A Junior Associate describes and illustrates material of the Pietersburg Culture from a cave deposit.

The Excavation of Mwulu's Cave, Potgietersrust District.

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INTRODUCTION:

The Northern Transvaal was an important hunting ground, factory and living area for the practitioners of stone cultures. Numerous eroded sites and dongas over wide areas like the Springbok Flats have given considerable insight into the technical procedures and achievements of the Northern Transvaal expression of the Middle Stone Age. From assemblages of implements collected in the Pietersburg District, at Grace Dieu, in the late 1920s, Goodwin first clearly distinguished the Pietersburg Variation (Goodwin and Lowe, 1929). Further material, gleaned from wider areas of the Transvaal, has indicated that we have here a characteristic and widespread Middle Stone Age variation which, it has been suggested recently, should be elevated in status to a distinct Pietersburg Culture (Lowe, 1940).

Until fairly recently certain questions about the Pietersburg have gone unanswered: Was it of long duration or short? Was it a single cultural manifestation, or did it show a range of variation within itself? The answers were necessary in order to view the Pietersburg in proper perspective.

What was required to answer them were sealed cave deposits. The excavation of the Border Cave in the Lembombo Mountains, in Zululand, threw much light on the Pietersburg (Cooke, Malan and Wells, 1945): it was found there to be a cultural expression spread over a long period, showing evidence of a vertical differentiation into earlier cruder phases and later more refined phases.

In the Transvaal sealed cave deposits were lacking until some eleven years ago, when a discovery was made which started a chain of archaeological activities in the Potgietersrust District of the Northern Transvaal. Prof. R. A. Dart (1925) had drawn attention to the importance of this area in a note on bone-breccias. Then, in 1937, Prof. van Riet Lowe discovered the Cave of Hearths in the Makapan Valley, 200 miles north of Johannesburg (Lowe, 1938). This remarkable site contains masses of implements, hearths and fossils in a heavily consolidated breccia. Most striking is the fact that it contains implements typifying two distinct cultural epochs: Chelles-Acheul hand-axes typical of the Earlier Stone Age, and flakes made with the prepared striking-platform technique of the Middle Stone Age. This discovery was followed by the disclosure near by of the Rainbow Cave, where (for the first time in the Transvaal) a known sealed deposit contained Pietersburg implements. This cave remains to be investigated.

Mwulu's Cave lies in the Potgietersrust District, five miles from the Makapan Valley. During July and December, 1945, parties of Medical Science students from the Witwatersrand University collected artefacts and fossils in the Makapan Valley.

Through the goodness of Mr. Brian Maguire we were shown a small cave in the Makapansberg, in which during our first visit we found a few flakes on the surface of the deposit. On subsequent visits during 1946 we recovered further artefacts. The little collection (about 40 in all) was characterised by the occurrence of prepared platforms, enabling us to assign it to the Middle Stone Age. This suggested that excavation might reveal some resemblances to the cultural sequence deduced from the Cave of Hearths. The deposit held promise of a good Pietersburg assemblage and we determined to excavate at the earliest opportunity. After a final reconnaissance late in 1946 four Medical Science students set out in January, 1947, O. Mollett, P. Barkham, A. Allison and the author, together with the late Mr. O. Jones, former technician in the Anatomy Department.

DESCRIPTION OF MWULU'S CAVE

We have called the site Mwulu's Cave after an old Native hermit who is said to have lived there about 70 years ago. On the surface of the deposit were fragments of pottery alleged by Potgietersrust townspeople to have belonged to Mwulu.

The cave is situated on the eastern escarpment of the Makapansberg. It faces north and is well protected by the overhanging scarp. The position commands a view stretching for scores of miles in many directions. Abundant water was dripping from the walls in the recesses of the cave, suggesting that a water supply might have been available in the cave itself.

A four-inch rain on the first day marked the rain-line and the drip-line clearly. Both lines left a large proportion of the deposit dry and, allowing for variation in the force and direction of the wind, the cave would have provided excellent habitation. Its position makes it virtually unassailable and it commands a wide terrain where game must have been abundant.

