

BARRACOODA POOL, ARTHUR RIVER :

- Evactinopora crucialis*, Hudleston.
Rhombopora tenuis, Hinde.
Athyris Macleayana, Eth. fil., var.
Productus semireticulatus, Martin?
Aulosteges, sp. nov.
Dielasma, sp. md.

WYNDHAM RIVER, LYONS DISTRICT, BOULDER BED :

- Fragments of a *Spirifera* and a *Pecten*.
Polyzoa, small fragments.

FOSSIL HILL, WYNDHAM RIVER :

- Hexagonella dendroidea*, Hudleston, sp.
Pleurophyllum Australe, Hinde.
 Crinoid stems (portions).
Polyzoa, fragments.
Spirifera Musakheylensis, Davidson.
Spirifera Hardmani, Foord?
Spirifera lata, McCoy.
Reticularia lineata, Martin, sp.
Athyris Macleayana, Eth. fil.
Chonetes Pratti, Davidson.
Productus (cf. *P. tenuistratus*), Foord.

THE ISLAND, LAKE AUSTIN.—Mr. H. P. Woodward, who visited this district in connection with an application for assistance towards testing the ore deposits at a depth, has furnished the following notes on the general aspects of the district:—

The Island is a ridge of about three miles long, which rises abruptly from the salt flat called Lake Austin. The rocks, which strike a little East of North, are schistose with diorite dykes, lenticular banded ferruginous quartz reefs and white irregular quartz reefs—all of which underlie to the Westward, whilst the ore chutes dip to the North at a slight angle. These rocks have been considerably broken by the diorite intrusions, for, although few of these outcrop, they are met with in the crosscuts below ground.

The banded quartz reefs are the main features of this district, being met with at both Mt. Magnet and Nannine, as well as the Island. They generally rise above the surface as rough rock ridges, which rarely extend half a mile in length; they do not follow one main fissure line, but overlap one another and lie a little to the East or West, as the case may be. At the surface, they appear to consist mostly of banded ironstone with jasper veins, but when cut below the water line they prove to be banded blue and white quartz, containing considerable quantities of pyrites in places. These lodes, although poor, always contain a small quantity of gold, and invariably exercise considerable influence upon the richness of the quartz reefs of this district, which rarely contain gold except when in proximity to them.

The white quartz reefs are very irregular in their course, and are included in fissures of a more recent date than the last-mentioned, which they intersect. These reefs have in parts at the surface proved to be phenomenally rich, but these patches were never of great extent, nor did any go down. The chutes of rich stone in these reefs dip to the North, but are, as before stated, influenced by the presence of the so-called ironstone lodes; they are very flat and are never of great thickness, but the stone contained is good. The reefs at a depth contain a considerable quantity of hornblende and chloritic schist, with pyrites, and assume a banded appearance something similar to the main lodes.

MOUNT IDA.—The mining centre of Mount Ida, situated in the Ularring District of the North Coolgardie Goldfield, 66 miles North-West of Menzies, was examined by Mr. H. P. Woodward, who reported that in its physical configuration, the district consisted of—

A series of low ranges running a little West of North, between which are wide stony flats. Some of these ranges are flat-topped, being apparently the isolated remains of the sandstone tableland which once covered the entire district. The geological features, from a mining point of view, are decidedly of interest, but, owing to the broken nature of the country, form a complicated puzzle to unravel until a detailed geological map of the district has been compiled. Roughly speaking, however, they may be described as a main anticlinal fold, the axis of which lies a little West of North and East of South. Of this anticlinal the arched beds have been denuded, exposing the granite core (which was evidently the cause of this contortion), upon each side of which there is a belt of crystalline rocks about three-quarters of a mile in width, which dip at a high angle upon the E. to the E. and upon the W. to the W., and it is in these zones that the auriferous veins are met with. These belts are greatly broken by a series of cross courses and faults which prove a considerable trouble to miners, since they either throw or cut out the lodes or cause the formation of secondary veins, which are sometimes rich, but which are never continuous.

To the Westward and Eastward of these belts is a belt of large ferruginous veins, some of which are said to carry gold, whilst beyond them are plains strewn with stones, with here and there large quartz blows or flat-topped ridges of the desert sandstone.

