

## No. 3 BORE.

Nature of Strata according to Bore Journal.	Thickness.	Depth.
	feet.	feet.
Incoherent sand ... ..	80	0
Black clay, interspersed with seams of sand ... ..	20	80
Quartz pebbles ... ..	10	100
Incoherent sand ... ..	52	110
Basalt, partly decomposed ... ..	21	162
Shale and brown coal ... ..	2	183
Bituminous sandstone ... ..	10	185
Brown coal, with particles of ashes, mud, pumice, etc. ... ..	10	195
Decomposed graphite ... ..	Thin seam only (?)	205
Scoriae from pyrites, sand, mica, clay, artesian flow, fresh water, graphite, and small quantity of gas	60	205
Quartz pebbles and iron pyrites ... ..	2	265
Decomposed basalt; gas ... ..	18	267
Hard basalt; no water ... ..	30	285
Calcite ... ..	(?) 2	315
Black mud, apparently bituminous, volcanic matter, and black mud ...	5	317
Sand, charcoal, and decomposed basalt ... ..	9	322
Brown shale, pieces of basalt, iron pyrites, anthracitised matter ...	9	331
Quartz pebbles ... ..	1	340
Pumice, mica, etc.; graphite ... ..	8	341
Artesian flow, salt water, sand, scoriae, ashes, coal particles, graphite	21	349
Apparent cement material of nature of lye, with graphite ... ..	(?) 1	370
Dry sand ... ..	106	371
Quicksand ... ..	25	477
Clay, with sand and shale ... ..	10	502
Sand, with garnets and mica (coal particles at 555ft.; slightly saline water at 565ft.)	78	512
Alternating fine and coarse calcareous sandstone, coherent where fine, incoherent where coarse; slight flow fresh artesian water, and fine particles of anthracite below 690ft.	140	590
Calcareous sandstone, fresh artesian water, gas, particles of coal, anthracitised lignite, fireclay, and fossils	(?) 3	730
Fine-grained sandstone, not hard enough to core ... ..	27	733
Sand ... ..	10	760
Alternating light grey and brown sand ... ..	20	770
Sand, with traces of shells, fossils, and anthracitised lignite, at about 820ft.	70	790
Fine-grained calcareous sandstone ... ..	40	860
Fine-grained calcareous sandstone, gradually altering in colour from light to dark yellow; coarse grained; not hard enough to core	17	900
Total ... ..	917	917

N.B.—The figures are taken from a tracing of the bore section, and as the thickness of the strata are not given in figures in every case on the tracing, they have been scaled off. The tracing appears to be only approximately drawn to scale, hence the figures of the strata given in this table may not be in every case absolutely correct.

A series of samples have been submitted to me from time to time by the Company, and the following is a description thereof:—

Nature of Strata.	Depth.
	feet.
Micaceous shale, with plant remains ... ..	Between 195-205
Débris of black sandy shale ... ..	322
Sand with fragments of dark shale ... ..	Between 492-503
Micaceous and somewhat sandy shale, and portion of a core of grit or quartzite	„ 503-572
Débris of clay shale ... ..	505
Coarse angular sand of quartz, felspar, a little mica, pale garnets (?) and fragments of pyritous shale	Between 550-570
Fine angular sand of quartz, felspar, and mica ... ..	„ 571-597
Fine angular sand of quartz, felspar, mica, and pale garnets (?) ...	„ 640-652
Angular sand of quartz, felspar, mica, with a few pale garnets (?) ...	„ 652-705
Coarse angular sand of clear transparent quartz and white felspar ...	„ 705-720
Fine angular sand of quartz, felspar, and a little mica ... ..	„ 720-722

In addition to the above, there are amongst the material submitted—

(a.) Fragments marked “portion of core from lower flow of basalt.”

(b.) A tin containing fragments of a quartz sand cemented by carbonaceous matter, such as is found in many of the coastal swamps.

These two samples have no distinctive labels; hence it is not quite clear whether they were obtained from No. 3 bore, from which the other specimens have been derived.

Cue.—Having received instructions to visit Cue in connection with an application to carry out some diamond drilling in the district, Mr. Campbell, Assistant Geologist, was employed to collect the necessary geological data bearing on the question. Owing to the nature of the application, it became

necessary to examine a very large extent of country, which embraced an area of about 10 miles in length by about 6 in breadth.

A plan has been made by Mr. Campbell, with the object of throwing light on the proposal for prospecting the reefs at a depth. This plan shows the position and extent of all the reefs of the district, and, wherever possible, the amount and direction of their underlie.