THE GRID AND TALUS

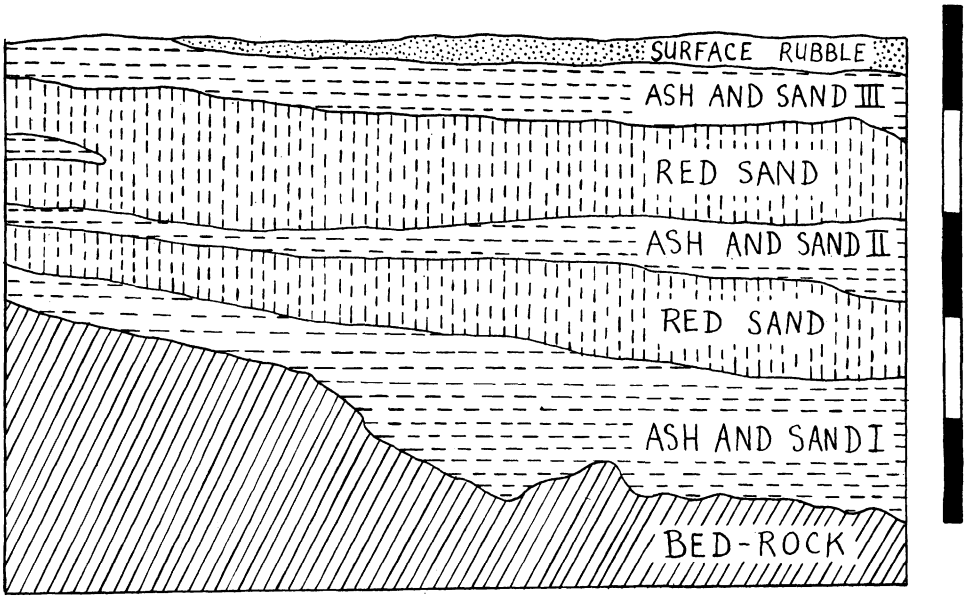
Having seen the cave in its natural setting we turned to the deposit. A grid of one-yard squares was laid out on two base-lines whose positions were permanently marked on the rock walls. In most respects the methods adopted were those outlined by Malan (1944) and by Goodwin in this Society's first Handbook, *Method in Prehistory* (1945). The grid enabled us to record accurately any point in the deposit and in the talus outside the cave.

Where a deposit has been built up in a cave, a talus or sloping platform of spillings usually accumulates outside the cave. It is customary to make a preliminary excavation here to obtain some idea about the contained material. At Mwulu's Cave, however, we departed from this practice because the talus formed a very short platform, ending 12 feet from the mouth of the cave at the lip of a precipice, the beginning of a descent to the flats 3,000 feet below. The talus was studded with rocks fallen from the overhanging cliff-face. It was thickly overgrown with bushes and shrubs, whose roots must have upset its stratigraphy. For these reasons we started excavation in the cave, beyond the line of plants.

THE DEPOSIT

The total surface area of the deposit was more than fifty square yards. We confined our work to one-half of the cave floor, leaving the other intact to provide a witness section. Bed-rock occurred at depths which ranged from 30″ to 57″. The floor was irregular as a large rock projected from the wall. The deposit was damp throughout, particularly towards the back of the cave. The water which gained access by seepage had leeched out almost all bony remains, thus denying us the opportunity of learning the physical structure of the cave-man and the types of animals upon which he had subsisted. We found no interrupted stratigraphy to suggest any burial.

From bed-rock upwards occurred a succession of alternating layers of grey or black ashy material and red sand respectively (Fig. 1). The ashy layers contained



an abundance of stone artefacts, while the red sandy layers were relatively poor. We deduced that at three periods the cave had been intensively occupied; during the intervening periods the cave was not inhabited or was infrequently occupied. The red sand then accumulated as a sterile layer until the ensuing occupation.

THE STONE AGE IN MWULU'S CAVE

MATERIALS

From the earlier to the later levels of occupation there is evidence of a progressively more careful selection of materials, parallel with successive improvements. In the lower levels the coarse-grained material (grey quartzite) predominated and was manifestly unsuitable for secondary trimming. In the upper levels more finely-grained materials were the important elements, e.g., clear and milky quartzes, cherts, indurated shale and, to a lesser extent, felsite and chalcedony. Many of these materials must have been transported; for example, the nearest outcrop of indurated shale is about three miles away.

DESCRIPTION OF SPECIMENS

Technically most of the three thousand artefacts recovered were fairly typical of the Middle Stone Age, showing the characteristic prepared platform and convergent longitudinal flaking. From their general features they could well be assigned to the Pietersburg Culture. There was evidence of a progressive advance in technique. Implements from the deepest level showed an almost complete lack of secondary trimming. Many of them (mostly broad flakes in grey quartzite) had such perfect edges that secondary trimming would have been unnecessary; these pieces we must regard as tools in the archaeological sense (Fig. 2; i, ii). Indeed, many of them show signs of wear along their cutting edges.

