The expenditure in 1917 was £34,000, of which £13,978 was advanced to companies; £4,473 was loaned to miners; £221 was spent on constructing roads, etc.; £10,868 on boring for gold, coal, etc.; and £4,460 on testing plants and miscellaneous. The Government batteries number 33, several of which are managed by local trusts without expense to the Department so far as cost of working is concerned. The State's contribution to the Coal Miners' Accident Relief Fund amounted to £613.

4. **Queensland.**—State assistance to the mining industry in 1917 amounted to £31,597, of which £17,922 consisted of loans in aid of deep sinking; £6,872 grants in aid of prospecting; £2,288 in aid of roads and bridges to gold and mineral fields; £970 advance under *Mining Machinery Advances Act 1906*; and £3,545 purchase of boring plant and boring for oil at Roma.

5. **South Australia.**—Aid is given to the mining industry under the terms of the Mining Act of 1893, and previous measures. Up to the end of 1917 the total amount of subsidy paid was £64,797, of which £10,168 has been repaid, and £1,500 written off, leaving a debit of £53,129. Portion of this amount is represented by machinery that has fallen into the hands of the Government. Repayments are made from profits, but in only two instances have the profits enabled a full return to be made.

6. **Western Australia.**—Under the Mining Development Act of 1902 assistance was granted in 1917 in accordance with the subjoined statement:—Advances in aid of mining work and equipment of mines with machinery, £5,072; advances in aid of erection and equipment of crushing plants, £1,017; rebates to prospectors, £1,571; advances in aid of boring, £129; providing means of transport, £137; subsidies for carting long distances to batteries, £153; Warburton Range Expedition, £731; miscellaneous, £567; making a total of £9,377. The receipts under the Act came to £4,012, of which £2,400 consisted of refunds of advances.

In 1917 there were 32 State batteries in operation. The amount expended thereon up to the end of 1917 was £91,981 from revenue and £274,558 from loan, giving a total of £366,539. During the year receipts amounted to £37,815, and working expenditure to £45,369.

The total value of gold and tin recovered to the end of 1917 at the State plants was £4,918,000, resulting from the treatment of 1,157,407 tons of gold ore and 72,088 tons of tin ore, together with a small amount from residues.

7. **Tasmania.**—Under the terms of the *Aid to Mining Act 1912* the expenditure for the year 1917 amounted to £581, and the total up to the end of that year to £19,480. The bulk of this was expended in mining, prospecting, and development work undertaken by or under the direction of the Department of Mines. Under the *Mining and Public Works Appropriation Act 1913*, a sum of £2,804 was expended during 1917, while the outlay to the end of that year was £57,692. Of the latter sum, £21,273 consisted of advances on the security of ore produced from any mine in the State, and £11,209 was absorbed by expenses in connection with the State Argent Flat mine, Zeehan. Under the *Public Works Appropriation Act 1913*, a sum of £231 was expended in 1917, the total expenditure under this Act being £7,509. Further, a sum of £17,254 was expended under the Mining Appropriation Act of 1915 in respect to the State mine at Zeehan. The practise of granting £5 per month to an approved prospector has resulted in the efficient investigation of mining possibilities over a wide area.

8. **Northern Territory.**—During the year 1917–18 the Government aid to mining amounted to £5,147, of which £2,011 was in aid of prospecting for gold; £2,594, copper; £211, tin; and other, £331.

§ 17. Commonwealth Government Control of Industrial Metals.

1. **General.**—The policy of the Commonwealth Government is to have all metallic ores, as far as possible, treated within the Commonwealth, so that the resultant metals can be marketed in a refined state.

The Australian Metal Exchange, formed in September, 1915, with offices in Melbourne and Sydney, controls the export of metals and minerals (except the noble metals—gold, silver, and platinum), and no metals or minerals can be exported from Australia unless

the contract be first registered with the Exchange by an active member and, while a state of war lasts, with the consent of the Minister for Trade and Customs. The members of the Exchange must be British companies, British firms, or natural-born British subjects, and the Attorney-General has the right of veto with regard to membership during the continuance of the present war and for one year after the declaration of peace.

