CHAPTER XXVI.

MISCELLANEOUS.

§ 1. Patents, Trade Marks, and Designs.

1. Patents.—(i) General. The granting of patents is regulated by the Commonwealth Patents Act 1903–21, which, in regard to principle and practice, has the same general foundation as the Imperial Statutes, modified to suit Australian conditions. The Act is administered by a Commissioner of Patents. Comparatively small fees, totalling £8, are now sufficient to obtain for an inventor protection throughout Australia, Papua and the Territory of New Guinea, and the only renewal fee (£5) is payable before the expiration of the seventh year of the patent, or within such extended time, not exceeding one year, and upon payment of further fees, as may be allowed.

(ii) Summary. The number of separate inventions in respect of which applications were filed during the years 1921 to 1925 is given in the following table, which also shows the number of letters patent sealed in respect of applications made in each year.

Particulars.	1921.	1922.	1923.	1924.	1925.
No. of applications	5,072	5,431	5,306	5,432	5,306
provisional specifications	$3,378 \\ 2,573$	3,643 3,273	3;454 2,464	3,637 2,313	3,405 2,479

PATENTS, AUSTRALIA .-- SUMMARY, 1921 TO 1925.

(iii) Revenue. The revenue of the Commonwealth Patents Office during the years 1921 to 1925 is shown hereunder :---

Particulars.	1921.	1922.	1923.	1924.	1925.
Food onlogical under	£	£	£	£	£
States Patents Acts Patents Acts 1903–21 Receipts from publications	5 28,516 385	4 30,912 561	27,995 599	26,259 1,004	29, 017 926
Total	28,906	31,477	28,597	27,263	29,943

PATENTS, AUSTRALIA.-REVENUE, 1921 TO 1925.

2. Trade Marks and Designs.—(i) *Trade Marks*. Under the Trade Marks Act 1905, the Commissioner of Patents is also Registrar of Trade Marks. This Act has been amended from time to time, the last amendment having been made in 1922. Special provisions for the registration of a "Commonwealth Trade Mark" are contained in the

Act of 1905, and are applicable to all goods included in or specified by a resolution passed by both Houses of Parliament that the conditions as to remuneration of labour in connexion with the manufacture of such goods are fair and reasonable.

(ii) Designs. The Designs Act 1906, as amended by the Patents, Designs and Trade Marks Act 1910, and the Designs Act 1912, is now cited as the Designs Act 1906-12. Under this Act a Commonwealth Designs Office has been established, and the Commissioner of Patents appointed "Registrar of Designs."

(iii) Summary. The following table shows the applications for trade marks and designs received and registered during the years 1921 to 1925 :---

Applications.			1921.	1922.	1923. ⁻	1924. 1925			
			Re	CEIVED.					
Trade Marks Designs	••		2,410 357	2,763 427	2,773 488	· 2,829 498	2,770 554		
			Reg	ISTERED.					
Trade Marks Designs	•••	 	2,542 300	1,991 380	2,038 377	1,801 453	2,029 439		

TRADE MARKS AND DESIGNS, AUSTRALIA.-SUMMARY, 1921 TO 1925.

(iv) Revenue. The revenue of the Trade Marks and Designs Office during the years 1921 to 1925 is given hereunder :---

TRADE MARKS	AND	DESIGNS,	AUSTRALIA	-REVENUE.	1921	T0	1925.
		,					

	1921.			1922.		1923.		1924.			1925.				
Particulars.	Trade Marks.	Designs.	Publi- cations.												
For collected under	£	£	£	£	£	£	£	£	£	£	£	£	£	£	£
State Acts Fees collected under	1	••		1	••	••	••			••	••			••	•••
Commonwealth Acts	10,557	427	122	9,282	499	131	9,26:	539	102	8,710	561	238	9,310	629	186
Total	10,558	427	122	9,283	499	131	9,26:	539	102	8,710	561	238	9,310	629	186

§ 2. Copyright.

1. Legislation.—Copyright is regulated by the Commonwealth Copyright Act of 1912, details of which will be found in previous issues of the Official Year Book (see No. 8, p. 1066), while, subject to modifications relating to procedure and remedies, the British Copyright Act of 1911 has been adopted as law and declared to be in force within Australia.

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LOCAL OPTION, AND REDUCTION OF LICENCES.

Reciprocal protection was extended in 1918 to citizens of Australia and of the United States under which copyright may be preserved in the latter country by registration at the Library of Congress, Washington. The Commonwealth Government promulgated a further Order in Council which came into operation on the 1st February, 1923, and extended the provisions of the Copyright Act to the foreign countries of the Copyright Union, subject to the observance of the conditions therein contained.

2. Applications and Registrations.—The following table shows under the various headings the number of applications for copyright received and registered, and the total revenue received for the years 1921 to 1925 :—

Part	iculars.		1921.	1922.	1923.	1924.	1925.
Applications rece	ived						
Literary	••	No.	953	1,027	1,133	1,145	1,269
Artistic	••	No.	146	185	186	150	134
International	••	No.	5	14	3	2	15
Applications regi	stered-	'					
Literary		No.	809	942	1,105	1,059	1.257
Artistic		No.	138	160	190	138	117
International		No.	4		13	2	4
Revenue		. £	292	312	339	336	360

COPYRIGHT, AUSTRALIA .-- SUMMARY, 1921 TO 1925.

§ 3. Local Option, and Reduction of Licences.