The middle level yielded delicate untrimmed flakes (Fig. 2; iv) and a fair proportion of retouched artefacts (Fig. 2; v). It was from this level that a fresh, almost perfect bifaced point was recovered (Fig. 3). Hewn from milky chert, it has been trimmed completely over both faces. The scars of the trimming-flakes are shallow, suggesting pressure-flaking. Both surfaces are covered with an irregular and intricate mosaic of flake-scars. It is conjectural whether some of those on the upper face represent the intersected scars of the primary trimming-flakes or whether they are all secondary. The point is symmetrical in outline and its thickness tapers towards both the point and the butt-end. At the butt-end is a plane surface at an oblique angle to the adjacent trimmed surface. This may be the platform of the initial flake, or it may represent an oblique fracture of a larger flake of which only a part has been utilised. The presence of this bifaced point served as a reminder that the most perfect specimens are not often found in home-sites. A man's first impulse on fashioning a fine lancehead would be to test it in the veld, leaving little but the rejects and waste material in the deposit.

In the upper level a higher proportion of the flakes was secondarily trimmed and many technical refinements emerged. For instance, several points were finely retouched over the entire upper surface (Fig. 4; i, ii, vii). Some show reduction of the butt and bulb of percussion, probably to facilitate hafting (Fig. 4; ii, vii); others show signs of more extensive trimming on the flake-surface, ranging up to the complete bifaced point.

Of the variety of tool-types in the upper level the most characteristic was a delicate triangular point, well trimmed on the upper surface and often possessed of a sharp tip (Fig. 4; iii, iv, vi). About one-quarter have reduced butts and other marks of secondary trimming on their cleavage-surface. One high-backed point in indurated shale has steep and elaborate trimming from its main arris in the mid-line to the edges (Fig. 4; i). There is no bulb of percussion; instead there are slight incomplete flake-scars towards the butt-end of the cleavage face. This suggests that the butt has been completely removed. It is difficult to say whether the butt has been snapped off or systematically reduced.

Several triangular points possess these features of a flat cleavage-face, no bulb of percussion and a few partial flake-scars near the original butt-end (Fig. 4; vi). Accidental breakage of the tool in the deposit is excluded as an explanation because there are definite signs of trimming made after the tip had been removed from the

