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RECORDS 1955/97

BERYLLIUM IN AUSTRALIA

by

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## BERYLLIUM IN AUSTRALIA

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Beryl in the Mt. Isa District.  
Records 1955/70.

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## BERYLLIUM IN AUSTRALIA

### 1. Introduction

The main beryllium mineral occurring in Australia and the only one which has been produced commercially is beryl.

Deposits of beryl are of the following types :-

- (a) Primary, in pegmatites.
- (b) Secondary, in detritus around beryl-bearing pegmatites. This detritus contains beryl crystals scattered through rock debris.

As beryl is very susceptible to weathering and is of low specific gravity it does not accumulate in alluvial deposits.

### 2. Production

The Australian production of beryl from 1939 is given below :-

|      | <u>Tons</u> |
|------|-------------|
| 1939 | 7           |
| 1940 | 2           |
| 1941 | 3           |
| 1942 | Nil         |
| 1943 | 524.45*     |
| 1944 | 414.35*     |
| 1945 | 46          |
| 1946 | 23          |
| 1947 | 52.89       |
| 1948 | 54.76       |
| 1949 | 35.25       |
| 1950 | 22.93       |
| 1951 | 112.47      |
| 1952 | 87.12       |
| 1953 | 125.42      |
| 1954 | 148.65      |
| 1955 | 205.78      |

\* Includes accumulated stocks and current production exported from W.A. as follows

|      |            |
|------|------------|
| 1943 | 516.1 tons |
| 1944 | 390.15 "   |

Apart from 1943 and 1944 when sales of accumulated stocks exaggerated the apparent production for those years, the highest production has been during 1951 to 1954. During this period the total production of beryl was 473.68 tons and the average annual production 118.42 tons. Further details of the production during these four years are given below.

|      | Qld.          |                               | N.S.W         |                               | S.A.          |                               | W.A.          |                               | TOTAL         |                               |
|------|---------------|-------------------------------|---------------|-------------------------------|---------------|-------------------------------|---------------|-------------------------------|---------------|-------------------------------|
|      | Beryl<br>Tons | Con-<br>tained<br>BeO<br>Tons | Beryl<br>Tons | Con-<br>tained<br>BeO<br>Tons | Beryl<br>Tons | Con-<br>tained<br>BeO<br>Tons | Beryl<br>Tons | Con-<br>tained<br>BeO<br>Tons | Beryl<br>Tons | Con-<br>tained<br>BeO<br>Tons |
| 1951 | 10.30         | 1.13                          | 11.40         | 1.40                          | Nil           | Nil                           | 90.77         | 10.90                         | 112.47        | 13.43                         |
| 1952 | Nil           | Nil                           | 1.0           | 0.1                           | 0.85          | 0.09                          | 85.29         | 10.46                         | 87.14         | 10.65                         |
| 1953 | Nil           | Nil                           | 0.8           | 0.1                           | Nil           | Nil                           | 124.62        | 14.97                         | 125.42        | 15.07                         |
| 1954 | 7.2           | 0.8                           | 9.3           | 1.20                          | Nil           | Nil                           | 132.15        | 15.23                         | 148.65        | 17.23                         |
| 1955 | Nil           | Nil                           | 7.15          | .80                           | Nil           | Nil                           | 198.63        | 23.48                         | 205.78        | 24.28                         |

It is clear from the above two tables that Western Australia has always been the largest and most important producer. During the past five years, the Western Australian production has averaged 93.9% of Australian production.

In 1954 practically the entire Australian output of 132.65 tons of beryl ore was produced in Western Australia, and this is the highest recorded production in any year excepting 1943 and 1944. The Pilbara area supplied 80% (106.4 tons) of this total. Seven tons were produced at Spargoville, near Coolgardie, three tons at Yalgoo, 130 miles east of Geraldton, and twelve tons at Yinnietharra, 150 miles north-west of Meekatharra. Production recorded from New South Wales was 0.5 tons. Queensland and South Australia recorded no production.

### 3. Export Control

The export of beryl is subject to control under the Customs (Prohibited Export) Regulations, and permits to export are granted only to O.T. Lempriere & Company as official agents for the U.K. Ministry of Supply. The Australian price of beryl delivered through this agency to the United Kingdom Ministry of Supply is fixed at £16/8/9 per long ton unit (22 pounds) of contained beryllia.

### 4. Australian Sources

All sources known up to 1945 were described briefly in the Bureau's Summary Report No.18 as follows :-

Nearly all the Australian production has come from Western Australia, and a very large proportion was from Wodgina in that State.

