course of preparation in April, 1910, and it is understood that in many cases the local authorities have held over registration pending the issue of such regulations. Reference has already been made (see § 3, 5 hereof) to the constitution of the Metropolitan County Board.

7. **Western Australia.**—In this State the inspection of dairy herds is under the control of the Department of Agriculture, while the supervision of dairy premises and of subsequent stages in the milk supply is carried out by the Health authorities. At the commencement of the year 1908 a campaign was instituted towards the elimination from dairy herds of tubercular cattle. This campaign took the form of the application to all the animals in each herd of the tuberculin tests and the isolation and slaughter of all re-acting animals.

8. **Tasmania.**—Under the Public Health Act 1903 it was the duty of local authorities to regulate the hygienic conditions of milk production and milk supply, and regulations dealing with milk, cream, and butter standards have been prescribed. Comprehensive by-laws for the registration and regulation of dairymen's premises existed in many districts, but outside the cities and a few towns it would appear that these were seldom enforced. These matters are now governed by the Food and Drugs Act 1910, which came into force on 1st March, 1911.

§ 5. Prevention of Infectious and Contagious Diseases.

1. **General.**—The provisions of the various Acts as to precautions against the spread and the compulsory notification of infectious diseases may be conveniently dealt with under the headings—(a) Quarantine; (b) Notifiable Diseases; and (c) Vaccination.

2. **Quarantine.**¹—Under the Commonwealth Quarantine Act 1908, the systems of State quarantine formerly in operation were abolished, and a branch of the Department of Trade and Customs, under the immediate control of a Director of Quarantine, was created on 1st July, 1909. As far as is at present practicable uniformity of procedure has been established throughout the Commonwealth in respect of all vessels, persons, and goods arriving from overseas 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 interstate 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 interstate quarantine of animals and plants is left in the hands of the States.

(i.) *Transfer of Quarantine Stations.* The transfer from the States to the Commonwealth of the quarantine stations, for the purposes of human quarantine, at the following places has been effected:—(a) *New South Wales.* North Head (near Sydney). (b) *Victoria.* Point Nepean (near Melbourne). (c) *Queensland.* Magnetic Island (near

1. From information furnished by W. P. Norris, Esq., M.D., D.P.H., Federal Director of Quarantine.

Townsville) and Thursday Island. (d) *South Australia*. Torrens Island (near Adelaide). (e) *Western Australia*. Woodman's Point (near Fremantle), Albany, and Broome. Animal quarantine stations in each of the States have also been transferred, and steps are being taken for the taking over by the Commonwealth of other stations. New buildings and improvements are in course of construction at several of the transferred stations.

(ii.) *Co-operation of Federal and State Authorities*. In order to secure co-operation between the Commonwealth and State authorities, and with the further object of economical administration, arrangements were, in 1909, made under which the chief medical officer of each State Health Department acts as the Chief Quarantine Officer in his State, and officers hitherto performing quarantine duties under the State Acts became Federal quarantine officers, payment for their services being made through the State Governments. Arrangements were also made for the administration of the Act and regulations relating to oversea animal and plant inspection and quarantine, to be carried out by officers of the State Agricultural Departments. Power to take action for the prevention of the spread of disease within a State still remains in the hands of the State, and as the functions of the Commonwealth and States may be exercised at the same time, the advantage of co-operation is apparent.

(iii.) *Chief Provisions of Act*. The Act provides for the inspection of all 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, or leprosy, or any other disease declared by the Governor-General, by proclamation, to be quarantinable. "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; and fix the quarantine lines in certain ports of Australia.

(v.) *Regulations*. Regulations have been made prescribing the quarantine signal; the hours of clearance of vessels; forms of notices, orders, reports, and bonds to be used by masters, medical officers, quarantine officers, and importers; the period of detention of vaccinated and unvaccinated persons in quarantine; the conditions of removal of goods and mails; the method of disinfection of persons, animals, and infected or suspected articles; the conditions under which certain animals not prohibited may be imported; the sustenance charges for quarantine animals; the conditions of importation of hides, skins, wool, hair, bones, and animal manure; the method of carrying out the quarantining, disinfection, fumigation, and treatment of plants and packages. Regulations have also been made with the object of preventing the ingress to and the egress from vessels of rats and mice, and for the destruction of rats, mice, and other vermin.

(vi.) *General*. The procedure has already been greatly simplified. Instead of all oversea vessels being examined in every State, as was formerly the case, those arriving from the south 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.—Provision exists in the Health Acts of all the States for precautions against the spread and for the compulsory notification of infectious diseases. When any such disease occurs the fact must be notified to the medical officer of health of the district. 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.

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

DISEASES NOTIFIABLE UNDER THE HEALTH ACTS IN EACH STATE, 1912.

Particulars.	N.S.W.	Vic.†	Q'land.	S.A.	W.A.I.	Tas.
Anthrax	+	...	+
Ankylostomiasis	+
Beri-beri	+	...
Bubonic plague ...	+	+	+	+	+	+
Cerebro-spinal meningitis	+	+	+	+	...
Cholera	+	+	+	+	+
Continued fever	+	...	+	...
Diphtheria ...	+	*	+	+	+	+
Dysentery	+
Enteric fever	*	+	+	+	+
Erysipelas	+	+	+	...
Infantile Paralysis	+
Leprosy ...	+	+	++	+	+	+
Malarial fever	+	...
Measles	+
Membranous croup	+	+	+	...
Ophthalmia neonatorum	+	+
Poliomyelitis anterior acuta ...	+
Puerperal fever	+	+	+	+	+
Pulmonary tuberculosis(phthisis)	*	+	+	+	+
Relapsing fever	+	+	+	...
Scarlet fever ...	+	*	+	+	+	+
Scarlatina	*	+	+	+	...
Septicæmia	+	+	...
Small-pox ...	+	+	+	+	+	+
Trichinosis	+
Typhoid ...	+	*	+	+	+	+
Typhus Fever	+	+	...	+	+
Whooping cough	+	...	+
Yellow fever...	...	+	...	+	+	+

† Those diseases marked with an asterisk in this column have been declared notifiable diseases, while those marked by a cross have been declared "dangerous infectious diseases" under the Public Health Act 1890, and when prevalent in any municipal district may be declared notifiable diseases within such district. ‡ Other diseases enumerated as notifiable under "The Health Act 1911" of this State are pyæmia, and Malta, dengue, low and Colonial fevers. § Thursday Island area only. ¶ Under the Leprosy Act 1892.

(ii.) *Duties of Authorities.* 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.

(iii.) *New South Wales.* The proclamation and notification of infectious diseases is dealt with in Part III. of the Public Health Act 1902. Special provision is made by that Act for the notification of small-pox and leprosy, and for the custody and treatment of lepers. Many improvements have been effected by the Sydney Harbour Trust (see Section XXVI. hereof; page 990) with a view to generally improving the hygienic condition of the area under its control, and especially with the object of preventing the introduction of bubonic plague. Special reports dealing with the ætiology of outbreaks of plague have been published.

(iv.) *Victoria.* Under Part VIII. of the Public Health Act 1890, the notification of small-pox, cholera, plague, yellow fever, and other prescribed malignant, infectious, or contagious diseases is compulsory. An amending Act, passed in 1907, requires medical practitioners and registrars to report all cases of notifiable diseases coming under their notice in any proclaimed district, and not merely those cases which occur in the district in which the practitioner or registrar is resident.

(v.) *Queensland.* Under Part VII. of the Health Act 1900, all cases of infectious diseases must be notified; special provision is made for notification of cases of phthisis and small-pox. A report on plague in Queensland for a period covering eight successive years—1900 to 1907—has been published by the Commissioner of Public Health. Apart from the statistical data collected and collated, the report deals exhaustively with the medical, preventive, administrative, and epidemiological aspects of the plague, as observed in Queensland. Plague hospitals are provided at Maryborough, Bundaberg, Gladstone, Mackay, Townsville, and Cairns. Provision is also made for the diagnosis of leprosy, and lepers are sent to Peel Island, Moreton Bay.

