

ALLEGED OCCURRENCE OF RADIO ACTIVE MINERALS
AT NORTH HEEMSKIRK

Introduction

Mr. E. McGuinness, an old prospector on the West coast of Tasmania, represented to the Commonwealth that he had knowledge of uranium occurring in alluvials and lodes at North Heemskirk.

The matter was referred to the Director of Mines in Tasmania who instructed that a geological investigation of the area should be made.

The area specified by Mr. McGuinness consists of a circle of half a mile radius with its centre near the middle of the 50 ac. section 2899/93M, formerly Copper Reward, now chartered in the name of Morisby and shown on the North Heemskirk mineral chart. This area takes in several of the headwaters of the St. Dizier Creek and Long's Iron Blow and lies wholly on granite.

Previous Literature

Two reports of the Tasmanian Department of Mines have been made on portions of the North Heemskirk Area.

1. Western Mining Districts

by G. Thureau, 1884.

This report was not available to the present writers.

2. Reconnaissance of the North Heemskirk Tinfield

by L. Lawry Waterhouse.

Geological Survey Report No. 6, dated 1915.

This report, the result of sixteen days work in the field deals briefly with the geology in the area and is accompanied by a geological sketchmap of a scale of 2 inches to the mile.

The author does not claim that this map shows the boundaries accurately and intended it merely as a guide for future work.

Mapping and Field Procedure.

Five days were spent in the area. Prior to going to the field the aerial photographs of the area specified by Mr. MacGuinness and the surrounding area were examined in conjunction with Waterhouse's report and all known lodes and zones of mineralization were plotted on the photographs.

The field procedure which is regarded as reconnaissance only consisted of visiting these lodes and zones of mineralization, plotting their positions accurately on the photos, and taking samples from the lodes or dump heaps.

General Geology

This has been described by Waterhouse, pages 5 to 19 and the present writer has nothing to add to his description.

The following is, therefore, a resume of Waterhouse's remarks.
Three main groups of rocks occur in the district:

- A. Igneous
- B. Sedimentary
- C. Alluvial

A. Igneous

The igneous rocks consist of four types:

- 1. Granite
- 2. Dolerite
- 3. Basalt
- 4. Gabbro

1. Granite

This is the chief igneous rock of the district and forms the Heemskirk massif which extends from Trial Harbour in the South to Granville Harbour in the North forming the coastline.

The massif is approximately 5 miles in width and its eastern margin is roughly parallel to the coast. The southern and eastern margins form prominent

3.

escarpments, and the western margin forms the coastline, but the northern margin is not marked by any sharp topographic change, the granite merging into the enclosing sedimentaries.

Waterhouse's description of the granite is as follows:

" In appearance the rock is typically a pink "
" granite, owing to the abundance of pink orth- "
" oclase feldspar. In addition to this mineral,"
" white plagioclase, quartz, black biotite, mica,"
" and sometimes black tourmaline are readily "
" distinguishable in hand specimens. In texture "
" the normal rock is medium grained, varying "
" somewhat in particular localities. Aplite "
" and granite porphyry are sometimes developed "
" as particular types."

2. Dolerite

Several large patches of dolerite occur on the Northern side of the massif. These are remnants of the Mesozoic sills which form the highlands of Central Tasmania. They have no bearing on the distribution of minerals.

3. Basalt

This covers a wide area N. of the Tasman River. It is a dark blue hard rock which yields a dark chocolate red soil which invariably supports a luxurious growth of scrub and undergrowth. The occurrence in this area is the southerly extension of the extensive basalt sheets which form the rich farming district along the N.W. coast.

Waterhouse states:

" Although not genetically connected with the "
" ore deposits, the basalt is important econom- "
" ically, for it has formed a protective cover- "
" ing to the secondary tin ore deposits formed "

4.

" in the old river channels, which otherwise " " would undoubtedly have long since disappear- " " ed. On the other hand, since the outpouring " " of the basalt and subsequent uplift, degrad- " " ational forces have done work which has been " " of great economic value in that the basalt " " cover has been cut through, and in places " " entirely denuded, so that the tin-bearing " " gravels has been exposed without being " " entirely removed."

4. Gabbro

This rock was not seen during the present investigation but Waterhouse's map shows a small patch 2 miles N. of Donnelly's Lookout. The gabbro appears to be of the same type and coeval with other patches occurring on the West coast e.g. on the Zeehan-Trial Harbour road at the south end of the massif, at Serpentine Hill, on the Zeehan - Renison Bell road, at the Bald Hills on the Waratah-Corinna road, etc.

B. Sedimentary

1. Pre Silurian Slates, Sandstones and Tuffs

These are widespread throughout the district and occupy the area east of Zeehan and extend from the Heemskirk to the Meredith massif.

These rocks, the oldest in the district, have been intruded by the granites, dolerites and gabbros. In the area investigated, they are much contorted in the vicinity of the igneous rocks and no strike or dip can be assigned to the formation as a whole. Further from the granite contact, however, there is not so much distortion and the general strike appears to be somewhat north of west and the dips at moderate angles to the N.E.

The series has been intensely altered

5.

by the granite intrusion, much silicification has taken place and numerous stocks and bosses of quartzite appear in the sedimentaries.

Close to the granite margins selective replacement has totally reconstituted the rocks which appear as alternate thin beds of quartz and fine tourmaline. During another investigation the present writer has observed the same phenomenon along the southern margin of the Meredith massif.

These rocks are of prime importance in the North Heemskirk area as they carry almost all the main tin lodes.

