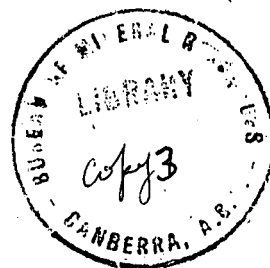


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MICA DEPOSITS NEAR NORTHAMPTON, WESTERN AUSTRALIA.

by

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REPORT OF MARY A. HILLMAN.Mineral Resources Survey.MINERAL RESOURCES SURVEY, MINNESOTA.Report No. 1049/G. Map No. 223.

Northampton is a small town 34 miles by rail north from Carleton and connected by a bitumen road to Perth 340 miles to the south.

Formerly the town enjoyed some importance as the centre of a not inconsiderable lead and copper mining field, but now all mining activity is at a standstill.

The area consists of a dissected elevated region lying about 500 feet above sea level. It is occupied by crystalline rocks, chiefly garnetiferous gneiss or granite, intersected by numerous basic dykes striking north-north-east, and by very many acid dykes and quartz reefs less regularly oriented. The metalliferous deposits appear to be closely associated with the greenstone dykes. The pegmatite dykes have a wide range in composition and muscovite is almost confined to those representing the high temperature or ultra-acid phases. These dykes are noteworthy for the presence of tourmaline and the development of much garnet in the adjacent host rock. The ultra-acid type is represented by finely grained quartz reefs containing scattered crystals of hard clear muscovite.

Descriptions of the deposits inspected are given in the order in which they are numbered on the locality plan.

No. 1. Callings. Approx. 8 miles north-east from Northampton and 14 miles west-south-west from Old Mill Hill.

At this site a pegmatite dyke 2 feet wide striking $N 30^{\circ} E$ and dipping north-easterly at 45° can be traced for a length of 100 feet on the slope of a low hill just south of Callings Eng. Station.

The dyke which is enclosed in granitic gneiss has been developed by an underlying shaft about 25 feet deep and a vertical shaft (inaccessible) in the hanging wall. A pit sunk on the outcrop at the top of the hill and about 50 feet south-east from the inclined shaft discloses the width of the dyke to be only a few inches.

Though narrow, this dyke displays the zoning typical of larger acid-bearing pegmatite bodies. Irregularly orientated books of mica occupy a band a few inches thick on the hanging wall; a foliopelitic band of similar thickness follows. The centre of the dyke is occupied by quartz containing a little scattered mica in small books. The footwall side of the dyke does not, in this deposit, display a complementary arrangement but consists wholly of white biotite resulting from the decomposition of feldspar. Tourmaline and biotite are also present.

It is estimated that the dyke as a whole contains 153 muscovite and could produce trimmed sheet mica in Grades 4, 5 and 6. The mica is somewhat richly coloured and the waste in discarding defective material would be high.

Close examination of specimens of mica chosen from the outcrops shows that it is the hard, shiny variety and very clear, but that it contains a large number of fractures which are barely visible to the naked eye but which are readily seen in thin films. When examined between crossed nicols minute differences in thickness of the film may be seen. Some of these fractures are due to

the film tearing when being split, a fairly common characteristic of hard varieties of mica, and they may not have been present in the original rock.

A small block of about the average quality of mica which would normally be reserved for telegraphy was found to yield 25% of vibrant sheet mica. This recovery is low compared with that of Central Australia and in terms of the total bulk of pyroxene would represent less than 0.5%. This figure assumes that 85-90% of the total mica contained in the gneiss would be immediately discarded on inspection as being too small or too crumpled to warrant any attention.

Pyroxene outcropping on an adjoining hill has been prospectively pitted. The body appears to possess considerable mica but the texture is too fine to have permitted the growth of muscovite crystals to useful commercial sizes.

No. 2. Location 2131. About 2 miles west-south-west from Ellery's Hill.

The presence of muscovite on Location 2131 has been reported and the mica described by Mr. E. C. Dwyer (able to give reference).

Location 2131 is a small farm block of 110 acres of level ground mostly under crop and crosses diagonally from north-east to south-west by a creek. An examination of this area disclosed no outcrops but a quartz reef containing small bands of hard, clear muscovite was found on a low wooded hill on the adjoining block No. 2132. This deposit is not of any commercial value.

No. 3. Williams' Farm. Near Boland's Creek, about 1/2 mile north from Lake Hill Trig. and 1/2 mile west-south-west from Northampton.

A telepathic gneiss enclosed in quartz-felspar-garnet-biotite gneiss forms a low hill on the south boundary of Williams' Farm. The gneiss is covered by a quartz reef containing a few small crystals of clear muscovite, some of which display the defect known as 'fishbone'.

Formaline is present and intergrown quartz-felspar was noted near the intersection of the telepathic and quartz bodies. The deposit cannot be considered to be of any commercial value.

No. 4. On Forest Estate. About 6 miles east-south-east from Northampton.

It was reported that mica had been found at a point near the Northampton-Berkeley Road at about 6 or 7 miles from Northampton and a considerable area in this locality was subjected to a very careful reconnaissance which resulted in the observation of a small pyroxene gneiss carrying 'third-hand' mica of no value. A prospecting shaft sunk on a quartz reef in a road cutting at about the place indicated had probably given rise to the report of mica outcrops.

No. 5. Old Railway Cutting near Selkirk Station. About 23 miles north from Geraldton and 7 miles south from Northampton.

A report that mica had been observed in a railway cutting from which the mica had since been collected was investigated.

From a point near Leake's Station to south of Selkirk Station the railway passes through hilly country and there are numerous cuttings.

The old cuttings unused since the re-location of the railway on better grades were examined, together with all cuttings now in use.

The sides of one old cutting showed a seam of biotite schist about three inches thick enclosed in gneiss, and a narrow quartz reef not more than 15 inches thick containing small books of biotite up to about 1 cubic inch in volume. No other mica was found in this locality.

Conclusions:

Trimmed sheet mica in grades 4, 5 and 6 could be produced from the Mullinu dyke, but the Ajara deposits should receive consideration before any attention is paid to Mullinu. None of the other deposits in the Northampton district is likely to yield useful quantities of sheet mica.

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