MAPUNGUBWE

ANCIENT BANTU CIVILIZATION ON THE LIMPOPO

Reports on Excavations at Mapungubwe (Northern Transvaal) from February 1933 to June 1935, edited on behalf of the Archaeological Committee of the University of Pretoria

by LEO FOUCHÉ

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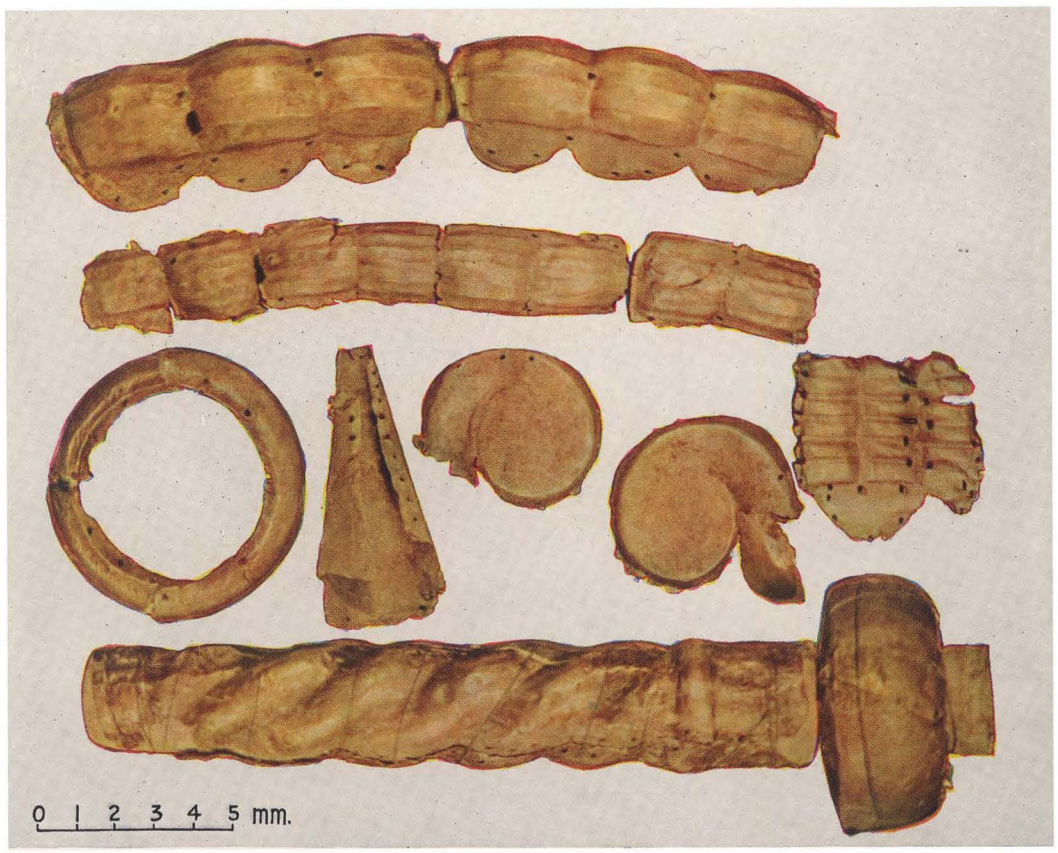
PLATE A

(*a*) Golden Rhinoceros.



(*b*) *Top and second row:* segments of sheathing, probably of wooden pillow or headrest; the two similar convolutions in third row (centre) may have belonged to this.

Third row: circular ornament, with herring-bone pattern, and point; probably parts of sceptre or staff of office similar to that in bottom row; last object in row, nature unknown.

Bottom row: gold sheathing, probably of sceptre, found with burial No. 10. All other objects found with original gold burial.

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PREFACE

The reader, confronted for the first time with the word "Mapungubwe", will want to know how it is pronounced. The pronunciation is *Ma-pu-ngú-bwe*, with the accent on the penultimate syllable. The *u* sound is, in both cases, equivalent to *oo*, as in *food*.

Another point, a matter of terminology, should perhaps also be explained. The term "Bantu", invented originally to denote a linguistic family, has come in current usage to connote not only language and culture but also race. Some physical anthropologists have used it as a physical term—a practice to which our ethnologists object. Therefore, in deference to requests from them, physical anthropologists are now using the term "South African Negro" instead of "Bantu" in their own field.

How necessary some such distinction has become will be realized after reading Part VIII of this volume, where Dr Galloway comes to the conclusion that the obviously "Bantu" culture revealed at Mapungubwe was practised by a race or races not of South African Negro stock.

It is a wholly agreeable duty to express here our thanks to all those who have helped the work at Mapungubwe. Among them the van Graans come first. Mr E. S. J. van Graan and his son, Mr J. C. O. van Graan, not only discovered the site, but through their fine sense of civic duty, helped to preserve it for science. Their action has borne magnificent fruit. May it serve as an example to others!

Without the generous assistance of the Union Government and the City Council of Pretoria the costly investigations at Mapungubwe would have been impossible. The Archaeological Committee of the University of Pretoria gratefully acknowledges this help. Individual donations to the Excavation Fund are acknowledged in Part I (p. 6).

The various contributors to the book record in their reports the assistance received in their investigations from many individuals. In addition the Editor wishes to acknowledge here much kindness and help received at Messina, our railway base. Mr A. B. Emery and the mine officials repeatedly helped us with stores and equipment. Dr and Mrs L. C. Thompson gave us, besides much valuable information, a quantity of comparative material from Southern Rhodesia, which has been very useful in our enquiries. Dr M. Weber gave us a valuable plan of the "Haddon" site. We are especially indebted to Mr and Mrs P. Frankleyne and Mr S. Milstein, who have helped us in so many ways and on so many occasions that we cannot enumerate them all.

Mr C. H. Blaine, Civil Commissioner and Resident Magistrate of Zoutpansberg (now Under-Secretary for Justice), helped us materially by improving the road to Mapungubwe. Information obtained by him led to the discovery of the "treasure pot" of beads, a find of great interest. Mr G. Burnett of "Schroda" gave us much welcome help in the difficult early days. Professor F. J. Tromp and Mr A. J. van Tonder of the University of Pretoria carried out some hard exploring work in the early stages of the investigations. The dry sieving machine invented by Professor Tromp proved most useful in the excavations. We offer thanks, also, to Mr W. R. Thompson of the University of Pretoria for putting us on the track of some interesting Native traditions, and to Mr H. Rissik of Johannesburg who unselfishly devoted a holiday at Mapungubwe to road-making. To the skill and patience of Dr N. J. van Warmelo, of the Department of Native Affairs, we owe the originals of the three colour plates A–C which we reproduce. Mr W. Paff of the Witwatersrand University gave expert assistance with poor negatives. Mr Myles Bourke of Pretoria presented valuable photographs of the earliest finds.

The ladies who devoted so much care to the catering arrangements for the first work parties will always be gratefully remembered by the pioneers.

Professor C. van Riet Lowe has earned our warm thanks for his work on the maps and diagrams. His original tacheometric survey of Mapungubwe has formed the basis for all subsequent work there. The Editor personally is deeply indebted to him for much valuable criticism and advice. His constant and ungrudging help in a hundred and one difficulties has been a boon to the Editor and a benefit to the book.

LEO FOUCHÉ

University of the Witwatersrand,
Johannesburg

23 October 1936

INTRODUCTION

When the Union Government, in June 1933, bought for the nation the farm "Greefswald" on which Mapungubwe is situated, the University of Pretoria, which had acquired the rights of excavation from the previous owner, Mr E. E. Collins, ceded these rights to the Government. In return, the Government entered into an agreement with the University under which the latter body could carry out archaeological investigations at Mapungubwe for a period of five years, with a guarantee of substantial financial support for the work.

The Minister of the Interior, the Hon. J. H. Hofmeyr, under whose charge archaeological investigations fall, set up a special Committee, the Archaeological Committee of the University of Pretoria, which was to be responsible for all the work in connexion with the proposed excavations. It had to raise funds for this purpose, direct operations in the field, arrange for the publication of accounts of the work done and present an annual report and balance sheet to the Minister. The Committee was to consist of representatives of the Government, the University of Pretoria and the public; for the Minister laid down as a principle that, since the investigations at Mapungubwe were deemed to be of national importance, not only the Government and the University were interested but also the public. Therefore some measure of financial support should be expected from the public as well. In this we were not disappointed, as is related elsewhere.

The members of the Committee, as originally constituted, were: Messrs J. de V. Roos and Chas. Maggs, representing the public, Col. Sir Theodore Truter, representing the Pretoria City Council, Messrs C. van Riet Lowe and J. H. de Wet, representing the Government, the Chairman of Council, the Rector *ex officio* and Professors D. E. Malan and L. Fouché, representing the University. As soon as the financial position permitted, the Committee drew up a scheme of systematic work on a large scale, which was planned to begin with the winter of 1934. Mr C. van Riet Lowe, the well-known South African archaeologist, was invited to take charge of the work, but the Public Works Department in which he was then Chief Structural Engineer, could not spare him for so long a period. The disappointment of the Committee was lessened by the consideration that Mr van Riet Lowe was one of its members, so that his great experience was always available to help its decisions.

The Committee then offered the direction of the field work to the Reverend Neville Jones, the Rhodesian archaeologist, who fortunately was able to obtain leave to come. Mr J. F. Schofield of Durban joined him as a volunteer, a piece of rare good fortune for the work, as Mr Schofield's contribution to this volume will show. To these two investigators, and to their field assistant, Mr P. W. van Tonder, the Committee expresses its grateful thanks for the excellent work they did.

To the other specialists who were consulted by them or by the Committee in the course of the investigations, and whose reports we are privileged to publish, we are especially grateful. They undertook these extra tasks in the midst of their own pressing duties and placed all their knowledge and experience at our disposal freely and without charge.[1]

In regard to all these reports, the Editor wishes to make it clear, that not only was no restriction of any kind laid on the writers, but he has printed their reports exactly as he received them.[2] The reader will therefore find some overlapping, possibly some contradictions. These were, however, inevitable if the policy of the Committee was to be carried out. The Committee felt that this volume, a first instalment of reports on work begun as far back as 1933, was, in 1936, not only due, but overdue.

The work at Mapungubwe is still going on. There is work there for many years. But so much had already been done, so much material of high scientific interest recovered, that even if the time was not yet come to draw final conclusions, the time had come to publish these results to the world.

The present reports must therefore be regarded not as final but as *ad interim* or progress reports. They contain many points of great interest and some views of challenging novelty which will probably meet with considerable opposition.

[1] One only, in special circumstances, accepted a fee.

[2] Except for a change of spelling in a single word. *V.* p. 119.

Discussion and (if necessary) opposition is precisely what we wish to elicit. The contributors offer their theories, even their conclusions, not as final, but as matter for argument. The field they work in is very new. South African archaeology is the Cinderella of the family. Bantu ceramics, a vast and fascinating subject, has never before been surveyed with authority. The subject of imported beads, of crucial importance as dating material, calls urgently for further investigation in a field where the workers are all too few.

Physical anthropology in South Africa is only now emerging, and under the lead of men like Broom, Dart, Drennan and others, is making great advances. What startling results it may soon achieve is sufficiently indicated in the stimulating report of Dr Galloway and his team.

In a field so new and full of surprises, so vast in its possibilities, it may be the better policy to publish rather than merely to wait and see. Aunt Sallies have their uses no less than Doubting Thomases.

PART I

THE DISCOVERY; PRELIMINARY WORK, 1933

Mapungubwe is a small, flat-topped, sandstone hill on the farm "Greefswald", No. 615, in the northern Zoutpansberg district. The farm is situated on the south bank of the Limpopo River (which forms the northern boundary of the Transvaal), at the point where three territories meet; for the Shashi River, which divides Bechuanaland from Southern Rhodesia, falls into the Limpopo opposite "Greefswald" (see map I, facing p. 4).

The hill itself lies about a mile south and east of the confluence. From its summit the view embraces all three territories. The Limpopo, indeed, is a purely political barrier, since for ten months out of the twelve it is easy fordable for most of its length. The characteristics of the Natives living in the vicinity show this clearly; they are in language and tradition a mixture of Shona, Venda and Sotho elements—the result of successive migrations from the north and the west.

Our hill is known to these Natives as "Mapungùbwe", —the hill of the jackals. To them it had always been taboo—a place of dread. They would not so much as point at it, and when it was discussed with them they kept their backs turned carefully towards it. To climb it meant certain death. It was sacred to the Great Ones among their ancestors, who had buried secret treasures there.

It was this tradition that led to the discovery of Mapungubwe by Europeans.

The discovery. The region in which it lies was then perhaps the wildest and most desolate in the Transvaal. The farms were for the most part unoccupied, and only used for a few weeks' shooting in the winter. Big game, including lions, swarmed everywhere, and wild elephants from across the Rhodesian border visited "Greefswald" regularly to feed on the Malala palms which abound there.

Mr E. S. J. van Graan, a farmer and prospector, who lived 50 miles away to the south-east, had heard from a very old Native the strange story of a white man gone wild, who had lived a hermit's life in a cave on the banks of the Limpopo. This was a well-known character, Lottering (or Lotrie),[1] who in the last decades of the nineteenth century had established himself in that remote wilderness, half a mile from Mapungubwe Hill. He had apparently climbed the sacred hill and found things there, because he presented to van Graan's informant a big earthenware pot, beautifully made, and quite unlike modern Native ware, which he (Lotrie) had brought down from the hill. Whether Lotrie found any other treasures cannot be established, but the probabilities are against it.

Following up this story, van Graan made enquiries until at last he located the sacred hill. On 31 December 1932, he set out with his son to investigate. On the way they were joined by three other adventurers. Everything had to be done secretly, as the land on which Mapungubwe is situated was private property, and the owner unknown. An old Native, Mowena, had promised to point out the hill, but when the whites appeared, his courage failed. He refused to help them. They would never find the place, nor the secret way up, he declared. And if they did, they would not return alive. Eventually a son of Mowena was persuaded to point out the hill. It proved to be a great mass of sandstone, about 100 ft. high and 350 yards long, with sheer cliff sides, apparently unscaleable, except with the help of ladders and ropes. The Native, who was literally shivering with fright and had to be forcibly detained, at last pointed out the secret stairway to the top. This was a narrow cleft or chimney in the rock, entirely hidden by trees. When a way had been cleared to its foot, it was found that the ancients had cut small holes on opposite sides of the cleft, into which cross-bars could be slotted, like the rungs of a ladder. Since the site had been abandoned, a wild fig-tree had sprung up some way up in the cleft, and had attained to a girth of 4 ft., an indication of the length of time elapsed since the abandonment (pls. i, ii).

On reaching the top, the explorers found breastworks of stone and great boulders balanced on smaller stones, ready to be pushed over on intruders. It was a veritable fortress they had entered.

Scattered all over the top were great quantities of potsherds. A few very large earthenware pots buried up to the neck near the top of the ascent seemed to have served as a water reservoir. A search of the surface on the summit, which proved to be loose sandy soil, brought to light rusted remains of iron tools and some bits of copper wire and glass beads. There had been a cloudburst in this region some weeks before, and this had caused a considerable amount of erosion of the loose surface. In the wash from a slope Mr J. C. O. van

[1] Cf. C. J. MOERSCHELL, *Der Wilde Lotrie* (Würzburg, 1912).

Graan saw a piece of yellow metal plate exposed. When van Graan, Senior, examined this, he pronounced it to be gold. An excited search now started, and soon the members of the party were finding gold beads, bangles and broken bits of thin gold plating. The next day (1 January 1933) the party continued their search, scratching over the loose soil with their knives. They found large pieces of plate gold, some of them shaped. These were the remains of little rhinoceroses which had consisted of thin plate gold tacked by means of little gold tacks on to some core of wood or other substance which had perished. Solid gold tails and ears, beautifully made, had likewise been tacked on to these figures. Presently they came upon the remains of a skeleton, which was dug out carefully; but the skull and most of the bones crumbled to dust on being exposed to the air (pl. iv, 1).

Masses of bangles were found round the arms and legs of the skeleton. Heavy coils of iron bangles round one leg had rusted into a solid mass, in which gold and glass spacing beads could be distinguished. The arms and neck had been surrounded by great numbers of gold wire bangles, of which about 130 were still intact, although the fibre core on which they had been wound had in most cases perished. Under the left arm or, as it seemed to the searchers, on the left hand, a beautiful black bowl, exquisitely made and polished, was found (pl. iv, 2). Where the skull had lain were found pieces of curiously shaped gold plate, the convolutions of which suggest that they had adorned the wooden head rest of the corpse. A bowl of gold plate, which had, like the animals, been riveted to an inner core (of wood?) by golden tacks, was also found, together with a gold plate bangle and a gold circlet and sheath or point, which probably ornamented a staff of office.

Great quantities of gold and glass beads were recovered from around the remains of the skeleton. The total weight of the gold ornaments (including those found later by the University) recovered from this burial amounts to 75 oz.

The discovery reported. The five fossickers had realized the schoolboy's dream—they had found hidden treasure. But they were in a dangerous situation: they were trespassers and in possession of property which the law might regard as stolen. There was much debate as to what to do next.

Eventually the two van Graans were forced to agree to a division of the spoils on the spot. The gold was roughly divided into five equal portions and each took his share.[1]

[1] When the different portions were eventually recovered by the writer, he found the head of a rhinoceros in possession of one, the tail and ears in that of another, the rump in that of a third member of the party. Reconstruction, in consequence, was almost impossible.

This was a most critical moment in the history of Mapungubwe. The site was so remote and lonely that unscrupulous treasure hunters could easily have ransacked it completely and got away with their loot, before anything could have been done to stop them. Thus the tragedy of the Rhodesian sites, referred to below (p. 3), might have been repeated in the Transvaal.

Fortunately, the van Graans were men of education, and young van Graan, when a student at the University of Pretoria, had become interested in the story of Zimbabwe and the problems of ancient Rhodesia. He remembered regrets expressed in lectures on the subject that at Zimbabwe no human remains had as yet been discovered, since such a find might well solve the mystery. Here at Mapungubwe they had found what looked like Zimbabwe gold in conjunction with a human skeleton. He realized the scientific importance of the discovery and resolved to consult his old professor.

Thus it came about that the writer, some weeks later, received from Mr J. C. O. van Graan specimens of the gold plate, bangles and beads found with the skeleton.

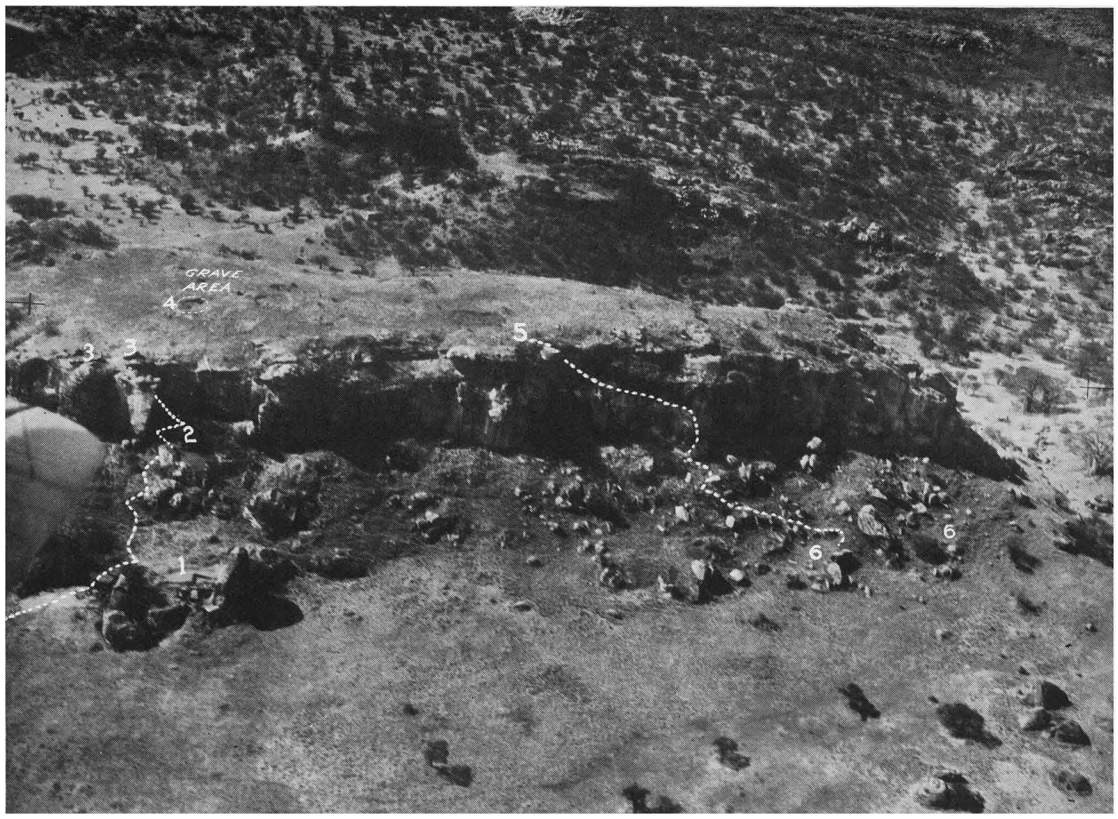
The specimens were at once submitted to Mr R. Pearson, Deputy Master of the Royal Mint at Pretoria, who reported that they were made of gold of great purity, the bangles being 91·23 per cent, the two pieces of plate 93·82 per cent and 91·59 per cent fine gold respectively, while the beads assayed proved to be approximately fine gold.[1]

Mr Pearson's great store of knowledge of the precious metals included first-hand acquaintance with gold found at Zimbabwe, and he did not hesitate to express the view that there were great resemblances between our specimens and gold objects found at Zimbabwe.

The University of Pretoria takes action. Here was a discovery of great potential importance. It was necessary that every effort should be made to recover all the contents of the rifled tomb before they were lost to science. With the cordial co-operation of the University of Pretoria, the writer was able to organize an expedition, in order to recover the treasures already scattered among the five discoverers and to examine the site and its environs.

The legal problems arising out of the question of treasure trove and ownership were very obscure. These were immediately investigated by Advocates A. A. Roberts and E. C. Niemeyer, while search was also made for the owner of the farm on which Mapungubwe is situated.

[1] Mr Pearson took the greatest personal interest in the discovery and has ever since placed all the resources of his great establishment at our disposal. The Committee owes him a great debt of gratitude for his valuable and unwearied services in assaying and valuing the various finds of gold.

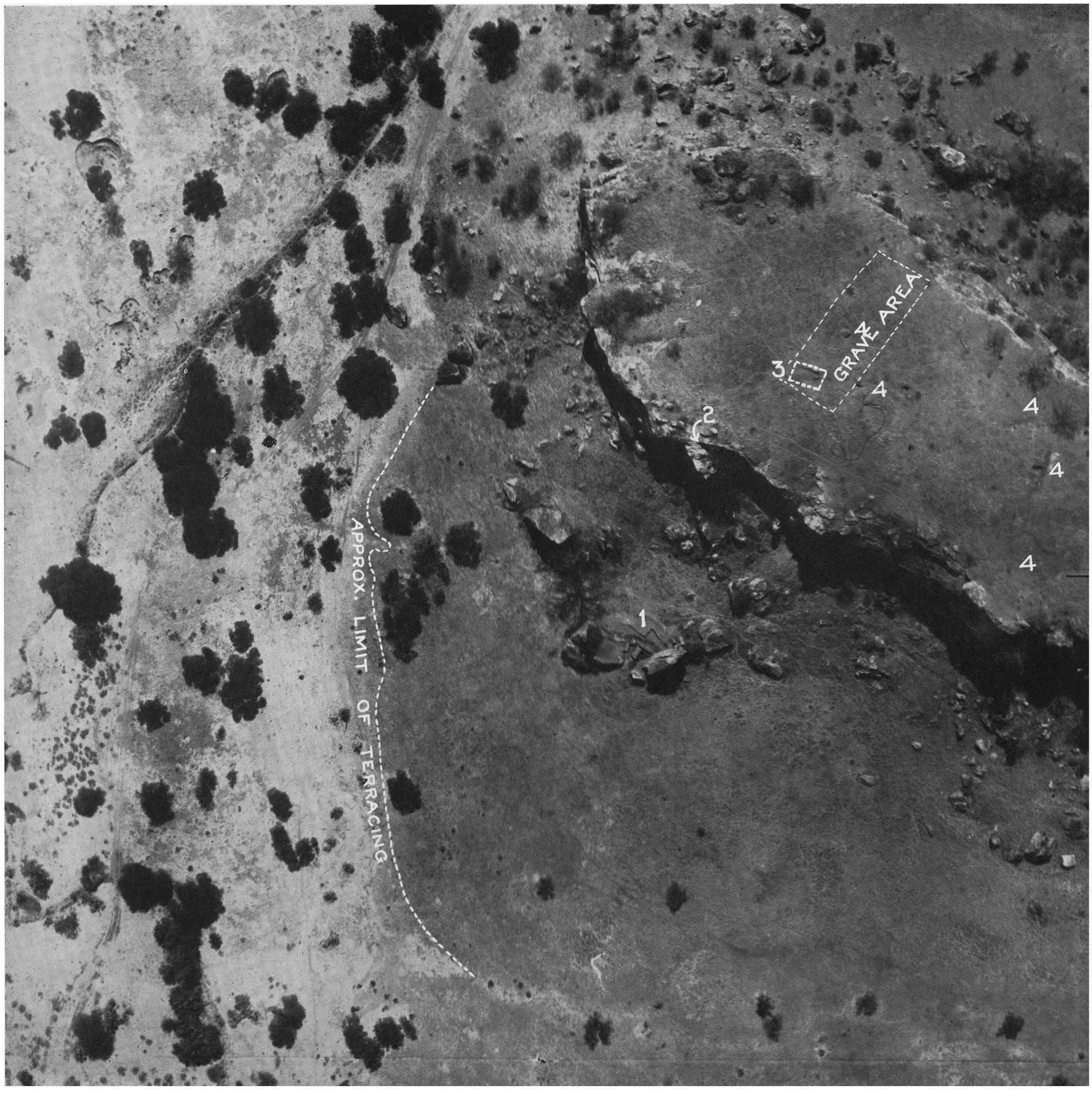


1. Mapungubwe; oblique air view from the south.

Showing: 1. Excavations T.B. 1, July, 1933, at base of hill.
2. Western Ascent.
3. Defensive walling at top of Ascent.
4. Site of original gold discovery.
5. Mahobe Ascent.
6. Mahobe Site.

