COMMONWEALTH OF AUSTRALIA.

DEPARTMENT OF NATIONAL DEVELOPMENT.

BUREAU OF MINERAL RESOURCES GEOLOGY AND GEOPHYSICS.

RECORDS.

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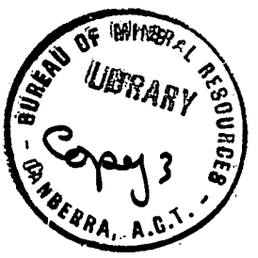

ANNUAL REPORT : JULY 1st 1961 - JUNE 30th 1962
RESIDENT GEOLOGICAL SECTION, NORTHERN TERRITORY.

by

P. Crohn.

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ANNUAL REPORT : JULY 1ST 1961 - JUNE 30TH 1962
RESIDENT GEOLOGICAL SECTION, NORTHERN TERRITORY.

The Resident Geological Section consists of officers of the Bureau of Mineral Resources, seconded to the Northern Territory Administration in order to supply geological advice and services to Government Departments, the mining industry and the general public.

A. STAFF

During the year 1961-1962, the staff consisted of the following officers :

Darwin	:	P.W. Crohn	.. Senior Resident Geologist.
		J. Hays	.. Geologist Grade III.
		P.G. Dunn	.. Geologist Grade I.
Tennant Creek	:	J. Barclay	.. Geologist Grade II.
Alice Springs	:	T. Quinlan	.. Geologist Grade III.
		D. Woolley	.. Geologist Grade II.
		K. Rochow	.. Geologist Grade I.

During the period November, 1961, to May, 1962, P. Rix, Geologist Grade I, was attached to the Darwin Office while J. Hays and P.G. Dunn were on recreation leave; and P. Cook, Geologist Grade I, was attached to the Alice Springs Office while T. Quinlan and K. Rochow were on leave.

Towards the end of 1961, a request for an increase in the strength of the Resident Geological Section to a total of ten officers was made by the Northern Territory Administration. This was supported by the Bureau of Mineral Resources, and approval has recently been received from the Public Service Board for the establishment of two additional Grade II positions at Darwin and one additional Grade II position at Alice Springs. It is hoped that these positions will be filled shortly.

Towards the end of 1961, a position of clerical assistant was also established by the Northern Territory Administration for the Alice Springs Office, and this has enabled better utilization of the professional staff by relieving them of routine clerical work. Approval for a similar position in the Darwin Office is also being sought.

B. WATER SUPPLY INVESTIGATIONS

Requests for water supply investigations were received at a greatly increased rate, compared with previous years. Major projects comprised the selection of bore sites on pastoral holdings, stock routes and aboriginal settlements, the continued investigation of sources of underground water supplies for Darwin, Alice Springs and Tennant Creek townships, and the investigation of proposed dam sites at Acacia Gap and on the Darwin River.

The bulk of this work was undertaken at the request of the Water Resources Branch, Northern Territory Administration, and much of it was carried out in close co-operation with officers of that Branch.

1. Selection of Bore Sites

A total of 161 bore sites were selected, and the majority of these were covered by reports under the Water Development Ordinance.

These bores were distributed as follows :

Mt. Allan	...	5
Ooratippra	...	4
Arapunga	...	1
Ambelindum	...	4
Horseshoe Bend	...	4
Haast's Bluff	...	9
Alice Springs	...	4
Hamilton Downs	...	3
Jervois	...	17
Henbury	...	3
Bushy Park	...	3
Kurundi	...	4
Maclaren Creek	...	1
Derry Downs	...	1
Victory Downs	...	2
Indiana	...	2
St. Teresa Mission	...	1
Todd River Station	...	4
Lilla Creek	...	1
Owen Springs	...	1
Orange Creek	...	3
Areyonga	...	1
Mt. Dennison	...	6
Hermannsburg	...	1
Yuendemu	...	12
Maryvale	...	10
Stirling	...	4
Lucy Creek	...	1
Willowra	...	4
Gurner	...	4
Victoria River Downs	...	35
Delamere	...	2
Munmalary	...	3
Jindare	...	1

Cuttings from about 140 bores were logged.

2. Town Supply Investigations.

(a) Alice Springs

Alice Springs Town Basin

Geological investigations associated with the drilling programme by the Commonwealth Department of Works were continued. Fourteen test holes were drilled, and two production holes were completed and connected to the town supply. These production holes were completed by setting sandscreens and exposing them by withdrawing the casing. They were developed by bailing and prolonged pumping. One of them (61/33) was developed to a specific capacity of 1,000 g.p.h. per foot of drawdown.

