6 GEOLOGY OF THE MT MEREDITH-YELLOWBAND CREEK AREA

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Abstract

A preliminary geological investigation of the Mt Meredith area has shown that potential shallow tin-bearing alluvials are present in several areas. No large greisenized zones were found in the granite and it is suggested that the cassiterite may have been derived from near the contact of the granite and the Cambrian volcanic and sedimentary rocks to the north of the areas of alluvial deposition.

Introduction

A preliminary geological examination of the area between the Waratah-Corinna Road and the Little Wilson River was carried out during January and February, 1964. Strong emphasis was placed on examination of the granite mass (Meredith Granite) which covers the larger part of the area. Previous reports (Reid, 1923; Scott, 1929; Finucane and Blake, 1933; and Henderson, 1934) indicated the occurrence of small but widespread tin deposits throughout the area and the investigation was designed to assess the potential of these deposits and delineate any new ore zones in the area.

Location and Access

Access to the area is provided by a series of pack tracks from the Waratah-Corinna Road, between 5 and 6½ miles SW of Waratah.

The Yellowband Creek area is reached by means of Bett's Track which leaves the Waratah-Corinna Road at about 6½ miles from Waratah and extends southwards to Mt Lindsay via Pine and Yellowband Creeks and the Little Wilson River (Fig. 7). The first 4 miles of the track were cleared and made accessible to four wheel drive vehicles in dry weather by the Aberfoyle Tin Mining Company as part of their access route to Mt Lindsay. The next 1½ miles is accessible to tracked vehicles under most conditions and the remaining distance is a fair walking track, accessible to pack horses during reasonably dry conditions.

The Mt Ramsay area is reached by means of a well graded walking track which turns off the Waratah-Corinna Road about 5 miles from Waratah. The track extends southerly for about 3 miles where it forks, the western branch extending to the South Bischoff workings while the main branch extends some 5 miles to the south towards Mt Ramsay. The track to South Bischoff is still clear although overgrown in places. Slightly less than a mile to the west of the Mt Ramsay Track is a good walking track leading to Summer P.A. Creek. From here the track becomes overgrown but is traceable to Johnson Creek. Previous maps of the area show that this track joined the western branch of the Mt Ramsay track at South Bischoff but it is now completely overgrown.

Further access is provided by a well graded walking track to Mt Stewart via the Heazlewood and Jasper Mines. To provide vehicular access much excavation would be necessary on some sections.

