

Although no determination of the chemical composition of the Hamersley Range ferruginous quartzites has yet been made, the striking megascopic resemblance and mode of occurrence of the rocks to the abovementioned published description, suggest that they are similar in all respects.

PROGRESS REPORT ON THE GEOLOGICAL SURVEY OF THE YILGARN GOLDFIELD (NORTH OF THE GREAT EASTERN RAILWAY).

(By H. A. ELLIS, B.Sc., A.O.S.M.)

The re-survey of that portion of the Yilgarn Goldfield situated south of the Great Eastern Railway having been completed in February, 1937, and the manuscript covering a report on the geology of that area compiled, the writer was instructed to continue the survey in that portion of the goldfield extending northwards from the Great Eastern Railway.

Field work was commenced by the writer and one field hand on November 8th, and continued until December 11th, when the field season ended.

During this period the boundaries of the Greenstone belt, extending from Hope's Hill northwards to Bullfinch, and a portion of the granitic and gneissic country westwards of the Bullfinch-Southern Cross Railway line were mapped.

The detailed knowledge of the structure of the schistose rocks obtained in the short period of investigation was insufficient to enable the broad geological structure worked out for the southern portion of the field to be correlated with that to the north. Further field work is necessary before this aim can be achieved. Several features of geological and economic importance noted during the survey of the southern part of the goldfield were found to recur in the northern part of the field so far investigated. Evidence available near the better exposed margins of the greenstone country confirms the conception of the processes of granitisation, the presence of which was suspected from an inspection of available outcrops near Southern Cross, and the occurrence of migmatites in some of the "rocks"\* situated some distance from the greenstone areas suggests that this process has been widespread.

Many of the bare "rocks" examined in the country west of Bullfinch are massive, fine, medium, and in places coarse-grained biotite granites, similar in all respects to the "rocks" of the southern part of the field. The impression gained so far of the granitic and gneissic country is that there are extensive areas of replacement gneisses showing structure lines contiguous to the margins of the greenstone belts, and that much of the sandplain country is of a similar nature. The granite "rocks" appear to represent bosses probably underlain by granite masses of batholithic dimensions.

In several places in the areas occupied by sandplain, sections are exposed showing the passage downwards from a sandplain surface through a ferruginous laterite to decomposed replacement gneiss. These occurrences tend to strengthen the conception of the origin of the sandplains formed during the survey of the southern portion of the field, namely, that they were largely residual soils overlying areas of rock of granitic or gneissic composition.

\*"Rocks"—A term in common use to designate the numerous elevated or flat granite outcrops which occur throughout the district.

The relation of gold-mining centres to the geological structure established for the southern part of the field is exemplified in the case of the main Bullfinch Mine, which occurs in a steep northerly pitching dragfold in a band of ferruginous quartzite and associated amphibolite schists, the minor structures of the mine being associated with a major west limb dragfold structure in the amphibolite schists of the Greenstone Series. Dragfolds in the first outcrops of jaspilite north of the Bullfinch Mine show a steep southerly pitch, and this suggests the occurrence of a synclinal crossfold immediately north of Bullfinch. Unfortunately, a wide alluviated area devoid of outcrops adjoins the mine to the north and obscures the necessary confirmatory evidence.

The rock types noted so far in the greenstone series are similar lithologically to those of the Southern Cross area. Two areas of rocks of ultra-basic composition, one of which is similar in all respects to the anthophyllite schist which outcrops so prominently in New Zealand Gully, south of Southern Cross, have been identified for the first time in this district. The anthophyllite schist outcrops prominently on Loc. 415, 4 miles S.S.E. of Corinthian, and the other patch of ultra-basic rock evidenced by a siliceous, bouldery and sometimes schistose ferruginous outcrop, in which specks of chromite are freely scattered, occurs on Loc. 567, 4 miles N.W. of Corinthian.

Several small outcrops of fresh massive quartz-dolerite have been noted on Loc. 581 and near the 18 mile peg on the Southern Cross-Bullfinch road, just south of Bullfinch.

No detailed work on the mining groups was undertaken during the short field season, but it is intended to carry out this work in conjunction with regional geological survey during the 1938 field season.

THE RIVERINA GOLD MINE, RIVERINA (30 MILES WEST OF MENZIES, NORTH COOLGARDIE GOLDFIELD).

(By H. A. ELLIS, B.Sc., A.O.S.M., Geologist.)

INTRODUCTION.

An examination of the accessible workings of this mine was made on November 22nd and 23rd with the object of determining as far as possible the nature of occurrence of the auriferous bodies at present being worked in the mine.

It was possible to determine the pitch of the ore shoots, the faulting system which has dislocated the lodes, and the distribution of the lodes, and suggestions for the future development and prospects of the mine can now be made. During the examination the writer had the valuable help of Mr. N. Butcher, underground manager, and his careful observations made during the course of development work at the 300ft. and 400ft. levels greatly aided the progress of the examination.

The results of the inspection confirmed many of the conceptions of the geological features of the mine already held by the present management, and future development work should now proceed with some degree of confidence.

GENERAL GEOLOGY AND STRUCTURE.

The ore bodies consist of metasomatic replacements in well defined shear zones of considerable length in amphibolite schist, having a general north