

REPORT OF THE DIRECTOR OF MINES

AR1980

JANUARY — JUNE
1980

TASMANIA DEPARTMENT OF MINES

723



1982

PARLIAMENT OF TASMANIA

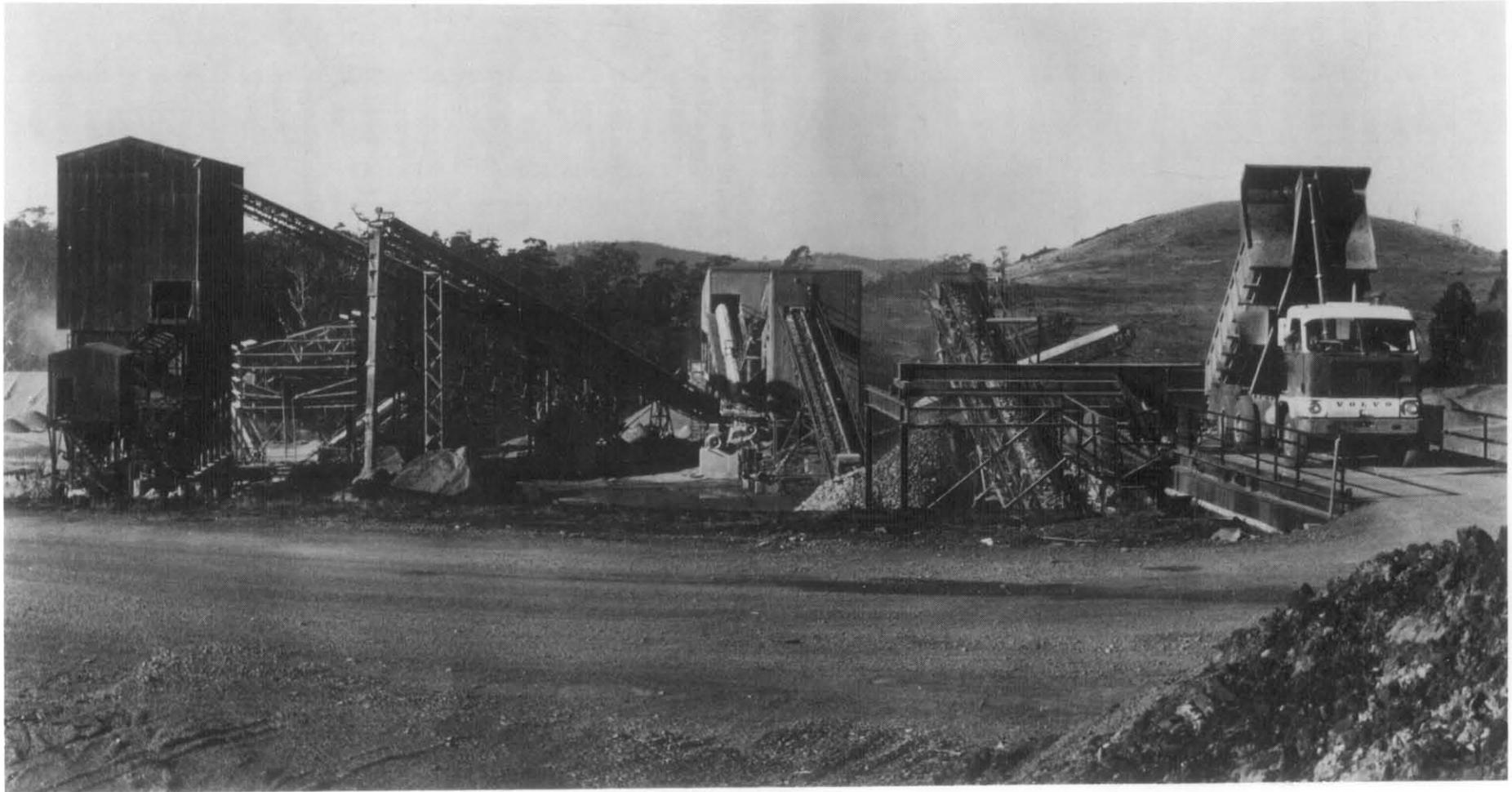
DIRECTOR OF MINES

REPORT FOR JANUARY TO JUNE 1980

Presented to both Houses of Parliament by His Excellency's Command

By Authority:

I. C. CARTER, Acting Government Printer, Tasmania



Hobart Blue Metal Industries quarry at Leslie Vale. Crushing and screening dolerite rock for use as road metal and aggregate. [CS1964]

TABLE OF CONTENTS

	PAGE
REPORT OF THE DIRECTOR OF MINES:	
Developments	5
Production	6
Metal Prices	8
Exploration	12
Coal	12
Oil	13
Australian Minerals and Energy Council	13
Revenue	14
Leases and licences	14
Mines Drafting Section	16
Wardens' Court	16
Mine managers' certificates	16
Value of Tasmanian minerals in recent years	17
Mineral production since 1880	18
Statistics relating to the mineral industry	20
Aid to mining	22
Staff Movements	22
Scholarships	22
Overseas visit	22
Conclusion	22
OPERATIONS AND PRODUCTION:	
1. Metallic minerals —	
Cadmium	23
Chromite	23
Cobalt oxide	23
Copper	23
Gold	26
Iron ore (pellets)	26
Iron oxide	27
Lead	28
Manganese dioxide	28
Mercury	28
Molybdenum	29
Pyrite	29
Silica for silicon alloy production	29
Silicon	29
Silver	29
Sulphur	29
Tin	30
Titanium	38
Tungsten (scheelite)	38
Tungsten (wolfram)	40
Zinc	41
Zircon	44

	PAGE
2. Non-metallic minerals—	
Clay	44
Dolomite	45
Kaolin	45
Limestone	45
Pebbles	46
Silica	47
3. Construction minerals—	
Building stone	47
Crushed and broken stone—	
Basalt	47
Dolerite	47
Limestone	47
Sandstone	47
Other stone	48
Gravel	48
Sand	48
Other road materials	48
4. Fuel minerals—	
Coal	48
Peat	49
5. Foreign ores—	
Aluminium	49
Ferro-manganese, ferro-silicon and silico-manganese	50
Titanium dioxide	50
Zinc, cadmium, cobalt oxide and superphosphate	50
GEOLOGICAL SURVEY BRANCH:	
Regional geology	51
Economic geology	52
Engineering geology	52
Geophysics	53
Cartographic draughting	54
Surveying	54
Geochemistry	54
Mineralogy and petrology	54
Palaeontology	55
Publications	55
CHEMICAL AND METALLURGICAL BRANCH:	
Summary of investigations	58
MINES AND EXPLOSIVES BRANCH:	
Employment	59
Accidents	59
Dangerous goods	63
Mechanical inspection	64
Electrical inspection	65
Drilling	65
North-Western District	67
North-Eastern District	67
Southern District	67
MOUNT CAMERON WATER RACE BOARD	68
RINGAROOMA AND CASCADE WATER BOARD	69

REPORT OF THE DIRECTOR OF MINES

Department of Mines,
Hobart, 16 November 1981

THE MINISTER FOR MINES

SIR,

I present my report on the mining industry for the six months ended 30 June 1980. Our annual report has been changed from a calendar year to a financial year period. This report will enable us to conform with financial years in future.

The value of metals and minerals produced from Tasmanian ores based on average Australian metal prices was \$196 101 766. This represents an increase of 24 per cent on the figure of \$157 709 536 for the corresponding period of 1979.

In addition metallurgical production from ores and concentrates imported into the State was \$165 101 795 compared with \$111 437 926 for the corresponding period of the previous year. This was an increase of 48 per cent.

There was reduced production of copper, gold, iron ore pellets, iron oxide, lead, silver, tin and zinc. However, this was offset by a substantial increase in tungsten as tungstic oxide, inflated prices for silver and gold and an improvement in copper and tin prices during the period under review.

Details of production and value of all mining products are shown elsewhere in this report but particulars of the principal minerals are summarised below —

	<i>January-June 1979</i>		<i>January-June 1980</i>	
	<i>Quantity</i>	<i>Value \$ million</i>	<i>Quantity</i>	<i>Value \$ million</i>
Copper (tonnes)	10 583	18.4	9 598	20.3
Gold (kilograms)	797	5.1	641	10.9
Iron ore pellets (tonnes)	1 176 234	24.7	1 104 656	23.2
Lead (tonnes)	7 898	7.5	7 217	6.9
Silver (kilograms)	33 025	7.0	27 227	20.0
Tin (tonnes)	3 319	46.3	3 281	52.9
Tungsten as tungstic oxide (tonnes)	1 177	14.0	1 486	18.7
Zinc (tonnes)	28 019	21.1	26 432	19.0
Coal (tonnes)	112 865	1.5	154 682	2.4

DEVELOPMENTS

RENISON LIMITED

The \$18 million program to expand the company's production from 630 000 to 850 000 tonnes of ore per annum continued during 1980.

The rod mill was fully commissioned in April 1980 and this will accommodate an annual ore feed rate of 690 000 tonnes. An additional ball mill will be brought on line towards the end of 1980. Deliveries of additional haulage trucks, loaders and drilling jumbos to increase the underground mobile fleet are on schedule.

The expenditure on site buildings includes an extension to the company's assay laboratory. The construction of 45 additional homes in Zeehan is proceeding. At the end of the year 18 houses had been completed.

QUE RIVER

A decision was made in early 1980 to extend the existing exploration decline into the upper part of the main ore body. This decline provides early access to mineable ore prior to production being available from the shaft.

Work has included deepening of the shaft to 238 m, road construction and other surface work. A permanent power supply has been installed and construction of 53 homes at Waratah is well advanced to house the mine work-force.

Changes have also been made to raise ore production from the planned initial level of 150 000 tonnes per year to 200 000 tonnes per year as soon as practicable. As a result of these changes it is now estimated that the capital cost of the project, from the time of the decision to proceed, until the commencement of production, will increase from \$16 million to \$19 million.

First ore deliveries are scheduled to be made in the first quarter of 1981 to the Electrolytic Zinc Company's concentrator at Rosebery.

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA

Construction work on the mill expansion project was 60 per cent complete by the end of the year. This expansion includes a new crushing station and increased capacity in the grinding, flotation and filtration sections of the mill. It is expected that the modernisation and expansion program will be completed by the end of December 1981.

KING ISLAND SCHEELITE

Development progress has been good at both the Dolphin and Bold Head mines. The mines and concentrator have now reached optimum production of about 400 000 tonnes a year. The molybdenum-free high purity artificial scheelite produced by the company has been well received on world markets.

MT LYELL MINING AND RAILWAY COMPANY LTD

The company repaid the Commonwealth Government subsidy of \$2.4 million and entered into an agreement with the Tasmanian Government to convert its subsidy to an interest-free loan. This is not repayable before 30 June 1985. This agreement was made conditional on the company undertaking significant capital expenditure and exploration to improve the company's longer-term viability. These works are now in progress and include the installation of two new large ball mills to replace eleven existing small mills which have an average age of 40 years.

Work has also commenced on extending the Main Decline to lower levels and the construction of a major long-term pumping station located on the bottom of the Prince Lyell No. 1 shaft.

CORNWALL COAL COMPANY

Preliminary work commenced in March on a new coal seam at Mt Nicholas. The new seam was discovered by the company late in 1979. A secondhand continuous miner and shuttle car being used on the development work will be replaced by new heavy mining equipment costing about \$1 million which is on order.

PRODUCTION

COPPER

The major producer is the Mount Lyell Mining and Railway Company Ltd at Queenstown but significant quantities also result from the processing of zinc-lead ores by the Electrolytic Zinc Company at Rosebery and as a product of tin mining operations by Cleveland Tin N.L. at Luina.

The Mount Lyell Company treated 698 250 tonnes of ore for the production of 30 787 tonnes of copper concentrate containing 8 034 tonnes of copper, 1 571 kilograms of silver and 179 kilograms of gold. The copper concentrates are transported by road to Melba Siding and then by rail to Burnie for shipment to Port Kembla and Japan.

The Electrolytic Zinc Company at Rosebery produced 1 336 tonnes of copper from the treatment of its zinc-lead ores and 228 tonnes were produced by Cleveland Tin N.L. at Luina as part of its tin mining operations.

IRON ORE

Pellets produced from iron ore mined at Savage River totalled 1 104 656 tonnes. Fourteen shipments of pellets were made from Port Latta to Japan under the existing contract.

Negotiations are continuing to transfer the area known as the Northern Lease to Savage River Mines.

TIN

Total production was 3 282 tonnes which was a decrease of 38 tonnes compared with the total of 3 320 tonnes for the six months ended 30 June 1979. The principal producers were Renison Limited at Renison Bell, Cleveland Tin N.L. at Luina, Aberfoyle Tin Limited at Rossarden and the Pioneer Tin Mine which is operated by Kibuka Mines Pty Ltd.

Tasmania continues to be the leading State in production of this mineral, contributing about 62 per cent of the Australian total production.

Renison Limited produced 2 541 tonnes of tin from the treatment of 273 209 tonnes of ore. The company has continued an active exploration program at Renison Bell, Mt Lindsay, Trial Harbour and Wilson River. The drilling program continued in the Blue Tier area near St Helens.

At the Cleveland mine at Luina production consisted of 563 tonnes of tin and 228 tonnes of copper from the treatment of 163 756 tonnes of ore.

Aberfoyle Tin Ltd treated 23 806 tonnes of ore from the Storeys Creek and Aberfoyle mines to produce 110 tonnes of concentrate containing 82 tonnes of tin and 88 tonnes of concentrate containing 63 tonnes of wolfram.

Amdex Mining Ltd continued to operate the Endurance mine at South Mt Cameron and the Pioneer mine at Pioneer. At Endurance 101 761 tonnes was treated for the recovery of 30 tonnes of tin. A total of 75 000 tonnes was treated for the recovery of 31 tonnes of tin from the operations at Pioneer.

The level of activity by small operators in the alluvial areas was maintained at a high level. This was a result of the continued high level of tin metal prices.

TUNGSTEN

The principal producers are King Island Scheelite, who mine scheelite at their Bold Head and Dolphin mines on King Island, Aberfoyle Limited, who produce wolfram concentrates from the mining of wolfram-tin ores near Rossarden, and Tasminex N.L. who produce scheelite from the Kara mine at Hampshire.

The Oakleigh Creek mine, which will be operated by Central Tasmanian Tungsten Pty Ltd on behalf of a consortium of French and Australian mining companies will commence production in the latter half of 1980.

The King Island Scheelite mine treated a total of 206 631 tonnes of ore for the production of 1 374 tonnes of tungstic oxide. An amount of 23 806 tonnes of ore was processed at the Aberfoyle mill for the recovery of 63 tonnes of tungstic oxide and 82 tonnes of tin.

Tasminex N.L. produced 48 tonnes of tungstic oxide from their mine at Kara. This was almost as much as the production for the previous twelve months.

ZINC

The Electrolytic Zinc Company at Rosebery treated 304 981 tonnes of ore for the recovery of 60 211 tonnes of zinc concentrates, 12 168 tonnes of copper concentrates and 7 802 tonnes of lead concentrates. Total production of metal consisted of 26 432 tonnes of zinc, 7 217 tonnes of lead, 1 336 tonnes of copper, 25 656 kilograms of silver and 461 kilograms of gold.

The zinc concentrates from the Rosebery mine and concentrates from the Broken Hill mines are treated at the Electrolytic Zinc Company's plant at Risdon. The production of zinc from non-Tasmanian ore was 61 859 tonnes.

METAL PRICES

The following table shows the average Australian metal prices:—

<i>Commodity</i>	<i>Unit</i>	<i>1977-78</i>	<i>1978-79</i>	<i>1979-80</i>
		\$	\$	\$
Copper	tonne	1 108.34	1 506.67	1 975.00
Gold	kilogram	4 762.06	6 526.09	14 014.55
Lead	tonne	512.50	791.25	1 041.50
Rutile concentrates	tonne	187.50	213.25	305.00
Silver	kilogram	140.90	186.26	563.63
Tin	tonne	10 974.75	12 827.33	15 413.08
Tungstic oxide	unit	133.22	120.10	124.60
Zinc	tonne	576.67	674.17	725.25

COPPER

The price at the end of January was \$2 500 per tonne. This increased in February to \$2 640 per tonne and then declined each month until June when the price was \$1 740 per tonne.

The price in January was influenced by the speculative boom which occurred at the end of 1979 and by disruption to supply caused by industrial problems in Chile.

The decline from February to June is partly a result of the general world economic recession and it is expected to continue for some time.

The London Metal Exchange price in January was £1 300 and it then declined to June when it had reached £858.46.

TIN

At the beginning of 1980 the price of tin was \$15 966 per tonne. This rose to \$17 438 in February and then declined each month until by June it was \$15 572.

In December 1979 the United States General Services Administration was authorised to release 35 000 long tons from the strategic stockpile. The arrangements which have been agreed to are that lots of 500 tonnes shall be made available for auction but that no bid need be accepted and the market will not be unduly disrupted. By 30 June seven lots have been made available but only 5 tonnes has been sold and all bids have been below the market price.

This stockpile release plus a change from supply less than demand to a marginal supply greater than demand situation has removed the upward pressure on the price. Whilst the price will not increase it is not expected that the fall will be dramatic.

TUNGSTEN

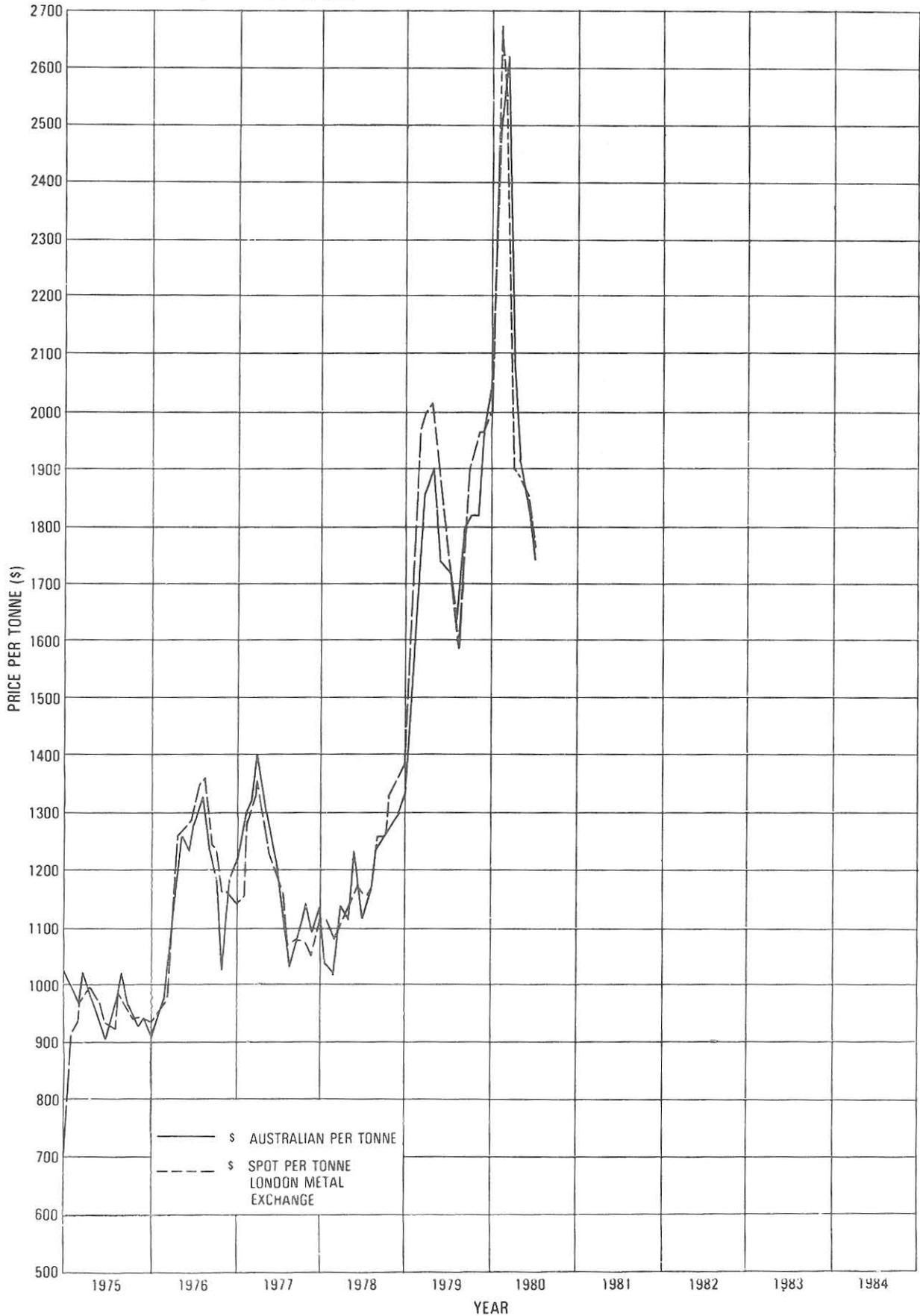
Tungsten prices have remained relatively stable since 1978 and this pattern continued for the period January to June 1980. The London Metal Exchange price range has varied from \$140-\$145 per metric ton unit (mtu) in January to a high of \$145-\$149 in March and a low of \$138-\$143 in May. At the end of June the range was \$143-\$146.

