

SOUTH AUSTRALIA.

ANNUAL REPORT

OF THE

DIRECTOR OF MINES

AND

GOVERNMENT GEOLOGIST

FOR

1932.

ADELAIDE:

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1933.

ANNUAL REPORT OF THE DIRECTOR OF MINES AND GOVERNMENT GEOLOGIST FOR 1932.

I have the honor to submit for your information the following report on the operations of the Department of Mines of South Australia for the year ended December 31st, 1932:—

STAFF.

The department experienced a serious loss by the retirement through ill-health of Mr. W. W. Weidenbach, whose illness eventually proved fatal. Mr. Weidenbach first joined the department as Geological Draughtsman in 1912, and after six years' service resigned to take up the practice of his profession in various branches of mining. He was subsequently in the Commonwealth Service in the mandated territory of New Guinea, and on his return to South Australia in 1927 rejoined the department in the capacity of draughtsman. He was responsible for the preparation of many maps, including the latest geological map of South Australia; and this work owes much of its value to his thoroughness, accuracy, and artistic sense.

Consequent upon the increased clerical work in the department the duties of officers were re-arranged and Mr. B. D. Searle was appointed junior clerk.

NEW LEGISLATION.

No amending legislation dealing with mining was passed by Parliament during 1932, but an alteration of the regulation governing the working conditions on miscellaneous leases for working salt and gypsum deposits was effected.

Under the regulation now in force it is a sufficient compliance with the covenants if the horsepower and labor employed on any one or more of the leases held by the same lessee satisfy the total labor covenants of the whole of the leases so held. The written approval of the Minister is necessary, and expires at the end of each calendar year. Renewals are granted only if the Minister is satisfied that there are good and sufficient reasons for granting the concession.

An alteration was made also in the general regulations under the Mines and Works Inspection Act, 1920, whereby air receivers were included with boilers for purposes of examination and testing.

WARDEN'S COURTS.

Plaint No. 155.—John Baker v. David Atkins. Claim for the forfeiture of mineral claim No. 13329, situated in the hundred of Mongolata. Consent to judgment herein by defendant. Warden's order to peg issued.

Plaint No. 156.—Ernest Harold Parsons v. Harold Mulcahy. Claim for the forfeiture of reef claim No. 13434, situated in the hundred of Mongolata. Plaintiff cancelled.

Plaint No. 157.—Phillip James Tiller v. Keith Dudley Bowman. Claim for the forfeiture of mineral lease No. 1510, situated in the hundred of Malcolm. Heard at Tailem Bend, February 24th, 1932. Verdict for the plaintiff with £3 12s. costs. The recommendation for forfeiture was approved by the Hon. Minister of Mines and the lease was forfeited in favor of the complainant.

Plaint No. 158.—Michael O'Toole, Michael Polomka, and William Henry Markey v. Alfred Napper and Edward Augustine Rolland. Claim for the forfeiture of mineral claim No. 13350, situated in the hundred of Hardy. Consent to judgment herein by defendants. Warden's order to peg issued.

Plaint No. 159.—Thomas Geach v. Carl Heinrich Bradtke. Claim for the forfeiture of mineral claim No. 13348, situated in the hundred of Hardy. Heard at Peterborough, May 12th, 1932. Verdict for the defendant. No costs.

Plaint No. 160.—James William Wickham v. Alex. Erskine Latter. Claim for the forfeiture of mineral claims Nos. 13549, 13550, and 13551, situated in the hundred of Para Wirra. Heard at Birdwood, May 31st, 1932. Verdict for plaintiff. No costs. Warden's order to peg issued.

Plaint No. 161.—James Henry Crittenden v. Alex. Erskine Latter. Claim for the forfeiture of mineral claims Nos. 13497 and 13498, situated in the hundred of Para Wirra. Consent to judgment herein by defendant. Warden's order to peg issued.

Plaint No. 162.—Arthur Arnold Brown v. Edward Clarence Gasmier. Claim for the forfeiture of mineral claim No. 13327, situated at Wadnaminga. Heard at Mannahill, July 12th, 1932. Verdict for defendant. £1 costs.

