

THE BELLARA GOLD MINE

By B. RAMA RAO

(*Director of Geology, Government of Mysore, Bangalore*)

Situation.—The Bellara Gold Mining block, situated about 95 miles N.W. of Bangalore, lies amidst a thickly wooded deciduous forest covered with Kamara trees (*Hardwickia binata*). It is a mile and a half to the E.N.E. of Bellara, a road-side village, 19 miles to the west of Sira, in the Sira-Huliyar road, in the Tumkur district. Actually the mine is about a mile north of the forty-third milestone in this road and can be reached easily from that spot through a connecting road which has been recently constructed.

The auriferous formation of this region consists of a massive basic igneous rock (locally called grey trap)—bouldery for the most part or somewhat crushed and rudely schisted at places—penetrated by several quartz reefs of various dimensions exposed here and there as disconnected runs. Most of these reefs are found to be gold bearing.

Early History.—The gold-bearing reefs of this area, as in all the other auriferous tracts in Mysore, had been worked to some extent by ancient miners. In 1897 or 1898, the State Geological Department discovered in this region some of those ancient workings. About the same time, one Mr. R. H. Morris, finding a few more of such workings, obtained a license over an area of 9 square miles to prospect for gold. He transferred his interest, soon after, to the Indian Mines Development Syndicate, Ltd., who took over the license from him on option and conducted, in the early years of this cen-

tury, some extensive underground investigations on two of the most promising reefs in the region.

Commencing their work in 1902 on the eastern reef, exposed prominently on the slope of a small hill, S.W. of Δ 2567, this Syndicate sunk three shafts to various depths and had driven levels at depths of 130, 230 and 330 feet from the surface. After considerable exploration of this reef, which they called the Bellara reef, the work was discontinued, however, at the end of 1905.

At the foot of the the hill, about $1\frac{1}{4}$ furlongs west of this reef, another reef was located by the Syndicate after a considerable amount of exploration and prospecting. On this reef, which they styled "Tank Reef", ten shafts were sunk altogether over a length of some 2,000 feet, six of the shafts being in a line north and south, and the rest on the sides parallel to them. The shafts were sunk to varying depths, the deepest being a little more than 400 feet. Several levels had been driven at various intervals, to varying distances, from the different shafts and also a few winzes connecting the different levels.

These extensive operations, conducted over some four or 5 years, had disclosed that the western reef (Tank Reef) varied in width from 2 or 3 inches to $2\frac{1}{2}$ feet and in gold value from a mere trace to about 3 ounces per ton with occasional richer shoots. It had been estimated that a few thousand tons of quartz

could be taken out from this reef at an average of 9 dwts. per ton; but still the total tonnage of such quartz was considered insufficient for large-scale operations and the gold value of the reef in depth, at some of the spots tested, was also considered too poor to tempt further extensive explorations beyond. Hence, the Syndicate abandoned the mine, finally, after several years of trial.

A couple of hundred tons of quartz which had been taken out during the course of these operations had been left stacked at the shaft-heads, being considered perhaps as unprofitable for treatment. Some of the local people who were aware of the existence of this gold quartz, took advantage of the situation of the stacks in the midst of the jungle far from any inhabited villages and started extracting gold surreptitiously. We are not quite sure for how long this clandestine practice was carried on, but the culprits were caught, however, red-handed in January 1941. The concentrates recovered from them on assaying in the chemical laboratory of the Geological Department, indicated very rich values, varying from 90 to 500 ounces of gold per ton. Since it was more or less impracticable to prevent altogether such unlawful, underhand, extractions by ordinary vigilance in that forest-covered area, the Geological Department took up in 1943, the extraction of gold by washing the powdered pieces of good-looking quartz, and also the mine debris and soil nearby, in specially constructed washing cradles.

While this work was going on it came to the notice of the Mysore Government that a small section of the workings on the Tank Reef contains a fairly rich zone which was believed to yield about 2,000 tons of auriferous quartz of an average grade of 11 dwts. per ton. On the strength of this information, and after a careful consideration of all aspects, the Government of Mysore decided to have the area thoroughly investigated. In May 1944, they sanctioned the proposal of the Director of Geology to recover the available gold from this known reserve of 2,000 tons of auriferous quartz at an estimated initial cost of Rs. 1.70 lakhs, and also to conduct further large-scale intensive investigations on the reef to ascertain its suitability or otherwise for commercial exploitation.

