Some observations on ‘ancient’ mining at Phalaborwa

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SYNOPSIS

A brief account is given of historical references to the Phalaborwa area, the first being to the mountain of copper and iron sought by Francois de Cuiper in 1725. These are followed by a description of several finds in the area, which are related to finds described in the literature and to Bantu tradition on the subject. Phalaborwa is one of the earliest known mining sites in the Republic of South Africa, Loolekop having been a mining centre, as shown by carbon-14 dating, since 770 A.D.

SAMEVATTING

Daar word ‘n kort oorsig van historiese verwysings na die Phalaborwa-gebied gegee en die eerste daarvan is die berg van koper en yster waarna Francois de Cuiper in 1725 gaan soek het. Hierdie verwysings word gevolg deur ‘n beskrywing van verskeie ondernemings in die gebied wat in verband staan met ondernemings wat in die literatuur beskryf word, en met Bantoe-onderwerpe oor die onderwerp. Phalaborwa is een van die ouste bekende mijnbougebiede in die Republiek van Suid-Afrika en volgens datering met koolstof-14 was Loolekop reeds sedert 770 n.C. ’n mynbouentsentrum.

INTRODUCTION

Acting on Roger Summers’s warning, I use the word ancient with reservation:

The word ‘ancient’ is a purely relative chronological term, depending on the historical background of the user. In Western Europe, where written records began under the Roman Empire, things are ‘ancient’ if more than 2000 years old. In America, however, Columbus provides a boundary between ancient and modern.

In the interior of Africa, written history is far more restricted and in Rhodesia itself there is a statute—Monuments and Relics Act, 1936—which puts the boundary of antiquity at 1st January, 1890.

In South Africa we have similar legislation, but our legislators have not been quite as specific in providing a date!

In these brief notes on ‘ancient’ mining (that is, mining before the advent of the twentieth century), I record a few observations that I have not seen mentioned in the numerous reports and publications that have become available during the past decade. Many of these observations are my own, made when I was resident in Phalaborwa† (1961-1963). During that time, accompanied by my family and friends, I spent all my spare time visiting more than 60 sites of archaeological interest in the area.

Prior to 1960 there was a paucity of literature on the pre-European mining of the Phalaborwa ores. Scant attention had been given to it by professional archaeologists, and, had it not been for the observations of geologists like Hall and Schwinn, much of what had been left by way of ‘ancient’ workings on Loolekop (Loolewe), at the site of the old Guide Mine and immediately north of the old Malelane road near Aprilkop, would have been lost to science by the encroachment of modern mining operations. Before Mason could survey and map the workings, or Van der Merwe, ⁶ apply the most modern methods of science including carbon-14 dating, blasting and drilling of the carbonatite area had already taken its toll. Today Loolekop is completely lost to archaeology; and so are other important sites, which are now covered by tailings, rock overburden, or slimes, or which serve as reservoirs or other necessities of modern mining. Large tracts of bush have been stripped to make way for towns and highways. Even the human material has been affected by ‘foreign’ influxes, but here science has been more fortunate, thanks to those ⁷-¹² who have recorded the history and ways of the local ba-Phalaborwa and other Lowveld tribes.

HISTORICAL REFERENCES

Loolekop is clearly the mountain of iron and copper that Francois de Cuiper set out to find in 1725¹. He was sent by the Dutch East India Company, who had heard of the mountain from the Bantu involved in barter trade with the east coast. Again, the area formed the subject of the following entries in the 1868 journal of Karl Mauch, the noted German explorer and geologist:

Copper ore, for which large mines are established at Palabora, is smelted by the blacks there and fashioned into ornaments. . . . The region is sparsely populated by men. Small kraals are found in the vicinity of small springs or perennial streams and are usually hidden in granite hills between boulders as, for instance, the chief Lepata of Palabora. The kraals here are experienced smelters . . .

Next on the scene was Edward Button (1869), but he evidently did not enjoy the confidence of the locals, for Thomas Baines¹⁵ notes: . . . among the Mosheshi hills of porphyritic granite, with occasional chloritic slate, they found natives working copper, but were not allowed to see any of the mines . . . Crossing the river Salate, and emerging from the hills to the west, they came upon tale schist with bands of steatite . . .