2. Oblique air view from the north. Showing Bambandyanalo in middle distance.

PLATE II



Mapungubwe; vertical view of north-west half.

Showing: 1. T.B. 1 Excavations (Fouché), July, 1933.
2. Western (Chimney) Ascent.
3. Site of original gold discovery.
4. 1933 (Easter) Trial Trenches.

Police Headquarters were approached for authority to deal with the possessors of the treasure trove, should the necessity arise. The Chief Commissioner, Lieut.-Col. I. P. de Villiers, was most sympathetic and immediately placed at our disposal Sub-Inspector G. Kruger, C.I.D., who accompanied the expedition.

The party consisted of Professor D. E. Malan, of the Department of Zoology, University of Pretoria, Dr L. J. Krige, of the Government Geological Survey, Mr E. V. Adams, the Pretoria solicitor, Mr T. Bowman, of the African Theatres, and the writer.

The journey through the Mopani bush at that season of the year (February) was no easy undertaking. The 50 miles of bush track between the railway at Mopani Station and the farm "Greefswald" took seven hours; and of the four motor cars, one had to be abandoned and another was saved from a similar fate only by the extraordinary skill of Mr Bowman as an emergency engineer.

The discoverers were traced and persuaded to hand over all their finds at a valuation and further to make over their discoverers' rights to the University. The tact displayed in these delicate negotiations by Mr E. V. Adams places the University and the scientific world under a deep obligation to him. Sub-Inspector Kruger was not required to intervene officially; his presence and moral authority sufficed.

The site was next examined and the statements of the discoverers verified in all details. The grave yielded more gold of similar nature to that found previously, and also fragments of human bones. A hasty reconnaissance of the surrounding country was carried out and the question of routes and a water supply investigated.

Geological features of Mapungubwe. Dr L. J. Krige drew up a report on the geological features of Mapungubwe, from which I quote the following:

> The farm, "Greefswald", is situated in the central portion of a narrow strip of Bushveld sandstone, which extends for 50 miles along the Limpopo River in the extreme north of the Transvaal. In this locality the sandstone has suffered considerable erosion and now forms rocky hills and ridges, separated by sand-covered valleys.
>
> The Bushveld sandstone is the Transvaal equivalent of the cave sandstone, the youngest sedimentary rock belonging to the Karroo System. It is a fine-grained and very thick-bedded freestone with a light colour, usually white, light grey, pink, cream or light brown. As in Basutoland and the surrounding areas, so here the sandstone cliffs are often somewhat hollowed out at the base. This phenomenon has given rise to the name "Cave Sandstone" and the even more appropriate Afrikaans term "Holkrans Sandsteen".
>
> Mapungubwe Kop stands in the middle of a sandy basin, about half a mile across and surrounded by rocky ridges and hills up to about 200 ft. high. Unlike all the surrounding hills, which are rocky and tree-clad, its surface consists of sandy soil, covered with grass, and almost entirely devoid of trees.
>
> In plan the hill has an elongated shape, with a broad blunt end pointing west-north-west and a narrow end directed east-south-east. From the blunt end it slopes gently upwards till near the narrow end. The summit is 200 ft. above the level of the surrounding valleys....
>
> The hill can now only be ascended at one place, up a cleft on the south side near the western end. Here the cliff is about 80 ft. high. The cleft is often not much more than a foot wide. There are shallow holes in the rock just above the path, on both sides of it, and opposite each other. They seemed to have served for holding short lengths of wood which were laid across the path and used as steps. There was formerly apparently also a path leading up the sloping face of the rock at the western end of the hill. Numerous holes in the rock seem to have served for holding wooden poles to assist people going up or down. Even with the help of such supports it must have been a difficult and dangerous path.
>
> Above each of the two paths there is a short wall, about 3 ft. high, built of undressed stone, roughly packed. These walls were doubtless built for defence, and their stones, as well as others lying in heaps, seem to have been kept ready for the purpose of throwing down on to any enemy attempting to ascend.
>
> A characteristic feature is the presence of artificial holes drilled in the rock wherever flat surfaces are exposed on top of the hill. Some of these holes are situated close to the edge of the precipice. They occur singly or in groups or rows, containing various numbers up to five or six. They are conical or bottle-shaped, the apex of the cone pointing vertically downwards. At the surface the diameter of the hole is usually about 5 or 6 in. while the depth varies greatly. The deepest hole has a surface diameter of 6 in. and a depth of no less than 22 in. The upper part of this hole is cylindrical, while the lower part tapers to a narrow end. Some holes are only 2 or 3 in. deep and had probably not been finished.
>
> It is not clear what purpose these holes served (see below, p. 7). The object of those at the eastern end of the koppie, beside the supposed path, could only have been for fixing supports of some kind, and the path is impassable without them. The majority of the other holes are not sufficiently near the edge of the precipice to have been necessary for fixing poles or railings, although some may have been used in this way.

Through the kind co-operation of the police, adequate protection of the site was secured. This was urgently required, since the discovery of the gold ornaments had produced a fever of excitement in the surrounding country and sent hundreds of treasure hunters into the field. Some of these might easily have done irreparable damage.

When the various finds had been recovered from the original discoverers and were once more brought together, it was possible for the first time to examine them thoroughly and to estimate their importance.

Importance of the finds. The scientific value of these finds was immediately obvious. No wrought gold objects had been found hitherto in South Africa, outside Southern Rhodesia, where hundreds of ancient ruins had been dug over and ransacked by greedy treasure seekers in the early days. In 1895 an "Ancient Ruins Company" had been floated in Rhodesia for this express

purpose.[1] How many ancient sites of archaeological value were thus ruined and their scientific evidence ruthlessly destroyed will never be known. In 1900, their activities were cut short by Rhodes. "Tradition relates", says Schofield, "that shortly before this, Rhodes came across a number of these gentry busily engaged on the Zimbabwe Ruins, with the avowed intention of putting all that remained of the 'Temple' through the mill! As a result, all the ruins were taken over by the Administration, and an Ancient Ruins Ordinance was passed by the Legislative Council."[2]

It may be confidently asserted that much of (if not all) the uncertainty which still exists with regard to the identity of the ancient gold workers of Rhodesia could have been dispelled long ago, if so much evidence had not been destroyed by these fossickers.[3] The Mapungubwe burial appeared to resemble the Rhodesian burials, as described by Hall and Neal, so closely, that strong hopes arose that a comparison might yield valuable data and throw light on the vexed question of the ancient civilization of Rhodesia.

Fortunately, also, the Transvaal discovery was a sealed site. Besides Lotrie and the van Graans, only two other parties of Europeans are known to have reached the summit of Mapungubwe in recent times. Some prospectors climbed the hill in May 1929, and although they removed some valuable pottery, they did no digging or other damage.[4] We found only one sign of recent disturbance on the hill: a stone circle (one of many that appear to have served as foundations for grain-bins) had been excavated to a depth of 4 ft. This may have been the work of Frobenius, who was in the neighbourhood in 1929 and is said to have been on Mapungubwe as well.

It would therefore be possible to examine the site scientifically for all possible sources of information.

Furthermore, its geographical situation (as already explained) made Mapungubwe a key position. It stood square in the track of successive waves of immigration into the northern Transvaal from north and west. The surrounding Natives showed signs of a racial mixture of clearly marked Shona, Venda and Sotho elements. Mapungubwe might therefore yield definite information of the courses of all these migrations.

And, most fascinating possibility of all, Mapungubwe might help to solve the riddle of Zimbabwe.

Ancient ruins and ancient mines. The hundreds of ancient ruins scattered through Southern Rhodesia and their connexion with the equally large number of ancient mine workings in the same area have long tantalized our archaeologists, demanding, as they do, an explanation which as yet is not forthcoming.

Dr P. A. Wagner, the brilliant young geologist and mining engineer, whose untimely death in 1929 is still mourned by a large circle of friends and admirers, had for many years studied this question of the relation between the ancient ruins and the ancient mines. He had formed the opinion that the problem of the ancient civilization of Rhodesia was not to be solved by sporadic diggings in particular ruins, but rather by tackling the big question: "Who worked the ancient mines?" After hearing Miss G. Caton-Thompson lecture on her (then) recent excavations at Zimbabwe,[1] he declared to the writer that, much as he respected her work, she had only touched the fringes of the problem, since she left aside the essential question of the ancient mines and the ancient miners.

He was compiling a map, on which the mysterious nexus of ancient ruins and ancient mines is vividly displayed, and was working at the problem from this point of view when he was cut off in his prime.

Wagner did not live to publish his map which would surely have become a significant signpost for future investigations. We are privileged to publish it here for the first time.[2]

It shows the sites of the more important ancient ruins and ancient mines, as known in 1929, and includes those then known in the northern Transvaal.

It will be seen that his southern boundary for ancient ruins includes (almost prophetically) Mapungubwe, which was not to be discovered until four years later.

Wagner's map exhibits, more clearly than any words can do, the relation of Mapungubwe to the ancient mining civilization, which flourished on both sides of the Limpopo in the distant past.

Excavation rights acquired. It was imperative to preserve the site for science and to acquire the rights to excavate it. The University of Pretoria with commendable promptitude proceeded to obtain these rights, not without considerable difficulty, as the financial burden was serious.

The owner of the farm, Mr E. E. Collins, of Johannesburg, and the owners of the mineral rights, the Transvaal Exploring, Land and Mineral Company, Ltd., with fine public spirit, were immediately willing to co-operate. The Company readily undertook to prevent any prospecting for minerals so long as scientific work was being carried on, while Mr Collins agreed to cede to the University the right to excavate.

[1] Cf. Hall and Neal, *The Ancient Ruins of Rhodesia* (2nd ed.), p. 91 and Schofield, in *Man*, quoted below.
[2] *Man*, 1935, No. 22 (Feb.).
[3] Cf. Hall and Neal, *op. cit.* pp. 232, 248 and *passim*.
[4] According to an affidavit by Mr R. G. Rorke, a member of the party.

[1] At Johannesburg, before the British Association, in 1929.
[2] By kind permission of Mrs I. M. Wagner.

—MAP I.—

Showing Some of the More Important

— PRE-EUROPEAN MINE WORKINGS —

— OF —

— SOUTHERN AFRICA —

— by —

— Percy A. Wagner —

— 1929 —

and approximate extent of

ANCIENT RUINS

— by —

Percy A. Wagner in 1929

WITH ADDITIONS BY —

C. van Riet Lowe in 1936.

100 0 100 200 300 400

Scale of Miles

BELGIAN CONGO.

UNCERTAIN

NORTHERN RHODESIA.

Lake Nyassa

River

Zambesi

SOUTHERN RHODESIA.

EAST AFRICA

UNCERTAIN

BULAWAYO

ZIMBABWE

BEIRA

SOFALA

Shashi River

Mapungubwe

VERDUN

DZATA

Limpopo River

BRODIE HILL

TRANSVAAL

ROODBERG

PRETORIA

JOHANNESBURG.

Limpopo River

PORTUGUESE

LOURENÇO MARQUES.

SWAZI-LAND.

SOUTH WEST AFRICA.

BECHUANALAND PROTECTORATE.

ATLANTIC OCEAN

Vaal River

ORANGE FREE STATE.

NATAL.

BASUTO LAND.

Orange River

DURBAN.

INDIAN OCEAN

CAPE OF GOOD HOPE.

EAST LONDON.

CAPETOWN.

PORT ELIZABETH.

T N

EXPLANATION.

Gold ..... •

Copper ..... ⊕

Iron ..... ○

Tin x

Approximate Limit of Ancient Ruins (Wagner) 1929 - - - -

Approximate Limit of Ancient Ruins (Extensions) 1936 —·—·

Approximate Limit of Undoubted Ancient Mine Workings ——

For Details of Sites referred to in Text, see Map II (page 11).

Easter visit to site. Although the University had not yet obtained any definite undertaking from the Government that the necessary financial support would be given, the University Council had assumed the responsibility of heavy initial expenses in obtaining the right to excavate. It had also bought a lorry, without which no work party could reach the site or maintain itself there.

At Easter, 1933, a party of five went to Mapungubwe. Professor D. E. Malan, and Mr D. Malan, of the Department of Zoology, took up the lorry with supplies and equipment. Professor F. J. Tromp, who was to work a dry sieving machine of his own invention, and Mr C. van Riet Lowe, who was kindly seconded by the Public Works Department, and was to serve as archaeologist and engineer, went up with the writer in a hired motor car. Some preliminary roadmaking had been done by Mr E. S. J. van Graan, so that the party could get to within a quarter of a mile of the hill.

We arrived on 13 April, and determined to camp on top of the hill, owing to the prevalence of malaria. As there were no Natives available, the writer's four companions had a terrible task in getting the tents, camp equipment and stores hoisted 100 ft. to the top of the hill (pl. iv, 3). Water had to be brought from a tiny spring some distance away, which yielded only one gallon in four minutes. The next morning (14th) Native labourers began to turn up in sufficient numbers, so that camp was soon made.

A scheme of trial pits and trenches was decided upon and the same day the excavations were started. The spot where the skeleton and gold ornaments had been found was to be excavated to rock bottom, all materials to be sifted twice. This site, "No. 1", was accordingly excavated over an area 12 by 20 ft., and all soil sifted once with coarse sieves (pl. iv, 4, 5). This yielded a quantity of gold plate, including a scroll like the two already in our possession, and other fragments of gold plate which looked like missing parts of the rhinoceroses. On the second sifting with very fine sieves, numbers of tiny gold beads together with great quantities of glass beads were found. The recovery of these tiny beads took so much time that we decided to leave the concentrates over for later sifting, when permanent work would have begun. About 4 or 5 cu. yards were left to be dealt with in future.

Professor Tromp's "dry baby" was most successful and we were convinced that without it large-scale sieving would prove impossible.

Mr van Riet Lowe meanwhile had carried out a complete tacheometric survey of the summit with 12 in. contours, which has served as a basis for all the work done since.

On the 21st the party had to strike camp and return to Pretoria. The trial pits and trenches dug during these few days are shown on pls. 1 and 2 (pp. 2, 3).

The following is quoted from Mr van Riet Lowe's *Notes on the Archaeology of Mapungubwe*, made during this visit:

> Investigations into the archaeological potentialities of Mapungubwe show that both the hill site and its surroundings are extremely rich in early human remains. The archaeological richness of the area is perhaps best brought out by the following observations:
>
> 1. The well-nigh inaccessible summit of the main site—on Mapungubwe proper—covers approximately 15,000 sq. yards and includes at least 10,000 tons of soil[1] most of which has every appearance of having been artificially transported from the surrounding country. The great labour involved in this artificial transportation and raising of material alone stresses the significance and value of the hill site to those who once possessed and occupied it.
>
> 2. With the passage of time great masses of the material have been washed from the summit and deposited in the talus round the base of the cliffs, so that what is left on the hill represents only a portion of what was originally there. Most of this loss of material was due to the limited engineering skill of those who built up this great accumulation in that their retaining walls were poorly constructed and collapsed under prolonged strain.
>
> 3. Remains of an apparently homogeneous culture abound throughout this great accumulation—both on the hill and in the talus surrounding it. A number of trial trenches and pits yielded rich and similar results. All the material examined is literally impregnated with the remains of human handiwork. Apart from the ornaments recovered (mainly copper bangles, gold plate and tacks, and beads of gold, glass and ostrich eggshell) many flagged-stone and "cemented" platforms, hearths and retaining walls were revealed in the excavations undertaken. Great quantities of potsherds and occasional pots (both decorated and plain) and bones were found; also many mullers and querns, a few phalli, fired clay "whorls", iron points and slag. When it is realized that all this resulted from just over a week's work in the nature of preliminary investigations in trial trenches and pits spread over the four corners and centre of the hill, the great wealth and archaeological potentialities of the site will be more fully appreciated. The work of reconstruction will be laborious and tedious, but I have every confidence in success if this work is undertaken before the many valuable "sealed" sites are disturbed, and, in the interests of archaeological enquiry, I would urge that this work be put in hand as early as possible....

[1] This figure is arrived at as follows: the length of the main accumulation is 300 yards; the average width 40 yards. This gives an area of 12,000 sq. yards of material on the summit. At a conservative estimate (based on trial holes) the average depth of soil, etc., is 30 in. The volume, therefore is equal to ($12{,}000 \times \frac{30}{36}$) or 10,000 cu. yards. The weight of the material is nowhere less than 100 lb. per cu. ft. so that the weight of the entire mass is equal to ($10{,}000 \times 27 \times \frac{100}{2000}$) or 13,500 short tons. The 10,000 tons quoted above is therefore a very conservative estimate. [This estimate was later found to be too conservative, as excavations revealed a depth of soil considerably greater than assumed here. Professor van Riet Lowe now considers that his estimate of 10,000 tons should be doubled. Ed.]

In his own report, covering all the activities of the party, the writer made various recommendations, dealing with the necessity of securing an adequate water supply, roadmaking, etc., and added:

> It is with real pleasure that I record my deep appreciation of the services of my companions. All four worked incessantly and cheerfully, in spite of heat, dirt and dust.

Government support obtained. This reconnaissance had revealed the magnitude of the task awaiting us. Many thousands of tons of soil would have to be dug up and sifted before Mapungubwe would yield its secrets. This would mean an outlay of thousands of pounds. The University could not assume this financial burden unaided; it had to look to the Government for help.

The discovery, which had been very kindly received by the press, had also been brought to the notice of the Government. The Prime Minister, General J. B. M. Hertzog, after viewing some of the finds, had declared the undertaking "a matter of national importance" while General Smuts, the leader of the Opposition, had from the first shown the keenest interest in the discoveries.

The University therefore rightly hoped for assistance from the Government. But a general election was due and a political crisis—the Fusion Movement—intervened. It was not until the Government had been reconstructed that anything definite could be done. In this way much precious time was lost.

Eventually, in June 1933, the new Government decided to buy the farm "Greefswald" outright. This was done and the rights acquired by the University of Pretoria were ceded to the Government. In return, the University was given the right to excavate for a period of five years.

Further, the Government agreed to provide funds for the undertaking on the basis of £2 for every £1 raised for the purpose by the University, with a minimum contribution of £500 a year.

The financial support would come through the Department of the Interior. The Minister, the Hon. J. H. Hofmeyr, had been from the first a good friend and warm supporter of the undertaking. He constituted a special Committee, the Archaeological Committee of the University of Pretoria, on which the Government, the public and the University were to be represented. This Committee would be in charge of the whole enterprise. It had to obtain funds, direct all operations in the field, prepare publications and present an annual report to the Minister.

The Committee got to work at once and found generous support for the undertaking among private individuals as well as public bodies. The City Council of Pretoria gave £300 per annum, while private citizens, like Mr J. de V. Roos and Mr Charles Maggs of Pretoria, and Mr F. R. Paver of Johannesburg, and others also gave generous contributions to the Excavation Fund.

It was thus possible at the end of June 1933 to make plans for systematic work at Mapungubwe.

Systematic operations planned. The season was then so far advanced that it was only possible to undertake the preliminary work which was indispensable before operations on a large scale could begin. The site was in a most inaccessible spot, 50 miles from the railway. The roads were mere bush tracks. Foot-and-mouth disease was raging, making animal transport impossible, while the cloudburst of the previous summer, which had revealed the treasures, had at the same time destroyed the rudimentary roads and made them practically impassable for motor transport. A programme of roadmaking, a water supply and preliminary excavations was therefore determined upon.

Mr C. van Riet Lowe (now Professor C. van Riet Lowe) was invited to take charge of the work of excavation, but could not be spared from his own urgent work in the Public Works Department. Mr Neville Jones, of Hope Fountain, Southern Rhodesia, was then approached, but he also could not come at such short notice.

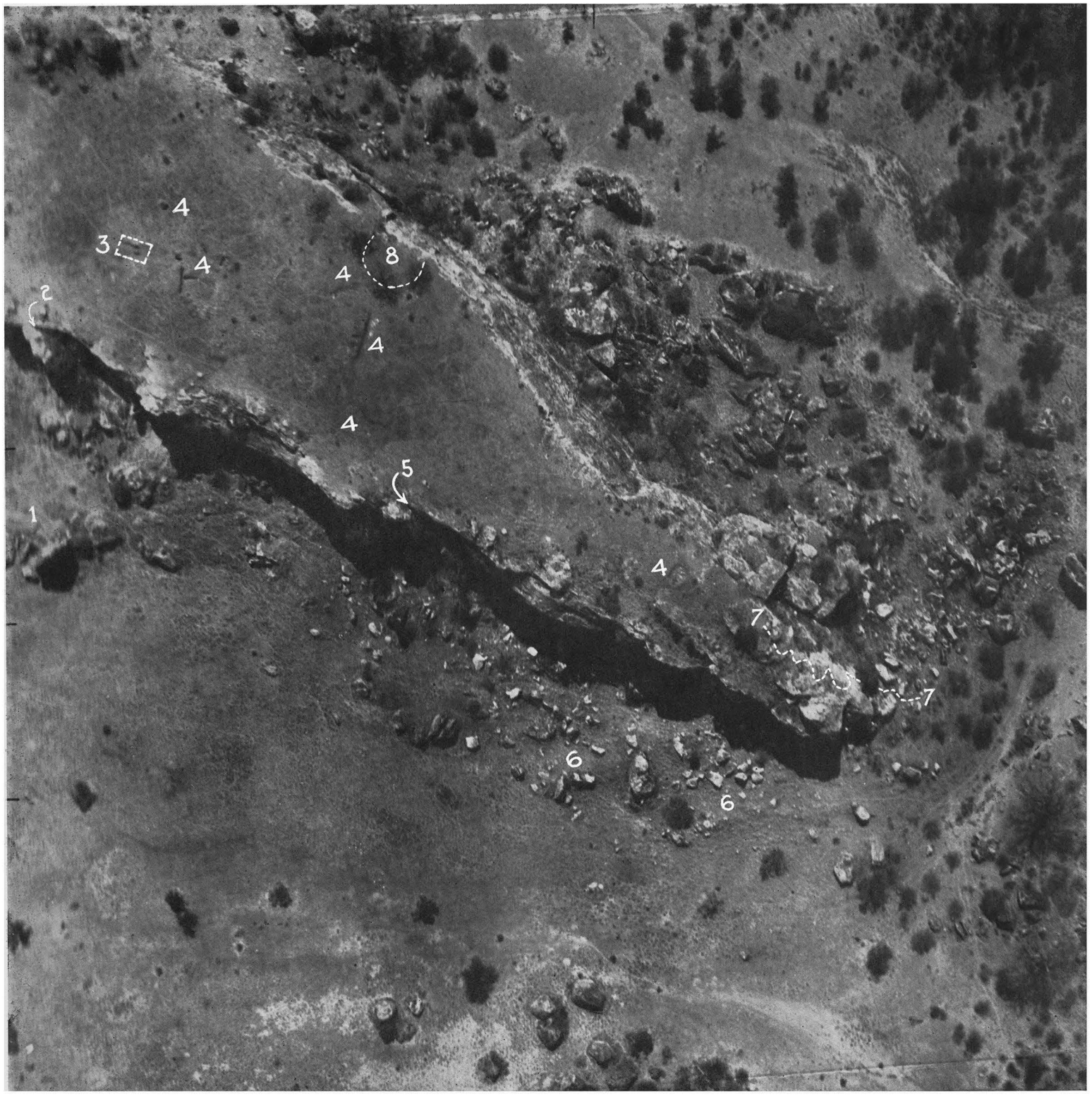
Thus it fell to the writer, who was wholly without experience in practical archaeology, to act as stopgap and take the work party to Mapungubwe at the end of June 1933.

The leader's lack of experience was amply made up for by the energy and enthusiasm of his band of assistants, all volunteers and all eager to tackle any task, no matter how hard or thankless. Advocate A. A. Roberts and Mr P. U. Rissik, of Pretoria, came for a fortnight and took the lead in all the rough work of roadmaking, digging, etc., while they also carried out some very useful archaeological prospecting in the environs of Mapungubwe.

Three University students, Messrs Quass, Bergsma and du Preez, came for the whole period. They attacked every job with gusto and seemed to enjoy their working days on Mapungubwe as much as their Sundays amongst the crocodiles in the Limpopo.

Details of July 1933 excavations. The greater part of the month spent on the site was taken up with roadmaking and the provision of a water supply. When this had been done, only twelve days remained for excavation. The following extracts from the writer's report will indicate what was done:

> The summit of Mapungubwe having been prospected at Easter, I determined to examine the slopes and the talus this time.
>
> (*a*) A single test pit had been dug in the talus at Easter and this had proved very rich in finds. Twelve more pits were now

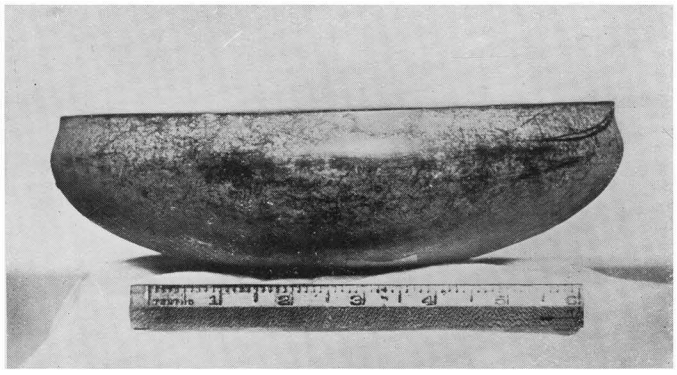


Mapungubwe; vertical view of south-east half.