1. General.—Local option concerning the sale of fermented and spirituous liquors is in force in all the States, the States being divided into areas generally conterminous with electoral districts, and a poll of the electors taken from time to time in each district regarding the continuance of the existing number of licensed premises, the reduction in number, or the closing of all such premises. Provision is made for giving effect to the results of the poll in each district in which the vote is in favour of a change.

2. New South Wales.—(i) Local Option. The Liquor Act of 1912 made provision for taking a vote of the electors on the parliamentary rolls on the question of continuance of existing licences, the reduction of the same, or that no licence be granted of public houses, wine-shops, and clubs. This vote was to take place simultaneously with that for a general election. Three such polls were taken, but in 1919, by an Amending Act, further taking of polls was suspended pending a referendum on the question of prohibition, to be taken within eighteen months after the passing of this Act. This referendum was not held, and a later amendment of the Act in 1923 fixed the first Saturday in September, 1928, as the day on which the vote is to be taken.

(ii) Licence's Reduction Board. The Liquor (Amendment) Act of 1923 provided for the reconstitution, as from 1st July, 1924, of the Licences Reduction Board and of the Licensing Courts which control the issue of licences. Three Licensing Magistrates constitute the Licensing Court in each licensing district, as well as the Licences Reduction Board, so that one tribunal controls all matters relating to the issue and withdrawal of licences. The funds for compensation in respect of publicans' licences are obtained by a levy at the rate of 3 per cent. on the value of all liquor purchased during the preseding year, of which the licensees pay one-third and the owners two-thirds. Since the beginning of 1923 the Board has also been empowered to reduce the number of Australian wine licences, the holders of which are liable to pay fees into the compensation fund at the rate of 1 per cent. of their purchases.

The Board, which was established by the Liquor (Amendment) Act of 1919, commenced operations in 1920, and up to 31st December, 1925, had terminated 260 publicans' licences and 58 wine licences, and had accepted the surrender of 61 publicans' licences and 2 wine licences. The compensation awarded was £507,215 in respect of 31S publicans' licences and £51,320 for 60 wine licences, while compensation had not been claimed in respect of one publican's licence in Sydney. The reductions made by the Board in the Sydney electoral district were 70 hotel licences and 31 wine licences, and the compensation awarded amounted to £152,500 and £28,075 respectively. In the Newcastle electoral district the reductions were 23 hotel licences, and the compensation awarded £29,470. The other reductions were in country districts. The fees payable into the compensation fund amounted to £1,248,003. During the years 1920 to 1925, 60 hotel licences were terminated by other than the Board's action, and 14 new licences were granted, and during the years 1923 to 1925, 6 wine licences were terminated and 1 new licence granted.

3. Victoria.—(i) Local Option. Under the Licensing Act of 1922, the previous system of local option was abolished, and provision was made for a vote of the electors for the Legislative Assembly to be taken once in every eighth year, the first of such votes to be taken in the year 1930. The Act also prescribes that each licensing district shall consist of an electoral district, instead of the subdivisions which under the previous Acts formed licensing districts.

(ii) Licences Reduction Board. This Board was established in 1906 with power to reduce the number of licensed victuallers' premises in districts in which there were more than the statutory number of licences. It has also the duty of fixing and awarding compensation to the owners and licensees of closed hotels. The compensation fund is derived from vendors of liquor who must all pay in proportion to the benefit they derive from their licences. The amount charged to the wholesale trade is 4 per cent. of the cost of all liquors sold to non-licensed persons, no charge being made on sales to other licensed vendors. The retail trade is charged 6 per cent. on liquor purchases, except the holders of Australian wine licences, who are charged 4 per cent. The expenses of operating the Licensing Act are a charge on the Compensation Fund, and, in addition, £23,000 is paid annually to the Police Superannuation Fund, and £68,000 to the municipalities which formerly granted licences. The balance is available for compensation purposes, but any surplus at the end of the financial year over an increment in the funds of £20,000 annually is carried to Consolidated Revenue.

Under the 1922 Act, the Court has held deprivation sittings each year in different licensing districts, and has taken away 103 victuallers', 26 Australian wine, 3 spirit merchants', and 2 grocers' licences. When the Board came into existence in 1906, the number of hotels licensed was 3,521, of which 73 were roadside victuallers', and up to the 31st December, 1925, the number closed was 1,588. Of these, 1,183 represented hotels delicensed, and 405 hotels surrendered, the compensation paid to owners and licensees amounting to £808,121 and £163,585 respectively.

(iii) Mallee and Additional Licences. Under the 1916 Act, special provisions were made for the granting of victuallers' licences in the Mallee, and by the 1922 Act these provisions as amended by that Act are extended to any area outside the Mallee country proclaimed for the purpose. Licences have been granted in 9 such areas.

4. Queensland.—Local Option is regulated in Queensland by the Liquor Act of 1912, as amended by the Liquor Act Amendment Acts of 1920 and 1923. A vote on the question is to be taken on the request of one-tenth of the number of electors in an area, which is defined in the request, and such area may be (a) an electoral district, or (b) an electoral division of an electoral district, or (c) a group of two or more divisions of an

electoral district, provided that the whole of such local option area is wholly comprised within one and the same electoral district. A separate request is necessary for each resolution on which a vote is to be taken.

By the amending Act of 1920 every local option vote must be taken in the month of May in every third year on a day to be fixed by the Governor in Council. On the 16th May, 1925, 43 polls were taken as requested in local option areas defined by the petitioners on the questions of prohibition in 25 areas, and new licences in 18 areas. Increase of licence was carried in 16 areas, while in 2 areas the majority for prohibition did not reach the necessary three-fifths of the total votes polled.