2. Tertiary Sandstone and Conglomerate

In Waterhouse's opinion these are consolidated alluvial deposits the silicification of which is taken place by the infiltration of water carrying silica solution. The extrusion of the basalt lava sheet over these sediments has resulted in baking of the partly consolidated material and, in particular, the coarse grained gravels have been converted into conglomerate. Waterhouse has shown that this series is stanniferous

C. Alluvial

Alluvial wash occurs along the beds of most of the streams in the area. As the material of the wash is derived from the granite most of the deposits are more or less stanniferous. Monazite has also been reported from some of the alluvials.

Areas Visited

Location 1

MacArthur's Copper Mine. This occurs near the head of a small tributary of the St. Dizier Creek near the N.E. corner of lease No. 5345 M. Here an E.W. lode is showing on the surface consisting mainly of arsenopyrite, some pyrite and a little chalcopyrite. A shaft sunk on the lode was full of water and could not

6.

be inspected. Samples were taken from the dump heap.

Location 2.

Iron ore in the 12-Mile Creek. Three small outcrops of iron ore occur in one of the headwaters of the 12-Mile Creek $\frac{1}{2}$ mile N. of the northern boundary of section 2998. The deposits are contact metamorphic and consist almost entirely of solid magnetite with a little hematite and limonite developed on the surface. In cavities in the magnetite, plates of greenish mica are developed. It was thought possible that this may be torbernite although the plates are square and do not show the typical triangular form of the torbernite. Samples were taken from the surface of the deposits.

Location 3.

Vicinity of North Heemskirk Trig station. This area is near the NE corner of lease No. 1299. No mineralization was noticed in this area. Narrow aplite dykes and joints occur in the area and as they are possible carriers of mineralization samples were taken from the aplitic material and jointfilling.

Location 4.

Long's Iron Blow. This is a prominent outcrop of hematite, tourmaline and quartz standing out boldly about 20 ft. above the surface, halfway up the northern flank of Mount Heemskirk. The outcrop which represents a magmatic segregation in the granite is known to be slightly stanniferous, 0.29% of Sn having been recorded. As tin has been known to be present it was thought possible that radioactive minerals may occur also. Several samples were taken from the outcrop.

Location 5.

This occurs at the junction of the small creek mentioned under Loc. 1 and the St. Dizier Creek, almost on the boundary of section 6141M. A lode showing

7.

on the surface consists again of arsenopyrite and is capped by gossan material. From the E.W. strike of the lode it appears possible that this may be a continuation of MacArthur's Copper lode. Samples of the unaltered material were taken from the lode:-

Location 6

This occurs some 5 chains W. of the loc. 5 near the western bank of the St. Dizier Creek and near the northern boundary of section 6141M. Boulders of pyritic material were found here but no actual lode was seen. Samples of these pyritic boulders were taken.

Location 7

The Peripatetic Mine. This mine is in section 5755M on the western slopes of the North Heemskirk massif and is connected by a branch road with the Trial Harbour - Corinna road. Waterhouse reported that the tin occurs partly in a lode, partly in the impregnated country rock and partly in a dyke of aplite containing quartz tourmaline nodules. Pyritic material occurs also. Samples were taken as follows:

- Loc. 7. From the wall of the western adit, driven in highly decomposed granite.
- Loc. 7A. From the wall of the eastern adit, also driven in decomposed granite.
- Loc. 7B. From the dump heap of the shaft in the eastern portion of the area. The rock consists of quartz tourmaline.
- Loc. 7C. From the dump heap of a shallow shaft in the western portion of the area.

Location 8

Diversion tunnel from the St. Dizier Creek to the Tasman River. This is a tunnel some five chains in length driven in granite. Samples were taken from a quartz vein at the western end (8A) and from an aplite

8.

dyke above the eastern end (8B).

Location 9

Headwaters of the St. Dizier Creek near the common boundary of former copper reward sections 2899/93M and 2900/93M.

A drive has been put in the granite for an unknown distance. This drive could not be inspected but from the size of the dump heap it was estimated to be from 200 to 300 feet in length. The drive was apparently put along a zone of mineralisation and in the dumpheaps some specimens of pyrite and chalcopyrite were found. Samples of this material were taken.

Testing and Results of Samples

All the above samples were forwarded to the Director of Mines for testing on the Geiger-Muller Counter. The Director's report states:-

" The samples submitted by you have been "
" examined and gave no positive results "
" when tested on the Geiger-Muller instru- "
" ment."

Conclusion

In the opinion of the present writers, the geological setup in the North Heemskirk area is a likely one for the occurrence of radio-active minerals. The presence of mineralised granite, the known silver, lead, zinc, tin, antimony, bismuth, molybdenum within and without the granite boundaries and particularly the

9.

small traces of copper within the granite all point to the likelihood of radio-active minerals also being present somewhere in the area.

From the area of approximately one square mile specified by Mr. MacGuinness samples were taken from three mineralised zones. In no case was any radio-active mineral noted although a careful search was made. The samples of mineralised material sent for testing also failed to disclose the presence of radio-active minerals. It must be concluded, therefore, that Mr. MacGuinness' claims that he has knowledge of radio-active minerals occurring within the area specified have not been substantiated.

In addition, the area specified by Mr. MacGuinness has been considerably extended to include all known mineralised zones in the North Heemskirk area. The completely negative results of these samples forces the conclusion that the North Heemskirk area is barren of radio-active minerals within the boundaries of the granite itself.

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