Plaint No. 163.—Alfred Lovell v. William Rivett. Claim for the forfeiture of mineral claims Nos. 12914, 12915, and 12916, situated in the hundred of Port Gawler. Heard at Adelaide, July 18th, 1932. Plaintiff dismissed.

Plaint No. 164.—Ernest Henry Fischer v. Alex. Erskine Latter. Claim for the forfeiture of gold lease No. 1679, situated in the hundred of Kuitpo. Defendant consented to judgment herein. The recommendation for forfeiture was approved by the Hon. Minister of Mines and the lease was forfeited in favor of the complainant.

Plaint No. 165.—Matthew Halem Webb v. Leslie Ruston Barber. Claim for the forfeiture of mineral claim No. 13727, situated at Glenloth. Consent to judgment herein by defendant. Warden's order to peg issued.

Plaint No. 166.—Joseph Crocker Symonds v. John Langdon Lane. Claim for the forfeiture of mineral claim No. 13728, situated in the hundred of Para Wirra. Heard at Gumeracha, August 30th, 1932, and adjourned hearing at Adelaide, September 3rd, 1932. Verdict for the plaintiff. Warden's order to peg issued. Defendant appealed against the decision of the Warden. Heard by Mr. Justice Piper in the Supreme Court at Adelaide. Appeal dismissed.

Plaint No. 167.—Harry Albert Thomas v. Edward Andrew Sleader. Claim for the forfeiture of reef claim No. 13666, situated in the hundred of Onkaparinga. Consent to judgment herein by defendant. Warden's order to peg issued.

Plaint No. 168.—George Ernest Bassett v. John Copland Guy. Claim for the forfeiture of mineral claims Nos. 13175 and 13290, situated near Yudnamutana. Plaintiff withdrawn.

Plaint No. 169.—George Ernest Bassett v. Fredk. Lount. Claim for the forfeiture of mineral claim No. 13559, situated near Yudnamutana. Plaintiff withdrawn.

Plaint No. 170.—William Matheson Morgan v. Leonard B. Haney. Claim for the forfeiture of mineral claim No. 13671, situated north-west of Mannahill. Consent to judgment herein by defendant. Warden's order to peg issued.

Plaint No. 171.—John Langdon Lane v. Registrar of Mines (Louis Bronner). Claim that plaintiff is entitled to have granted his application for registration of a gold claim and to have his gold claim registered, and such other or further relief as shall be just. Heard at Adelaide, December 16th, 1932. Verdict for defendant. Costs £16 6s. 10d.

GEOLOGICAL INVESTIGATIONS DURING 1932.

The following schedule contains a summary of the principal work carried out by the geologists during the period under review :—

(A) INVESTIGATIONS AND REPORTS CONCERNING MINERAL DEPOSITS.

The Government Geologist made inspections of various localities at which prospectors were engaged in the search for gold.

The same officer visited the sites of departmental boring operations on several occasions. The results of this work have been published in the Mining Reviews.

The Government Geologist accompanied the Minister of Mines to Melbourne on two occasions in connection with the relief of unemployment in the mining industry.

Several visits were paid by the Government Geologist to Mongolata in connection with the arrangements for erecting a Government battery on that field, and to Moonta in connection with the erection of a concentrating mill.

The Assistant Government Geologist visited and reported on the phosphatic deposits occurring in caves at Oraparinna Station, and in the Good Friday Cave at Holowilena Station in the Flinders Range. The reports on these deposits are printed in Mining Review No. 58.

The Government Geologist represented South Australia on a committee that investigated the possibility of establishing the alkali industry in South Australia on a sound commercial basis, and the committee's report was furnished to the Commonwealth and State Governments.

Visits were paid to the Woodside district by the Government Geologist in connection with proposals to start diamond drilling in exploration of the auriferous lodes on that field.

(B) INVESTIGATIONS CONCERNED WITH WATER SUPPLIES.

The Government Geologist made inspections of the reservoir site at Mount Bold, and of a site for a small reservoir near Tweedvale.

He inspected also a locality at Back Valley near Victor Harbor in connection with proposals to obtain water by boring.