5. South Australia.—In this State the subject of local option is regulated by Part VIII. of the Licensing Act 1917. Under this Act each electoral district for the House of Assembly is constituted a local option district, and each electoral district may, by proclamation of the Governor, be divided into local option districts. A quorum of 500 electors, or of one-tenth of the total number of electors—whichever is the smaller number—in any district may petition the Governor for a local option poll. The persons entitled to vote are those whose names appear on the electoral roll and who reside in the local option district. A local option poll is taken on the same date as a general election.

In order to settle any doubt as to the validity of the proclamation of 1917 relating to local option districts, an Act was passed in 1922 by which such proclamation was declared to be valid, and the local option resolutions in force in old districts at the time of the proclamation were declared to be still in force notwithstanding any alterations in the boundaries of the districts

6. Western Australia.—(i) General. By an Amending Act, No. 39 of 1922, the Local Option provisions of the Licensing Act 1911 were repealed, and in lieu thereof a Licences Reduction Board was constituted, and charged with the duty of reducing the number of licences throughout the State over a period of 6 years from 1st January, 1923, to the extent of the money for the time being to the credit of a fund to enable compensation to be paid to the lessors and licensees of premises deprived of a licence. The fund is formed by a levy of 2 per cent. per annum on the amount of liquor purchased for licensed premises, excluding duties thereon. More extended reference to this subject was made in Official Year Book No. 18, page 1030.

(ii) Prohibition. In addition to the above provisions, the Act of 1922 provides that in the year 1925 and in every fifth year thereafter on a day to be fixed by proclamation, a poll shall be taken in each electoral district as to whether prohibition shall come into force. It also provides that where prohibition has been carried and is in force, the proposal shall be that the licences for sale of intoxicating liquor be restored. Where a resolution of prohibition is carried, no compensation is payable. A poll was taken on the 4th April, '1925, with the following result:—In favour of prohibition, 41,362; against, 77,113; informal, 658; total, 119,133. The percentage of persons voting on the number enrolled (200,212) was 59.5.

7. Tasmania.—In this State the subject of Local Option is dealt with in Part V. (Sections 39 to 53) of "The Licensing Act 1908" as amended by the "Licensing Act 1917." The provisions of Part V. of the Act of 1908 did not come into force until 1st January, 1917. It was thereby provided that a poll of ratepayers was to be taken in each city and in each municipality in which more than one licensed house was situate, once in every third year. The most recent polls taken were in December, 1923, in Hobart and Launceston, and in April, 1924, in other municipalities. In neither of the cities (Hobart and Launceston) were the prescribed resolutions carried, the statutory proportion of the electors not having voted at either poll. In one municipality the resolution for continuance was carried. In each of the remaining 39 municipalities in which polls were taken, the statutory proportion of electors failed to vote, and accordingly no resolution was carried. No poll was taken in 1925.

§ 4. Lord Howe Island.

1. Area, Location, etc.—Between Norfolk Island and the Australian coast is Lord Howe Island, in latitude 31° 30' south, longitude 159° 5' east. It was discovered in 1788. The total area is 3,220 acres, the island being 7 miles in length and from $\frac{1}{2}$ to $1\frac{3}{2}$ miles in width. It is distant 436 miles from Sydney, and in communication therewith by monthly steam service. The flora is varied and the vegetation luxuriant, with shady forests, principally of palms and banyans. The highest point is Mount Gower, 2,840 feet. The climate is mild and the rainfall abundant, but on account of the rocky formation only about a tenth of the surface is suitable for cultivation.

2. Settlement.—The first settlement was by a small Maori party in 1853; afterwards a colony was settled from Sydney. Constitutionally, it is a dependency of New South Wales, and it is included in the electorate of Sydney. A Board of Control manages the affairs of the island and supervises the palm seed industry referred to hereunder.

3. Population.—The population at the Census of 3rd April, 1921, was 65 males, 46 females—total 111.

4. Production, Trade, etc.—The principal product is the seed of the native or Kentia palm. The lands belong to the Crown. The occupants pay no rent, and are tenants on sufference.

§ 5. Commonwealth Council for Scientific and Industrial Research.

1. General.—By the Science and Industry Research Act, 1926, the previously existing Commonwealth Institute of Science and Industry was reorganized under the title of the Council for Scientific and Industrial Research. An account of the organization and work of the former Institute was given in previous issues of the Official Year Book. (See No. 18, p. 1062.)

2. Science and Industry Research Act, 1926.—This Act provides for a Council consisting of—

(a) Three members nominated by the Commonwealth Government.

(b) The Chairman of each State Committee constituted under the Act.

(c) Such other members as the Council, with the consent of the Minister, co-opts by reason of their scientific knowledge.

The three Commonwealth nominees form an Executive Committee which may exercise, between meetings of the Council, all the powers and functions of the Council, of which the principal are as follow:—(a) The initiation and carrying out of scientific researches in connexion with primary or secondary industries in the Commonwealth; (b) the training of research workers and the establishing of industrial research student-ships and fellowships; (c) the making of grants in aid of pure scientific research; (d) the establishment of industrial research associations in any industries; (e) the testing and standardization of scientific apparatus and instruments; (f) the establishment of a Bureau of information; (g) the function of acting as a means of liaison between the Commonwealth and other countries in matters of scientific research.

The State Committees are to be constituted in accordance with the regulations prescribed, and their main function is to advise the Council as to investigations to be undertaken. A sum of £250,000 has been appropriated under the terms of the Act for the purpose of scientific and industrial investigations.