The other (61/42) has a specific capacity of 250 g.p.h. per foot of drawdown. The initial yield was higher than this, and sloughing of clay around the casing is thought to have occurred during development, preventing water from the upper aquifer from reaching the screen.

Water levels at all available measuring points were measured in October and in April, and these results were used for the compilation of contours on the water table.

A preliminary report on the occurrence of ground water in the Town Basin was completed, and the preparation of the final report on this work was commenced.

Alice Springs Farm Basin

This area, extending from Heavitree Gap to the vicinity of the Aerodrome, was under intensive investigation throughout the year. Logs for 119 holes, totalling about 10,000 feet of drilling, are now available from this area.

Inner Farm Area

A preliminary map showing the geology of this area has been prepared and is being brought up to date as additional drilling information becomes available.

The area is underlain by deposits of Quaternary and ? Mesozoic age, which form a discontinuous thin veneer over a Precambrian basement. The basement is composed of granite, Heavitree Quartzite and Bitter Springs Limestone, and the distribution of these units is controlled by a complex system of faults. Potable water is obtainable from all these units with the possible exception of the Heavitree Quartzite. Quality of water in the granite appears to decrease with increasing distance from the Todd River, possibly with a logarithmic relationship. Quality of water obtainable from the Bitter Springs Limestone is also variable, and appears to depend on the character of the aquifer as well as on distance from the river.

Outer Farm Area

The steady decline in water levels in the Town Basin since 1958 indicated the need for the development of supplementary sources of water for the town supply, and a recommendation was made to the Water Resources Branch that the occurrence of groundwater in the Mereenie Sandstone, seven miles south of Alice Springs, be investigated.

To-date, eight holes have been drilled into the Mereenie Sandstone in the area west of Alice Springs Aerodrome, where the sandstone is covered by less than a hundred feet of alluvium, and a seismic refraction survey has been carried out in this area by the Geophysical Branch of the Bureau of Mineral Resources. The evaluation of this work is still in progress.

(b) Tennant Creek

Investigations into underground water supplies in the Cabbage Gum and Seven-mile areas were continued.

Cabbage Gum Basin

Seven additional diamond drill holes were put down by the Mines Branch to test a possible western extension of the known Cabbage Gum Basin.

Complete pump tests have not yet been carried out on these holes, but present indications are that the western limit of the Basin has not yet been reached. It is likely that considerable quantities of water are present, though a water analysis on a sample from one bore (155/95) showed an undesirably high sulphate contents. Other samples have been forwarded for analysis, and results are awaited.

Seven-Mile Area.

Six diamond drill holes were put down by the Mines Branch in the search for additional ground water supplies in areas of weathered granite. The evaluation of the results of this drilling is still in progress, but on present indications the best prospects for the development of additional supplies appear to be in the vicinity of the race-course.

The Seven-mile well was deepened from 108 to 148 feet, but the rate of inflow of water remained at about 40 gallons an hour. Examination of the well revealed that a perched zone of water exists from 117 to 130 feet, overlying impervious weathered lamprophyre. Below this, the granite is dry to the bottom of the well.

(c) Darwin

Berri Springs

Investigations into the underground water resources of the Berri Springs area were temporarily suspended towards the end of 1961 to allow alternative schemes to be investigated.

3. Dam Site Investigations

(a) Darwin Area

Preliminary investigations were carried out at proposed dam sites on the Manton River at Acacia Gap, on the Darwin River near the railway bridge, and on the Adelaide River near the Marrakai crossing. Three weir sites on the Adelaide River were also investigated.

Acacia Gap

The Acacia Gap dam site may be suitable for the construction of a rock fill wall to store water to a maximum depth of about sixty feet above bank level, and a natural spillway exists north of the Gap. However, it appears likely that the gap has formed at the site of a fault which offsets the resistant quartzites of the Masson Formation, and diamond drilling or deep excavation would be necessary to establish the nature of the foundation conditions.

Darwin River

The Darwin River dam site may be suitable for construction of a wall to store water to a maximum depth of 65 feet above bank level, but no natural spillway site has been found to-date. Diamond drilling or deep excavation to test the foundation conditions would again be necessary.