(vi.) *South Australia.* In this State cases of infectious diseases must be reported to the local Board, under the provisions of Part VIII. of the Health Act 1898. The onus of notification is placed primarily on the head of the family, and, failing him, the nearest relative, the person in charge, or the occupier of the house; in any case, notification must be given by the medical practitioner attending.

(vii.) *Western Australia.* Regulations made under the Health Act 1898 provide for the compulsory notification to local Boards of infectious diseases. The local Boards must report to the Central Board. The necessity for providing hospital treatment for infectious cases has been recognised by the Boards of Health, and in several instances wards for the treatment of these cases have been erected.

(viii.) *Tasmania.* Provisions regarding the prevention and notification of infectious diseases are contained in the Public Health Act 1903, as amended in 1908.

4. **Vaccination.**—In the State of New South Wales there is no statutory provision for compulsory vaccination, though such exists in all the other States of the Commonwealth. With the exception of Victoria, the Vaccination Acts are, however, not generally enforced. The following table shews, so far as particulars are available, the number of persons vaccinated in each State from 1902 to 1911 inclusive:—

NUMBER OF PERSONS VACCINATED IN EACH STATE, 1902 to 1911.

Year.	N.S.W.*	Victoria.	Q'land.†	S. Aust.	W. Aust.	Tasmania.
1902	896	16,117	...	1,906	†	3,296
1903	605	20,935	...	1,857	†	24,857
1904	20	20,548	...	1,476	†	53
1905	32	20,116	...	1,142	†	†
1906	42	20,539	...	980	†	†
1907	39	20,902	...	3,165	†	†
1908	42	20,924	...	1,502	616†	†
1909	11	21,344	...	1,477	†	†
1910	280	21,575	...	†	†	†
1911	20	20,562	...	†	†	†

* By Government medical officers only. † Returns not available. ‡ Notifications of vaccinations to district registrars during year 1908-9.

The large increase in Tasmania in 1903 is accounted for by the small-pox epidemic which occurred in Launceston in that year.

(i.) *New South Wales.* Although there is no provision for compulsory vaccination in this State, public vaccinators have been appointed. A fee is paid, and free lymph is provided.

(ii.) *Victoria.* Compulsory vaccination is enforced throughout the State, under Part IX. of the Health Act 1890. From the year 1873 up to the present time it is estimated that 72 per cent. of the children whose births were registered have been vaccinated. Free lymph is provided.

(iii.) *Queensland.* Although compulsory vaccination is provided for in this State, under Part VII. of the Health Act 1900, only one remote district has been proclaimed under the Act.

(iv.) *South Australia.* The Vaccination Act 1882, which applies to South Australia and the Northern Territory, is enforced by the vaccination officer of the State and by the Police Department. Under this Act vaccination was compulsory, but in 1901 an Act to abolish compulsory vaccination was passed. This latter Act was subsequently amended, and the present law is that no parent is liable to any penalty if, within 12 months from the birth of the child, he makes a declaration that he conscientiously believes that vaccination would be prejudicial to the health of the child, and within seven days thereafter delivers the declaration to the vaccination officer. It is estimated that about 15 per cent. of the children born are vaccinated.

(v.) *Western Australia.* In this State vaccination is compulsory under the Vaccination Act 1878, which, however, remains almost a dead letter. All district medical officers are public vaccinators, but they receive no fee for vaccinations.

(vi.) *Tasmania.* All infants in Tasmania 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. The Act is not enforced, and practically no vaccination of infants is performed in the State, or has been performed since the small-pox outbreak in Launceston in 1903, when 66 cases occurred with 19 deaths. It is estimated that 45,000 persons, or about one quarter of the present population, have been vaccinated.

§ 6. Filariasis and the Destruction of Mosquitoes.

1. *Introduction.*—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 shewn that the difficulties in the way of tropical colonisation, 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 colonisation 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, are of common occurrence in many of the tropical and sub-tropical parts of the Commonwealth. In Brisbane, for example, it is stated that during 1908 an examination was made of 200 patients who had been admitted consecutively to the general hospital, and it was found that 17 per cent. were suffering from filaria, though only a few of them had been brought in for treatment for that disease. It is also stated that an examination made in 1909 of 1000 patients admitted for all causes at the general hospital at Brisbane shewed that 13 per cent. of them were infected with filaria.

2. Scope of Operations.—In certain parts of Australia considerable benefit has already resulted from the adoption of methods of anti-malarial prophylaxis. The extermination of mosquitoes in their larval stage by drainage, screening and oiling of water supplies, and the isolation of infected persons, are some of the methods pursued with success. It would appear, however, that before any general comfort and freedom from house mosquitoes and from the diseases carried by these insects can result, a much wider crusade for the destruction of the mosquito, involving absolute co-operation and conscientiousness on the part of the community in the elimination of breeding places of mosquitoes, is necessary.* In many countries "Mosquito Brigades" have been organised, whose object is the killing of the mosquito and the removal, as far as possible, of the conditions favourable to the insects. In other countries the churches, medical societies, corporations, business organisations, factories, and schools have all taken part in organising lectures and spreading literature dealing with the mosquito.

3. Queensland.—The existence of filaria in Brisbane was first discovered about thirty years ago. Filariasis is now on the increase, and early in the year 1909 the Commissioner of Public Health for Queensland convened a conference of medical officers of health to the various local authorities to discuss the matter. A plan for combined action in mosquito destruction was the outcome, and it is stated that good results therefrom have already been noticed. Screening of domestic and other water tanks and destruction of larvæ by kerosene have been carried out in a number of places, while particular attention has been devoted to the draining of swamps within the metropolitan area. It may here be mentioned that an Institute of Tropical Medicine was inaugurated in January, 1910, at Townsville, under the control of an expert officer. In his report for 1910, the Director of the Institute refers especially to the initial difficulties confronting him on account of (1) the scarcity of suitable laboratory animals for experimental purposes, and (2) the absence of any systematic scheme of collaboration with medical confrères throughout the tropical portions of Queensland, which is stated to be essential to the success of the Institute, both difficulties requiring some little time and money to overcome. Most of the scientific work done during 1910 is necessarily in an incomplete state, but a fairly large amount of material, especially with regard to animal parasites, has been collected and will be dealt with at an early date. A full course of instruction in tropical medicine and parasitology will be arranged for, in future, at Townsville.

4. South Australia.—During the year 1907 malaria assumed such a serious form at the Government Smelting Works at Daly River, in the Northern Territory, that almost every employee was invalidated to Palmerston for treatment. Early in 1908 preventive measures in the way of improved camp hygiene, treatment of swamps by petroleum, and the systematic use of quinine, were adopted, with the result that during that year no case of malaria appeared among the Government employees, although the natives and outsiders suffered as badly as before. The whole experiment cost under £5. Similar precautions have been adopted in other parts of the State.

* See Report of the Commissioner of Public Health, Queensland, 1908-9, Appendix C., p. 17.

5. **Other States.**—In Western Australia it is stated that malaria is not known to exist south of the 20th parallel, while filaria has not been discovered at all. No mosquito-borne diseases are known to exist in Victoria or Tasmania, 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 to destroy mosquitoes at various places in these States both by municipalities and private individuals.

§ 7. Supervision of Infant Life.

