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PROSPECTING AND GEOLOGICAL RECONNAISSANCE IN THE
YERRANDERIE AREA.

by

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SUMMARY

One week was spent in rapid geological reconnaissance of the Ordovician, Silurian and Devonian sediments in the Yerranderie area with a view to ascertaining the environment in which these sediments were deposited and its possible relation to ore deposition.

A rough geological map of the area can be found in:
Harper, L.F. 1930 : "The Yerrandie Silver Field." Min
Resour. N.S.W., 35.

ORDOVICIAN:

A narrow belt of Ordovician sediments was discovered about 1 mile N10⁰W of Mt. Colong. (As aerial photographs of this area were not available a more exact location cannot be given). The Ordovician and Silurian rocks in this area trend approximately north-south.

The Ordovician sediments consist of siltstones, usually greenish, or reddish, in colour, and black carbonaceous slates.

The black slates contain well preserved Upper Ordovician graptolites.

As the Ordovician rocks give place to fossiliferous Silurian beds both to the east and to the west several alternative structural hypotheses must be considered.

(a) The Ordovician may be tightly folded into the Silurian and, in this case, further Ordovician outcrops may occur within the area of Silurian outcrop in the NW corner of the Wollongong 4-mile sheet. Furthermore, as all dips seen were to the west, the folded Ordovician may have been overturned. A thin bed of arkose on the western side of the Ordovician outcrop could possibly represent an unconformity between Ordovician and Silurian.

(b) The Ordovician rocks may have been emplaced in the Silurian by two faults. No evidence was found of such faulting in the field but only one traverse was made across fossiliferous Ordovician rocks.

The occurrence of Ordovician rocks is interesting as they have not previously been reported from this area.

Radiometric readings could not be taken on the Ordovician sediments as the geiger counter in use became defective.

SILURIAN:

A massive belt of Silurian limestone runs NNE for approximately 5 miles to the west of Mt. Colong.

The limestone is massive and cavernous and shows a maximum thickness of about 500 feet. Bedding is not visible and, although fossiliferous, the fossils are not prominent and do not weather out at all conspicuously.

To the west of the limestone there is an extensive sequence of greenish siltstones, including one band of carbonaceous shale. No fossils were found in these rocks.

To the east of the limestone a bed of black flaggy limestone occurs near Colong Caves but it is uncertain just what proportion of the siltstones to the east of the limestone are Silurian and what proportion are Ordovician.

On the eastern side of the Ordovician, north of Colong Gap, more siltstones and mudstones occur.

A mudstone band about 100 yds east of the most easterly fossiliferous Ordovician slate bed contained Lower Middle Silurian fossils.

Radiometric readings in the Silurian averaged 60-80 cpm. No significant anomalies were found. Further prospecting is not warranted as a true shelf environment of deposition is not present. If a shelf did exist in the area it has been made inaccessible by faulting and later sedimentation. However, it is more likely that the Colong limestone represents an island area type of environment.

DEVONIAN.

Devonian sediments and volcanics outcrop in the vicinity of Yerranderie and also along the Tonelli River.

They consist mainly of volcanic lavas, agglomerates, tuffaceous sediments and sandstones with some conglomerates.

Devonian fossils have been found in some of these rocks.

The Yerranderie silver-lead mines were investigated carefully and in all cases the ore is undoubtedly of fissure vein type. The ore occurs in quartz veins which occupy shear zones in the country rock. The ore appears to be concentrated mainly in the volcanic beds but clean quartz sandstone is present in the mullock heaps of several of the mines.

The Devonian sediments and lavas and the mine dumps were carefully tested for radioactivity. However, all these rocks consistently gave readings of 50-75 cpm (Austronic PRM 200) and no significant variations were recorded.

Further prospecting in the Devonian of this area is not warranted. The environment of deposition was definitely not favourable for the deposition of syngenetic ore deposits. (See Condon, M. A. and Walpole, B.P. : "Sedimentary Environment as a Control of Uranium Mineralisation in the Katherine-Darwin Region, Northern Territory" unpub. Rept. Bur. Min. Resour. Aust., 1954).