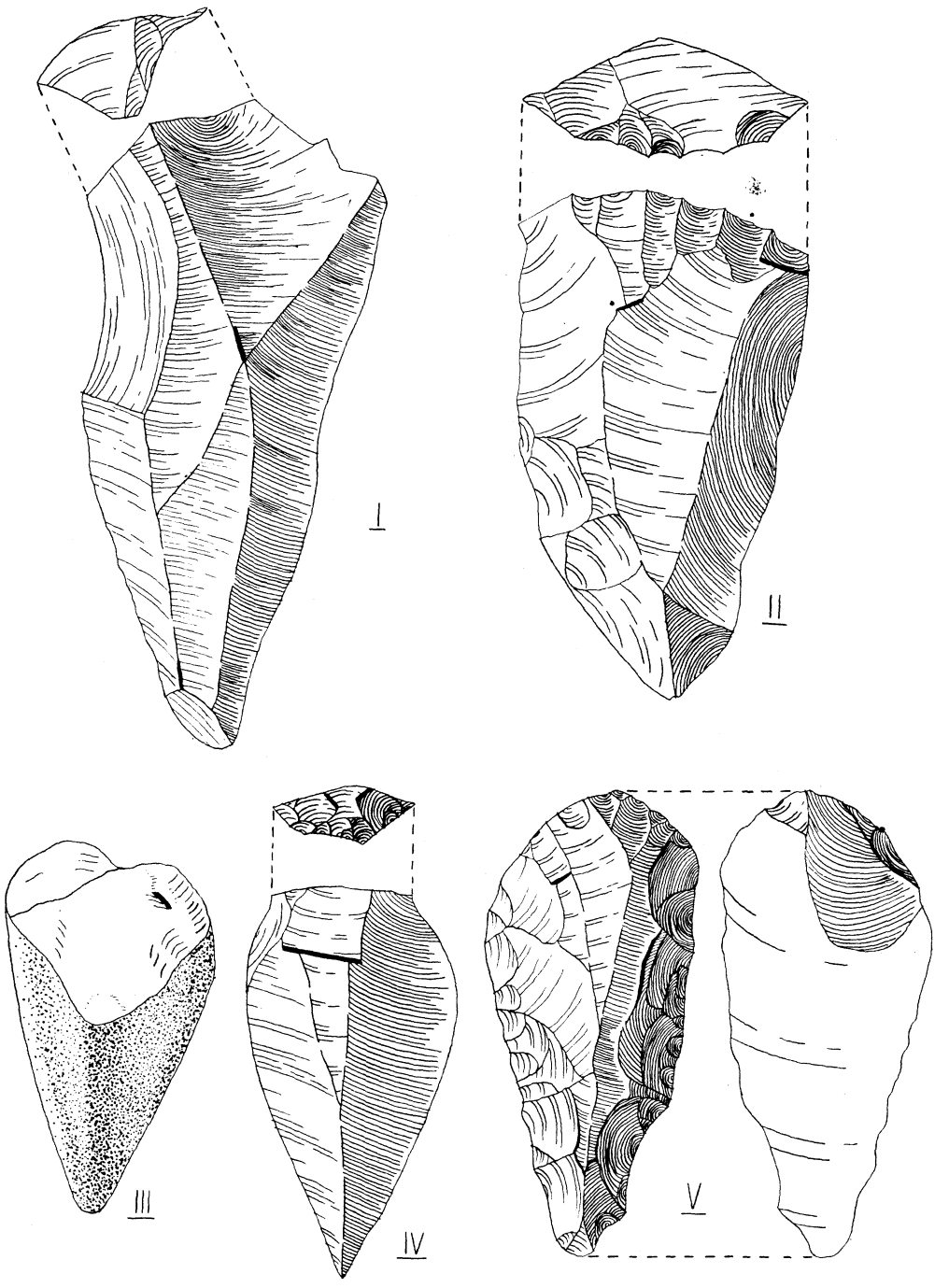


FIGURE 2 (Natural size).

butt. These specimens must for this reason be regarded as complete tools. However, one cannot say whether the original larger flakes were deliberately fractured to remove the butt or whether the thinner portions of fortuitously broken flakes were utilised.

Other tools from the upper level are classifiable as side-scrapers, end-scrapers (Fig. 5; ii), end- and side-scrapers (Fig. 5; iv), and butt-end scrapers (Fig. 5; iii, v). In the latter group four or five flakes have secondary flake-scars at the

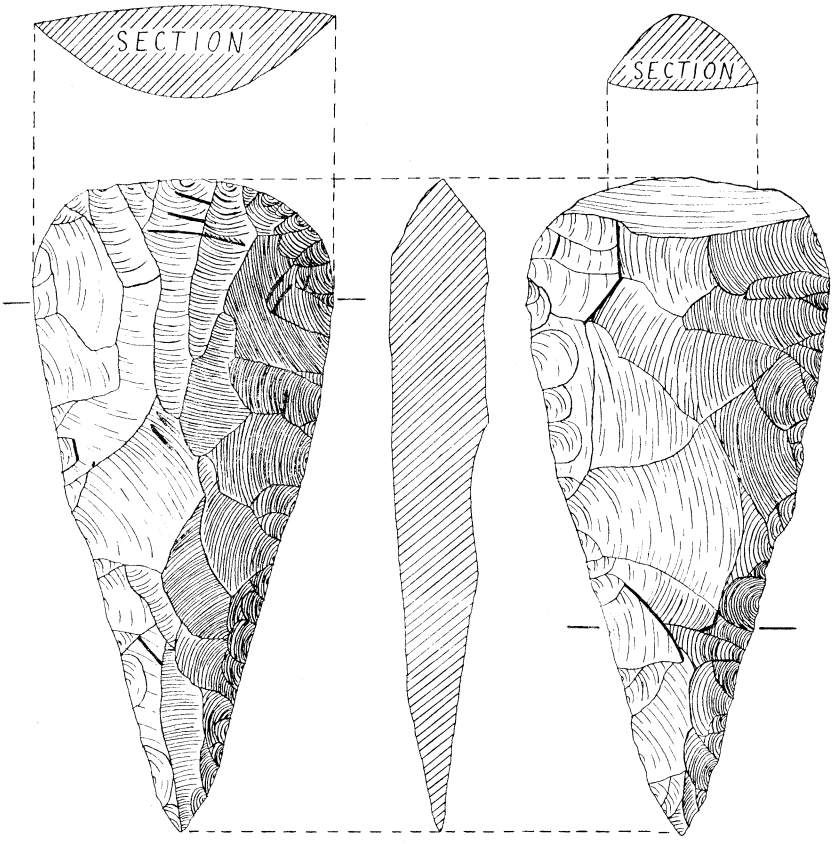


FIGURE 3 (Natural size).

butt-end which have been struck by blows on the flake-surface. This is indicated by the position of the negative bulbs of percussion. One of the side-scrapers is a characteristic serrated scraper with widely-spaced secondary flake-scars (Fig 5; i).

Apart from the bifaced point in the middle level, the upper level yielded one small bifaced point and the tip of another. The more complete specimen (Fig. 4; v) is a thin, delicate spatular point in a fine-grained milky quartz, lacking only its extreme tip. Both surfaces are covered with shallow flake-scars.

From the abundance of tools and debitage recovered the cave appears to have served as a home-and-factory site. It was interesting therefore to note the relative

paucity of cores. This may be attributed to the need for economy of material, dictated by the situation of the cave. The cores would no doubt have been worked out to a very small size and perhaps finally used as tools themselves. No such core-tools were found, however, though several very small cores, some of which had been worked out completely, were recovered. Most of the cores were asymmetrically biconvex with radial trimming.