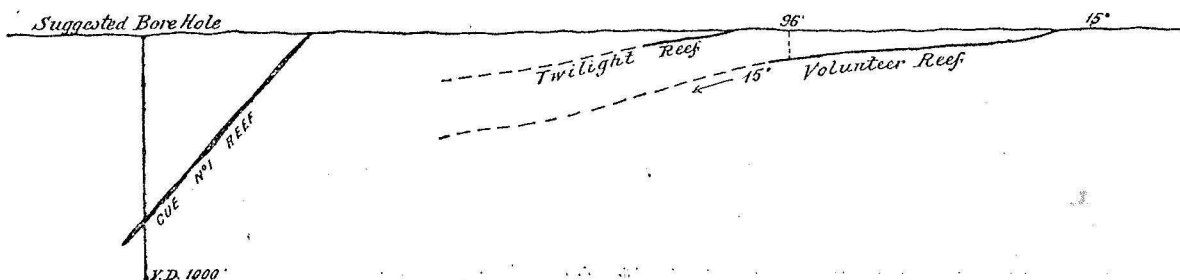
In the year 1897 I visited Cue at a time when enterprise seemed to be on the wane, and the returns showed signs of falling off. It was then pointed out in an official report\* that—"The Cue district in its geological structure is identical with that of the other productive goldfields in Australia and elsewhere, . . . . There is no falling off in the supply of ore available for crushing in the district as a whole, although there are local variations in the dimensions of the reefs in almost every case. . . . So far, the reefs have shown themselves to be well defined fissure veins, in some cases, of large size, and, as such, are likely to be as persistent in depth as anything in the nature of reefs ever can be. Local fluctuations in the gold yield per ton are, of course, only to be expected in the future, but there are no scientific grounds for believing that such large and well-defined reefs as those at Cue have, on the whole, shown themselves to be, will not prove equally productive when followed to greater depths." This condition of affairs still obtains.

The reefs of Cue and Day Dawn are arranged along certain well-defined lines, which have been delineated on the plan, and their assumed continuity indicated.

After giving careful consideration to the whole question, it was recommended that (bearing in mind the general considerations which should determine the granting of State aid in this direction) the best assistance that could be rendered would be by means of a bore put down to the West of the Volunteer leases, just North of the township of Cue, at such a distance as would enable the drill to intersect the reefs at from 800 to 1,000ft.

Over this area there are certain well-defined and persistent parallel reefs which all underlie generally to the Westward. The Volunteer and the Twilight reefs both underlie to the Westward at an angle of  $15^\circ$  from the horizontal. The Cue One reef, which outcrops some distance to the West, underlies in a similar direction at an angle of from  $50^\circ$  to  $60^\circ$ .

A bore put down at a point about five chains East of the North-East corner of G.M.L. 217 would demonstrate the relation which may be called the horizontal reefs bear to the highly inclined. In such a bore the Cue One Reef, its present strike being measured, should be met with at about 800 feet from the surface. The Twilight Reef, if continuous, unless cut off by that last mentioned, should be met with at about 500 or 600 feet, and the Volunteer at about 300 feet lower down.



SECTION SHEWING THE POSITION OF THE VOLUNTEER, TWILIGHT AND CUE NO. 1 REEFS.

In view of the fact that any boring carried out would confer a direct benefit upon the holders of the leased land adjoining, it was further suggested that a contribution on their part, on a basis to be mutually arranged, would not be unreasonable.

The Warden provisionally reserved such an area as would include the ground operated upon.

Lennonville, Boogardie, and Mt. Magnet.—During the year a short visit was paid to Lennonville, with the object of investigating its mineral resources.

It was found that the auriferous deposits were of two distinct types—viz., white quartz reefs and banded quartz or jasper veins (which in some cases proved to be exceptionally ferruginous), approaching very closely the banded hematite-bearing quartzites, which form such a conspicuous feature in some portions of the Murchison. The white quartz reefs present all the characteristics common to deposits of this nature; they are of later formation than the banded quartz veins, for in many cases they intersect the latter. These laminated quartz veins form the principal feature of the district, and, so far as they have at present been worked, have proved to be rich in gold, though it cannot be said that they have had that prospecting which their importance warrants.

The two types of deposits bidding fair to become of economic importance, it seemed that the greatest assistance the Department could render to private enterprise in the district would be in the direction of mapping these formations, in the hope of furnishing a reliable guide for the conduct of the operations of the prospector and the mining engineer.

From an examination of the Lennonville district, it was found that the ore deposits exhibited a remarkable parallelism, having a general North and South trend. They were found to sweep across country, with scarcely any interruption, for about four miles, and to extend both North and South far beyond the limits of the inspection.

\* Cue Water Supply for Crushing Purposes. Perth: By Authority, 1897, p. 6.