2. **Lead.**—The following are the plants existing in the Commonwealth for treating silver-lead ores and concentrate :—

At Port Pirie, South Australia, is situated the Smeltery and Refinery of the Broken Hill Associated Smelters Proprietary Limited. The works were purchased by the above-named company from the Broken Hill Proprietary Co. Ltd. on the 2nd June, 1915, and have since been considerably enlarged and modernised. At present the works have an annual capacity of 160,000 tons of refined lead and 8,000,000 ozs. of silver, and are thus amongst the largest in the world. The Smelter Company, which provides in its Memorandum and Articles of Association for all British control, was formed primarily to treat on a co-operative basis the lead concentrates of its own shareholding companies and to undertake in addition general customs work. In order, however, to give effect to the new metal policy of the Commonwealth Government, arrangements were made about the middle of 1916 whereby other Broken Hill companies, who were not shareholders, were enabled to participate in the advantages of co-operative smelting, refining, and realisation. As a result the whole of the Broken Hill output of lead concentrate, excepting that of the Sulphide Corporation's mine, is to-day controlled and treated by the Associated Smelters Proprietary.

At Cockle Creek, near Newcastle, New South Wales, is located the Smeltery and Refinery of the Sulphide Corporation Ltd. The smelting plant here was established years ago, and produced bullion which was refined in Great Britain. The Refinery was added towards the end of 1917, and is now producing about 50,000 tons of refined lead and also gold and silver. The works cater for all the smaller silver-lead mines in New South Wales, Victoria, Queensland, and Tasmania, as well as for the company's own mine—the Central—at Broken Hill.

At Fremantle, Western Australia, is located the Smeltery and Refinery of the Fremantle Trading Company Limited. The plant running at its full capacity is capable of an annual output of 15,000 tons of pig-lead or silver-lead bullion from usual grade lead concentrates. The company is at present smelting only the Northampton lead ores, which contain little or no silver, and the present output is at the rate of 5,000 tons per annum. The plant in operation has a capacity for an annual output of about 7,000 tons of pig lead.

3. **Zinc.**—The Zinc Producers' Association Proprietary Limited was formed in May, 1916, to control and dispose of the Australian output of zinc concentrate and metals. All the principal zinc-producing companies are members, and the Association is founded on a co-operative basis. Fundamental principles are "all British control" and "equality of treatment" to all members. The Commonwealth Government is represented on the Board, and provision is made in the Articles of Association for the appointment of a representative of the Imperial Government on the Association's London Board.

The following contracts have been negotiated with the Board of Trade, London :—

(*a*) Sale of all stocks of Broken Hill zinc concentrate and slime on hand at 31st December, 1917, less certain stipulated reserves, also the sale of 250,000 tons per annum during the period of the war and one year thereafter, and 300,000 tons per annum for nine years succeeding (if these quantities are available) plus option to the buyer over any balance of production. Full provision has been made for the requirements of works in Australia, and for all commitments in respect to contracts already made by the Association to Allied Countries.

(*b*) Sale of supplies available up to 45,000 tons per annum of spelter and electrolytic zinc for ten years from 1st January, 1918. The contract contains a provision reserving supplies for Australian consumption and for other existing markets.

In order to facilitate the early establishment of Australian zinc industries the Imperial Government has undertaken to advance £500,000, if required, to finance Australian zinc works, interest on such advances to be at the same rate as is paid by the Imperial Government.

Zinc works have been established within the Commonwealth as follow :—

At Port Pirie, South Australia, there is a Zinc Distillery, established in 1909 by the Broken Hill Proprietary Co. Ltd., and now controlled by the Broken Hill Associated Smelters Proprietary Company Limited. This plant has a capacity for the treatment of 16,000 tons of zinc concentrates and a production of 6,000 tons of spelter and other zinc products. Nearly one-third of the spelter product is used by the Smelter Company in its lead refining.