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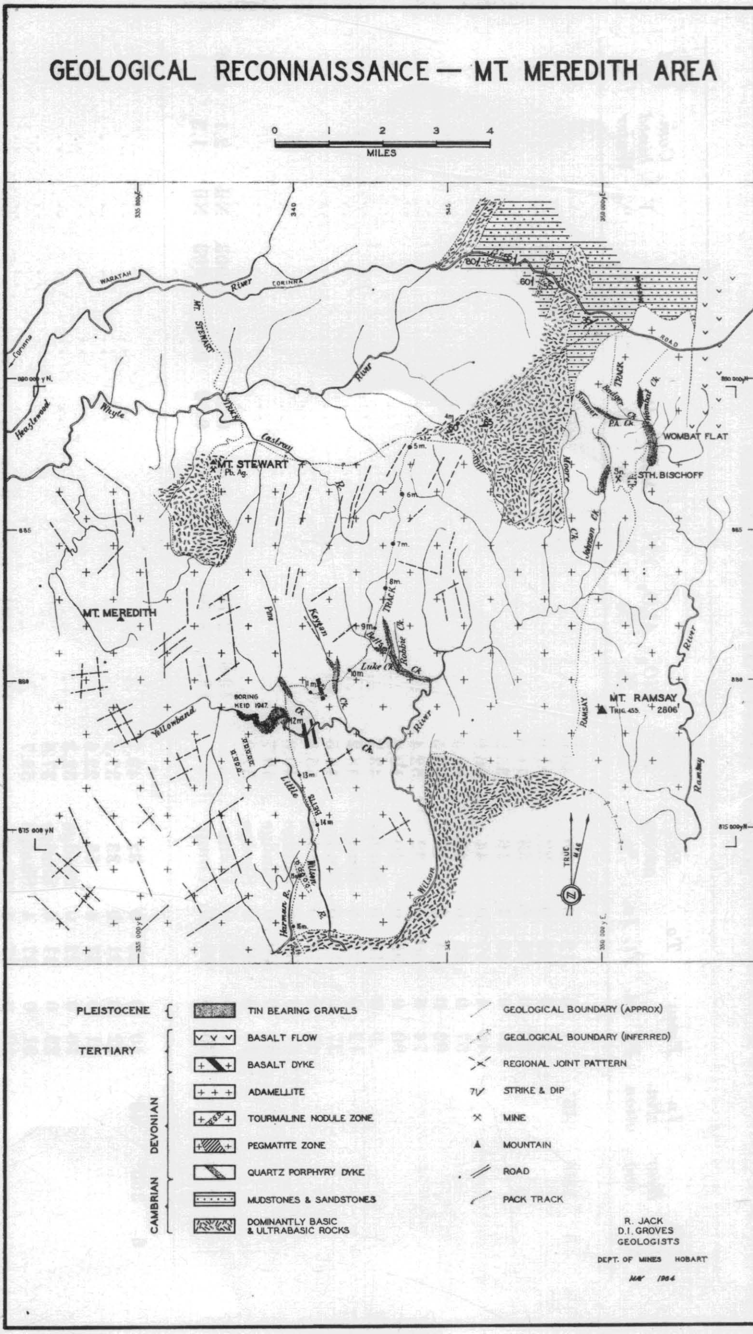
GEOLOGICAL RECONNAISSANCE — MT. MEREDITH AREA
0 1 2 3 4
MILES
WARATAH
River
CORINNA
MT. STEWART TRACK
Whyte
Heazlewood
Castray
MT. STEWART
Pb. Ag.
MT. MEREDITH
Pine
Keyan
TRACK
Luke Ck.
Robbie Ck.
BORING
KEID 1947
Yellowband
Ck.
River
Little
Wilson
Harman R.
Wilson
River
ROAD
Badger Ck.
Summer
TRACK
Wombat Ck.
WOMBAT FLAT
STH. BISCHOFF
Moore
Ck.
Johnson Ck.
RAMSAY
MT. RAMSAY
TRIG. 455
2806'
River
Ramsay
TRUE
MAG
PLEISTOCENE
TIN BEARING GRAVELS
TERTIARY
BASALT FLOW
BASALT DYKE
DEVONIAN
ADAMELLITE
TOURMALINE NODULE ZONE
PEGMATITE ZONE
CAMBRIAN
QUARTZ PORPHYRY DYKE
MUDSTONES & SANDSTONES
DOMINANTLY BASIC & ULTRABASIC ROCKS
GEOLOGICAL BOUNDARY (APPROX)
GEOLOGICAL BOUNDARY (INFERRED)
REGIONAL JOINT PATTERN
STRIKE & DIP
MINE
MOUNTAIN
ROAD
PACK TRACK
R. JACK
D.I. GROVES
GEOLOGISTS
DEPT. OF MINES HOBART
MAY 1964

FIGURE 7.

Topography and Vegetation

The topography of the area is one of high relief rising from 600 feet at the Huskisson River to about 2800 feet at Mt Ramsay. The general elevation of the area is approximately 1900-2100 feet, corresponding with the elevation of the plateau area at Waratah.

From the northern peak of Mt Ramsay a long ridge extends northwards and forms the divide between the headwaters of the two main southern rivers, the Wilson and the Huskisson. The principal tributaries of the Wilson River are Johnson, Betts, Keygan, Pine and Yellowband Creeks and the Little Wilson River. The Huskisson River is principally fed by the Ramsay River and its tributaries. The Mt Meredith Range forms a further divide in the NW section of the area, the drainage to the north of the range generally being E-W along the Castray and Whyte Rivers.

The country is generally heavily timbered with myrtle, eucalyptus, leatherwood &c. and an undergrowth of horizontal, laurel, ti-tree and bauera. Huon pine is also fairly extensive along Yellowband Creek, particularly near the junctions of Pine and Keygan Creeks. An extensive button grass plain extends southwards between Pine Creek and the Little Wilson River and facilitates access in the southern part of the area.

General Geology

The oldest rocks exposed in the area are Cambrian slate, sandstone, breccia, chert and basic volcanic rocks which are intruded by a complex of basic and ultrabasic igneous rocks of probable Cambrian age. This extensive Cambrian sequence has been intruded by a large stock of granite (Meredith Granite) of Devonian age which forms the major part of the area investigated. Tertiary gravel and lignite overlie the Palaeozoic rocks in places and were examined in the South Bischoff area. In places Tertiary basalt flows cover the basement rocks and small dykes, probably related to Tertiary vulcanism, intrude the granite in places.

