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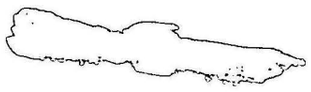
COMMONWEALTH OF AUSTRALIA.



DEPARTMENT OF SUPPLY AND DEVELOPMENT.

BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS.

REPORT NO.
RECORDS NO.1951/50.

RECONNAISSANCE GEOLOGICAL REPORT ON THE MT. CAVENAGH AREA.

Records No. 1951/50.

by

B. P. WALPOLE.

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C O N T E N T S.

1. Introduction.

2. Locality and Access.

3. General Geology.

4. Economic Geology.

5. Conclusions.

Reconnaissance Geological Report on the Mt. Cavenagh Area.

Records 1951/50.

1. INTRODUCTION

A reconnaissance geological and radiometric survey of the Mt. Cavenagh area was carried out from 24.4.51 to 25.4.51 by B.P. Walpole and J. Sleis of the geological section and J. Daly and D. Dyson of the geophysical section of the Bureau of Mineral Resources. Two days were spent travelling to and returning from the area to Alice Springs.

The objects of the survey were to examine reported occurrences of radioactive minerals in this area and to determine whether further prospecting of the area for radioactive orebodies was warranted.

The party was accompanied by Mr. W. Sneddon, Inspector of Mines, Alice Springs.

2. LOCALITY AND ACCESS. (Plate 3.)

The Mt. Cavenagh area is situated immediately north of the South Australia/Northern Territory border. Mt. Cavenagh homestead is approximately three miles north of the border and on the main road from Quern to Alice Springs. A road runs in a westerly direction from Mt. Cavenagh homestead to Victory Downs homestead, a distance of approximately 17 miles. A track branches off the main road at Kulgera, approximately 10 miles north of Mt. Cavenagh homestead, and runs in an easterly direction to meet the railway line at Finke.

All roads leading to, and in, the Mt. Cavenagh area are of the graded fireplough type and are impassible for short periods after heavy rain.

3. GENERAL GEOLOGY.

The radioactive deposits in the Mt. Cavenagh area are confined to pegmatite veins in granitic rock, with associated sills(?) of amphibolite.

A granite bathelith extends to the south and west from Mt. Cavenagh to the Musgrave Ranges in South Australia and to the north to approximately two miles north of Kulgera homestead.

The granite outcrops examined were acid in composition, the predominant minerals present being quartz, kaolinized felspar and chloritized biotite and hornblende.

Immediately south of Mt. Cavenagh homestead, bands of amphibolite, outcropping in granite, form a wide belt which strikes in a general direction at 100^{0} - 115^{0} magnetic. This belt continues to the west for at least 20 miles. The extension to the east and to the south is not known.

The amphibolite bands comprising the belt range in thickness from a few inches to, in one case, a thickness of forty feet. (Twenty bands of amphibolite were noted in a traverse of 700 yards across the strike of part of the belt south west of Victory Downs homestead).

All amphibolite bands studied dip to the south at angles ranging from 20 degrees to 45 degrees. A careful examination failed to reveal any positive megascopic evidence of hybridization or other metamorphic effects along the granite amphibolite contacts. The bands appear to "float" in the granite and have apparently been folded with it. Some band outcrop as small discontinuous lenses whilst other bands are continuous along the strike for some miles.

Shearing in the granite, in the area examined, is almost wholly confined to the granite amphibolite belt, but is not strongly developed.

A strongly lateritised aplitic granite outcrops immediately north of the amphibolite belt in the Vktory Downs area.

4. ECONOMIC GEOLOGY.

Six prospects were examined. In two cases, radioactive minerals are associated with the quartz cores of pegmatite veins. Examination of other prospects failed to reveal any indication of radioactivity.

No. 1 PROSPECT. (Plate 1)

This prospect is situated three miles west of Mt. Cavenagh homestead and approximately 150 yards south of the Mt. Cavenagh - Victory Downs road. Radioactive minerals are associated with a core of smoky quartz in graphic quartz pegmatite.

Minerals, previously identified as probably naegite and betafite, were originally found in surface rubble. A pit has been sunk through the rubble and to a depth of five feet and has revealed part of the quartz core with graphic pegmatite on the south wall. Mineralisation is strongest on the west face of the pit and consists of:

Quartz
Naegite
Betafite
Ilmenite(?)
Tantalite or Columbite (chemical determination necessary.

A count of 8 times background was registered in the pit on the Geiger counter.

The pit sunk on No. 1 Prospect has revealed, on the west face, a width of approximately 18" of smoky quartz containing an estimated 3-5% of other mineral matter not all of which showed radioactivity when tested. The percentage of radioactive material would probably not exceed 0.5-1%. Probably the lower estimate is more correct. Tantalite or tantalo-columbite and ilmenite are associated. Most of the radioactive material had been picked out before the pit was examined.