The baTubatse of Másimále are to this day the neighbours of the baPhalaborwa; the Másimála Range is adjacent to Phalaborwa and, among those hills in 1954, 1961, and several times afterwards, I was able to locate what must be one of the best-preserved metal age sites in South Africa. More than six iron furnaces were discovered, a copper furnace was at one time operated in a small cave, and the hut floors, terraces, and the like are intact and await the attention of a professional archaeologist. The site is on the farm ‘Square’, about 12 miles (19.3 km) from Phalaborwa, on the road to Mica. The ‘tale schist with bands of steatite’ is to be found on the
Plate I.—Three of several dolerite hammers found on Loolekop. Note the shallow depressions on the sides (about the size of a 50-cent piece), evidently fashioned to facilitate holding them. Other depressions were caused by careful hammering with iron gads and chisels such as those shown. The tools shown here are from Kgopolwë, which is now a proclaimed National Monument. As Kgopolwë was occupied by the baPhalaborwa until 1903, these tools probably date from the nineteenth century, but they follow a pattern hundreds of years old. All the tools had been used and showed signs of minework.

FINDS NEAR PHALABORWA
I have often wondered what has become of the green skull that Johan Breitenbach (I think that was his name), a geologist with Palabora Mining Company during pilot-plant days (1961), showed me in one of the temporary offices on Loolekop. It had been found in the carbonatite area, and the malachite had made it light green. In 1962, I found the scapula of a kudu 70 ft (21.3 m) down one of the shafts of the ancient workings exposed in the Foskor pit after a blast. It bore scars of an iron implement, possibly an axe, but, judging by its green colour, it was probably contemporary with the light-green skull. The skull, it seems reasonable to conclude, was that of an ‘ancient’ mineworker, probably killed in a mine accident.

Although I never found any mining tools on Loolekop, except dolerite hammers, I did discover a complete set of gads and chisels, and a holed iron for drawing wire, all hidden in the hollow of a huge rock on the south slope of Kgopolwë in 1962 (Plate I). These iron tools and the hammers are similar to those demonstrated by Leo Frobenius17 and R. J. Mason18 as having been in use at Rooberg and Malabog. Moreover, at the apex of Loolekop, there was a particularly large ancient working on which malachite had been laboriously chip-

228 JANUARY 1974
Ped away from one face (Plates II and III). One of the Kgopolwè gads fitted neatly into every one of the depressions on the ore face. In this same working I collected several pieces of wood so old in appearance as to be almost like cork. Most of these fragments were round, from 2 to 3 inches (50.8 to 76.2 mm) thick, and had been cut with iron tools; some were pointed. These could have been stays of some sort. Pottery fragments, some richly decorated, were also collected, as were several jaw bones of small bok. The 'ancient' miners must have eaten their meals on the spot. A further find was a partly burnt piece of candleabra euphoria; the copper miners of Musina, who had once mined at Phalaborwa but left under the leadership of Dopokabatho for richer fields, are said to have used the 'leaves' of this latex tree (nanboom) for lighting purposes.

Some of the 'ancient' workings consisted of extremely narrow stopes as little as 15 inches (37.5 cm) wide, and often 20 feet (6,096 m) and deeper in places. It was impossible for an adult to see and labour in them. One possibility is that these were merely vents, as illustrated by Terry Donnelly for the dust cover of Roger Summers's splendid work, but child labour cannot be ruled out. Female labour was certainly employed, and perhaps the best ever illustration of this is the painting by Samuel Songo depicting Bantu women mining gold in Rhodesia in 'ancient' times. He painted it in 1951, when he was Canon Paterson's pupil at Cyrene Mission School near Bulawayo. The painting now hangs in Rhodesia House, London. Captive labour was probably used, as indicated by a poem or song of the laPhalaborwa, one of several containing references to metallurgy, which contains this reference in the last line of the third stanza: 'The conquered are taught how to smelt iron'. Loolekop, it seems, once had slaves working metal and probably mining in the narrow passages too.

The Loolekop miners were doubtlessly mining malachite as a primary, and, since the average copper content is 0.7 per cent, the task must have been a very laborious one. Heaps of primitive tailings (Plate IV) surrounding the open-cast workings that I examined on Loolekop in 1962 showed that the minutest piece of malachite had been removed and the iron ore discarded. There was no need to mine the iron for the ore could be had for the picking up on the surface. In addition, there is an abundant magnetite scree on the western slope of Loolekop. It is also probable that the first people on the scene were able to pick the green malachite encrustations from the weathered orebody on the surface.