The average Australian price ranged from \$125.30 per mtu in January to a high of \$133.58 per mtu in March and low of \$120.08 per mtu in May. In June the price was \$123.27 per mtu.

There is no indication that this steady state of affairs will not continue.

COPPER PRICES

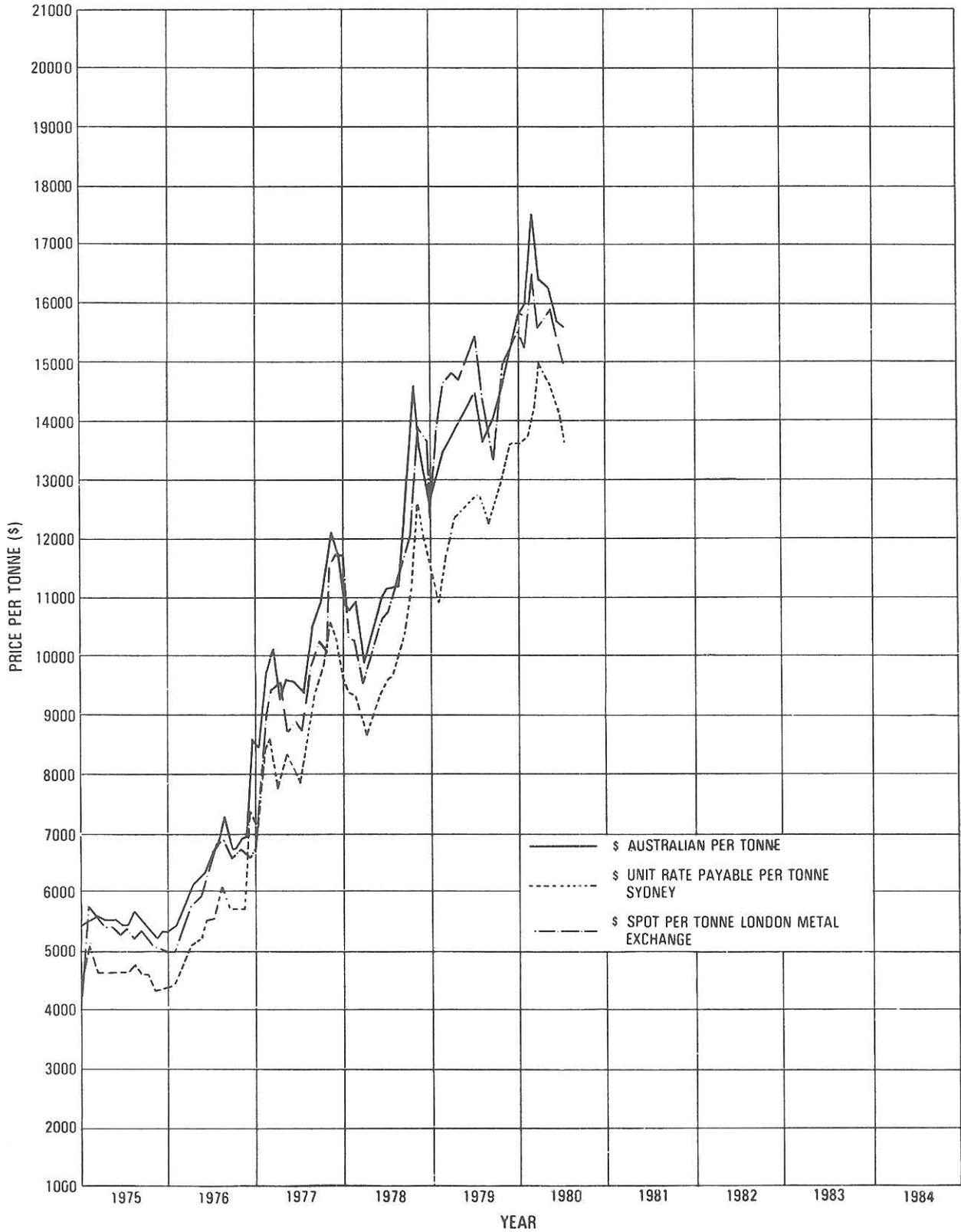
MONTHLY AVERAGES, 1975-JUNE 1980



5 cm

TIN PRICES

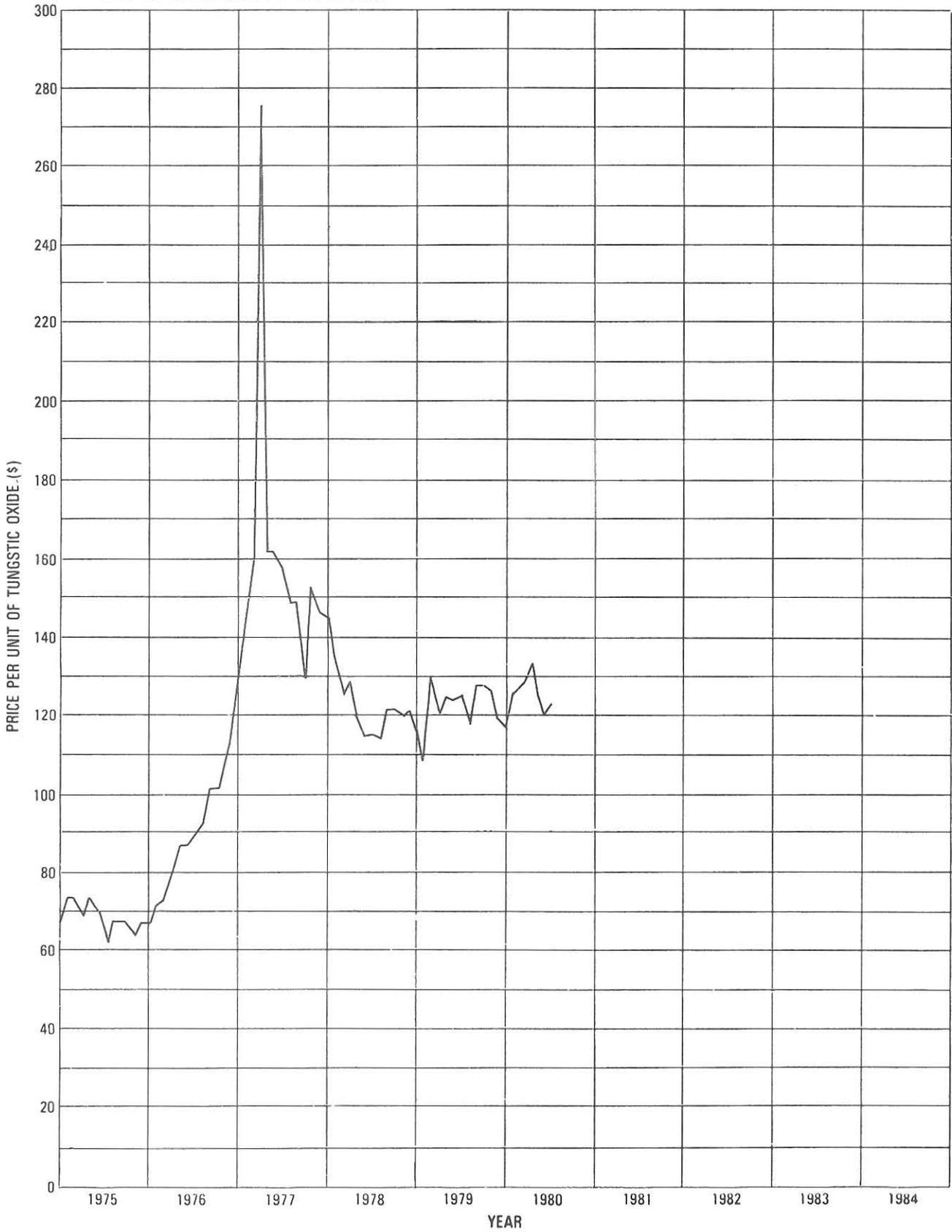
MONTHLY AVERAGES, 1975-JUNE 1980



5 cm

TUNGSTEN PRICES

MONTHLY AVERAGES, 1975-JUNE 1980



5 cm

ZINC

There has been a very small growth in zinc consumption world wide since 1968 (of the order of 2 per cent) but the demand in developing countries is increasing at a much greater rate (approximately 8 per cent in the ten year period to 1978).

During the first quarter of 1980 there was a continuing slight decline in production in the western world. This was not sufficient to prevent a continuous decline in the LME price which moved from £370 per tonne in January to £289.83 per tonne in June. It is expected that this decline will continue as a 3 per cent fall in demand was forecast in May 1980.

The Australian price has fluctuated from \$714 per tonne in January 1980 to \$745 in February and March, \$715 in April and May and in June was \$695.

EXPLORATION

Thirty-two applications were received for exploration licences in the six months ended 30 June 1980. Six of these were for coal and 26 for other minerals.

At the end of June there were 95 current licences for exploration. Nineteen new licences were issued during the period under review. Expenditure on Exploration Licences and Special Prospectors' Licences for the period totalled \$4 067 988 compared with \$2 983 159 for the same period in 1979.

The moratorium imposed on South-West Tasmania continued in force. This is to remain until the appropriate legislation is passed by Parliament to amend the National Parks and Wildlife Act and the Forestry Act.

The demand for the Department's key maps for (a) all minerals, and (b) coal, oil and shale showing current and pending licences has continued. There are now 63 companies which receive the six issues of the maps made during the financial year.

The Department has maintained its established program of regional geological mapping, economic geology, groundwater investigations and engineering geology. Maps and reports are issued regularly and professional staff are always available to assist and advise those engaged in the mining industry.

Reports and other information lodged by former exploration licence holders are placed on 'open file' when licences are relinquished or cancelled. These, with Departmental publications and maps, form the basis upon which further work is planned by other explorers.

The Department's drilling plants have continued testing mineral and coal deposits and the investigation and measurement of underground water in selected areas.

COAL

The Duncan mine at Fingal operated by the Cornwall Coal Company N.L. was the only coal mine in production during the year. Output for the six months showed an increase of 41 817 tonnes over the figure of 112 865 tonnes for the same period in 1979. The total production for the six months was 154 682 tonnes. The average number of employees increased from 107 to 115.

The Cornwall Coal Company at present provides coal for its parent company, Goliath Cement, and for the Australian Newsprint Mills at Boyer, Cadburys, the Royal Derwent Hospital and Savage River Mines.

Since the company was taken over by Goliath an intensive exploration program has been undertaken to ascertain the extent of coal seams in the area. In addition a new coal seam has been opened up, improvements have been made to the coal washing facility and a new maintenance workshop has been constructed.

Coal exploration is also being carried out by the Department in the Fingal Valley and by the Shell Company at Avoca on E.L. 18/77 and in a joint venture with Industrial and Mining Investigations Pty Ltd on E.L. 5/61 on the East Coast.

OIL

The following table shows details of permits issued under the Petroleum (Submerged Lands) Act 1967 which were current at 30 June 1980:—

<i>Title</i>	<i>Blocks</i>	<i>Holder</i>	<i>Expiry Date</i>
T/5P	16	Hematite Petroleum Pty Ltd	16.7.84
T/6P	32	Hematite Petroleum Pty Ltd	16.7.84
T/12P	60	Amoco Australia Petroleum Company, Tasman Oil Inc.	4.4.85
T/13P	224	Otter Exploration N.L.	4.4.85
T/14P	42	Cue Minerals N.L.	9.1.86
T/15P	272	Weaver Oil and Gas Corp. Aust.	19.2.86

There were also three applications in process at the end of June. These included —

- Weaver Oil and Gas Corp. Aust.— 32 blocks.
- Van Diemen's Land Resources and Others — 16 blocks.
- Bass Strait Oil and Gas N.L. and Others — 118 blocks.

All applications are for areas in Bass Strait.

Weaver Oil and Gas Corporation is an American company based in Houston, Texas. The other applications are from two consortiums of Australian companies.

In April the Federal Government introduced legislation giving the States day-to-day control of offshore mining. Under the legislation the State mines ministers will be able to set day-to-day rules for mining operations. These will include safety standards, the number of wells drilled and adherence to exploration conditions.

AUSTRALIAN MINERALS AND ENERGY COUNCIL

The Council met on 7 March in Adelaide and 9 April in Melbourne.

Important matters discussed have included:—

- (1) Offshore mining —
 - Petroleum (Submerged Lands) Act amending legislation
 - Other minerals legislation
 - Revised royalty arrangements for offshore petroleum.
- (2) National energy conservation campaign.
- (3) L.P.G.
- (4) Natural gas.
- (5) Enquiry into electricity generation and the sharing of power resources in south-east Australia.
- (6) Future of Australian phosphate industry.
- (7) Oil supplies outlook.
- (8) Raw materials processing.
- (9) National program to expand electricity generation from coal, and electricity transmission within the infrastructure framework.
- (10) Motor vehicle emission.
- (11) National Petroleum Advisory Committee reports.
- (12) International developments.
- (13) National Energy Research, Development and Demonstration Program.

The meeting in Melbourne in April was convened to conclude agreement on the Petroleum (Submerged Lands) Amendment Bill of 1980 as introduced into Federal Parliament. The States have agreed to follow this with mirror legislation and discussion continues between State Parliamentary Counsels.

REVENUE

REVENUE COLLECTED DURING THE SIX MONTHS ENDED 30 JUNE 1980

<i>Heads of Revenue</i>	\$
Mines Department (Drilling)	96 934
Rent and Fees of Auriferous and Mineral Lands	89 089
Iron Ore Royalty	182 157
Mineral Royalties	2 979 759
Survey Fees	1 425
Fees under the Dangerous Goods Act	8 799
	3 358 163

COMPARATIVE STATEMENT OF REVENUE FROM MINES BEING RENTS, FEES, STORAGE OF EXPLOSIVES, ETC., PAID TO THE TREASURY DURING THE YEARS 1974-75 TO 1979-80

<i>Year</i>	\$	<i>Year</i>	\$
1974-75	693 667	1977-78	2 455 353
1975-76	884 877	1978-79	2 621 380
1976-77	1 866 370	1979-80	5 837 682

The above statement does not include Stamp Duties upon Transfer of Leases and Licences.

ROYALTIES

The royalty on sand and gravel remained unchanged at 30 cents per cubic metre. The three tier system for other minerals applied for the full period.

The amount of royalty collected in the period was \$2 979 759 consisting of \$18 415 from the mining of sand and gravel and \$2 961 344 from other mining operations.

Two companies elected to pay royalty on proceeds and one elected to pay on profits.

LEASES AND LICENCES

NUMBER AND AREA OF NEW LEASES AND LICENCES ISSUED
DURING THE SIX MONTHS ENDED 30 JUNE 1980

<i>Leases and Licences</i>	<i>Number</i>	<i>Area (ha)</i>
Coal	2	1 463
Copper	1	1 171
Gold	9	575
Stone	3	84
Minerals	1	2
Gravel and Sand	5	256
Tin	15	191
	36	3 742

TOTAL NUMBER OF LEASES AND LICENCES IN FORCE
ON 30 JUNE 1980

<i>Leases and Licences</i>	<i>Number</i>	<i>Area (ha)</i>	<i>Sluiceways</i>
Antimony	1	32	....
Bauxite	5	183	....
Clay	20	356	....
Coal	16	3 638	....
Copper	4	2 393	....
Dolomite	4	126	....
Gemstones	3	22	....
Gold	63	2 338	....
Granite	2	6	....
Iron ore	18	1 692	....
Kaolin	1	346	....
Limestone	5	615	....
Marble	2	32	....
Minerals	68	10 990	....
Osmiridium and chromite	2	184	....
Peat	2	92	....
Sand and gravel	105	7 689	....
Silica	11	641	....
Slate	2	99	....
Stone	107	5 382	....
Silver, lead and zinc	17	959	....
Tin	372	11 804	....
Uranium	1	81	....
Wolfram and tin	15	2 772	....
Water	112	....	1 047
Easements	84	1 432	....
Total	1 042	53 904	1 047

NUMBER AND AREA OF LEASES AND LICENCES APPLIED
FOR DURING THE SIX MONTHS ENDED 30 JUNE 1980

<i>Leases and Licences</i>	<i>Number</i>	<i>Area (ha)</i>	<i>Sluiceways</i>
Coal	5	2 170	....
Gold	9	566	....
Gravel and sand	8	243	....
Limestone	5	97	....
Minerals	7	1 236	....
Tin	35	812	....
Water	5	....	15
Total	74	5 124	15

TOTAL NUMBER OF ALL TYPES OF PROSPECTING RIGHTS HELD
AS AT 30 JUNE 1980

<i>Mining Tenement</i>	<i>Number</i>	<i>Area</i>
Permits to enter and search on private land, including owners' consents	12	16 935 ha
Exploration licences	91	25 554 km ²
Special Prospectors' licences	4	80 km ²
Miners' Rights	4	1 ha
Prospectors' licences	20	442 ha
Authorities to prospect under the Aid to Mining Act 1927	....	....
Permits to explore for petroleum under the Petroleum (Submerged Lands) Act 1967	7	662 blocks

MINES DRAFTING SECTION

Three new tenement charts at a scale of 1:20 000 were produced — Dublin Town, Yolande River and Brilliant Creek.

Due to the upsurge in mining activity, the increase in the price of gold and the popularity of metal detectors, enquiries from the public increased considerably during the period of this report.

Fifty-three applications for mineral leases on Crown land and 14 on private property were recorded. Because of ever-increasing regulation of land use, the searching and recording of lease applications is taking up more and more of the available time of staff of the section.

Special Prospectors' Licences and Exploration Licence applications totalled 37 and again searching and recording is becoming more and more complex.

Two special plans were drawn showing areas exempt from the Mining Act 1929.

Twenty-two diagrams were drawn subject to survey and a further four survey diagrams were drawn in office.

Dyelines for office use and for sale to the public totalled 900. Most of these were Exploration Key Maps.

Photostat copies for sale and office use amounted to 31 000. Copy number has decreased from the previous period, undoubtedly due to quality problems with the current copy machine.

Of particular concern to the section during this period was the ever-increasing task of attending to requests from the legal profession regarding mineral tenure on lands subject to purchase.

WARDENS' COURT

A. and S. Annan v. B.H.P. Co. Ltd. Objection to exploration licence, Styx River. The objection was withdrawn by the plaintiff.

Tasmanian Conservation Trust and Tasmanian Wilderness Society v. White Industries Ltd. Objection to exploration licence, Geeveston. The objection was withdrawn by the plaintiff.

Tasmanian Conservation Trust and Tasmanian Wilderness Society v. White Industries Ltd. Objections to exploration licence, Glovers Bluff. The objection was withdrawn by the plaintiff.

N. W. Fearn v. C. Faulkner. Forfeiture of lease 78M/73. Application withdrawn by plaintiff.

R. K. McDermott v. F. J. Griffiths and D. C. Dunkley. Forfeiture of leases 90M/72 and 4M/73, by consent of the parties lease 90M/72 was forfeited.

S. A. Clark v. Electrolytic Zinc Co. of Australasia Ltd. Forfeiture of lease 123M/47. The application was not heard.

M. Reynolds v. R. M. McLellan. Forfeiture of leases 20M/72, 21M/72, 22M/72, 26M/72. The application was not heard.

F. Bardenhagen v. G. E. Johnson. Objection to lease application 1041P/M and licence 9W/80. The Warden of Mines dismissed the application for the lease and licence.

