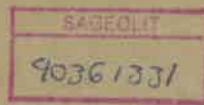


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REPORT

GEOLOGICAL EXCURSION TO SWAZILAND AND THE
BARBERTON MOUNTAIN LAND FROM JULY 11TH
TO JULY 18TH, 1965.

deur/by

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REFRACTORY GOLD ORES

REPORT NO. 10

GEOLOGICAL EXCURSION TO SWAZILAND AND THE BARBERTON MOUNTAIN

LAND FROM JULY 11TH TO JULY 18TH, 1965

PROJECT No. C.68/61

DATE 19th October, 1965

INVESTIGATOR H. Schweigart
 W.R. Liebenberg

REFRACTORY GOLD ORES

GEOLOGICAL EXCURSION TO SWAZILAND AND THE BARBERTON
MOUNTAIN LAND FROM JULY 11TH TO JULY 18TH, 1965

S Y N O P S I S

The excursion to Barberton and Swaziland proved to be informative and interesting. There is a great deal of activity in mining in this area at present, and a number of mines were visited. Among them was the Havelock Asbestos Mine.

The gold production in this area exceeds 125 thousand ounces per annum, and some of the dormant mines may be reopened.

1. INTRODUCTION

The excursion, arranged by the Geological Society of South Africa, was attended with the object of obtaining further knowledge of the economic mineral deposits in the Barberton and Swaziland areas, of which the gold ores of the Barberton Mountain Land are the most important.

Apart from this, the geological relationships of the oldest rocks exposed in Southern Africa were studied both in Swaziland and in the Barberton area.

In the following short report, only the various outcrops or mines that are of economic importance will be described briefly.

2. BOMVU RIDGE IRON ORE MINE

This iron-ore mine is situated in Swaziland, near the border between Swaziland and South Africa. The ore body belongs to the banded ironstones of the Fig Tree Series of the Swaziland System. The mine became operational some eight months ago and has a contract with Japan to supply, over a period of ten years, fourteen and a half million tons of iron ore, averaging more than 62 per cent iron and containing very small amounts of titanium, phosphorus, and sulphur.

The ore is obtained at the mine by an open-cast mining method; it is crushed and screened to supply a minus-8in plus-1/4in fraction, which is shipped to Japan. The minus-1/4in fines are accumulated on a waste dump. There is a possibility, however, that these fines may be sold at a later date. The present production is at the rate of 1.2 million tons a year. This figure is going to be increased in 1966 to an average of between 1.5 and 1.7 million tons a year.

/3. RED

3. RED REEF GOLD MINE

This is now a dormant mine situated in calcose schists in Swaziland. The average ore grade was approximately four pennyweights per ton. The geological survey of Swaziland is presently undertaking an exploration programme to investigate the possibility of reopening the mine.

4. USUSHWANA COMPLEX

This complex is situated in the southern part of Swaziland. The magnetite bands that occur in the basic rocks of this complex may be of economic importance in the future.

5. HAVELOCK ASBESTOS MINE

This mine is one of the largest asbestos mines in the World and presently produces over 40 thousand tons of fibre annually. The asbestos is of the green (i.e., chrysotile) variety. The fibre, which is of a fairly high grade (the average length of the fibre mined being in the vicinity of one inch, and the maximum length, three inches), is transported by cable car to Barberton, from where it is shipped.

The asbestos occurs in serpentine bodies in the lower Swaziland System. Banded ironstones of the Fig Tree Series are also present in this area.

6. GOLD ORES IN THE FORBES REEF AREA, SWAZILAND

Unfortunately, these mines could not be visited during the excursion.

The She Mine however, is operational, and produces something in the region of one to three hundred ounces of gold per month. There seem to be some problems ahead for this mine, however,
/as

since the oxidized ore is just about depleted and the sulphide ore body has now been struck. It will be remembered that the investigations carried out at the Government Metallurgical Laboratory (G.M.L.) indicated that some 30 per cent of the gold in the sulphide ore was locked up in sulphide minerals. These results were made available to Mr Davies, Director of the Geological Survey, Swaziland.

7. GOLD MINES IN THE BARBERTON MOUNTAIN LAND

During the excursions, visits were paid to the Fairview and New Consort mines.

7.1. Fairview Mine

This mine is presently milling some eleven and a half thousand tons of ore per month, which has an average grade of about eight pennyweights per ton. This means that its annual gold production is in the region of 45 thousand ounces.

The ore from this mine is of a refractory nature, and the sulphide concentrates obtained from the ore are roasted before cyanidation.

7.2. New Consort Mine

At this mine the cyanide-residue ore dump (1.5 million tons averaging 1.2 pennyweights per ton) is at present being reworked at the rate of 100 thousand tons per year. The residue is reground and conventional leaching is applied, resulting in a recovery of 0.6 pennyweights of gold per ton. Sulphide concentrates from the Agnes, Sheba, and New Consort mines are combined and roasted at the central roasting plant at the New Consort Mine.

The present gold production from these three mines is as follows:

New Consort Mine: 35 000 oz per year.

Sheba Mine: 25 000 oz per year.

Agnes Mine: 20 000 oz per year.

8. FORTUNA MINE

Eastern Transvaal Consolidated Mines Ltd. (E.T.C.) are at present investigating the possibility of reopening this mine. Some 1 700 tons of ore have been milled and are being treated at the New Consort Mine.

9. DORMANT MINES

E.T.C. are also investigating the possibility of reopening some other dormant mines or opening up new prospects. The mines involved are the Golden Hill Mine, the Clutha Mine, and the Mount Morgan Mine.

10. CONCLUDING REMARKS

The writer was impressed by the extensive development presently being undertaken in mining operations in Swaziland. These include the iron-ore mine, the asbestos mine, and the gold mine. In addition, there is also a possibility of exploiting some of the coal seams present in the area. Apart from this, Swaziland produces some 100 thousand tons of pulp annually, and the timber industry, which is largely owned by the Anglo American Corporation, is very extensive in that area.

The Swaziland Geological Survey intends undertaking a comprehensive geophysical survey of the entire territory during the following year. This Survey will be followed by a more extensive exploration of areas showing anomalies, and may well lead to the discovery of further ore deposits in the area.

The gold production in Barberton and the surrounding areas is at present in excess of 125 thousand ounces per annum. Furthermore,

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some of the old dumps are being reworked, and serious exploration into the possibility of reopening some of the dormant mines in the area is being undertaken. The prospects for the area, at least for the next few years, appear to be good.

In general, the excursion was most informative and interesting.

HS/ED

19th October, 1965.

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