In any event, a rough estimate by mining engineers indicates that well over 10,000 tons of rock containing secondary copper ore deposits (malachite and azurite) had been removed from the hill before the start of recent mining activities.

In method of mining there is very little to distinguish the Loolekop workings from those of 'ancient' miners in Rhodesia, Messina, or elsewhere in Southern Africa. In extent they were very large. One aspect of possible difference was related to me by the late Mr Råh. He said that the 'ancient' workings at the old Guide Mine on the farm Schiettocht, about 4 miles (6.4 km) north-west of Loolekop, had steps leading down to the shafts and other passages. Walter Henry Scannell, who was the first European to settle and mine at Phalaborwa, and who had once worked this property during the early 1900s, discovered this when he cleared the back-filled workings for development. Steps had been cut into the bedrock. When I examined official papers on the old Guide Mine in 1967, I saw two identical plans drawn by Scannell, indicating the location of 'ancient' workings, but there was no specific reference to steps. The remains of 'ancient' workings I saw at the abandoned old Guide Mine were on a small scale and mainly opencast like the odd depressions near Aprilkop.

Many were filled up. Although Loolekop and surroundings were the main mining and smelting centres of the Lowveld, the not-too-distant Murchison Range has also been shown to have engaged...
the attention of the ‘ancients’. Of special interest is the presence of zinc blende in the Castle Koppies north workings. This is the only known occurrence of zinc blende in the Murchison schist belt. The ‘ancients’ probably obtained brass when they smelted these ores. Although copper was probably prospected for in the first place, the old workings have been found to contain traces of gold too; for instance, at Solomon’s Mine, about 5 miles (8 km) north of Gravelotte, and at workings about 100 yards (91.4 m) long and averaging 4 yards (3.7 m) wide, open cast and with a pillar in the centre, about 1½ miles (2 km) north of the United Jack Mine.

Tin for the making of bronze could be had at Phalaborwa by barter from elsewhere, for no source of this ore is known in the immediate vicinity of Loolekop. Experienced metallurgists that they were, the

Plate III—The interior chamber of the same working as shown in Plate II. From this chamber, several stopes were found leading, mostly in a westerly direction, even from the floor, which was mostly backfilled. The ore surface, especially near the dark patch towards the right of the 3 ft (0.9 m) steel rule, showed very distinct, although weathered and smoke-covered, pock-marks of an iron gad that had been used for chipping the malachite streaks away.

baPhalaborwa of old very probably knew the art. In the papers mentioned above19, there was a record of Scannell’s having shown Lawson, the beacon inspector from Leydardorp, ‘tin nodules obtained from the other side (south) of the Olifants River. Did the ‘ancients’ know the source of Scannell’s find?

Not only did the peoples of Southern Africa, before the advent of the European, mine and prospect for various metals, but they were also capable of working iron, copper, tin, and gold and of making bronze and brass. It therefore seems to me more appropriate to refer to them as Metal Age peoples than as Iron Age peoples, which is the term commonly used.

The furnaces (Plates V and VI) and the copper lerale of the Phalaborwa area have been described so often that I shall not mention them here except to make two observations for the record.

Firstly, as far as I know, the earliest photograph of a South African furnace in operation is that given in a book compiled by H. F. Gros18 in about 1888. The inscription reads: ‘Makaties Iron Foundry, Iron Mountain, East of the Spelonken’. To my knowledge, there is only one iron mountain in that position, and that is Loolekop. The structure of
Plate V—One of several iron-smelters' furnaces at a combined habitation and 'factory' site in the Masimimala hills on the farm 'Square'. As a copper smelter was active in a nearby cave, this was rightly a Metal Age site not unlike those observed by Karl Mauch (1868) or Edward Buxton (1869). Iron smelters used three tuyères, and copper smelters a single, but larger, one. The difference is due to the degrees of heat required for the smelting of iron and copper ores.

The clay tuyère, the mouth glazed by heat, is in the possession of the University of Potchefstroom (C.H.E.). The furnace itself was removed for preservation by N. J. van der Merwe. (For comparison, the spade is approximately 27 in or 69 cm.)

