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RADIOMETRIC ANOMALIES—BICHENO AND COLES BAY AREA

by T. D. Hughes.

INTRODUCTION

In February and March of this year the Bureau of Mineral Resources conducted an Airborne Scintillograph Survey of portion of north-eastern Tasmania. Previous Airborne surveys of north-eastern Tasmania had been undertaken in 1955, 1957 and 1958 and this year's survey completed the cover over rocks of the Mathinna Group and the granites of north-eastern Tasmania. The principal areas surveyed this year were:—

East of Lilydale,

Headwater of the North Esk River,

Areas south-west of St. Helens, extending to Mathinna and Fingal,

Bicheno to Coles Bay.

It was only in the latter area that any anomalies were detected.

ANOMALIES I AND II

These adjacent areas are located on the northern slope of a small hill, one mile east of the town of Bicheno and south of the highway. The position is shown on aerial photograph, No. 21666 of Run 5 of Bicheno. The rock outcropping on this hill is a very coarse grey biotite granite with felspar crystals up to two inches in size. The count obtained with a P.R.M. 200 geiger counter on any rock outcrop on this hill was 100 to 110 counts per minute against a background of 50 c.p.m. Both this type of granite and the count obtained are typical of any outcrop in the Bicheno area and it is not known what has caused the increased activity recorded from the plane.

ANOMALY III

This is located just behind Half Moon Bay, five miles south of Bicheno. It is shown on photograph No. 21622 of Run 3 of Bicheno, as a line anomaly, one mile long occurring along a hill which runs at an angle inland from the southern edge of the beach at Half Moon Bay. All along the face of this hill are bold outcrops of coarse grained grey biotite granite which give a count of 100 to 130 counts per minute. This granite also outcrops along the shore line between Bicheno and Half Moon Bay where it contains numerous quartz veins sometimes containing large tourmaline crystals, and often concentrations of orthoclase to give the characteristic red appearance of the Coles Bay Granite. Nowhere does any of this granite or its variations give a higher reading than 130 c.p.m. On the beach at Half Moon Bay and inland between the granite hill and the sea are outcrops of Permian sediments containing plentiful fossils and sparse pebbles. A count of 60 c.p.m. can be obtained on these rocks. At places on the beach are fairly heavy concentrations of dark and pinkish sands a sample of which under the microscope showed the following minerals:—

	%
Quartz	30
Ilmenite and Magnetite	25
Garnet	25
Zircon and monazite	20

with small amounts of tourmaline, rutile and topaz. A P.R.M. geiger counter placed on the sand gave 180 to 200 c.p.m. This higher count was doubtless caused by the monazite in the beach sand and it is considered that this is the cause of the airborne anomaly, which may be displaced a little to the west.

ANOMALY IV

The location of this anomaly is shown on photograph No. 21590 of Run 1 of Bicheno. It is located on the eastern or seaward side of a small ridge running up to a prominent hill overlooking the Friendly Beaches and may be reached from about the four mile peg on the Coles Bay Road by walking two miles through the rather sparse bush. There are several ridges running in a northerly direction towards the higher hill and some show outcrops of orthoclase granite and some, including the ore in which the anomaly is shown, Permian sediments. These Permian rocks consist of arkose conglomerates constituting the base of the Permian in this area, and form only these remnants on the granite. This latter rock gives a count of 100 to 150 c.p.m. while the Permian rocks give 75 c.p.m.

It is considered likely that the position of the anomaly is slightly misplaced on the photograph and the increased count is probably due to an accumulation of monazite in the sand of Friendly Beaches, a quarter of a mile to the east.