Most of the ore was mined during 1943 and 1944 in response to a war-time request from the United States of America. The total Australian output to the end of 1944 was 950.8 tons valued at approximately £A.27,674.

The chief known occurrences in Australia are described below. No beryl has been reported from Victoria, New Guinea or Papua.

(a) Queensland

Beryl occurs as a minor accessory mineral in several Queensland ore deposits, but has been reported in quantity only from MICA CREEK, 7.5 miles by road south-west of Mount Isa.

Production began in 1943, and up to June, 1945, 17.14 tons of beryl, assaying 11.47 per cent BeO had been shipped. Numerous large pegmatite dykes contain small quantities of beryl, but the only concentration of ore was a lens with an outcrop 20 feet long and 5 feet wide. A small part of this lens contained 15 to 20 per cent beryl, but the average grade was less than 5 per cent. The production was obtained mainly from detrital material surrounding the dykes.

Beryl is reported to occur in a molybdenite-bearing leader at the MOUNT CARBINE wolfram mine, and at several other localities in Queensland. None of them is likely to provide ore for metallurgical purposes.

(b) New South Wales

The only significant production of beryl in this State is from the BROKEN HILL district which, during 1944, produced 14.2 tons assaying 13.4 per cent BeO. It is believed that the area offers scope for prospecting, if prices were sufficiently attractive. The greater part of the beryl was produced in the Thackaringa area, approximately 16 miles west-south-west from Broken Hill. In this area, beryl has been obtained from four deposits situated within a radius of  $3\frac{1}{2}$  miles of the Cockburn felspar quarry. Seven tons were obtained from Carne's mine, 1 mile south-west from the above quarry;  $4\frac{1}{2}$  tons from Parker's mine,  $1\frac{1}{4}$  miles north-east; and  $1\frac{1}{4}$  tons from Pearce's prospects, 1 and  $3\frac{1}{2}$  miles north from the above quarry.

Two deposits, situated 2 to 3 miles northerly from Broken Hill, produced a total of less than 1 ton. From the deposit situated  $\frac{1}{2}$  mile east of the racecourse, about 500 tons of rock broken from a pegmatite dyke yielded 125 tons of felspar and about 3 cwt. of beryl, which is present as hexagonal prisms, chiefly 1 inch, but ranging up to 12 inches in diameter. The average beryl content of the lode was estimated at less than 1 per cent.

At SKILLBACKS, 8 miles north-west from Broken Hill, pegmatite was worked for felspar, and the reject dumps, totalling some thousands of tons, contain a few crystals of beryl.

At EURIOWIE HILLS, 52 miles by road north of Broken Hill, 1 cwt. of caesium-bearing beryl was obtained during mining operations for amblygonite. The small amount of rejects from the amblygonite mining was estimated to contain 1 to 5 per cent beryl. Production would be contingent on establishing a market for amblygonite.

Beryl is reported as an accessory mineral in Hefferman's wolfram mine at TORRINGTON, in molybdenite pipes at TENTERFIELD, and from wolfram deposits near EMMAVILLE. None of these appears to be possible sources of commercial quantities of beryl. Beryl has been recorded in pegmatites in the BLACK RANGE near Albury.

(c) Tasmania

Beryl has been noted in several places in Tasmania, but there has not been any production, even under the stimulus of the relatively high prices ruling during 1943 and 1944. The most promising deposit is Sayers Lode in the MOINA DISTRICT. A shoot very rich in beryl, but only 4 feet long and 8 inches wide, is found in pegmatite carrying cassiterite and wolfram. Small quantities of beryl can be seen in the lode over a length of 250 feet.

Small amounts of beryl are reported from a tin-bearing vein in the ROYAL GEORGE district, and crystals up to 2 inches in diameter and 10 inches in length have been found in a pegmatite dyke at or near the Great Republic tin mine at BEN LOMOND.

(d) South Australia

The total recorded production from this State to the end of 1944 is 7.5 tons. The chief known occurrence is in the OLARY DISTRICT, where beryl is present as sporadically distributed crystals in pegmatite dykes. Over a period of five years during which 2,000 tons of felspar were mined, only 2 tons of beryl were obtained. Clean beryl assayed 13.86 per cent BeO. Prospects of significant production are small.

Small quantities of beryl have been recorded in the felspar quarry at GUMERACHA, 16 miles east-north-east of Adelaide, but there has been no production. Near WILLIAMSTOWN, beryl occurs in pegmatite dykes which were prospected for emeralds about 1900.