1. **Introduction.**—It has been frequently stated in recent years that when the social, climatic, and industrial conditions are taken into consideration the infantile mortality of Australia, particularly in the large towns, is much higher than it should be. It is now generally recognised, however, that infant mortality is largely attributable to parental ignorance and neglect, and that, in particular, improper feeding is accountable for perhaps the majority of infant deaths. In all the States of the Commonwealth, Acts have been passed with the object of generally supervising the conditions of infant life and of reducing the rate of infantile mortality, and in many of the large towns measures have been adopted by private individuals to spread among the mothers a knowledge of the best methods of feeding and caring for their infants. Milk Institutes have also been established after the manner of the *Gouttes de Lait*¹ in Europe, with the object of reducing the number of deaths of infants from milk poisoning in the summer months. Reference has been made in a previous part of this book (see page 189) to the number of infantile deaths and the rates of infantile mortality in each State, and it will be convenient to here shew corresponding particulars for the year 1911, classified according to metropolitan and other districts in each State:—

INFANTILE DEATHS AND RATES OF INFANTILE MORTALITY FOR METROPOLITAN AND OTHER DISTRICTS, 1911.

Districts	N.S.W.	Victoria.	Queensland.	S.A.	W.A.	Tasmania.	C'wealth.
NUMBER OF INFANTILE DEATHS.							
Metropolitan	1,286	1,127	334	406	262	89	3,504
Other ...	2,016	1,142	776	264	353	310	4,865*
RATES OF INFANTILE MORTALITY.†							
Metropolitan	71.56	77.54	80.85	77.60	79.02	76.92	75.61
Other ...	68.19	61.76	60.38	45.32	73.93	72.43	64.18

* Including 4 in Commonwealth territories.

† i.e., the number of deaths of infants under one year of age per thousand births.

It may be seen that in each State the rates of mortality are higher in the metropolitan than in other districts. The causes of "preventable" deaths may generally be attributed to milk poisoning, want of knowledge on the part of mothers, inability to nurse, and lack of the necessary medical facilities.

The figures in the above table do not, however, completely represent the hygienic aspect of the question. For every infant death recorded there are probably three or four survivors who have sustained more or less serious permanent physical damage, quite apart from injuries at birth or congenital causes. It is stated that the far-reaching influence of the first year or two of life upon the whole subsequent physical welfare of the individual cannot be recognised too clearly, and it has been alleged that many serious defects and diseases occurring in later life may be credited to results ensuing from infantile disease. This is particularly the case in respect of digestive diseases.²

1. Organised action in this direction commenced in 1894 in Belgium. The original Belgian Society is known as the "*Société des Gouttes de Lait*." The movement has become an international one, and branches of the Society have been founded all over Europe. Similar philanthropic work was commenced in the United States of America before 1894.

2. See Report of Department of Public Health of Tasmania for 1906-7, by J. S. C. Elkington, Esq., M.D., D.P.H., Chief Health Officer.

The conditions regulating the employment of boys and girls in shops and factories are referred to in the section of this book dealing with *Industrial Unionism and Industrial Legislation* (Section XXVII.). Certain particulars have also been given in Section XXIV. (see pages 935-7) of this book regarding Orphanages, and Industrial and Reformatory Schools in Australia. Though perhaps not directly connected with the subject of Public Hygiene, it will be convenient to refer briefly in this sub-section to the principal Acts which have been passed in each State dealing with the subject of child-life, and to the principal functions of the States' Children's Departments.

2. New South Wales.—In this State there is a State Children's Relief Board under the direct control of an Honorary Board of nine members and under the administration of the Minister of Public Instruction.

(i.) *Scope of Operations.* The scope of the Department's operations comprises matters under the following Acts:—

(a) *The Infants' Protection Act 1904.* This Act deals with the control of children up to the age of seven years in licensed homes, and with the supervision of such homes. These latter fall into two classes—(1) The private homes of individual women householders, licensed for two or three children, and (2) institutions maintained by public subscription, licensed for any number of children up to 100. The Act also deals with paternity proceedings in connection with the enforcement of maintenance for illegitimate children.

(b) *The State Children's Relief Act 1901.* This Act deals with the boarding-out of destitute children, and includes the extension of monetary aid for children under twelve years of age who are allowed to remain with their own mothers when the latter are widows or deserted wives in destitute circumstances.

(c) *The Children's Protection Act 1902* deals with the supervision of lying-in homes, in so far as the children born therein are concerned. It also provides for the registration of children up to three years old boarded out privately apart from their mothers.

(d) *The Neglected Children's and Juvenile Offenders Act 1905* has provided for the establishment of Children's Courts throughout the State. The Act deals with the disposal of neglected and uncontrollable children and juvenile delinquents who come before the Courts. It contains provisions for the supervision of truant children, and for the introduction of machinery necessary to carry out the purposes of the Act.

(e) *The Public Instruction Act 1880.* The supervision of all children of school age is carried out by officers of the State Children's Relief Department, and action in regard to truancy and prosecutions for breaches of the compulsory clauses of the Public Instruction Act are undertaken.

(ii.) *General Supervision of Conditions of Infant Life.* The principal functions of the State Children's Relief Department are as follows:—(a) Provision for sickly infants with, or without, their mothers at the homes at Paddington and Thirlmere. About twenty children are treated in each home. (b) The compulsory attendance of guardians of infants, boarded out independently by their mothers under the Children's Protection Act, at the Metropolitan Hospital fortnightly, in order that the children in their charge may be systematically supervised by the doctors, and the development of ailments checked. (c) A home for healthy babies, twenty in number, at Croydon, with their mothers, the object being to free the latter from the more or less contaminating influences of large institutions, and at the same time to protect the children from dangers of infection. (d) The establishment of separate cottage homes for invalid children, according to their ailments, including special cottages for the scientific treatment of epileptic and feeble-minded children. (e) The supervision of all children

dealt with at the Children's Courts, the Carpenterian Reformatory, and the Industrial School for Girls. A special aspect of the Board's work under this heading is the supervision of children released on probation, and of children committed to the Farm Home, Mittagong.

3. **Victoria.**—The conditions of infant life in Victoria are, to some extent, supervised by the Department for Neglected Children and Reformatory Schools under the Neglected Children's Act 1890, the Crimes Act 1890, and the Infant Life Protection Act 1907. In Melbourne the Lady Talbot Milk Institute was established in 1908 in order to provide a supply of pure milk for infants. In the first annual report of the Institute, it is stated that out of about 300 infants supplied with milk by the Institute during 1908-9, only eight died. Crèches have been established in many of the suburbs of Melbourne.

(i.) *The Neglected Children's Act 1890.* This Act provided for the establishment of receiving houses and probationary schools, and for the committal of neglected children to the care of the department already referred to, or to approved private persons or institutions. Assistance is afforded to the department by ladies' committees in finding suitable homes for boarded-out children, and in supervising these homes. A receiving depôt has been established, and special schools are provided for boys who are backward in their education. A certain number of boys, who bear the best of characters, are sent to learn farming at the Rutherglen Viticultural College.

(ii.) *The Crimes Act 1890* provided, *inter alia*, for the establishment of reformatory schools for convicted children. A considerable number of court committals and transfers from gaol are made to these reformatory schools.

(iii.) *The Infant Life Protection Act 1907.* This Act came into force on the 31st December, 1907, and all infants then in registered homes were transferred to the care of the department. Provision is made for the inspection of registered homes, which are divided into districts, allotted to four inspectors. The Act does not provide for the registration or supervision of maternity homes.

(iv.) *The Children's Court Act 1906.* This Act provides for the establishment of Children's Courts in every place in the State where a Court of Petty Sessions is appointed to be held. Any boy or girl under the age of seventeen years may be released by the Court on probation under the supervision of a Probation Officer, who may at any time bring before the Court any child under his supervision who has broken any of the terms of his probation. The Courts have power to commit children to the Neglected Children's Department or to reformatory schools.

4. **Queensland.**—The Infant Life Protection Act 1905 is administered by the Commissioner of Police. This Act provides, that, with certain exceptions, no person may receive, in consideration of any payment, into his house any infant under the age of three years for the purpose of nursing such infant apart from its parents for a longer period than forty-eight hours, or of adopting such infant, unless the person is registered as the occupier of the house and the house is registered as a nursing home. Registration of adopted infants is compulsory, and notice of the birth or death of illegitimate infants must be given within three days. Police investigation occurs in the case of every illegitimate child born, whether the child be finally sent to a nursing home, adopted, or taken charge of by parents or relatives.