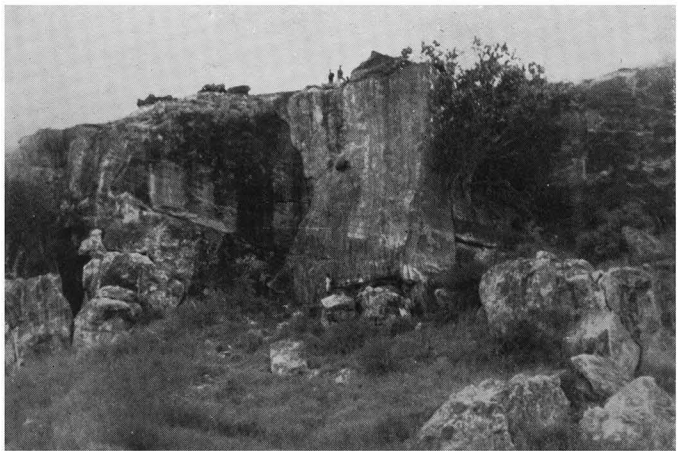
Showing: 5. Mahobe Ascent.
6. Mahobe Site.
7. Eastern Ascent.
8. The "Bowl".

PLATE IV

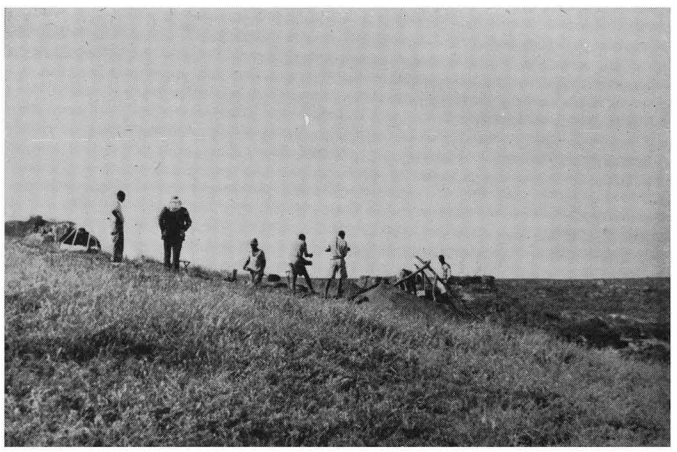
1. Original gold burial site, discovered 31 December 1932.



2. Black bowl, found under arm of skeleton. In original state.



3. Easter 1933 visit. Hoisting gear to the summit.



4. Excavating original gold burial site.

5. Excavating original gold burial site, showing concentrates.

6. Summit, looking south. Original gold burial site on right. In foreground is the Grave Area, uncovered later.

sunk at intervals below this first one, the last few being practically on the valley bottom. They all produced very interesting finds—a piece of plate gold, a copper needle, much copper and iron work, and many varieties of beads. Again no blanks were encountered, and the view expressed after our Easter visit, that the talus would be found to be as rich as the summit, was definitely proved.

(*b*) Long, thick grass obscured the slopes to such an extent at Easter that no proper inspection was then possible. This grass was now sufficiently thinned to allow of an examination. Traces of terracing were found along the southern slopes, extending for more than 200 yards east of the south-west ascent.

Dr P. W. Laidler, who arrived on the evening of the 12th and whose experience and advice were most useful throughout his stay, was invited to make suggestions for the work to be undertaken on the slopes east of the ascent. He began a cross-trench on a terrace immediately east of the ascent, where heaps of stones suggested collapsed walling. Walling was exposed at 2–3 ft. At this stage, unfortunately, Dr Laidler was called away. In his absence the excavations were continued and soon cement floors were uncovered. Two quartz mills bored in loose stones were found *in situ*, one of which is carefully packed and cemented into a cement floor, while two similar ones were found close by, evidently from the same site. Five others were found in mother rock, within a radius of 50 ft. Portions of crucibles, with slag of different kinds adhering to them, a copper ingot, burnishers and much burnt earth suggest that this was an active ore-crushing and smelting centre (see pl. ii and Diagram 1, cross-section TB 1). Incidentally, the discovery of four funnel-shaped holes in loose stones in close proximity to five similar ones in mother rock, surrounded by such evidences of metal working, should dispose of the vexed question of the origin and purpose of these funnel-shaped holes, of which so many are found on the summit of Mapungubwe and also in Southern Rhodesia.[1]

Other finds of interest were two bits of wrought gold, ivory needles, copper and iron bracelets of several kinds, and a large variety of beads. The most remarkable feature was, however, the large number of potsherds of exceptional quality, with ornamentation which, if not quite new, was at least very unusual. One fine fragment, showing a spout, is, so far as I know, new in Bantu ceramics.

The walling originally exposed was found to be double, a second, and later wall having been built against an earlier one. Beneath this second wall, at 6 ft., a fine cement floor, superior in quality to those found at 3–4 ft., was exposed. A set of stone steps, with stone newel posts, and a flagged passage leading to them, was found south of the double wall. The steps lead up to a circle of collapsed stones. The south end of the passage has been blocked up by what appears to be later walling. At 8 ft. a third cement floor was discovered, thicker and very much better in quality than those previously found. By this time there was a considerable amount of dampness present, in spite of which this floor was in excellent preservation and quite difficult to cut through.

Up to this cement floor the strata had a slope of approximately 1 in 10. From and after this lowest cement floor the layering is horizontal.

Dr Laidler returned at this stage, and I was very glad of his help in the ticklish work that followed.

Under this floor a thick midden layer was met, consisting of 14 ft. 9 in. of earth, and containing bones, charcoal, potsherds, beads (disc and glass—but only one variety of the latter), several types of copper and iron bangles and slag. At 23 ft. an ash layer 5 in. thick, containing charcoal, pottery and bones, was met. This overlay an earth layer of 3 in., with charcoal and bones, which was found, at 23 ft. 8 in., to rest upon rock bottom (see Diagram 1, cross-section TB 1).

Excavating at this depth and without proper equipment was a very risky business, owing to the danger of collapsing side walls. It was therefore with something like relief that I received the news that rock bottom had been reached at last. The students, who cheerfully undertook this "mining", deserve our warm thanks.

(*c*) North of the double wall, about 20 ft. away, a similar inspection pit was sunk to 14 ft. down. It brought to light rich midden and other interesting features, including many signs of burnt earth and clay, pointing to a possible furnace site. Time did not permit of this pit being sunk to rock bottom, but it proved that occupation levels are to be looked for at considerable depths north of the wall as well as south.

This terrace, of which only about 25 ft. square was partially excavated, was traced for over 200 yards. Six other sites on it were cleared, but there was no time to examine these properly.

(*d*) Besides these excavations on the southern slopes of Mapungubwe, the plateau behind the spring (east) was examined by Messrs Roberts and Rissik. A trial pit produced beads and potsherds corresponding to those found on the summit of the hill.

(*e*) Another tumulus, observed on our previous visits, about ½ mile east of Mapungubwe, was examined. An old inspection pit (by Frobenius?) was found, and some potsherds, but no excavation was undertaken.

(*f*) The ridge 500 yards south of Mapungubwe called "Bambandyanalo" (see pl. i, 2), on which the most extensive walling on "Greefswald" occurs, was examined in three places. Beads were found in each pit. This was all the excavation that could be done on "Greefswald" in the time available.

Examination of sites in the environs of "Greefswald". Beyond the boundaries of "Greefswald" we found definite proofs of the existence of important sites which, from the finds made, appear to be closely related to Mapungubwe. At "Haddon" 35 miles north-east, there is granite walling, with a check pattern, and a drainage system. Beads and very fine pottery were also found, specimens of which were brought back. In the opposite direction, 15 miles south, the farms "Machete" and "Faure" have walling (in one case with herring-bone pattern), and Messrs Rissik and Roberts found a variety of beads, copper and iron implements, an ingot of lead and much interesting pottery.

Archaeological wealth of northern Transvaal. In this connexion I wish to impress on the Committee my firm conviction that a vast and very rich field of archaeological material exists in the northern Transvaal. The sensational finds on Mapungubwe have aroused general interest, and I was literally embarrassed with offers to show sites, walls, caves, graves, irrigation canals, old mining and smelting centres, etc. I cannot refer to all in detail, but will only add that they extend from Rhodes Drift, 20 miles west of "Greefswald", to the hills north-east of Louis Trichardt, and north to Messina, and 20 miles east of Messina on the Limpopo—a distance of 100 miles.

The air survey. The indications, here referred to, of archaeological materials found over a very large area of what was in this respect almost virgin territory, impressed the writer so strongly that he applied for an

[1] Cf. HALL and NEAL, *op. cit.* p. 77.

air survey of the environs of Mapungubwe. The acting Minister of Defence, General J. Kemp, and General A. J. E. Brink, Secretary of Defence, who had been interested visitors at Mapungubwe during our July dig, at once gave their consent.

At the end of August 1933, two Union Air Force machines, under Major C. J. Venter (now Lieut.-Col. C. J. Venter), with Lieutenants King and Fourie and Staff-Sergeant Photographer Ireland, proceeded to make a photographic survey of the Mapungubwe region. The strip actually photographed was some 10 miles broad by about 30 miles long. This was an interesting experiment in archaeological exploration and gave most valuable results. Where the land surface was not obscured by bush or scrub, remains of ancient hut foundations or terracing along hillsides, which at ground level were completely invisible, could be readily picked out and showed up clearly on the photographs. The slopes of Mapungubwe were at the time clothed in long, thick grass standing 5–6 ft. high. This had been a great handicap to us in March and July in our efforts to trace terraces, etc.

The air photographs revealed, under this long matted grass, terracing which could be easily traced afterwards by their means. This led to the discovery of the dwelling-place of the chieftainess, Magobe[1] (Mahobe). On the summit, too, terrace walling, hut and grain-bin foundations were clearly shown, where our surface explorations had failed to find them. The air photos of the hill and its slopes served as a most valuable basis for planning future excavations.

We are very grateful to the Government and the Air Force authorities for the opportunity of making this experiment, and we owe special thanks to Major Venter and his officers, who entered upon their novel task with great enthusiasm.

[1] Cf. below, p. 18 and pls. i and iii.

Note. In the interests of future undertakings of this nature in South Africa, it may be noted here that the photographs were taken from an altitude of 4000 ft. As stated, this gave very good results; but subsequent experience suggests that these results would have been even better if the altitude had been considerably lower.

An air survey of the Vaal River at River View Estates, carried out for the Government Bureau of Archaeology in 1936 at an altitude of 1000 ft., showed a wealth of archaeological detail strikingly greater than any obtained at higher altitudes. This seems to indicate that air surveys for archaeological purposes in bushy country and under South African light conditions should not be taken from an altitude exceeding 1000 ft.

The Mapungubwe experiment provided comparative data of great practical usefulness on this all-important question of altitude in archaeological surveys.

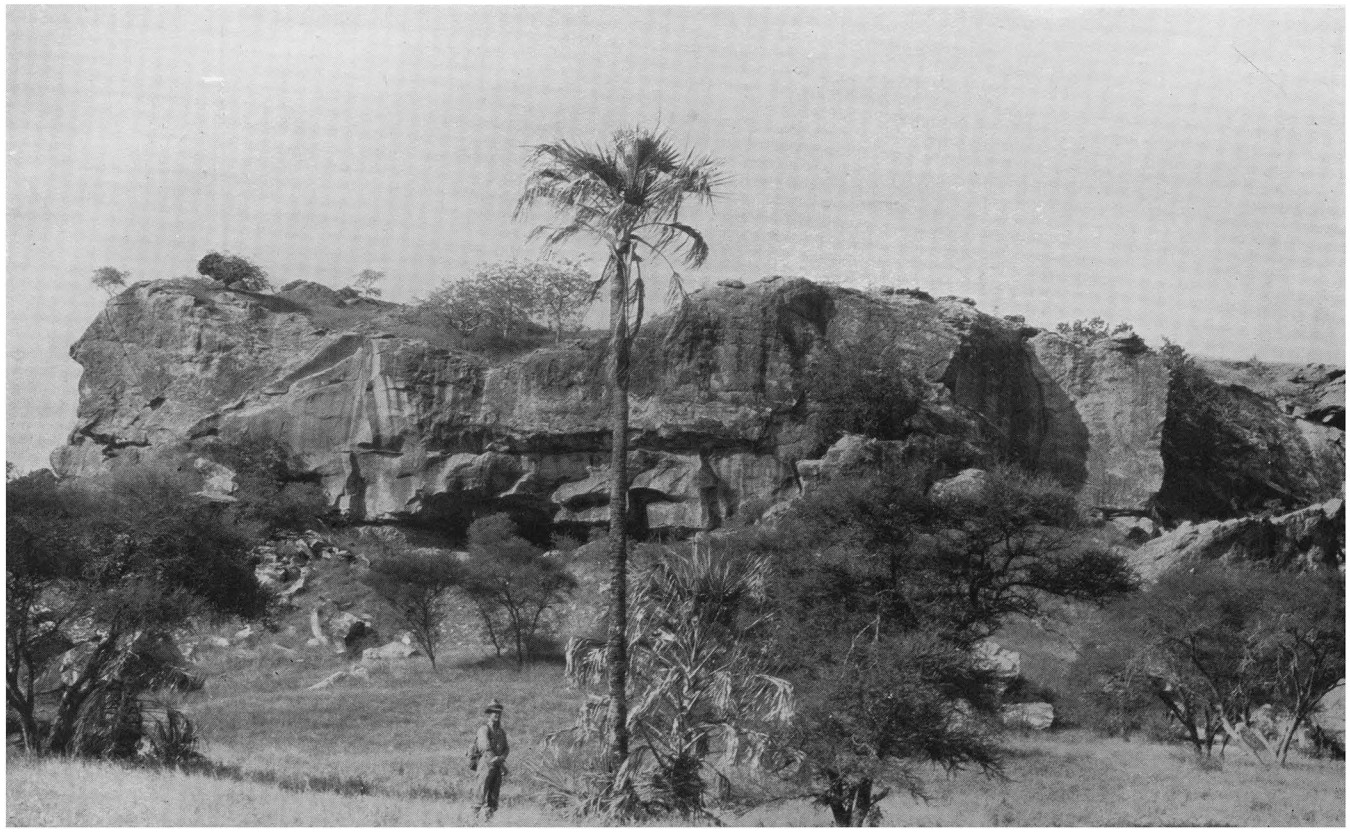
Native traditions. While the air photographs were being developed at Messina, Professor G. P. Lestrade was interrogating two old Natives, reported to be descendants of the last chief who had lived at Mapungubwe. One of them, Tshiwana, told us that the last member of this chief's family, his daughter, Magobe (Mahobe), had married a Sotho. The site of her village was indicated on the south-west slopes of Mapungubwe (see pls. i and iii). When the photos were examined they showed clear signs of terracing at this spot. During the following season Mr Neville Jones, at my request, sank some trial pits on the spot indicated by Tshiwana and revealed by the photographs, and sure enough he found hut sites and all the usual indications of a lengthy occupation by Bantu people.

. . . . .

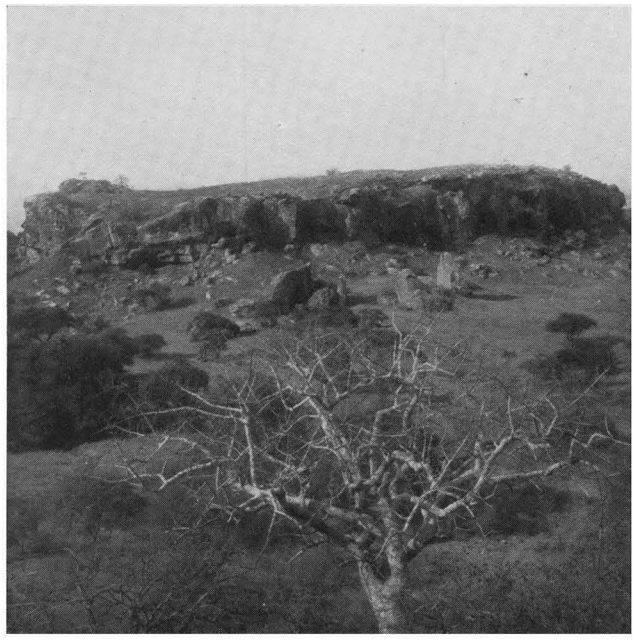
With the approach of the summer, when work at Mapungubwe would be dangerous, if not impossible, the site was left under guard until the following winter, when operations could be resumed.

Petty Chief Tshiwana, successor and reputed descendant of the legendary chief, Mapungubwe.

PLATE VI



1. Mapungubwe from the west.



2. From the south-west.

3. The western ascent. Looking up at an angle of 45°.

PART II

THE 1934 EXPEDITION

1. INTRODUCTORY

The publication of the discovery of an ancient occupied area at Mapungubwe in 1933, where a number of remarkable finds of worked gold had come to light, aroused considerable interest among archaeologists, and it was immediately recognized that the site was an important one. So little is known of that period of South African history sometimes referred to as the Ancient Ruins Period, that a discovery that might lead to additional light on its many problems was to be welcomed. From the information published at that time it seemed evident that it was to this period that the site might tentatively be ascribed, in view of the general similarity of many of the objects found with those that had been found at various other sites in Rhodesia, which have been definitely associated with a large and extensive Bantu culture. On the computation of Miss Caton-Thompson, whose work at Zimbabwe and at other Rhodesian sites is the most exhaustive treatment of the subject we yet possess, this period has been placed between A.D. 700 and 1500, in the absence of any information that would warrant an earlier date. The main question that presented itself at the outset was whether we might not have in Mapungubwe some evidence that would affect the dating arrived at, supposing that the site should prove contemporary with the Rhodesian Ruins Period, or alternatively, whether Mapungubwe might not provide data which would place it at an earlier date than that given for Zimbabwe and other ruins associated with it in the time scale. The determination of this question, if it could be accomplished, would throw considerable light on an historical gap which the investigation of one set of sites cannot possibly expect to do adequately.

It thus became evident that the site would need to be subjected to careful investigation, and no time was lost in the carrying out of such preliminary work as was essential in determining the probable value of the site as a contributory factor to our present knowledge of the later prehistory of South Africa, and it is only right that, in this connexion, tribute should be paid to the far-seeing and statesmanlike work of Professor Fouché, whose keen interest in Mapungubwe, coupled with his belief in its possibilities, has resulted in the preservation of the site for research purposes, and in the securing of funds with which to carry on investigation. I feel that, at the outset, this should be emphasized, as it is very rarely that the archaeologist is able to arrive at the scene of action before the depredator has done his worst, and the Union of South Africa is to be congratulated on having preserved Mapungubwe from a fate that has befallen so many other sites of importance.

The invitation I received to undertake the work was not accepted without considerable hesitation on my part. Hitherto my work has been focused on an earlier period, and though I have always endeavoured to keep in close touch with prehistoric investigation generally I had not previously attempted a work of such magnitude as was evidently involved at Mapungubwe. While I felt that I would rather have seen the task entrusted to one who had had a wider experience in this class of investigation, I realized that there are very few people in South Africa who had such qualifications. The importance of such tasks is so great that the undertaking of them becomes a duty which we must learn to perform for ourselves if the knowledge of the past of our own country is to advance materially in the future. I say without hesitation that the factor that largely determined me to undertake the work was the offer of assistance I received from Mr J. F. Schofield, whom I had known in Rhodesia, prior to his removal to Durban. Mr Schofield has done much valuable work in this direction, and I welcomed his offer which was accepted by the Archaeological Committee of the University of Pretoria.

The Committee made further provision for the conduct of the work in appointing for the non-technical side of it Mr P. W. van Tonder, who came to it without any previous knowledge of archaeological work but quickly proved himself a most painstaking and conscientious worker. I was thus fortunate in having with me two men whose assistance proved invaluable, and I owe to them both a debt of gratitude for the work they did. While Mr Schofield undertook the surveying work from which the drawings that accompany this report have been made, he further prepared the report on the pottery which constitutes the most important section of the finds we made, and in this direction he is an acknowledged authority, so far as we have any authority on a subject that has hitherto received but little attention. The contribution he has made will provide a basis for more extensive study in the future.

We were fortunate at the outset in having at our disposal the fullest information as to all that had hitherto been done on the site, as well as a good deal of information relative to adjacent sites which would need to come within our purview. Very soon after the news of the discovery had been made public Professor Fouché was at work on preliminary investigations, and in this he was very ably helped by Mr C. van Riet Lowe, who visited the site, made a survey of it, and opened up some trial holes. We were thus privileged to begin with a great deal of valuable knowledge at hand and much time was thus saved.

The Archaeological Committee of the University did all that was possible to make us comfortable and assisted us in our work in every way.

We were also fortunate in our friends at Messina, our nearest point of contact with civilization. While there were many who showed themselves always ready to assist us, a few in particular must be mentioned here. Dr Thompson, the Medical Officer of the Messina Copper Mine, himself an enthusiastic amateur archaeologist, together with Mrs Thompson, put themselves to a great deal of trouble to assist us. A welcome awaited us at their house whenever we went to Messina, and the store of local information they had accumulated was at our disposal. Mr and Mrs Frankleyne helped us greatly by seeing to it that our weekly supplies of fresh food were sent out to us, and in many other ways. Mr Weber, the accomplished geologist of the Messina Mine, provided us with a valuable report on gold beads and was always ready to assist us whenever we wished to consult him on technical points. To them all as well as to others who helped us we desire to record our sense of gratitude.

We assembled at Pretoria, where I had the pleasure of meeting the Archaeological Committee and discussing plans with them. They had placed at our disposal a lorry and a touring car, which served to carry our equipment, and later proved indispensable in our work. In company with Professor Fouché, Professor Tromp and Mr C. van Riet Lowe we travelled to the site, at which we arrived on 1 May. It was of great advantage to us to have these gentlemen with us at the beginning of our work, and to be able to go over the site with them. They returned to Pretoria after a few days' stay and we lost no time in making a start.

In any kind of archaeological investigation it is essential to work towards a definite end, and to have constantly in mind the goal at which we may hope to arrive. Mapungubwe had been so constantly referred to in the popular press as a "hill of treasure" that we expected to find a great deal more material than was actually the case. There is as a matter of fact very little to be found in the way of objects other than those one would expect to find on any Bantu site, and of these few, except for pottery, are of such a nature as to provide evidence of importance in arriving at a probable date, or in evaluating the cultural contacts with other peoples. The main outside interest has, of course, been centred on the gold objects, the finding of which led in the first place to the discovery of the site, and, while they are certainly of great interest, it is unfortunate that they do not provide us with much information of the kind we need for establishing a dating scale for the site. As General Pitt-Rivers once said, "the value of relics, viewed as evidence, may be said to be in inverse ratio to their intrinsic value", and this is certainly true of the gold beads, foil and other objects of which Mapungubwe has yielded such a goodly store. The making of a collection of objects is merely a matter of vigorous digging and sifting and would not in itself justify the expenditure of money on an expedition, or the employment of persons experienced in research work. Objects retrieved under such conditions become mere curios and can tell no connected story, such as it is the aim of the archaeologist to construct. While I am well aware that such statements as these hardly need to be made, I venture to make them in order to make it clear that our main object in conducting our work was not the turning over of the maximum amount of material in order to amass a large collection so much as, by concentration on certain selected areas, to arrive at such conclusions as should enable us to supply the answers to the first questions that confront us in all investigations of this kind.

The main objects, therefore, which we had in view were:

1. The discovery of such evidence as should enable us to arrive at a certain, or probable, date for the occupation of Mapungubwe.
2. The sifting of evidence for the establishment of cultural contacts with other contemporary peoples, whether indigenous or foreign.
3. The collection of such material as would help us to know what manner of people lived there, and to note such cultural features or peculiarities as might reveal themselves.

Towards the solution of these problems our work was conducted, and though we cannot claim that they have been finally solved, we venture to hope that we have been able to shed some light upon them which future investigation will find of value, and on which it will be possible to build.

There yet remained another and major question with which we were not ourselves immediately concerned—that of determining the course of cultural evolution to its ultimate development in one or other of the Native tribes living near or at no great distance from the centre,


MAP II
SHOWING
SITES REFERRED TO IN THE TEXT.
SCALE OF MILES
20 10 0 20 40 60 80 100 120 140 160
KHAMI
ZIMBABWE
The Matopos
SOUTHERN RHODESIA
TATI
SHASHI RIVER
BECHUANALAND
TULI
PROTECTORATE
RHODES DRIFT
MAPUNGUBWE
MESSINA
LIMPOPO RIVER
Nuanetsi R.
SABI RIVER
Brak R.
Sand River
Magalakwin R.
Zoutpansberg Mountains
Palori
KRUGER NATIONAL PARK
Klein Letaba
Groot Letaba
PIETERSBURG
TRANSVAAL
DRAKENSBERG MTS.
Springbok Flats
Limpopo or Crocodile R.
PRETORIA
JOHANNESBURG
PORTUGUESE EAST AFRICA
LOURENCO MARQUES
REFERENCES:
1. RATHO.
2. PARMA.
3. PONT-DRIFT.
4. MAPUNGUBWE.
5. SCHRODA.
6. WEIPE.
7. HADDON.
8. SIBSEY.
9. ISLET.
10. SINGALELE.
11. MALANGA.
12. IPIDI.
13. KANJILI.
14. ARMENIA.
15. HILDA.
16. VERDUN.
17. DZATA.
18. BLAAUWBERG
19. BRODIE HILL.
20. ROOIBERG.
Del. 1936.
19°
21°
23°
25°
29°
31°

2-2

supposing the inhabitants of Mapungubwe still to continue to exist in their descendants. For such a task the services of an experienced ethnologist are essential, and for this work it would hardly have been possible to find one more fitted to undertake it than Professor Lestrade. To this side of the work the greatest importance attaches, and its success necessarily depends on such preliminary work as we were called upon to do. The archaeologist is looked to by the ethnologist for the provision of such information as shall give him direction in the prosecution of his enquiries, and this we endeavoured to do. I look back to the short period of my intimate association with Professor Lestrade with great pleasure, and I derived not a little profit from it.