3. Science and Industry Endowment Act, 1926.—Under this Act the Government has established a fund of £100,000, the income from which is to be used to provide assistance (a) to persons engaged in scientific research, and (b) in the training of students in scientific research. Provision is made for gifts or bequests to be made to the fund, which is controlled by a trust consisting of the three Commonwealth nominees on the Council. In accordance with the Act arrangements have been made to send a number of qualified graduates abroad for training in special fields of work.

4. Work of the Council.—The Council held its first meeting in June, 1926, and has decided to concentrate its initial activities on five main branches of work, viz., (i) Animal pests and diseases; (ii) Plant pests and diseases; (iii) Fuel research—especially liquid fuels; (iv) Forest products; and (v) Preservation of foodstuffs—especially cold storage problems. While continuing the major researches initiated by the former Advisory Council and the Institute of Science and Industry, the Council is engaged on the organization of investigations into the five groups of problems specified above. Some of the more important matters on which investigations have already been carried out, or are in progress are—(a) sheep blow-fly pest, (b) prickly-pear pest, (c) pottery, (d) paper-pulp from Australian trees, etc., (e) tanning materials, (f) cattle-tick dips, (g) viticultural matters, (h) citrus fruit problems, (i) buffalo-fly pest, (j) bunchy-top disease in bananas, (k) engineering standardization, (l) power-alcohol, (m) worm-nodule disease in cattle, (n) freezing of beef, (o) posidonia fibre, and (p) tuberculosis in stock.

In carrying out its work it is the policy of the Council to co-operate closely not only with existing scientific institutions and State Government Departments in Australia, but also with similar organizations in other parts of the Empire.

§ 6. The Commonwealth Solar Observatory.

1. Reasons for Foundation.—The Commonwealth Solar Observatory was established for the study of solar phenomena, for allied stellar and spectroscopic research, and for the investigation of associated terrestrial phenomena and, incidentally, will fill a gap in the chain of existing astrophysical observatories. With its completion, there will be stations separated by 90 degrees of longitude round the globe, while its situation in lat. 35° south places it in the unique position of being the only observatory making a feature of solar work south of the equator. In addition to advancing the knowledge of the Universe and the mode of its development, it is hoped that the eventual discovery of the true relation between solar and terrestrial phenomena may lead to results which will prove of direct value to the country.

2. History of Inauguration.—The initial step towards the establishment of a Solar Observatory in Australia was taken on 4th March, 1907, when, as the result of a letter communicated to the press of South Australia, inquiry was made into the possibility of the Adelaide Observatory undertaking this work. Subsequently the movement received the support of the International Solar Union, the Royal Society, the British Association for the Advancement of Science, the Australasian Association for the Advancement of Science, the Smithsonian Institution, and various other scientific bodies throughout the world, and in April, 1908, a memorandum was presented to the Prime Minister setting forth the reasons why a solar station in Australia is desirable. As the result of inquiries among the State Observatories, it was found that none of them had the necessary funds or equipment for undertaking the work. Committees for aiding in the establishment of a Solar Observatory in Australia were instituted by the British Association and by the Australasian Association for the Advancement of Science.

The Committee of the last-mentioned body sent a deputation to the Minister for Home Affairs in April, 1909, and a public meeting was organized in the Melbourne Town Hall, presided over by the Governor-General, and supported by the Governor of Victoria and delegates from all the Australian Universities and Observatories. As a result of the public support which the movement had received, in December, 1909, the Prime Minister took the first official action towards the establishment of the Observatory by accepting the gift of a 9-inch refracting telescope from Mr. James Oddie, of Ballarat, and by placing on the Estimates a sum of money sufficient for the erection of a temporary building within the Federal Capital area wherein to house the telescope in order that the suitability of this site might be examined. On 19th March, 1910, a conference of surveyors at Canberra, attended also by the Government Astronomer of Victoria, and by the Commonwealth Meteorologist, recommended that Mount Stromlo should be the site of the temporary observatory.

On 8th September, 1911, the temporary observatory on Mount Stromlo being ready, Mr. Baracchi, then Government Astronomer of Victoria, was commissioned to undertake observations to test the site, and two years later he reported that it was suitable for an observatory for solar and general astronomical research. In the meantime a sum of money, which had been collected for its partial equipment, was offered to the Commonwealth Government on behalf of the subscribers, but the offer was not at the time accepted.

In May, 1913, a further memorandum by the present Director, setting forth certain aspects of Australia's participation in the International scheme of solar research, was transmitted to the Government, and, in reply, the Secretary to the Department of External Affairs stated that when Canberra became the seat of Government, provision would be made for the establishment amongst general scientific studies of a section to be devoted to solar physics. In 1914, the visit of the British Association to Australia was made the occasion of a deputation of overseas Astronomers to the Prime Minister, which resulted in a conference with the Works and Railways Department to discuss the probable cost of housing on Mount Stromlo the apparatus which had been offered. The Government ultimately agreed to accept the donations and to arrange that observations should be conducted when times were more favourable. The matter remained in abeyance during the war and until April, 1923, when the Government decided to proceed with the establishment of the observatory. As a first step, a committee of British Astronomers was invited to act as a selection committee to choose a Director. The first Director, Dr. W. G. Duffield, was appointed as from 1st January, 1924.

3. Site of the Observatory.—The site selected for the Observatory is on Mount Stromlo, a ridge of hills about seven miles west of Canberra. The highest point is 2,650 feet above sea level, or about 700 feet above the general level of the Federal Capital City. A road has been constructed to the summit, upon which has been erected the temporary building to house the Oddie telescope. From the summit clear views are obtained in all directions. The approach to the Observatory passes the reservoir which supplies Canberra with water, and thence follows the eastern side of the ridge past several sheltered sites suitable for residences for the members of the staff, who will thus be within easy reach of the instruments to be housed on its crest.