Plate VI—A copper-smelter's furnace on the western slope of Maséké hill on the farm 'Wegteek'. The clay tuyère, the mouth glazed by heat, is in the possession of the University of Potchefstroom (C.H.E.). The furnace itself was removed for preservation by N. J. van der Merwe. (For comparison, the spade is approximately 27 in or 69 cm.)

the furnace and the tuyères is typical of the iron furnaces of Phalaborwa, numerous remains of which are still extant (at 'Square', for instance).

Secondly, further evidence that the lerale is native to Phalaborwa was provided by Mr Rüth, a pioneer of the district. The word lerale means 'wire' and refers to copper objects about 18 inches in length (see Plate VII). Some authorities say the lerale was a form of currency, others contend it had sexual significance, and still others argue that it was merely cast in this form for ready conversion to ornaments and the like. Because of their rarity, the marale (the plural form) were thought to have been handled only by royalty, but there is evidence to suggest that they were fairly common at one time, though never plentiful, and that they were used in the barter trade. Mr Rüth told me that he ploughed up four marale near Maseke hill in the 1920s. It was obvious that they had been cast on the spot, which was near one of the copper furnaces I located in 1961 (Plate VI).

CONCLUSION

Although the development of Phalaborwa in the twentieth century has resulted in the loss of many archaeological sites, it has also had its advantages from the scientific point of view. Archaeology has been enriched by the carbon-14 dating of the Loolekop hill—from about 770 A.D. to the end of the nineteenth century—and habitation for the same period has been proved at Kgopolvé hill. In addition, a pottery or ceramics sequence relative to the baPhalaborwa and covering a period of more than a thousand years has been found extant by N. J. van der Merwe and his team of scientists.

Phalaborwa thus represents one of the earliest known Metal Age sites in the Republic of South Africa.

ACKNOWLEDGEMENTS

The copyright for the finds mentioned in this paper and for the photographs reproduced here is vested in the Potchefstroomse Universiteit vir Christelike Onderwys.

REFERENCES

8. KRUIK, J. D. Traditional origins and tribal relationships of the Sotho of the Northern Transvaal. Ibid., p. 321 ff.
Notices

THE FEDERATION OF SOCIETIES OF PROFESSIONAL ENGINEERS

The following letter has been received from the Secretaries of the above Federation.

Ref. EHvdL/MM/27 13/11/1973

TO THE SECRETARIES OF ALL MEMBER AND AFFILIATE SOCIETIES

Dear Sir/Madam,

ENTRIES IN TELEPHONE DIRECTORIES

Heretofore the General Post Office has not always been consistent regarding the use of the titles "Pr. Eng." and "Pr. Ing." or "Eng." behind the names of Professional Engineers in the telephone directories.

In a letter dated 12 September 1973 ref. 3B27/3E1A/73, the Post Master General advised the South African Council for Professional Engineers that appropriate arrangements were being made to include the titles "Pr. Eng." and "Pr. Ing." when requested to do so by Professional Engineers.

It would be appreciated if you could publicise this matter in your Journal.

Yours faithfully,

(Miss) E. H. VAN DER LINDE
for Secretaries

DIE FEDERASIE VAN VERENIGINGS VIR PROFESSIONELE INGENIERS

Die volgende brief is van die Sekretarisse van die bogenoemde Federasie ontvang,

verw. EHvdL/MM/27 13/11/1973

AAN DIE SEKRETARISSE VAN ALLE LID- EN GEAFFILIEERDE VERENIGINGS

Geagte heer/dame,

INSKRYWINGS IN TELEFOON- GIDSE

Tot dusver was die Hoofpos-kantoor nie altyd konsekwent in verband met die gebruik van die titels "Pr. Ing." "Pr. Eng." of "Ing." na die name van Professionele Ingenieurs in die telefoongids nie.

In 'n brief gedateer 12 September 1973, verw. 3B27/3E1A/73 verwittig die Posmeester-Generaal die Suid-Afrikaanse Raad vir Professionele Ingenieurs dat gepaste reëlings getref word om op versoek van Professionele Ingenieurs die betiteling "Pr. Ing." en "Pr. Eng." op te neem.

Dit sal waarder word indien u hierdie daak deur middel van u Joernal sou bekend stel.

Die uwe,

(Mej.) E. H. VAN DER LINDE
namens Sekretarisse

PAPERS OF INTEREST

The following recently published papers may be of interest to members.