(e) Western Australia

Western Australia has been the main source of beryl in Australia and up to the end of 1944, had produced 916.25 tons valued at approximately £26,802.



PORT HEDLAND DISTRICT - The production from this district until the end of 1944 was 779 tons valued at £22,615.

The greater part of this beryl was obtained at WODGINA, 70 miles south of Port Hedland, North-West Division, as a by-product from the mining of tantalite. The total output from Wodgina was approximately 710 tons, averaging 11.62 per cent BeO, and valued at £21,152 f.o.b. Fremantle. Of this total, some 550 tons were won during several years of tantalite mining, and were stacked pending a rise in price, the remainder being obtained during Government mining operations in 1943 and 1944. Most of the beryl was produced from one large body at the northern end of the main workings. A little was obtained from two smaller bodies. The dyke containing the above bodies outcrops over a length of 2,200 feet and has an average width of 50 feet, but no other large beryl bodies have been found. The distribution of beryl in the dyke as a whole is sporadic, and its average grade is certainly too low to allow profitable mining for beryl alone. At the conclusion of operations in 1944, all easily won ore in sight had been exhausted. The late manager stated that another 40 to 50 tons could possibly be won, but at considerable cost. It is possible that other similar bodies of beryl will be found in depth, if this dyke should be prospected for tantalite and beryl at a later date. The degree of concentration of beryl in the northern body is unique among known Australian deposits, the only comparable occurrence in the world being at Las Tapias, Argentina, where 3,000 tons of beryl are reported to have been obtained from one dyke. The beryl at Wodgina, which is the caesium-bearing variety known as rosterite, is pale pink to milky-white in colour.

The prospect known as Tom Molloy's claim is situated 3 miles south-west of WALLYREENA STATION homestead, which is 45 miles from Wodgina on the Strelley road. Up to November, 1944, some 7 tons of crystalline and white massive beryl had been extracted. At that time, the deposit had not been properly opened up, but it appeared to be quite promising. It is the only other known occurrence of massive reef beryl in the Port Hedland district.

At TABBA TABBA, 40 miles south-east of Port Hedland, at STRELLEY, 40 miles east-south-east of Port Hedland and at PILGANGOORA, 20 miles north-east of Wodgina, beryl occurs in pegmatite dykes, but the occurrences have not been proved of importance to date. A total of 4 tons was exported from detrital occurrences at Strolley during 1943 and 1944. Beryl crystals 2 inches long and 1.5 inches in diameter are estimated to form 10 per cent of a small pegmatite outcrop at Tabba Tabba. Prospects at Pilganoora are poor (Ellis, 1944).

At MOUNT FRANCISCO (G. Lamont's claim) 10 miles south-west of Wodgina, 46 tons of beryl, largely collected from the detrital material surrounding a tantalite-bearing pegmatite dyke, had been exported to June, 1945. The beryl is pale green, with well

developed crystal form, and averaged 12.73 per cent BeO. Lamont reports that beryl occurs underfoot in the dyke. A pproximately 4 tons of beryl were also obtained from the detritus surrounding a pegmatite dyke, some 2 miles to the south of Lamont's claim and on the eastern side of Mount Francisco. Some 20 to 30 tons of beryl are reported (1945) lying on the surface of a gully in this vicinity.

Beryl occurs also at KANGAN, 13 miles west-north-west of Wodgina, and some 3 tons of eluvial beryl were obtained.

GASCOYNE RIVER AREA. - From the YINNIETHARRA district, approximately 225 miles by road east of Carnarvon, 76.7 tons of beryl averaging approximately 13 per cent. BeO were exported up to June, 1945. Nearly all this beryl had been obtained from detrital material surrounding pegmatite dykes. Most of it was obtained from a lease known as The Cairn from where, it is reported, most of the detrital beryl had been removed by the end of 1944. It is possible that beryl in minable quantities might be found in the parent dyke if this were prospected. Other localities, including the Bidgemia, the King mica mine and the Commonwealth owned mica mine, have produced small quantities of eluvial beryl, but the grade of the dykes is low. Thus from 5,000 tons of rock mined at the Commonwealth mica mine, only 600 lb. of beryl were collected by hand-picking methods.

It is expected that in the future, beryl will be produced from this area only as a minor by-product from the mining of mica, if this should be resumed.

