

9.—PRELIMINARY REPORT ON A GEOLOGICAL RECONNAISSANCE BETWEEN LAVERTON AND THE WARBURTON RANGES.

(F. G. Forman, B.Sc.)

The writer received instructions in May, 1931, to accompany a survey party from the Lands Department who were preparing to traverse the country between Laverton and the Warburton Ranges. The party left Laverton on the 2nd June and returned on the 7th October.

The country traversed by the present expedition had been previously examined by Messrs. Talbot and Clarke in 1916, who recorded the results of their observations in Geological Survey Bulletin 75.

The preparation of the report on the recent reconnaissance is still in progress, the delay being due to a difficulty in getting a petrological examination made of the rock specimens collected in the field. A satisfactory map cannot be drawn nor can an accurate account of the rock relationships be written until the petrological examination is completed.

The country examined, other than that over which our outward route passed, which is considerably to the north of the route followed by Talbot and Clarke, includes the country between the western end of the Warburton Range and the Barrow Range on the east, and between the junction of the Hughes and Elder Creeks and the Townsend Range on the south, and Spring Granite and Barlee Springs on the north.

All over this block of country numerous signs of prospecting were seen, there being signs of knapping on nearly every quartz reef observed. Judging from the absence of favourable reports by prospectors working in this area, the prospects do not appear encouraging. Mr. Michael Terry and Party, who were met by us returning from the Warburton Range area, reported that they had carried out loaming extensively over the country west and north of the Ranges without encouraging results.

Although the writer was unable to investigate country much removed from the traverses made by the 1916 expedition, he endeavoured wherever possible to make his traverse cover such strips of country which had not been crossed previously by the 1916 party. By this means it has been possible in a number of places to modify the rock distribution as shown on the existing maps.

The greenstones of the Warburton Range Area have been regarded up to the present as counterparts of the auriferous greenstones of the Western Australian Goldfields. The field evidence obtained, during the recent reconnaissance, suggests that the greenstone areas, if they exist at all, can be considerably lessened in extent, and that the greater part of the area is covered by a series of metamorphosed sediments and associated igneous rocks of possibly later age than the Goldfields greenstone, and therefore having less economic possibilities.

10.—THE CORRELATION OF THE ARTESIAN BORES OF THE METROPOLITAN AREA.

(F. G. Forman, B.Sc.)

In November, 1930, the writer received instructions to attempt a correlation of the artesian bores of the Metropolitan area. Owing to the pressure of other work, very little was done until December, 1931. Since then, considerable advance has been made but the work is still incomplete.

At the present stage it appears that there are three distinct artesian water-bearing horizons underlying the Metropolitan area. These three horizons can be identified by water analyses, water temperatures, and the static-heads of the various bores.

Bore cores, obtained at the time the various bores were sunk, are now being studied with the object of confirming by lithological evidence the correlation made by other methods. It is only in a few cases that bore cores have been preserved, and in the majority of cases the only record kept of the strata passed through by a bore is contained in the driller's log. Where the actual core from a bore has been preserved, and a comparison between it and the driller's log is therefore possible, the latter has been found in many cases unreliable. It is for that reason that the correlation is based mainly on other than lithological evidence.

The ultimate object of the present investigation is the production of a plan indicating the probable areal extent of the water-bearing horizons, and the depth below the surface (at any particular point), at which artesian water might confidently be expected. This plan, when completed, should prove of value when the drilling of new bores is being considered in the future.