Both the middle and upper levels contained several artefacts of a type not previously linked with the Middle Stone Age. The first is a large fragment of red quartzitic sandstone, almost round in outline and somewhat flattened. Both the upper and the lower surfaces have been ground, while there are signs that parts of the circumference have been used in pounding processes. This grinder-cum-pounder was found in close association with the bifaced point from the middle level.

From the upper stratum three artefacts show similar features. One is a large fragment of quartz, ground to a smooth surface. The original tool had been fractured and only one portion was recovered. Another is a worn fragment of quartzitic sandstone, ground over the entire surface and bruised by pounding. A third, barely two inches in its longest axis, is an ovoid of pale quartzitic sandstone. The tool has a smoothly-abraded grinding surface, while the ends and parts of the circumference are marked by bruises from pounding.

METAL AND ART

The walls of the cave, consisting of uneven quartzitic protuberances, would have been unsuitable for rock-paintings. In the deposit, however, were found a number of pieces of specularite, a metallic substance which on grinding is suitable for use as a pigment. Several pieces had been rubbed to a smooth surface, while one had been fashioned by rubbing into the shape of a pencil (Fig. 2; iii). This provides strong presumptive evidence that the inhabitants used this colouring substance, probably to adorn their faces, hair and bodies. Prof. R. A. Dart and Prof. G. H. Stanley have noted the use of specularite for body ornamentation by Natives in Portuguese East Africa up to the present day. When ground and wetted with a suitable medium specularite leaves a deep and lasting stain. Professor Stanley suggested to the author that the grinders found in Mwulu's Cave may have been used for preparing this cosmetic material.

DISCUSSION

The finds noted in this paper were made in the first recorded systematic excavation of a sealed cave deposit in the Transvaal. The occurrence of material which typologically and technically comprises a Pietersburg industry has only rarely been reported in a cave deposit. Previously it has been recorded (but not systematically excavated) from only one other cave in the Transvaal, namely, the Rainbow Cave in the Makapan Valley. In addition, a series of phases of the Pietersburg Culture was revealed in the Border Cave in Zululand. Apart from these two sites Pietersburg implements have been recovered in the main from dongas and open eroded areas scattered over large tracts of the Transvaal.