At Risdon, Hobart, there are works for the production of electrolytic zinc controlled by the Electrolytic Zinc Company of Australasia Proprietary Limited, which, when completed, will have a capacity for a production of about 37,000 tons of electrolytic zinc per annum. The company is also engaging in other allied industries, such as zinc rolling and the manufacture of zinc oxide, *lithophone, etc.*

A contract for electrical power has been arranged with the Tasmanian Government. The first block of 4,000 h.p. at 11,000 volts is now being delivered to the Risdon works, allowing for an output of 5,000 tons of high-grade zinc per annum. It is expected that the second block of 26,000 h.p. will be delivered in two sections, the first of 11,000 h.p. in about twelve months, and the balance of 15,000 h.p. at a later date, when it is anticipated the plant at Risdon will be ready to treat zinc concentrates and produce high-grade zinc to its full capacity.

The Mount Lyell Mining and Railway Company Limited, having acquired mines on the West Coast of Tasmania containing large bodies of complex sulphide ores, formed a new company—The Mount Read and Rosebery Mines Limited—to take over these properties. The new company promises to be a substantial producer of electrolytic zinc.

4. **Copper.**—The Copper Producers' Association Proprietary Limited was formed in November, 1917, on similar lines to those of the Zinc Producers' Association, to control and dispose of the output of copper produced within the Commonwealth. All the principal copper-producing companies are members of the Association, and, as in the case of the Zinc Producers' Association, the Commonwealth Government is represented on the Board of Directors.

Works are established within the Commonwealth for the refining of copper as follow :—

At Port Kembla, New South Wales, owned by the Electrolytic Refining and Smelting Company of Australia Limited, with a capacity for an output of 44,000 tons of electrolytic and fire-refined copper per annum.

At Wallaroo, South Australia, owned by the Wallaroo and Moonta Mining and Smelting Company Limited, with a capacity for an output of 9,000 tons of refined copper per annum.

At Bowen, Queensland, owned by the Mount Elliott Limited, with a capacity for an output of 9,000 tons of refined copper per annum.

At Lithgow, New South Wales, owned by the Mouramba Mines Limited, with a capacity for an output of 2,500 tons of refined copper per annum.

At Kandos, New South Wales, works are being erected for the C.S.A. Mines which, when completed, will have a capacity for an output of 2,500 tons of electrolytic copper per annum.

Metal Manufactures Limited, a company formed at the instigation of the Commonwealth Government by the principal copper-producing companies, is now manufacturing at its extensive works at Port Kembla, New South Wales, high conductivity copper wire, rods, bars, and strips. All the usual sections of bar and strip are being made as well as special sections, including commutator segments. Hard and soft-drawn copper wire, and square, hexagonal, and round rods are produced in all sizes. Square and rectangular wire of the dimensions of circular wire is made to order. Stranding machinery has been installed by the company to make hard-drawn bare copper strand of all known sizes. Single and double cotton-covered wires form a regular part of the output.

The extension of the works to cover a wider field of production is now under consideration by the company.

5. **Tin.**—The principal tin smelters are the Mount Bischoff Company, Tasmania, the Sydney Smelting Company (Pyrmont Works), New South Wales, and the Irvinebank Company, Queensland. These are capable of treating all the tin ore and concentrate at present produced in Australia.

6. **Molybdenite, Wolfram, and Scheelite.**—The Commonwealth Government in September, 1915, entered into an arrangement with the Imperial Government for the acquisition of all wolfram, molybdenite, etc., produced in Australia. Under this arrangement, practically the whole of these minerals produced in Australia are being acquired for the Imperial Government, the prices fixed from the 1st January, 1918, being—

Wolfram and scheelite, 65 per cent., WO_3, 52s. 6d. per unit at producing centres.
Molybdenite, 85 per cent., MoS_2, 100s. per unit at producing centres.

This arrangement with the Imperial Government will terminate six months after the declaration of peace.