Adelaide River

The proposed dam site on the Adelaide River near the Marrakai crossing may be suitable for a low wall, impounding about twenty feet of water above bank level, and a natural spillway site exists. However, extensive excavation and drilling would be necessary before a final recommendation on the suitability of the site could be made.

The proposed weir sites on the Adelaide River do not appear to present favourable conditions for construction owing to the great width of alluvial flats and the presence of old river channels in this area.

(b) Banka Banka Station

A proposed dam site on Banka Banka Station was inspected, but it was concluded that a bore would offer better prospects of obtaining a satisfactory water supply in this area.

4. Irrigation Projects

(a) Willowra

An investigation into the prospects of obtaining supplies of groundwater for irrigation was commenced in the Willowra area.

In this area, Quaternary and ? Mesozoic deposits of unknown thickness overlie a basement of Precambrian metamorphic and granitic rocks, but a Tertiary deep weathering profile has affected the basement and possibly some of the sediments, and often obscures the boundaries between them. On present information, there appears to be a reasonable prospect of obtaining water supplies suitable for irrigation from the ? Mesozoic sediments, but further investigation will be required to confirm this.

(b) Harper Springs, Tea Tree and Utopia Areas.

Regular measurements of water levels in these areas were continued during the early part of the year, but have now been temporarily discontinued due to pressure of other work. A feature of these areas is the high nitrate content of the groundwater (between 50 and 200 parts per million), which is correlated with the high nitrate content (between 20 and 600 parts per million) of the Middle Tertiary sediments which crop out on the margins of the basins.

5. Miscellaneous Investigations

(a) Tennant Creek - Government Battery-Peko Area.

Six additional diamond drill holes were put down in this area by the Mines Branch in the search for underground water. The investigation led to the location of a suitable source of supply in a shear zone of the Warramunga sediments, and a production hole drilled at this site by Peko Mines N.L. has since resulted in the development of a satisfactory supplementary supply for the mine's treatment plant.

(b) Bathurst Island Mission

An investigation of the water supply of the Bathurst Island Mission was carried out, and recommendations for improvement were made. The water is obtained from wells in the laterite capping which rests on Mesozoic shales and mudstones.

C. MINES AND MINERAL DEPOSITS

During the year, a great increase in prospecting activity occurred throughout the Territory, especially in the northern portion, and investigations carried out by the Resident Geological Section played a major part in the discovery and preliminary assessment of several deposits, notably the Frances Creek iron ore deposits and the Groote Eylandt manganese deposits.

1. Iron Ore.

A large number of iron ore occurrences were examined during the year, and several of these appear to offer prospects of economic development.

(a) Frances Creek

These deposits, situated about ten miles east of Burrundie railway siding, some 120 miles south-east of Darwin, were located in August, 1961, as the direct result of close co-operation between a prospecting syndicate of Darwin businessmen and geologists of the Resident Geological Section. A preliminary investigation has shown that although they are not large by world standards, they may be economically workable because of their relatively convenient situation to existing rail and port facilities.

At the time of writing, a major programme of testing by means of costeans and wagon drilling is being undertaken on these deposits by New Consolidated Goldfields Pty. Ltd. under an agreement with the leaseholders.

(b) Mount Bundey

At Mount Bundey, 40 miles north-east of Adelaide River township, a bold ironstone outcrop, known as Pritchard's Lode, some 2,000 feet long and up to 50 feet wide, has been known for several years, but had not previously been considered as a possible source of iron ore because of its relative inaccessibility. This prospect is currently under investigation and a diamond drilling programme is being undertaken by the Mines

Branch under an agreement with the leaseholder. However, the first two holes have indicated that significant amounts of sulphides are present in the lode at relatively shallow depth, and there is an additional possibility that economic concentrations of copper may be present in this lode.

(c) Other Occurrences

Other iron ore occurrences examined during the year include hematite rubble deposits in the Darwin River and Little Finnis River areas, gossanous ironstones in the Mount Paqualin area, hematite in the Mount Tolmer area, and lateritic ironstones in the Mount Mabel, Tabletop and Berri Springs areas. Some of these occurrences are obviously uneconomic because of their small size or inaccessibility, but others, especially the hematite rubble areas, appear to warrant some further testing.

2. Manganese

(a) Groote Eylandt

A preliminary investigation was made of manganese occurrences on Groote Eylandt, off the east coast of Arnhem Land, which had been noted by geologists of the Bureau of Mineral Resources in the course of regional surveys in 1960. The preliminary investigation, which involved the sinking of a number of test pits, indicated that the deposits contained substantial tonnages of fair quality manganese (better than 45% Mn) and very large tonnages of low grade manganiferous material. Proposals for the complete evaluation of these deposits by means of costeaning and drilling are now under consideration.