The Lady Chelmsford Pure Milk Institute was opened in 1909 for the supply of a clean pure milk in Brisbane for infant feeding. The delivery of the milk began on the 1st July, 1909.

5. **South Australia.**—The State Children's Act 1895 provides for the constitution of a council to have the control of all State children and the supervision of all institutions for their reception, education, or training. The Act provides for the establishment and inspection of institutions, for the commitment, release, and apprenticing or placing out of children, and for the licensing and supervision of lying-in homes and foster-mothers. Illegitimate children are also received into the institutions under the care of the council, and are placed out in various homes. It is stated that the result, so far as illegitimate children are concerned, is that the death-rate of infants supervised by the council is under 7 per cent., while the death-rate of those not under such supervision is 45 per cent.

6. **Western Australia.**—In Western Australia the State Children's Act 1907 provides for the control of boarded-out infants, the registration of foster parents, and the general supervision of the conditions of infant life and of neglected or destitute boys and girls under the age of eighteen years. The Act is administered by the State Children's Department. The registration of maternity homes is obligatory, and persons acting as paid foster-mothers to any child under the age of three years must be licensed. Neglected or destitute children may be committed to orphanages, and convicted children to industrial schools. There is one Government institution under the Act, and it is used as a receiving dépôt for the temporary detention of all classes of children. The Act also provides for the establishment of Children's Courts, which must not be held in any police or other court-house.

With regard to the prevention of infantile mortality, the educational aspect has been met by the free distribution of pamphlets giving directions to mothers respecting the care and feeding of infants.

7. **Tasmania.**—The Infant Life Protection Act 1907, which is administered by the Commissioner of Police, provides for the protection of illegitimate and privately boarded-out infants, and for the compulsory registration of nursing homes and occupiers. Notice of the death of an infant in a registered home must be given within twenty-four hours, and the adoption of illegitimate infants under five years of age must be registered. Notice of the birth or death under the age of five years of an illegitimate infant is also compulsory. The Act also deals with paternity proceedings, in connection with the payment of preliminary or maintenance expenses for illegitimate children.

§ 8. Medical Inspection of State School Children.

1. **Introduction.**—For many years medical officers of health and many others concerned in education generally have, from time to time, suggested the desirability of a medical inspection of school children. The State, which enforces school attendance under penalties, is also under the obligation of securing a satisfactory hygiene for the child during such attendance. Moreover, efficiency in education demands several things, viz., that the conditions under which the studies are made shall be physically and hygienically satisfactory; that there shall be no undue concentration of nervous effort on school work, and that the child shall be reasonably safeguarded against infection, etc. Only by an adequate scheme of medical supervision can these results be attained.

Several limited and isolated surveys of the physical proportions of Australian children have been made during the past 30 years in the various States. The first important systematic survey, however, was made in Sydney in 1901, and the results were reported by the Government Statistician of New South Wales to the Australasian Association for the Advancement of Science Conference in Hobart in 1902, and shewed

that the Sydney boy was taller than the English boy, but that his chest expansion was small in comparison with European figures.

A series of measurements on 500 boys took place concurrently but independently in Hobart during 1901, which also gave similar results. It was recognised that the figures were based on limited numbers, but they at least challenged attention. The 1901 survey in Sydney, though small, was a valuable and suggestive contribution to anthropometric research in Australia, and may be regarded as the beginning of a systematic attempt to ascertain what characteristics of bodily form are exhibited in Australia. This inquiry roused considerable interest in the other States, and series of measurements have since been made in Western Australia, Tasmania, and South Australia, by various authorities, and in Victoria by the Education Department's medical officers. Each year since 1907 the Department of Education of New South Wales has carried out regular anthropometric measurements of the height and weight of school children, and now possesses records of about 90,000 children, the results being detailed in the Department's Annual Reports. A card for each child allows his measurements for successive years to be recorded. The department perambulated the apparatus, each set serving about 20 schools, and the visits recur in the same month of each succeeding year.

2. Co-ordination of Effort.—It may be seen in the succeeding parts of this subsection that, while the medical inspection of school children has been carried out in some of the States of the Commonwealth in a systematic manner, in other States but little has been done in the direction indicated. So far as it has been carried out, the medical inspection of school children goes to shew that in Australia, as in other lands, the hygiene, both of the schools and of the pupils therein, is more defective than is ordinarily recognised, and that, not only preventable physical injury to the rising generation from school conditions can be avoided, but also instruction itself can be made more efficient by a proper regard to the demands of a good school hygiene. With a view to securing uniformity of procedure in the several States the Commonwealth Government in 1907 formulated a scheme and communicated with the States asking their co-operation in obtaining measurements of school children with a view to establishing the relations between age, weight and height, chest measurement, etc. Delays occurred from various causes, but in a paper read at the Science Congress in Sydney 1911, the subject was again brought under notice, and this led to the appointment by the congress of a committee of experts to encourage anthropometric research and to consider the organisation of a systematic survey of school children throughout Australia. The scheme was essentially identical with the former proposals of the Federal Government, but in the interim the report of the British Anthropometric Committee became available, thus making possible a method uniform with that of Great Britain, and making the results immediately comparable with those of Europe.

The Australian Anthropometric Committee has drawn up a memorandum setting forth the importance and object of the survey, and suggestions as to method for the use of teachers, physical trainers and others interested. This report it is expected will shortly be available.

The plan of the survey is as follows:—The children's heights, weights and chest-measurements are to be taken once a year as near as possible at the same time of the year. A card for each child enables his development to be watched. Differently coloured cards are used for boys and girls. These cards should be kept in the schools, and the results tabulated on sheets and sent to the Commonwealth Statistician for the general tabulation, the Federal Government being willing for this to be undertaken.

In several States advantage has been taken by the Anthropometric Committee of the assembling of teachers in physical training camps to arrange for a demonstration on the object and method of the survey. Much interest has been roused, particularly as affecting the physical growth of school children, and as regards fatigue-effects in connection with the school programme or drill requirements. If in the Anatomical Schools of the Universities special teaching in anthropometric methods were given, it

would perhaps facilitate the work. This has been done in some of the universities of the United Kingdom.

As regards the anthropometrical aspect of the matter, questions dealing with physique and growth must receive more intelligent attention than has hitherto been the case here, if the future of the British race in Australia is to be properly studied. A uniform scheme of comparative physical observations of children would go to shew the ultimate influence of the Australian climate on the British race, and would serve as a guide to the importance of certain forms of physical training. In addition, the importance of gathering information concerning the general trend of physical and mental development of Australian children, the variations induced by environment in different localities and different latitudes, and the extent of preventable influences capable of injuriously affecting mental and physical development, are sufficiently apparent.

3. New South Wales.—In this State, arrangements were made in May, 1907, for the medical inspection of school children in Sydney, and later in the year the work was extended to Newcastle. At the inauguration of the scheme, it was considered advisable to restrict the work of the first year to two populous centres in order to determine what procedure would be necessary, and what limits could best be assigned in the further development of the work. Two inspectors were appointed for the first year's work, and a third in March, 1909. The scheme as now in operation embraces Sydney and suburbs, Newcastle and the West Maitland districts, and its extension to other country centres will be carried into effect at an early date.

The results of the third year's work shew that during that period 127 schools, having an enrolment of 75,854 pupils, were visited by the inspectors. Of the total number of pupils, 16,026, or 21 per cent., were presented by the teachers for medical inspection as suffering from some physical defects. Of that number, 7008, or 43 per cent., were found to be suffering from defects of vision; 6634, or 41 per cent., were returned as suffering from post-nasal trouble; 2779, or 17 per cent., from throat trouble; 640, or 4 per cent., from swollen glands; and 891, or 5 per cent., from either defective hearing or ear trouble. The percentages here stated refer only to children presented as defective cases to the school doctors. Of the total enrolment at the schools, 9.2 per cent. had bad sight, 8.7 per cent. nasal trouble, 4.5 per cent. throat trouble or swollen glands, and 1.0 per cent. defective hearing or ear trouble.