P. J. Price v. N.S.W. Mining Pty Ltd. Forfeiture of lease 11635/M. The Warden of Mines forfeited the lease.

MINE MANAGERS' CERTIFICATES

Metalliferous Mine Managers' Certificates were issued by the Board of Examiners under the Mines Inspection Act 1968, as follows:—

By examination viva voce —

<i>Certificate No.</i>	<i>Name</i>
273/80	Roland Ronald Mertimer
274/80	Stephen Douglas Ireland
275/80	John Hylton

**VALUE OF TASMANIAN MINERALS IN RECENT YEARS WITH AUSTRALIAN METAL
PRICES**

<i>Year</i>	\$	<i>Year</i>	\$
1970-71	109 063 914	1975-76	190 490 321
1971-72	126 387 262	1976-77	277 266 070
1972-73	133 238 921	1977-78	291 496 400
1973-74	164 699 058	1978-79	322 919 534
1974-75	173 297 481	1979-80	372 810 760

MINERAL PRODUCTION SINCE 1880

QUANTITY AND VALUE OF PRODUCTION AS AT 30 JUNE 1980

Commodity	Unit	Total Quantity	Total Value
METALLIC MINERALS			
Antimony	(tonne)	3	\$ 2 034
Bismuth	(kilogram)	110 080	503 385
Cadmium	(tonne)	3 147	12 362 716
Chromite	(tonne)	2 121	195 847
Cobalt oxide	(kilogram)	132 174	874 543
Copper (blister) to 1918 (now shown under Silver and Copper)	(tonne)	169 273	25 577 054
Copper matte	(tonne)	6 326	267 472
Copper ore to 1918 (now shown under Copper)	(tonne)	42 439	1 155 476
Copper (from 1919)	(tonne)	778 028	538 601 496
Crocoite	(specimens only)	....	46 187
Gold	(kilogram)	102 582	101 720 898
Ilmenite	(tonne)	558	2 512
Iron ore pellets	(tonne)	25 706 773	391 069 130
Iron oxide (including hematite, limonite and magnetite)	(tonne)	277 801	1 452 702
Lead (from 1919)	(tonne)	568 971	127 286 096
Manganese	(tonne)	1	6
Manganese dioxide (from 1957)	(tonne)	11 743	428 089
Mercury	(kilogram)	7 697	90 251
Molybdenum	(tonne)	25	96 848
Monazite	(tonne)	34	1 214
Nickel	(tonne)	237	81 036
Osmiridium	(kilogram)	881	1 418 771
Pyrite (to 1971)	(tonne)	2 124 070	10 239 957
Pyrite (from 1972)	(tonne)	1 524 975	....
Rutile	(tonne)	1	36
Rutile (concentrates)	(tonne)	40 027	8 270 047
Scheelite (concentrates)	(tonne)	51 369	226 217 424
Silica for silicon alloy production	(tonne)	288 969	6 008 324
Silicon as silicon alloys	(tonne)	310 262	62 568 531
Silver-lead ore to 1918 (now shown under Silver and Lead)	(tonne)	1 101 295	12 858 582
Silver (from 1919)	(kilogram)	2 239 911	124 099 084
Sulphur as sulphuric acid	(mono tonne)	4 164 187	76 504 843
Tin	(tonne)	228 841	603 593 698
Wolfram (concentrates)	(tonne)	21 964	45 279 949
Zinc	(tonne)	1 540 848	482 772 298
Zinc sulphate (from 1957)	(tonne)	3 251	324 177
Zircon (concentrates)	(tonne)	39 001	5 039 899
NON-METALLIC MINERALS			
Asbestos	(tonne)	4 044	34 284
Barite	(tonne)	2 240	16 478
Clay (from 1958) —			
Brick	(metre ³)	1 695 135	4 650 167
Tile	(metre ³)	71 310	182 009
Other	(metre ³)	542 829	2 293 963
Dolomite	(tonne)	119 352	1 016 879
Graphite	(tonne)	41	214
Kaolin	(tonne)	175 249	6 262 909
Limestone —			
Agricultural and other	(tonne)	1 380 491	4 366 708
Carbide	(tonne)	1 060 508	5 621 174
Cement	(tonne)	11 047 047	20 927 158
Chemical and metallurgical	(tonne)	5 053 038	10 756 343
Ochre	(tonne)	2 949	23 483
Pebbles (from 1957)	(tonne)	24 925	505 367
Sand (moulding)	(tonne)	864	9 550
Silica	(tonne)	428 851	1 196 298
Talc	(tonne)	338	2 154
FUEL MINERALS			
Coal	(tonne)	11 639 538	41 433 332
Shale	(tonne)	42 239	62 462
Peat	(tonne)	10 269	525 528

MINERAL PRODUCTION SINCE 1880 — *continued*
 QUANTITY AND VALUE OF PRODUCTION AS AT 30 JUNE 1980 — *continued*

<i>Commodity</i>	<i>Unit</i>	<i>Total Quantity</i>	<i>Total Value</i>
CONSTRUCTION MATERIALS			\$
Building stone —			
Freestone	(metre ³)	15 637	947 344
Granite	(metre ³)	6 269	337 872
Other stone	(metre ³)	14 681	131 388
Crushed and broken stone (from 1958) —			
Basalt	(metre ³)	4 721 632	28 169 756
Dolerite	(metre ³)	10 153 345	50 457 049
Limestone	(metre ³)	452 546	2 114 093
Sandstone	(metre ³)	50 326	191 678
Other	(metre ³)	4 394 185	22 415 848
Gravel (from 1958)	(metre ³)	24 627 069	64 489 514
Sand (from 1958)	(metre ³)	3 038 004	10 674 513
Other road-making material	(metre ³)	3 623 029	8 556 367
			3 157 382 494

STATISTICS RELATING TO THE MINERAL INDUSTRY

Commodity	Unit	Six months ended 30 June 1979		Six months ended 30 June 1980	
		Total Quantity	Value	Total Quantity	Value
METALLIC MINERALS			\$		\$
Cadmium	(tonne)	66	366 630	68	442 000
Chromite	(tonne)	403	35 395	432	45 115
Cobalt oxide	(tonne)	....	....	....	....
Copper	(tonne)	10 583	18 437 794	9 598	20 335 492
Crocoite	(specimens only)	....	1 447	....	....
Gold	(kilogram)	707	5 068 291	641	10 873 565
Iron ore pellets	(tonne)	1 176 234	24 703 016	1 104 656	23 193 252
Iron oxide	(tonne)	8 700	82 500	8 400	84 000
Lead	(tonne)	7 898	7 527 428	7 217	6 867 850
Manganese dioxide	(tonne)	31	977	72	2 409
Mercury	(kilogram)	....	....	....	....
Molybdenum	(tonne)	Production recorded from 1980	....	25	96 848
Rutile (concentrates)	(tonne)	....	....	....	....
Silica for silicon alloy production	(tonne)	28 978	724 450	37 040	926 000
Silicon as silicon alloys	(tonne)	14 123	6 723 770	16 236	5 512 015
Silver	(kilogram)	33 025	7 046 099	27 227	19 979 634
Sulphur —					
Pyrite	(tonne)	31 655	....	Recorded production ceased 1979	....
Sulphuric acid from pyrite	(mono tonne)	72 400	....	....	....
Sulphuric acid from zinc concentrates	(mono tonne)	41 096	989 007	53 510	1 004 383
Tin	(tonne)	3 319	46 287 627	3 281	52 867 430
Tungsten as tungstic oxide	(tonne)	1 177	14 005 532	1 486	18 732 083
Zinc	(tonne)	28 019	21 112 716	26 432	19 070 688
Zircon (concentrates)	(tonne)	....	....	....	....
VALUE OF METALLIC MINERALS			153 112 679		180 032 764
NON-METALLIC MINERALS					
Clay —					
Brick	(metre ³)	34 427	105 928	30 633	153 165
Tile	(metre ³)	....	....	....	....
Other	(metre ³)	6 500	33 035	6 884	34 420
Dolomite	(tonne)	11 925	140 542	8 369	99 084
Kaolin	(tonne)	8 196	718 358	8 964	694 972
Limestone —					
Agricultural	(tonne)	35 727	243 875	27 125	167 457
Carbide	(tonne)	9 819	147 285	21 671	325 065
Cement	(tonne)	312 829	938 487	268 083	804 249
Chemical and metallurgical	(tonne)	43 039	421 774	44 947	466 304
Other	(tonne)	8 042	24 743	11 427	40 836
Ochre	(tonne)	....	....	....	....
Pebbles	(tonne)	746	21 090	993	31 539
Silica	(tonne)	3 969	22 428	5 175	29 770
VALUE OF NON-METALLIC MINERALS			2 817 545		2 846 861
FUEL MINERALS					
Coal	(tonne)	112 865	1 462 949	154 682	2 366 903
Peat	(tonne)	345	65 905	815	155 400
VALUE OF FUEL MINERALS			1 528 854		2 522 303
CONSTRUCTION MATERIALS					
Building stone —					
Freestone	(metre ³)	213	9 310	392	44 186
Granite	(metre ³)	....	....	....	....
Granite (red)	(metre ³)	554	67 392	48	12 726
Other	(metre ³)	1 172	12 020	....	....

STATISTICS RELATING TO THE MINERAL INDUSTRY — *continued*

Commodity	Unit	Six months ended 30 June 1979		Six months ended 30 June 1980	
		Total Quantity	Value	Total Quantity	Value
Crushed and broken stone—			\$		\$
Basalt	(metre ³)	245 622	1 727 374	334 024	3 437 105
Dolerite	(metre ³)	173 146	1 230 258	116 136	1 189 893
Limestone	(metre ³)	25 992	183 925	6 466	64 660
Sandstone	(metre ³)	4 036	28 400	869	9 470
Other	(metre ³)	131 071	896 775	122 476	1 228 390
Gravel	(metre ³)	616 310	3 016 577	662 644	3 969 953
Sand	(metre ³)	132 520	775 992	109 113	680 476
Other road materials	(metre ³)	60 487	302 435	10 995	62 979
VALUE OF CONSTRUCTION MATERIALS	....	....	8 250 458	....	10 699 838
TOTAL VALUE WITH AUSTRALIAN METAL PRICES	....	....	157 709 536	....	196 101 766
METALLURGICAL PRODUCTION FROM OTHER THAN TASMANIAN ORES	....	....	111 437 926	....	165 101 795
VALUE OF MINING AND METALLURGICAL PRODUCTION	....	....	277 147 462	....	361 203 561

AID TO MINING

Under the provisions of the Aid to Mining Act 1927, financial assistance may be made available to companies or single operators who hold mineral leases. Loans are secured by a registered mortgage deed and repayments are required at the rate of 7.5 per cent of the proceeds of minerals produced and sold. Repayments of royalty from assisted parties are credited to the Mining Trust Fund and are then available to other applicants.

For the period from January to June 1980 three advances totalling \$35 000 were made. Two of these were to enable drilling to be carried out and the other was to assist a tin miner to purchase a bulldozer.

STAFF MOVEMENTS

<i>Name</i>	<i>Position</i>	<i>Remarks</i>	
Bacon, C. A.	Geologist	Commenced	4.2.80
Davis, L. G.	Field Assistant	Commenced	20.3.80
Gardner, C. G.	Inspector of Explosives	Commenced	5.6.80
Garlick, E. J.	Inspector of Explosives	Commenced	24.4.80
Hunt, G. E.	Inspector of Explosives	Commenced	2.6.80
Johnson, E. A.	Field Assistant	Resigned	18.4.80
Martin, N. M.	Laboratory Technician	Commenced	5.5.80
McGuinness, A. M. (Miss)	Typist	Commenced	14.2.80
Moore, G. P. (Mrs)	Typist	Resigned	13.2.80
Murray, D.	Drilling Superintendent	Resigned	30.4.80
Whitehead, E. J.	Clerk	Commenced	13.3.80
Wyatt, D. J.	Field Assistant	Resigned	29.2.80
Wyton, S. R. (Miss)	Laboratory Technician	Commenced	14.3.80

SCHOLARSHIPS

No new scholarships were awarded for 1980. P. B. Ketelaar and D. Polya commenced their third year of study at the University of Tasmania for the degree for Bachelor of Science.

OVERSEAS VISIT

Two officers of the Department attended the 5th International Gondwana Congress in Wellington, New Zealand in February 1980.

Four officers attended the 3rd Australian-New Zealand Geomechanics Conference in Wellington, New Zealand in May 1980.

The Director of Mines, Mr J. G. Symons, attended a meeting of the Australasian Institute of Mining and Metallurgy in New Zealand in April and May.

Mr R. H. Castleden, geologist, attended the 42nd Annual Meeting of the European Association of Exploration Geophysicists in Istanbul, Turkey, and also completed a course in effective seismic data processing in London.

CONCLUSION

Appreciation is recorded of the services rendered by officers of the Department, Wardens of Mines and Registrars of Mines in Hobart, Launceston and Burnie.

A detailed review of operations and production, and the reports of the Geological Survey Branch, the Chemical and Metallurgical Branch, Mines and Explosives Branch, the Mount Cameron Water Race Board and the Ringarooma and Cascade Water Board follow.

J. G. SYMONS, Director of Mines.

OPERATIONS AND PRODUCTION
1. METALLIC MINERALS
CADMIUM

QUANTITY AND VALUE OF PRODUCTION

<i>Year</i>	<i>Tonnes</i>	<i>Value (\$)</i>	<i>Year</i>	<i>Tonnes</i>	<i>Value (\$)</i>
1927-1975	2 526	9 279 286	1978	145	594 500
1976	118	554 810	1979	141	760 870
1977	149	731 250	1980*	68	442 000
			Total	3 147	12 362 716

* January to June.

This is a by-product obtained by the Electrolytic Zinc Company of Australasia Ltd at its Risdon Works from zinc concentrates produced from the Rosebery and Williamsford mines.

Sixty-eight tonnes of contained cadmium were produced valued at \$442 000.

CHROMITE

QUANTITY AND VALUE OF PRODUCTION

<i>Year</i>	<i>Tonnes</i>	<i>Value (\$)</i>	<i>Year</i>	<i>Tonnes</i>	<i>Value (\$)</i>
1978	684	61 312	1979	1 006	89 420
			1980*	432	45 115
			Total	2 122	195 847

* January to June.

NORTHERN CHROMITE PTY LTD, BEACONSFIELD

A hydraulic excavator and 10-tonne capacity trucks were introduced to replace the bulldozer formerly used to move and stockpile ore.

Reclamation of tailings from three early tailings dams was completed. A new large tailings storage dam was constructed during the period under review and all mine water is now re-circulated to prevent the discharge of any effluent into Andersons Creek.

The workforce remained static during the period.

Twenty-two thousand three hundred and seventy-three tonnes of ore were treated to produce 740 tonnes of concentrates valued at \$45 115.

COBALT OXIDE

No production of cobalt oxide was recorded for the period under review.

COPPER

SOURCE QUANTITY AND VALUE OF PRODUCTION

<i>Year</i>	<i>From tin ores</i>		<i>From lead-zinc ores</i>		<i>In blister copper</i>		<i>From copper ores</i>		<i>Totals</i>	
	<i>Tonnes</i>	<i>\$</i>	<i>Tonnes</i>	<i>\$</i>	<i>Tonnes</i>	<i>\$</i>	<i>Tonnes</i>	<i>\$</i>	<i>Tonnes</i>	<i>\$</i>
1919-1975	5 685	6 282 004	30 440	26 439 839	501 143	208 564 870	142 414	159 075 841	679 682	400 366 554
1976	611	709 379	2 709	3 153 402	....	....	21 246	24 644 879	24 566	28 507 660
1977	433	519 836	2 966	3 509 792	....	....	17 690	20 772 332	21 089	24 801 960
1978	450	547 864	2 163	2 596 818	....	....	19 454	23 586 223	22 067	26 730 905
1979	453	820 955	2 318	4 172 383	....	....	18 255	327 865 587	21 026	37 858 925
1980*	228	478 990	1 336	2 787 693	....	....	8 034	17 068 809	9 598	20 335 492
Total	7 860	9 363 028	41 932	42 659 927	501 143	208 564 870	227 093	278 013 671	778 028	538 601 496

* January to June.

THE MOUNT LYELL MINING AND RAILWAY COMPANY LIMITED, QUEENSTOWN

T. E. Evans, Mining Engineer, Burnie, reports —

PRODUCTION

Production over the period was as follows:—

1. Tonnage of ore mined and despatched to the concentrator —

<i>Source</i>	<i>Tonnes</i>
Prince Lyell	545 338
'A' and Intermediate lenses	95 150
Cape Horn	55 641
Crown 12 West	2 121
Total mine	698 250

2. Grade of ore despatched to the concentrator — 1.24 per cent copper.

3. Tonnage of ore treated at the concentrator — 695 620 tonnes.

4. Copper concentrate produced — 30 787 tonnes.

Containing —

Copper — 8 034 tonnes;

Silver — 1 571 195 grams; and

Gold — 179 242 grams.

5. Gross value of production — \$21 300 000.

From a tonnage point of view, the production rate was similar to that of the previous year. The average grade of the ore produced was however lower than it was for the previous year in consequence of lower block grades having been mined in the Prince Lyell and Cape Horn orebodies.

All the ore produced came from underground. Approximately 90 per cent was produced by stoping, which was almost entirely open stoping, and the balance was produced by mine development.

Another Prince Lyell pillar, the 23/24 rib and crown pillars of approximately 560 000 tonnes, was successfully mass fired.

GENERAL

Conversion from truck/rail haulage to entirely truck haulage of the ore from Prince Lyell, 'A' Lens and Intermediate Lens took place without an undue number of teething problems occurring. Four DJB D550 trucks each of 50 tonnes capacity were brought into service for the purpose. The Roxon mechanical plate feeder installed at the 14-Level horizon for loading the DJB D550 trucks proved to be highly productive.

An hydraulic jumbo was purchased and employed to outstanding effect on the development of the Prince Lyell 30 Series extraction level from April onwards.

A new workshop complex is being mined on the 20 metre Level off the 30 Series Haulage Decline. When complete, this complex will replace the diesel workshop on the 195 m Level.

MINE DEVELOPMENT

A summary of the mine development achieved during the period is as follows:—

<i>Mine Area</i>	<i>Drives and Crosscuts (metres)</i>	<i>Rises (metres)</i>	<i>Total (metres)</i>
Prince Lyell—			
20 Series	133	96	229
30 Series	904	264	1 168
Off No. 1 Shaft	171	8	179
Main Decline	142	....	142
'A' Lens and Intermediate			
Lens	325	26	351
Cape Horn	405	66	471
Crown Twelve West	140	....	140
Total Mount Lyell	2 220	460	2 680

Development continued at virtually the pace of the previous year. The emphasis was placed on the opening up of the Prince Lyell 30 Series levels. However, extension of the Main Decline down to the 40 Series levels continued and more than a hundred metres of rising and sublevel driving was completed in connection with the Southern Exhaust Airway extension from the 195 m Level down to the 92 m Level. In addition, the back of the first 1 000 metres of the Main Decline was stripped to provide adequate clearance for the DJB D550 trucks and 166 metres of 2.5 m diameter ventilation rise was bored by raise-boring machine.

Ground support in the development openings is a continuing requirement in most areas of the mine. Provision of this support is becoming more integrated with the development operation.

DIAMOND DRILLING

Diamond drilling on the mine lease amounted to 4 746 metres and had the definition of ore outlines as its objectives, as follows:—

- (a) above the 14 Level at Western Tharsis;
- (b) in the 30 Series stope block at 'A' Lens; and
- (c) between the 14 Level and the 105 m Level at Cape Horn.

ORE RESERVES

Ore reserves were calculated to stand at 30 June 1980 as follows:—

<i>Mine</i>	<i>Ore (tonnes)</i>	<i>Copper (%)</i>	<i>Silver (g/tonne)</i>	<i>Gold (g/tonne)</i>
PROVED ORE				
Prince Lyell	2 174 000	1.39	3.0	0.4
Cape Horn	96 000	2.32	4.3	1.2
'A' Lens	231 000	1.40	1.5	0.2
Intermediate Lens	129 000	1.25	1.5	0.2
TOTAL	2 630 000	1.42	2.84	0.40
PROBABLE ORE				
Prince Lyell	20 284 000	1.45	3.0	0.4
Cape Horn	1 603 000	1.81	3.3	0.5
'A' Lens	1 968 000	1.37	1.5	0.2
Royal Tharsis	1 878 000	1.46	1.5	0.2
Crown Twelve West	23 000	9.50	30.6	0.2
TOTAL	25 756 000	1.47	2.82	0.38
POSSIBLE ORE (NOT RESERVES)				
'A' Lens	1 418 000	1.25	1.5	0.2
Prince Lyell	3 000 000	1.30	3.0	0.4
Crown Three	1 187 000	1.67	4.0	0.4
TOTAL	5 605 000	1.37	2.83	0.35

MANPOWER AND SAFETY

Including contractors' employees, the average number of persons employed was 755.

Eighty-two lost-time accidents occurred, but only three of these were classified as serious.

CLEVELAND TIN N.L., LUINA

This company, reviewed under Tin, produced 1 084 tonnes of copper concentrates containing 288 tonnes of copper valued at \$478 990.

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED, ROSEBERY

This company, reviewed under Zinc, produced 1 336 tonnes of copper valued at \$2 787 693.

GOLD**QUANTITY AND VALUE OF PRODUCTION**

<i>Year</i>	<i>Kilograms</i>	<i>Value \$</i>	<i>Year</i>	<i>Kilograms</i>	<i>Value \$</i>
1880 to 1975	95 993	56 970 867	1978	1 618	8 768 832
1976	1 314	4 246 862	1979	1 490	13 884 521
1977	1 616	6 976 251	1980*	641	10 873 565
			Total	102 582	101 720 898

* January to June.

During the period 641 kilograms of gold valued at \$10 873 565 were produced mainly as a by-product from concentrates produced by the Mt Lyell Mines at Queenstown, and the Electrolytic Zinc Company's mines at Rosebery.

IRON ORE (PELLETS)**SAVAGE RIVER MINES, SAVAGE RIVER AND PORT LATTA**

R. N. Hampson, Mining Engineer, Burnie reports —

PRODUCTION

	<i>Tonnes</i>
Savage River —	
All material handled	6 961 008
Rock to waste	4 625 318
Crude ore	2 335 690
Concentrate produced	1 085 968
Concentrate pumped	1 088 265
Port Latta —	
Pellets produced	1 113 656
Pellets shipped	1 218 652
Pellets inventory	169 546

MINING

Mining operations in the pit were concentrated mainly on the 15th and 16th levels. In addition, the 17th level was established and waste on the 9th level on the East Wall was removed to widen the pit and expose ore at depth.

The pit was redesigned to conform with the recommendations of the report by D. Piteau and Associates of Vancouver, Canada. A program was commenced to dewater and depressurise the East Wall of the pit with horizontal bore holes. Some changes have been made to the blasting procedures.

One new 85 tonne truck, one new 992 C front end loader and a new horizontal bore hole drill rig were purchased in the period.

MILLING

Ore blending continued with positive effect on concentrator throughput, pellet quality and furnace oil consumption.

Trials continued with the substitution of a small percentage of oil with coal in the firing of two furnaces.

The pellet plant building was reroofed during the period.