4. Buildings.—The temporary structure for housing the Oddie telescope, which was the first building erected upon Mount Stromlo, is a concrete building, comprising a central dome 16 feet in diameter, with four rooms opening off it. A small reservoir has been built near the summit which is fed with water pumped from the main reservoir 120 feet below. The present building programme includes residential quarters for the staff; and an administrative block which is being erected near the site for the laboratory and workshop. It is hoped that a contract for further buildings will be let shortly. Electric light and power have already been conveyed to the residential area and to the summit. The station is connected by telephone with the Canberra Post Office. Pending the completion of the buildings on Mount Stromlo, the bulk of the work has been carried out in temporary premises at the Hotel Canberra.

 $P^{*}P^{*} = 0$

5. Equipment.—The bulk of the present equipment is due to the generosity of supporters of the movement in England and Australia. The gifts include a 6-inch Grubb refracting telescope, presented by the late W. E. Wilson, F.R.S., and Sir Howard Grubb, F.R.S., trustees of the late Lord Farnham, a 9-inch Grubb refractor with a 6-inch Dallmeyer lens, both presented by the late Mr. James Oddie, of Ballarat, while Mr. J. H. Reynolds, of Birmingham, has presented a large reflecting telescope with a mirror 30 inches in diameter, which will shortly reach Australia. Cash donations amounting to over £2,000 have been received, and will form the nucleus of a Foundation and Endowment Fund. With these generous gifts as testimony to the value of Australia's co-operation in, solar and astrophysical research, it is hoped that the Government will liberally equip and endow the institution so that it may rank with the great observatories of the world. During the past year a microphotometer, a Goerz spectrograph, a Rivett precision lathe and minor additions have been made to the equipment, and the library has benefited by gifts of early publications from other observatories.

6. Observational Work.—Since Mr. Baracchi and Dr. Baldwin completed their examination of the site in 1913, the Oddie telescope was not used for astronomical purposes until the present year, though the building has served as a lookout-station for bush fires during the summer months. During the year, a dense flint glass prism was mounted in front of the object glass, enabling the spectra of stars to be photographed upon a considerable scale. Routine work upon stellar spectra was commenced in February, 1926, with the object of measuring the absolute brightness and distances of the stars. To determine the intensity of the auroral component, observations were made on the luminosity of the night sky, and for some months the brightness of Nova Pictoris was observed. Measures were recorded of the solar radiation reaching the earth throughout the 24 hours, and observations were made of the potential gradient of the earth's electric field. A laboratory research upon certain spectroscopic phenomena is in progress.

7. Staff.—The present staff, which is, of course, merely a nucleus, consists of the Director, two Assistants, a Research Fellow, and two mechanics.

§ 7. Department of Chemistry, South Australia.

In South Australia, a Department of Chemistry was formed in 1915. The Department is principally engaged in general routine chemical examinations and analyses in pursuance of various Acts of Parliament and for Government Departments, but the chemical investigation of local products and industries forms an important branch of its work. At first the Department issued bulletins, of which nine have been published, but since 1918 the results of investigations made have been embodied in the reports of the Advisory Council of Science and Industry of South Australia. Researches have been carried out for the Wheat Weevil Committee, and investigations have been made into the lignites at Moorlands, the utilization of grapes and surplus lemons, cold-water paints, calorific values of South Australian firewoods, charcoal and coke, kernel oil from peaches and apricots, and a survey of the tannin resources of South Australia. Further investigations into South Australian lignite are reported in the South Australian Mining Review.

§ 8. State Advisory Council of Science and Industry of South Australia.

The Advisory Council of Science and Industry of South Australia is the result of the fusion of the members of the Committee of Scientific Research and the Committee on Post-war Problems. The members of the Council, who all act in an honorary capacity, are the nominees of the different public bodies in the State, such as the Chamber of Commerce, the Chamber of Manufactures, Associated Banks, United Trades and Labour Council, Employer's Federation, etc., and include a number of Government technical officials and University professors.

For the purposes of investigation, the Council is divided into Committees, under the headings Agriculture, Pastoral, Mineral, Manufacture, Trade, Commerce, and Transport. These Committees consider and take evidence on subjects proper to their provinces, and report to the Government. The office of the Council is attached to the Department of Chemistry, where research work is carried out at the instance of the Council, the Director of Chemistry being Vice-Chairman of the Council. Four reports have been issued for the years 1919 to 1924, and contain a summary of the work done, with reports of investigations, including the "Wheat Pests Problem," "Utilization of Surplus Lemons," "Cold Water Paint," "Calorific Values of Different Firewoods," "Peach and Apricot Kernel Oil," and "Tannin Resources of South Australia," etc. The Council also distributed information forwarded by the Commonwealth Department of Markets and Migration.

§ 9. Valuation of Australian Production.