An outcrop of quartz fifty feet west of the pit did not register any activity when tested with the Geiger counter.

No. 2 PROSPECT. (Plate 2)

This prospect is situated south of the South Australia-Northern Territory border approximately five miles in a west-south-westerly direction from Victory Downs homestead. The pegmatite lode strikes at 280 magnetic and occurs as discontinuous outcrops over a length of approximately 600 yards.

Activity, to the order of 5 times background, was registered at four places along the line of lode.

A count of 27 times background was registered in a small pit on the western edge of a quartz blow near the eastern end of the line of lode. Plate 2 illustrates the occurrem

No openings have actually penetrated the host rock at No. 2 Prospect and radioactive material was not seen in any of the outcropping rock, only in surface rubble on the western side of the quartz blow referred to above.

The minerals present are similar to those at No1 Prospect, which are listed above.

Two barren quartz bodies outcrop along the southern edge of the pegmatite vein.

5. CONCLUSIONS.

Although several pegmatite veins are known to outcrop in the area, the majority of these are small in size and of those examined only No. 1 and No.2 Prospect registered any radioactivity.

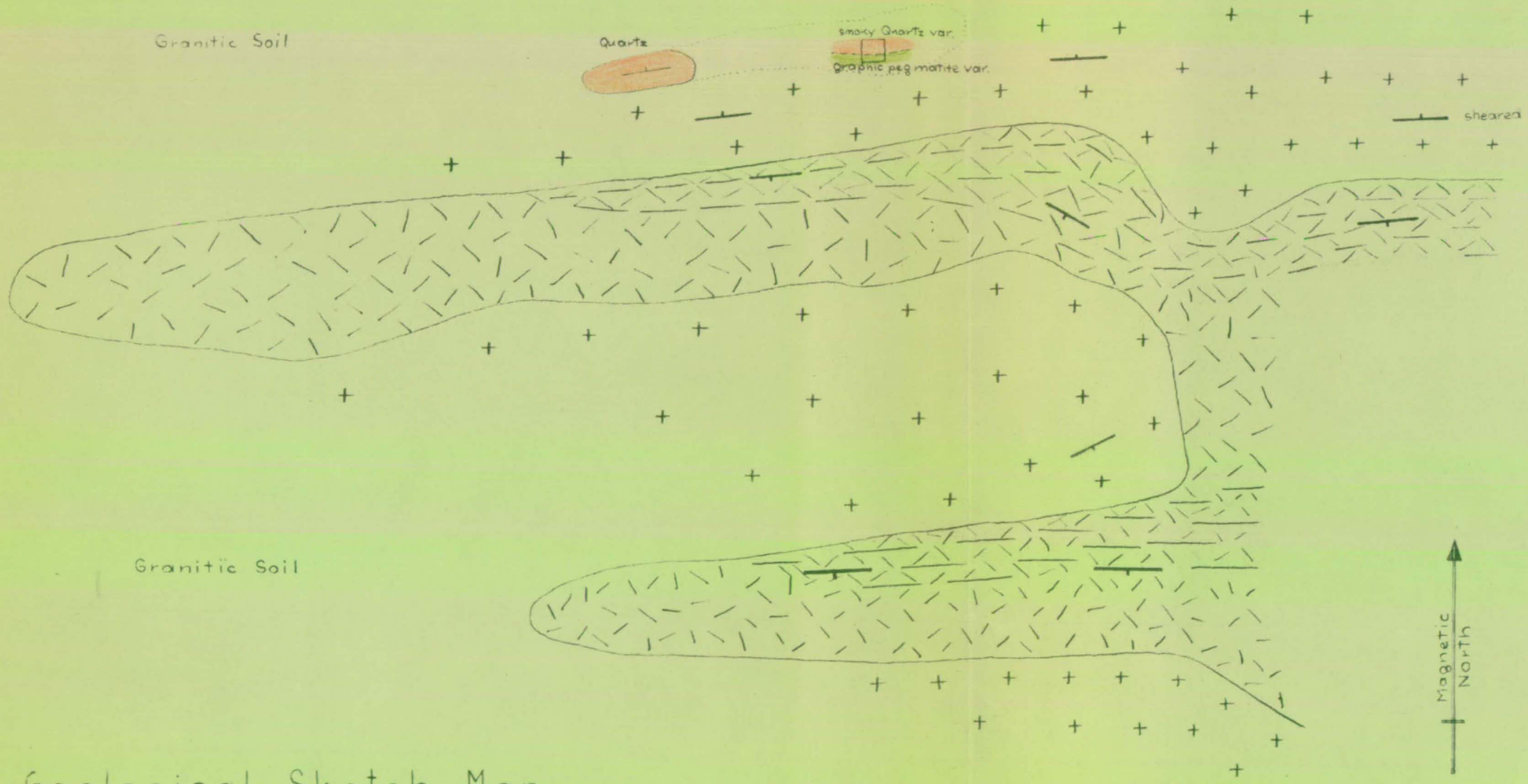
The known ore occurrences are unlikely to prove to be of economic dimensions.