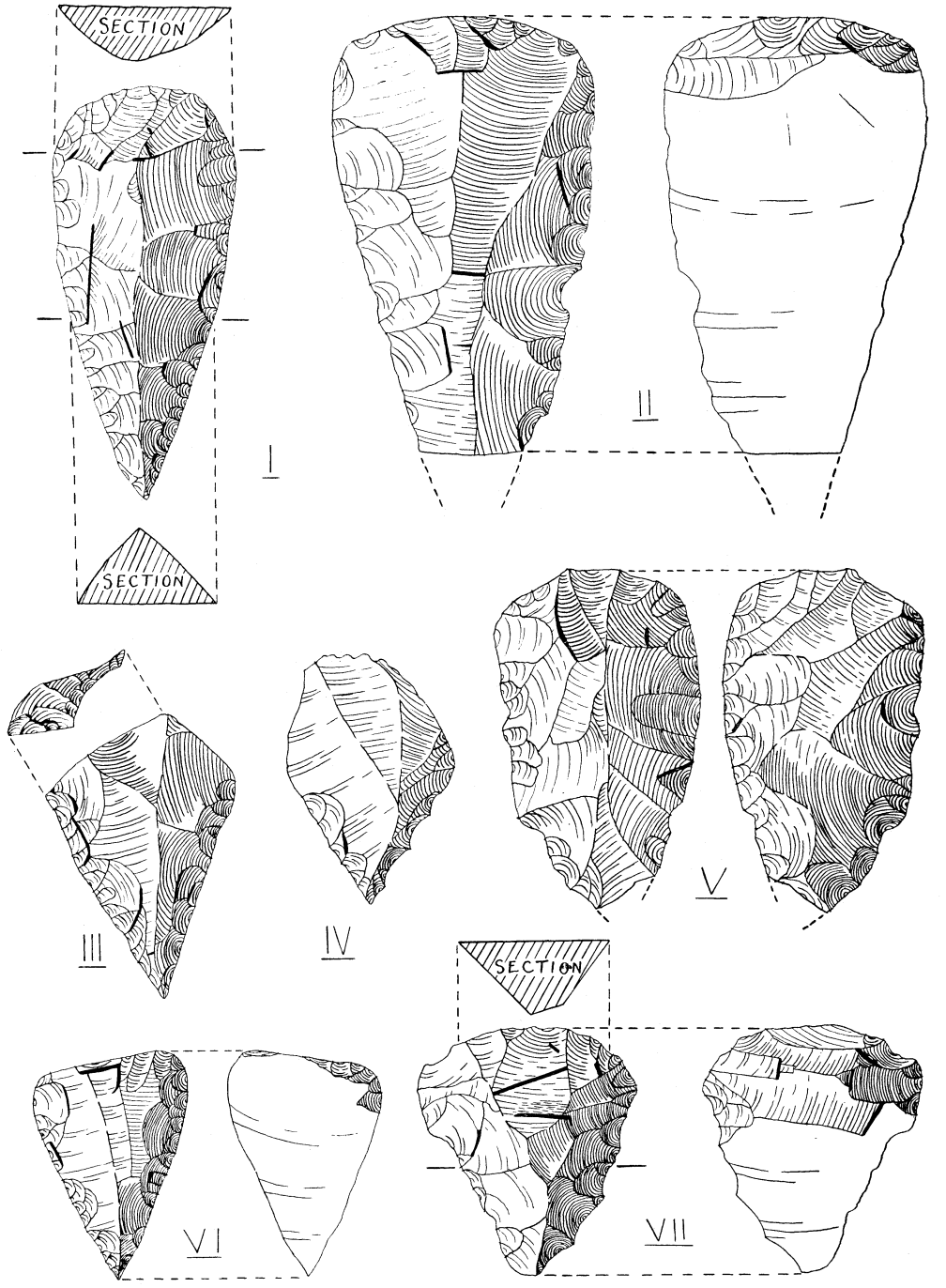


FIGURE 4 (Natural size).

The artefacts recovered from Mwulu's Cave show a definite evolution from more primitive to more refined phases, paralleled by a growing discrimination in the choice of material. The more advanced phases show a high degree of secondary working on the upper surface of flakes, butt and bulb-reduction and further trimming on the flake-surfaces, ranging in degree up to the most elaborate bifaced forms. The inclusion of a pounding and grinding tool in a Pietersburg assemblage is of particular interest, as there has hitherto been no indication of such elements in the Middle Stone Age. Well-rubbed pieces of specularite suggest the artistic practices of the Pietersburg folk, another cultural element which has not up to the present been associated with the Middle Stone Age.

By corroborating the findings in the Border Cave these conclusions establish that the important Transvaal manifestation of the Middle Stone Age (i.e., the Pietersburg) extended over a sufficient period to have shown within itself a definite cultural sequence.

It is important to consider all the features of the environment in which stone age man lived. One evidence of this environment was the red sand. What was its origin? Two possible answers suggest themselves. It may be derived by weathering from the quartzite rocks. Recent work on the great Kalahari Desert suggests the alternative hypothesis that on several occasions in the past the desert has swept eastwards over the Transvaal, as it is now reported to be doing over the Western Free State (Bosazza, etc., 1946). Mwulu's Cave is at an altitude of just under 7,000 feet above sea-level. It is conceivable that it lay within the belt of wind-blown sand, which accumulated in the cave to form the red sterile layers between layers of occupation, or which became mixed with ash during the times when the cave was a human habitation. Microscopical examination of the sand will throw light on its origin, and samples of the layers have been collected.

Evidence of Mwulu's occupation was found directly above the last stone age level of occupation. Between the other periods of occupation red sterile infills occurred; yet none occurred after the last Middle Stone Age occupation before Mwulu entered the cave. It is difficult to interpret this until we know the nature of the red sand. Two possible explanations are that the period elapsing between the end of the Middle Stone Age and the Bantu period was much less than has been imagined previously, or that the climatic conditions in which the red infill occurred changed at the end of the Middle Stone Age. The latter explanation is more likely, as it is known that the end of the Middle Stone Age was marked by distinct changes. These are of four main varieties:—

(1) Well-marked climatic changes occurred, probably towards increasing aridity (Cooke, 1941).

(2) Many of the animals which lived during Middle Stone Age times are extinct, while the Later Stone Age is characterised only by animals belonging to living species (Wells, Cooke and Malan, 1942). This suggests that the extinct forms died out with the change of climate.