The determination of cultural contacts with others of the early inhabitants of this part of Africa necessitated the visitation of such other ruins and old habitation areas as were within striking distance, with what investigation of them was possible in the limited time at our disposal, and, between us, we visited most of those on the Transvaal side of the Limpopo. For the ancient sites on the Rhodesian side there is a fairly abundant literature, and in this connexion Miss Caton-Thompson's *Zimbabwe Culture* is particularly important, and provides conclusions which are generally accepted by most archaeologists. With three months at our disposal we were able to devote two to Mapungubwe and its immediate vicinity, and one to the other known sites in the northern Transvaal.

In dealing with the material recovered I have been assisted by a number of specialists on whose results, apart from purely local considerations, I have been able to base the conclusions arrived at. To all of these I am most grateful. Their names are as follows:

Mr Horace Beck, F.S.A., who undertook to examine the beads, on which subject he is the only court of appeal.

Mr J. F. Schofield, A.R.I.B.A., who assisted on the expedition and is our best authority on ceramics.

Dr I. Pole-Evans, the Chief of the Division of Plant Industry of the Department of Agriculture in the Union of South Africa, who reported on the plant remains found.

Professor G. H. Stanley, of the University of the Witwatersrand, who has examined the Mapungubwe slags.

Mr Hobson, Keeper of the Department of Oriental Antiquities and of Ethnology in the British Museum, who has reported on the porcelain and glass fragments.

I would also add the name of Miss Caton-Thompson, who by her advice and assistance in correspondence has helped me greatly.

2. DESCRIPTIVE

MAPUNGUBWE (see pl. vi, 1, 2)

A. General

Mapungubwe lies about 50 miles to the west of Messina on the right bank of the Limpopo and a little to the east of the confluence of the Shashi with the Limpopo. Three miles before arriving at the site, the road descends from the plateau into broken country consisting of steepsided sandstone kopjes intersected by valleys covered, for the most part, with scrubby vegetation and palm trees. A fever trap in the wet season, it is delightful in winter when the low-lying ground is no longer deluged by storm water, which has been responsible for the picturesque erosion of the surrounding country.

The hill itself stands out conspicuously amongst those that surround it, both on account of the wide valley that surrounds it on every side but the south, where it is flanked by a small hill known as Mapungubanyana (the little Mapungubwe), and by the precipitous and forbidding appearance of its cliffs which rise to an average of 200 ft. above the valley. Its lower slopes are covered with talus and huge rocks which have fallen from above, and, at a first approach it is impossible to detect a means whereby access to the summit could be gained. Actually there are three well-defined ascents. These are as follows:

1. That known as the Western Ascent (pl. 1), which is the one generally used in reaching the summit. After ascending the talus a chimney is reached, formed by the slipping away of a huge wedge-shaped fragment of rock from the main mass, thus leaving a narrow space at the bottom of which stones have been placed to facilitate ascent. Those at the bottom of the crack appear to have been placed there by the original inhabitants, and to these we and those before us have added others to make the way easier. In both sides of the crack shallow holes have been excavated in which timbers were evidently placed by the original inhabitants. At the top of the ascent is a small piece of walling with a circular end, built evidently as a protection and to confine the means of access to the top of the ascent. There is an "isifuba" board cut in the rock surface so near the walling that it must have been cut before the walling was built, which suggests a relatively later date for the walling.

2. That which we have called Mahobe's ascent on the southern side of the hill and immediately behind the site which goes by that name. It is a trifle more difficult at the bottom where it is necessary to scramble up some steep rocks, but after that it is an easy walk along an ascending ridge. Here again there are evidences of timbering in places where it was necessary.

3. The Eastern Ascent, which is no longer usable on account of the disintegration that has taken place. This ascent was originally heavily timbered, and the holes made for this purpose are plainly visible from the valley below. The top of the ascent was protected by a number of short lengths of walling, most of which are in a ruinous condition.

It is probable that there were other means of access, and we think it not unlikely that there was one just west of the western ascent, and another at the bowl, though it is impossible to speak with any certainty. We are led to think that the Bowl Ascent existed, as our excavation in that area revealed the fact that the bowl was artificially filled in, and this can only have been done in order to make it possible of transit.

From the abundance of potsherds on the slopes it is evident that much of the talus consists of cultural material fallen from, or deliberately thrown from, the summit. It is, however, much mixed with boulders which make the foundation, in the interstices of which the soil has accumulated.

The summit itself is covered with a layer of cultural material of varying thickness, and, from the abundance of powdery dust in the valley flanking the hill, it is evident that, during all or part of the period during which the summit was occupied, a considerable number of people lived there also.

B. Excavations on the Summit

The first necessity was to make a preliminary examination. Such an abundance of excavatable material existed that I felt that, in the first instance, it would be well to gain experience of the conditions existing and to study the nature of the deposits. It was evident that excavation would need to be conducted both on the summit and in the valley, and I decided to begin on the hilltop where the deposits were hardly likely to be of any great depth, and might reasonably be expected to yield some data of interest and importance. We accordingly selected a line which we estimated would cut through the thickest part of the deposit and would open up what might, from its appearance, prove to be of special interest. This we called JS 1 (see Diagram 1).

Trench JS 1 (see Diagram 2*a*)

Beginning at the eastern end (the trench runs approximately east-west) we removed the soil to a depth of 12 in. until we reached the highest point. We found that the first 4–6 in. consists of humus. Below this we came upon undisturbed cultural material. On the removal of the second 12 in. we began to uncover the remains of successive cement pavements of which some were in good preservation, though for the most part they were very fragmentary. This continued until bed rock was reached at an average depth of 7 ft. towards the centre.

The section thus presented revealed no well-defined stratification but a continually alternating series of cement pavements, midden material, red rubble, and more or less pure ash, all of which indicates a lengthy occupation, and a gradual elevation of the level through the accumulation of rubbish which formed the successive foundation on which later huts were erected. In order to give some idea of the appearance of the section I photographed a portion of it, and analysed it, with the result shown in the accompanying illustration (pl. vii, 1).

When cutting through the surface soil two stone circles came to light, one of which was visible beforehand, while the other was just below the surface. In one of these a small crude pot was found. It was necessary to remove one circle but the other was left intact (pl. vii, 2). Near the bottom of the trench a small group of erect stones was uncovered, as well as a small stone mortar. Circular pounding holes were also visible in the bed rock.

As digging proceeded eastward we encountered a piece of retaining wall (pl. vii, 4), which, being built on midden and without foundation, was evidently erected towards the end of the occupation of this area. This wall, which has only an outer face, crosses the trench obliquely and curves round into the northern wall of the trench. We endeavoured to follow it up towards the north but found that it had broken down to within a few feet of the trench wall. It differed in no way from the rest of the Mapungubwe retaining walls, to which reference will be made later. Beyond this wall to the edge of the plateau the soil consisted entirely of midden material, and we were led to conclude that only the north-eastern side of the "mound" (that to the north of the retaining wall) was occupied, the western portion being the dumping ground for kraal rubbish. This probably accounts in some degree for the great accumulation of midden material in the site JS 2, which is immediately below it. Having ascertained the nature of the soil in this part of the trench by sinking to bed rock at three places as shown we did not clear it all out, but left some of the midden *in situ*.

The material belonging to the occupied area as well as the midden material cast out from it contains an abundance of potsherds, charcoal and fragments of bone, but collectable material proved very sparse. As much soil as could be handled without holding up operations was sieved through mosquito-gauze sieves, and beads were thus obtained from the different levels.

The only sterile material is the "red rubble". This appears to be a decomposed shale, and is similar to some that occurs in quantity *in situ* at valley level. It

appears to have been imported in order to obtain levels for hut building or for the infilling of inconvenient depressions.

No noticeable difference was detected between the uppermost and the lowest levels which would indicate that the site had been occupied by more than one race of people, who appear to have preserved an unchanged culture over the whole period of occupation. The deposit is, that is to say, homogeneous from top to bottom, and shows no indication of any progressive development.

The "cement floors" are hardly to be compared with the more durable cement floors prepared from granite sand which are more commonly found in ruins in granite country. The Mapungubwe cement floors do not seem to me to differ from those made to-day by Natives everywhere. On a foundation some 3 in. thick a thin layer of ant hill and cow dung in a wet condition is laid. As this dries it is beaten with wooden beaters until it becomes very hard and will last an indefinite time with no more attention than an occasional smearing with fresh dung. There is nothing about the Mapungubwe floors that would indicate that they were made in any other manner, and they probably owe their preservation to their having been quickly covered by rubbish.

There are frequent evidences of fire and, indeed, we found no hut that had not been burned during the whole of our excavations.

The objects obtained from this trench, excluding potsherds, copper wire fragments and beads, which were found everywhere, were as follows:

A broken dish, bored to enable it to be repaired.
A small bowl (from stone circle).
An arrow-head.
A bone awl.
Fragments of worked bone.
Bone pins.
Fragment of celadon porcelain (see later).

Trench JS 4 (see Diagram 2*b*)

This intersected an area in which a little digging was done last year and traversed the hill just north-west of Beacon A.

Near Beacon B was a small area paved with flags which we removed, hoping that these concealed something of interest, but we found nothing other than a large beer pot and two small bowls associated with it.

While in general features it differed little from the JS 1, already described, it was interesting in that it revealed a hut floor 1 ft. above rock bottom (pl. vii, 3). A later hut floor above it was cleared away. The lower floor showed remains of a small cement bench together with a row of post holes running through the centre from wall to wall. These probably served for the erection of a shelf for storage purposes. Apart from some potsherds and a good deal of charred material nothing of special interest was found here. At the north-east end of the trench some slag came to light and we searched for evidence of smelting. Nothing other than a fragment of a tuyère and what appears to be a slag filling of a tuyère (found elsewhere in the trench) came to light.

The objects found here were:

Three perfect pots.
A stone pounder.
Three clay oxen (child's toys).
Two pottery spindle whorls.
Ear ornaments.
A bone needle.
A burnisher.
An iron gad.
An arrow-head.
A small spear-head.
A fragment of a tuyère.
Solid core of a tuyère.

A small parallel trench (JS 4*a*) was dug to bed rock as shown on plan, but yielded nothing of interest except two small platters which I have repaired. These forms are not very common and I thought it well to preserve the only two we found which were capable of reconstruction.

Trench JS 5 (see Diagram 2*c*)

This trench connected JS 4 and JS 6, which was opened up at the same time. We found here a thickness of 9 ft. 6 in. of deposit, a great deal of which was midden, though at one point midway along its length we encountered a number of superimposed cement floors. We also dug into a small fireplace containing a quantity of charcoal and charred marula nuts. The rock bottom is here very uneven and much of the material upon it consisted of rubble and stones.

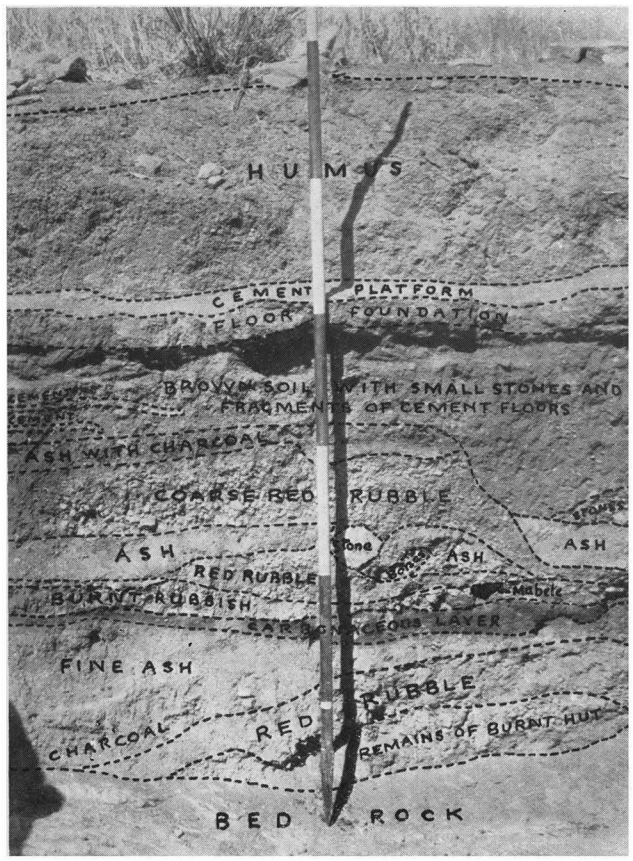
From this trench we obtained:

A large pot containing two smaller ones, a polishing stone, some unio shells and a few beads.
Two stone pounders.
Some small ear ornaments of calcite.
Two arrow-heads.
A portion of an iron bracelet.
An iron spatula.
A fragment of celadon porcelain.

Trench JS 6 (see Diagram 2*d*)

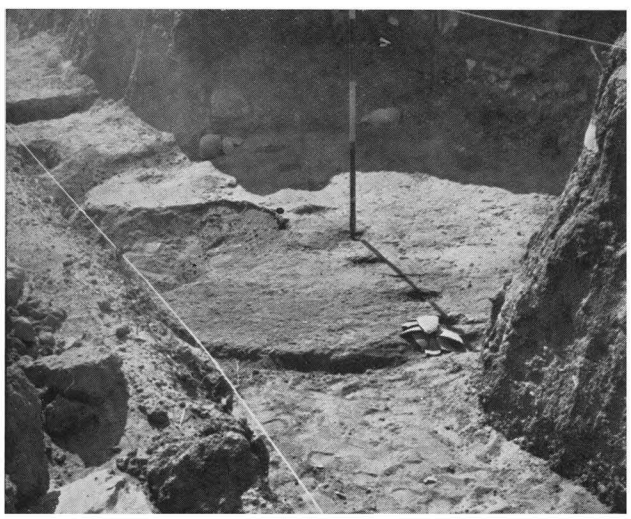
This trench was cut with two main objects in view. First to explore the retaining wall, partly revealed externally by Mr van Riet Lowe in 1933, and secondly to investigate the nature of the semicircular depression known as the "Bowl".

The retaining wall (pl. viii, 1) was found to have been built on midden just above a cement floor, below which was rubble with large stones gradually merging into midden with abundance of potsherds and bones. Below

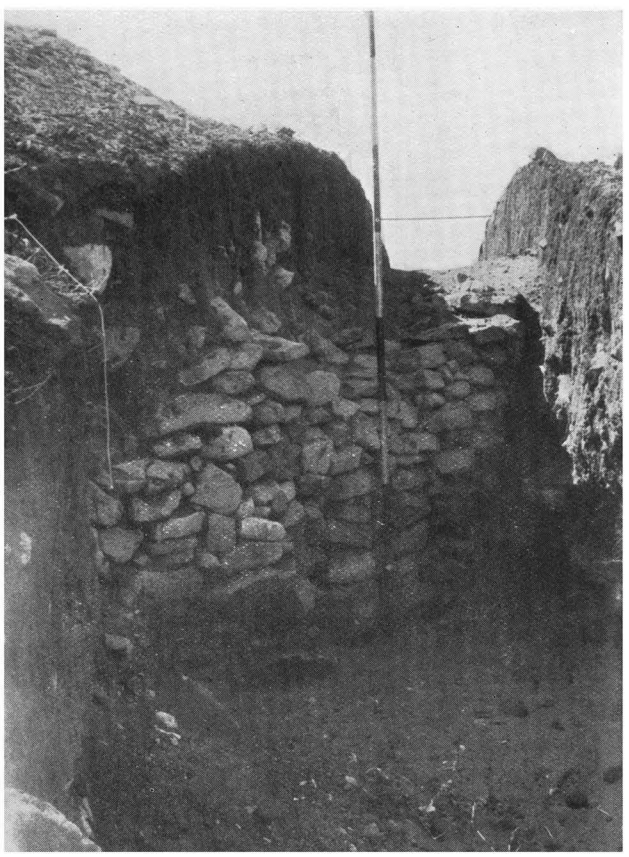


1. Mapungubwe; section in JS 1 analysed.

2. Stone circle in JS 1, left intact.



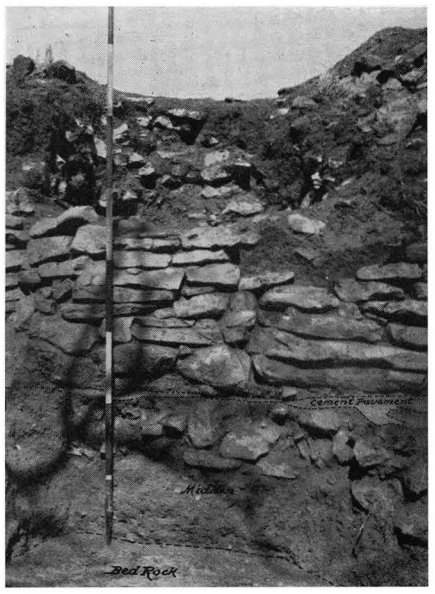
3. Hut in JS 4, with post holes.



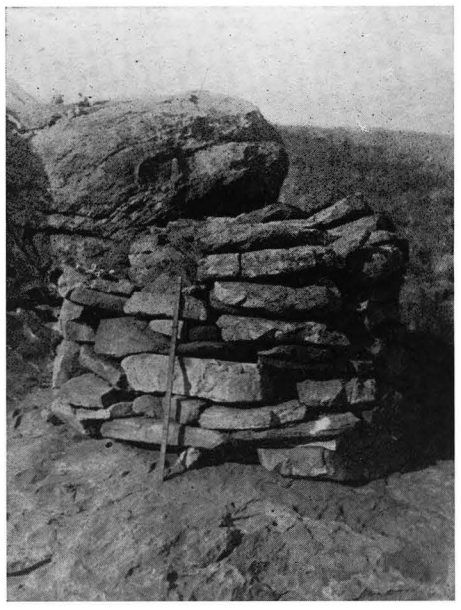
4. Retaining wall in JS 1.

PLATE VIII

1. Mapungubwe; walling in "Bowl".

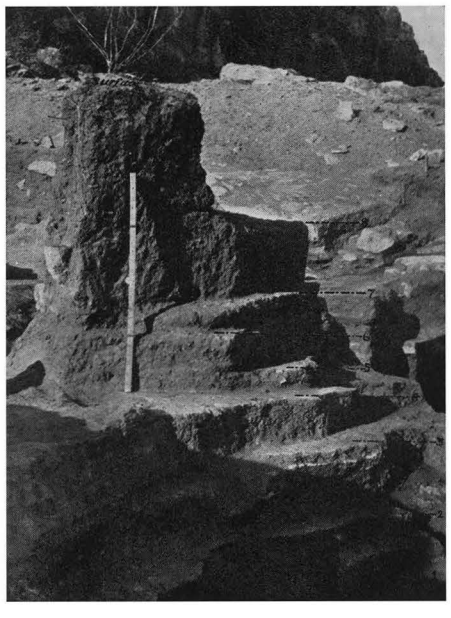


2. Walling in "Bowl", showing section explored.

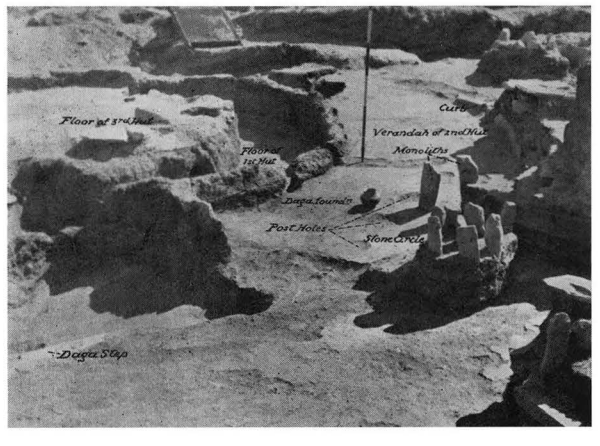


3. Walling at top of western ascent.

4. Walling at south-east end of summit.



5. Earth column left as "witness section" to show eight successive cement floors.



6. Hut No. 1 in occupation area.

this was bed rock. The retaining wall itself does not appear to go far in either direction. We followed it up on either side until it petered out, its only purpose having been to prevent the falling away of soil down the steep slope leading to the centre of the bowl. It is shown in plan on Diagram 6*a*, and it will be noted that it is a composite structure. The original portion has been added in order to give it extra strength, or possibly to repair gaps that, owing to the very insecure method of building adopted, have occurred from time to time. The wall where the trench met it is shown in pl. viii, 2, and it will be noted that the area inside it was extensively occupied, hut levels having been obtained by sand and earth infilling.

The bowl itself contained a deep depression 8 ft. deep by 6 ft. broad near the cliff face which was entirely filled with fine river sand the top 4 ft. of which was sterile. Below this some sherds were obtained, and we recovered a few beads which, through having been preserved in sand and not subjected to heat or in contact with ash, were remarkably fresh looking. A little pottery was found on the surface.

At the south-western end of the small trench JS 4*a*, we found, as had those who were there before us, a number of gold beads of the larger variety, but they did not occur many inches below the surface. In the adjacent area from which the gold was recovered in 1933, where the deposit is very shallow, we sifted out a quantity of gold and glass beads, gold wire and foil, some ear ornaments, and some bone awls.

At the conclusion of the period I could afford to allot to Mapungubwe itself, Mr van Tonder began the excavation of the area adjacent to the original grave area, and, on my return, I found he had unearthed four burials, two of them of children, which were unaccompanied by objects of interest, one of them a small baby with which were found quantities of small shell beads and tiny blue glass beads, rare elsewhere, and the remaining one, a young woman, with a baby, whose arms and legs still retained massive coils of iron wire amongst which were some glass beads of the usual type. With this burial were three small globular pots with typical ornament (pl. ix, 1). The skull of this woman was removed and sent to Pretoria for examination. All the skeletons were flexed and lying on the right side but exhibited no orientation. There being no point in removing the skeletons, which were in a very friable condition, I left them *in situ*.

One point in connexion with these burials calls, however, for comment. They occurred very near the surface and were all above the same cement floor which was in no place more than 2 ft. below the surface. Since there is no evidence of extensive soil erosion it seems probable that the burials were never very much deeper than when we discovered them, and their position indicated that they were of comparatively late date.

Work was still in progress in this area when we left, and I have since learned that an interesting discovery has been made.

C. The Isolated Walling on the Summit

(see pl. viii, 3, 4)

Before leaving the top of Mapungubwe it will be well here to note the occurrence of some walling other than that revealed in digging operations, which is, as has been shown, the retaining wall, built to prevent the slipping away of the foundation soil of the living area. This other walling, which is represented by four examples in a fair state of preservation, seems to have been built for protective purposes. Three of these walls, which average about 12 ft. in length, are intimately connected with the Eastern Ascent, and they appear to have confined the means of access to the summit in such a way as to make it impossible for a large number of people to ascend together. They would also form a rampart for the protection of the defenders in case of assault. They are slightly crescentic in form, and rise to a present height of 3–5 ft. with rounded ends. The rough construction follows the general Mapungubwe tradition. The remaining piece of standing wall occurs at the top of the Western Ascent, and served a similar purpose. These walls are all faced on both sides and stand on bare rock foundations.

D. The Occupied Area at the foot of the Western Ascent

JS 2*a* and *b* (see pl. ix, 2 and Diagram 4)

The main work below the hill was concentrated in the area at the foot of the Western Ascent. Here amongst some huge boulders, Professor Fouché had revealed three walls, and sunk a pit to a depth of 23 ft. in the area enclosed by them. These walls appear on our plan as W. 4*b*, W. 5 and W. 6, and the area he excavated as T.B. 1. Our first task was to make a clearance outside wall 6, in which we uncovered some steps leading down on to the cement floor above which the wall was built. We then opened trial holes 1 and 2, sections of which are given. From these we learned, from the remains of cement floors which occurred to an average depth of 4 ft., that the site had been extensively occupied. Below the occupation level we found only homogeneous midden material which persisted almost to rock bottom, though within 12 in. of rock bottom in trial hole 2 we came upon a layer of ash. We thereupon started to excavate as much of the ground between wall 6 and the

Western Ascent as the nature of the ground made possible, and the results of our work are shown on Diagram 4.

This shows the foundations of four huts, and suggests that hut No. 1 was the residence of a person of importance, the other huts being subsidiary huts belonging to the family. We endeavoured to excavate down to the original floor in order to get some idea of the lay-out of the kraal, a task that was attended with some difficulty as floors had been superimposed one on the other, apparently for successive generations. We left a small pillar in a central position in order to exhibit this feature (pl. viii, 5) from which it will be seen that on one side no less than nine floors, or remnants of floors, are to be seen, and on the other five. From the general view of the excavation a number of earth pillars will be noticed. They owe their existence to the fact that I forbade the removal of any stones encountered lest some structure, that might possibly be beneath, might be damaged. The stones were therefore left *in situ* supported by earth pillars which encumber the site. This course was not without its advantages as by this means some interesting stone structures were preserved.

The principal hut (No. 1) appears to have been rebuilt three times on the same foundation. Of these three successive huts the evidences are as follows:

1st and earliest hut (pl. viii, 6). Of this, part of, or possibly all, the floor remains, together with a cement bench 14 in. high which apparently encircled the verandah, and the lower part of the wall, which is of daga.

2nd hut. The floor of this hut was 13 in. above the older one, and consisted of a wattle and daub wall set in the original daga. This too had a verandah 13 in. above the older one and curving up to the top of the cement bench, which protrudes an inch or so above the general verandah level in places. The verandah is set on an infilling of river sand, and contains post holes which carried the roof. The small pot, since restored, was found as shown in the figure in a crushed condition, together with two small monoliths which belong to the same phase. Such stones can be seen in modern Venda villages.

The small partition wall jutting out on to the verandah and dividing it is an interesting feature which can frequently be seen in Native huts, particularly among the Venda, to-day.

3rd and latest hut. This was built within the second, and was a wattle and daub structure, of which the holes of the longer strengthening posts are visible. The floor is poorly made, and has settled in the direction of the midden flow. It is laid on clean river sand.