NEW SOUTH WALES.—HEIGHT AND WEIGHT OF SCHOOL CHILDREN, 1909-10.

Age last Birthday.	Boys—24,591 Records.		Girls—24,168 Records.	
	Average Height.	Average Weight	Average Height.	Average Weight
	Inches.	Lbs.	Inches.	Lbs.
3 years	40.66	39.03	40.04	37.91
4 „	42.85	42.17	42.08	40.16
5 „	43.11	43.04	42.70	41.31
6 „	44.72	45.06	44.49	44.61
7 „	46.47	49.49	46.42	48.42
8 „	48.59	53.72	48.09	52.58
9 „	50.43	58.61	49.93	57.57
10 „	52.23	64.03	51.91	62.83
11 „	53.86	69.25	53.98	69.74
12 „	55.80	75.61	55.96	77.42
13 „	57.48	85.74	58.13	86.11
14 „	60.14	94.14	59.84	94.93
15 „	62.69	108.11	61.47	104.40
16 „	64.74	118.12	62.01	112.70
17 „	66.29	128.99	62.66	114.35
18 „	66.70	134.16	63.34	116.26
19 „	67.29	137.21	63.34	119.45

Since its initiation in 1907, the scheme has embraced 135 schools, having an enrolment of 80,000 pupils, while upwards of 50,000 physical records have been received from teachers. The foregoing table shews the results of height and weight measurements recorded during the year 1909-10.

4. **Victoria.**—In Victoria three medical inspectors have been appointed by the Education Department, and a commencement was made towards the end of 1909 by the examination of the pupils attending the Melbourne Continuation School. An Advisory Committee was also appointed to formulate a scheme of medical inspection, which it is proposed to extend to all State schools in Victoria. During the year 1909-10 the chief work of the inspectors consisted in carrying out a preliminary investigation of the health of the pupils in various schools in town and country, and it was stated in the Report of the Minister of Public Instruction for that year that the result of this investigation had shewn the presence of an amount of physical defect which, were it not paralleled in other lands would, in its magnitude, seem incredible. Up to the 30th June, 1910, the total number of children examined was 3560, of whom 2613 were in primary schools; of the latter number 1345 were boys, and 1268 girls. During the year ending 30th June, 1911, many of the ideas and intentions outlined in the previous Annual Education Report were initiated, and the foundation laid for a proper and systematic scheme of medical school instruction in future. In the course of that year 8491 children attending primary schools were examined and the results are appended below. The following table shews the defects and their percentage amongst Victorian boys and girls in all primary schools examined:—

**VICTORIA.—NUMBER AND PERCENTAGE OF DEFECTS IN SCHOOL CHILDREN,
1910-11.**

Number of Children Examined.	PARTICULARS OF DEFECTS.										
	Vision.	Hearing.	Nose and Throat.	Dental.	Hair.	Deformities.			Lungs.	Heart.	Anemia.
						Chest.	Shoulders.	Lateral Curvature.			

NUMBER SUFFERING FROM DEFECTS.

Boys 4289	...	822	556	1,310	1,841	81	156	280	15	35	102	118
Girls 4202	...	547	602	700	2,013	1,619	34	322	31	13	80	108
Total 8491	...	1,369	1,158	2,010	3,854	1,700	190	602	46	48	182	226

PERCENTAGE ON TOTAL NUMBER EXAMINED, SUFFERING FROM DEFECTS.

Boys 4289	...	19.1	12.9	30.5	42.9	1.8	3.6	6.5	.3	.8	2.3	2.7
Girls 4202	...	13.0	14.2	16.7	47.6	37.6	.7	7.7	.7	.3	1.8	2.5
Total 8491	...	16.1	13.5	23.6	45.3	19.7	2.2	7.0	.5	.5	2.0	2.6

5. **Queensland.**—In this State a systematic scheme for the inspection of State school children has recently been prepared and came into operation on 1st January, 1911, under which a Medical Branch of the Department of Public Instruction was created, consisting of a Medical Inspector of Schools, a School Nurse, and a Dental Inspector. A report on the work of this branch for the half-year ending 30th June, 1911, has been presented, and shews that of 3068 children examined during that period by the Medical Inspector, 973, or 31.71 per cent., were found to be physically defective to an extent which either now seriously interferes, or threatens to do so shortly, with their educational progress. The report of the Dental Inspector discloses that of 823 children examined 97 per cent. had diseased teeth, and that only about 15 per cent. had clean mouths. The Standard of Vision here taken as interfering with the child's progress is $\frac{1}{2}$ and $\frac{3}{8}$, the latter only if the child complains or suffers from headaches, or assumes unnatural attitudes in trying to see. The standard adopted for defective hearing is $\frac{1}{16}$. For explanation and significance of these fractions see footnote attached to the second table of this subsection.

In the report the relation between educational progress or intelligence and physique and nutrition is shown under the three degrees of comparison, indicated by the words "Good," "Fair," and "Poor." These particulars are shewn in the following table:—

**QUEENSLAND.—RELATION BETWEEN INTELLIGENCE OF SCHOOL CHILDREN AND
PHYSIQUE AND NUTRITION, HALF-YEAR ENDING 30th JUNE, 1911.**

Intelligence.	Number Examined.	Physique.			Nutrition.		
		Good.	Fair.	Poor.	Good.	Fair.	Poor.

NUMBER OF CHILDREN.

Good	...	1,328	741	417	170	867	373	88
Fair	...	1,414	661	495	258	820	479	115
Poor	...	326	109	128	89	158	114	54
		3,068	1,511	1,040	517	1,845	966	257

PERCENTAGE ON NUMBER EXAMINED IN EACH CLASS.

Good	...	1,328	55.8	31.4	12.8	65.3	28.1	6.6
Fair	...	1,414	46.8	35.0	18.2	58.0	33.9	8.1
Poor	...	326	33.4	39.3	27.3	48.5	35.0	16.5

The children examined were also classified according to "intelligence" and "physical condition." This classification is shewn in the following table, and it may be observed that the columns marked with a (x) indicate conditions which are alleged to interfere seriously with the child's school progress. In this table "deafness" does not include the deafness accompanying adenoids, nor does "physical defects" include such as are incidental to adenoids. Excluding the first and last columns, the figures in the table represent individual defects, not individual children.

**QUEENSLAND.—RELATION BETWEEN INTELLIGENCE OF SCHOOL CHILDREN
AND PHYSICAL CONDITION.**

Intelligence.	Number Examined.	Adenoids.			Defective Vision.*		Deafness.*	Weak Hearts.	Enlarged Glands.	Anæmia	Physical Defects.	Mental Deficiency.
		x Marked.	Slight.	Re-moved.	$\frac{x}{f_3}$ or worse.	$\frac{x}{n}$						
NUMBER OF DEFECTS.												
Good ...	1,328	290	384	38	46	111	53	20	278	151	270	0
Fair ...	1,414	401	423	54	56	128	74	30	340	298	442	0
Poor ...	326	131	81	19	14	26	24	11	104	85	131	7
	3,068	822	888	111	116	265	151	61	722	534	843	7

PERCENTAGES OF NUMBER OF DEFECTS ON CHILDREN EXAMINED.