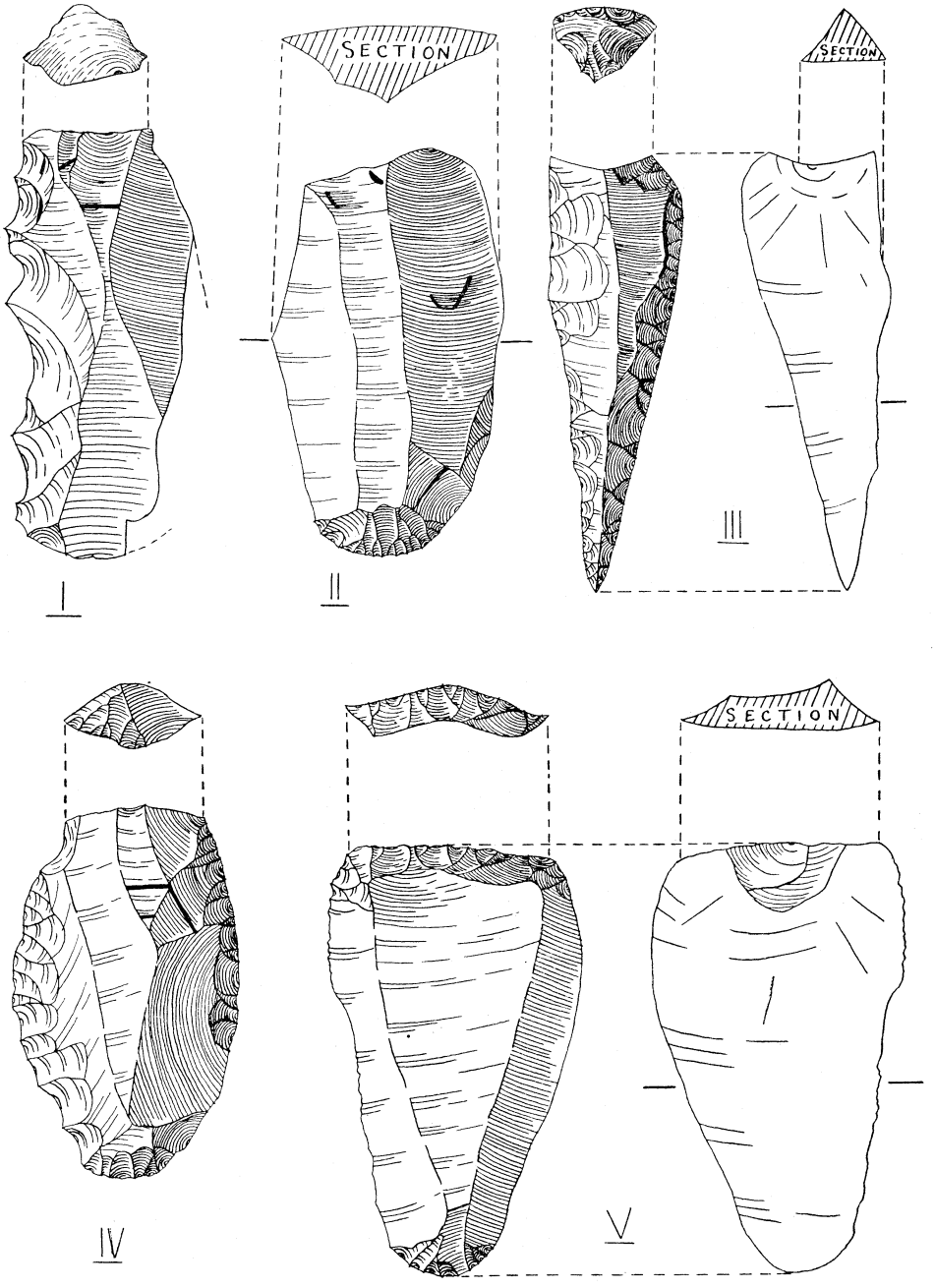


FIGURE 5 (Natural size).

(3) The human forms associated with Later Stone Age deposits differ from those of the Middle Stone Age. The heavy-browed man of Springbok Flats, of Ingwavuma and of Fish Hoek, gave way to Bush-Boskop and Bush people of later times (Dart, 1940).

(4) Finally, the stone culture underwent a revolution in which the characteristic technical features of the Middle Stone Age were lost and new Later Stone Age techniques emerged to dominate this latest phase of the stone age.

Each of these hypotheses points to a change that swept away the old manner of life and introduced a new mode into the caves and valleys where man made his home.

Let us now try to evaluate these changes in relation to Mwulu's Cave. Water action denied us two sources of evidence, human and animal skeletal remains. We were left, therefore, with the geological evidence of the deposit and the evidence from the implements. During the red sand era men who were masters of Middle Stone Age techniques dwelt in the cave. During the subsequent period, comparatively short and recent, Mwulu lived there. The last stone age habitation of the cave thus coincided with the end of the red sand era, and we may assume provisionally that the climatic changes manifested elsewhere terminated those conditions in which red sand accumulated in the cave. The cave was then presumably uninhabited for a long time, during which no more sand was accumulating. Finally Mwulu took up his abode in the cave and a fresh few inches of deposit accumulated, containing potsherds, ash and scorched hearth-stones and bony fragments.

This sequence must be regarded as tentative until a microscopical examination of the red sand has been made.

The cultural sequence, coupled with the geological evidence in the stratified deposit, thus helps to place the Pietersburg in proper perspective.