Hut No. 2 (pl. ix, 5) has been twice rebuilt, the later floor being 2 ft. higher than the original one. On the verandah a quantity of charred beans were found. The two other huts call for no special comment, except that the small size of No. 4 suggests that it was used probably as a store as it is too small for human occupation. The remains of a well-made curb suggests, however, that a larger hut probably stood in the same position previously.

Another feature of interest is the number of small stone circles. They exist all over the site, and I have no hesitation in stating my belief that they originally carried clay grain bins, such as Natives to-day commonly construct. That shown in pl. ix, 3 is of some interest in that it exhibits at least two successive foundations, the later one having been constructed on the earlier as the general ground level around it arose. At Mochudi recently I had the opportunity of seeing some of these grain bins and I noticed that there the foundation had been made, first by erecting upright stones and then laying flat stones on top of them. On these flat stones the bins rest. Here we have a double set of superimposed foundations which probably, in turn, served a similar purpose.

We encountered a few pounding mortars on the site (pl. ix, 4). That shown with the grinding stone beside it is interesting as exhibiting the method by which a mortar was started. The actual stone itself has a very small depression in it, but upon it there is built up a strong daga rim which prevented the grain from escaping until such time as the hole in the stone had worn sufficiently deep to do away with the need of a rim, which was apparently then removed, as we found no rims on any of the other mortars.

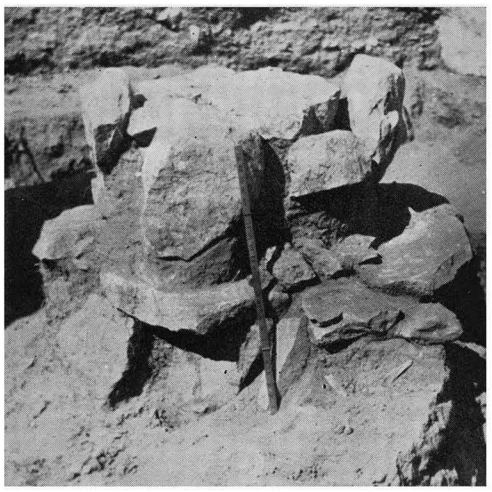
Near this mortar we uncovered two large pots, both of which have been preserved.

The finds from the occupation area are as follows:

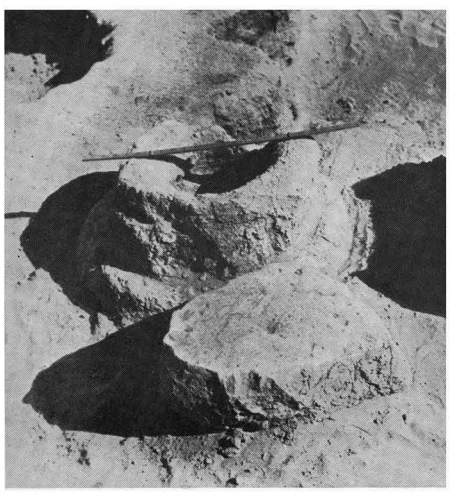
Two large pots.
Three smaller pots.
Four arrow-heads.
Five iron pins.
Two spear-heads.
Three iron spatulas.
Calcite ear ornaments.
Cylindrical grinding stone.
Small stone mortar.
Hammer stones.
Piece of asbestos.
Small clay ox.
Small clay spoon, snuff?.
Bone ear ornaments.
Rings of twisted copper.
Small copper bar with circular loop.
Copper bangle.
Stone pounders.

It remains to be noted that we observed no distinctive difference in the cultural material or objects found

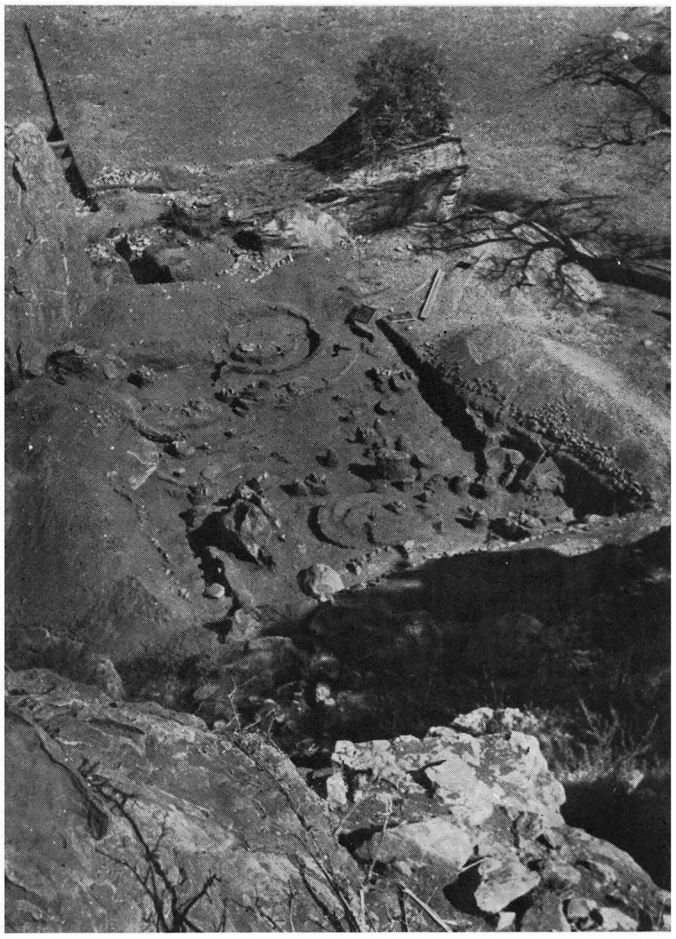
1. Mapungubwe; burial on summit, with pots and wire bangles.



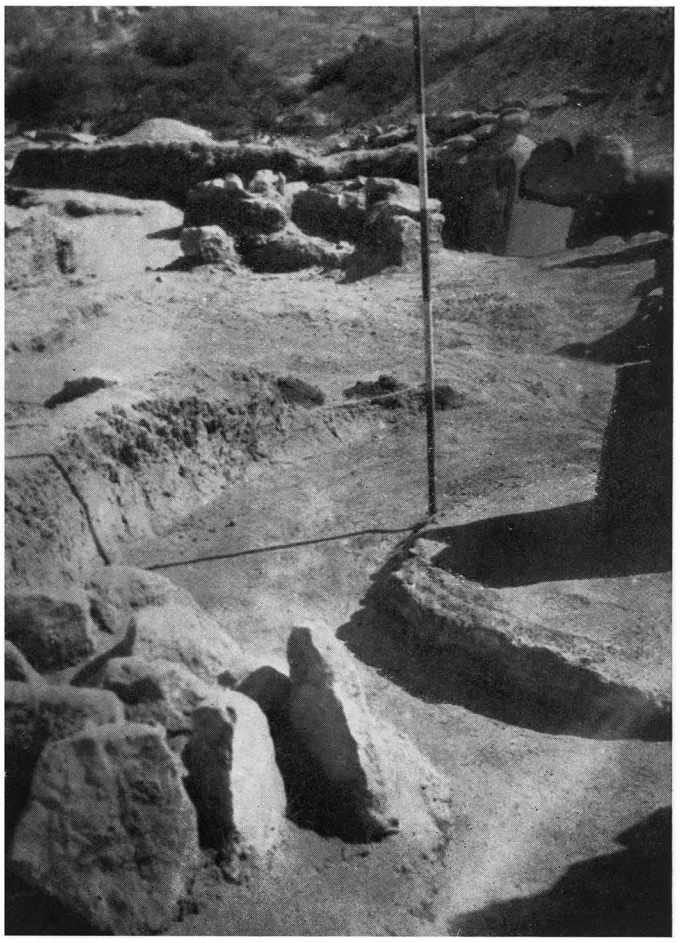
3. Granary foundation, showing successive stages.



4. Mortar with daga rim and grinding stone.

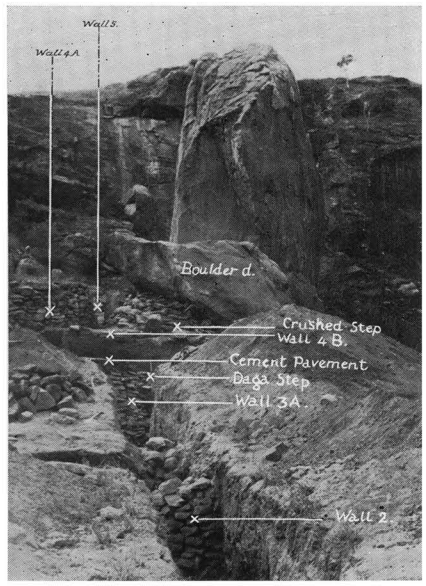


2. Occupation area, seen from the summit.

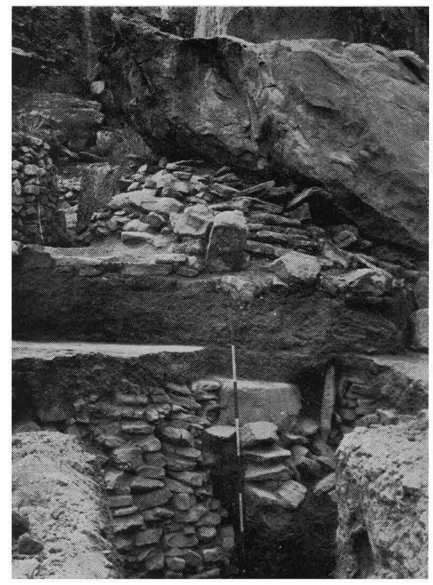


5. Hut No. 2 in occupation area.

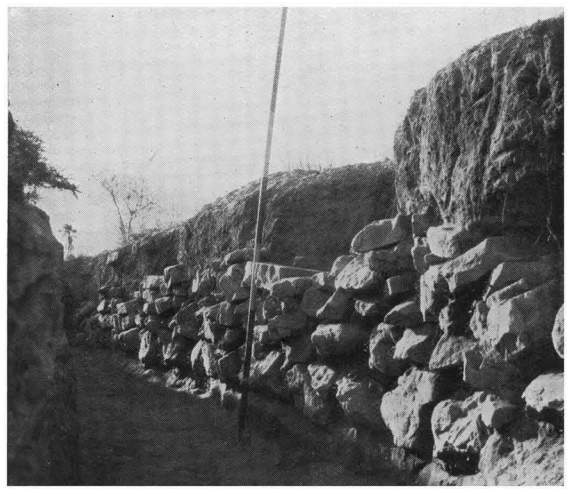
PLATE X



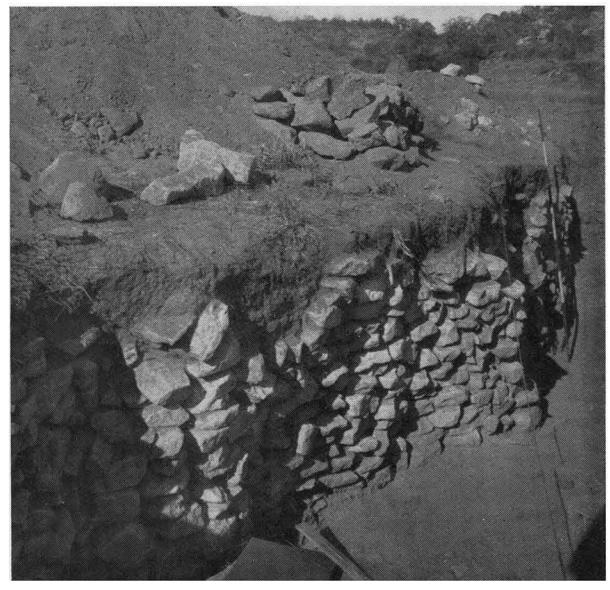
1. Mapungubwe; walls No. 2, 3, 4 and 5 in JS 2 (*a*). Crushed steps in centre.



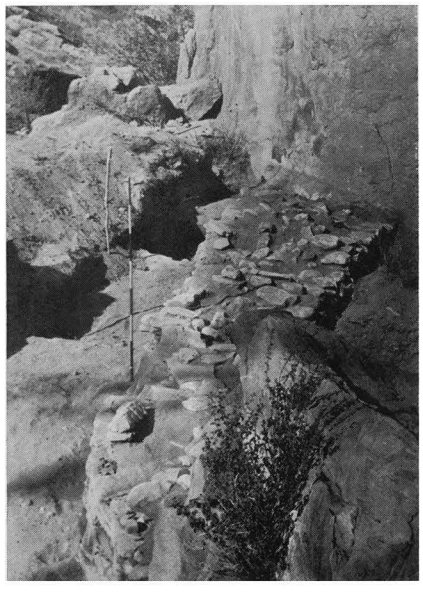
2. Wall No. 3*a*, the daga step, and the crushed steps.



3. Wall No. 1.



4. Wall No. 2.



5. Walls No. 5 and 6 in JS 2 (*b*).

6. Wall No. 6, facing occupation area.

here that would suggest any break in the time sequence, nor were there any features that would suggest any outside contacts. The deposit was similar to that occurring on the summit in all essential details.

Simultaneously with the excavation of the occupied area we proceeded to excavate to the south of the old T.B. 1 (see Diagram 3).

We first of all cleared away the debris at the foot of wall 4A so as to expose it to its full height and cleared away the ground immediately in front of and below it. In doing this work the foundations of a wall 4B, and a set of steps originally leading to the level of the top of wall 4A, were discovered, the latter being crushed out of shape and rendered useless by the collapse of the boulder *d*, the fall of which also probably accounts for the ruinous condition of the wall immediately below it. On continuing to excavate we found an extensive cement platform bearing the foundations of a small hut at the north-western end, with a well-made daga step leading up to it (pl. x, 1). In and about this area a great number of ostrich egg-shell beads and an equal abundance of small black, plum-coloured and green glass beads were collected. Within the hut a bronze handle (the only bronze object found) was recovered.

We noted that the cement pavement, while intact towards and below wall 4B, was much cracked concentrically outwards, as though the ground beneath it had subsided for want of a sufficiently strong foundation. On sinking where the cracks began we at once hit on wall 3A, which is the highest piece of walling we encountered. It is 10 ft. high and curves inwards towards the crushed steps to a point where it probably gave into the interior. We were, however, unable to prove this owing to the danger of the wall collapsing under the immense weight of the boulder immediately above it. This will be at once apparent on reference to pl. x, 2. In order to prevent the possibility of collapse at the north-western end we built a buttress to support the wall. Wall 3B, which was uncovered at the same time, thins out as it approaches the boulder *d*.

We then dug a trench, as shown on the diagram, with the object of finding out whether any other retaining walls existed and we discovered walls 2 and 1, which brought us to the limit of the occupied area. We sunk two holes in the trench to rock bottom and proved the existence in each of cement floors, those in trial hole No. 4 being only just above river sand, which is here to be regarded as bed rock.

The details of the walling are as follows:

Wall 1 (pl. x, 3). A rough vertical wall averaging 2 ft. 6 in. in height, with infilling at back extending to 12 in. from wall face. Stones laid on river alluvium without foundation, with thin layers of midden material at intervals to make up the level. No coursing or bonding. Exposed for 50 ft. (*Note.* A hole sunk 3 ft. in alluvium determined rock bottom.)

Wall 2 (pl. x, 4). An irregular and badly built wall, 4 ft. 6 in. high at highest point. Fallen down in one place owing to bad construction. Backed by an infilling which reaches to the foot of wall 2A. The lowest course is level with a cement pavement which does not, however, pass beneath it. This course rests on midden material. A second pavement abuts on to the wall 15 in. above the lower one. Exposed for 30 ft.

Wall 3A (pl. x, 1). A wall 10 ft. high in centre. Built of rather smaller stones than those used previously. Probably meets rock to north-west, and returns inwards towards newel where it gave access to the inside. Rests on midden foundation. Further excavation impossible owing to danger of collapse.

At the point where the wall returns a daga step has been formed which originally gave access to the level of the wall top. This is made on a rough foundation of stones placed in position to block the entrance which was at that time partly filled up.

Above the wall is a layer of midden on the top of which is a cement pavement. Wall exposed for 20 ft.

Wall 3B (pl. x, 1). A small wall built subsequently to 3*a*, and intended to close the opening at a time when the midden had accumulated in it to a depth of 5 ft. This wall peters out as it curves round towards boulder *d*.

Wall 4A (pl. x, 1). A well-built wall starting at boulder to north-west and returning into the narrow area between big rocks. Steps have been formed to give access to the wall-top level. Average height 4 ft.

The sequence here seems to be:

Stage I. Wall 4A was built on midden foundation and steps were formed. There was a companion wall on the same level which also curved inwards and left a narrow passage between the two walls. This wall was demolished by the falling of boulder *d*.

Stage II. The passage gradually filled up. Wall 4B was built, of which the foundations only now exist, to meet 4A and close the opening. Another set of steps was built to give access to wall-top level thus closed.

Stage III. The boulder *d*, having become detached from the parent rock, fell on the steps and rendered them useless. By this time more midden had accumulated and wall 5 was built to make the space between it and wall 4 usable. This area appears to have been used during the latest phase as a place for granaries and the like.

Wall 5 (pl. x, 5). A wall of large angular fragments of stone built to an average height of 5 ft. and set to a batter of 1 in 3, on midden foundation.

Wall 6 (pl. x, 5, 6). Built for the most part of tabular stones set stringer-wise, but without coursing or bonding and slightly curved inwardly. Average height 3 ft. It stands on a thin midden foundation, and unlike any of the other of the series of walls was faced inwardly. The space between it and wall 5 is filled in with rough stones. Rough steps have been formed at south-east end. A better set of steps was formed towards the north-west, consisting of five steps with narrow treads and low risers, flanked by flat stone newels. The lowermost step was concealed by a later daga step, giving on to the cement pavement. The wall meets the rocks at both ends.

Such are the general facts in regard to the six sets of retaining walls we uncovered. It now becomes necessary to set down the history of the site as we interpret it. It would appear that the earliest arrivals at Mapungubwe established themselves in the valley and did not at first build on the hilltop. They first of all surrounded their kraal, which must have been an extensive one, as evidence of walling exists in the shape of loose stones lying on the surface over a wide area, with a low wall probably for protective purposes. During this period the cement pavements uncovered in trial hole 4 were laid, and it is to be noted that, unlike the other pavements, these are composed of red material. Shortly after the occupation some of the people ascended the hill and started to build there. The kraal rubbish from the top then fell over the precipice above the valley settlement (or possibly it was deliberately thrown over in order to dispose of it) and threatened to engulf the people below. They, in order to preserve their village, threw up wall 2, which stayed the onflowing midden for a time, and until it had filled up the space enclosed by it and started to flow over the top. Before it did so, however, wall 3 A was begun. This wall appears to have been built in two portions, which seems indicated by the stratification of the midden below it. Wall 3 B belongs to the same phase being only slightly later in date, and built to confine the midden material which poured through the opening left in the 10 ft. wall. During the whole of this period the people in the valley were trying to accommodate themselves to the gradual rise in the surface level, and endeavouring to rid themselves of the nuisance by erecting walling to stem the flow of midden.

The midden having at length buried walls 3 A and B, walls 4 A and B were built with the same object in view, and were themselves ultimately engulfed. Wall 6 was the final effort to stem the midden flow. At the period when it was erected, however, the summit ceased to be occupied residentially, and the population descended and built round the slopes at its foot. Wall 6, which is the only wall facing inwards, was probably built as a backing to wall 5, than which it is slightly later. The occupation of JS 2*b* then began. This, like every other part of Mapungubwe, began to rise on its own refuse until it was finally abandoned.

Whether or not my explanation is correct in every detail the main conclusion that all the walling on this site, with the single exception of wall 6, was built to stem the flow of midden from the hill is hardly open to dispute.

Mr Schofield is of opinion that the explanation is in part to be found from the apparent tendency to build a revetted hut platform, which I agree appears to have been done in certain instances, though I am inclined to doubt whether it would account for every instance. It is true that the 10 ft. wall (3 A on plan) has a hut platform immediately above it, but similar conditions did not obtain in the outer walls excavated. It therefore seems probable that this motive to some extent operated, though to what extent it would be impossible to say. Mr Schofield further suggests that the time sequence was, first, the early occupation; then the desertion of the site during which time the midden material accumulated, and, lastly, the reoccupation of the site and the building of the retaining walls, which were filled in deliberately in part, and in part with accumulating midden.

E. Mahobe's

Trench JS 3

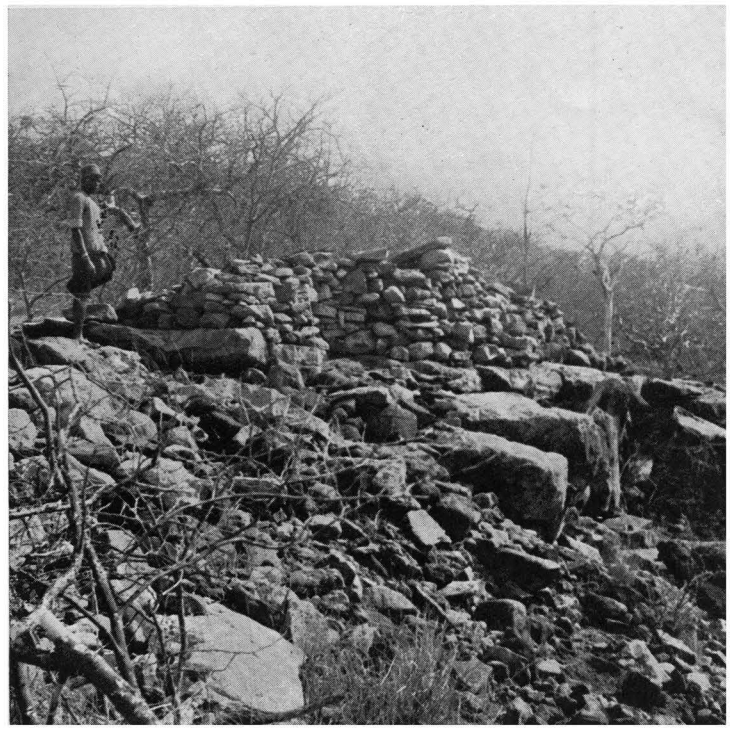
This site is about 150 yards from JS 2 and lies almost immediately beneath the cliff face. We were directed to it by Professor Fouché who stated that local native tradition had it that the daughter of Mapungubwe, by name Mahobe, had a kraal there and that she was the latest resident of the area. He hoped that some attention given to it might reveal something of interest.

We began by opening a pit 8 by 8 ft. in cultural soil at valley level, and continued until we reached bed rock at a depth of 6 ft. Beneath 12 in. of top soil we found 5 ft. of midden material similar to that which we had encountered in JS 2. The only finds of interest were as follows:

A small model giraffe, a child's plaything.
A clay ox (broken).
A clay object, nipple-shaped, bored with two holes.
An iron spatula.

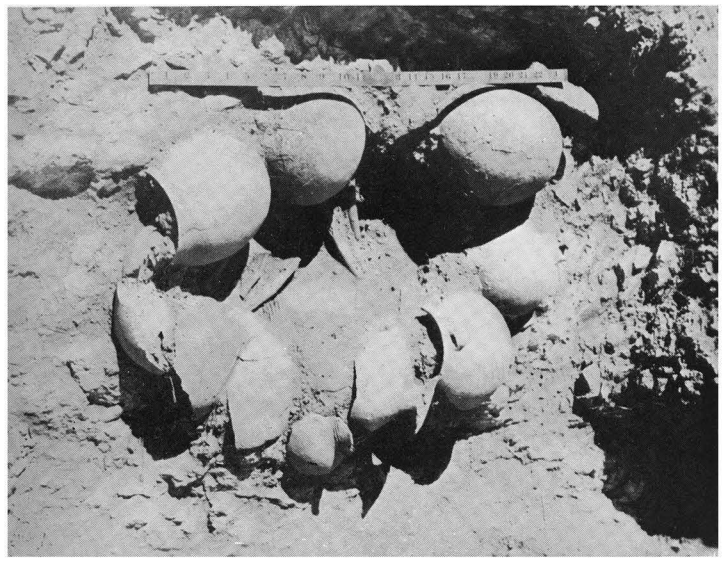
The nipple-shaped object is of interest, but it is impossible to suggest the use to which it could have been put. The presence of the two holes suggests that it might have been used as an amulet, and that it might possibly be phallic. A similar one was found at Bambandyanalo.

Abandoning this spot we started to trench in an area above a short length of retaining wall between two

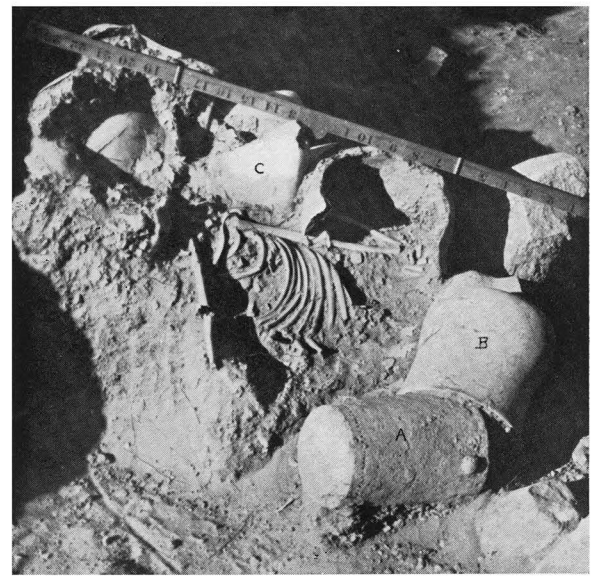


1. Bambandyanalo; walling on north side.

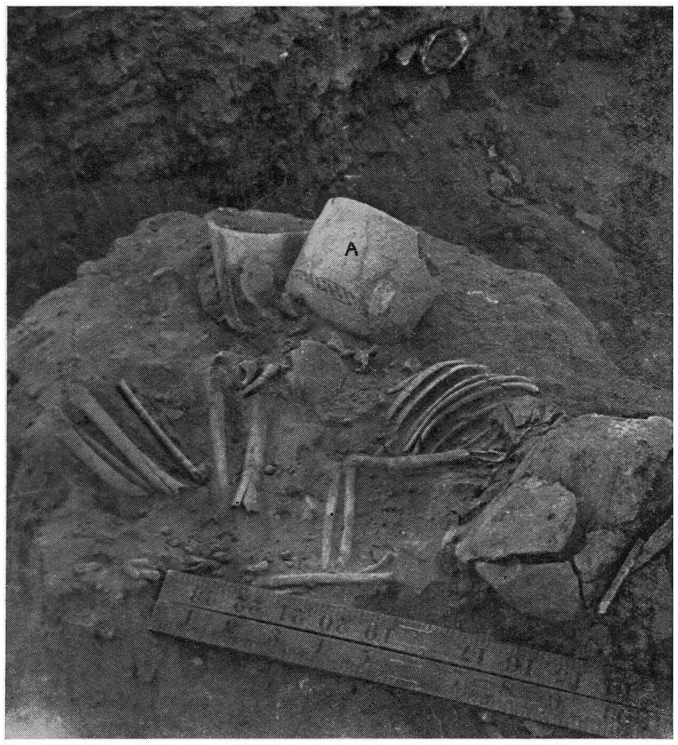
2. Burial No. 1.