Good ...	1,328	21.8	21.3	2.8	3.5	8.3	4.0	1.5	20.9	11.4	20.3	0.0
Fair ...	1,414	28.4	20.9	3.8	4.0	9.0	5.5	2.1	24.0	21.1	31.2	0.0
Poor ...	326	40.2	24.8	5.8	4.3	8.0	7.4	3.4	31.6	26.1	40.2	2.1

* Normal hearing is assumed to be susceptible to an ordinary whisper over a distance of eighteen feet and is represented by the denominator of a fraction, while its numerator indicates to what this distance has to be reduced in order that the whisper may become intelligible. Visual condition or vision is similarly represented by a fraction, the denominator of which represents the distance in metres (a metre being approximately forty inches) at which normal vision would clearly distinguish an object, while the numerator indicates the reduction in distance required ere the patient attains clear effortless visual perception. Thus $\frac{x}{f_3}$ would mean that a person whose eye test was represented by that fraction, could only see an object at six metres distance, which had he possessed normal vision he would have seen at a distance of twelve metres. Normal vision, which is generally tested by Snellen's ordinary test type, is represented by the fraction $\frac{x}{6}$.

6. **South Australia.**—No scheme for systematic medical inspection of schools has yet been adopted here, all Government action having been postponed pending receipt of a report upon the examination of 1000 school-going children in different parts of the State, which was commenced by Dr. Rogers, in August, 1909. No children under seven years nor over 15 years of age were examined. Investigations were made with regard to personal appearance, cleanliness, height, weight, chest measurements, teeth, eyesight, hearing, nose and throat, etc., and the report was presented to the Minister for Education in September, 1910, the results being, on the whole, satisfactory. As this report contains statistical details exhibiting many interesting comparisons between various States in the Commonwealth and other parts of the world, a brief summary thereof has been given at the end of this section.

7. **Western Australia.**—No general scheme for school medical inspection exists here, although examination in a few metropolitan schools has been intermittently carried on. During the latter part of 1906 and the first half of 1907 an extended examination of about 3300 children was conducted by the Department of State Medicine and Public Health with the co-operation of the Education Department. These children were attending the State schools in Perth, Fremantle, Kalgoorlie, Boulder, Bunbury, and Albany. Many physical defects among the children were detected, and the co-operation of the Inspector-General of Schools has resulted in steps being taken, where possible, to provide better hygienic conditions. The system followed during 1909 was that, wherever possible, a visit was made to a school, the teacher bringing up all children who appeared to be suffering from any physical defects or bodily ailments. The exact condition of the child having been determined, a notice was sent to the parents calling attention to the necessity of obtaining treatment for the defect. Under the "Health Act 1911," Medical Officers of Health become medical officers of schools and school children, and although complete details of their duties have not yet been worked out, an opportunity

will soon be afforded of judging how far the new machinery is likely to go towards providing a satisfactory scheme of medical inspection of school children. The Dental Society has also arranged for the examination of teeth at some of the larger schools, and over 1000 children have already been inspected. Free treatment is given where the parents are not in a position to pay for it.

8. **Tasmania.**—The credit of being the first State in the Commonwealth to provide for the medical inspection of schools and school children in a systematic way rests with Tasmania, where, under the direction of the Chief Health Officer and the Director of Education, about 1200 children attending schools in Hobart were inspected in 1906. The general examination was based upon that of the Royal Commission on Physical Training (Scotland) of 1903, but considerable modifications and adaptations were found necessary in order to fit it to immediate requirements. No attempt was made to secure anthropometric observations beyond those of unquestionable medical value, and in only one case (colour of eyes) were any purely anthropological data collected. The sociological data obtained (parental occupation, etc.) were found of much service, and produced some interesting comparative results.

Medical inspection of school children as now existing in Tasmania is carried out by three medical officers, each controlling respectively one of three areas, which for medical inspection purposes are known as Hobart District, Launceston District, and the Country Districts of the State. Additional assistants in the persons of two school nurses have been appointed to follow up the work of the Medical Inspectors. Reports on the physical condition of the children are furnished, and parents advised when medical attention is considered necessary, and in the case of parents unable to pay for such attention, orders are given for free treatment at the hospital. From March, 1907, to 31st December, 1910, the total number of children examined in State schools was 20,961, of which 11,869 were examined in country schools, 5870 in Hobart and 3222 in Launceston. During 1910, 2963 children were examined by Drs. Clark and Ormiston, 1774 by the latter, who found adenoids affecting 35 per cent., defective sight 19.3 per cent., and defective hearing 9 per cent. of the children; while Dr. Clark out of 1189 children found that 242, or 20.35 per cent., were suffering from various defects to an extent requiring medical treatment in order to fit them for their educational studies. Of these 242 children 95 had severe eye defects, and 95 were suffering from advanced adenoids. Out of the 1774 children examined by Dr. Ormiston 14 were found to be mentally deficient in the true sense of the term, while 16 others, though regarded as practically bordering on that condition, were set down as dull or backward, many of this latter group shewing the stigmata of congenital syphilis. With regard to dental condition, all the Medical Inspectors agree that the teeth of the children of Tasmania seem to be uniformly bad.

9. **Comparisons of School Children in Australia and other Countries.**—In 1909 a medical officer was appointed by the South Australian Government to carry out an inspection of 1000 school-going children residing in different districts of the State. Inspection was commenced in August 1909, and the results were embodied in a report issued in September, 1910.* The matter therein dealt with may conveniently be subdivided into the following sections, viz.:—(i.) height, (ii.) weight, (iii.) chest measurement, (iv.) teeth, (v.) vision, (vi.) hearing, (vii.) nose and throat, (viii.) deformities, (ix.) diseases, (x) "dullards" and their physical defects.

(i.) *Height.* Comparative returns were available for all the States except Victoria and Queensland. In New South Wales and Western Australia the system of age-grouping was different to that adopted in Tasmania and in South Australia. In the former the last birthday was assumed to be the child's age, while in the latter the nearest birthday was adopted. Consequently, some slight allowance must be made for this difference in classification. The following table shews the comparative heights of school children (boys and girls) in Australian States, England and Scotland:—

* Report of R. S. Rogers, M.A., M.D., Hon. Consulting Physician to Adelaide Hospital, etc.

MEDICAL INSPECTION OF SCHOOL CHILDREN.—COMPARATIVE HEIGHTS IN AUSTRALIA, ENGLAND, AND SCOTLAND.

Ages.	HEIGHT IN INCHES.					
	South Aus.	* N.S.W.	† Tasmania.	‡ West Aus.	§ England.	Scotland (Glasgow).
BOYS.						
7 ...	46.02	46.10	47.19	—	45.97	43.70
8 ...	48.20	48.22	49.00	49.10	47.05	45.80
9 ...	49.58	49.98	51.25	50.50	49.70	47.70
10 ...	51.73	51.97	52.65	52.10	51.84	49.60
11 ...	53.18	53.53	54.35	53.80	53.50	51.30
12 ...	55.31	55.20	56.30	56.10	54.99	53.00
13 ...	56.86	57.16	57.80	58.80	56.91	54.60
14 ...	59.53	60.07	60.78	60.10	59.33	56.30
GIRLS.						
7 ...	45.60	45.72	47.80	—	44.45	43.40
8 ...	47.96	47.70	48.40	48.90	46.60	45.20
9 ...	49.51	49.68	50.50	49.80	48.73	47.20
10 ...	51.53	51.67	52.43	52.40	51.05	49.00
11 ...	53.22	53.59	54.59	53.50	53.10	50.80
12 ...	55.62	55.99	56.50	55.80	55.66	52.90
13 ...	57.50	58.41	58.10	57.20	57.77	55.10
14 ...	60.00	60.23	61.28	59.30	59.80	57.10

* Last birthday assumed to be the age of the child. † Elkington and Clarke. ‡ Blackburne. Last birthday assumed to be the age of the child. § Statistics of Anthropometric Committee. Last birthday assumed to be the age of the child; the boots of the children were not removed. || Mackenzie and Foster. Last birthday assumed to be the age of the child.