The Assistant Government Geologist made a large number of inspections of various properties, and furnished reports on sites for boreholes and wells in the districts of Strathalbyn (4), Freeling (2), Mount Barker (4), Aldgate (4), Gawler South (2), Crafers (5), Kuitpo (2), Hermitage (4), Teatree Gully (2), Willunga Range (3), Brownhill Creek (3), Echunga (3), Birdwood (2), Woodside (4), Macclesfield (3), and also at Stirling West, Verdun, Hackham, Bradbury, Kangarilla, Bugle Ranges, Ashbourne, Myponga, Smithfield, and near Terowie.

Inspections were made by the same officer and reports furnished in connection with the prospects of obtaining underground water by boring on behalf of 18 settlers at Cherry Gardens.

The Assistant Government Geologist furnished advice on boring for water at Thebarton Oval and the Kooyonga Golf Links. He inspected also Yarna Station, at the western end of the Gawler Ranges, and prepared a report on sites for boreholes and wells.

In co-operation with the Western District Engineer of the Engineering and Water Supply Department, the Assistant Geologist examined and reported on the Robinson fresh water basin to the south of Streaky Bay, which was under review as a source of water for the township of Flinders. He also inspected the Poldra fresh water basin and the hundreds of Condada and Wallala on Eyre Peninsula with a view to relieving the draft on the Tod River mains by drawing upon useful subterranean supplies.

The same officer made reports also on underground water supplies for the forest-clearing camps of unemployed men in the vicinity of Kersbrook.

He inspected several sites and reported on proposals to dispose of effluent water by drainage into porous strata beneath the surface at the Mount Gambier Hospital and at Naracoorte.

THE INSPECTION OF MINES, WORKS, AND QUARRIES.

The Chief Inspector of Mines has given the following summary of work carried on during the year 1932 :—

Inspections.—During the year the usual supervision of the above was maintained, to ensure that the provisions of the Mines and Works Inspection Act were properly observed, and visits of inspection were made to report on various mineral occurrences and advise on their development.

Visits were made to the Deloraine, Angaston, and Tanunda districts. The prospecting and development work on the Mongolata gold field was inspected on a number of occasions. The old gold field at Tarcoola, where aided by a Government battery on the field, a number of men are constantly engaged, was also visited.

Gold mining operations at Forest Range, Tweedvale, Barossa, and Birdwood were inspected, as also Golden Ridge near Second Valley, where a gold-bismuth concentrate is being produced from a low grade lode. Rutile and ilmenite occurrences at Myponga and Yankalilla were visited and barytes workings at Noarlunga and Hermitage.

Sand and gravel deposits on the Torrens River, where an attempt to recover a small content of alluvial gold was being made, were also seen, and the mica occurrence at Warren Reservoir and the large fireclay deposit at Williamstown were inspected. Visits were also made to the radium ore workings at Mount Painter, the Broken Hill Associated Smelters at Port Pirie, and the newly discovered gold-bismuth lodes at Stockyard Gully.

Accidents.—Detailed statistics are published in the Mining Reviews. The provisions of the Mines and Works Inspection Act are, in general, well observed. In one case only, action was taken for a breach of the regulations, and the defendant concerned was convicted and fined.

The fatal accidents for the year were three, and the number of accidents involving the loss of more than 14 days employment were 89.

Prospecting.—A large number of men are engaged in prospecting, and close supervision is maintained over their work. The continued high price of gold has encouraged this work considerably.

The Inspector of Mines (Mr. J. L. Pearson) has supplied the following summary of the principal work carried out by him during the year 1932 :—

A regular supervision was maintained over the operations of the Broken Hill Associated Smelters, Port Pirie. The position in respect to both industrial disease and accidents was satisfactory. The marked improvement over earlier periods indicates the influence on the conditions of the extensive changes made during the reconstruction scheme that has been in progress for several years past. These alterations have made the conditions at least equal to, if not superior to, those at any similar plant in other countries.

The principal alterations made during 1932 are outlined in reports printed in No. 56 and No. 57 Mining Reviews.

The most notable feature was the putting into full commission of the new units for the continuous softening, desilverising, and refining of the lead bullion from the blast furnaces.

With the new method the whole of the refining operations are continuous, and as far as is known this makes the treatment speedier and more economical than any processes in use elsewhere. These methods have been developed entirely at Port Pirie by members of the company's technical staff, and represent one of the most important advances in lead metallurgy made for many years.