Pellets were shipped on 14 vessels averaging 87 046 tonnes per vessel. Two shipments of fuel oil were received totalling 25 385.64 tonnes inclusive of road freighted fuel. One shipment of bentonite was received totalling 8 732 dry tonnes.

CAPITAL EXPENDITURE

The main areas of capital expenditure for the period were —

- (a) purchase of one new 85 tonne haulage truck.
- (b) purchase of one new Cat 992 C front end loader.
- (c) purchase of one new horizontal bore hole drill rig.
- (d) continued installation of cobber reject systems.
- (e) continued installation of main air blower filters.
- (f) installation of coal addition equipment.
- (g) expenditure related to slope stability.
- (h) dewatering and surface drainage in pit.
- (i) expenditure related to corrosion control at Savage River and Port Latta.
- (j) purchase of spare ring gear for ball mill.
- (k) completion of painting and reroofing of pellet plant.
- (l) replacement of oil meters, all furnaces.

EMPLOYMENT AND SAFETY

The average number of employees for the period was 222 at Port Latta and 434 at Savage River. There were 51 lost-time injuries reported of which three were classed as serious.

IRON OXIDE
QUANTITY AND VALUE OF PRODUCTION

Year	Tonnes	Value \$	Year	Tonnes	Value \$
Prior to 1976	212 508	871 494	1978	14 325	105 800
1976	13 529	134 550	1979	16 246	154 660
1977	12 793	102 200	1980*	8 400	84 000
			Total	277 801	1 452 702

* January to June.

A. Pearson mined 8 400 tonnes of hematite, valued at \$84 000, from the Iron Cliffs Mine. The hematite is supplied to the cement works at Railton.

The average number of persons employed was five.

LEAD
QUANTITY AND VALUE OF PRODUCTION

<i>Year</i>	<i>Tonnes</i>	<i>Value \$</i>	<i>Year</i>	<i>Tonnes</i>	<i>Value \$</i>
Prior to 1976	500 375	80 765 259	1978	16 907	9 573 050
1976	12 070	4 415 664	1979	16 375	17 140 828
1977	16 027	8 523 445	1980*	7 217	6 867 850
			Total	568 971	127 286 096

* January to June.

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED, ROSEBERY

This company reviewed under Zinc produced 7 217 tonnes of lead contained in lead, zinc and copper concentrates. The value of production was \$6 867 850.

Specimens of Lead Minerals

ADELAIDE MINE, DUNDAS

Production of mineral samples realised \$4 000 with stock on hand valued at \$5 000. Under hand stoping has opened up a good section of lode with top quality specimen visible in the faces. Two men worked the lease and future plans include extending a cross cut for 20 metres to intersect the main lode. Demand remains firm with prices only average.

RED LEAD AREA

The new land holder produced specimen crocoite valued at \$1 200 during the period. Further development of the open cut operation is planned.

MANGANESE DIOXIDE

This is recovered as a sludge in the electrolysis of zinc sulphate at the Risdon Works of the Electrolytic Zinc Company of Australasia Limited, the original source being the ore from its West Coast mines. The production of 72 tonnes was valued at \$2 409.

MERCURY
QUANTITY AND VALUE OF PRODUCTION

<i>Year</i>	<i>Kilograms</i>	<i>Value \$</i>	<i>Year</i>	<i>Kilograms</i>	<i>Value \$</i>
Prior to 1976	7 536	89 782	1978	....	....
1976	140	363	1979	....	....
1977	21	107	1980*	....	....
			Total	7 697	90 251

* January to June.

No production of mercury was reported for the period under review.

MOLYBDENUM

The King Island Scheelite mine produced 25.2 tonnes of molybdenum valued at \$96 848 as a by-product from its artificial scheelite plant.

PYRITE**QUANTITY AND VALUE OF PRODUCTION**

<i>Year</i>	<i>Tonnes</i>	<i>Year</i>	<i>Tonnes</i>
Prior to 1976	3 039 137	1978	141 250
1976	202 370	1979	41 018
1977	225 270		
Production ceased December 1979		Total	3 649 045

With the closure of the North-West Acid Plant at Wivenhoe in 1979 production of pyrites concentrates from the West Coast mines ceased.

SILICA FOR SILICON ALLOY PRODUCTION**THE BROKEN HILL PTY COMPANY LIMITED, BEACONSFIELD**

This company mined and supplied to the Tasmanian Electro-Metallurgical Company 37 040 tonnes of silica valued at \$926 000. A local contracting firm carried out the operation of quarrying and crushing.

SILICON**TASMANIAN ELECTRO-METALLURGICAL COMPANY PTY LIMITED, BELL BAY**

In the production of silicon as silico-manganese this company smelted 17 597 tonnes of local Beaconsfield quartzite combined with slag from ferro-manganese production for a yield of 16 236 tonnes of silico-manganese valued at \$5 512 015.

SILVER**QUANTITY AND VALUE OF PRODUCTION**

<i>Year</i>	<i>Kilograms</i>	<i>Value \$</i>	<i>Year</i>	<i>Kilograms</i>	<i>Value \$</i>
Prior to 1976	1 961 272	59 740 683	1978	68 456	10 475 642
1976	54 421	6 341 438	1979	62 705	18 657 637
1977	65 830	8 904 050	1980*	27 227	19 979 634
			Total	2 239 911	124 099 084

* January to June.

Silver is produced solely as a by-product from the treatment of copper, lead, zinc and tin ores at the West Coast mines of Mt Lyell Mining and Railway Co. Ltd, Queenstown, Electrolytic Zinc Company of Australasia Ltd, Rosebery and Cleveland Tin at Luina.

Twenty-seven thousand two hundred and twenty-seven kilograms of silver valued at \$19 979 634 were produced during the period.

SULPHUR

Sulphuric Acid is produced at the Risdon plant by the roasting of zinc concentrates from the West Coast mines of the Electrolytic Zinc Company of Australasia Limited.

Fifty-three thousand five hundred and ten monotonnes of sulphuric acid were produced during the period valued at \$1 004 383.

SULPHUR AS SULPHURIC ACID: SOURCE, QUANTITY AND VALUE OF PRODUCTION

Year	From zinc concentrates		From pyrite concentrates			Total	
	Mono tonnes	\$	Pyrite	Acid		Mono tonnes	\$
			Tonnes	Mono tonnes	\$		
1957-1975	1 020 102	13 262 972	1 201 245	1 765 648	29 439 960	2 785 750	42 702 832
1976	91 182	1 937 278	226 639	299 293	7 220 562	390 475	9 157 840
1977	70 051	1 582 435	233 146	322 710	7 754 761	392 761	9 337 224
1978	109 626	2 590 668	201 419	242 438	6 723 816	352 064	9 314 484
1979	87 695	2 025 134	41 018	101 932	2 962 946	189 627	4 988 080
1980*	53 510	1 004 383	Production ceased			53 510	1 004 383
Totals	1 432 166	22 402 870	1 903 467	2 732 021	54 101 973	4 164 187	76 504 843

* January to June.

TIN

QUANTITY AND VALUE OF PRODUCTION

Year	Tonnes	Value \$	Year	Tonnes	Value \$
1873-1975	198 185	255 752 887	1978	7 271	84 521 356
1976	6 853	46 834 677	1979	6 617	94 511 996
1977	6 634	69 105 352	1980*	3 282	52 867 430
			Total	228 842	603 593 698

* January to June.

ABERFOYLE LTD, ROSSARDEN

MINING

R. C. Thomas, Senior Mining Engineer, Hobart, reports that operations at the Storeys Creek Mine remained at a reduced level. Stopping operations below 11 level ceased and the main emphasis of work was on reclaiming the remaining economic remnants.

At the Rossarden mine the majority of development was concentrated on the Lutwyche section and this will continue in the immediate future.

The upgrading of the pumping facilities had almost been completed at the end of the period.

MILLING

Work continued on testing to recover heavy metal from the jig tailings stockpile.

PRODUCTION

Twenty-three thousand eight hundred and six tonnes of ore were treated in the concentrator and 110 tonnes of concentrates were obtained at a value of \$1 198 977.

EMPLOYMENT

The average number of persons employed during the period was 210 an increase of nineteen on the previous period ending 31 December 1979.

AMDEX MINING LIMITED, PIONEER

J. Dempster, Mining Engineer, Launceston reports that operations continued at both properties of the company.

ENDURANCE MINE, SOUTH MT CAMERON

Mining operations were concentrated at two new areas of the leases, the Clifton and Riverside leads. The former is a gravel pump/slucice-box operation and the latter is a scaper/slucice-box operation. The final cleaning being done at South Mt Cameron. The workforce for the year increased by three to 15 employees.

PIONEER MINE, PIONEER

An operation to strip overburden by hydraulic mining methods ahead of the main gravel pump commenced in May 1980.

A temporary skid-mounted jig plant was constructed consisting of a vibrating screen and surge bin, Yuba-Richards primary jigs and a Yuba-Richards re-concentrating jig in closed circuit with the primary jigs and spiral classifiers. The plant was commissioned in June and will operate while the permanent jig plant is dismantled and re-erected at a new site during the next year.

A new assay laboratory for in-house work was completed.

The workforce increased by four to forty-three employees at the end of the period.

CLEVELAND TIN N.L., LUINA

T. Evans, Mining Engineer, Burnie reports —

PRODUCTION

Over the six months to 30 June 1980, 205 840 tonnes of ore were hauled from the mine and 266 436 tonnes of material were treated at the concentrator. Concentrates were produced from the material treated which contained 77 462 metric tonne units of tin in the form of cassiterite and 307 tonnes of copper.

The average grade of the material treated at the concentrator amounted to 0.48 per cent tin as cassiterite and 0.22 per cent copper. The quantity treated was again augmented by H.M.S. float material taken from stockpile.

The ore hauled from the mine came from the following sources:—

	<i>tonnes</i>
B-South lens	103 392
Khaki lenses	57 820
Hall's lenses	31 756
Henry's lenses	12 872

Seventy-five per cent of this ore hauled was contributed by stoping and twenty-five per cent was contributed by development.

STOPING

During the period, 194 506 tonnes of ore were broken in stopes and 45 788 metres of stoping holes were bored, of which 2 872 metres were of 165 mm diameter. Bored reserves decreased from 357 200 tonnes at the beginning of the period to 317 300 tonnes at the end, but this decrease was almost entirely due to a mass firing taking place in the Khaki pillar in March.

This mass firing was of ten tonnes of explosives in approximately 5 500 metres of hole. The firing broke the portion of Khaki pillar lying between the 8 and the 10 levels and produced approximately 27 000 tonnes of broken ore.

In the B-South lens, stoping continued by means of the vertical crater retreat method and elsewhere in the mine strike-retreat sub-level. Open stoping was the method again employed.

MINE DEVELOPMENT

The mine development achieved was as follows:—

<i>Development Type</i>	<i>Metres Advanced</i>
Decline	167
Drives and crosscuts	1 675
Rises	138
Total development	1 980

Development of the 17, 20, 23 and 24 levels on the Hall's lenses was given the highest priority during the period. At the same time, the face of the decline was advanced to a position only a few metres above the 25 level horizon.

DIAMOND DRILLING AND EXPLORATION

The amount of diamond drilling carried out was as follows:—

<i>Purpose</i>	<i>Metres Drilled</i>
Production assistance	3 795
Ore reserves determination	722
Underground exploration	4 156
Surface exploration	675
Total	9 348

The commencement of 1980 witnessed much increased effort applied to diamond drilling. During the six months that followed, production-assistance drilling took place of the Hall's and Henry's lenses from the 10, 15, 16, 18, 19 and 20 levels and of the B-South and Khaki lenses from the 11, 14 and 17 levels. In addition, exploration drilling was undertaken to cover Hall's lenses at depth in the northern part of the mine and the Battery lens below 17 level in the southern portion, also to test the Eastern sediments from 20 level.

Surface exploration activities included mapping of the area immediately to the north of the mine and of exposures over the Eastern sediments.

ORE RESERVES

Mineable ore reserves amounted to 2 477 000 tonnes grading 0.57 per cent tin as cassiterite and 0.24 per cent copper at 17 November 1980.

METALLURGICAL PERFORMANCE AND DEVELOPMENTS

Concentrates averaged 61.1 per cent for tin as cassiterite and 52.3 per cent for copper, a performance which represents an improvement in recovery over the previous year in respect of both metals. This improvement in recovery reflected developments in the areas of primary grinding, sulphide regrinding and cassiterite flotation.

Control instrumentation was installed in the primary grinding circuit and commissioned early on in the period. The circulating load in the circuit now undergoes measurement and consequent control.

A regrind circuit comprising spirals, screens and a grinding mill was commissioned in September 1979, and operated with success throughout the period under review. This circuit scavenges the plant sand tailings and reports the product to tin flotation.

In the tin flotation section, a modification was made in which the role of the Maxwell flotation cell was changed from that of first time rougher to second scavenger.

CAPITAL EXPENDITURE

Expenditure on capital items was as follows:—

	\$
Replacements (net of disposals)	205 000
Metallurgical developments	403 000
Housing and slimes-dam extension	165 000
	773 000

MANPOWER

An average of 280 persons was employed by Cleveland Tin Limited, as follows:—

Staff— all departments	68
Award —	
Mining	56
Milling	58
Engineering	80
Other	18
	280
Total	280

RENISON LIMITED, RENISON BELL

Mr R. N. Hampson, Mining Engineer, Burnie reports that —

Ore hauled to the surface stockpile, or delivered direct to the crusher, totalled 253 552 tonnes. The sources of this production were —

	<i>Tonnes</i>
Federal	3 030
North Stebbins	44 910
South Stebbins	18 054
Murchison	10 328
Dreadnought	20 991
Colebrook	64 765
Penzance	41 027
Howard	2 357
Melba	31 908
Sligo	1 298
Ring	5 010
Bassett	9 874
	253 552
Total	253 552

CONCENTRATOR PLANT

Tonnes treated	273 209 tonnes
Ore grade	11.25 % Sn
Tonnes (concentrate)	5 173.42 dry tonnes
Grade (concentrate)	49.1 % Sn
Tin metal in concentrate	2 540.32 tonnes
Overall metal recovery	74.4 %

MINING**Development**

There was no advance in the Renison decline during the six month period. The development effort was concentrated in the Ring, Sligo, Melba and Howard ore zones together with the South Stebbins decline access. No further work was carried out in the North Bassett exploration drive as this is a water bearing area. Groundwater consultants have advised on inflows likely to be encountered.

The 4A ventilation raise holed through to surface. Bad ground conditions in the last 30 m necessitated the use of longholes to complete the raise. The raise will be slipped to a diameter of 4.5 m prior to the installation of a major surface fan.

<i>Driving and cross-cutting</i>	<i>Ore (m)</i>	<i>Waste (m)</i>	<i>Total (m)</i>
Renison mine	....	42.1	42.1
North Bassett	69.9	5.0	74.9
Services	....	27.7	27.7
Sligo	9.1	17.1	26.2
North Stebbins	130.4	38.8	169.2
Colebrook	....	7.5	7.5
Penzance	17.3	3.4	20.7
Howard	....	129.7	129.7
South Stebbins	140.5	183.3	323.8
Murchison	39.4	....	39.4
Dreadnought	59.5	....	59.5
Melba (2.5 Horizon)	110.5	....	110.5
Ring	102.3	250.7	353.0
	678.9	705.3	1 384.2
<i>Raising</i>	9.2	126.9	136.1
Total development	688.1	832.2	1 520.3

Stoping

Mining was again concentrated in the No. 2 and No. 3 Horizons. Only a token tonnage was mined from Federal reserves and no open-cut material was mined. All stopes were back-filled with waste rock generated by development or by heavy media reject material.

Ring ore was exposed in the Ring 1 and Ring 2 ore zones. Ore structure appears to be more complex than originally considered.

MILLING

A total of 273 209 tonnes of ore at an average grade of 1.25 per cent Sn was treated at an average rate of 77.2 t.p.h. Overall concentrator recovery was 74.4 per cent. Total declared tin metal in concentrates was 2 540.32 tonnes following reconciliation with figures declared as received at the smelters. Mill availability at 81.5 per cent was below the target of 94.0 per cent, largely as a result of industrial disputes. Crushing plant operations were satisfactory.

Continuity of operations suffered from a series of power failures and industrial disputes. The concentrator expansion to treat 850 000 tonnes per annum commenced with new equipment and circuitry installed and commissioned in some sections.

Heavy media separation operations were satisfactory and refurbishing of the H.M.S. building was completed. A new 650 tonnes sinks storage bin was commissioned. The problem of fine spillage from conveyor belts was alleviated by the commissioning of a bucket elevator and sump pump installation. Both milled and atomised ferrosilicon continued to be used with best consumption achieved with the atomised finer media cyclone 40.

The grinding circuit was completely re-arranged with the removal of the old rolls crusher, bucket elevator, vibrating screens and feed conveyor. A 2.6 × 3.4 metre Vickers rod mill was installed and commissioned. A re-arrangement of the sulphide flotation section had commenced and the removal of all Agitair 48 cells was completed. Two new banks of Agitair 90 A cells were installed and commissioned and work had commenced on the foundations of two further Agitair 90 A banks. A new reagent distribution centre was commissioned.

The mill building was expanded to allow construction of a new cassiterite flotation section using Agitair 90 A cells for roughing and first cleaning stages. All steel work was completed and installation of the new cells and pumps had commenced by 24 June 1980.

The leach plant performance was satisfactory. Sporadic emission of hydrogen sulphide remained a problem but was controlled by increasing the strength of the sodium hydroxide solution in the scrubber and maintaining a pH in excess of 11.0.

The capacity of both A and B tailings dams became exhausted and tailings were discharged into the newly completed C dam. An overflow has occurred from this dam and will be monitored as normal procedure.

Support frames have been installed for new table decks on the old vanner floor. These tables are to be used in fines treatment. The thickener will be fully automatic with discharge rates governed by bed depth. Many circuit changes and process additions have made much equipment redundant and removal will be undertaken to maintain a high degree of tidiness and aid efficient housekeeping.

A fuming plant trial with 100 tonnes of low grade concentrates was performed in East Germany. The results were promising with both economic and metallurgical parameters acceptable. Licensing negotiations will continue throughout 1980.

Extensions to the assay laboratory were completed and the research laboratory extensions were progressing well with all foundations laid and walls and roof erected.

The two mill computers were relocated in the X.R.F. room as the control room atmosphere was hostile to the computer circuitry resulting in many failures. Two new O.S.A. probes were purchased together with a Digital PDP 11/03 computer for processing O.S.A. data.

The Technical Services section has been at a high level of activity commissioning new equipment, monitoring existing equipment together with other process development and off-lease prospect evaluation.

EXPLORATION AND RESERVES

During the six month period ending 30 June 1980, Renison Limited expended \$0.96 million and drilled 12 500 metres on a wide variety of exploration projects in Eastern and Western Tasmania.

Exploratory work was concentrated on the Renison Bell, Heemskirk Granite, Meredith Granite, and Blue Tier areas.

In the Renison Bell area, diamond drilling was concentrated in the current mine area on the better definition of known ore zones as a prerequisite to detailed mine planning, and at reconnaissance style drilling designed to highlight areas warranting detailed drilling at some later stage. As of 30 June, combined probable and proven reserves were increased by 707 000 tonnes to 15.6 million, but the average grade declined from 1.14 per cent to 1.11 per cent Sn. This same style of exploration, by way of definitive and reconnaissance core drilling, will continue during 1980-81.

In the Heemskirk Granite area, Renison has interests in two Exploration Licences and three Mining Leases. During the six month period, six cored drill holes were completed in the Federation Plateau and two holes were drilled in the sediments east of the granite following the completion of an I.P. survey in that area. Further drilling on the Federation Plateau and intensive geophysical and geochemical surveys over the southern margin of the granite are planned in the coming year.

In the Meredith Granite area Renison holds interest in three Exploration Licences. A substantial grid of cut traverse lines was established in the remote Harman River area and reconnaissance style geochemical and geophysical surveys were completed on this grid. Similar surveys were completed on a smaller, more detailed grid over the Mount Merton mine in advance of a core drilling program. A large stream sediment survey is planned for the 1980-81 summer in addition to this drilling.

On the Blue Tier Batholith near St Helens, an Indicative Feasibility Study with respect to the former Anchor mine indicated that the deposit was marginally viable if additional similar mineralisation could be located in the area. Hence a further program of core drilling was completed. To enable the continued evaluation of the region north of the Anchor, a system of cut grid lines was established in preparation for geochemical surveys.

Ore reserves were estimated on 30 June 1980, at 15 656 000 tonnes at an average grade of 1.11 per cent Sn. This was composed of 6 596 000 tonnes of 1.19 per cent Sn classified as proven ore and 9 060 000 tonnes of 1.05 per cent Sn classified as probable ore. In addition to the above a further 11 150 000 tonnes of 1.05 per cent Sn were classified as possible ore but not as reserves.