It appears from these tables that the Tasmanian children are exceptionally tall, being in advance of the other States at almost all ages. Western Australia stands next to Tasmania in this respect, while South Australian children approximate very closely to those of New South Wales in stature, the latter State having a very slight advantage. It may be seen that the heights of boys examined in Tasmania and Western Australia are greater than those examined in New South Wales and South Australia at every age, and that the New South Wales boys are consistently slightly in advance of South Australian boys, age for age. In the case of the girls, the Tasmanian girl is the tallest at all ages, except 8, when she is surpassed by Western Australia, and at 13 when New South Wales takes the lead. The stature of Western Australian girls, which exceeds that in any of the other States at the age of 8, approximates to that of South Australia at the age of 12, and is lowest of all the States at 13 and 14. As in the case of the boys, the stature of South Australian girls is very nearly the same as that of New South Wales, except at the age of 13, at which the older State has a very distinct advantage.

Comparison of the average heights of the South Australian with those of the English child tell decidedly in favour of the former at all ages. In the case of the boy, England would appear to have a slight advantage at the ages of 9, 11, and 13, but this apparent advantage disappears when it is remembered that the English children were measured in their shoes, whereas South Australian children were measured without their shoes. South Australian girls seem to have a still greater advantage in height over their English sisters than appears in the case of the boys. Only at the ages of 12 and 13 do the latter (English) seem slightly taller, but this superiority at once disappears when the boots are taken into consideration. The disparity in height is most noticeable during the first three years of school life.

(ii.) *Weight.* In comparing South Australian children with those of other States it is obvious from the tables given below that the Tasmanian children lead in weight as they were seen to do in height. The weight of South Australian children closely approximates to that of New South Wales. Among the boys, Tasmania leads at all ages except the age of 13, when the South Australian boy stands first amongst the States. The latter falls a trifle behind the New South Wales boy during his 14th year, and still more behind the Tasmanian at that age, but maintains a marked superiority over the Western Australian lad at the two higher ages. The boy in South Australia weighs nearly the same as the boy in New South Wales at the ages of 7, 8, and 14, falls a trifle behind him at 9 and 10, loses a pound in favour of the older State at 11, regains it at 12, and pushes his advantage over his rival to the extent of nearly $2\frac{1}{2}$ pounds at 13. The Western Australian lad weighs high during his junior years at school, closely approximating to Tasmania at the ages of 8 and 9. He is considerably ahead of South Australia and New South Wales at 10, 11, and 12, but loses ground at 13, and falls into the rear of all the States at 14.

In the case of girls, Tasmania is in advance of the other States at all ages, and greatly so at the two higher ages. Western Australia is a good second at the junior ages, 8, 9, and 10. The girls from that State weigh nearly the same as those in South Australia and New South Wales at 11 and 12, almost the same as the mother State at 13, but fall behind her at 14. As in the case of the boys so also with the girls, the weights in South Australia closely approximate to those in New South Wales, at some ages being slightly in advance of the latter, at others slightly behind, the most noticeable differences being observable at the two higher ages, when the South Australian girl falls rather more than $1\frac{1}{2}$ pounds behind in her average. One of the most interesting features is the remarkable average weight of the Tasmanian girl at 14, when she exceeds the next highest State average by upwards of 4 pounds.

South Australian boys compare favourably with average English boys in point of weight at the lowest and the two highest school-going ages, but fall very considerably behind the latter in the middle ages; *e.g.* at the ages of 10 and 11 there is an average difference of about 5 pounds in favour of the English lad, whereas at 13 and 14 the South Australian is slightly ahead in weight.

The following table shows the comparative weights of school children (boys and girls) in Australian States, England and Scotland:—

**MEDICAL INSPECTION OF SCHOOL CHILDREN.—COMPARATIVE WEIGHTS OF
CHILDREN IN AUSTRALIA, ENGLAND, AND SCOTLAND.**

Ages.	Weight in Pounds.							
	South Australia.	N.S.W.	Tasmania.	West. Aust.	England.	Scotland (Glasgow).		
BOYS.								
7	49.00	48.90	51.30	—	49.7	45.3
8	53.24	53.26	55.30	55.10	54.9	49.3
9	57.11	57.83	59.80	59.20	60.4	53.6
10	62.48	62.78	66.10	65.20	67.5	58.3
11	67.11	68.18	70.60	69.50	72.0	63.1
12	75.01	73.93	79.40	76.60	76.7	68.1
13	83.75	81.32	82.30	81.10	82.6	73.5
14	92.41	92.98	93.70	88.70	92.0	79.3

**MEDICAL INSPECTION OF SCHOOL CHILDREN.—COMPARATIVE WEIGHTS
OF CHILDREN IN AUSTRALIA, ENGLAND AND SCOTLAND—(continued.)**

Ages.	Weight in Pounds.					
	South Australia.	* N.S.W.	+ Tasmania.	‡ West. Aust.	 England.	= Scotland (Glasgow).
GIRLS.						
7	47.92	47.63	48.80	—	47.5	43.9
8	52.88	51.98	53.50	53.40	52.1	47.5
9	56.89	56.59	58.90	58.50	55.5	51.9
10	61.82	62.31	64.70	63.20	62.0	56.1
11	68.78	68.15	72.20	69.00	68.1	61.1
12	76.76	76.65	77.20	76.60	76.4	67.2
13	85.61	87.21	91.40	87.70	87.2	75.1
14	94.36	96.08	100.20	95.20	96.7	82.9

* Last birthday assumed to be the age of the child. † Elkington and Clarke. ‡ Blackburne. Last birthday assumed to be the age of the child. || Statistics of Anthropometric Committee. Last birthday assumed to be the age of the child; the boots of the children were not removed. = Mackenzie and Foster. Last birthday assumed to be the age of the child.

(iii.) *Chest Measurement.* Owing to the variety of methods in obtaining such measurements, comparatively few reliable statistics are available. In South Australia measurements were taken at the level of the nipple next the bare skin with the arms hanging loosely at the sides. Measurements at "full inspiration" and at "forced expiration" were taken, as also the "mean" between these two, but for the purposes of comparison with other places for which similar figures are available "mean" figures only are dealt with. The following table compares the mean chest measurements of Australian boys with those in certain other parts of the world:—

**MEDICAL INSPECTION OF SCHOOL CHILDREN.—COMPARATIVE CHEST MEASURE-
MENT OF BOYS IN AUSTRALIA AND IN OTHER PARTS OF THE WORLD.**

Age.	South Australia.	New South Wales (Sydney).	* Great Britain.	† United States.	‡ Poland.
7	23.26	23.6	—	—	21.8
8	23.89	23.9	—	—	22.8
9	24.66	24.5	—	23.48	23.7
10	25.31	25.1	26.10	24.30	24.4
11	25.99	25.9	26.53	25.34	25.1
12	27.04	26.7	27.20	26.28	25.6
13	28.07	27.7	28.03	27.28	27.2
14	29.28	28.9	28.46	28.55	—

* Anthropometric Committee.

† Kline.

‡ Landsberger.

The following table shewing the average degree of expansion in inches amongst boys of two Australian States is very striking, the marked superiority of the South Australian boy at any age being suggestive of more careful training in breathing exercises than in the Mother State:—

**MEDICAL INSPECTION OF SCHOOL CHILDREN.—COMPARATIVE DEGREE OF CHEST
EXPANSION BETWEEN SCHOOLBOYS IN SOUTH AUSTRALIA AND N. S. WALES.**

Age	7	8	9	10	11	12	13	14
Average degree of expansion in inches { S. Australia	2.50	2.47	2.81	2.82	2.71	3.0	2.98	3.11
{ N. S. Wales	1.8	1.8	1.9	1.9	2.2	2.5	2.4	2.5

(iv.) *Teeth.* With regard to teeth the proportion of decayed teeth in South Australia was found to be 2.73 teeth per child as against 4.2 in Hobart, and 4.6 in Sydney, in which latter place, however, only ages between 7 and 14 inclusive were dealt with. An examination of 10,500 English and Scottish children averaging the age of 12 shewed a percentage of 3.5 decayed teeth per child as against 1.8 per South Australian child of same age, while Sydney shewed 4.8, New South Wales Country Districts 3.5, and Hobart 3.3 for same age. It is somewhat difficult, however, to obtain reliable data upon this matter, as it is not always made clear whether the averages given refer to second teeth only or to both sets. Out of the whole number of 1007 children examined in South Australia only 70 were found to possess perfect sets of teeth.