3. Burial No. 3.

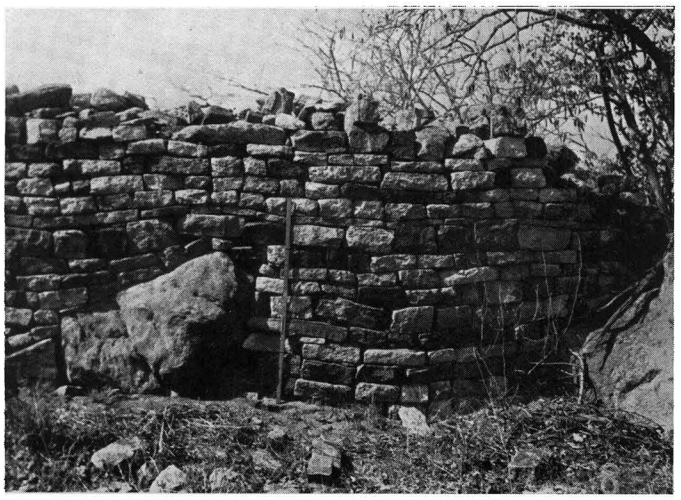


4. Burial No. 2.



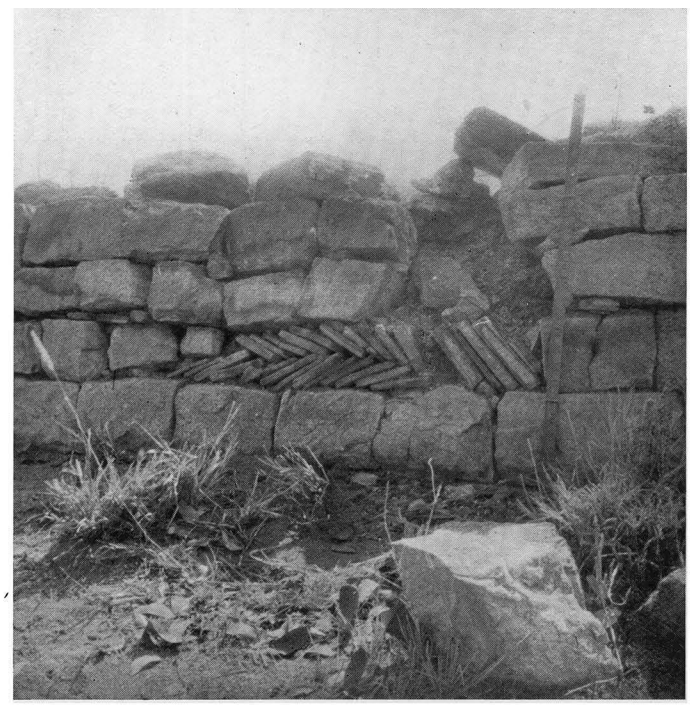
1. Bambandyanalo; burial No. 4.

2. Walling on Bambandyanalo, north side.

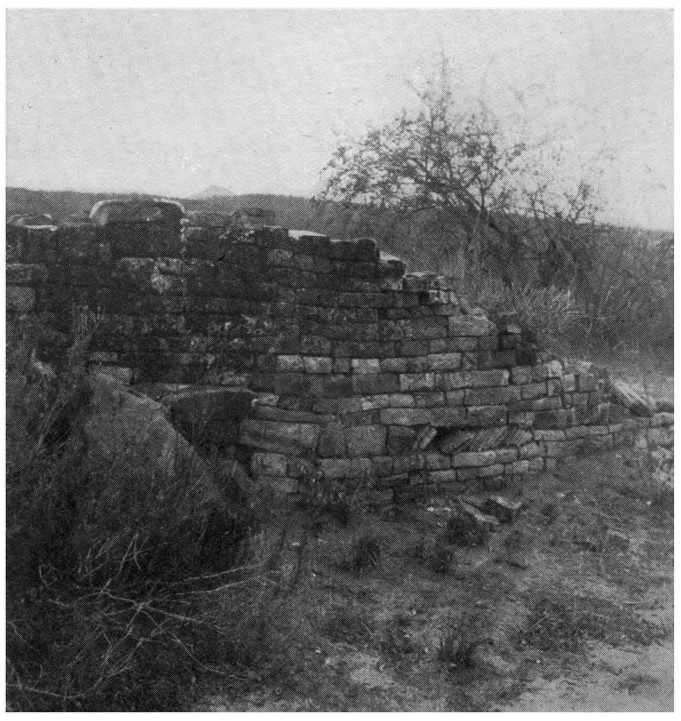


3. Maryland; wall No. 2, showing black stone courses.

4. Maryland; wall No. 1.



5. Pattern on wall No. 1.



6. Pattern on wall No. 2.

boulders (see Diagram 4), at the same time excavating in front of the retaining wall. This latter we excavated to its base and for 2 ft. below it through midden material. The wall was 5 ft. high. We found no occupation levels, and from the nature of the soil it was evident that midden would persist to bed rock as was the case in the trial hole near by. We therefore left it and continued on the trench, where there was ample evidence of occupation, though no noticeable difference existed between it and the material in JS 2*b*. On reaching the original ground surface we relinquished work. Trench 2, seen on plan, revealed no feature of interest.

There is nothing here to show that the site was not occupied contemporaneously with the occupied area excavated in JS 2*b*, and there is every indication that such was the case.

F. The Western Midden

At the top of the talus immediately west of the Western Ascent we found a large accumulation of potsherds, amongst which were a few pots which admitted of reconstruction. These, there is no doubt, were deliberately thrown over from the summit. We have reason to conclude that they represent the latest of the Mapungubwe pottery, and very few pieces exhibiting the black-glaze finish of the best period came to light. A noticeable feature of the site was the strong, and at times almost overpowering, odour of midden gas, which escaped from the sherds in quantity when washed.

G. Bambandyanalo (see Diagram 5)

The long hill to the south and west of Mapungubwe and running parallel with it bears on its flank a great fallen boulder, which has become detached from the parent mass and has slid half-way down the talus. To this rock local tradition attaches the name "Bambandyanalo" and, in the absence of another name, we adopted it for the hill itself.

The slope of the hill visible from Mapungubwe carries numerous small portions of walling (pl. xi, 1), while on the further side there are remains of extensive walling, much of which is ruined, though a portion is still fairly intact. The valley beneath this long wall is an elevated area, grass-covered, and with a subcentral but obviously artificial mound. The appearance of the place at once suggests an old settlement, and we spent some time investigating it.

Our first work was to cut a trench through the mound. This trench, 50 ft. long and 4 ft. wide, cut through 2 ft. of top soil and entered midden material, containing numerous ash layers. We dug to a depth of 15 ft. in midden before reaching bed rock. We then opened a trial hole on the lower slope of the mound, where very similar conditions obtained, and we reached bed rock at 9 ft. 6 in. At 4 ft. from ground level in the south corner we encountered a baby's skeleton lying flexed and on its right side, the feet being higher than the rest of the body. The skeleton was covered by a thin layer of ash and the strata above showed no interference, from which it would appear that the body had been thrown there without ceremony. Nothing was found with it except some large pieces of potsherd which partially covered it. In this pit there was abundant evidence of copper smelting having been carried on, and fragments of tuyères and pieces of slag were numerous.

We then turned our attention to the slopes immediately beneath the walling, and here we found four children's graves, of which the particulars are as follows:

No. 1 (pl. xi, 2). A small baby lying flat on its back. Skull 12 in. away from body and among some broken pots, one of which was provided with a handle. Above the skull was a small upright stone, which apparently once marked the site of the burial. Near the skull there was a quantity of small, green, glass beads, and some fragments of iron bracelets.

No. 2 (pl. xi, 4). Child, flexed and lying on right side. Skull crushed, left arm flexed and right arm extended, 2 ft. below ground level. Accompanied by six pots and one toggled beaker.

No. 3 (pl. xi, 3). Child, apparently 5–6 years, lying flexed on left side, 3 ft. below ground level, and in an oval hollow excavated in the bed rock nine pots arranged round and slightly above the body, of which pots one was provided with a pedestal, and one had two toggles, or lugs, bored vertically. The skull was lying crushed beneath two pots.

No. 4 (pl. xii, 1). Baby, lying on left side with skull crushed, on earth bottom, 19 in. below surface. One broken pot near rump.

In most instances the pots, though broken, were repairable, and very few fragments were found to be missing, which suggests that the pots were intentionally broken at the time of the burial. No common orientation existed.

The walling on the hillside is set on the bare sloping rock and is faced only on the outside. No infilling exists behind it, which indicates that the hill above was not occupied, or only occupied by very few people, and for an insufficient time to admit of the accumulation of refuse. When complete the wall must have been an imposing one, but it is now completely ruined in the centre, and stands to a height of 2 or 3 ft. to the south. It is only at the northern end that it remains fairly intact, and at this point it impinges upon a more solid construction from which it is divided by a narrow opening. This originally gave access to the hilltop. This better-

preserved wall is perched upon the brink of a precipice, and probably defended the entrance (see pl. xii, 2).

The finds at Bambandyanalo were as follows:

A fine series of pottery.
Portions of human figurines.
Clay object, nipple-shaped, with two holes.
Clay ox.
Honing stones.
Fragments of ivory bracelets.
Tapered bone instrument.
Arrow-head.
Iron chisel.
Fragments of tuyères.
Fragments of crucibles.
Smelted copper.

Beads of types found also at Mapungubwe were recovered.

H. Other Sites Visited

The following sites, extending from the Bechuanaland border on the west to 30 miles east of Messina, and including a few to the south, were visited and examined so far as proved practicable:

Parma.
Maryland.
Shirbeek.
Beitbridge.
Riet.
Haddon.
Sibsey.
Singalele.
Dzata.
Verdun.
Kaalkraal.
Islet.
Schroda.

These sites all contain some walling accompanied by other evidences of occupation. In order to describe them adequately for the present purpose, some sort of grouping is necessary. I am, therefore, classifying them having regard to the method of building adopted in each instance, without in any way committing myself to the opinion that each group indicates any definite racial group, though such would appear probable.

The walls can thus be divided:

Group 1. *Mapungubwe type.* Those in which the stones neither fit one another, nor are they laid in regular courses. They consist of rough blocks placed without regard to any constructional method, the interstices between them being filled in with smaller fragments. No ornament is attempted, and they are generally faced on one side only. They would more properly be spoken of as revetments rather than as walls, their purpose being the retention of the soil on the hill slopes or, in some cases, the filling in of gaps to prevent access along other than the recognized paths. They are very infrequently faced on both sides, but, where this is the case, they finish in rounded ends. They are backed by an infilling of stones thrown in haphazard.

Group 2. *Dhlo-Dhlo type.* Those in which the masonry consists of small, finely jointed stones, squared externally and laid in regular courses, the stones being carefully selected to fit the courses, which are generally level and well laid. Door grooves and steps, so marked a feature of the earlier Zimbabwe type, are absent. Ornament is frequently included by arranging smaller stones to form a pattern, or by the inclination of courses of stones of another colour. They are generally faced on both sides, and finished with rounded ends. The marked similarity of these walls with the walls of Dhlo-Dhlo and Nanatali suggest at once a common origin.

Group 3. *Dzata type.* Those in which no, or very little, regular coursing is apparent, the stones being selected to fit one another and not to fit courses. The result is generally neat and orderly. Ornament is sometimes included, though less frequently than in Group 1. Wall ends are frequently squared off. They are generally thicker than those in Group 1, and are faced on both sides.

Group 4. *Fortifications.* Generally similar to Group 1, but considerably later, as evidenced by the cultural objects found in association. Frequently loopholed, and sometimes have entrances with timber lintels. More generally roughly faced on both sides. The walls sometimes enclose hut sites, and sometimes fill in interstices between boulders. Occasionally enclosing walls and fortification walls are found in association.

More important than the technique employed in building is the shape of the walls, which is necessarily indicative of the purpose to which they were put. In this connexion it is noteworthy that, though the Dhlo-Dhlo type is present, not one of these buildings is circular, nor do they, in their present condition, enclose anything. In some instances they appear to have partially enclosed small occupied areas, the intervening spaces having been filled with brushwood or pole fences.

This grouping will form a suitable basis on which to describe the ruins visited and does not violate the historic sequence. At the same time it must be borne in mind that the groups were possibly to some extent overlapping or contemporary in the time scale.

Group 1. *Mapungubwe type*

(*a*) *Mapungubwe*
(*b*) *Bambandyanalo* } *previously described.*
(*c*) *Sibsey*.[1]

This site is situated 15 miles west of Messina, and consists of a small ruin more or less circular in shape

[1] The owner spelt the name of the farm as given but on the Survey Map it is spelt Sibsby.

surrounded by a wall with entrances, and containing partition walls inside. Below it and on level ground is an extensive occupation area covered with midden material, including an abundance of potsherds, in which hares have extensively burrowed, revealing cement pavements below. The pottery is clearly of Mapungubwe type. The site is one which would well repay excavation, and application was made for permission to put down a trial hole, but this was withheld. The walled area is of considerable interest and I much regretted that the owner of the farm was unwilling to comply with my request, which, had it been acceded to, would certainly have added something to our knowledge of the Mapungubwe people.

I am unable to give more details for the reason stated, but I collected a few potsherds, which, with the knowledge we have gained of the ceramics of this area, were sufficient to enable me to ascribe the ruin and the site to the Mapungubwe period.

(*d*) *Riet.*

This is a fortified kopje 30 miles due south of Messina. On the summit is a low stone coping of which only a small portion still remains intact. Immediately below the summit is a small accumulation of midden material in which potsherds of Mapungubwe type occur. The place was apparently occupied for a very short period and probably only as a temporary place of safety. A pile of stones within the enclosed area was opened up in the hope that it might possibly mark a grave, but they proved to have been placed on bed rock with only a thin layer of soil intervening. Mapungubwe potsherds occurred here.

Group 2. *Dhlo-Dhlo type*

(*a*) *Maryland* (see pl. xii, 3–6, and Diagram 6*c*).

This site is in the Limpopo valley, 5 miles north of Messina, on a granite slope in thick bush. There are here two lengths of walling built on sand without foundation. Both are slightly curved as though intended to afford some protection to a flat area in which the huts were probably built. Excavation within this area showed only a thin layer of cultural material in which I unearthed a large and well-worn grinding stone.

From the abundance of small fragments of copper ore in the vicinity it is evident that copper smelting was carried on here.

The walling is built of fragments of the local aplitic granite, neatly squared and well fitted, and is finished with rounded ends. The infilling is rubble. As shown on the diagram some pattern occurs in the southern face of the south wall, and on the north wall two courses of black stone are worked in. In addition to many copper fragments a series of glass beads was obtained by sifting. From the shallowness of the soil it is quite evident that the site was only occupied for a very short time.

On the flat ground between the site and the river an old kraal site was found, where we collected glass beads in abundance on and around the old floors. There is little doubt, however, that this is of recent date, but the fact that the beads are of a kind no longer procurable makes it of some interest.

(*b*) *Haddon* 1 (pl. xiii, 1).

Near the homestead on this farm, which is situated 19 miles west of Messina, there is a length of walling on the lower slope of a granite kopje, so placed as to confine a small hut area with steep rocks at the back. It is more or less semicircular, and was originally 90 ft. long. Unfortunately 45 ft. have been destroyed to provide building stone, but what remains is sufficient to make it evident that the wall, when intact, was the best example of this type of building in the whole area. The portion still remaining is well built of carefully selected stones, well fitted together, coursed and bonded. It is set upon the solid rock, large blocks of stone being used where necessary to obtain a level first course. Soil appears to have been used to fill in the interstices. Large blocks of granite lying in the way of the wall were not removed but built over neatly. Two drainage holes have been formed, and the wall, over part of its length, was decorated with a narrow check pattern. This will be seen to end abruptly at a vertical joint to the left of the photograph, after which a black stone course has been run in. In the demolished portion the check pattern also occurred. The height averages 5 ft. and the width 3 ft., and it is built to a slight batter. A number of copper fragments and some potsherds were recovered, together with a series of glass beads. Like Maryland, this site was evidently occupied only for a short period.

Haddon 2 (pl. xiii, 2).

The second piece of walling at Haddon is to the west of the homestead on the scree-covered hillside. It is in a very ruinous state, but, from the careful selection of the blocks of ironstone used in its construction, I do not hesitate to ascribe it to this group. It is semicircular and partly encloses what was apparently a kraal site. There are two stone circles, evidently old granary foundations, nearby. This again was only briefly occupied.

(*c*) *Kaalkraal* (see Diagram 6*e*).

This site was visited by Mr Schofield, who reports that the wall is about 4 ft. high, constructed with large, roughly dressed blocks. Black and striped beads were found there.

(*d*) *Schroda* 1 (pl. xiii, 3, 4).

Two pieces of walling occur on this farm, which is 41 miles west of Messina. The finer of the two is on the hilltop south of the homestead where it cuts off the end of the rock-covered plateau, which it serves to defend. It evidently belongs to this group though it is more roughly built than those previously mentioned, probably on account of its having been built of sandstone. Its length is about 50 yards, but much of it has fallen down. The exterior face is better built than the interior, where there are no regular courses. Its thickness averages 3 ft. There is a later wall outside it, to which reference is made later.

The other piece of walling is on rising ground near the Messina road, and calls for no special remark. I had hoped to do a little exploration on Schroda in view of its nearness to Mapungubwe but was unable to obtain the owner's permission.

Group 3. *Dzata type*

(*a*) *Dzata* (pl. xiii, 5, 6).

Dzata, the old Venda capital, was visited by both me and Mr Schofield, who visited it in company with Professor Lestrade. A description of the old town occurs in Mr Schofield's report and it is unnecessary to duplicate it here. The photographs will serve adequately to make clear my meaning in laying down as the distinctive type of building that the stones are laid to fit one another rather than to fit any definite courses.

The Venda claim the ruins as the work of their ancestors, and the spot is regarded as sacrosanct. The chief himself cannot visit it, and it appears to be regarded as unlucky. There is, however, so I am informed, no taboo on the ruins, such as seemed at first to be indicated.

On the occasion of my visit to Dzata, where I was most hospitably entertained by Chief Mphephu, I collected a few potsherds, beads and copper wire which I found lying on the surface, feeling that it was important that any available evidence that might shed light on its past should be obtained. On exhibiting these to the chief he recoiled in horror from them, but he made no objection to my having them. A note on the beads and wire is appended to Mr Beck's report.

Some difference will be noted in the structure of the walls shown, a difference that is, I believe, due more to the stone used than to the method employed.

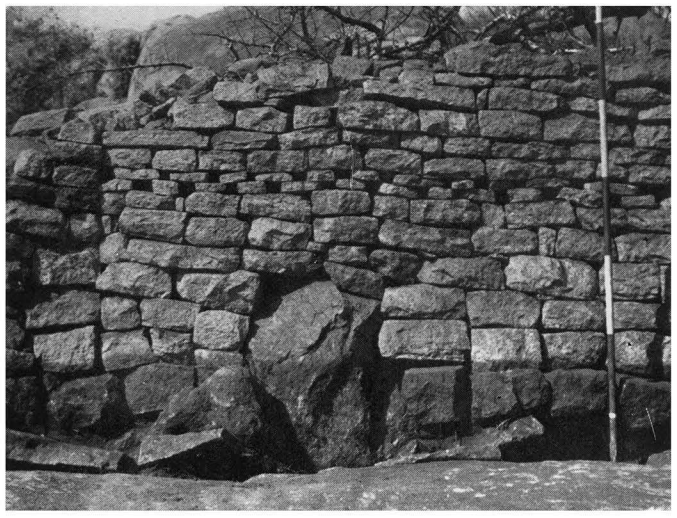
(*b*) *Verdun* (pl. xiv, 1, 2, and Diagram 6*d*).

This site, situated about 25 miles south-west of Messina, is in the custody of the Historical Monuments Commission, from whom, however, I was unable to obtain permission to do any digging. I was, therefore, debarred from the opportunity of obtaining a series of beads, such as I endeavoured to obtain from every site visited, but I was at least able to see the walling and take some photographs. I see in them a remarkable resemblance to the Dzata walling and believe them to have been built by the same people. They are, if anything, better than Dzata, and the stones (in one piece of walling at any rate) are beautifully laid. The introduction of a little pattern is unusual and interesting, as is also the seat on the other side of the same wall, which is similar to those in the Dzata walls.

The ruin is situated on the edge of a precipitous hill about half a mile from the homestead. It consists of two pieces of walling, much of which has fallen down quite recently, and unless steps are taken for its preservation there will be but little left in a few years' time. The two walls converge to form an angle, and, with the cliff edge, they enclose a small area in which a hut floor can still be seen. The small size of the hut area would preclude the possibility of more than one family living there. There is very little soil within the enclosure, but on the other side of the shorter wall and opposite the seat there appears to be a greater depth, which might yield some information of interest if excavated.

(*c*) *Shirbeek* (pl. xiv, 3, 5, and Diagram 6*b*).

Shirbeek is 30 miles east of Messina, and on the kopjes at the back of the kraal near the main road there are many ruined walls, generally following the Dzata tradition, though admittedly of more recent date. The headman of the kraal, Tshurundu, who hospitably received me and gave me all the help I needed, informed me that his family once occupied the ruin nearby, and that he himself was born in it. According to him the walls were built at the time of the Shangaan invasion under Gungunyama, which would make them not more than 40 years old. They cannot be very old as timber was used in their construction, and logs of wood are still to be seen supporting portions of walling and as lintels in doorways. The main ruin is a fortified hilltop with an enclosing wall round the major part of it, while the eastern end, which is loopholed, probably acted as a redoubt to defend the more vulnerable approach to the hill. The area below, enclosed by rocks, has been used as a kraal site, and a hut floor still remains. I did a good deal of sifting here but obtained no old beads. Those I found were very modern and fresh-looking but they are old enough to have gone out of date, and are no longer to be bought in the stores. Tshurundu may therefore be correct in his statement. If so, these ruins are of interest

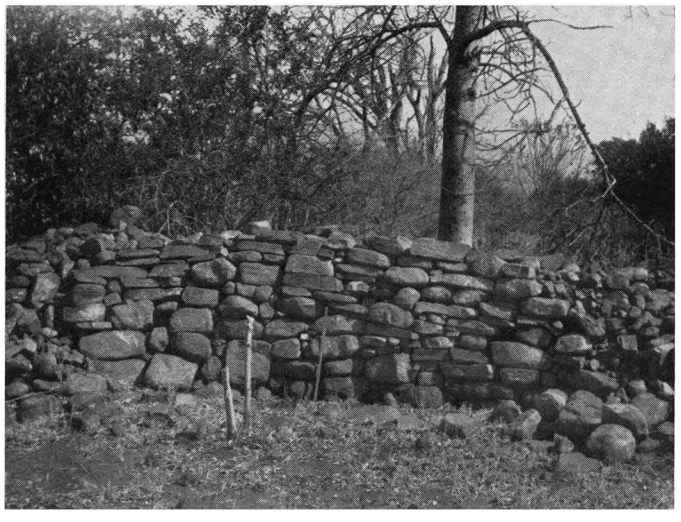


1. Haddon; wall No. 1.

2. Haddon; wall No. 2.

3. Schroda; wall No. 1, outside face.

4. Schroda; wall No. 1, inside face.



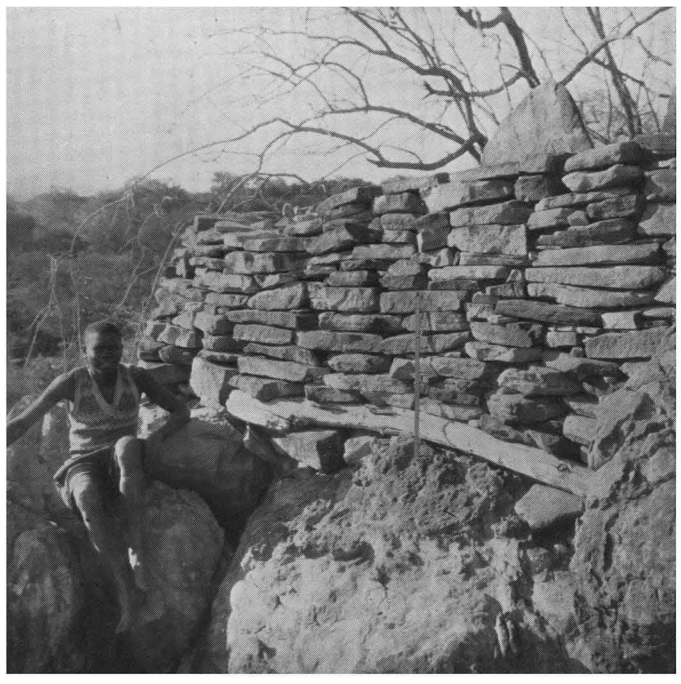
5. Dzata; Kgotla wall.