Ore Zone	Proved		Probable		Total	
	Tonnes 000's	Grade % Sn	Tonnes 000's	Grade % Sn	Tonnes 000's	Grade % Sn
No. 2 Orebodies	2 065	1.23	2 910	1.07	4 975	1.14
No. 3 Orebodies	1 595	1.59	3 150	1.12	4 745	1.27
Federal-Bassett	2 290	0.87	2 750	0.98	5 040	0.93
No. 1 — North Bassett	....	....	250	0.85	250	0.85
Melba (2.5 Horizon)	646	1.26	....	....	646	1.26
Totals 1980	6 596	1.19	9 060	1.05	15 656	1.11

CAPITAL EXPENDITURE

A total of \$7 915 877 was spent on capital expenditure during the period 1 January to 30 June 1980, within the following categories:—

	\$
Community projects	105 708
Expansion program	7 209 550
Lease buildings and services	208 574
Mine development	88 528
Underground equipment	54 620
Mill plant and equipment	69 034
Mobile equipment	59 932
Motor vehicles	70 793
Instruments, laboratory and workshop equipment	39 916
Office equipment	9 222
	<u>\$7 915 877</u>

SMALL PRODUCERS

The alluvial tinfields maintained a high level of activity during the period due to adequate tin prices but there are signs that mounting costs of production may inhibit production in the ensuing period.

The production of sundry small producers is summarised as follows:—

BRANXHOLM — DERBY AREA Production 6 months ended June 1980

Name of Producer	Tin Concentrates Tonnes	Contained Tin Metal Tonnes	Value \$
Banks, K.	0.1880	0.105	1 708
Barnett, L. M.	0.6440	0.463	7 679
Barnett and Jones	1.1548	0.829	13 719
Hayes, R.	4.2060	1.632	26 996
Johnson, N.	3.8360	2.637	34 007
Johnson, N. C. and V. A.	3.8360	2.655	42 823
Jones, E.	1.8742	1.365	22 361
Kerrison, K.	0.0470	0.035	554
Price, P.	0.0410	0.014	221
Rainbow, W.	2.1740	1.523	24 408
Taipan Tin	0.0900	0.060	949
Yaxley, T.	0.0410	0.029	481

PIONEER - SOUTH MT CAMERON - GLADSTONE AREA

Production 6 months ended June 1980

Name of Producer	Tin Concentrates Tonnes	Contained Tin Metal Tonnes	Value \$
Dawe, V. C.	0-058	0-037	585
Galbraith and Wood	2-495	1-795	26 769
Groves, L. J.	1-513	1-022	18 351
Hayes, C.	0-057	0-039	617
Hodgetts, J.	0-110	0-070	1 161
Lawry, D.	0-058	0-039	617
Lawry, R. G.	3-016	0-135	2 136
Moore, N. B.	3-347	2-341	38 543
Moore, R. J.	0-048	0-030	498
Mott, J. G.	0-053	0-039	647
Reynolds, M.	1-537	1-063	17 022
Standage, H.	0-068	0-050	829
Summers, I.	0-381	0-233	3 753
Wines, K. J.	1-453	0-911	14 383
Wood, C. V.	3-647	1-373	21 719
Worbey, R. M.	0-979	0-694	10 978

EAST COAST

Production 6 months ended June 1980

Name of Producer	Tin Concentrates Tonnes	Contained Tin Metal Tonnes	Value \$
Fitzallen, T. M.	0-0189	0-014	460
Franks, W.	0-1490	0-098	1 625
Gillies, F.	0-0530	0-037	614
Lewis, D.	0-6620	0-290	4 588
Reynolds, J. P.	0-0970	0-070	1 161

WEST COAST (BALFOUR - WARATAH - PORT DAVEY)

Production 6 months ended June 1980

Name of Producer	Tin Concentrates Tonnes	Contained Tin Metal Tonnes	Value \$
Clark, S. A.	0-422	0-201	3 333
Glozier, M.	0-040	0-025	395
Heathcote, M.	0-050	0-036	597
Kenworthy, D.	0-257	0-155	2 498
King, C. D.	0-500	0-370	4 557
Laan, M.	2-190	1-524	24 538
Laan, P.	1-414	0-178	2 816
Laffer, R.	7-474	2-118	35 126
Ralph and Guy	8-016	5-775	93 469
Smith, A. R.	0-564	0-346	5 657
Norton-Smith, H.	1-099	....	....
Wilson, P. R. N.	0-500	0-370 (est.)	5 853

TITANIUM**TITANIUM DIOXIDE: QUANTITY AND VALUE OF PRODUCTION**

<i>Year</i>	<i>Tonnes</i>	<i>Value \$</i>	<i>Year</i>	<i>Tonnes</i>	<i>Value \$</i>
1969 to 1975	30 993	6 144 052	1978	....	....
1976	6 379	1 938 650	1979	....	....
1977	732	187 345	1980*	....	....
			Total	38 104	8 270 047

* January to June.

There was no production of titanium dioxide for the period.

TUNGSTEN (SCHEELITE)
QUANTITY AND VALUE OF PRODUCTION

<i>Year</i>	<i>Tonnes (Concentrates)</i>	<i>Tonnes (WO₃)</i>	<i>Value \$</i>
1917 to 1975	36 807	7 203	91 118 908
1976	2 698	2 019	19 044 373
1977	3 276	2 397	38 878 558
1978	3 429	2 490	30 058 958
1979	3 231	2 379	29 178 743
1980 (January to June)	1 928	1 423	17 937 884
Total	51 369	17 911	226 217 424

KING ISLAND SCHEELITE LIMITED, GRASSY

Mr R. Billingham, Mining Engineer, Hobart reports that —

PRODUCTION

A total of 206 631 tonnes of ore was mined during the period from the two mines Bold Head and Dolphin.

Two hundred and fifteen thousand four hundred and eighty-three tonnes were treated in the concentrator to produce 137 433 metric tonne units of tungstic oxide and 15 583 kilograms of molybdenum.

EMPLOYMENT

The average number of persons employed underground was 123 and 375 persons were employed on surface. The increase in persons employed was 17.

DOLPHIN MINE

The main ore producing areas at the mine were the Pit, C Central and Lower Pit stopes. Considerable development work was carried out in the proposed lower Wedge stope where the ore body steepens against the Decline fault. It is planned to mine this stope using open stoping ring blasting and cement fill.

The extensive rock mechanics program throughout the mine continued. Equipment purchased included an Atlas Copco R.O.C. 6 drill and a scaling machine mounted on a Caterpillar loader.

BOLD HEAD MINE

Main production and development areas in the mine were the C Lens ore bodies. Mining in the A Lens and Upper B Lens slowed down whilst access to the stopes was improved.

TASMINEX N.L., KARA MINE, HAMPSHIRE

Mr E. C. Leyland, Senior Mining Engineer, Burnie reports that —

PRODUCTION

	Tonnes
Ore treated	21 409
Concentrate	77.98
Magnetite (stockpiled)	13 352

During the six month period the bulk of the ore production, 12 262 tonnes, was extracted from the 'Bob's Bonanza' orebody. Kara No. 1 open pit yielded 5 867 tonnes with the balance, 3 280 tonnes, being mined from the small surface outcrop of the Eastern ridge orebody. Surface excavation along the strike of 'Bob's Bonanza' indicated a strike extension to this lode. Similar work carried out on the Eastern ridge outcrop, within the mining lease 105M/77 was unsuccessful in increasing strike potential.

The ore mined was treated in the Kara concentrator by primary and secondary crushing, grinding by ball mill, wet drum magnetic separation followed by concentration on Wilfley tables. The scheelite concentrate was sold and shipped to Europe with the magnetite being stockpiled for possible future sales.

EXPLORATION

McIntyre Mines (Australia) Pty Ltd continued their exploration activities on E.L. 17/68. Detailed mapping, following further trenching, was undertaken in the Kara North, South, and Eastern ridge localities. Reconnaissance mapping of the outlying areas was continued with several potential diamond drill hole sites selected, however, no drilling was undertaken during the period. No additions were made to the previously published reserves for this property.

CAPITAL EXPENDITURE

The total capital expenditure for the six months was \$213 000. A replacement International 530 front end loader was purchased for \$88 500, to handle ore from the surface stockpile to the concentrator. The cost to convert the Kara concentrator from diesel-petrol powered engines to electric motors was \$124 500. The major item of this expenditure, \$50 000, was incurred in the construction of a 4.5 km 22 kV overhead power line, with the remainder covering the purchase of motors, switchgear, cables and their installation.

MILLING

The conversion of the concentrator to electric power was mainly carried out at weekends, with the result that little interruption to continuous milling occurred. Three shift operation in the concentrator was again introduced in February with the additional shift re-treating stockpiled waste. By the end of June, under electric power, the concentrator was operating without the former handicap of frequent and time-consuming mechanical break-downs. The overall improvement in working conditions was noticeable and appreciated by the work-force.

TUNGSTEN (WOLFRAM)
QUANTITY AND VALUE OF PRODUCTION

Year	Tonnes (Concentrates)	Tonnes (WO ₃)	Value \$
1899 to 1975	21 121	2 264	37 492 443
1976	248	186	1 724 433
1977	185	136	2 214 489
1978	196	140	1 691 781
1979	126	111	362 604
1980 (January to June)	88	63	794 199
Total	21 964	2 900	45 279 949

ABERFOYLE LIMITED, ROSSARDEN

This company, reviewed under Tin, produced 87 tonnes of Wolfram concentrates valued at \$797 920 at their Rossarden and Storeys Creek mines.

ALL NATIONS MINE AND POCHIN'S ADIT

Mr E. C. Leyland, Senior Mining Engineer, Burnie reports that —

An agreement between the lease-holders and the Department of Mines was signed, whereby the Department would drill a brief program of exploration holes in order to confirm indicated ore extensions. Two holes of this program were completed. Encouraging results from these holes have provided the incentive to extend the drilling to a further two holes.

CENTRAL TASMANIAN TUNGSTEN PTY LTD

DEVELOPMENT

Driving	(m)
Rising	202
Declining	118
	202
	522

A 1 in 7 decline was commenced from a portal below the 240 m level and in the footwall of the vein; this will permit the development of levels at the 200 m and 160 m should the vein persist at these horizons at an economic grade. The driving and rising, although capitalised as development, was in fact stope preparation above the 200 and 240 m levels. Seven stopes 50 m × 30 m were blocked out during the period under review. Stopping was commenced and at 30 June 6 000 tonnes had been broken.

The mill was commissioned early in February and, after the initial teething problems, settled down to continuous production in late April. The extremely abrasive character of the ore and host rock caused unduly severe wear problems in both the primary and secondary crushers. The manufacturers were consulted but failed to ameliorate the problem.

Production figures were —

Total tonnes broken (ore)	7 097
Total tonnes trammed (ore)	2 706
Total tonnes milled	3 405
Grade	0.4% WO ₃
Concentrate produced	14 tonnes
Grade concentrate	70% WO ₃

A recalculation of ore reserves as at 30 June 1980 yielded the following result: Possible ore 121 000 tonnes at 1.17 per cent WO₃. On the exploration licence trenching and sampling were continued but no mineralisation of economic significance was discovered.

Capital expenditure on mill equipment was \$388 630 and the average number of employees on site for the period was 24.

ZINC
QUANTITY AND VALUE OF PRODUCTION

Year	Tonnes	Value \$	Year	Tonnes	Value \$
1919 to 1975	1 280 500	307 226 754	1978	61 753	35 078 116
1976	49 697	34 683 132	1979	59 396	43 968 329
1977	63 070	42 745 279	1980*	26 432	19 070 688
			Total	1 540 848	482 772 298

* January to June.

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

RISDON WORKS

EXTRACTION FROM CONCENTRATES

	Tonnes
From other than Tasmanian ore —	
Zinc	61 859
Cadmium	237
Cobalt oxide	17.16
Superphosphate	55 093
From Tasmanian ore —	
Zinc	26 432
Cadmium	68
Manufactured products —	
Aluminium sulphate	1 855
Ammonium sulphate	...

Mr P. Allan, Mining Engineer, Hobart reports that major developments include —

Completion of the building and plant for the mechanical stripping of cathode zinc.

Continuation of the water treatment works program.

Continuation of the construction of the new sulphuric acid plant.

Installation of a new telephone switchboard.

The average number of persons employed at the Risdon plant was 2 014.

WEST COAST MINES, ROSEBERY

Mr R. Hampton, Mining Engineer, Burnie reports —

Production

	Tonnes
Ore —	
Rosebery mine —	
Underground	258 650
Open pit	38 098
Hercules mine	41 472
	338 220
Ore milled	337 879
Concentrate produced —	
Zinc concentrate	60 211
Lead concentrate	7 802
Copper concentrate	12 168
Recoverable quantity in ore mined —	
Zinc	33 450
Lead	9 518
Copper	1 641
Cadmium	68
Silver	31 902
Gold	558
Manganese dioxide	72
Gross value of production — \$30 452 933	

Mining*(a) Development*

Rosebery: A total of 2 536 metres of driving and cross-cutting and 636 metres of raising was advanced. Of this, 81 per cent was advanced on the 15, 16 and 17 levels in main level development and bulk stoping blocks. Of the remaining 19 per cent, 17 per cent was advanced in the decline section below 17 level.

Hercules: A total of 420 metres of driving and cross-cutting and two metres of raising was advanced.

(b) Ore Reserves

Ore reserves as at 10 December 1980 were as follows:—

Rosebery 7 861 000 tonnes, Hercules 430 800 tonnes, Farrell Mine 71 000 tonnes for a total of all mines of 8 363 600 tonnes at a grade of 5.0 per cent Pb, 15.6 per cent Zn, 0.79 per cent Cu, 133 g/tonne Ag, 3.0 g/tonne Au and 13.9 per cent Fe.

Employment

At the end of June 1980 the employment breakdown was —

Mining	602
Engineering	296
Treatment	88
Other	139
Total	1 125

Capital Expenditure

Capital expenditure included commencement, continuation or completion of the following projects:—

(a) Purchase of mining equipment —

- 1 HB4KE electric loader
- 1 Caterpillar grader
- 2 DJB 35 tonne trucks
- 1 Dewatering pump
- Underground power supply.

(b) Purchase or construction of surface and mill equipment and plant —

- Stores compound and building
- On-stream analysis in mill
- Rosebery mill expansion (continued)
- Material handling bins
- Surface haulage truck
- 7 level workshops and maintenance area
- Air compressors (1 200 c.f.m. each) at Hercules
- Surface waste disposal bins.

Exploration

(b) *Rosebery Underground*

A total of 4 332 metres was drilled underground for exploration and planning purposes. In addition a total of 92 metres was drilled for pilot holes.

(b) *Hercules*

Two holes were drilled at Hercules totalling 96 metres.

(c) *Exploration on Outside Prospects*

MT BLACK E.L. 1/62 (196 km²)

Farm Creek: 2.2 line km of follow up grid were cut, pegged, soil sampled and geologically mapped. 1.5 line km were covered by dipole-dipole E.I.P.

Mt Sale: 4.18 line km of follow up grid were mapped.

Murchison River: A diamond drill hole, commenced in 1979, was completed at 293 m.

Mt Murchison: A helipad and camp site were constructed after cutting of 4 km of walking track into the area. A further 12.4 km of access lines and creeks were cut. Creek mapping and drainage sampling were carried out.

Stitt: 16 line km of follow up grid at 500 m spacing were cut, pegged, soil sampled and geologically mapped. 2.75 line km of dipole-dipole were run on 1 km spaced lines with 24.3 line km of pole-dipole I.P. run on the infill follow up grid. One line of gradient array I.P. totalling 0.7 km was completed. Stream sediment sampling was undertaken in the Sterling River area.

Colebrook Hill: 12.1 km of grid line on 200 m and 100 m spacings were cut, pegged and soil sampled. 2 km of creek and walking track were cut. 3 km of access track were mapped. Ground magnetics were run on 11.9 line km and gradient array I.P. covered 10.5 line km. Dipole-dipole I.P. was run on three lines for 1.84 line km and a horizontal loop E.M. survey covered 3.16 line km.

White Spur: 21.3 line km of old grid were repegged and 18.1 line km of extensions were cut, pegged and soil sampled. A gradient array I.P. survey covered 44 line km and follow-up dipole-dipole I.P. covered 5 line km.

A diamond drill hole was drilled under an I.P. anomaly to a depth of 149.2 m.

STERLING VALLEY E.L. 4/73 (33 km²)

6.5 km of old grid line were re-cut and pegged and 4 km of creeks were cut for access. Geological mapping and stream sediment sampling of drainage systems were undertaken. Proton precession ground magnetics were run on 10 lines 120 m apart. Two diamond drill holes were completed, the first being 249.1 m deep and the second 165 m deep. Downhole I.P. surveys were run on each hole and all the core was measured for magnetic susceptibility.

BULGOBAC E.L. 12/72 (94 km²)

Silver Falls: 7.2 line km of grid were soil sampled and geologically mapped with 5.5 km of line being pegged. Stream sediment sampling and geological mapping of drainage systems were carried out.

North Pinnacles: Three diamond drill holes were completed for respective depths of 130 m, 128 m and 142 m.

QUE RIVER PROJECT

Mr T. Evans, Mining Engineer, Burnie reports that —

GENERAL

Preparation for production continued. In addition to underground development work, construction of a compressor station, an administration building, a change house and a workshop/warehouse was undertaken and water and power supplies were upgraded. By 30 June 1980, the building construction work was virtually complete.

MINE DEVELOPMENT

Development of the shaft and of openings off the shaft continued. The shaft was deepened a further 56 metres to the final depth (for the time being) of 238 metres. A plat was cut at RL 505 m (No. 7 level) and 80 metres of lateral development, including the No. 7 Level plat, was accomplished. In addition, excavation of the skip-loading station between No. 7 Level and the shaft bottom was commenced.

PRODUCTION

No ore was produced during the period.

EXPLORATION AND ORE RESERVES

No exploratory work was carried out and the ore reserves consequently remained at the level that was established in March 1979, as follows:—

	Tonnes	Cu %	Pb %	Zn %	Ag g/t	Au g/t
P-Q Lens	3 557 210	0.35	6.97	12.51	171.0	2.36
S Lens	870 711	1.05	1.89	3.86	41.7	....
Total	4 427 921	0.49	5.97	10.81	145.6	2.70

CAPITAL EXPENDITURE

\$5.3 million were expended on capital works during the period.

MANPOWER

Employee strength averaged 85 over the period. Roberts Construction (Pacific) Pty Limited and The Cementation Company (Australia) Limited provided the bulk of the work force.

ZIRCON

There was no production of Zircon in the period under review.

2. NON-METALLIC MINERALS**CLAY****QUANTITY AND VALUE OF PRODUCTION**

Year	m ³	Value \$	Year	m ³	Value \$
1958-75	1 905 062	5 702 134	1978	85 167	292 399
1976	100 926	334 830	1979	92 671	324 281
1977	87 931	284 910	1980*	37 517	187 585
			Total	2 309 274	7 126 139

* January to June.

DETAILS OF PRODUCTION

Company	Clay m ³	Value \$	No of Persons	Product
Agrippe Pottery Pty Ltd	....	....	4	Pipes and Pots
Clifton Brick (Tas) Pty Ltd, Longford	15 500	77 500	28	Bricks
Goliath Portland Cement Co., Railton	6 884	34 420	*	Cement
Grierson, M. A., Dodges Ferry†	3 913	19 565	1	Bricks
Hazell Bros, Kingston†	3 869	19 345		Bricks
Hobart Brick Co., Granton	2 621	13 105	33	Bricks
Hobart Brick Co., Kingston	530	2 650		Bricks
Hobart Brick Co., Oyster Cove	634	3 170		Bricks
Zolati and Sons, Dulverton	3 566	17 830	24	Bricks

* Reported under Limestone.

† Suppliers to Hobart Brick Company.

The brick-making industry has been affected by the down-turn in the building industry as well as the rising costs of production. Zolati and Sons at Dulverton have converted their kiln from oil-burning to wood burning at a cost of \$5 000.

DOLOMITE
QUANTITY AND VALUE OF PRODUCTION

Year	Tonnes			Value \$			Year	Tonnes			Value \$		
Prior to 1976	63 434	387 737		1978	....	....	....	10 284	119 438	
1976	10 335	96 392		1979	....	....	....	18 313	216 739	
1977	8 617	97 489		1980*	....	....	....	8 369	99 084	
							Total	....	....	....	119 352	1 016 879

* January to June.

CIRCULAR HEAD DOLOMITE AND TRADING CO. PTY LTD, SMITHTON

This company, the sole producer, produced 8 369 tonnes of crushed and milled dolomite, valued at \$99 084, which is used primarily as a top-dressing in agriculture.

The average number of persons employed during the period was 10.

KAOLIN
QUANTITY AND VALUE OF PRODUCTION

Year	Tonnes			Value \$			Year	Tonnes			Value \$		
Prior to 1976	114 925	1 053 156		1978	....	....	....	13 281	1 174 763	
1976	9 527	857 170		1979	....	....	....	17 513	1 454 203	
1977	11 039	1 028 645		1980*	....	....	....	8 964	694 973	
							Total	....	....	....	175 249	6 262 909

* January to June.

A.P.P.M. LTD, TONGANAH

This company produces filler clay for their paper mills at Burnie.

The production for the period under review was 8 964 tonnes valued at \$694 973.

The clearing of the No. 3 Pit area at North Tonganah and the construction of the haul road from the pit to the treatment plant was completed during the period.

Mining was confined to No. 2 Pit with the tailings being returned to No. 1 Pit which has ceased production. The rehabilitation of mined areas continues.