CAMBRIAN

Sedimentary Rocks

A thick sequence of purple and grey slate with subordinate sandstone, breccia and chert occurs predominantly in a belt to the north of the Waratah-Corinna Road. These sedimentary rocks generally strike NNE and dip steeply west, although dips tend to parallel the granite margin adjacent to its most northern extension. This sequence, previously termed the Dundas Series by the early authors, shows strong similarities to rocks of the Crimson Creek Formation described by Blissett (1962) from the Pieman River-Renison Bell area. At this stage correlation can only be based on lithology and is thus tentative.

Igneous Rocks

Several NNE-trending basic intrusions occur along the Waratah-Corinna Road between Bett's Track and the Whyte River. These rocks are generally altered gabbro and have been described by Groves and Solomon (1964).

A large complex of basic and ultrabasic igneous rocks crops out along Bett's Track to the 4 mile peg and extends to the north, crossing the road about ¾ mile west of Bett's Track. Outcrop is very poor, although boulders of the bedrock are relatively common throughout the area. The contact between the sedimentary beds and the igneous complex is not exposed although Finucane and Blake (1933) recorded small veins of actinolite within the sedimentary rocks close to the probable boundary.

At the northern end of Bett's Track the dominant rock type is a serpentinized pyroxenite comprising fragmented pyroxene crystals up to 4 mm. in diameter which are partially replaced by fibrous serpentine, in a fine groundmass of talc and serpentine. The rock is strongly foliated with aligned serpentine lamellae wrapping around fragmented pyroxene and magnetite crystals. Small flakes of muscovite are rarely present. A small patch of an extremely fine grained, dark grey sedimentary rock occurs immediately to the south. It contains fine quartz, muscovite, chlorite and a high percentage of magnetite, often with cubic form. Lamination is produced by accumulations of magnetite and in places by coarser flakes of muscovite. This is the only definite sedimentary rock within the igneous complex.

The dominant rock types along the remainder of the track are altered basalt and altered porphyritic and spherulitic basic rocks. The altered basalt consists of fine interlocking crystals of albite and pyroxene, largely altered to chlorite, with subordinate muscovite, magnetite and quartz. Irregular masses of penninite up to 0.5 mm in diameter occur and are probably pseudomorphs after original phenocrysts of pyroxene. Spherulitic rocks are also present with spherules up to 5 mm in diameter comprising radiating to massive sericitized feldspar crystals with subordinate granular quartz and flakes of muscovite in a fine groundmass of tremolite (?), quartz, feldspar and chlorite. Porphyritic rocks are fairly common, one type containing stumpy sericitized feldspar phenocrysts up to 7 mm in length and smaller probable pyroxene phenocrysts almost completely pseudomorphed by serpentine, talc and sericite in a fine felsitic groundmass. Alteration is so intense that in some specimens the original phenocrysts are completely altered and the rock is now a fine interlocking mass of talc with relict porphyritic texture. Small euhedral hornblende crystals are also common in this rock type.

Large outcrops of a volcanic rock with conglomeratic structure occur between the 3 and 4 mile pegs on Bett's Track. The rock contains fragments of altered porphyritic volcanic rock within a similar porphyritic rock type. The boundary between the two rock types is sharp but strongly embayed although no reaction rim occurs between them. Each type consists of extremely sericitized feldspar laths, sericite and talc pseudomorphs after pyroxene and muscovite and biotite flakes in a fine grey-brown groundmass composed largely of talc, biotite and interstitial quartz. The rock may be called a flowglomerate.

The igneous rocks in this belt are probably of varying origin. The pyroxenite and associated rocks may be intrusive by analogy with similar Cambrian rocks throughout Tasmania, whereas the altered basalt and spherulitic and porphyritic basic rocks are probably extrusive as they are similar compositionally and texturally to basic lavas interbedded within the Cambrian sedimentary sequence to the north (Groves and Solomon, 1964). The relationship between the various rock types is unknown due to lack of outcrop.