Inspections were made periodically of the zinc-roasting and sulphuric acid plants operated by the Wallaroo-Mount Lyell Company at Birkenhead and Wallaroo. The plants at both centres were maintained in a satisfactory condition, and there were no cases of industrial disease amongst the employees. The operations under the Moonta mining scheme have been closely supervised, and considerable time devoted to locating and examining machinery at various places in the State and at Broken Hill to secure suitable units for the concentrating mill being erected at Moonta Mines.

A report was prepared for No. 56 Mining Review outlining the conditions under which funds were made available by the Commonwealth to continue work under the Moonta mining scheme and to prepare for productive mining.

A regular supervision was maintained over subsidised prospecting operations at Wallaroo Mines and at the Hillside Mine near Ardrossan.

Special examinations were made of the Balhannah Mine as well as the Westward Ho Mine near Mannahill, and at both mines the surface dumps were sampled. Reports embodying the results of these examinations prepared for the mine owners were published in No. 55 Mining Review.

Inspections were made of a fluorspar deposit north from Mannahill, and a felspar deposit near Olary, and the particulars regarding both properties are contained in reports printed in No. 57 Mining Review.

A summary report on the asbestos deposits of the State was prepared for publication in No. 56 Mining Review.

Inspections were made of the Homeward Bound Mine, Mannahill; New Milo, Thunder Queen, Virginia, Great Eastern, Bison, Golden Record, and Welsh Prince Mines in the Wadnaminga district; Morning Star Mine, Olary, Esmonde Mine, Taltabooka, Moonta Extended Mine; Norman mineral claim near Orroroo, and the corporation crushing plant at Port Pirie.

Other work carried out included the preparation of reports and estimates dealing with proposals placed before the Commonwealth Unemployment Relief Council, and the compilation of labor and accident statistics of the operations supervised by the department under the Mines and Works Inspection Act.

The following is a summary of the work carried out during the year ended December 31st, 1932, by the Inspector of Mines and Quarries (H. S. Cornelius) :—

Regular inspections have been made of all the road metal and building stone quarries, stone crushing plants, quarries, and clay pits and treatment plants connected with the cement and brick-making industries in the metropolitan area.

The metal quarries under the control of district councils and corporations that have received periodical visits of inspection include Woodside, Stirling, Crafers, Willunga, Payneham, Onkaparinga, Burra, Angaston, Mobilong, Murray Bridge, East Torrens, Port Germein, and Unley Corporation.

In connection with the road construction work carried out by the Commissioner of Highways outside the metropolitan area, quarries and crushing plants were inspected at Houghton, Woodside, Willunga, Palmer, and Myponga.

Other inspections include quarries at Cudlee Creek, Mount Pleasant, Tweedvale, Teatree Gully, Northfield, Stockwell, Mannum, Salisbury, and Smithfield, and the Reynella building stone quarries at Mount Lofty, Crafers, Longwood, Tapley's Hill, and Upper Sturt were visited periodically.

Regular inspections were made of the clays winning material for brickmaking in the metropolitan area, as well as those situated in country districts.

The cement companies' works and quarries at Birkenhead, Brighton, Reynella, and Klein Point were visited and found in good condition. Other inspections include the sand and gravel workings at Torrensford, Pitman's, Moule's, and Bide's on the River Torrens, Wardang Island flux, shellgrit at Gawler and St. Kilda beaches, gravel pits at Murray Bridge, Findon sand, Williamstown clay deposits, Birdwood china clay, the Mintaro slate works and the saltworks at Price and Bumbunga. Two inspections were made of the Broken Hill Pty.'s extensive quarries and plant at Iron Knob and Whyalla.

The Adelaide Barytes Syndicate Mine and Turner's Barytes workings at Noarlunga were inspected at regular intervals, while a small barytes show was seen near Birdwood, and another at the Lower Hermitage, and visits of inspection were made to the Hillside Copper Mine near Ardrossan, an alunite deposit near Stansbury, rutile near Myponga, and the clay mines at Teatree Gully.

