

THE GEOLOGY OF THE MACCLESFIELD REGION, S.A.INTRODUCTION:

Aerial photographs were used as the basis for the geological mapping of this area. The final map was based on a two inch to the mile Echunga sheet, on to which all observations were transferred.

In the following report, the various localities referred to will be numbered, and these will correspond to numbers on the map in green ink.

SUMMARY:

The first portion of the area studied included the "Macclesfield Quartzite". This horizon was followed along the strike for most of its length, and agreement with the Mines Department regional map was found. Poor outcrops in this more settled area inhibited much detailed work in neighbouring horizons. After this, a section to the south-east of the town of Macclesfield was traversed in more detail, and the axis of the anticline to the east of the "Macclesfield Syncline" was located.

REPORT:

The first area inspected was situated on the Macclesfield Quartzite (1). Apparent drag folding visible on the ariel photograph was verified by tracing the quartzite and obtaining dip and strike readings. In this area, a traverse of the creek produced no sign of a contact between the quartzite and neighbouring horizons. The quartzite, which appears to be the only outcropping rock in the vicinity of Macclesfield, was followed along the strike continuously from (1) to (2) (see map) (~~and continuously from (1) to (2)~~ ~~(see map)~~) and complete agreement with the Mines Department map was found. In regions where faulting is suggested (at the nose of the syncline) deep valleys cut the horizon, but no direct evidence, such as fault breccia, is visible, due to alluvial cover.

Honours project, CC von der Borch, 1957: mapping project

The "Macclesfield Marble" was found to exist as a rather weaker horizon than mapped. Massive marble was observed in quarries several miles south of Macclesfield and also near the town itself. However, several traverses across the strike (near 3 on map) failed to produce any sign of the rock.

Because of its critical nature, the Macclesfield Quartzite was traced in the supposed vicinity of the Nairne "Fault". The horizon was found to weaken rapidly along the strike, and it was eventually lost near the creek at 2. However, ^a rather strong clean quartzite horizon was picked up at 4 which may correspond. This seems to be a lenticular body, as it was last seen as a one foot wide band in the main road cutting at 5, dipping about 55° W.

In the vicinity of this quartzite, a traverse was made along a creek (6) to the east. Only a hundred yards or so from the westerly dipping quartzite, a horizon of current bedded impure quartzite was found dipping 40° E. Thus the axis of the anticline neighbouring the Macclesfield Syncline was located. The current bedded quartzite mentioned appears to be a rather distinctive horizon, and it also outcrops to the south at 7 and to the south west at 18. Thus it may continue around the nose of the anticline from 6 to 18.

The general rock in the above area is a typical "Kanmantoo" schist, with layers rich in lineations. Also, just north of the Strathalbyn road at 8, a narrow band of "schorl rock" is visible, but this cannot be followed far along the strike.

At the U-turn in the angas River at 7, the "turn over" of the anticline is apparent in a traverse along the north arm. Here the rocks are typical greywacks, overlain by the current bedded quartzite horizon higher in the cliff-face.

An outcrop of andalusite schist was noted at 9. This band has a minimum width of thirty feet and is composed of distinctive knotty schist. Being a rather soft and easily

weathered rock it was hard to trace along the strike. However, it is tentatively considered to be the best marker bed in the vicinity as it was picked up in several localities (9,10,11,12,13 and 14) in correspondence with the general strikes of the surrounding rocks. At 14 the andalusite schist strikes more or less parallel to the creek bed (N+S) and at 10 it occurs as a strong horizon both in the cliff face overlooking the Angas River and also in the river bed itself. An attempt was made to follow this horizon directly along the strike around the nose of the anticline, but its poor outcropping properties prevented this. However a traverse along the Angas River enabled a rather weak andalusite bed to be found at 11. This may correspond to 10. In traversing the area around the reservoir, then, a weak andalusite band was noted in the creek bed at 12, and later, floaters of coarse andalusite schist were picked up at 13. All specimens, as may be seen from the strikes indicated on the map, could be from the same horizon.

On a scrub-covered hill at 15, a clean quartzite band was noted. This could be traced for some distance to the south although it was lost to the north. It appears to be the northern extremity of a constant quartzite horizon which follows the general trend several miles towards the south. Just above this quartzite, a weakly outcropping narrow band of typical weathered pyritic schist was found. (16). Although this band could not be followed far along the strike, it corresponds in position to a pyritic horizon which can be traced to the south towards Strathalbyn.

This bed may "turn around" the anticlinal nose beneath covering sediments south of Strathalbyn, and could join a rather strong pyrites horizon visible in a quarry at 17 to the east.

The rocks of the above area are generally rich in lineations. These are most readily visible on the bedding

planes (schistosity planes) of typically soft layers between more massive quartzitic "Kanmantoo" rocks, and in all cases in the area described the fine lineations plunged approximately 15 to 20 degrees south. That is, they correspond to "b-lineations", and are parallel to the major fold axis.