LIMESTONE
QUANTITY, VALUE OF PRODUCTION AND USAGE

Year	Manufacture of cement		Manufacture of carbide		Chemical and metallurgical		Agricultural and other		Totals		
	Tonnes	\$	Tonnes	\$	Tonnes	\$	Tonnes	\$	Tonnes	\$	
To 1975	1 724 728	13 960 201	938 797	3 795 509	4 672 860	6 955 754	1 071 285	2 668 595	15 407 670	27 380 059
1976	488 441	1 465 823	20 696	310 440	75 154	704 308	52 490	257 116	636 781	2 737 187
1977	490 514	1 471 542	20 308	304 620	82 131	812 499	65 552	348 532	658 505	2 937 193
1978	515 717	1 547 151	29 876	448 140	89 575	913 400	81 848	468 493	717 016	3 377 184
1979	559 564	1 678 692	29 160	437 400	88 371	904 478	70 764	415 679	747 859	3 435 849
1980*	268 083	804 249	21 671	325 065	44 947	466 304	38 552	208 292	373 253	1 803 910
Totals		11 047 047	20 927 158	1 060 508	5 621 174	5 053 038	10 756 343	1 380 491	4 366 707	18 541 084	41 671 382

* January to June.

A total of 327 persons was employed in the quarrying and processing of limestone.

BENDERS SPREADING SERVICES, IDA BAY

This company produced 20 881 tonnes of crushed limestone for use at the Electrona Carbide Works and the Risdon Plant of the E.Z. Company of Australasia Ltd. Value of production was estimated at \$313 215.

A drilling program was initiated to provide information for quarry planning and grade control.

An average of eleven persons was employed during the period.

A. R. BEAMS, FLOWERY GULLY

From his quarry, crushing plant and lime kiln, Mr Beams produced 1 183 tonnes of crushed limestone and lime for agricultural purposes and 1 326 tonnes of crushed limestone for chemical and metallurgical use at Burnie and Bell Bay. Total value of production was \$31 054 and an average of six persons was employed during the period.

ELECTRONA CARBIDE INDUSTRIES, ELECTRONA

This company although overcoming many of its technical problems, continued through a difficult period due to declining markets. As a result there was an increase in the stocks of unsold carbide at the end of the period.

Production of calcium carbide amounted to 12 006 tonnes and acetylene black to 314 tonnes.

GOLIATH PORTLAND CEMENT CO. PTY LTD, RAILTON

The \$11 million construction of the Pyroclon Precalcination Preheater System and ancillary equipment was 90 per cent complete at the end of the period. The quarry produced 208 083 tonnes of limestone valued at \$804 249 for use in the manufacture of cement. The average number of persons employed in the quarry and plant was 298.

MOLE CREEK LIMESTONE LTD, MOLE CREEK

During the period under review there were no major developments of a capital nature. The quarry produced 22 605 tonnes of limestone for chemical and metallurgical purposes and 1 440 tonnes for agriculture. Value of production was estimated at \$151 647. Seven persons were employed.

RAILTON LIME PTY LTD, RAILTON

Limestone obtained from Goliath Portland Cement Co. Pty Ltd was crushed for agricultural use and road construction.

PEBBLES**QUANTITY AND VALUE OF PRODUCTION**

<i>Year</i>	<i>Tonnes</i>	<i>Value \$</i>	<i>Year</i>	<i>Tonnes</i>	<i>Value \$</i>
Prior to 1976	18 026	314 578	1978	1 486	48 095
1976	1 716	33 366	1979	1 515	47 390
1977	1 819	30 399	1980*	993	31 539
			Total	24 925	505 367

* January to June.

MINERAL SUPPLIES, ULVERSTONE

The collection of pebbles for grinding was continued along the North-West Coast. A total of 585 tonnes valued at \$29 500 was produced by eight persons.

SILICA
QUANTITY AND VALUE OF PRODUCTION

<i>Year</i>	<i>Tonnes</i>	<i>Value \$</i>	<i>Year</i>	<i>Tonnes</i>	<i>Value \$</i>
1936-1975	372 981	926 177	1978	8 366	43 991
1976	20 479	66 630	1979	8 397	47 800
1977	13 453	81 930	1980*	5 175	29 770
			Total	428 851	1 196 298

* January to June.

F. R. AND C. M. LAZENBY, SOUTH ARM

A total of 5 064 tonnes of silica sand, valued at \$25 320 was produced for the manufacture of glass.

MINERAL SUPPLIES, ULVERSTONE

This firm produced 111 tonnes of silica valued at \$4 450.

3. CONSTRUCTION MATERIALS**BUILDING STONE****Freestone**

Three hundred and ninety-two cubic metres of freestone were quarried at a value of \$44 186.

Red Granite

Forty-eight tonnes of red granite were quarried at a value of \$12 726 at the Coles Bay granite quarry. The company ceased production in the June quarter due to the difficulties in the marketing of their product as well as problems associated with the extraction of the granite and the environment of an extractive industry in close proximity to a National Park.

BUILDING STONE (OTHER)

There was no production of stone under this classification during the period of review.

CRUSHED AND BROKEN STONE**Basalt**

A total of 334 024 cubic metres of basalt was quarried, the value of production was \$3 437 105.

Dolerite

A total of 116 136 cubic metres of dolerite was quarried during the period, the value of production was \$1 189 893.

Limestone

Six thousand four hundred and sixty-six cubic metres, valued at \$64 660 were produced mainly for road construction.

Sandstone

A total of 869 cubic metres valued at \$9 470 was produced during the period.

Other Stone

A total of 122 476 cubic metres valued at \$1 228 390 was produced. The majority of this production was in connection with Hydro-Electric Commission construction works.

An average of 132 persons was employed by the producers of crushed and broken stone.

GRAVEL

Production of all types of gravel amounted to 662 644 cubic metres valued at \$3 969 953. Most of the production was used in public roads throughout the State.

SAND

Production of sand during the period amounted to 109 113 cubic metres valued at \$680 476.

OTHER ROAD MATERIAL

A total of 10 995 cubic metres was produced valued at \$62 979.

The construction materials industry employed an average of 468 persons during the period.

4. FUEL MINERALS

COAL

QUANTITY AND VALUE OF PRODUCTION

<i>Year</i>	<i>Tonnes</i>	<i>Value \$</i>	<i>Year</i>	<i>Tonnes</i>	<i>Value \$</i>
Prior to 1976	635 064	29 495 029	1978	223 957	2 527 033
1976	189 489	1 689 878	1979	237 380	3 202 108
1977	198 966	2 152 381	1980	154 682	2 366 903
			Total	11 639 538	41 433 332

Mr P. Allan, Mining Engineer, Hobart, reported that washed coal from the two producing collieries amounted to 123 146 tonnes valued at \$2 366 903.

DUNCAN COLLIERY, FINGAL

Throughout this period one unit has continued to develop the North Eastern headings towards the outcrop, advancing 500 m. However, towards the end of the period very strong roof pressures were being experienced along with a change in the nature of roof from sandstone to laminite.

A second unit commenced to drive panels with the intention of following development with pillar extraction. Two such panels were terminated after encountering a change at 250 metres from sandstone roof to a very crumbly mudstone. Pillars were not extracted due to proximity to main roads already affected by floor heave.

The second unit then moved to a point near the first and commenced to drive headings into the north eastern corner of the lease. A change in roof conditions again disrupted progress after 150 metres. At 30 June, an attempt was being made to drive through the disturbed area which featured a roof consisting of one metre of mudstone and then a metre of coal before the normal sandstone.

About 200 metres of three main roads were brushed outbye of the dyke to maintain access through areas affected by floor heave.

Poor mining conditions generally in the period from Easter to the end of the year were reflected in reduced coal stocks.

Capital expenditure was incurred mainly on extensions of conveyors, power and water services and conversion of the underground high tension supply from 3 300 volts to 11 000 volts and a new surface substation.

BLACKWOOD COLLIERY

A tunnel was driven in the lower (Cornwall) seam for 68 metres to determine the extent of suspected faulting. It intersected the old Cornwall mine workings which were found to be standing well.

It was also determined that the suspected faulting did not exist and the upper Blue Seam was mineable.

At 30 June, one heading was driven 65 metres in the Blue Seam. This area shows potential for high productivity mining.

Capital expenditure covered access roads, portal development and minor equipment.

WASHERY

Improvements to the washery included an 'Enviroclear' 8.5 metre thickener to clarify circulating water, improve the handling of slurry fines within the plant and reduce the need for slurry ponds which are environmentally undesirable. This was commissioned late in June.

A new maintenance workshop was also constructed.

EXPLORATION

By the end of the period a total of ten cored drill holes were completed, eight being on the Mt Nicholas Range and one each on Mt Durham and Tower Hill.

PEAT
QUANTITY AND VALUE OF PRODUCTION

Year	Tonnes	Value \$	Year	Tonnes	Value \$
Prior to 1976	1 837	121 421	1978	3 098	65 170
1976	3 779	58 974	1979	410	78 775
1977	330	45 788	1980*	815	155 400
			Total	10 269	525 528

* January to June.

A total of 815 tonnes of peat was produced valued at \$155 400. Most of the peat was used in the horticultural industry.

5. FOREIGN ORES

The total value of the metallurgical products of four large works treating foreign ores imported into Tasmania was \$165 101 795 during the period.

ALUMINIUM**COMALCO ALUMINIUM (BELL BAY) LTD, BELL BAY**

One hundred and fourteen thousand and seventy-one tonnes of alumina were imported during the period producing 58 204 tonnes of aluminium. Average employment was 1 323 persons, an increase of 53 persons on the previous period.

A number of items of a capital nature were commenced but not completed during the period as follows:—

No. 4 Potline extension: Extension to No. 4 1st Half Potline by additional 108 cells and support services — \$2 750 000.

Computer control system for aluminium reduction cells: Microprocessor based system to be used at Bell Bay and associated Comalco smelters — \$130 000.

New Medical Centre: Improved medical facilities and office accommodation — \$5 000.

Curries River water: Reticulation scheme to use settled water from Curries River — \$13 000.

Upgrade sub-station 11: Improved electrical switchgear installed to replace obsolete equipment — \$16 000.

No. 4 DC project: Additional furnace capacity installed at No. 4 DC Station for casting rolling blocks — \$90 000.

FILD System: Improved production of can stock alloys by an in-line filter degassing unit — \$42 000.

The size of the workforce remained substantially the same during the period under review; it increased only from 1 315 to 1 320 employees.

**FERRO-MANGANESE, FERRO-SILICON AND SILICO-MANGANESE
TASMANIAN ELECTRO-METALLURGICAL CO. PTY LTD, BELL BAY**

Capital expenditure on projects completed during the period was as follows:—

	\$
No. 5 fence sheeting	6 500
Asphalt sealing at No. 3 amenities	6 500
Valve pit construction	3 000
Total	\$16 000

Capital expenditure on projects initiated during the period but not completed was as follows:—

	\$
Drain construction to No. 3 amenities	6 000
Installation of 1 750 kW induction furnace	690 000
Increase of FeSi storage area	202 000
Installation of C150 computer	254 000
Storage shed construction	4 000
Total	1 147 000
Grant Total	\$1 163 000

The workforce increased during the period under review from 430 to 448 employees.

**TITANIUM DIOXIDE
TIOXIDE AUSTRALIA PTY LTD, HEYBRIDGE**

Western Australian ilmenite was treated at the Burnie plant for the production of titanium dioxide pigments. Market demand locally remained firm, but intense competition and over supply made export market conditions difficult. Production costs again increased with the rise in fuel costs.

Capital expenditure for the six month period was one million dollars and covered the following items:—

- (a) projects for improved and expanded operation;
- (b) energy saving projects;
- (c) electrical distribution upgrading;
- (d) pilot plant for utilising some waste products;
- (e) safety improvements and cost saving exercises.

Company employment showed a further decrease during the period to 387 persons, however, with the contractors employed average employment on site was 426 persons.

Modifications to operations included an upgrading of the plant electrical distribution system, and the commencement of construction of additional steam generating and process equipment.

**ZINC, CADMIUM, COBALT OXIDE AND SUPERPHOSPHATE
ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED, RISDON**

This company, reviewed under Zinc, produced zinc from concentrates imported from Broken Hill together with small quantities of cadmium and cobalt oxide as by-products.

The sulphuric acid derived from roasting the concentrates was used in making superphosphate fertilisers from phosphate rock imported from Nauru, Ocean and Christmas Islands.

GEOLOGICAL SURVEY BRANCH

REPORT OF CHIEF GEOLOGIST, I. B. JENNINGS, B.Sc.(Hons), A.M.Aust.I.M.M.

This is a short report covering the period 1 January to 30 June 1980 to enable the Annual Report to be compiled on a financial year basis in the future.

The Geological Survey Branch has been working under considerable pressure during the past six months. This is due to a number of factors, viz —

- (1) The continued high level of mineral exploration in the State;
- (2) Increased interest by private enterprise in the various energy resources including coal, oil shale and offshore oil;
- (3) The continuation of the accelerated coal exploration program in the vicinity of the Fingal Valley;
- (4) An increase in demand for engineering geology and groundwater services.

Having regard to these abnormal factors it is pleasing to report that the Branch has been able to meet all commitments and at the same time has been able to maintain its normal high professional standards on all aspects of its work. The regional mapping program has progressed well but particular problems are foreshadowed on the drafting and printing of coloured geological maps.

In coal exploration the Branch has had to face up to particularly difficult geological problems to avoid drilling into dolerite feeders and irregular intrusions which have invaded the coal bearing sequences. Gravity surveys commenced some years ago have been brought to a completion and have proved to be invaluable in this regard. These have been supplemented by aeromagnetic surveys which have been flown in the period under review. The processing of the results of this work is still awaited.

Other areas of the Survey's work of more than usual importance have been the number of requests for advice on underground water which have been dealt with. This has arisen because of the unusually long dry period which the State has suffered particularly in the South-East. The development and investigation of groundwater resources in coastal sands is becoming an increasingly important task as these resources are often located in areas of greatest need and offer significant resources of usually high quality water.

It is a pleasure to record my appreciation for the work of all officers of the Survey during a particularly busy and responsible period. Reports of the heads of sections and of the specialist officers follow.

REGIONAL GEOLOGY

Supervising Geologist E. Williams reports —

There were no changes in the staff of the Section during the period.

This Section together with other Geological Society members and the University of Tasmania organised the 4th Australian Geological Convention which was successfully held at Hobart from 14–18 January 1980.

1:50 000 Map Series —

- Kingborough, Huntley, Maria, Smithton and Sorell Sheets are being drafted for publication.
- Dover Sheet: Senior Geologist N. Farmer continued mapping.
- Snow Hill Sheet: Senior Geologist A. B. Gulline commenced mapping.
- Interlaken Sheet: Geologist S. M. Forsyth continued mapping.
- Blue Tier Sheet: Geologists M. P. McClenaghan and P. R. Williams continued mapping.
- Pedder Sheet: Geologists M. P. McClenaghan and N. J. Turner continued mapping.
- Eddystone Sheet: Geologists P. W. Baillie and P. R. Williams continued mapping.
- St Marys Sheet: Geologists N. J. Turner and C. Calver continued mapping with P. W. Baillie completing mapping of a priority area.
- Corinna Sheet: Geologist A. V. Brown continued mapping.
- St Valentines Sheet: Mapping was completed by P. R. Williams and P. W. Baillie.
- Ben Lomond Sheet: Geologist P. G. Lennox commenced mapping.

Bathurst Sheet: Geologists P. R. Williams and P. G. Lennox continued mapping.
 Notes for the 1-mile Sheffield Sheet were published while those for the 1:50 000 Ringarooma-Boobyalla Sheets are in press.
 Reports for the 1-mile Frankford Sheet, and 1:50 000 Strahan, Oatlands and Kingborough Sheets are in preparation.

ECONOMIC GEOLOGY

Supervising Geologist A. J. Noldart reports —

The staff of the section comprised a supervising geologist, two senior geologists and six geologists, geologist Miss C. Bacon was appointed on 4 February 1980.

The following activities were carried out:—

- (1) Continuation of investigation of detrital tin in the north-east generally including —
 - (a) Continuation of exploratory drilling on the Musselroe River flats — Cybele Creek, Garfield-Elizabeth area.
- (2) Examination of mineral prospects and small mines throughout the State and examination of mineral potential of areas under application to purchase from the Crown.
- (3) Advice to prospectors in general.

Fuel Minerals

- (1) Continuation of exploratory diamond drilling in the north-east coal fields.
- (2) Continuation of mapping and studies of the Duncan coal mine, Fingal.
- (3) Continuation of compilation of an interim report on the coal resources of the Fingal area.
- (4) Continuation of detailed field mapping of the north-east coal fields in association with the Regional Mapping Section.
- (5) Close liaison was maintained with private interests investigating fuel deposits throughout the State.

Non-Metallic Minerals

Construction Materials

- (1) Continuation of construction materials survey and register from government, local government and private industry records.
- (2) Continuation of quarry sampling data tabulation for construction materials report.
- (3) Compilation of above data to assist various planning authorities and municipal bodies.
- (4) Appraisals of potential or proposed quarry sites in various localities.
- (5) Advice to governmental and semi-governmental bodies, and private industries.

Industrial Minerals

- (1) Continuation of diamond drilling and associated studies of Lune River limestone deposits including ground mapping, core logging and sampling particularly in the Newlands quarry area.
- (2) General liaison with industrial mineral organisations throughout the State.

ENGINEERING GEOLOGY

Supervising Geologist P. C. Stevenson reports —

The Section was at full strength with two Senior Geologists and four Geologists.

As the only government groundwater authority in the State, groundwater resources claim much attention. Medium scale surveys occupying some weeks were conducted at King Island and at Swansea, both in continuation of previous work. A detailed report on the town supply at Winnaleah was completed, and work was started on a water supply scheme for the Royal Hobart and Tasmania Golf Clubs from the Seven Mile Beach resource.

Smaller scale surveys were made and reported at Sorell and Brighton, Braddons Point, Strahan, for the National Parks and Wildlife Service, South Arm and Sheffield. Follow up work in previously mapped regional groundwater areas at Longford, Scottsdale, Lilydale, Cygnet and Sorell enabled private boreholes to be sited.

Some work was done on possible amendments to the Underground Water Act 1966, as limitations to this Act have appeared, and this will be pursued. One geologist was invited to Sydney to work on computer programs for the Nine Mile Beach groundwater resource and thanks are due to Australian Groundwater Consultants for their kindness.

Slope stability has again been a major preoccupation. Mapping has continued in the Lilydale area and a provisional zone map has been issued. Numerous small reports and letters have been issued mainly on private house blocks and subdivisions. The St Helens landslip area continues to generate much work and small occurrences in the Devonport area have been examined for the Devonport Council. Monitoring instruments have been installed, maintained and read at Groom's Slip at Penguin and Bovill's Slip at East Devonport and useful background information on long term movement has been obtained.

In the 'hard rock' domain, a report was made on the Savage River Mines pit for the guidance of the inspectors, and an examination of haul roads at A.N.M. Maydena.

Several members of the section were able to attend the 3rd Australia-New Zealand Geomechanics Conference in Wellington, New Zealand in May where slope stability matters were a major concern.

Foundation work was in demand at Lauderdale for a water storage tank and in another connection at proposed cemetery sites at Old Beach, Risdon and Kingston. An urban geology map is proposed at Riverside in view of the foundation problems there, and work is continuing. Soil shrinkage was studied at Glenorchy.

Dam mapping was called for and provided at Guide River and Carlton River for urban water supply schemes.

A revised core logging scheme has been devised which conforms with the Geological Society of London's Working Group recommendations.

The Australian Geological Convention took place in February and contributions were made to both discussions and tours.

Distinguished visitors included Prof. W. R. Dearman, Professor of Engineering Geology at the University of Newcastle on Tyne, and Professor Peter Lamb of the University of Hong Kong who spoke to section geologists on statistical and probability methods in slope analysis.

GEOPHYSICS

Geophysicist D. E. Leaman reports —

Regional interpretation of the gravity field in Tasmania was continued as time permitted. It appears that mineralised granites might be more common than previously thought.

With the exception of the pioneering application of high resolution seismic reflection methods on the Bridgewater Causeway re-alignment most geophysical surveys related to foundation engineering or groundwater projects continue to be undertaken by the Engineering Geology Section. Advice and specialised training is provided as required for refraction work.

The Garden Point site at Port Arthur was revisited at the time of archaeological excavation in order to relocate target anomalies.

However, most effort has been directed at the geophysical exploration of the East Coast Coalfields. The gravity surveys in the region have been completed, interpreted and are now being used to guide the drilling program. In addition surface and air magnetic surveys have been undertaken but the processed data are not yet available for interpretation. Seismic reflection surveys at Seymour have been able to resolve seam continuity and small faults. Two reflection traverses have been completed on Fingal Tier and a third is being recorded. Few results are available but present processing indicates that further refinements will be required in this difficult terrain.

A small Perkin Elmer 6/16 computer was installed to replace the old Wang system. Although not yet fully operational it will be unable to cope with all projects and external services continue to be needed.

CARTOGRAPHIC DRAUGHTING

Senior Draughtsman D. M. Hardy reports —

The following progress was made on colour map productions:—

1:50 000 Series

Maria (sheet 77): printed in 11 colours.

Huntley (sheet 73): fair drawing proceeding.