ACKNOWLEDGMENTS

I wish to pay a warm tribute to Prof. C. van Riet Lowe, Prof. R. A. Dart, Dr. L. H. Wells, Dr. H. B. S. Cooke and Mr. B. D. Malan for the help, co-operation and encouragement they have at all times shown the students of the Witwatersrand University in their archaeological endeavours, particularly the excavation of Mwulu's Cave.

Thanks are due to the Wits. Students' Representative Council and to the Research Department of N.U.S.A.S. for their generous financial assistance.

Finally, I wish to express my gratitude to fellow-members of the expedition, particularly to Mr. O. Mollett for valuable co-operation during the analysis of the recovered material.

BIBLIOGRAPHY

1946 BOSAZZA, V. L., ADIE, R. A., and BRENNER, S. Man and the Great Kalahari Desert. *Journ. Natal Univ. Coll. Sci. Soc.*, V, p. 1.

1941 COOKE, H. B. S. A Preliminary Survey of the Quaternary Period in Southern Africa. *Bur. of Arch.*: *Arch. Ser.*, IV.

1945 COOKE, H. B. S., MALAN, B. D., and WELLS, L. H. Fossil Man in the Lebombo Mountains, South Africa: The Border Cave, Ingwavuma District, Zululand. *Man*, XLV, 3.

1925 DART, R. A. A Note on Makapansgat: A Site of Early Human Occupation. *S. Afr. J. Sci.*, XXII, 454.
1940 DART, R. A. Recent Discoveries Bearing on Human History in Southern Africa. *J. Roy. Anthrop. Inst.*, LXX, 13-27.
1929 GOODWIN, A. J. H. and VAN RIET LOWE, C. The Stone Age Cultures of South Africa. *Ann. S. Afr. Mus.*, XXVII.
1945 GOODWIN, A. J. H. Method in Prehistory. *S. Afr. Arch. Soc. Handbk.*, No. 1.
1938 LOWE, C. VAN RIET. The Makapan Caves: An Archaeological Note. *S. Afr. J. Sci.*, XXXV, 371-381.
1943 LOWE, C. VAN RIET. Further Notes on the Makapan Caves. *S. Afr. J. Sci.*, XL, 289-295.
1944 MALAN, B. D. Excavation Method in South African Prehistoric Caves. *S. Afr. Mus. Assoc. Bul.*, III.
1942 WELLS, L. H., COOKE, H. B. S. and MALAN, B. D. The Associated Fauna and Culture of the Vlakkraal Thermal Springs, O.F.S. *Trans. Roy. Soc. S. Afr.*, XXIX (III), 203-233.

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REVIEWS.

L. S. B. Leakey. **Report on a Visit to the Site of the Eyasi Skull, Part I.**

W. H. Reeve. **Geological Report on the Site, Part II.** *J. East Af. Nat. Hist. Soc.*, June, 1946.

These two papers serve mainly to confirm the original evidence collected in 1936 by Professor Reck and Dr. Kohl-Larsen on Lake Eyasi. Mr. Reeve raises doubts as to the association of certain deposits with the Makalian wet-phase of about 8000 B.C. If the deposit is Makalian, then the Eyasi skull (which does not belong to our own species) belongs to an earlier period. He concludes that "a date somewhere in the Upper Pleistocene is indicated. It is not possible to be more precise than this." Associated fauna supports this broad dating.

A.G.

Goodwin, A. J. H. **South African Prehistory in the War Years.** *Man* (1948), 118, 132, 143.

During the war the studies of many European prehistorians were interrupted and practically everywhere their contacts with other countries ceased. In order to fill this gap so far as Southern Africa is concerned Mr. Goodwin, in a series of three articles, has reviewed 36 books and papers published in the Union and Southern Rhodesia from 1939 to 1946.

At the conclusion of his review of seven years' work Mr. Goodwin reaches the melancholy conclusion: "There is insufficient planning, insufficient guidance and thoughtful co-operation behind prehistory in South Africa."

Readers of this *Bulletin* will not be surprised to hear this depressing story from Mr. Goodwin and, because it is substantially true, may feel somewhat hurt that the unsatisfactory state of their prehistoric studies has been blazoned to Europe through the mouthpiece of the Royal Anthropological Institute.

Yet Mr. Goodwin's triple woe should rather be accepted by us as a threefold challenge: to the mass of amateur archaeologists as a call to redouble their efforts to observe and collect and record; to the professional archaeologists (particularly those receiving Government support) as a charge to encourage and co-ordinate the efforts of their lay helpers; to Universities as an appeal to shoulder the burden of synthesising the facts collected by archaeologists into a coherent and intelligible picture of the life of the past. Time alone will show if the articles reviewed prove to be an inspiration or an indictment.

R.S.