Considerable attention was given throughout the year to gold prospectors working both alluvial and reef formations. The following localities were periodically visited:—Barossa, Tweedvale, Woodside, Torrens River, Pitcairn Range, Twigham Lead, Uooloo, Paracombe, Mount Pleasant, Tanunda, Morphet Vale, Jupiter Creek, Echunga, Fifth Creek, Birdwood, Mylor, Balhannah, Sixth Creek, Oakbank, Watts' Gully, Stockyard Gully, Waitpinga, Deloraine, Aldgate, Forest Range, Mount Charles, Mintaro, Sheoak Ridge, Palmer, Blackfellows Creek, Morialta Blocks, Noarlunga, Second Valley, hundred of Reynolds, and Mount Rufus.

Special visits were made to the Adelaide Quarries and Quarries Limited, to investigate the cause of fatal accidents which occurred. At the former place an employee was struck on the head with a stone while attending to his duties at the crushing plant.

At Quarries Limited an employee at the crushing plant was run over by a loaded lorry and killed. A fatal accident occurred in a small quarry controlled by the Port Germein district council. Special reports were made on each accident. In connection with the latter, the district council was prosecuted and fined for the non-notification of the accident.

A serious accident to a powder monkey at Anderson Bros.' metal quarry near Mitcham was also investigated, as was an accident which occurred to a mill employee engaged at Pocock's Quarry near Reynella. The results of the investigations in both instances are embodied in departmental reports.

Generally speaking the regulations of the Mines and Works Inspection Act were being complied with in the places visited.

Departmental reports have been furnished on all the places inspected, and, where any unsafe practice was observed, orders were given to remedy the matter.

STATE BATTERIES AND CYANIDE WORKS.

The following report on the operations of the State Batteries and Cyanide Works has been furnished by the General Manager:—

During the year ended December 31st, 1932, work has proceeded as usual at the Government Batteries and Cyanide Works.

This work consists of the treatment of ore by battery, the treatment of tailings by the cyanide process, and the testing and assaying of small parcels for the prospector not included as parcels. In the course of the year 1,140 assays and pan tests of small parcels of ore of a few pounds weight and ore and tailings under treatment were made.

In the period referred to, 237 parcels of ore were treated, the total weight being 2,600 tons 18cwt. The total gold bullion recovered from various sources is 3,263ozs. 4dwts. 2grs., valued at £11,937 12s. 4d. Of this total, £650 8s. 6d. represents gold purchased, smelted, and assayed.

The total weight of tailings treated by the cyanide process amounted to 1,901 tons. Of the total bullion recovered, 2,698ozs. 15dwts. 22grs., valued at £9,676 1s. were recovered by amalgamation and 395ozs. 11dwts. 1gr., valued at £1,582 5s. 2d., were recovered by the cyanide process.

The average value per ton of ore treated for the 12 months was £4 6s. 7d.

The work carried out at State Batteries and Cyanide Works during the year has, in addition to the testing of small parcels for the prospector, enabled a return to be made to the prospector of £10,533 14s. 5d. as proceeds on the treatment of the various parcels of ore.

The total value of gold bullion recovered to date at State Batteries and Cyanide Works is £138,633 17s. 4d.

In the figures quoted no addition has been made to the value of the bullion as a result of the premium now payable on all gold produced. All values mentioned are given in relation to fine gold at £4 4s. 11½d per ounce.

GOVERNMENT DRILLING OPERATIONS.

A diamond drilling plant was engaged for the whole of the year in the Wallaroo district. The total amount of drilling in this field was 1,906ft., made up of 27ft. at North-east Matta, and 1,879ft. on Smith lode at Wallaroo Mines West.

A second diamond drill was engaged at the New Deloraine Mine, near Kersbrook, and carried out 837ft. of boring.

Boring for lignite was restricted to the drilling of one hole in the hundred of Bagot, nine holes in the hundred of Anna, and seven holes in the hundred of Inkerman.

In the hundred of Bagot, adjoining the hundred of Anna, one hole with a depth of 97ft. was drilled.

In the hundred of Anna the total footage drilled was 1,778ft.

In the hundred of Inkerman the total footage drilled was 1,921ft. 6in.

A borehole, 136ft. deep, was drilled in search of water at Kyeema.

The total amount of drilling completed by all drills at all localities was 6,675ft. 6in. for the year 1932.