(b) Other Occurrences

The only other manganese prospects examined during the year were two small occurrences at Beetsons Creek in the Darwin River area and at Battle Creek on Victoria River Downs Station. Both of these were found to be too small and too low-grade for economic exploitation.

3. Bauxite

Officers of the Resident Geological Section accompanied prospecting teams from Gove Bauxite Corporation Ltd. on several occasions to assist in surveying and sampling the deposit at Gove in Eastern Arnhem Land. Work is at present concentrated on the area immediately south of Yirrkala Mission, but some work is also being carried out in the areas south of Rocky Bay and south of the Lackham River. A brief trip was also made to examine the bauxite deposits on Marchinbar Island.

4. Tin

The Mount Wells Government Battery commenced operations in May, 1962, and prospecting for tin in the northern part of the Territory was maintained at a high level throughout the year.

At Yeuralba, near Maranboy, alluvial tin deposits in the valley of Sandy Creek were extensively sampled, but only relatively small parts of the deposits were found to be of economic grade. Small occurrences of high-grade tin-bearing eluvial material were also examined at Maud Creek, 15 miles north-east of Burrundie, and at the Hang Gong Mine in the West Arm area.

Numerous small mines in the Mount Wells, Mount Harris and Spring Hill areas were examined and recommendations for further work were made to the leaseholders. Jessop's Lode at present has the largest indicated ore reserves of this group, but several other mines, notably the Mavis, have good quality ore in sight.

A detailed survey was also made of portion of the Hayes Creek tin field, and recommendations for further exploration were made to the leaseholder. A re-appraisal of available information on the Maranboy field was carried out, and a small new tin find six miles north-west of Maranboy was examined.

5. Copper and Gold

(a) Tennant Creek Field

Inspections were made of most of the active mines and prospects on the field, and detailed surveys were carried out at several of them.

Pinnacles Mine

At the Pinnacles Mine, intermittent exposures of malachite and chrysocolla in talc chlorite schist occur over a strike length of 250 feet and width up to 8 feet.

Five shallow drill holes have been put down in this area by the Mines Branch to test the vertical extent of this lode formation. All these holes were depressed at 60 degrees in a northerly direction. The first three holes, spaced 100 feet apart, intersected the lode at vertical depths of between 60 and 100 feet and obtained intersections of 1.95% copper over 5 feet; 1.48% copper over 9 feet; and 1.5% copper over 7 feet true widths. Gold assays, however, were generally low, the highest value being 1.1 dwts/ton over 2 feet. No lode intersection was obtained in the most westerly hole. The most easterly hole (No. 5), had reached a depth of 104 feet at the end of the year and is to be continued.

It is now proposed to drill at least two angle holes to a depth of 300 to 350 feet in order to test the primary and secondary enriched zones of the lode.

Lone Star Mine

At the Lone Star Mine, a vertical diamond drill hole was put down to a depth of 648 feet in order to test a magnetic anomaly situated approximately 700 feet north-west of the main shaft. This drilling was done under a subsidy agreement between the leaseholder and the Mines Branch, Northern Territory Administration.

An ironstone body was encountered in this hole between 372 and 590 feet, with patches of high-grade copper mineralization at about 520 feet, and some further testing of this occurrence is considered to be warranted.

Other Mines

At the Northern Star and Cat's Whiskers Mines, diamond drill holes were in progress at the end of the year to test targets at depths of about 950 feet and 475 feet respectively. In each area, a limited examination of the surface geology was undertaken by the Resident Geologist.

Underground surveys were also made at the Enterprise, Whippet, Mary Lane and Burnt Shirt Mines, and plans of the workings were brought up to date.

Close liaison was maintained throughout the year with geologists of Peko Mines and Australian Development N.L., who are actively engaged in the search and investigation of new mineral occurrences on the field.

(b) Other Areas

An investigation of the Power of Wealth Gold Mine in the Kurundi area was carried out, and the survey of the Excelsior Lease on the White Range Gold Field was completed. Brief examinations were also made of several copper prospects in the Pine Creek district.

6. Other Metals

(a) Bismuth

At the Jubilee Mine, Tennant Creek, an investigation into the distribution of bismuth was carried out and a development programme to block out and mine bismuth ore was laid out for the leaseholders.