(v.) *Vision.* Keenness of vision was tested with the ordinary Snellen's type read at six metres. The various tests made disclosed that the vision of South Australian children is by no means ideal, 15 per cent. of them being unable to read (under normal test conditions) with both eyes separately. The percentage of those possessing normal keenness of vision (6/6) amounted to 54.8. Defective vision in school children appears to be worse in other parts of the Commonwealth, the percentage for New South Wales being 27.7; Hobart, 44.2; Western Australia, 38.3, for children between the ages of 8 and 16 inclusive. In Edinburgh and Aberdeen similar tests revealed percentages of 31.7 and 18.5 respectively. In analysing defects in vision amongst South Australian children, 6/6 was taken as representing "normal" vision; 6/9 "fair"; 6/12 "medium"; and less than 6/12 "bad" vision. For explanation and significance of these figures see footnote attached to second table of sub-section 5 (Queensland) on page 1131 hereof.

Any attempt to record errors of refraction without the aid of retinoscopy being necessarily more or less unsatisfactory, and as the conditions under which these South Australian children were examined absolutely precluded the use of retinoscopy, only such tests as experience and circumstances rendered practicable were adopted. The tests used included, amongst others, a series of striped balls, striped letters, and a series of radiating lines. (a) *Astigmatism.*—The percentage of astigmatism for children (of both sexes) in South Australia between the ages of 8 and 14 inclusive, was found to be 36.8, but many of the ailments were of low degree, the children possessing "full vision" (6/6). No definite relation seems to exist between this trouble and the age of the child, and probably ought not to, astigmatism being a congenital defect. (b) *Hypermetropia.*—Owing to the impossibility of applying the retinoscopic test the examination for hypermetropic errors has not been satisfactory, and must be greatly underestimated, as only the "manifest" cases were recorded. Long sight (hypermetropia) among children is a congenital defect which is present in a very large number of children in the early school-going ages. Later on it may be replaced by normal or even by short sight. The unusual power which a child has, by straining the eye, of bringing it to a correct focus enables it in a great many instances to hide the defect, so that it only becomes "manifest" at a later period of life. The percentage of "manifest" cases among children examined was only 5.6, which is undoubtedly greatly below the extent which would have been revealed by a mirror examination. (c) *Myopia, or Short Sight.*—The general percentage of myopia was found to be 5.9. In the north a few schools were examined in which a large number of short-sighted children were found, and these have considerably raised the percentage throughout the State. In the metropolitan area the percentage was 3.5; in the southern areas 2.7, and in the northern areas 9.8.

Medical Inspection of School Children. The following table shews the percentage of astigmatism, manifest hypermetropia, and myopia in South Australian boys and girls at various ages:—

TABLE SHEWING PERCENTAGES OF ASTIGMATISM, MANIFEST HYPERMETROPIA, AND MYOPIA IN SOUTH AUSTRALIAN BOYS AND GIRLS AT VARIOUS AGES.

Ages.	Boys.			GIRLS.		
	Astigmatism.	Hypermetropia.	Myopia.	Astigmatism.	Hypermetropia.	Myopia.
7 ...	38.5	3.8	—	40.5	7.8	1.8
8 ...	31.8	9.0	—	40.6	6.5	3.2
9 ...	38.2	4.4	3.9	44.7	5.6	5.6
10 ...	37.1	1.5	5.1	43.2	5.8	4.4
11 ...	38.2	4.4	8.9	40.9	6.2	6.2
12 ...	40.8	5.4	9.0	31.1	8.7	7.8
13 ...	28.8	4.4	9.3	40.9	3.0	10.9
14 ...	22.2	5.7	10.1	31.4	7.3	7.8
Average at all ages ...	34.4	4.8	5.8	39.1	6.4	6.0

The above table shews the proportion of myopia to be almost the same in boys and girls. It also shows a marked tendency for the defect to increase with the school age. This corresponds with observations made elsewhere. Myopia, unlike the two other errors of refraction (astigmatism and hypermetropia) already dealt with, is generally an acquired defect, and is usually the result of eye-strain. Faulty position, or lighting, and other school defects are often contributing causes. It must be remembered that once a child acquires short sight the trouble is likely to be a progressive one unless checked by suitable glasses.

The number of errors of refraction found throughout the State, even when they did not reduce the visual acuteness, are, nevertheless, potential causes of future eye troubles. The children with apparently perfect vision formed only a small majority; and it is questionable whether they would have been in the majority had it been possible to correctly estimate the proportion of hypermetropia.

(vi.) *Hearing.* For this defect each ear was tested separately, the test employed being a whisper at the distance of eighteen feet, and of the 1007 children examined, in 34 cases or 3.3 per cent. deafness was observed, 16 of them being affected in only one ear. Similar statistics show a percentage of 12.1 for Hobart, while the percentages for West Australian children range from 4 to 15 in the different schools. In Edinburgh the percentage for distinctly defective children was 6.7; of defective 35.2. In Aberdeen the results were exceptionally good, only 5 children being distinctly defective, while the proportion of children set down as possessing slightly defective hearing was 13 per cent. Low percentages of deaf children in metropolitan areas may be greatly due to the facilities which exist for removing adenoid growths.

(vii.) *Nose and Throat.* Examination shewed that 17 per cent. were mouth breathers and that nearly 61 per cent. of the children were suffering from enlarged tonsils, a percentage sufficiently high to be regarded as a somewhat serious matter, when the amount of ill health directly or indirectly arising from such a condition is considered. South Australia seems to possess unenviable prominence in this respect, the percentage of the other places being New South Wales, 49; Hobart, 38; Western Australia, 20-40; Edinburgh, 52; and Aberdeen 30 per cent.

(viii.) *Deformities.* Twenty-four cases of pigeon-breast were noted, and it was observed with satisfaction that cases of curvature of the spine were exceedingly rare, only

0.6 per cent. of spinal deformities being found amongst South Australian children, as against 8 per cent. for Hobart, and 5 per cent. in Western Australia. The New South Wales Report for 1910 states that spinal curvature amongst school children is infrequent, only 15 cases out of several thousand children having been noted.

(ix.) *Diseases.* This section deals with various ailments, such as skin troubles, diseases of the glandular system, the bones and joints, and nervous disorders, but discloses nothing sufficiently important to warrant any special reference here.

(x.) *Dullards.* The report presents many features of significant import, which emphasise the urgent necessity for medical inspection of school children, but none more so than the information contained in the section bearing upon "Dullards and their physical defects." Concerning these and their condition the examiner remarks that "no number of arguments could be more overwhelmingly convincing for this necessity [*i.e.*, medical inspection], and to expect such children, suffering as they are from many remediable troubles, to keep pace with their better-equipped schoolfellows, is highly unreasonable." Of the 1007 examined, 111 children, or 11 per cent., were marked "dull" by the teacher. Fifty-seven of these were boys, equal to 11.4 per cent.; 54 were girls, equal to 10.6 per cent. An analysis of these cases revealed the following conditions:—Twenty suffered from very serious defects of vision; 21 were bad "mouth-breathers" (affected with adenoids); 7 were mentally defective in a very marked degree; 7 were very deaf; 3 had speech defects; 2 had heart disease; 1 was strumous; 1 had a large abdominal tumour; 1 suffered from anæmia and general debility; 1 had chronic bronchitis. These conditions will readily account for 57.6 per cent. of the "dull" children. Of the remainder, three were quadrons of less than average intelligence, and nearly all the other "dullards" suffered from some minor visual defect, enlarged tonsils, or some trouble calculated to handicap them in their school work.