THE MINERAL PRODUCTION OF SOUTH AUSTRALIA TO THE END OF 1932.

The localities from which has been derived the mineral production of the State during 1932 are shown in the tabulated statement published with this report.

The following table, in which the principal minerals are segregated from the totals recorded for the State over the entire period for which records have been kept, shows which have made the most important contributions to the total mineral wealth:—

Mineral.	Value of Total Production, 1841-1932. £
Copper	33,096,171
Iron ore	9,933,589
Salt	3,063,855
Gold	1,666,339
Gypsum	803,803
Limestone	579,402
Silver and lead	381,747
Phosphate rock and phosphatic material	135,078
Opal	130,907
Manganese	92,408
Barytes	90,091
Other minerals	441,618
Total	£50,420,008

The principal output from any one district is that from the Wallaroo and Moonta field, which has produced 336,316 tons of copper valued at £20,499,542, from the time of its discovery to the end of 1932.

The total production of iron ore from Iron Knob since the deposits were first worked in 1899 to the end of 1932 is 9,218,952 tons.

**SOUTH AUSTRALIA.—GEOGRAPHICAL DISTRIBUTION OF MINERAL PRODUCTION
FOR THE YEAR 1932.**

Division and County.	Value of Mineral Production for 1932.	Details of Production.
I. Central—	£	
Adelaide	24,632	Gold, £7,798; barytes, £4,153; silica, £267; felspar, £64; clay, £4,139; kaolin, £750; flint pebbles, £12; limestone, £5,789; talc, £804; soap-stone, £856.
Carnarvon	4,251	Salt, £4,251.
Eyre	144	Barytes, £144.
Fergusson	125,657	Gypsum, £39,291; limestone, £9,345; salt, £77,021.
Gawler	278	Limestone, £118; salt, £160.
Hindmarsh	645	Gold, £106; clay, £430; bismuth, £109.
Light	1,727	Gold, £920; barytes, £807.
Sturt	269	Clay, £269.
Total	£157,603	
II. Lower North—		
Burra	3,666	Gold, £3,363; magnesite, £173; asbestos, £130.
Daly	53,277	Salt, £53,277.
Kimberley	687	Gold, £687.
Stanley	22	Salt, £22.
Victoria	363	Gold, £14; clay, £349.
Total	£58,015	
III. Upper North—		
Blachford	—	Gold, £8.
Dalhousie	8	—
Derby	—	—
Frome	—	—
Granville	—	—
Hanson	—	—
Herbert	296	Gold, £296.
Lytton	37	Gold, £37.
Newcastle	—	—
Taunton	69	Gold, £29; phosphatic material, £40.
Total	£410	
IV. South-Eastern—		
Buckingham	—	—
Cardwell	—	—
Grey	467	Silica, £105; flint pebbles, £362.
MacDonnell	—	—
Robe	—	—
Total	£467	
V. Western—		
Bosanquet	—	—
Buxton	—	—
Dufferin	—	—
Flinders	1,811	Graphite, £1,367; talc, £444.
Hopetoun	—	—
Jervois	—	—
Kintore	353	Salt, £353.
Le Hunte	—	—
Manchester	618,617	Iron ore, £618,617.
Musgrave	—	—
Robinson	—	—
Way	—	—
York	—	—
Total	£620,781	
VI. Murray Mallee—		
Alfred	—	—
Albert	6	Gypsum, £6.
Buccleuch	23	Gypsum, £23.
Chandos	—	—
Hamley	—	—
Russell	80	Gypsum, £22; salt, £58.
Young	—	—
Total	£109	
Outside Counties—		
Northern	461	Gold, £136; ochre, £325.
North-Eastern	4,089	Gold, £976; radium and uranium salts, £1,050; fluorspar, £133; felspar, £58; phosphatic material, £1,872.
North-Western	9,473	Gold, £6,386; clay, £27; opal, £3,060.
Western	490	Gold, £490.
Total	£14,513	
Total for State....	£851,898	

Finally, I have to express my appreciation of the work of all members of the Department of Mines during the whole of the year covered by this report.

I have, &c.,

L. KEITH WARD,

Director of Mines, Government Geologist, and Secretary to the Minister of Mines.
To the Honorable the Minister of Mines.