

THE CRYSTALLINE ROCKS OF YORKE'S PENINSULA, S.A.I INTRODUCTION:

The areas under discussion are situated at the southern end of Yorke's Peninsula, approximately two hundred miles from Adelaide by road. In the three maps, (figures 1, 2 and 3), the positions of these areas are shown and, as may be seen, the crystalline rocks outcrop only along the coastline in a strip up to one hundred yards wide.

Two separate areas were studied. The first, (figures 1 and 2) includes Cape Spencer, the southernmost point on the peninsula, and Pondalowie Bay, a small fishing village. The nearest town is Stenhouse Bay, situated at the eastern extremity of the area, noted for gypsum. This section covers some fifteen miles of coastline. The second area is bordered to the west by Marion Bay and to the east by Foul Bay, (both low-lying areas devoid of outcrops), and includes Point Yorke. In this area crystalline rocks outcrop continuously along the sea cliffs and wave cut platforms for a distance of about seven miles.

Owing to the fact that exposures of the older rocks are limited to this narrow, long strip, only a one dimensional picture is obtained of any regional structure. Thus detailed mapping is irrelevant in this case and correlation over large areas may be impossible. Therefore the area was studied from a chiefly descriptive and petrological view-point, special attention being paid to contact phenomena between the various rock-types.

Aerial photographs from the South Australian Lands Department were used as the basis of the work. From these the maps were drawn and outcrops located. Then the coastline concerned was traversed on foot, working from the nearest tracks accessible to a car. Approximately fifty specimens were collected, representative typical rocks, and from these thirty thin sections were cut and described. In places the trends of the rocks were followed some distance under the sea with the aid of underwater breathing equipment, but generally this facility only widened the strip several yards, as sand covers all deeper rocks.

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A total of twenty days was spent in the areas concerned and the point Yorke section received more attention than the less accessible Pöndalowie district.

LI      SUMMARY AND CONCLUSION:

This report deals with the crystalline rocks of Southern Yorke Peninsula. The Precambrian age of these is considered and the petrography discussed. The rocks are divided into the main varieties, which are as follows:-

- (i) Gneisses:
  - (a) "Grey banded gneiss".
  - (b) "Red gneissic granite".
  - (c) "A<sup>u</sup>gen gneisses".
  - (d) Cape Spencer and Royston Head gneisses.
  - (e) "Dark biotite granite".
- (ii) Amphibolites:
  - (a) Conformable amphibolite bodies.
  - (b) Altered dyke rocks.
- (iii) Pegmatites.

The mineralogy and texture are described where necessary, and structural relations are considered.

The older rocks in the Point Yorke area are described as possible metasediments containing the conformable amphibolite bodies which may represent metamorphosed basic flows or sills. The "red gneissic granite" is shown to have subsequently engulfed these rocks forming migmatites and injection gneisses, and many of the pegmatites of the area are tentatively related on structural evidence to this later activity. Rapikivi<sup>4</sup> type porphyritic granites are common, usually as narrow zones related to intrusive contacts.

The paper is concluded with a discussion concerning similarities between these rocks and rocks of other Precambrian terrains of the world.