6. Dzata; Kgotla wall, showing seat.

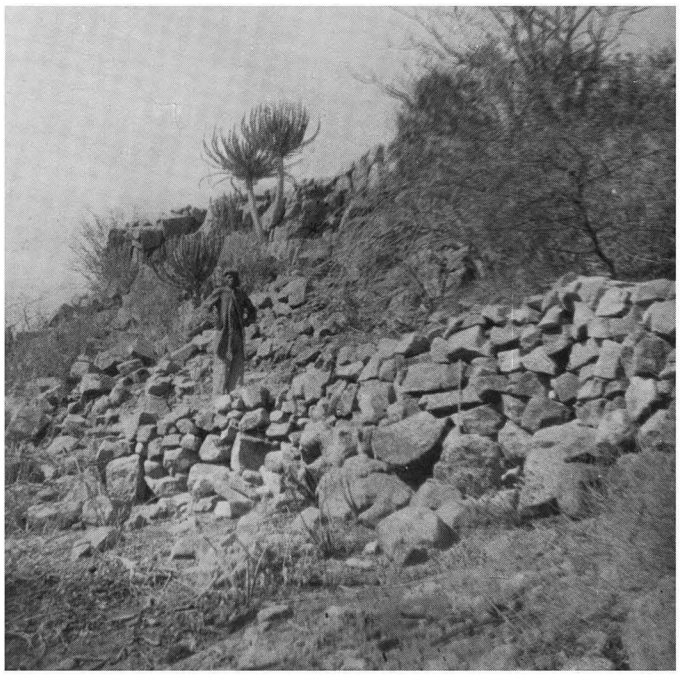
PLATE XIV

1. Verdun; Kgotla wall, showing seat.

2. Verdun; ornament on Kgotla wall.

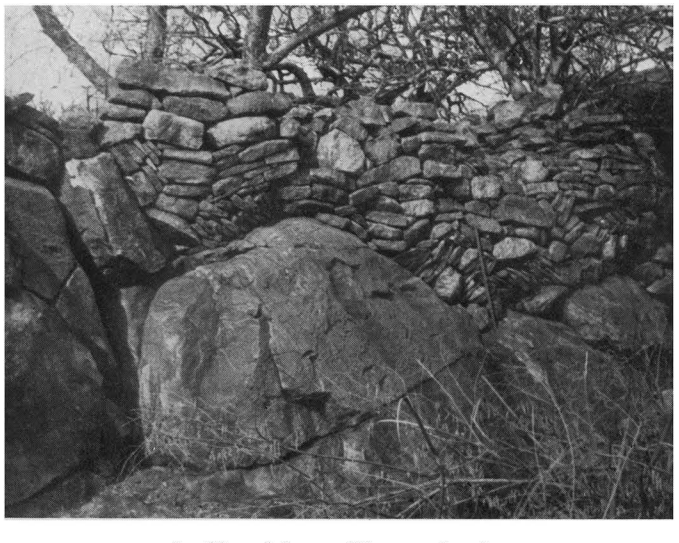


3. Shirbeek; timber supporting wall.



4. Islet; walling in fortified kopje.

5. Shirbeek; ruin near Native kraal (exterior).



6. Singalele; walling on kopje.

as examples of the persistence of stone wall building until modern times, and for as long as such structures were needed for protective purposes.

As a whole the building is much cruder than anything at either Dzata or Verdun and marks a distinct decadence in the art.

I managed to secure an old Venda door at Shirbeek which I have already forwarded to the University. This door is of considerable age and is a rarity which I felt justified in acquiring on account of its ethnological interest.

Group 4. *Fortifications*

(*a*) *Parma.*

This was visited and reported upon by Mr Schofield, who states that the wall consists of a course of huge boulders resting on a bed of ashes 12 in. thick. It is of the usual rough character and has a loophole at a height of 5 ft. above its base. This commands the entrance to the outer enclosure. On the same site he discovered a small cement floor 6 ft. in diameter under which were fragments of pottery of Bambandyanalo type. Other similar fragments were found in one of the trial holes on the surface. He did some excavation and recovered the following objects—in addition to potsherds and beads:

Copper fragments.
Bone tubes.
A bone awl.
An iron arrow-head.
Two ear ornaments.
Some fragments of glass beads.

The last named I forwarded to the British Museum and Mr Braunholtz writes me that he submitted them to Mr Hobson, who considers the glass to be Arab and *possibly* medieval, but it is impossible to date it definitely.

It will thus be noted that we have at Parma a quite definitely late occupation superimposed on an older one which has marked affinities with Bambandyanalo. There seems, however, to have been an interval between the occupations.

Mr Schofield discovered, in the course of his trenching operations, a stone implement site which will be mentioned in the appropriate place (Appendix I).

(*b*) *Singalele* (pl. xiv, 6).

Singalele is the name of the conspicuous granite kopje which rises, surrounded by lower groups of rocks, just east of the golf links at Messina. It appears to have been the centre of extensive smelting activities in medieval and later times and evidences of occupation exist everywhere.

There are several sites which appear to have been occupied by kraals, though in none of them is there any depth of deposit, which points to a short period of occupation. In one of these we sifted the loose midden soils and obtained a series of beads similar to the Mapungubwe series, but the cultural soil did not here exceed 6 in. in depth.

On the slopes of one of the adjacent kopjes and facing north there is a good deal of very rough walling, in which the small fragments of rock used have been so placed as to suggest an attempt at pattern, but it is evidently quite accidental and is brought about by the building up of the wall, which was begun by placing flat stones upon the curved surface of the boulders. No space sufficient for occupation is enclosed by the walling, and it is therefore evident that the ruin is a fortification. There is here very little artificial soil, and there is no evidence to indicate that the walling is of any great age.

(*c*) *Islet* (pl. xiv, 4).

This farm is situated on the bank of the Limpopo 13 miles west of Messina. On a granite kopje south of the homestead is a quantity of stone walling which encloses an area nearly at the base of the kopje and continues to the summit. The impression the ruin conveys is of a walled kraal with a fortified kopje behind it for additional safety in time of need. The walling is very rough and owes its strength to its thickness.

We sieved for beads of which we obtained a series, and we collected a pottery whorl, an iron spatula and an axe, which two latter objects were of no great age and of very fresh appearance. Potsherds were present, as everywhere.

(*d*) *Beitbridge* (pl. xv, 1, 3).

This is a fortified kopje on the banks of the Limpopo (Transvaal side) about 1 mile east of Beitbridge. The top, which is a narrow flat area, was once surrounded by a stone coping of which portions still exist. Extensive protective walls were built in terrace formation on the northern slope, but no signs of occupation were visible. It would appear to have been built for occupation in time of emergency.

(*e*) *Schroda* 2 (pl. xv, 2).

Outside the older wall on the kopje at Schroda is a very roughly built retaining wall in which an entrance has been left near the middle. It is faced only exteriorly, the interior being filled up with loose blocks. The intention of the builders was evidently to fortify the area enclosed by the earlier builders, whose wall was at the

time considered insufficiently strong for defence purposes, and may possibly have been partially ruined.

(*f*) *Kanjili and Pidi* (pl. xv, 4).

These are two hills in the Dogola Reserve and to the south of the mountain of that name. On both of them there are short lengths of ruined walls, those on the former being the better preserved. They are built of long blocks of black hornblendic rock set header-wise. As there are no evidences of actual occupation they appear to be fortifications built for emergency purposes.

In addition to the above there are remains of fortification walls at Pont Drift, Ratho, Hilda and Western Kopje, Limpopo, which were visited and examined by Mr Schofield. He also examined some less well-built walling on Weipe, Eastern Kopje (Mapungubwe) and Bester's Farm, all of which are, in his opinion, the stone bases of kgotla enclosures, the upper parts being stockades which have perished. Pertinent details of these sites are to be found in Mr Schofield's report.

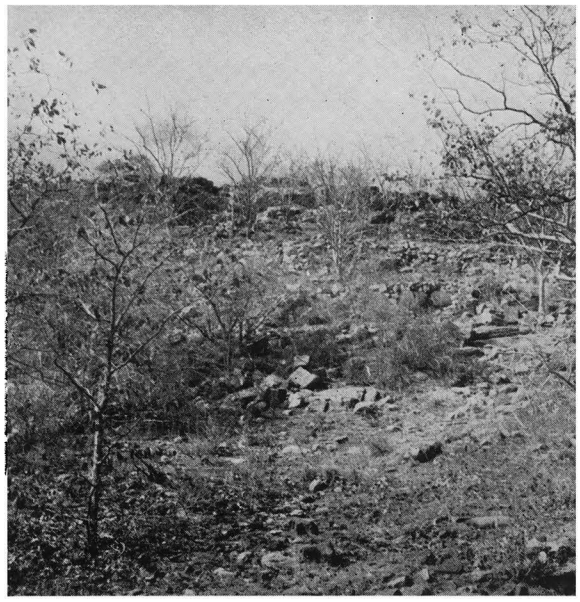
The various types of walling, as detailed above, are set forth in the following table:

Locality	Nature of walling	Purpose
GROUP 1. ***Mapungubwe type***		
(*a*) Mapungubwe	Revetments	Soil retention on hill-top and slope
	Short lengths of walling	Protection
(*b*) Bambandy-analo	Revetments	Intended for soil retention but not used
	Small walled enclosure on precipitous rock	Protection
(*c*) Sibsey	Small walled enclosure	? Chief's quarters
(*d*) Riet	Low coping wall on kopje top	Protection
GROUP 2. ***Dhlo-Dhlo type***		
(*a*) Maryland	Two lengths of walling with pattern	Probably connected with occupation sites, though they actually enclose nothing
(*b*) Haddon	(1) Granite walling with pattern (2) Ironstone walling	
(*c*) Kaalkraal	Length of walling with lateral projecting wall	
(*d*) Schroda (1)	(1) Short length of walling on low ridge (2) Long wall on summit of kopje	
GROUP 3. ***Dzata type***		
(*a*) Dzata	Lengths of walling in old Venda town	Kgotla walls, and other ruins
(*b*) Verdun	Two walls on hilltop with pattern	One a kgotla wall which, with the other, encloses occupation area
(*c*) Shirbeek	Extensive walling on low kopjes	Protected occupation sites
GROUP 4. ***Fortifications***		
(*a*) Parma	Extensive walling, loop-holed	Protection
(*b*) Singalele	Revetments between rocks on hillside	Protection
(*c*) Islet	Extensive walling at base of, and on, kopje	Occupation, with easily available protection
(*d*) Beitbridge	Low coping wall on top of small kopje	Protection
(*e*) Schroda (2)	Outer revetment wall	Protection. Built to enlarge older area
(*f*) Kanjili and Pidi	Rough walling near kopje tops	Protection

To what extent, if any, are these varieties of wallings interrelated? The two groups which call for comment in this direction are Groups 2 and 3. There is marked similarity between the two, and the main difference lies, not in the form or quality of the walling, but in the nature of the stone work. In this connexion it is significant that in both sets a different material was employed. While Group 2 is almost exclusively of granite, Group 3 is of sandstone. The former material, obtained from the exfoliation of the granite kopjes, naturally permits itself to be broken up into small blocks of more or less uniform thickness, while the latter exfoliates in thin slabs along the parallels of stratification, and these are of uneven thickness and fracture into wedge-shaped and uneven fragments. There is every indication that the builders of Group 2 would naturally produce walling of the Group 3 kind, if they found themselves under the necessity of having to use a material other than that to which they were traditionally accustomed, and any doubt that such was the case is resolved by an examination of the pottery associated with the ruins. The sherds found at Dzata are in effect similar to those found at Maryland and Haddon. They all conform to the Zimbabwe D type (red and black polychrome which, though rare at Zimbabwe, is common at Dhlo-Dhlo and Khami). While, therefore, there may be considerable variation in age, as in the case of Shirbeek, which is undoubtedly of very recent date, they may with safety be ascribed to one people, and that these were the early Venda there can be little doubt.

3. OBJECTS RECOVERED FROM THE EXCAVATIONS

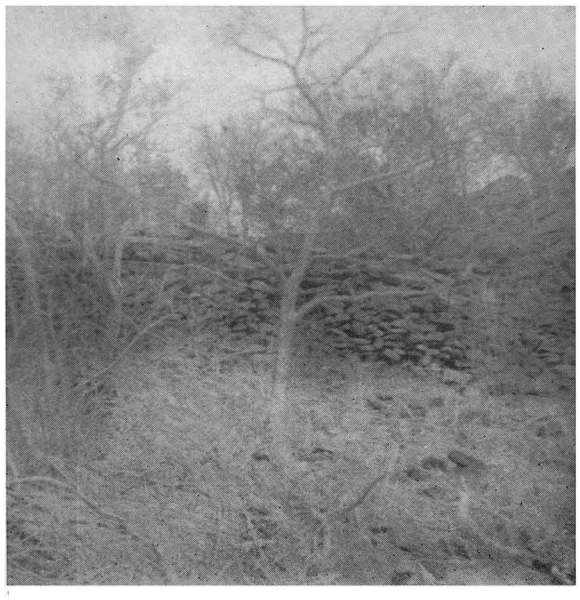
As has been previously stated, the objects found are comparatively few in number, having regard to the great quantity of material handled. This is hardly surprising in that the present-day Bantu has few material possessions, and he does not throw much away so long as it has any use to which he can put it. A cursory



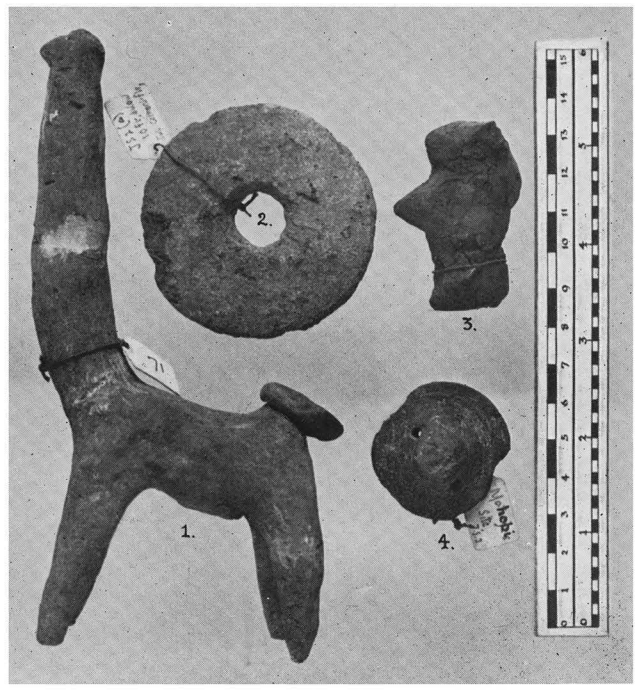
1. Beitbridge; fortified kopje.

2. Schroda; wall No. 2.

3. Beitbridge; coping wall on summit of kopje.

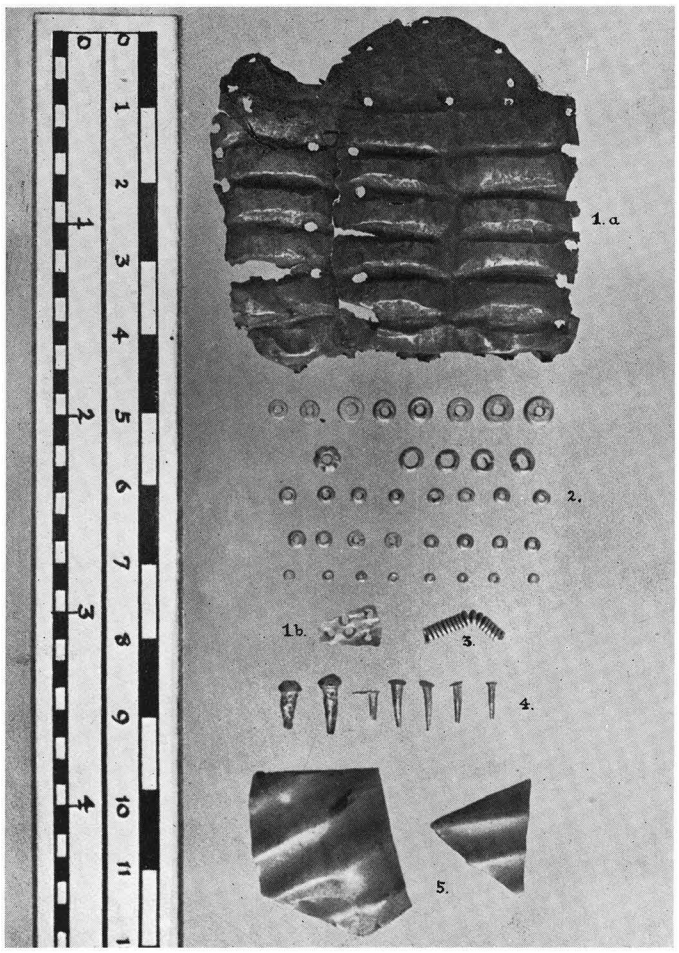


4. Kanjili; late walling near summit.

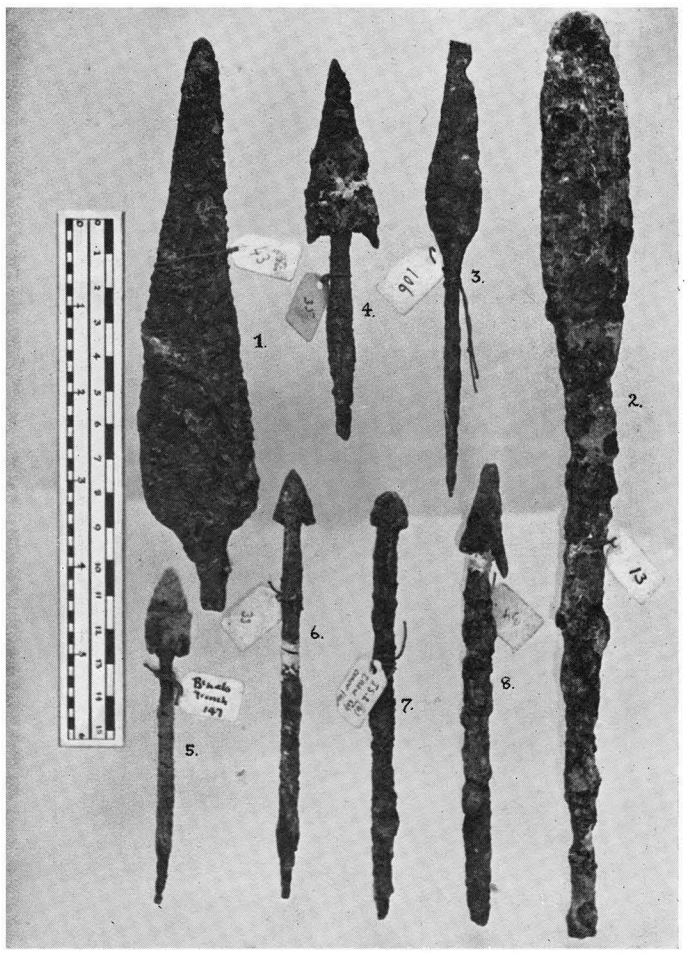


5. Clay objects from Mapungubwe.

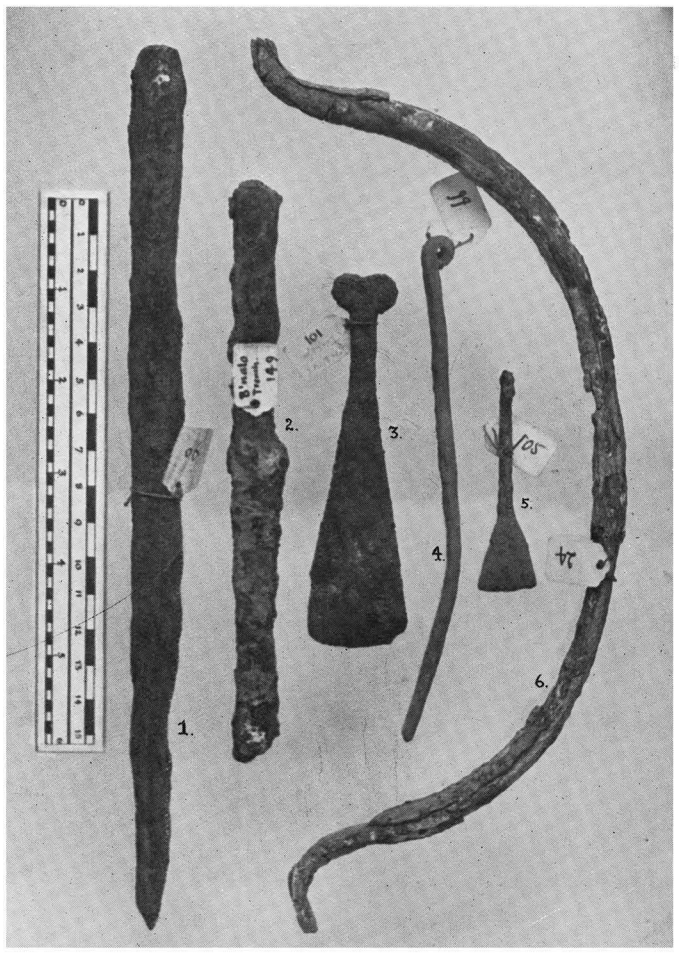
PLATE XVI



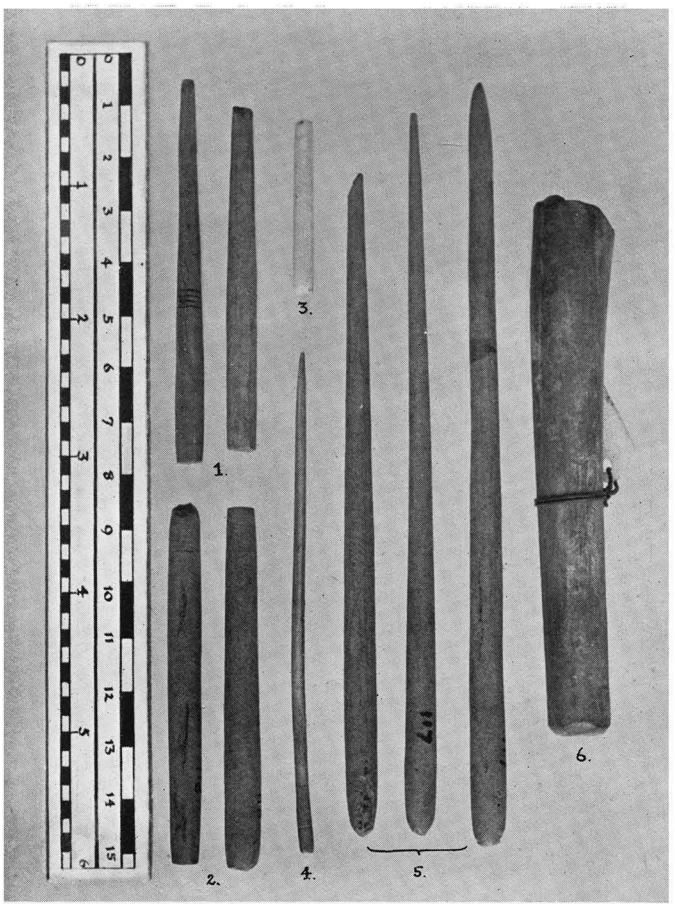
1. Mapungubwe; gold foil, wire, tacks, beads, and two pieces of celadon below.



2. Mapungubwe; spear and arrow heads.



3. Mapungubwe; metal objects.



4. Mapungubwe; bone objects.

inspection of any recently vacated Native kraal will illustrate the truth of this statement. Of imperishable articles the inhabitants of Mapungubwe possessed very few—fewer indeed than the Native of to-day, since he was obliged to make them for himself. We found no traces of wood or vegetable remains other than those which had been completely carbonized by subjection to intense heat, and so preserved. It is also to be noted that the objects found are fewer than would otherwise have been the case, had the inhabitants not imported so much soil for filling in and constructional purposes. This has, to a very great extent, adulterated the midden material, of which it is necessary to dig out a considerable quantity without finding anything other than bones, fragments of charcoal, occasional potsherds and a few beads.

1. *Gold* (pl. xvi, 1).

Gold occurred in the shape of beads, of which there are four distinct varieties, tacks, used and unused; pieces of foil, most of which contain tack holes and were originally attached to wooden bases; and occasional fragments of coiled wire.

A comparison of these objects with the collection of gold objects retrieved from ruins in Rhodesia and preserved in the Rhodesian Museum is sufficient to warrant the opinion that they were all manufactured by the same people, and at the same period. We obtained no evidence of gold objects having been manufactured locally, and it seems probable that they came from some distributing centre in Rhodesia, not far distant from a gold-mining area. It is, however, undoubtedly the case that the gold tacks were made use of locally, as some of them are flattened at the head while others are rounded and obviously unused. If, as we are of opinion, Mapungubwe was inhabited partly by the later Zimbabwe people, they would probably have brought the manufactured gold objects with them and would have ceased to extract and smelt gold on account of the distance from the gold areas. While they prove but little, these objects constitute a very obvious link with the Late Ruins Period in Rhodesia. An examination of the slags found, made by Professor Stanley, has failed to reveal any evidence of gold smelting having been carried on locally (see Appendix II).

It should be noted that the gold occurred almost exclusively in one area—that in proximity to the grave area—and it was all found at or very near the surface, which points to a relatively later date. At Zimbabwe, as Mr Schofield[1] has pointed out, the gold was also near the surface and in association with objects of the Second Zimbabwe Period, which cannot be ascribed to a later date than A.D. 1550. Though in itself inconclusive, relative contemporaneity is at once suggested for the gold from Mapungubwe.

2. *Iron* (pl. xvi, 2).