This year saw more time devoted to black and white diagrams, especially work on graphic logs and isopach maps associated with the drilling program in the Fingal Exempt Area. In all approximately 75 geophysical, geological, palaeontological and engineering plans and diagrams for Reports, Geological Survey Bulletins and normal field services were produced.

SURVEYING

Surveyor G. Benn reports —

The following surveys were carried out:—

- (1) Continuation of surveying and levelling of diamond drill holes and associated tracks at Fingal.
- (2) Continuation of levelling and check survey in the Duncan Coal Mine, Fingal.
- (3) Landslips at Penguin, Groom's Slip; East Devonport, Brooke Street.
- (4) A further proposed reservoir site at Carlton.
- (5) Continuation of surveying at Lune River limestone quarry.
- (6) Surveys of: Moina — All Nations Mine.
- (7) Plans produced of all surveys.

GEOCHEMISTRY

Geochemist, W. E. Baker reports —

Investigations of the application of biogeochemistry of gold to exploration for this metal are continuing. About 2 000 analyses have been completed to date and it appears likely that the presence of alluvial gold can be detected by plant analysis.

Some preliminary studies have been carried out on the interaction between humic acids and some of the less common elements such as molybdenum, tungsten, vanadium and germanium.

Numerous delays in analytical procedures are being caused by problems with the atomic absorption equipment.

MINERALOGY AND PETROLOGY

D. C. Green, Mineralogist and Petrologist reports —

In this period some 150 requests for mineralogical identification of samples were received. These range from relatively simple determinations of cassiterite and possible alluvial gold to more complex requests for zeolite identification. Determination of the amount and type of asbestos fibre in industrial dust samples has become increasingly important and techniques for dispersion staining have been introduced to facilitate this work. Considerable use has been made of X-ray diffraction equipment located at Derwent Park and of the electron microprobe in the Central Science Laboratory, University of Tasmania, in mineralogical and metallurgical investigations.

The registered rock and mineral collections of the Geological Survey have been recatalogued and housed in the basement of the Davey Street building in preparation for permanent storage in new premises at Rosny Park.

John Everard has begun a comprehensive survey of tin and tungsten mineralisation in the skarn environment while I have continued to apply stable isotope techniques to problems of hydrothermal alteration, palaeotemperatures and groundwater investigations. A study of calcite deposition in three Tasmanian caves has been completed with the collaboration of A. Goede (University of Tasmania).

PALAEONTOLOGY

Palaeontologist, M. J. Clarke reports —

Good progress has been maintained on studies of Late Palaeozoic faunas from the Kingborough, Hobart, Brighton, Sorell, Maria, St Marys and Snow Hill Quadrangles, and Early Palaeozoic faunas from the Corinna and Murchison Quadrangles. Of particular importance are Tamarian faunas from Kingborough with a large species of *Streptorhynchus*, and Bernacchian faunas from Maria, Sorell (Forestier) and St Marys Quadrangles. The unusual linoproductid *Anidanthus* is proving to be very abundant, but has a very restricted distribution both stratigraphically and geographically.

Participation in the proceedings and excursions of the Fourth Australian Geological Convention, Hobart in January, and the Fifth International Gondwana Symposium, Wellington, New Zealand in February, is recorded. Whilst in Wellington, the extensive and important collections of Permian fossils housed by the New Zealand Geological Survey were examined. Dr Campbell will pay a reciprocal visit to Tasmania in 1981.

Dr Viera Scheibnerova, Geological Survey of New South Wales, was assisted in the collection of samples from the Hobart, Huon-Channel and Tasman Peninsula areas in April. Dr Scheibnerova has commenced a systematic study of Tasmanian Permian Foraminifera. Should the samples from south-eastern Tasmania prove productive, she will extend her studies to embrace the rest of Tasmania.

PUBLICATIONS

Publications Officer E. L. Martin reports —

The following publication was printed during the half-year:—

Notes on procedures for occupation of land for mining purposes, 9 ed.

The following publications were in press at the end of June 1980:—

Geological Survey Bulletin 2. The Mathinna Goldfield, Part III, by W. H. Twelvetrees. (microfiche edition, including Parts I and II)

Geological Survey Explanatory Report. Sheet SK-55/3. Burnie, by E. Williams and N. J. Turner. (reprint)

Geological Survey Mineral Resources 1. Tungsten and Molybdenum, by C. L. Hills and L. L. Waterhouse. (microfiche edition)

Petroleum (Submerged Lands) Act 1967. Directions as to: Cranes and winches on platforms, diving, drilling operations, geological and geophysical surveys, marine operations, petroleum production, safe practice — general, and explanatory notes on reporting requirements.

Technical Reports 18. (microfiche edition)

Technical Reports 19. (microfiche edition)

Underground Water Supply Paper 7. The geology and groundwater resources of the Coal River Basin, by D. E. Leaman. (reprint)

Unpublished Reports, 1976. (microfiche edition)

PHOTOGRAPHY

About 200 colour slides were added to the collection; subjects represented included drilling for coal in the Fingal area, dolerite exposures, drill core, and coastal exposures in the Eaglehawk Neck-Cape Surville area.

COMPUTATION

Work on the Unpublished Reports data base was extended back to 1971. Geological articles in the Papers and Proceedings of the Royal Society of Tasmania from 1921 to 1979 were also indexed.

The text of the 1979 Report of the Director was prepared for input and editing by computer. Several sections had been completed by the end of the half-year.

LIST OF UNPUBLISHED REPORTS

<i>No.</i>	<i>Title</i>	<i>Author</i>	<i>Date</i>
1980/1	Notes on engineering logging of soils and rocks	A. T. Moon	17.1.80
1980/2	Summary of chromite investigations in the Beaconsfield area	T. G. Summons	4.2.80
1980/3	Investigation of a proposed lawn cemetery site at Old Beach	R. W. Moore	8.2.80
1980/4	Investigation of groundwater for a town supply at Winnaleah	R. W. Moore	19.2.80
1980/5	Mineralogical investigation of samples from clay member, Barnes Hill	J. L. Everard	
		D. C. Green	6.3.80
1980/6	Savage River mines open-cut; notes for guidance of Inspectors of Mines	A. T. Moon	
		W. R. Moore	3.1.80
1980/7	Geological map of the coal measures at Kaoota	N. Farmer	11.3.80
1980/8	Geological map of the coal measures at Mt Cygnet	N. Farmer	11.3.80
1980/9	Seismic refraction survey at Mathinna	R. G. Richardson	14.3.80
1980/10	Examination of a landslip at Blackwall	W. L. Matthews	3.4.80
1980/11	The stability of a building allotment at Armidale Street, Norwood, Launceston	D. J. Sloane	5.5.80
1980/12	Further drilling for water on King Island	W. L. Matthews	8.5.80
1980/13	The geology of the Mt Nicholas, Fingal Valley and Mt St John areas	P. W. Baillie	
		C. Calver	6.5.80
1980/14	A basaltic intrusion near St Marys	P. W. Baillie	2.6.80
1980/15	Subsurface investigations at the Guide River dam site	W. L. Matthews	5.6.80
1980/16	List of geological papers in the Papers and Proceedings of the Royal Society of Tasmania 1920-1950, 86-113 (1921-1979)	E. L. Martin	5.6.80
1980/17	Author index to geological papers in the Papers and Proceedings of the Royal Society of Tasmania, 1920-1950, 86-113 (1921-1979)	E. L. Martin	5.6.80
1980/18	The stability of a building allotment at Kayena, West Tamar	D. J. Sloane	9.6.80
1980/19	List of Unpublished Reports issued by the Tasmania Department of Mines, 1971-1979	E. L. Martin	9.6.80
1980/20	Crane's tin prospect, Upper Natone	P. L. F. Collins	30.6.80
1980/21	Sedimentology of the Freshwater Sequence, Upper Parmeener Super-Group on Fingal Tier	C. A. Bacon	30.6.80

CHEMICAL AND METALLURGICAL BRANCH

REPORT OF THE CHIEF CHEMIST AND METALLURGIST, H. K. WELLINGTON, B.E., F.S.A.S.M., A.M.Aust.I.M.M.

The change from calendar years to financial years has resulted in furnishing a report for only six months and hence comparisons can be drawn only by referring to rates rather than actual numbers of determinations made.

The number of samples registered, 1 592, the total number of determinations 4 048 are in line with normal annual rates.

Gold determinations in line with the record gold price in January reached a record level being three times that of the previous highest and ten times the normal level for this element.

Tin maintained its second place in the number of determinations with double that of the previous year; chromium, after a record level in 1979 fell to about half that rate but was still high compared with past levels.

Individual metallurgical tests were much lower as most of the effort was directed at a coal project.

During the half year 47 complete rock analyses were done. This is at an increased rate on previous years.

TYPE AND NUMBER OF TESTS

<i>Type of Test</i>	<i>Number</i>	<i>Type of Test</i>	<i>Number</i>
I. QUANTITATIVE —		B. Miscellaneous	
A. Elements —		Ash	151
Aluminium	58	Combined water	25
Antimony	17	Cyanide	2
Arsenic	28	Insoluble	4
Barium	27	Loss on ignition	32
Bismuth	22	Moisture	160
Boron	19	Specific energy	27
Calcium	63	Volatiles	53
Carbon (including			—
CO ₂)	90		462
Chromium	192	C. Waters, etc.—	
Cobalt	7	Complete analysis	159
Copper	58	Partial analysis	123
Fluorine	14	Deposit gauges	24
Gallium	19		—
Gold	732		306
Iron (ferric)	118		3 833
Iron (ferrous)	25		33
Lead	83	II. QUALITATIVE	
Lithium	22	III. CLAY AND CERAMIC	
Magnesium	63	Clay properties	
Manganese	106	(liquid and	
Mercury	2	plastic limits,	
Molybdenum	22	shrinkage)	20
Nickel	48	Fusion point	3
Niobium	22	Mortar tests	6
Phosphorus	53	Stone soundness	
Potassium	52	tests	16
Rubidium	22	Special tests on	
Scandium	3	bricks	20
Silicon	62		—
Silver	71		65
Sodium	54	IV. METALLURGICAL	
Strontium	22	Crushing and	
Sulphur	99	grinding	3
Tin	594	Magnetic	
Tantalum	2	separation	31
Titanium	49	Pan concentration	2
Tungsten	61	Sizings	31
Uranium	1		—
Vanadium	3		67
Yttrium	22		67
Zinc	66		—
Zirconium	22		67
	—	Total	4 048
	3 115		

RESEARCH INVESTIGATIONS

Tin	...	...	...	...	1	Cobalt, etc.	...	...	...	...	1
Gold	...	...	...	...	1						
						Total	...	...	...	...	3

During the period a large part of the metallurgical effort has been devoted to a coal project which extended over about ten months.

SUMMARY OF INVESTIGATIONS

GOLD

R778 — TASMINEX N.L., GOLD RECOVERY FROM MATHINNA TAILINGS

Six samples from bore holes were submitted. The head assays ranged from 0.7 to 1.9 g/t Au and from 0.31 to 0.55 per cent As. Recovery of gold by cyaniding the 'as received' material recovered between 16 and 43 per cent of the gold.

Attempts to concentrate the sulphides by flotation proved difficult probably due to oxidation of the sulphide surfaces. The rougher sulphide concentrate contained only 10 per cent of the gold and 10 per cent of the arsenic in the feed.

COBALT, etc.

R784 — ABERDARE INC., MACQUARIE HARBOUR SEDIMENTS

Products made in R690 were further examined in this project.

Cobalt was found to be associated with the sulphides but as concentrates only assayed 0.09 per cent Co commercial extraction is not envisaged.

Concentration of tungsten and the rare earths does not appear possible.

Barium was concentrated by gravity followed by magnetic separation. Half the barium was recovered in a product assaying 25 per cent barite. Tin which was concentrated with the barium could be separated by floating off the barite.

TIN

R789 — BALFOUR TIN MINES, A SURVEY OF THE BALFOUR FIELD

The three operating mills at Balfour were visited.

The Specimen Hill mine was not working. Two stages of jigging are used to recover tin from low grade superficial material on Specimen Hill.

At Tatlow's Mine a three head battery and table are used to recover tin from a pyrite feed. The table concentrate is roasted and the calcine retabled to recover a final concentrate.

The mill of Balfour Tin Mines was sampled. The feed assayed 700 g/t Sn. Screening classification/desliming and jigging were used to recover the tin. Recovery appeared to be about a third of the tin in the feed. By plant modifications it may be possible to raise recovery to about 45 per cent, that is recover about 300 g/t Sn.

MINES AND EXPLOSIVES BRANCH

REPORT OF THE DEPUTY STATE MINING ENGINEER AND DEPUTY CHIEF INSPECTOR OF MINES AND EXPLOSIVES, H. MURCHIE, B.Sc., D.R.T.C. M.Aust.I.M.M.

THE MINES INSPECTION ACT 1968

EMPLOYMENT

The average number of persons employed in the mining, metallurgical and quarrying industry during the year was 9 438, an increase of 165 persons over the previous period.

ACCIDENTS

Accidents continue to be reported and recorded in accordance with Australian Standard AS 1885 'Recording and Measuring Work Injury Experience' however, there are some areas which do not report and these are mainly small alluvial mines that are owner operated and persons employed in exploration activities.

Because of the change in the reporting period so that this report covers a six month period it is not possible to compare the accident statistics with past years.

The only pleasing fact that should be stressed is that no fatal accident occurred during the period under review.

DESCRIPTION OF SERIOUS AND FATAL ACCIDENTS

FATAL

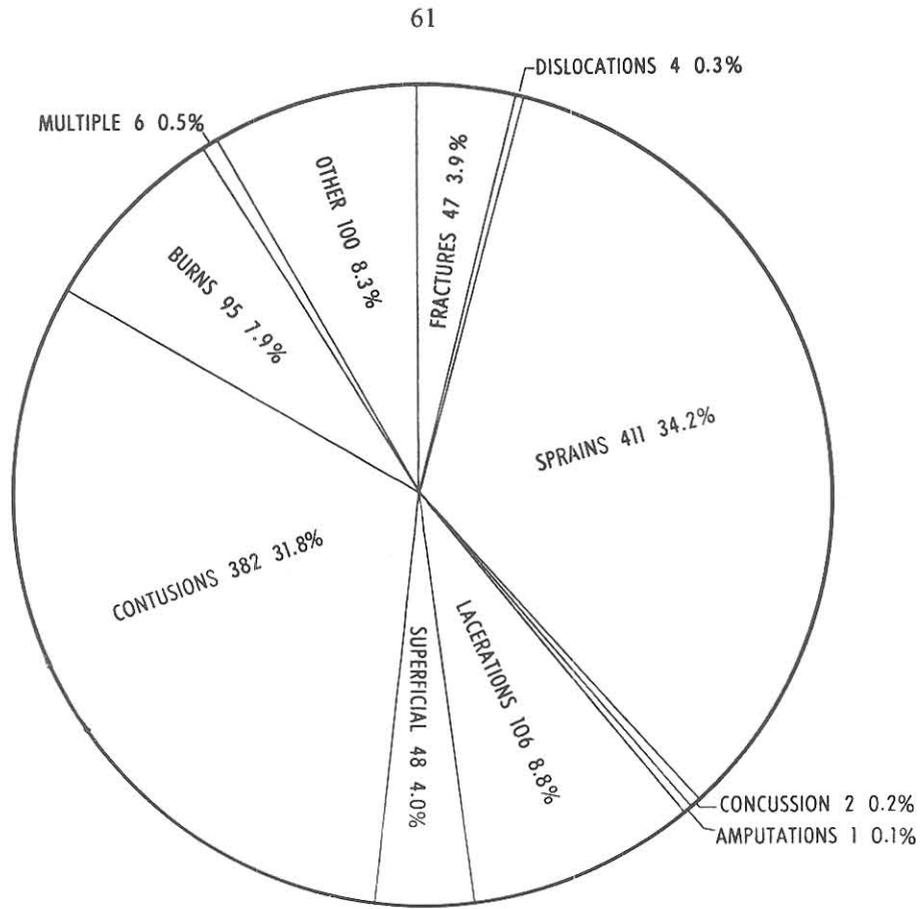
There were no fatal accidents during the period.

SERIOUS

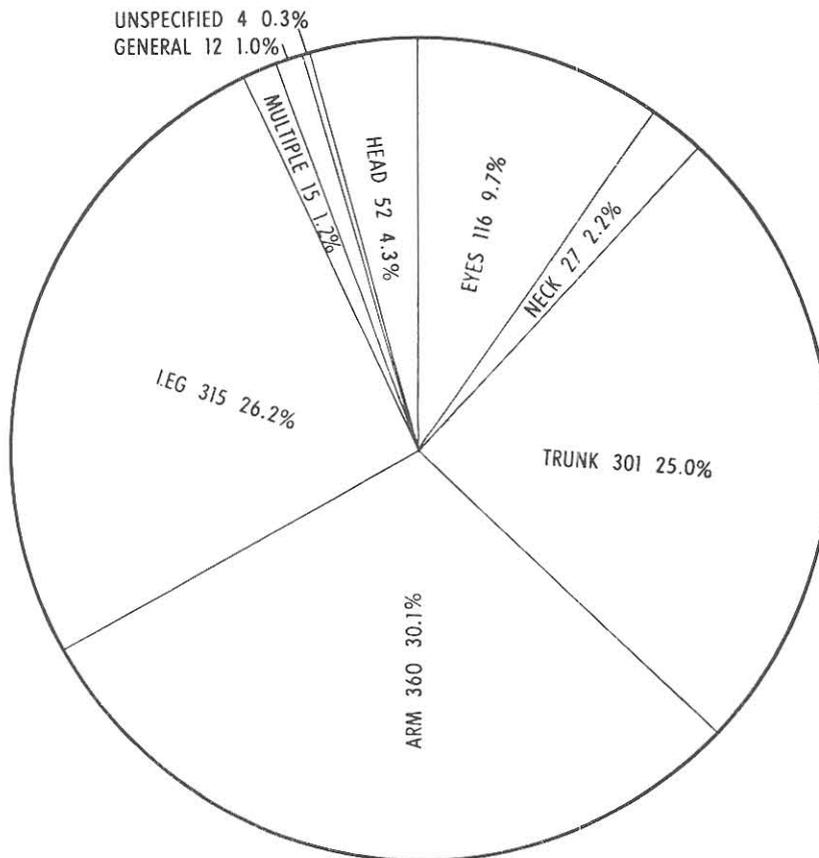
- D. Dunk, Savage River: Thrown out when truck turned over, fractured pelvis and elbow.
- A. Cooper, Savage River: Crane hook dropped on foot, broken rope struck hand, serious bruising of foot and hand.
- A. Cooper, Renison Ltd: Tripped over hose and struck knee against wall, fractured knee.
- G. A. Keller, Renison Ltd: Struck by air hose in workshop, fractured leg.
- W. Bailey, Renison Ltd: Struck by tree while felling, leg and pelvis injuries.
- C. Newey, E.Z. Co., Rosebery: Struck by falling chain block; knee, elbow and back injuries.
- C. Leonard, E.Z. Co., Rosebery: Struck by falling chain block; neck injuries and severely bruised foot.
- F. A. Vimpany, E.Z. Co., Rosebery: Struck by fall of rock; multiple injuries.
- B. Newman, E.Z. Co., Rosebery: Drilled into misfire, multiple pepper wounds and loss of one eye.
- B. J. Thomson, E.Z. Co., Rosebery: Leg jammed under Granby tipping wheel, fractured leg.
- T. Parish, Comalco: Hand caught between chuck key and lathe bed, fractured hand.
- J. Rigby, Comalco: Foot run over by forklift, severe lacerations.
- D. Robinson, Comalco: Skimming molten metal, burns to ankle.
- D. Lambert, Temco: Grinding wheel fractured, severe bruising to groin.
- I. Cummings, Temco: Struck wrist against feed chute, fractured wrist.
- P. R. Collins, Northern Chromite: Electric isolator switch failed lever raised, burns.
- E. Kaja, King Island Scheelite: Rock fell from backs, multiple injuries.
- M. Clark, Electrona: Holding bar while cleaning tapping tip, struck on forehead when employee wielding hammer missed end of bar, contusions to forehead.
- J. T. Walker, E.Z. Risdon: Pushing hot water tank-trolley which struck obstruction, scalds to legs and arms.
- W. E. Pearce, G. G. French, E.Z. Risdon: Used cigarette lighter to illuminate pipe-line to check for blockage, causing gas ignition, burns to face, neck and arms.
- L. Fenton, E.Z. Risdon: Caught between buffers during rail shunting, extensive leg lacerations.