1. Value of Production. — The want of uniformity in methods of compilation and presentation of Australian statistics renders it an extremely difficult task to make anything like a satisfactory valuation of the various elements of production. At present there is so little accurate statistical knowledge regarding such industries as forestry, fisheries, poultry, and bee-farming, that any valuation of the production therefrom can only be regarded as the roughest approximation. As a matter of fact, complete information as to value of production in all states is available in regard to the mining industry alone, and even in this case adjustments have to be made before the returns are strictly comparable. Careful estimates have been made in connexion with the value of production from the agricultural and pastoral industries, which, it is believed, in the main give fairly accurate results. The returns given in the following table for 1914 and subsequent years may be taken as substantially correct. The table hereunder shows the approximate value of the production from all industries during the years specified :—

			1					
Year	•	Agricul- ture.	Pastoral.	Dairy, Poultry, and Bee- farming.	Forestry and Fisheries.	Mining.	Manufac- turing.(a)	Total.
1914 1915 1916 1917 1918 1919–20 1920–21 1921–23	· · · · · · · · ·	£1,000 36,052 75,475 61,255 59,641 59,036 72,202 112,801 81,890	£1,000 63,452 65,852 77,126 83,926 88,448 101,578 85,861 70,048	£1,000 22,504 22,399 27,931 31,326 33,738 38,830 52,613 44 417	£1,000 6,853 6,253 6,062 6,147 6,890 9,670 11,136 10,519	£1.000 22,054 22,060 23,192 24,998 25,462 18,982 21,613 19,977	$\pounds1,000$ 59,004 59,212 60,502 65,327 70,087 92,330 101,778 112,517	£1,000 209,919 251,251 256,068 271,365 283,661 333,592 385,802 339,368
1922–23 1923–24 1924–25	••• •• ••	84,183 81,166 107,096	90,535 102,843 121,891	43,542 42,112 45,190	11,124 11,866 12,357	$20,316 \\ 22,232 \\ 24,646$	123,188 132,732 137,977	372,888 392,951 449,157

ESTIMATED VALUE OF PRODUCTION.-AUSTRALIA, 1914 TO 1924-25.

(a) These amounts differ from those given in Chapter XXII., Manufacturing Industry, which include certain products included under Dairy Farming and Forestry in this table.

2. Relative Productive Activity.—The relative output or production per head of population measured quantitatively cannot be gauged from a mere statement of the total value of production from year to year. If measured by mere value, increase of price might have the effect of making an equal production to that of a time when prices were lower, and show an increase which would, of course, be misleading. For example, the annual figures relating to the estimated value of production from Australian industries do not directly show whether there has been any increase in the *quantity* produced, since the price-level at the time is itself a factor in the determination of the values. Before, therefore, any estimate of the relative increase or decrease in production (that is, in the relative quantity of output) can be formed, the variations due to the price element must be eliminated. This is done in the following table, in which Column I. shows the estimated value of production (i) in the aggregate and (ii) per head of mean population. In Column II. the estimated value of production per head of population is shown in the form of index-numbers with the year 1911 as base; that is to say, the production per head in 1911 is made equal to 1,000, and the values for the other years computed accordingly. In Column III. production price index-numbers are given; it is assumed that these index-numbers reflect, with substantial accuracy, variations in production prices in Australia as a whole. The figures in Column IV. are obtained by dividing the figures for each year in Column II. by the corresponding figures in Column III. They show the estimated relative productive activity per head of population, taking the year 1911 as the basic or standard year, the fluctuations due to variations in prices having been eliminated :---

			1	ī .	п.	ш.	1v.
	Үеаг.		Estimated Produ	l Value of ction.	Relative Value of Production	Production Price Index-	Estimated Relative Productive Activity
			(i) Total (000 omitted)	(ii) Per Head of Population.	per Head (Year 1911 = 1,000).	Numbers (Year 1911 = $1,000$). (a)	(Year 1911 = 1,000). (a)
			£	£			
1871			46.700	27.46	664	1.229	540
1881			71.116	30,83	746	1.121	665
1891			96,087	29.65	717	945	759
1896			92,605	26.06	630	922	683
1901	••		114,585	29.96	725	974	744
1906	••	••	147,043	35.94	869	948	917
1911		••	189,098	41.34	1,000	1,000	1,000
1916	• •	••	256,068	52.07	1,260	1,398	901
1920-21		••	385,802	71.80	1,725	1,911	903
1921-22		• •	339,368	61.60	1,490	1,579	944
1922 - 23	••	••	372,888 -	66.19	1,601	1,753	913
1923-24	••	••	392,951	68.34	1,653	1,850	894
1924 - 25	••	• •	449,157	76.47	1,850	1,880	984
			I	1	1	1	1

RELATIVE PRODUCTIVE ACTIVITY.-AUSTRALIA, 1871 TO 1924-25.

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(a) Production Price Index-numbers are not available prior to 1908, and Wholesale Price Index numbers are substituted therefor.

The total production from all recorded industries during 1924-25 was £449,157,000, equal to an average of £76.47 per inhabitant.

The index of productive activity given above is based on total population and is that most usually employed for such a purpose. As a measure of the efficiency of the whole community to provide with its existing organization the commodities produced in the industries concerned the index is correct, but it does not necessarily indicate the variation in efficiency of the workers engaged in those industries, since these workers may not represent a constant proportion of the total population. As a fact this proportion is diminishing, and if the index were based on persons engaged in the industries rather than on total population it would be increased by nearly 10 per cent. in the later years of the period, and the index for 1924 instead of falling short of the 1911 standard by 1.6 per cent. would be in excess of it by 7.7 per cent. This aspect of the question is at present the subject of further investigation. In Year Book No. 5 (page 1217) will be found the value of production in each State at decennial intervals since 1871, and for the year 1909. Details for individual States are not available for subsequent years owing to discontinuance by the Customs Department of the collection of statistics of interstate trade.

§ 10. Wealth of Australia.

1. Methods of Estimating.—(i) General. At various times estimates have been made of the wealth of Australia, and more especially of the private wealth. For this purpose three different methods have been employed—(a) The Probate method, (b) The Census method, (c) The Inventory method.