The area has apparently been very thoroughly prospected by Mr. Ashmore, who originally located the radioactive occurrences and who is obviously a diligent and careful observer.

Any further occurrences of radioactive mineralisation in the area would probably be similar in character to No. 1 and No. 2 Prospects. It is, therefore, not recommended that the area be investigated further for radioactive orebodies of economic dimensions.

21st September, 1951.

Plate I



Geological Sketch Map

showing occurrence of radioactive minerals

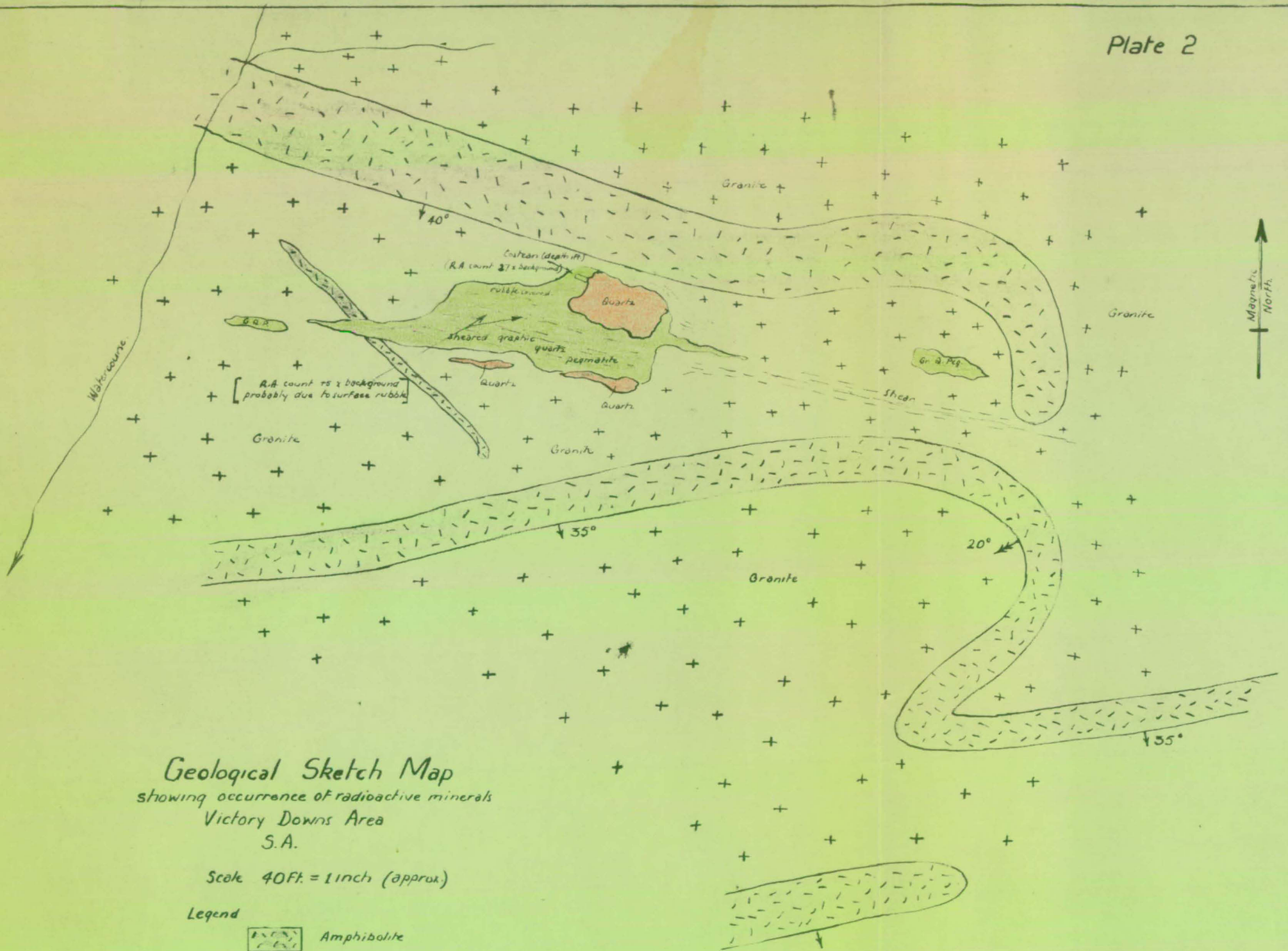
Mt. Cavenagh Area ~~N.T.~~

Scale 40ft = 1 inch (approx.)