DEVONIAN

Meredith Granite

The Meredith Granite occupies the greater part of the area examined forming a large stock elongated NE-SW and intruding Cambrian rocks. It is considered to be Devonian by analogy with compositionally similar Devonian granite elsewhere in Tasmania.

Where examined the granite is generally consistent compositionally, comprising orthoclase, oligoclase, quartz and biotite with minor muscovite, hornblende, tourmaline and apatite. Three main types occur: a porphyritic adamellite, an even-grained adamellite and a micro-adamellite. The porphyritic adamellite is well exposed on the Waratah-Corinna Road where it contains large phenocrysts of oligoclase up to 2 cm in length, which in places show slight zoning, in an even-grained groundmass of intergrown orthoclase, oligoclase (approx. An_{30}) quartz and biotite with minor hornblende, zircon, topaz and tourmaline. Graphic intergrowths of quartz and orthoclase are common. Modal analyses of four sections of this rock averaged 55% total feldspar (including 9% oligoclase phenocrysts), 34% quartz, 11% biotite and accessories. The even-grained variety is similar and comprises intergrown crystals generally from 1 mm to 3 mm in length although coarser varieties with crystals up to 2 cm in length are common in the Yellowband Creek area. Modal analyses of these rocks from near the Waratah-Corinna Road averaged 54.5% total feldspar, 36.0% quartz, 9.0% biotite and 0.5% accessory minerals. Between 20% and 30% of the total feldspar is oligoclase and the remainder orthoclase. It can be seen that the porphyritic and even-grained adamellites are remarkably similar in composition and are probably variations within the granitic mass rather than distinctive bodies as considered by Reid (1923). A common rock type throughout the area is a micro-adamellite with similar composition to the previous types, but with crystals generally 0.5 mm in length, the largest being 1.5 mm. Dark brown varieties of adamellite occur to the north of Wombat Flat, the dark colour being due to a higher proportion of biotite in predominantly larger crystals than the quartz and feldspar.

Small bodies of aplite occur sporadically throughout the area. They comprise predominantly anhedral crystals of quartz, up to 1 mm in diameter, with minor sericitized feldspar and fine flakes of muscovite in a fine felsitic groundmass. Tourmaline is common, occasionally forming large clots which in places constitute the greater proportion of the rock. Pegmatite is rare although a small pegmatitic mass occurs on the margin of the granite just SE of the 4 mile peg on Bett's Track. Small veins are common and in Yellowband Creek contain a high proportion of large anhedral quartz crystals intergrown with tourmaline, which is strongly pleochroic from blue-grey to pink and in places zoned. Radial growths of muscovite occur in association with the tourmaline and irregular patches of pyrite and limonite are common. No cassiterite was seen in thin section and Finucane and Blake (1933) reported only a trace of this from similar veins.

To the SW of the Yellowband Plain there is a zone containing numerous tourmaline nodules in a fine-grained adamellite. These nodules are generally ovoid, with a long axis between 2 inches and 9 inches and appear to be confined to northerly trending zones parallel to the dominant joint direction in the adamellite. The nodules contain fine granular quartz crystals with interstitial and interlocking black tourmaline strongly pleochroic from pale grey to blue grey in thin section. Feldspar is rarely present. In places coarse aggregates of tourmaline crystals are present but these are generally rare. The nodules appear similar to those reported from the Heemskirk Granite by Blissett (1962).

Greisen zones within the granite appear rare although rocks from the workings at South Bischoff contain largely quartz, biotite, sericite, and chlorite and very little feldspar and are probably greisen. Greisen containing cassiterite was also reported by Reid (1923) from several workings in the NE portion of the granitic mass. None was seen in the Yellowband Creek area.

TERTIARY

Sedimentary beds

Tertiary gravel, clay and lignite were recorded from the Arthur River area by Finucane and Blake (1933) and appeared similar to those of the Waratah area which underlie the basalt. Similar sediments occur in the area investigated and are discussed fully in the economic section later in this report.

Basalt

A basalt sheet, some 50 to 150 feet thick, occurring extensively in the Waratah area, is in contact with the Meredith Granite about 4 miles from Waratah on the Waratah-Corinna Road. The base is generally at an elevation of 1900 to 2000 feet.

The basalt generally consists of a fine intergrowth of augite and labradorite, up to 0.3 mm in length, with fine interstitial magnetite and calcite. Slightly serpentinized olivine is generally present and green glass is common in places.