(ii) The Probate Method. This method consists essentially in taking account over a given period of the amount of property left by deceased persons as disclosed by probate returns, and in assuming that, in respect of wealth, those dying at each age represent a fair sample of the persons living at that age. It also involves the further assumption that the whole of a deceased person's wealth passes under review in the probate returns. If the period involved is a fairly long one, and the community is large, the first of these assumptions is probably warranted; but, owing to the large number of cases in which property passes by settlement or by gift *inter vivos*, the second assumption is rarely allowable, and the probate method of estimate is consequently unsatisfactory. It has a further disadvantage in that it requires a record over a long period of the ages of the deceased persons combined with the values of the estates subject to probate, and thus involves an elaborate inquiry to furnish a result which when obtained relates to a somewhat remote and rather indefinite past. In these circumstances it may be regarded under Australian conditions as an unreliable method.

(iii) The Census Method. From many points of view the census method would appear to be that which should give the most reliable results. The figures are obtained directly from the persons who should be best able to give the information—the owners of the property concerned. The results relate to a comparatively recent and specific date, thereby avoiding one of the disadvantages of the probate method. Further, the form in which the information is obtained enables a classification to be made, showing the number of persons in each wealth group. Notwithstanding these manifest advantages, the census method is not convenient to employ for the purposes of an estimate of wealth, since in normal times its inquisitorial character is objected to, and its cost is very great.

(iv) The Inventory Method. The inventory method has been employed for many years in the United States of America, and has been the basis of several estimates of Australian wealth. This method consists in making use of various valuations of different forms of material wealth that have been made for other purposes, and of supplementing these by estimates based on statistical data available in respect of items for which no such valuations are already in existence. The estimate when obtained relates to a specific and fairly recent point of time, and is in such form as to enable a classification to be made according to nature and locality of the items concerned.

2. Inventory Estimates, Private Wealth, 1813 to 1921.—(i) Australia.—Inventory estimates for Australia are furnished for a number of years in the following table, together with the average wealth per head of population in each case. These figures relate to private wealth, and do not include any estimate in respect of Government or Municipal property :—

WEALTH OF AUSTRALIA.

Year to	which Es Relates.	timate	Aut	hority.		Aggregate Amount.	Mean Population.	Average Private Wealth per Head of Mean Population.
						Million £.	Thousands	r
1812			T. A. Coghla	in .		1	13	75
1636	• ·	••	1			26	143	182
1000	••	••	, ,,	••		160	1 9 9 9	130
1003 (4)	••	••	"	••		005	9,099	100
1888(a)	• •	••	"	••	••	000	2,932	302
1890		••	,,	••	••	1,019	3,107	328
1899			,,	••		. 879	3,690	238
1901				• •		909	3,791	240
1903						982	3,893	252
1015	•••	•••	GH ["] Knibl	18		1.620	4 985	325
1910	••	••	O T Wishs			0,160		0.00
1921		••	C. H. Wicke	ns		2,166	5,458	397

PRIVATE WEALTH, AUSTRALIA.-INVENTORY ESTIMATES, 1813 TO 1921.

(a) Adjusted to allow for exclusion of New Zealand.

(ii) Details for States, 1921. The following table furnishes details as at 30th June, 1921, in respect of each State and Territory and for Australia as a whole :---

PRIVATE WEALTH .-- INVENTORY ESTIMATE, DETAILS, 1921.

Class of Property.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Ter.	Austra- lia.
I Land and Improve-	£1,000.	£1,000.	£1,000.	£1,000.	£1,000.	£1,000.	£1,000.	£1,000.	£1,000.
ments	593,484	399,503	142,120	115,814	.67,777	41,549	625	397	1;361,269
III. Agricultural, Dairying and Pastoral Imple- ments and Machin-	+0,947	21,011	40,004	10,790	10,000	4,422	2,090	101	198,833
ery	12,409	10,218	4,057	5,248	3,300	709	12	11	35,964
V. Manufacturing Frant and Machinery V. Mining Properties (in- cluding Plant and	29,735	17,588	9,999	4,233	3,325	2,838			67,718
Machinery)	14,800	5,300	2,800	1,300	7,200	2,600			34,000
VI. Coin and Bullion	13,607	38,874	3,173	2,452	2,163	945	1	1	61,216
VIII. Shipping	3,511 2,970	777 2,793	4,90 6 370	278 756	5,047 164	1,454 186		 	15,973 7,243
toral Products	24,692	17,993	11,711	8,275	5,624	2,210	3	7	70,515
X. Locally Manufactured Products	44,479	34,481	12,755	7,132	3,645	2,343	••		104,835
than gold)	1,964	111	214	148	88	. 132	- 3	•	2,660
XII. Imported Merchan- dise	31.616	23.062	11.448	7.461	5.008	3.200	59	37	81 801
XIII. Clothing and Personal	10 596	7 695		0 400	1 600	1 000		10	01,001
XIV. Furniture and Fit- tings, Books, Pic-	10,030	7,065	3,813	2,480	1,009	1,000	20	12	- 27,289
tures, etc	43,482 9,862	33,229 7,537	12,183 3,235	10,845 4,688	5,529 1,417	3,428 931	46 5	38 • •	108,780 27,675
	886,094	626,968	271,450	181,906	127,292	68,013	3,474	664	2,165,861
Mean Population for 1921 (in thousands)	2,107.1	1,537.0	763.0	497.2	333.8	213.3	3.9	2.5	5,457.8
Private Wealth per Head	£421	£408	£356	£366	£381	£319	£889	£267	£397