Legend:

- Amphibolite
- Amphibolite - sheared variety
- Granite
- Graphic Quartz Pegmatite
- Quartz

Plate 2



Geological Sketch Map

showing occurrence of radioactive minerals

Victory Downs Area

S.A.

Scale 40Ft. = 1 inch (approx)

Legend

- Amphibolite
- Granite
- Graphic Quartz pegmatite
- Quartz

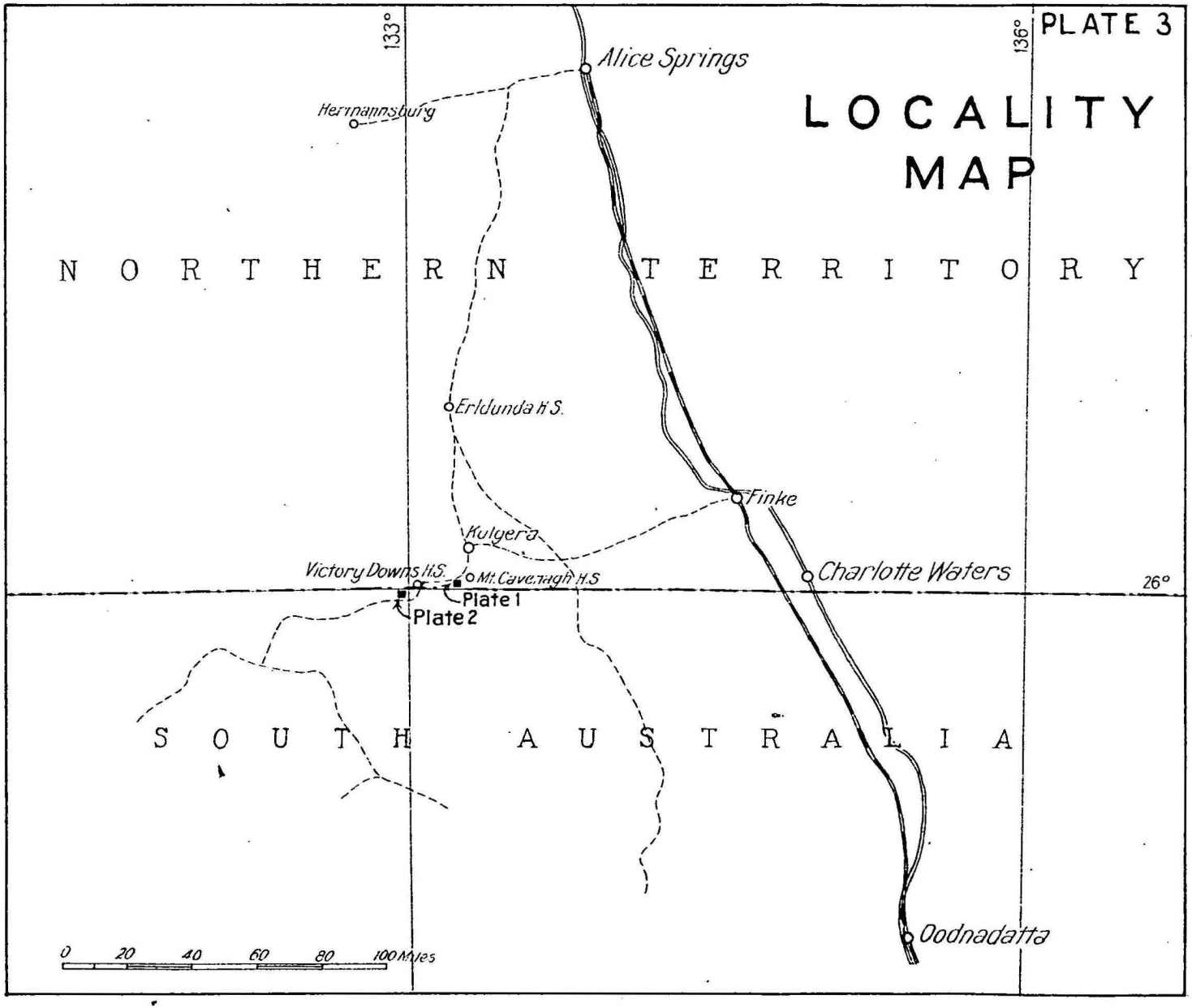


PLATE 3
LOCALITY MAP
133°
136°
26°
Alice Springs
Herrnamnsburg
NORTHERN TERRITORY
Erldunda H.S.
Finke
Kulgera
Victory Downs H.S.
Mt. Cavenagh H.S.
Charlotte Waters
Plate 1
Plate 2
SOUTH AUSTRALIA
Oodnadatta
0 20 40 60 80 100 Miles