(b) Wolfram

The Black Diamond Mine, Hatches Creek, was inspected and recommendations made for further work.

(c) Base Metals

A brief inspection was made of the Mount Bonnie Mine, near Grove Hill, where small quantities of complex base metal ore, similar to that in the Iron Blow, have been mined in the past.

In the Alice Springs area, samples of black shales of the Bitter Springs Formation, obtained in three bores put down by the Water Resources Branch, were found to contain significant quantities of sulphide minerals. Spectrographic analysis of these samples by the Bureau of Mineral Resources showed that the sample from 150 feet in bore WRB/X contains 220 parts per million of cobalt and 150 parts per million of nickel, but samples from bores WRB/0 and WRB/U contain less than 10 parts per million of copper, cobalt, nickel, zinc, tin or lead.

D. NON-METALLIC MINERALS

1. Phosphate

Close liaison was maintained with the Bureau of Mineral Resources Geological Party investigating phosphate deposits in the Rum Jungle area. In the Alcoota area, north-east of Alice Springs, an occurrence of suspected phosphatic sediments was examined and sampled, but assays by Australian Mineral Development Laboratories indicated that only a very low percentage of phosphate was present.

2. Barite

A small occurrence of barite in the Dorisvale area was examined, but this is not likely to be economically mineable at the present time because of high transport costs.

3. Raw Materials for Brick and Cement Manufacture

An evaluation of possible sources of raw materials for brick and cement manufacture in the Darwin area was undertaken by Messrs. K. Carter and E. Gardner of the Bureau of Mineral Resources Engineering Geology Section, in conjunction with officers of the Resident Geological Section. Possible sources of lime which were sampled in the course of this investigation included limestone from Katherine and Fenton, lime sand from Buffalo Creek and Gunn Point, and coral reef material from Gunn Point. Deposits which were sampled as possible raw materials for brick manufacture included clay from Shoal Bay, Elizabeth River and Berri Creek, and shale from Port Darwin, Lee Point and Berrimah. Samples from all these deposits have been forwarded to Australian Mineral Development Laboratories for preliminary testing, and bulk samples for more detailed investigation will be forwarded when the results of these preliminary tests are known.

E. REGIONAL INVESTIGATIONS

1. Yuendemu

A report on the geology of the Yuendemu Native Reserve was prepared, and a map compiled. The Reserve covers an area of 850 square miles, and is underlain by Precambrian basement rocks in the northern part and by sedimentary rocks of ? Upper Proterozoic and Palaeozoic age in the south. This work was undertaken in order to assess the groundwater potential of the area, and twelve bore sites were selected.

2. Charlotte Waters Four-mile Sheet

Regional mapping was carried out in this area in conjunction with water supply investigations, and a geological map of the Charlotte Waters Four-mile Sheet is in process of compilation. The mapping revealed that about 1,800 feet of gently dipping Upper Palaeozoic sediments, the "Finke River Beds", overlap the eastern part of the granite-metamorphic complex of the Musgrave block and the strongly folded Upper Proterozoic and Lower Palaeozoic sediments of the Amadeus Basin. The "Finke River Beds" contain three major aquifers, and the distribution of these aquifers largely controls the availability of groundwater in this area.

3. Tennant Creek One-mile Sheet

Draft compilation of the Tennant Creek One-mile geological map was completed and further progress was made in the preparation of a report on the regional geology and mineral occurrences of the area.

4. Other Areas

At the request of the Chief Geologist, Bureau of Mineral Resources, geological mapping was carried out in the vicinity of some of the B.M.R. No.2 Seismic Party's traverses along the Alice Springs - Port Augusta railway line and at Gosses Bluff.

Revisions were made to the geological maps of the Henbury Four-mile Sheet and the northern portion of the Hermannsburg Four-mile Sheet.

F. ENGINEERING GEOLOGY

1. Heavitree Gap

A survey of the western face of Heavitree Gap was carried out at the request of the Commonwealth Railways. There is a considerable amount of loose and unstable material on the steep slopes above the railway line, and rockfalls in this area could interfere with rail traffic. An estimate of the amount of loose material was made, and remedial measures were suggested.

2. Venn Airstrip

An investigation into the foundation conditions at the Venn airstrip, near Katherine, was carried out and a report was prepared.