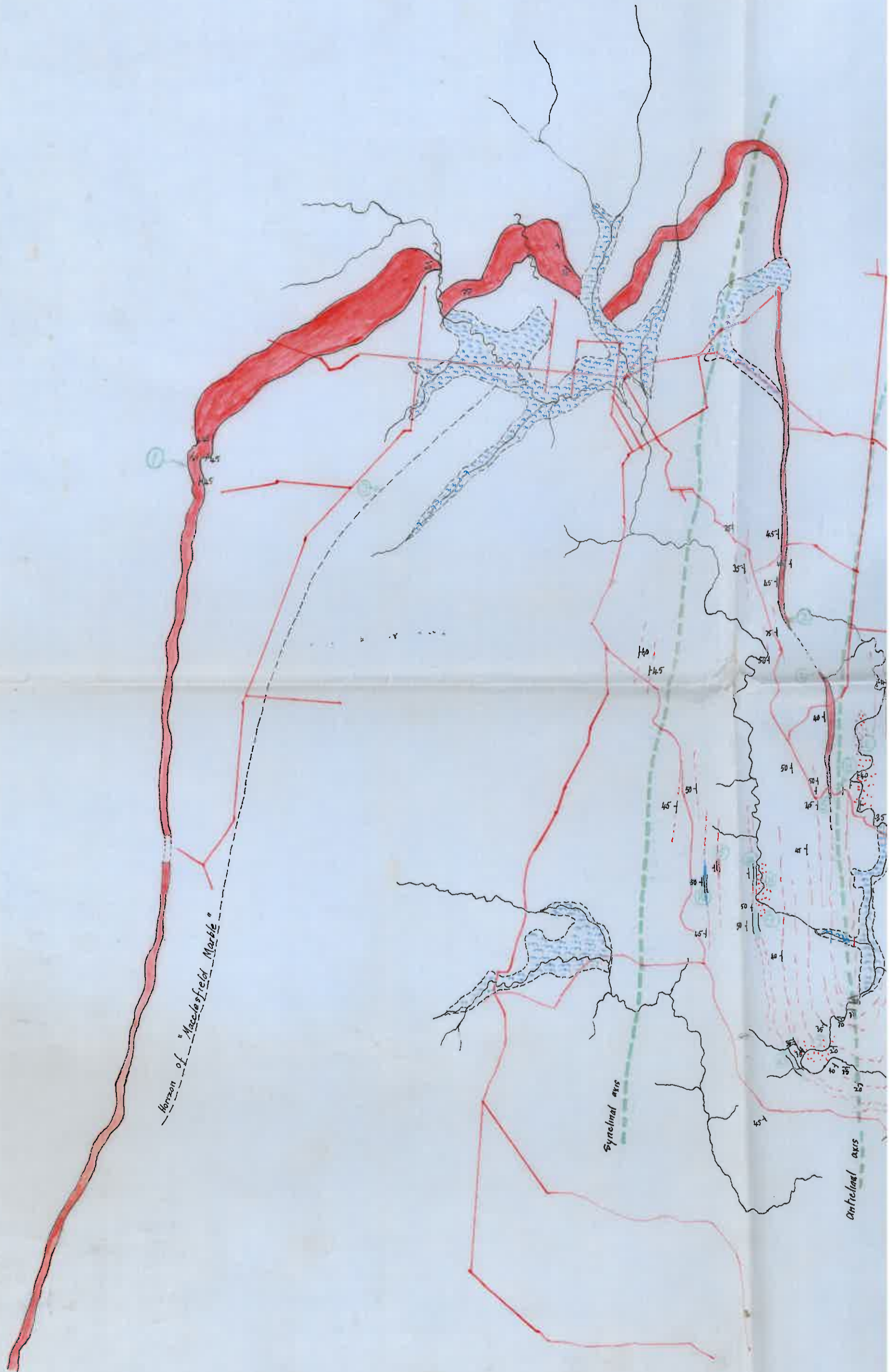
However, at one location an anomalous lineation of doubtful significance was noted. This occurs at 18 on the map, and it consists of a coarse ripple-mark-like pattern on the bedding plane of steeply dipping current bedded quartzite. The exposure is on a cliff of this rock forming the eastern bank of the creek. The cliff face is composed almost entirely of a single bedding plane, and on this the lineation plunges 30 degrees northwards.

CONCLUSION:

As may be seen from the above description, the main rock types of the area are:

- "Kanmantoo" micaceous schists,
- Clean quartzites,
- Current Bedded impure quartzites,
- Andalusite schist.
- Pyritic schists.

In general, it seems that the current bedded quartzite horizon is stratigraphically below the andalusite schist, which is overlain by the pyritic schist. Although none of the above horizons could be directly traced around the nose of the anticline, the general strikes have been indicated on the map, giving the supposed form of the fold.



GEOLOGICAL MAP of MACCLESFIELD AREA

S.A.