CENTRAL GOLDFIELDS AREA - Beryl and helvite are reported from pegmatites at MELVILLE, 15 miles north of Yalgoo, but significant quantities have not been found. Beryl is reported in some quantity from pegmatites at Poona, 35 miles north-west of Cue, and 21.53 tons were exported in 1944. At the LONDONDERRY felspar quarry, 13.5 miles southerly by road from Coolgardie, 28.7 tons of beryl assaying 11.57 per cent BeO were obtained during 1944 as a by-product of the mining of felspar from a pegmatite dyke. The portion normally worked for felspar is low in beryl content, only 5 tons of beryl being obtained from 100,000 tons of rock broken up to October, 1943. Most of the 28.7 tons referred to above was obtained from another section of the dyke, during normal felspar-quarrying operations. Reserves of beryl ore are small.

Beryl of mineralogical interest only is reported to occur in pegmatite dykes at TANTALITE HILL, 15 miles south of Coolgardie.

SOUTH-WEST DIVISION. - In the felspar quarry at BALINGUP, 125 miles south of Perth, some rich patches of beryl are reported, but the general distribution is erratic. It is reported that 2 to 3 tons were hand-picked during the mining of 400 tons of felspar. Total production from 1939 to 1944 was 10.1 tons.



Occurrences of beryl, though not in commercial quantities, are reported at MUNDARING, 28 miles south-east of Perth; RAVENSTHORPE, 275 miles south-west of Perth; TOODYAY, 45 miles north-east of Perth; YABBERUP, 110 miles south of Perth; and in the Vulcan tin mine at GREENBUSHES, 130 miles south of Perth. The only recorded production from those deposits is from Mundaring, where 0.1 ton was produced in 1943.

(f) Northern Territory

When beryl was urgently required, it was hoped that some supplies might be obtained as a by-product from the mica mines in the HARTS RANGE, 75 to 100 miles north-east of Alice Springs. Careful examination showed, however, that though beryl occurs in the Disputed, Eastern Chief, Kismet, Spotted Tiger and Caruso mines, the quantity present is small. Methods of mica mining render difficult the saving of small crystals of beryl, the main mass of discarded rock not being sorted in any way.

Beryl is found in minor quantities in many pegmatite dykes in other parts of the Northern Territory, but no large concentrations have been reported.

Since 1945, the only beryllium prospect discovered is a uranium-beryllium prospect found in 1954 near Torrington in the New England district of New South Wales. The deposit is a primary one and the three principal beryllium minerals are beryl, phenacite and milarite, although doubt exists with regard to identification of the last-mentioned mineral.

The Torrington deposit has been surveyed by the New South Wales Mines Department and a report is being prepared. In the meantime the Under Secretary reports - "Samples of the richer grade ore from the prospect have yielded 8.8 and 10.2 per cent. BeO. Average BeO content of the lode-stuff would be in the region of 5 per cent., but only very limited tonnages are available."

5. Deposits Containing Reserves and which Justify further Prospecting & Development

(a) From Viewpoint of Sources

The description of sources given above indicates that some areas and deposits have some possibilities from the viewpoints of testing and possible production. The most important of these are Wodgina, Wallyreena Station and Yinniotharra in Western Australia and Broken Hill in New South Wales. The possibilities are summarised below.

- (i) Wodgina, W.A. At the conclusion of operations in 1944, all easily won ore in sight had been exhausted. The late manager stated that another 40 to 50 tons could possibly be won, but at considerable cost. It is possible that other similar bodies of beryl will be found in depth, if this dyke should be prospected for tantalite and beryl at a later date.

- (ii) Wallyreena Station, W.A. In 1944 the deposit had not been properly opened up, but at that time it appeared to be quite promising. It is the only known occurrence of massive reef beryl in the Port Hedland district outside the Wodgina mine.
- (iii) Yinnietharra district, W.A. Most of the beryl was obtained from a lease known as The Cairn from where, it is reported, most of the detrital beryl had been removed by the end of 1944. It is possible that beryl in minable quantities might be found in the parent dyke if this were prospected. It is expected that in the future, beryl will be produced from this area only as a minor by-product from the mining of mica, if this should be resumed.
- (iv) Broken Hill, N.S.W. It is believed that this area offers scope for prospecting if prices were sufficiently attractive. Beryl has been obtained from four areas.

(b) From viewpoint of Production

The production during the past four years shows that the most important and continuous producers are in Western Australia and that there has been a little production from South Australia and New South Wales but none from Queensland since 1951. The production of beryl from the W.A. areas was -

|                                 | 1951 | 1952 | 1953  | 1954  |
|---------------------------------|------|------|-------|-------|
| Pilbara (tons)                  | 77   | 70   | 104.5 | 105.0 |
| Spargoville (Coolgardie) (tons) | 14   | 14   | 10.0  | 11.0  |
| Yinnietharra (tons)             |      | 1    | 2.0   | 11.5  |

The beryl in all areas was produced by individuals or small parties.