Three basic dykes, several feet wide, intrude the granite in the Yellowband Creek area, two in Yellowband Creek between Bett's Track and Pine Creek and the other to the north between Pine and Keygan Creeks. The latter was described by Finucane and Blake (1933) as a porphyrite dyke, considered to be a basic differentiate of the granite magma. In thin section the rock comprises a fine intergrowth of augite and labradorite with large patches of chlorite which is probably pseudomorphing original phenocrysts. In one section original phenocrysts of augite, partially altered to chlorite and serpentine (?) are present. The rock is identical with the Tertiary basalt except for alteration of phenocrysts which is probably due to hybridization within the narrow confines of the dyke. Olivine is absent in these dykes, a feature consistent with Tertiary basaltic dykes in the Waratah District.

RECENT

Recent deposits of river gravel and sand occur in the present streams. The gravel is composed of quartz, chalcedony, quartz-tourmaline and adamellite pebbles varying from 1 to 9 inches in diameter. The thickness of the gravel varies from about 2 to 8 feet and in places it contains cassiterite, ilmenite and monazite.

ECONOMIC GEOLOGY

ALLUVIAL DEPOSITS

Alluvial deposits are widespread in the area investigated, occurring mainly along the banks of the present creeks and occasionally filling old stream valleys which now have a different superimposed drainage pattern. The alluvium is composed of water-worn and semi-water-worn pebbles and boulders of quartz, quartz-tourmaline rock and granite, the larger boulders being up to 8 inches in diameter. This coarse material forms a large percentage of the alluvium, the remainder being coarse to fine sand and some thin clay bands.

The coarse and sandy deposits were found to contain as accessories the following heavy minerals: monazite, ilmenite, chromite, gold and osmiridium; and in places these occur in sufficient quantity to form economically important deposits. These alluvial deposits have been worked in the past primarily for their cassiterite content, a little gold and osmiridium also being recovered during sluicing operations.

Cassiterite-bearing alluvials occur in two zones throughout the area investigated. One zone extends in a N-S direction from 3 miles north of Betts Creek to the Little Wilson River in the south while the other zone extends from the junction of the Mt Ramsay Track and the Waratah-Corinna Road southwards to the South Bischoff Mine. In the easternmost zone the cassiterite is generally coarse; individual grains are semi-rounded to rounded and 1-5 mm in diameter, some with adherent quartz. There is little or no gold, osmiridium and chromite found in this zone. In the westernmost zone the grains of cassiterite are smaller and more rounded, and occur with subsidiary amounts of gold, osmiridium and chromite. In both zones the grain size of the cassiterite appears to decrease southward and the degree of rounding to increase.

Gold, osmiridium and chromite occur in the westernmost zone together with cassiterite and monazite in the older alluvial creek terrace and also in the present streams and their terraces where they have resorted the older material. The source of the gold, osmiridium and chromite is not the headwaters of the present creeks as these creeks head entirely within the main granite mass and these minerals are not found as accessories in the granite. They have therefore been introduced during an earlier cycle of erosion when the main drainage to the south extended further north, at least as far as the Cambrian basic intrusives and sediments. These rocks are the most probable source of the osmiridium and chromite and they are also the probable source of the gold which was introduced together with vein quartz into these Cambrian rocks by the Devonian granite. One such small quartz vein was seen striking NW-SE through Cambrian volcanics near the 3 mile peg on the Yellowband Track. The source of the cassiterite is also problematical. As no cassiterite veins or greisen were found in any of the granite in the western zone it is probable that the cassiterite was derived during an earlier erosion cycle from a source to the north of the present drainage. This source would most likely be the Cambrian rocks near the junction of the Waratah-Corinna Road and the Mt Ramsay Track and the Cambrian rocks in the Mt Stewart area.

Monazite is present in most of the creeks draining the granite country. It occurs as fine yellowish grains and the richest samples have been obtained from the Yellowband Plain area. As the monazite can be washed from the headwaters of nearly every creek, it must be present throughout the granite mass in trace amount.

Age of the Alluvials

The alluvium was probably deposited in three different periods of erosion. The oldest alluvium is of Tertiary age and occurs in terraces near the junction of Palmer Creek and the Ramsay River. It consists of poorly cemented coarse gravel with clay bands containing a little lignite. The pebbles in the gravel are mainly quartz, quartz-tourmaline, granite and slate. The presence of slate pebbles suggests that some of the alluvial material has come from the north where slate occurs near the Waratah-Corinna Road. This Tertiary alluvium was probably widespread over the area and has since been largely removed by stream erosion.