(iii) Details for Australia 1903, 1915, and 1921. A comparison of the leading items for 1903, 1915, and 1921, and of the relative distribution of such items, is given in the following table :---

	Agg	regate Amo	ount.	Relative Distribution.				
Classification.	1903 (Coghlan).	1915 (Knibbs).	1921 (Wickens).	1903 (Coghlan).	1915 (Knibbs).	1921 (Wickens).		
Land and Improvements Live Stock Coin and Bullion Merchandise and Produce on hand Household Furniture and Per- sonal Property Shipping Mines and Mining Plant Plant, Machinery, etc., not else- where included	Million £. 683.9 96.9 26.1 59.6 43.4 6.4 32.2 33.5	Million £. 1,105.6 100.4 44.4 148.0 91.9 13.3 41.3 74.6	Million £. 1,361.3 158.8 61.2 259.9 163.8 7.2 34.0 119.7	% 69.6 9.9 2.6 6.1 4.4 0.7 3.3 3.4	% 68.3 6.2 2.7 9.1 5.7 0.8 2.6 4.6	% 62.9 7.3 2.8 12.0 7.6 0.3 1.6 5.5		
Total	982.0	1,619.5	2,165.9	100.0	100.0	100.0		

PRIVATE WEALTH.—INVENTORY ESTIMATE, AUSTRALIA, 1903, 1915, AND 1921.

(iv) Private Wealth per Head. A comparison of the wealth per head under the principal items mentioned above is furnished in the following table :---

INVENTORY ESTIMATE.—PRIVATE WEALTH PER HEAD, AUSTRALIA, 1903, 1915, AND 1921.

			1	Avera	uge We	alth	per	Head.		
Classification.		1 (Cog	903 ghlai	ı).	1 (Kr	915 ibb	5).	1921 (Wickens).		
Land and Improvements Live Stock Coin and Bullion Merchandise and Produce on hand Household Furniture and Personal Property Shipping Mines and Mining Plant Plant, Machinery, etc., not elsewhere included	· · · · · · · · · · · · · · · · · · ·	£ 175 24 6 15 11 1 8 8	s. 13 17 13 6 2 12 5 12	d. 5 10 11 4 9 8 5 1	£ 221 20 8 29 18 2 8 14	s. 15 2 18 13 13 5 19	<i>d</i> . 10 9 1 7 10 6 9 2	£ 249 29 11 47 30 1 6 21	s. 8 1 4 12 0 6 4 18	d. 6 11 3 5 3 4 7 8
Total		252	4	5	324	17	6	396	16	11

(v) Distribution according to States and Territories. The following table gives the distribution of the private wealth of Australia, according to the States and Territories in which it was situated. In the case of the 1903 estimates, the Northern Territory was regarded as part of South Australia, and the Federal Capital Territory not having come nto being as a separate entity, was included in New South Wales :--

				Estimated Private Wealth.					
State or Territory.				Agg	Per Head of Population.				
•			_	1903 (Coghlan).	1915 (Knibbs).	1921 (Wickens).	1903.	1915.	1921.
				Million £.	Million £.	Million £.	£	£	£
New South Wales		• • ·		3 i 8.8a	660.8	886.1	261a	350	421
Victoria				110.0	454.1	627.0	257	317	408
Queensland				119.5	209.6	271.4	232	303	356
South Australia			• •	83.36	134.0	181.9	240b	300	366
Western Australia				49.1	107.1	127.3	223	333	381
Tasmania	••			48.3	51.3	68.0	268	261	319
Northern Territory		••	• •	(b)	2.0	3.5	(b)	450	889
Federal Capital Ter	ritory	••	•••	(a)	0.6	0.7	(a)	236	267
Australia		••		982.0	1,619.5	2,165.9	252	325	397

PRIVATE WEALTH.-INVENTORY ESTIMATE, STATES, ETC., 1903, 1915, AND 1921.

(a) Particulars for Federal Capital Territory included with New South Wales.
(b) Particulars for Northern Territory included with South Australia.

In all instances the figures relate to the material private wealth existing in the several States and Territories, irrespective of the domicile of the owner.

3. Estimated Value of Government and Municipal Property, 1915 and 1921 .--An estimate of the value of Government and Municipal property at any date cannot be readily obtained, but with the object of presenting a complete view of Australian wealth, a rough estimate has been prepared in respect of the years 1915 and 1921, the results of which are given hereunder :-

GOVERNMENT AND MUNICIPAL PROPERTY.-ESTIMATED VALUE, 1915 AND 1921.

P		1915.	1921.			
Commonwealth-	<u>,</u>				Million £.	Million £
Railways					6	11
Land, Buildings, and	11	18				
State—		1				
Railways and Tramw	avs				202	240
Crown Lands	·				38	53
Buildings and other	Property			.	100	121
Municipal—	1			.		1
Roads and Streets					120	· 160
Other Property					40	54
Total					517	657

These figures indicate that the total for Government and Municipal property is about one-fourth of the aggregate wealth of Australia, public and private, a proportion which agrees approximately with estimates that have been made in the case of Great Britain.

As the estimates previously given, whether for public or private wealth, are in respect of the values of material objects, irrespective of ownership, the effect of public or private indebtedness does not enter into the question.

§ 11. Conspectus of Australian Life Assurance Legislation.

A conspectus of Australian Life Assurance Legislation appeared in Official Year Book No. 18, pp. 1041 to 1059, but considerations of space preclude its insertion in the present issue.