There must therefore be some resources of beryl in the above areas from which production can be obtained.

## 6. Possible Investigations

The discussions in the preceding section indicate that the following areas are the most important and have possibilities of either continuing as, or becoming, producers and therefore are worthy of some investigation.

Pilbara (and particularly Wodgina) W.A.  
 Yinnietharra, W.A.  
 Spargoville, W.A.  
 Broken Hill, N.S.W.  
 Torrington, N.S.W.

The investigations could be of types -

- (a) Geological surveys to determine the possibilities.
- (b) Detailed testing and particularly determination of reserves if ore is present.

(a) Geological Surveys

Geological surveys could be made of all deposits and prospects in -

- (i) Pilbara district )
- (ii) Yinnietharra area) Western Australia
- (iii) Spargoville area )
- (iv) Broken Hill district) N.S.W.
- (v) Torrington )

Surveys of other areas in which beryllium prospects are known, could be deferred until the above more important ones have been done. The other areas include Olary, S.A., Mica Creek (Mount Isa) Q., Georgetown, Q., Harts Range, N.T., Middlesex district, T.

Any comprehensive programme of surveys of all deposits in Australia would have to be a combined effort by the Bureau and the State Geological Surveys. In the meantime the Bureau will examine and report on all beryl deposits in districts being surveyed by it; the Northern Territory prospects will be re-examined at the end of the year.

(b) Detailed Testing and Determination of Reserves.

(i) Testing

The testing of beryl deposits would be a difficult procedure and without much chance of successfully determining the extent and grade of any ore.

Primary Deposits. If a lens of beryl occurred in a dyke, it would be easily tested although the search for it might be long and expensive. However, if the beryl was disseminated through a dyke, testing by drilling would be almost useless, unless the beryl was fine in grain and distributed uniformly throughout the dyke. However, these favourable conditions would be the exception rather than the rule.

Detrital Deposits. These would be somewhat easier to test, but as the beryl occurs in large crystals or pieces the results of drilling would not be satisfactory.

Pitting would be better but not entirely satisfactory owing to the coarseness of the beryl and the irregularity of its occurrence throughout the deposit.

(ii) Determination of Reserves

If testing is difficult, the extension of it to determine reserves would be even more difficult and applicable with some reservations only to detrital deposits.

The most that can be said about reserves at present is that until the deposits being worked are depleted, production will generally be of the same order as in recent years, that is, about 110 tons of beryl annually. No statement can be made as to how long production will continue at this or at any other rate.

*P. B. Nye*

(P. B. Nye)

DIRECTOR.

OCCURRENCES OF BERYL, MOUNT ISA DISTRICT

by

E. K. Carter

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Records 1955/70

The only source of beryl in the district, known to have been worked, is the Big Beryl Mine,  $5\frac{1}{2}$  miles south-west of Mt. Isa. The following production figures have been compiled by J. H. Brooks from Queensland Department of Mines records:

|      | <u>Tonnage of Beryl produced</u> | <u>Value £.</u> |
|------|----------------------------------|-----------------|
| 1942 | -                                | -               |
| 1943 | 7.0 tons                         | 112             |
| 1944 | 5.9 "                            | 105             |
| 1945 | -                                | -               |
| 1946 | 8.9 "                            | 272             |
| 1947 | -                                | -               |
| 1948 | 12.0 "                           | 440             |
| 1949 | 9.5 "                            | 385             |
| 1950 | 6.0 "                            | 609             |
| 1951 | 10.3 "                           | 934             |
| 1952 | -                                | -               |
| 1953 | -                                | -               |
| 1954 | <u>7.2 "</u>                     | <u>1251</u>     |
|      | 66.8 tons                        | £4108           |

Production ceased last year as a result of the death of one of the mine owners, who worked it single-handed, the other being overseas.

A description of the working is given by S.R.L. Shepherd in Queensland Government Mining Journal, Vol. 47, No. 532, page 51 - February, 1946, together with a description of the area, as a result of inspections in May and September, 1944. Shepherd records the existence of beryl in non-economic quantities 4 miles south-south-easterly from the Big Beryl Mine and of small isolated crystals of beryl in quartz veins near the mine.