Late Tertiary and/or Quaternary alluvium was deposited as a result of the reworking of the older Tertiary alluvium. It has been deposited as higher alluvial terraces along the courses of the present streams and also occurs filling old stream valleys. One such old stream valley was found by Departmental drilling of Yellowband Plain (Keid, 1947), where gravel extends to a depth of 26 feet, 15 feet below the level of the bed of the present Yellowband Creek in this area. The result of the drilling suggests that during the late Tertiary or Quaternary the drainage in this area was along a N-S axis and formed this broad N-S valley. The present drainage of this area flows E-W and was probably superimposed on the older drainage during the late Tertiary due to stream capture.

Recent alluvial deposits occur in the beds of the present creeks and on the flood plains of the creeks. Much of this material is probably derived from the reworking of the alluvial material deposited in the two earlier cycles of deposition. These alluvials are up to 5 feet thick and contain boulders of granite, quartz-tourmaline and quartz varying from 1 to 8 inches in diameter.

ALLUVIAL MINING

Several of the larger creeks have been worked in the past for the cassiterite content of their gravels. Most work was done in the early 1930's when Bett's Track was cut out and made suitable for pack horses. Mining in more recent years has been confined to the more readily accessible areas such as those near the start of the Mt Ramsay Track.

Betts Creek

Betts Creek crosses the Yellowband Track 9½ miles from the Waratah-Corinna Road, and flows SE to the Wilson River. Fairly large river flats are evident near the junction of the creek and the river but they diminish rapidly upstream until at the track crossing they are about one chain wide along each bank. A tunnel has been driven through the divide between Robbie Creek and Luke Creek, two small tributaries of Betts Creek. This has diverted the flow of water and appears to have been used as a tail race to obtain sufficient fall for sluicing the alluvium on the upstream side of the tunnel. The alluvium is mainly gravel containing small boulders of quartz-tourmaline, quartz and granite and it occurs to a depth of 3 feet on small flats along the banks of the creek.

By 1935, production from Betts Creek and its tributaries had amounted to approximately 6 tons cassiterite, 10 oz gold and 10 dwt osmiridium.

Keygan Creek

Keygan Creek is the next major creek 1 mile south of Betts Creek. Evidence of old workings can be seen just upstream from where the track crosses the creek; here the gravel is up to 2 feet thick and contains mainly small pebbles of quartz-tourmaline and granite. This narrow flat only extends 10-12 chains upstream before granite appears in the bed of the creek. Approximately ½ mile further upstream more old workings were seen on flats beside the creek. The depth of alluvium is 2 to 3 feet and it is reported that 2½ tons of tin concentrate and 10 oz of osmiridium have been obtained from this area.

Pine Creek

Pine Creek is crossed on the Yellowband Track approximately 11½ miles from the Waratah-Corinna Road. Old alluvial workings were seen both upstream and downstream from the collapsed bridge. The creek has been worked for about ½ mile upstream from the bridge, but beyond this no signs of old workings were seen and the creek is thickly overgrown by "horizontal" scrub.

Yellowband Creek

Yellowband Creek is approximately 1 mile south of Pine Creek or 12½ miles from the road. In this area fine cassiterite and monazite can be washed from the creek and its tributaries. Cassiterite also occurs in older gravel beds in the banks of the creek. On the large flat to the NW of the bridge crossing Yellowband Creek some hand boring was done by the Department of Mines in 1947-48 to test this area for monazite. The drill logs show that granite bottom was found at a maximum depth of 26 feet below plain level. This is considerably deeper than the bed of the present creek, 11 feet below plain level. The northernmost line of drill holes shows deeper ground than the southernmost line, suggesting that the drainage here in the late Tertiary or early Quaternary flowed northward to the vicinity of Pine Creek before turning eastward and joining the Wilson River. The drilling shows that monazite is present to the extent of 5-6 oz per cubic yard but only very little tin was found in the drill holes. Only a very small area on the eastern edge of the plain was drilled.