G. MISCELLANEOUS INVESTIGATIONS

1. Hermannsburg Oil Seep.

A reported oil seep on Hermannsburg Mission was inspected. The occurrence consists of oil-saturated sand in the bed of a small creek north of the Mission. It has also been visited by geologists of Magellan Petroleum Corporation, which holds an Oil Search Permit over the area, but investigations to-date have not succeeded in tracing the source of this oil.

2. Palaeontology

(a) Alcoota Bone Beds

Fossil bones, including diprotodont remains, were found at a locality four miles south of Alcoota Homestead. Professor Stirton of the University of California has briefly examined the collection and has provisionally dated them as Middle Tertiary.

(b) Mount Peachy and Native Pine Gap

Sections of Upper Proterozoic and Palaeozoic Formations were measured at Mount Peachy and Native Pine Gap, in the Alice Springs district. Fossil collections from both these areas were sent to Canberra for systematic study.

3. Granite Sampling

Samples of a pegmatite from the Harts Range and a granite from the Alice Springs district were collected and forwarded to Canberra for age determination.

4. Henbury Meteorite

An inspection was made of a new meteorite find in the Henbury area.

H. ADMINISTRATION, OFFICE, ETC.

1. Petroleum Advisory Board

The Senior Resident Geologist attended nine meetings of the Petroleum Advisory Board.

2. Visitors, etc.

A number of visitors, comprising representatives of mining companies, companies engaged in the search for oil, Government Departments and overseas organisations, were escorted on visits to mines, mineral deposits and critical geological sections.

Numerous enquiries for maps, air photos, mineral identification and general geological advice were answered.

3. Meetings and Conferences

P. Crohn attended the Underground Water Conference in Adelaide, a hydrodynamics course in Canberra, and the Government Geologists' Conference in Melbourne, all in May, 1962.

D. Woolley attended a Hydrology Symposium conducted by Technical Committee No.6 of the Institute of Engineers and the Water Resources Conference, in Hobart in April, 1962.

J. Hays and T. Quinlan attended a symposium on Geochronology and Land Surfaces in relation to soils in Australasia, organized by the Australian Academy of Science in Adelaide in December, 1961.

I. REPORTS

The following reports, written by geologists of the Resident Geological Section during the year, have been incorporated in the Bureau of Mineral Resources Record Series :

Record	Title	Author
1961/108	Preliminary Report on Iron Ore Deposits near Maud Creek and Frances Creek, Burrundie Area.	P. Crohn
1961/159	The Availability of Groundwater at Bushy Park Homestead.	T. Quinlan
1961/C.7	An Examination of Venn Airstrip, near Katherine, N.T.	J. Hays
1962/10	Annual Report, 1960-61, Resident Geological Section, N.T.	P. Crohn
1962/21	Water Supply, Bathurst Island Mission.	P.G. Dunn
1962/26	Preliminary Report on Manganese Deposits, Groote Eylandt, N.T.	P. Crohn
1962/29	Iron Ore Occurrences under Investigation by Nevsam Mining Co.Pty. Ltd. - October 1961.	P.G. Dunn

Reports which had been completed at the end of the year, and which may subsequently be included in the Record Series of the Bureau, include the following :-

Title	Author
Reconnaissance Survey of Bauxite Deposits held by Duval & Co. at Gove Peninsula, N.T.	P.G. Dunn
Lone Star Diamond Drill Hole, Tennant Creek.	J. Barclay
Raw Materials for Brick and Cement Manufacture Darwin area.	D.E. Gardner and P. Rix.
The Big Drum Tin Mine, Mount Harris area, N.T.	P. Crohn
Alluvial Tin Deposits at Yeuralba, near Maranboy, N.T.	J. Hays
The Hayes Creek Tin Mine, Brocks Creek area.	P.G. Dunn
Preliminary Examination of McIntyre's Adit, Excelsior Lease, White Range Gold Field.	D. Woolley and K. Rochow
An Inspection of the West Face of Heavitree Gap, Alice Springs.	D. Woolley
Notes on the Alcoota Bone Beds.	K. Rochow.
A Summary of the Mesozoic and Cainozoic Geological History of the MacDonnell Ranges, Central Australia.	T. Quinlan
The Occurrence of Groundwater in the Alice Springs Town Basin.	T. Quinlan and D. Woolley

The following paper was presented to the Symposium on Hydrology, held in April, 1962, in Hobart, and sponsored by the Water Resources Conference and Technical Committee No.6 of the Institute of Engineers, Australia :-

Groundwater Resources of the Cabbage Gum Basin, N.T.
by M. Bracewell, P. Crohn and J. Hays.