I inspected the workings on 7th July, 1955. They consist of an open cut of great length 89', depth 41', and maximum width approximately 15'. Access was obtained by a 30' vertical shaft in the hanging wall near the southern end of the open cut, joined to the open cut by a 4' tunnel. The hanging wall of the open cut dips roughly  $65^{\circ}\text{W}$ .

At the northern end of the open cut is a prominent quartz blow. A trench 12' x 2' wide had been dug immediately to the west of the blow. Another pit has been dug in pegmatite at 350' distance on bearing  $020^{\circ}$  from the quartz blow. No beryl was observed in either of these openings.

In the open cut pegmatite is exposed at both the southern and northern ends. The western-hanging wall- of the cut is of amphibolite and the footwall of a dark mica schist.



The southern exposure of pegmatite could not be adequately inspected for the presence of beryl but at the northern end beryl was observed at two points, as marked on the longitudinal section attached. The more northerly face showed garnet-bearing mica-felspar pegmatite over a width of 2 feet, with beryl constituting not more than 5% of the bulk. The second exposure of pegmatite is 16 inches wide and contains perhaps 15-20% beryl.

The floor of the open cut is covered with rubble. It is not known how deep the winze shown on the sketch was originally or what was exposed in it. It is now almost entirely filled with mullock.

A brief examination of some of the numerous pegmatites within 200 to 300 yards of the Big Beryl Open-Cut suggested that the beryl-bearing pegmatite is more micaceous than most of the others. No specific search for beryl was undertaken.

Mount Isa Mines Ltd. have no information later than 1944. A company report was made by R. Blanchard and G. Hall in 1942. In it they refer to an area of one square mile, with the Big Beryl mine in the north-east corner, in which pegmatites are numerous and which contains beryl.

Four analyses made in 1942-44 shows the beryllium content of beryl from the Big Beryl Mine as 12.49% to 12.85%.

### Prospects

Regular production of beryl from the Mica Creek area cannot be expected. Further beryl can be won from the Big Beryl open cut, but only, as in the past, on a "weekend gouging" basis. The quartz blow marks the limit of possible northward development. Any further winzing to test a depth must be on a trial and error basis.

It is suggested that if Governmental agencies are interested in increasing the output of beryl this can best be served in the Mt. Isa District by encouraging "weekend gougers". The attention of such people to beryl as a source of additional income could be drawn by a press release in a local newspaper or perhaps an article could be printed, by arrangement, in either Mount Isa Mines Ltd.'s "Mimag" or in the Queensland Government Mining Journal. The proximity to Mt. Isa of the Mica Creek area should appeal to part-time prospectors and gougers.

## BERYL IN THE NORTHERN TERRITORY

The occurrence of beryl appears to be restricted to the Harts Range field.

The following information on beryl in the Harts Range field is extracted from the report on the Harts Range Mica Field by G. F. Joklik (Bulletin No. 26).

The following extracts are taken from the section on Mineralogy, sub-Section "Other Minerals".

- (1) "At least 12 accessory minerals, none of which occur in great concentrations, have been recognized in the Harts Range pegmatites. They are listed together with the names of the pegmatites in which they are most abundant.

Beryl .....Disputed, Caruso, Dinkum, Eastern Chief, Kismet.

- (2) Beryl is generally restricted to the wall zones and intermediate zones. It is associated mainly with potash felspar but its occurrence in plagioclase is not uncommon. By far the best specimens of the field occur in the Disputed Mine which contains both bluish green (aquamarine) and yellow beryl. Both varieties are extensively fractured."

In describing the Disputed Mine the following statement is made -

"Most of the large quantities of mica won in the early years of the operation of the mine were extracted from the upper, flat-dipping portion of the pegmatite. In recent years, the regular fissure vein in the lower levels has been stoped.

The keel of the Disputed pegmatite plunges gently east; the pegmatite cuts out rather abruptly at approximately 120 feet from the western extremity of the main stope. In places the reef is 50 feet thick; the average thickness is roughly 20 feet.

The zoning system of the pegmatite is fairly complete. The core is regular, and consists of quartz which, here and there, contains large perthite crystals. The intermediate zones consist of blocky microcline and abundant beryl. The wall zones, which are particularly uniform, contain plagioclase, muscovite, and tourmaline. The border zones are fine-grained aggregates of quartz, plagioclase, and muscovite."

There has not been any production of beryl from the Harts Range field. It appears that the beryl is present only as an accessory mineral in the pegmatites and that production is most unlikely. The Disputed Mine may perhaps justify further examination as opportunity offers.