The rocks of the auriferous belt, like those of most of the goldfields, consist principally of the hornblende and chlorite series, whilst the dykes are feldspar porphyry, feldstone, quartz, hornblende, and fibrous talc veins. The rocks of the two belts are identical even to their relative positions to the lodes, for on both sides of the anticlinal we find the main lode is of the class called "contact," and lies between hornblende schists and feldspar porphyry, locally called "spotted rock."

The lodes are, for the most part, small, although they open out in places to bodies of considerable size; but, to counterbalance this, they may pinch to a mere thread of quartz or indicator for a considerable distance. The stone of the reefs carries gold throughout the so-called chutes, being that portion of the lode which is large enough to work at a profit. These vary in size, but are sometimes of considerable length. The stone in the upper levels is oxidised, but below the water level it is heavily charged with sulphides of iron and copper, the latter metal being generally associated with gold in this district.

The water supply of this district is not as a rule good, the water shaft used by the Government yielding about the best supply, whilst that at the Mt. Ida Consols is so small that, in spite of the most economical treatment, it will only supply the battery 12 hours. The water difficulty does not promise to improve with depth, since, when the old sulphide zone is entered, it is found to be hard and impervious. However, when the workings are extended in the water-bearing zone to the point of intersection of the lode with a cross course, it is highly probable an abundant supply will be struck.

Timber for mining purposes is getting scarce in the vicinity of the mines, but at present there is abundance of excellent firewood close at hand.

About five miles South of the township, upon what may be probably the Southern extension of the same belt, a patch of surfacing was discovered some time ago, the deposit dry-blown, with the result that some rich parcels of gold were found. This led to the prospecting of the reefs in the vicinity, which consist for the most part of large quartz blows, all of which proved to be barren, however. Two or three smaller parallel reefs were worked, which yielded rich stone in patches, but never in sufficient quantities to pay.

Public Batteries and Cyanide Plant.—This is a very complete 10-head stamp battery with cyanide plant upon this field, which has been a great boon to the prospector, who, without it, could not have worked their claims. During the time this has been running, a considerable quantity of stone has been crushed and yielded very good results, whilst the tailings still remained to be treated; however, since these contain a considerable quantity of copper, the extraction from the sands, although rich in gold, will be low. The stone treated at this battery amounts to 9,832 tons, which yielded 10,795ozs. 1dwt. 6grs. of gold, giving an average per ton of 1oz. 1dwt. 23grs., the total value of the gold won being £41,021.

The district generally is in a quiet condition owing to the fact that the miners have worked out most of the payable stone exposed in the workings left by the previous prospecting companies, and therefore require capital to proceed with dead work. Many of the properties undoubtedly warrant the expenditure of capital, and when it is borne in mind that a public battery, etc., exists in such a central position, there would be no need for a company to erect its own plant until such time as it felt warranted in doing so.

With regard to boring to test lodes at a depth, this cannot be recommended anyhow until a detailed geological survey has been made of the locality, owing to the fact that the lodes are so broken by dykes and cross courses, besides which the reefs themselves are so irregular in dip and size, which might lead to most unsatisfactory or erroneous conclusions, therefore by far the most satisfactory method to be adopted for the assistance of the district would be the subsidising of sinking below the water level.

Everything considered, this district may be said to be rich in auriferous quartz veins, which present all the appearance of true fissure veins, the ore bodies, although small upon the average, contain chutes of considerable extent of workable sizes, whilst the value of the ore has been so high that it has paid working miners to raise and cart to a public battery without taking into consideration the value of the tailings.

YARDARINO BORE.—Having in view the delimitation of the Western margin of the Irwin River coal measures, a bore was put down by the Government at Dongarra in the year.

The bore attained a depth of 2,111 feet 7 inches, when operations were stopped owing to the capabilities of the bore's plant being exhausted, without having proved the presence of the Irwin River Coal Beds.*

The Government having decided upon boring operations at Yardarino, one mile to the Eastward, there was then no necessity for deepening the bore originally put down at Dongara.

Boring operations were eventually started at Yardarino, and when the bore hole attained a depth of 1,607 feet, the boring tools were lost in the hole, and it then became impossible for the contractor to continue further operations.

* The Mineral Wealth of Western Australia. A. Gibb Maitland. Bulletin No. 4. Perth: By Authority: 1900, pp. 105-106.