ACCIDENT STATISTICS (AS 1885)

<i>Employer</i>	<i>Man hours exposure</i>	<i>No. of injuries</i>	<i>Frequency rate</i>	<i>Days lost</i>	<i>Incidence Rate (%)</i>	<i>Mean Duration (days)</i>	<i>Average No. of Employees</i>
Aberfoyle	173 252	43	248.2	393	20.4	9.1	211
Amdex Endurance	14 542	1	68.8	5	6.3	5.0	16
Central Tasmanian Tungsten	24 816	5	201.5	29	20.8	5.8	24
Cleveland Tin	350 613	48	136.9	660	17.0	13.8	282
E.Z., Rosebery	925 519	339	366.3	3 863	28.5	11.4	1 190
King Island Scheelite	502 318	68	135.4	585	14.2	8.6	478
Mt Lyell	642 354	82	127.7	1 258	10.9	15.3	755
Northern Chromite	13 333	4	300.0	64	26.7	16.0	15
Pioneer	37 365	9	240.9	41	23.1	4.6	39
Que River	95 553	9	94.2	69	10.6	7.7	85
Renison	486 613	50	102.8	532	9.8	10.6	511
Savage River	437 604	44	100.6	387	10.1	8.8	434
Tasminex	21 279	1	47.0	4	5.0	4.0	20
Thiess Bros (Bastyan Dam)	12 152	1	82.3	10	6.7	10.0	15
All mines	3 174 090	704	221.8	7 900	17.3	5.8	4 075
A.P.P.M.	17 094	1	58.5	8	4.7	8.0	21
Comalco	1 427 748	118	82.6	1 697	8.9	14.4	1 323
Electrona	170 924	101	590.9	1 024	52.9	10.1	191
E.Z., Risdon	1 951 674	198	101.5	2 209	9.8	11.2	2 014
Goliath Cement	400 493	17	42.4	108	5.7	6.4	296
Mole Creek	15 610	1	64.1	5	5.5	5.0	18
Port Latta	239 778	7	29.2	112	3.15	10.6	222
Temco	453 012	5	11.0	85	1.1	17.0	441
Tioxide Aust.	397 893	11	27.6	72	2.6	6.5	426
Ceramics	64 806	15	231.5	129	19.7	8.6	76
All works	5 139 032	474	92.2	5 449	9.4	11.5	5 030
Collieries	103 588	20	193.1	225	17.9	11.3	112
Quarries	68 733	4	58.2	7	6.1	1.8	66
Totals	8 485 443	1 202	141.6	13 581	12.9	11.3	9 283

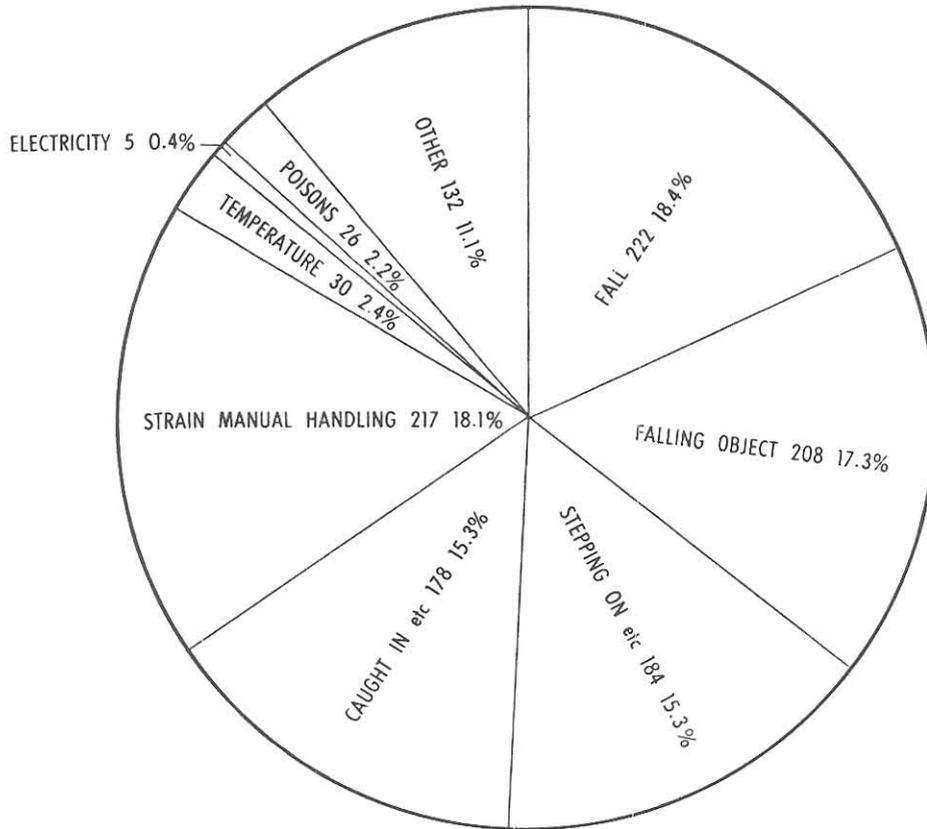


Nature of injury

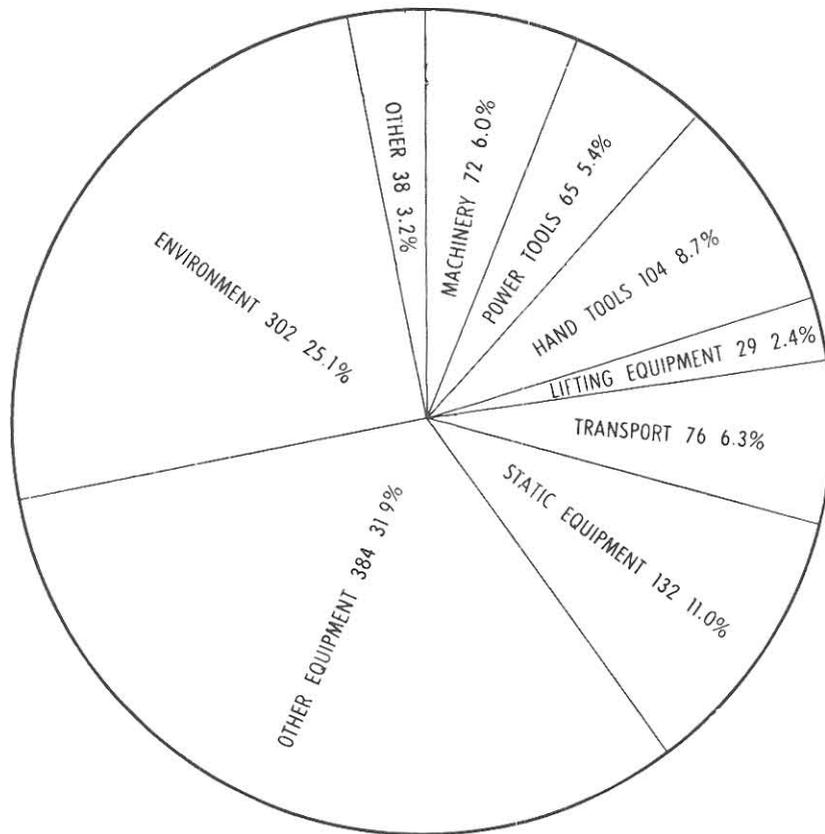


Part of body injured

5 cm



Type of incident



Agency of injury

5 cm

DANGEROUS GOODS**THE DANGEROUS GOODS ACT 1976**

Mr M. E. Curtain: Assistant Chief Inspector of Explosives
Mr G. Jobson: Senior Inspector of Explosives

SOUTHERN DISTRICT —

Mr R. A. Pickett: Inspector of Explosives
Mr E. J. Garlick: Inspector of Explosives
Mr C. G. Gardner: Inspector of Explosives
Mr J. Goodrick: Magazine Keeper

NORTHERN DISTRICT —

Mr D. R. Bonham: Inspector of Explosives
Mr S. Smith: Magazine Keeper

NORTH-WEST DISTRICT —

Mr H. E. T. Medwin: Inspector of Explosives
Mr G. Hunt: Inspector of Explosives

There has been a marked increase in the Section's activities concerning the manufacture, transport, storage and use of all classes of dangerous goods. In addition many aspects associated with dangerous goods have been conducted on an administrative or advisory basis. This has particularly applied to autogas, L.P. Gas Start Work Notices, transport of dangerous goods, inspection of laboratories (especially in hospitals, schools and colleges), disposal of dangerous goods and occupational health matters.

The appointment of three inspectors, two in the southern and one in the north-western districts in May-June 1980, will enable the section to carry out its obligations under the Dangerous Goods Act 1976.

Attention is drawn to the fact that many organisations and statutory authorities throughout Australia have realised that many of the existing codes and guidelines used for dangerous goods are out of date or are non-existent. To help rectify the situation the Department and its staff is actively engaged in drafting new requirements.

It has been observed over the last six months that there is a continuing trend for service stations to rationalise. A number have ceased trading while some have changed to a self-serve operation.

A number of lectures and demonstrations were presented to various colleges, seminars, associations and statutory authorities —

- Occupational Health and Toxic Substances.
- L.P. Gas Pottery Kilns.
- L.P. Gas General Requirements.
- L.P. Gas Internal Combustion Engines.
- Explosives.
- Handling and Storage of Dangerous Goods, e.g. chlorine.

The Section participated and assisted in the following meetings:—

- Revision of Australian Standard, AS 1596 L.P. Gas Code.
- Revision of the Australian Standard AS 1940 Flammable and Combustible Liquids Code.
- Preparation of draft codes for the safe handling of chemicals.
- Preparation of the draft code for the Transport of Dangerous Goods by Road and Rail.
- Hazchem Committee.
- Proposed Tasmanian Requirements for the Transport of Dangerous Goods by Road in conjunction with the Transport Commission.

The Australian Occupational Health Scientists and Industrial Hygienists Committee.
The Building Regulations Board.

The following figures represent the first six months of 1980 and should not be used as a comparison with previous yearly figures:—

Licences to Keep	2 596
Plans Approved	187
Magazine Licences	131
Import Licences	21
Other Licences	505
Shotfirers' Licences	6
Incidents and Accidents	4
Exemptions Granted	4
Start Work Notices L.P. Gas	485
Installations Inspected	320
Sub-standard Installations	16
Approved Installers Autogas	14
Vehicles Converted to Autogas	41
Autogas Outlets	5

IMPORTS OF FLAMMABLE LIQUIDS

<i>Product (tonnes)</i>	<i>Bell Bay</i>	<i>Burnie</i>	<i>Devonport</i>	<i>Hobart</i>	<i>Total</i>
Aviation gasoline	3 768	....	....	18 015	21 783
Kerosene —					
Aviation	4 490	....	....	3 586	8 076
Lighting	....	....	298	700	998
Motor Spirit —					
Regular	15 839	487	3 369	8 473	28 168
Premium	31 650	16 548	19 317	57 319	124 834
L.P. Gas	2 004	....	....	2 028	4 032
Distillate	23 901	22 766	17 071	32 758	96 496
Heating oil	1 328	....	1 626	1 547	4 501
Fuel oil	....	29 422	4 975	14 485	48 882
Total	82 980	69 223	46 656	138 911	337 770

IMPORTS OF EXPLOSIVES

	<i>Burnie</i>	<i>Wynyard</i>	<i>King Island</i>	<i>Total</i>
Nitro compounds (kg)	568 750	....	20 500	589 250
Detonators (No.)	19 400	2 450	2 600	24 450
Ammonium nitrate for ANFO (tonnes)	....	....	....	1 468
Number of explosives shipments	2	4	3	9

MECHANICAL INSPECTION

W. C. Hodgson, M.I.E. (Aust.), Hobart reports —

ABERFOYLE

The new emergency escapeway hoist and headframe was installed, and awaiting completion of the escape capsule and winch.

CLEVELAND

Work on increasing the compressor station capacity is progressing.

The raisebore escapeway was completed and furnished.

GOLIATH

The new Pyroclon plant was completed and brought into production.

E.Z. RISDON

The automatic zinc stripping machinery commenced operating. If successful it is expected that manual stripping will be gradually phased out.

QUE RIVER

Work on shaft sinking is well advanced and should be completed by Christmas.

MT LYELL

The new D.J.B. 50 tonne haulage trucks commenced work in the Prince ore body but experienced some teething problems.

The Roxon feeder was completed and commenced operation.

Certificates of Competency

Twenty-nine candidates were examined for certificates of competency to operate machinery.

ELECTRICAL INSPECTION**E. J. Bartkus, M.I.E. (Aust.), Hobart reports —**

Inspection of electrical installations and equipment continued throughout all mines and works.

Two minor electrical accidents were reported during this period.

The following proposed electrical installations and equipment were investigated and approved:—

Electrolytic Zinc Co. of Australasia Ltd: New extensions to Rosebery plant.

Amax Iron Ore Corporation, Beaconsfield Gold Mine: Mine dewatering installations.

Tioxide Australia Pty Ltd: Extensions to titanium dioxide milling plant and upgrading of H.V. distribution.

Goliath Portland Cement Company: New plant extensions and H.V. substations at Duncan and Cornwall collieries.

Thiess Brothers Pty Ltd: Electrical installations at H.E.C. Bastyan dam site.

New installations inspected and approved on completion —

Central Tasmanian Tungsten Pty Ltd: Diesel power station and treatment plant.

Electrolytic Zinc Co. of Australasia Ltd: Hercules mine — new H.V. substation.

Aberfoyle Limited, Que River: Main H.V. substation and load centre.

DRILLING**R. Billingham, Mining Engineer, Hobart reports —**

The major project during the period was the continuation and expansion of the coal exploration program in the area of the Fingal Tier exempt from the Mining Act.

Five drilling rigs operated at Fingal, including the new hydraulic top-rotation truck mounted Warman 1000 which was acquired in March. Drilling crews worked through the normal January shutdown and worked increased daily hours on overtime. The total depth drilled for coal during the six month period was 5 168 m, and ten holes were completed.

In the north-east, several water bores were drilled to complete the water investigation program.

Mineral investigation work included drilling on contract under Aid to Mining at Moina and Lune River and churn drilling on contract for Amdex Pty Ltd at Scotia and Pioneer.

DRILLING DETAILS 1 January-30 June 1980

<i>Location</i>	<i>Purpose</i>	<i>Drill</i>	<i>No. of holes</i>	<i>Total depth (m)</i>
<i>Diamond —</i>				
Fingal	Coal investigation	Edeco	2	515.24
Fingal	Coal investigation	Longyear 44	4	1 465.57
Fingal	Coal investigation	Longyear 38	3	1 196.93
Fingal	Coal investigation	Joy 30 HD	3	1 125.80
Fingal	Coal investigation	Warman 1000	2	621.00
Moina	Mineral investigation	F20C	2	278.20
Lune River	Mineral investigation	F20C	4	549.00
Total			20	5 751.74
<i>Churn —</i>				
Scotia	Tin investigation	Keystone 55	13	485.00
Pioneer	Tin investigation	Keystone 55	4	122.00
Total			17	607.00
<i>Diamond/Auger —</i>				
Beauty Point	Landslip investigation	Gemco 210A	1	16.97
Hobart	Site investigation	Gemco 210A	5	48.43
Penguin	Site investigation	Gemco 210A	8	119.51
Deloraine	Site investigation	Gemco 210A	5	54.50
Launceston	Site investigation	Gemco 210A	3	44.10
Total			22	283.51
<i>Rotary/Percussion —</i>				
Lulworth	Water investigation	Failing WW1	1	36.56
Weymouth	Water investigation	Failing WW1	2	74.62
Karoola	Water investigation	Failing WW1	1	19.81
Pipers Brook	Water investigation	Failing WW1	3	102.06
Pipers River	Water investigation	Failing WW1	1	18.29
Winnaleah	Water investigation	Failing WW1	2	54.85
Fingal	Water investigation	Failing WW1	5	243.90
Total			15	550.09

SUMMARY OF DRILLING

<i>Drill Type</i>	<i>No. of drills operating</i>	<i>Depth drilled (m)</i>
Diamond	6	5 751.74
Diamond/Auger	1	283.51
Rotary/Percussion	1	550.09
Churn	1	607.00
Total		7 192.34

Numerous site investigation holes were drilled for the Materials and Research Section of the Department of Main Roads using the Gemco 210A drill rig.

NORTH-WESTERN DISTRICT

E. C. LEYLAND, A.W.A.S.M., M.Aust.I.M.M.

T. E. EVANS, A.R.S.M., B.Sc. (Eng.), F.I.M.M., C.Eng.

R. N. HAMPSON, A.C.S.M., M.I.M.M., M.S.A.I.M.M., C.Eng.

GENERAL

Assistance was given to the Police in their investigation into the theft of 700 kg of tin concentrate owned by Renison Limited. The concentrate had been temporarily stored in the yard of West Coast Transport at Wivenhoe.

Monitoring of the transport, manufacture, and utilisation of water-based gel explosives was continued, following the introduction of bulk 'Aqua-pour' to the West Coast mines.

Further observations of the vertical crater retreat method of mining, recently being practised at Cleveland mine, were undertaken to assess this method's potential as a primary stoping method.

DANGEROUS GOODS

Mr G. E. Hunt commenced duty as an Inspector of Dangerous Goods on 2 June 1980.

NORTH-EASTERN DISTRICT

J. W. DEMPSTER, A.C.S.M., F.I.M.M., M.Aust.I.M.M., F.I.Q., C.Eng.

The activity of small alluvial tin mining operations was bolstered by the market price of tin.

The rise in the price of gold stimulated prospecting in the Mathinna, Lisle and Lefroy districts. Work continued on rehabilitating the collar of the Hart's Shaft at Beaconsfield.

The Bell Bay metallurgical works of TEMCO and Comalco were operated at full capacity during the period.

Complaints by the public into mining and blasting operations were investigated by the Department.

SOUTHERN DISTRICT

R. C. THOMAS, A.C.S.M., M.I.M.M., M.Aust.I.M.M., C.Eng.

P. ALLAN, B.Sc., A.H.-W.C., M.I.E. (Aust.), M.Aust.I.M.M., F.I.Q.

R. BILLINGHAM, B.Sc., A.R.S.M., A.M.Aust.I.M.M., M.I.Q.

There was a continuing interest in exploration in the southern district, mainly for coal.

The section continued to supply a service for other government departments ranging from testing vibratory road rollers to site investigation drilling.

The level of complaints from the public regarding blasting operations remained at a low level.

Members of the Section served on various committees during the period in addition to their normal duties.

REPORT OF THE MOUNT CAMERON WATER RACE BOARD

FOR THE YEAR ENDED 30 JUNE 1980

THE MINISTER FOR MINES

We submit the report of the Mount Cameron Water Race Board for the six months ended 30 June 1980. This report is for six months only to enable future reports to conform with the financial year. The statistical and financial parts of the report have been prepared for the financial year 1979-1980 for ease of comparison with the next report.

Mr Petrie, the Manager of the Mount Cameron Water Race, reported that during the six months ended 30 June 1980, 218 sluiceheads of water were sold on the fixed scale for a total return of \$1 824. Two mines were operating during that period employing six men. One hundred and forty-one bags of tin were produced.

Scrubbing and cleaning of the race continued and the staff had purchased a petrol driven mechanical scrubber to assist in the work.

The domestic charge for water provided to the Gladstone township was increased from \$4.00 to \$8.00 for each of the 62 connections at a meeting of the Board on 21 May 1980.

Despite an increase of almost \$4 000 in the operating costs of the race the loss has increased by only \$2 080.

J. G. SYMONS, Chairman.
S. EVERETT, Member.
N. P. EDWARDS, Member.

MOUNT CAMERON WATER RACE SUSPENSE ACCOUNT

Statement of Receipts and Payments for the Year Ended 30 June 1980

<i>Receipts for the year ended 30 June</i>	<i>1979</i>	<i>1980</i>	<i>Payments for the year ended 30 June</i>	<i>1979</i>	<i>1980</i>
	\$	\$		\$	\$
Proceeds from sale of water —					
Fixed scale	1 308	3 264	Salaries, wages and pay-roll tax	27 309	31 071
Royalty scale ....	....	....	Car allowance — Manager	300	500
Domestic	248	248	Maintenance	361	295
Other	140	....		
Balance — loss	26 274	28 354			
	\$27 970	\$31 866		\$27 970	\$31 866

MOUNT CAMERON WATER RACE

Statistics for the Year Ended 30 June 1980

<i>Registered Rainfall</i>		<i>Production</i>	<i>Tonnes</i>
Great Musselroe	1 069.9 mm	Tin oxide produced —	
Little Musselroe	991.0 mm	Fixed scale	21 055
		Royalty scale ....	....
<i>Water Services</i>		<i>Employment</i>	
Average number of claims supplied per week	1	Average per week —	
Greatest number of claims supplied in any one week	2	Fixed scale	6
Sluiceheads supplied —		Royalty scale ....	....
Fixed scale	416		
Royalty scale ....	....	

REPORT OF THE RINGAROOMA AND CASCADE WATER BOARD

FOR THE YEAR ENDED 30 JUNE 1980

THE MINISTER FOR MINES

We submit the report of the Ringarooma and Cascade Water Race Board for the year ended 30 June 1980.

Board members visited the Cascade Dam following their meeting on 20 May. It was agreed that Mr Petrie, the Manager of the Mt Cameron Water Race would arrange for maintenance of the control valve system and replacement of the trestle access to the dam. The existing trestling is unsafe and will be replaced by a wire supported walkway similar to that in existence prior to 1972.

J. G. SYMONS, Chairman.
S. EVERETT, Member.
N. P. EDWARDS, Member.

RINGAROOMA AND CASCADE (WATER) SUSPENSE ACCOUNT

Statement of Receipts and Payments for the Year Ended 30 June 1980

<i>Receipts for the year ended 30 June</i>	<i>1979</i>	<i>1980</i>	<i>Payments for the year ended 30 June</i>	<i>1979</i>	<i>1980</i>
	\$	\$		\$	\$
Balance (loss) 	1 616	1 642	Ringarooma Race maintenance	150	150
			Interest on capital cost 	1 466	1 492
	\$1 616	\$1 642		\$1 616	\$1 642