Summer P.A. Creek

This area is approximately 2 miles south of the Waratah-Corinna Road on the track which leaves the road 5¾ miles from Waratah. The alluvium along the bed of the creek has been worked in the past but good prospects can still be obtained by washing the gravel in the banks of the creek. The gravel is fairly coarse with pebbles of granite, quartz and quartz-tourmaline rock and generally forms a band 2 feet thick on the granite bedrock. Above the gravel there is 4 feet of sand and sandy clay containing only a little cassiterite. Part of this area is at present held by G. Machen of Waratah, lease 43M/63.

Cundy's Workings

These workings are about 1 mile south of the road on the Mt Ramsay Track. The alluvium occurs along the banks and in the bed of Wombat Creek and is generally less than 2 feet thick. It contains very coarse semi-rounded cassiterite, often with adherent quartz, and where the granite bedrock is exposed by sluicing operations the granite appears to be slightly greisenized.

Johnsons Creek

This creek is reached by following an old track southwards from the Summer P.A. workings. Alternative access is via the South Bischoff workings along the Mt Ramsay Track. A narrow belt of alluvium has been worked along the upper reaches of the creek. This alluvium is up to 5 feet deep and at its base is a band of gravel approximately 1 foot 6 inches thick which contains most of the cassiterite. The creek was worked to below the South Bischoff Mine by the Waratah Tin Sluicing Company (1920-1924) and later by Webb and Pryde in 1932. Approximately 6 tons of tin concentrate has been produced from this area. There appears to be little alluvial ground left that has not been worked or prospected; smaller flats occur further downstream but these are very heavily timbered and prospecting is difficult.

Wombat Flat

Wombat Creek forms a fairly extensive flat approximately 2 miles south of the Waratah-Corinna Road on the Mt Ramsay Track. The area has been extensively worked and it is reported that 50 tons of tin concentrates were recovered from alluvium varying in depth from 6 to 20 feet. The gravel is very coarse with individual boulders of granite and quartz-tourmaline rock up to 8 inches in diameter. The width of the alluvium is reported to have extended up to 200 yards and to have contained 2 lbs cassiterite to the cubic yard.

LODE TIN

The only lode deposit examined was the South Bischoff Mine. This is accessible from the Mt Ramsay Track and is approximately 6 miles from the main road. The lode was first discovered by W. & E. Pryde in 1914 and has since been worked by various companies and parties. At present the workings have largely collapsed, the upper adit only being accessible. The workings on the orebody are approximately 50 feet long:— the strike of the orebody was 350°M dip 65° W. The tin occurred in a narrow vein varying in width from 12 to 18 inches. The vein is mainly composed of quartz, tourmaline and muscovite and could best be described as a greisen. The granite surrounding the vein has also been partially greisenized. The rich ore occurred in irregular patches within the greisen and Reid (1923) recorded assays of up to 3.92% Sn over 3½ feet. However, the overall grade of the greisen appears to have been about 0.75% Sn. The low grade and narrowness of the lode appears to have been the main reason why the various companies failed in working this lode.

Recommendations

The present investigation has confirmed the belief that no large tin-bearing greisenized zones occur in the area investigated. However, unworked and unprospected areas of alluvium do occur, particularly in the area from Betts Creek to Yellowband Creek. Most of these alluvial areas would be very difficult to prospect at present but if access is improved it would be worthwhile boring the more accessible alluvials, particularly in the area from Pine Creek to Yellowband Creek. Flats at the junction of Betts Creek and the Wilson River also warrant more prospecting; however, access here is very difficult at present. The area from Wombat Flat to the old South Bischoff Mine appears to have been extensively prospected in the past and it is doubtful if there are any large unworked areas of alluvium here.

The primary source of the alluvial tin in the Wombat Flat-Johnsons Creek area is probably near the contact of the granite and the Cambrian rocks to the north of these alluvial deposits. Further prospecting is warranted along this boundary and similarly along the granite boundary in the Mt Stewart area as this is another possible source of the tin in the Pine Creek area. Prospecting could be by panning of the creeks or by more sensitive geochemical testing of the fine stream sediments for tin. If geochemical work is done it would also be useful to record the occurrence of other elements in the streams such as Pb, Zn, Cu, and the radicals $SO_4^{=}$ and F^{-} as the known tin deposits in the area are most often associated with galena, sphalerite, chalcopyrite, pyrrhotite and fluorite.

More geological reconnaissance work remains to be done in the Mt Ramsay area in the east and to the south and west of Mt Meredith. However, access is very difficult in view of the present conditions of the tracks in these areas.

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