Present Operations.—The work of the Indian Mines Development Syndicate had indicated that the Tank Reef formed a thin vein of auriferous quartz of an average width of about 2 feet, traceable for a length of over 2,000 feet north and south. The reef with a pronounced westerly dip seems to have been followed on its underlie for over 400 feet in depth, beyond which it had not been traced. For the present operations which commenced in July 1944, almost the central portion of the reef was selected. In accordance with the sanctioned programme for extracting the gold from the proved reserve of 2,000 tons of quartz in this selected portion, the Geological Department started its operations with the cleaning and reconditioning of three of the old shafts which the Indian Mines Development Syndicate had sunk in this section and which, from disuse, had all collapsed and partially filled up with debris. The work done so far since the commencement has resulted in thoroughly reno-

vating these three shafts to depths of 100 to 150 feet, and also the 100-foot level, where the reef had been first met with underground, to about 350 feet north and south and the 150-foot level lower down, to 600 feet. The portions reconditioned expose the auriferous reef right through. The eastern extension of the reef from the 100-foot level is being traced by driving in that direction, and though the reef has been followed till now to about 150 feet it seems to be continuing still further. The present development of the reef so far has exposed and blocked for stoping about 4,000 tons of quartz of an average estimated yield of about 10 dwts. of gold per ton. A few thin splashes and pockets of considerably richer portions are being occasionally met with, which may tend to raise the estimated average yield somewhat higher. From one of such exceptionally rich pockets recently struck, which may not yield more than a ton or two of very rich quartz, by hand-pounding some 2 or 3 panfuls nearly 100 ounces of fine gold have already been obtained, and another 80 to 100 ounces of gold will easily be won from the remaining portion.

The extent of the reef to be mined and treated at present, being nearly twice of what had been at first proposed, the revised scheme as now stands is estimated to cost about Rs. 3.9 lakhs. From the portion of the reef now developed about 1,200 tons of auriferous quartz have already been mined and stacked at the surface ready for treatment and the remaining 3,000 tons are under stoping. It is anticipated that these 4,000 tons of auriferous quartz will yield at least some 2,000 ounces of gold worth, at the present market value, about Rs. 4¼ to 4½ lakhs.

There has been a considerable delay in getting the needed machinery and other appliances. Consequently, the milling and extraction of gold have not been started as yet. However, from washing the debris in the mined areas and from hand-pounding small pieces of rich quartz about 120 ounces (250 tolas), valued at Rs. 26,000-27,000, at the present market rates, have been recovered; and another 80 to 100 ounces are anticipated to be recovered during this month and the next.

Future Prospects.—The previous work of the Indian Mines Development Syndicate indicates that the Tank Reef runs north and south for a length of at least 2,000 feet and would yield some 80,000 to 100,000 tons of quartz to a depth of about 400 feet from the surface. The reef had not been traced beyond that depth since it seems to have got poorer in its gold value at that depth. Consequently, it is not known precisely how deep the reef would go, and what would be its width and value beyond the explored depth of 400 ft. The central section of the reef as now developed shows, however, that in this zone it forms, more or less, a gently undulating, tabular vein, of an average thickness of 1½ to 2½ feet, faulted and cut off abruptly at the 150-foot level. The previous workers seem to have followed downwards the thin stringer of quartz which occupies the fault line at 150-foot level. Very probably this may be a separate reef,—a later vein filling up the fault fissure, which, widening out below, might have shown low values in gold. If so, the continuation of the dislo-

cated richer reef, west of the fault line, remains yet to be discovered and traced.

The work done so far has not yet reached beyond the investigatory stage and as such it is too early to foresee whether the area will develop into a large productive mine. If, as we surmise, the previous workers had lost at the fault zone the rich shoot we are developing now and had followed in depth a much poorer reef; and if the dislocated portion of the rich shoot could be discovered and traced west of the fault zone, there is every likelihood of the area developing into a fair-sized productive mine. There are a few other auriferous reefs in the area, including the Bellara Reef, which would add considerably to the tonnage of

quartz suitable for milling. Consequently, the prospects so far as one can foresee at present seem to be quite encouraging, and there is every reason to hope that the region will turn out into a thriving gold field though, perhaps, on a considerably smaller scale than the well-known Kolar Gold Field.

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