The iron objects are all very much oxidized, and it proved impossible in many instances to remove the heavily indurated matrix without injuring them. A few tanged spear-heads of the flat-bladed type (i.e. without midrib), and without barbs, and some arrow-heads, generally laterally barbed, were recovered. Coiled iron wire and a few tools including a spatulate instrument, were also found. Iron was smelted and the objects probably forged locally. It is rather remarkable that we found no hoes or axes.

3. *Copper* (pl. xvi, 3).

The copper occurred mostly in the form of twisted wire, which, from the evidence furnished by one of the burials, was used for heavy bracelets and leglets, precisely as it is used to-day by the Venda. A quantity of this was encountered, mostly in short lengths, retaining the grass core round which the wire was wound. For the preservation of the grass the antiseptic properties of the copper is doubtless responsible. A few other objects were obtained, but nothing calls for special mention other than a few copper tacks found in the grave area. These were used, as in the case of the gold tacks, for nailing copper foil on to wooden bases. A notable example of this is in the Rhodesian Museum in the shape of a ceremonial battle-axe with a copper-encased shaft from Khami.[1] The copper had stood the test of time better than the iron, and a few fragments of coiled wire from the grave area are quite fresh and unoxidized.

4. *Bronze* (pl. xvi, 3).

A single example of bronze was found. It is not unlike a bucket handle, and probably served a similar purpose. The origin of Native-made bronze objects is discussed by Miss Caton-Thompson,[2] and there is no need to rediscuss it here. It is sufficient to remark that there is no evidence of its having been locally made.

5. *Bone* (pl. xvi, 4).

Bone was made use of in the fashioning of pins and awls, such as would be employed in the sewing together of skins, and in short, cylindrical, or, more rarely, tapering, lengths of a few inches as ear ornaments. One of the bone pins (the only one in perfect condition) is

[1] "Zimbabwe: a critical examination of the building methods employed", *S.A.J.S.* vol. XXIII, p. 984.

[1] *Occasional Papers of the Rhodesian Museum*, No. 3, p. 40.
[2] *Zimbabwe Culture*, p. 64.

decorated with a fine hatched pattern at the thicker end. A bone tube, one end of which was rounded off, was also found.

6. *Stone* (pl. xvi, 4).

Stone was employed in a variety of ways and for purposes for which it is to-day employed by all Native peoples. Grinding stones, stone pounders, mullers, round hammers, mortars, burnishers and the like are of common occurrence. We found a few ear ornaments of calcite.

7. *Clay* (pl. xv, 5).

A few small clay animals, such as are to-day made everywhere by Native children, came to light. Of these the giraffe is the most ambitious attempt. The clay oxen are of the traditional form and differ in no way from those made now. We found a few spindle whorls, a tiny spoon (probably a snuff spoon), and a stopper-shaped object bored with two holes, which may possibly have been worn as an amulet. It might be mentioned here that no recognizably phallic objects were found.[1]

The pottery, which constitutes the most important section of our finds, is separately dealt with by Mr Schofield, who has been able to use it as a dating material. Actually it has proved to be the only reliable dating material we have to work on.

8. *Imported articles.*

Glass beads occur in abundance and may be picked out of every sieve. A complete series from all the sites has been sent to Mr Horace Beck, and they are fully dealt with in his report appended hereto.

Two small fragments of porcelain (pl. xvi, 1) were found in the occupation layers on the hilltop, one at 4 ft. and one at 1 ft. from the surface. These were at once forwarded to the British Museum where they were examined by Mr Hobson, who identified them as Chinese celadon, and dated them definitely as late Sung Period, twelfth to fourteenth centuries A.D. While these fragments do not date the site, they are the earliest definitely datable objects found. As they appear to have formed part of the same vessel, it would seem that this vessel arrived at the site unbroken. We do not, however, know how long it may have been in arriving, and it may even have been brought from Rhodesia where similar celadon has been found in much greater quantity. It is very likely that it was kept with great care for a long period, as is the case to-day in the Malay Archipelago, where the Natives possess some very old Chinese porcelain, which they carefully preserve.

[1] Several were found previously. (Ed.)

9. *Vegetable remains.*

Dr Pole-Evans has kindly supplied a report on the vegetable remains, which is appended hereto. I very much hoped that these would supply some dating information, but in this I was disappointed. They suffice, however, to show us that, except for mealies, which we did not find, the food of the inhabitants differed in no way from that of the present-day Natives. They used amabele both as a food and for the brewing of beer; they planted beans and ground-nuts, and they appear to have used the fruit of the marula for the making of marula beer. I infer this from the presence of whole seeds obviously collected together. Had the intention been to extract the kernels, the nuts would have been broken.

10. *Slags.*

I forwarded a collection of Mapungubwe slags to Professor G. H. Stanley of Johannesburg and he has kindly reported on them. His report is appended and is of considerable interest.

A number of animal bones were collected from the occupation area and these were submitted to Professor Malan, from whom I have no report.[1] I do not, however, imagine that they would contribute materially to our knowledge of the site.

CONCLUSIONS REACHED

It will be seen that, apart from the pottery, we have very little material on which to base the probable date of the site. The objects found and above enumerated make it clear that the population was purely Bantu, and, so far as our evidence goes, the occupation period, which was continuous, was a peaceful one. The site bears no signs of having been hastily vacated, or of having been sacked by an enemy tribe. The impression formed was that when the site proved, for some reason or other, no longer desirable, the inhabitants left it and dispersed. What that reason was one can only conjecture. It is evident that the burials on the hilltop took place late in the history of the site, and it is not improbable that they marked the period at which the place was abandoned. In this way it is possible to account for the burial of what appear to be objects connected with the sacred rites of the tribe, which could only have been ceremonially used, and had probably been in tribal possession for a long time. It would not be unreasonable to suppose that, when the people dispersed, they would have buried with the dead chief these sacred objects which would no longer have retained their former significance. An alternative, or possibly con-

[1] See below, Part VII. (Ed.)

(*a*) Gold bangles found with original burial. Smaller objects found with burial No. 10. (Motif: Animal heads, with herring-bone pattern.)

(*b*) Examples of gold beads and tacks. In top right-hand corner, gold nodule.

tributory reason, might be found in the fact that, after so lengthy a period of continuous occupation, the accumulation of decaying rubbish rendered the site too unhealthy. The present-day Native gets over this difficulty by moving his kraal to an adjacent site when conditions become unbearable, but, at Mapungubwe, the only alternative was to move the settlement when the available suitable ground was exhausted.

The unfinished walling at Bambandyanalo seems to suggest that some effort was made by the people to re-establish themselves there, but the site appears to have been hastily vacated for some reason not apparent unless it was that a heavy rate of infant mortality, as possibly indicated by the number of child interments, rendered it unpopular.

The walling tells us nothing, as no walls other than the low external retaining wall in the valley, and the isolated protective walling on the summit, were laid on bed rock under conditions which admitted of reaching the original occupation level, and the results in these cases were negative. It seems probable that the soil filling up the lowest part of the "Bowl" is the oldest deposit on the hilltop, and the floor levels in Trial Hole 4 in JS *2a* marks the earliest occupation of that area, but neither furnish any data that would lead us to conclude that they differ essentially from the rest of the deposit. The varieties of beads and potsherds found in both places were similar to those found elsewhere in undoubtedly later deposits, and there can be no doubt that the culture is homogeneous throughout.

Of the indigenous objects, other than the pottery, the gold alone gives some indication of association with the Second Zimbabwe Period, as has already been pointed out. Everything else is indeterminate in so far as it reveals no divergence from similar articles still being made by present-day Bantu peoples. The same applies to their huts and general kraal appointments.

Mr Schofield's very thorough and painstaking analysis of the pottery reveals a fact of very great interest. This is that while other objects give no evidence of any admixture of racial elements, the pottery makes it evident that two separate peoples inhabited Mapungubwe contemporaneously. He was able to reach this conclusion not only by the finding of two distinct traditional species of pottery on the site itself, but also by a study of the pottery revealed in excavations on the other sites we visited. From this it is apparent that two cultural streams, one from the north and east and one from the west, met at Mapungubwe where they coalesced. Of these the dominant influence is evidently the former, which he has called M_1. It is significant that the best examples of this were found on the hilltop. This pottery consists of pots, bowls and dishes of uniformly fine texture and finish, and usually decorated with a great variety of neatly incised patterns. M_2 is, however, of coarser fabric and poorer finish, and exhibits a great variety of form. Spouts, lugs and bases frequently occur. Though at Mapungubwe these two distinct varieties occur in association, we noted that at Sibsey and at Riet M_1 occurred alone, while at Parma and Pont Drift, M_2 only was found. We thus have at Mapungubwe an overlapping of these two cultures.

Mr Schofield has recognized the Shona affinities of the M_1 pottery, and this he equates with the Second Zimbabwe Period (Z B_2 of Miss Caton-Thompson). Indeed, the similarity between the two was one of the first things that struck us both, and, within a short time of our beginning operations, I forwarded some samples of it to Miss Caton-Thompson, who stated in her reply, "I agree that your pottery is closely like my Z B_2 stuff". We are thus able to link the occupation of Mapungubwe to the most flourishing phase of the Second Zimbabwe Period. Since my return home I have had access to the actual potsherds recovered by Miss Caton-Thompson, and though the texture of the fabric is coarser it confirms our conclusion.

A sidelight of importance in postulating the Shona affinities of the M_1 pottery is shed by an exhibit of pottery made by the Ndau group of the Shona people which I saw at an exhibition held recently in connexion with an education conference in Salisbury. The Ndau people live on the eastern border of Southern Rhodesia, and the pottery referred to came from Chikore. It is of fine texture and is ornamented with inverted triangles depending from a circumferential line, and hatched diagonally. In some instances the triangles are filled in with stippling. Both are characteristically M_1 patterns, and are so strikingly similar that the tribal connexion is unmistakable. They might, but for their obvious modernity, have come from Mapungubwe itself.

The ascription of Mapungubwe to the Second Zimbabwe Period receives strong support from the results of Mr Horace Beck's examination of the beads. His impression that "they come from a very similar civilization to the Zimbabwe ones, but that they are not quite so early as the Bedrock Layer" confirms the finding arrived at by Mr Schofield on the evidence of the pottery alone, and seems to me sufficiently conclusive.

The question naturally arises as to which of the two sites, Zimbabwe or Mapungubwe, was occupied first by these makers of fine pottery. From the presence of the gold objects, which are a strong link with Rhodesia and from which they certainly came, there can be no doubt that the Shona people came across the Limpopo subsequent to their having established themselves at Zimbabwe and possibly at the end of their occupation. This

would account for the finding of ritual objects which would more likely have been brought if the tribe had migrated as a whole. The available evidence goes to indicate that the second occupation of Zimbabwe took place about the middle of the sixteenth century.

The pottery of the M_2 people, who were throughout contemporaneous, is linked up with that which is found on sites to the west of Mapungubwe. Mr Schofield sees in it a "generalized resemblance to Zimbabwe A pottery", and thinks that these people were probably distant connexions of the first Zimbabwe people, and belonged to one of the divisions of the Sotho-Chuana stock.

The finding of a very few fragments of pottery not referable to either of the two main series indicates that contacts were made with other Bantu tribes within reach. Mr Schofield is able to recognize a contact with the people of the Waterberg district who were probably of Sotho-Chuana stock.

Of the foreign imported articles found on the site, mention has already been made of the Sung Period celadon. It is unfortunate that this does not provide us with a definite *terminus a quo*. Actually it proves nothing by itself, and it certainly does not indicate an earlier date than that provided by the evidence of the pottery after comparative study, of which the evidence is too overwhelming to be set aside by the discovery of two small fragments of porcelain which may have been brought on to the site at any time subsequent to their manufacture. The fact that both fragments were found in superficial layers renders it still more unsafe to adduce any proof of greater antiquity for the occupation of Mapungubwe. The pottery must at present remain our sheet anchor in any dating scheme for the site as a whole, even though it produces no conclusive evidence of the date of its first occupation.

That the occupation of Mapungubwe extended over a prolonged period is made very obvious by the great accumulations of midden which, though varying considerably, reaches a maximum depth of 8 ft. on the summit and is as much as 15 ft. below, where, however, it has accumulated both by natural gravitation as well as by probable intentional dumping over the cliff edge. At the same time it must be remembered that this midden might have accumulated very rapidly, especially as so much sand and earth was carried to the summit for levelling-up purposes. For reasons indicated later we incline to put the period of occupation at about 250 years.

For evidence of later immigrations into the northern Transvaal we have to turn to sites other than Mapungubwe, which, so far as we were able to discover, was not subsequently occupied. Reference has already been made to the main features revealed by the other sites visited. Apart from Sibsey and Riet, which appear to be M_1 sites only, these can be classified into: (1) those in which the walling is of Dhlo-Dhlo type, and (2) those which are evidently fortifications, and built with that object entirely in view. The former are associated with "Band-and-Panel" pottery resembling so closely that found at Dhlo-Dhlo (figured by Maciver, *Mediaeval Rhodesia*, pl. xxxiii) and at Khami that it is obvious that they are the work of the same people. These we believe to have been the Venda, who appear to have established themselves for a short time along the southern bank of the Limpopo (Haddon, Maryland, etc.), subsequently moving southwards to Verdun and ultimately arriving at Dzata. None of their very characteristic pottery was found at Mapungubwe, but it is noteworthy that a fragment of M_1 was found at Haddon, which makes it probable that these settlements were established soon after Mapungubwe had been vacated. The building of Dhlo-Dhlo has been definitely shown by Miss Caton-Thompson (*Zimbabwe Culture*, p. 193) to have been carried down to 1700 or even later, without prejudice to the possibility of an earlier occupation, so that we are disposed to date the ruins which exhibit the characters of Dhlo-Dhlo at about A.D. 1750, which gives sufficient time for the movement of the people to have taken place, and suggests a probable date for the evacuation of Mapungubwe. Had this site been occupied contemporaneously it would appear almost certain that we should have obtained some supporting evidence.[1] Dzata itself appears to have been vacated about A.D. 1800.

The sites characterized by the fortifications are evidently considerably later. Mr Schofield found that at Parma, which had been occupied by the M_2 people, a later people had arrived after a definite break in the occupation. And it was they who had fortified the place. These people, judging by the loopholes, used firearms, possessed beads of modern type, and made pottery indistinguishable from that found on other post-Mzilikazi sites. It is, in fact, probable that these fortifications owe their existence to the Tebele invasion which must have spread terror throughout this area. Similar fortified kopjes are to be found to the east of Messina, as at Shirbeek and other places between the Njelele River and the Portuguese border. Here there are Venda people living who have no doubt as to the walling having been built by their own ancestors. At Shirbeek I was assured that the enclosed areas had only been vacated

[1] The fact that the few beads found there are similar to those found at Mapungubwe is not, in itself, sufficient evidence on which to postulate a previous occupation by these people. Had recognizable Mapungubwe pottery been found the case would have been different.

in quite recent times, and that they were actually occupied during the invasion of Gungunyama which took place in 1895.

I should like, in conclusion, to state that Mr Schofield and I are in mutual agreement as to the conclusions arrived at as the result of our joint work. We have been in close correspondence since our return from the field and have freely consulted one another on various points that have arisen. The dating schedule given at the end of Mr Schofield's report should provide a dating basis for future work.

Our work at Mapungubwe, though devoid of spectacular results, has, we trust, added a chapter to what has hitherto been known of the medieval prehistory of the Rhodesia-Transvaal area of South Africa, and, as such, will we hope be of service to future investigators.

APPENDIX I

NOTES ON THE EARLIER PREHISTORY OF THE NEIGHBOURHOOD OF MAPUNGUBWE

It was inevitable that, in exploring the country round about the neighbourhood of Mapungubwe, some evidence should be forthcoming in regard to the Stone Age inhabitants of the area. On the summit of Mapungubwe itself it was not unusual to pick up flakes belonging to the Middle Stone Age. These, however, from the very nature of their occurrence, do not rightly belong there, but have been carried on to the site in ballast imported for infilling purposes. The actual Stone Age sites located were as follows:

1. *Mapungubanyana.* This is a small sugar-loaf kopje immediately to the east of Mapungubwe itself. The summit, which is difficult of access, bears evident traces of human occupation in later times, but scattered about it are a number of spalls of chalcedony and jasper belonging to the Wilton Culture.

2. *Weipe and Armenia.* On both these farms there are interesting groups of rock paintings. Representing as they do the latest phase of the Rhodesian Wilton, which is characterized by the beginning of the polychrome development of cave art, they appear to have been the work of the Wilton people during their southward migration. Some trial sifting at Weipe revealed the characteristic tools of this culture.

The painting at Weipe, which has been traced by Mr van Riet Lowe, is of considerable interest, and contains figures of various species of buck, a fine giraffe, locusts (in polychrome), human figures, and, perhaps the most interesting of any, a hide evidently spread out to dry. These paintings are on sandstone and not, as is usually the case, on granite. The rate of disintegration of the cave sandstone is much more rapid than that of granite, and though they are protected from the weather they cannot, in the nature of things, be very ancient. Mr Schofield is of opinion that these paintings give some indication of the late date of Mapungubwe, which is only a few miles distant, in that the Wilton people would hardly have remained settled in the vicinity of a large Bantu settlement. They doubtless arrived earlier, and at a time when the giraffe roamed about the surrounding country, as this animal is said never to be found near human settlements. The point of view is an interesting one and cannot be ignored, but I myself feel that, as we have no data by which the rate of the disintegration of the sandstone can be measured, especially when protected from severe climatic conditions, it would be unsafe to stress it. From my own observations in Rhodesia, I am inclined to place the Wilton migration from the Matopo area at somewhere in the neighbourhood of 1000 years ago, but it may have been a little later. It is, of course, possible that the Wilton people who crossed the Limpopo may have remained settled there for a considerable time in view of the abundant food supply. The question is, therefore, I feel, an open one.

3. *La Reve.* This farm adjoins "Greefswald" to the south. In the bed of a storm-water spruit which starts on La Reve and runs through "Greefswald" to join the Limpopo, Middle Stone Age flakes are fairly abundant. They appear to belong to an early phase in the Levallois sequence, and are unassociated with older material, which, in Rhodesia, is most unusual.

4. *Parma.* Mr Schofield, in the course of his digging on this farm, encountered at rock bottom a layer of cultural material 12–18 in. thick. This was full of spalls, amongst which were some perfect implements including points, scrapers and burins. These appear to belong to the Bambata culture, though to a phase of it which is quite new to me. The points are atypical in technique in that the edges are trimmed, not by the neat parallel flaking usually practised, but by steep edge flaking, in which respect they strongly resemble the Capsian technique. The entire collection has been handed over to Mr van Riet Lowe. The site is a most interesting one

and is worthy of special attention when such proves practicable.

5. *Klein Bulai.* This is a small granite kopje 14 miles west of Messina on the road to Mapungubwe. Around its base, particularly to the west of the kopje, the ground is littered by a quantity of fragments of milky quartz amongst which tools of late Bambata date can sometimes be picked up. The site appears to be generally known to people in Messina and has been considerably picked over.

6. *Creamotartarfontein.* This is a water-pan a few miles south of Dogola, and within the confines of the Dogola Reserve, to which I was conducted by Dr Thompson. The pan, though apparently fed by a perpetual spring, derives some of its water supply from rain water which flows towards the spring along a number of converging gullies. In the beds of these gullies a number of stone implements are to be found. They are for the most part *coups de poing* associated with flake tools and fabricators, and the assemblage as a whole gives the distinct impression of combining some of the characters of the Fauresmith and the lower Smithfield industries. It may indeed prove to provide a nexus between the two, and as such is of considerable importance. The whole series, together with the implements collected on another and very similar site near Dogola, is in the hands of Mr van Riet Lowe.

APPENDIX II

REPORT ON SPECIMENS OF SLAG FROM MAPUNGUBWE SUBMITTED TO PROFESSOR G. H. STANLEY

of the University of the Witwatersrand, Johannesburg

Most of the specimens are apparently genuine iron smelting slag consisting in the main of silicate of iron, which on crushing and treatment with hydrochloric acid gelatinizes more or less. In several cases they contain quite minor amounts of alumina, lime, magnesia and manganese, and in some cases quite a lot of unaltered sandy matter, but, with one exception, none of them contains any detectable amount of tin or copper in the small quantity I took for examination.

The one exception, among Nos. 121, is a definite piece of copper sulphide matte, presumably obtained by melting practically pure copper glance or chalcocite. This is very interesting, as it is the first example I have come across. There is a piece of white pumice-like slag which does not appear to have been connected with iron smelting at all, but to have resulted from the heating to a high temperature of some clay article or possibly merely a support of some vessel or piece of a furnace wall or hearth, and consists mainly of silica with a little alumina and iron oxide, magnesia and lime and phosphoric acid. In no case, however, are any of these constituents, lime, magnesia, manganese and so on, present in sufficient amount to indicate that they have been added intentionally to whatever mixture the slag is composed of.

I find no evidence of the presence of gold in any of the samples, although finally I ground and mixed together all the residues from my tests and carefully panned the mixture. If you wish it I could take a larger quantity from the samples and make a fire assay for gold, but I should not expect to get any information of value, since slags from the smelting of gold practically always contain at least minute bits which I think I should have found already.

No. 124. This is a plug of solidified iron smelting slag from the interior of a tuyère as you suggest.

No. 152. Also are both iron smelting slags.

No. 182. Appears to be a piece of partly reduced iron ore with some adhering slag and charcoal.

No. 122. Is an iron smelting slag.

No. 121. Comprises a piece of fritted, i.e. partially fused, sand-clay mixture; several pieces of iron slag; a piece of igneous rock with one face glazed which has apparently been used as part of a furnace wall, or possibly a crucible support; and a piece of copper matte, *not* slag, consisting essentially of fused sulphide of copper.

APPENDIX III

REPORT ON VEGETABLE REMAINS FROM MAPUNGUBWE SUBMITTED TO DR I. B. POLE-EVANS

Chief of the Division of Plant Industry, Pretoria

I have submitted the seeds referred to in your letter to our Herbarium Staff and I attach their report on the same. I am sorry to say the seeds are not of much value in giving us any clue which will assist in the dating of the site.

JS 2*b* area. Marula pips.

These are most probably the fruits of *Sclerocarya caffra*, "Marula".

JS 2*b* area. Burnt thatch.

JS 2*a* area. Burnt pea-nuts.

These seem more like the fruits of the native tree *Pseudocadia Zambesiaca*, for which the native names "Inhaari" and "Mushalo" have been submitted.

JS 2*b* area.

Below top cement floor. This appears to be the same as the "burnt pea-nuts" of JS 2*a*, that is *Pseudocadia Zambesiaca*.

JS 2*b* area. Umhlampunzi.

These are evidently the fruits of *Grewia* sp., "*Kruis bessie*". The name Umhlampunzi, according to Sim, is applied to *Excoecaria reticulata*, the jumping bean, the fruits of which are not at all like the enclosed (one specimen of what might be a Baobab seed is enclosed with these).

JS 2*b* area. Majodo (pig-melon) seeds.

Probably *Citrullus* sp.

JS 2*b* area. Beans.

These appear to be *Vigna Sinensis* (Kaffir beans or cow-peas). The cow-pea has been cultivated in Asia and Africa as a food for human beings for a great many centuries. Its natural habitat is Central Africa. In the Union a number of indigenous "Vignas" occur which are closely related to these Kaffir beans.

JS 2*b* area. Kaffir corn.

These seeds belong to one or other strain of *Andropogon Sorghum* of which there are to-day hundreds of cultivated varieties and forms. Most of these have been evolved by breeding and selection in the U.S.A. The original material following the foundation stock came, however, from Africa. In 1853 Wray collected sixteen varieties for the United States Department of Agriculture. These came from Natal. Africa is undoubtedly the home of this group of plants, but records show that in China too, *Sorghums* were grown for human consumption as early as 2200 B.C.

PART III

THE POTTERY OF THE MAPUNGUBWE DISTRICT

INTRODUCTION

Anatole France somewhere remarks that the task of the historian is beset by two main difficulties; if he writes ancient history, his documents are so few, and if he essays on modern history, they are so many.

In this study of South African pre-European pottery we shall meet with both these difficulties, but in the reverse order, for our ancient documents are the thousands of sherds we set out to classify and describe, while our modern authorities, the works of our contemporaries in the same field, can be accommodated on the fingers of one hand, for the only references to South African pottery with which we are acquainted are contained in Bent's *Ruined Cities of Mashonaland*, Hall's *Great Zimbabwe* and *Prehistoric Rhodesia*, Maciver's *Mediaeval Rhodesia*, Caton-Thompson's *Zimbabwe Culture* and scattered articles in various scientific periodicals, of which the most important are those published by Dr Laidler.

The Bantu peoples of South-East Africa are at present divided into a vast number of tribes, which are classified into five language groups or clusters, viz. the Sotho, the Shona, the Venda, the Nguni and the Thonga.

The component members of any one of these groups have much more in common than affinities of speech, which are only the most easily observed symptoms of a deeply seated unity, which permeates every part of the social structure, including their pottery making.

We shall endeavour therefore to place the pottery industries, now to be described, within the framework of the language group because we feel that there is indeed a parallel between language and pottery in that both are the commonest artistic expression of the common people, reflecting their daily requirements and habits, both are subject to changes of fashion and environment, and pottery amongst the Southern Bantu is entirely the work of the women.

At first blush it would seem that, if we were armed with a differential analysis of the pottery fashions now in vogue amongst the Bantu, it would be possible, by carefully collecting and correlating our data, to trace each of the members of our groups back to the ancestral homeland of their legends. Unfortunately nothing of the sort is at present possible, for not only are the language groups exceedingly complicated, but the comparative study of Bantu pottery has hardly begun, and we must walk by faith rather than by sight. Our faith rests on the knowledge that pottery, which in every other field of archaeological research has proved a faithful guide, will not fail us in South Africa, and must, as our work progresses, unlock many doors which are at present closed to us. It is in this faith that the work on the pottery of the Mapungubwe district was undertaken.

Amongst the Southern Bantu peoples the women not only are the potters, but they also are the *spolia opima* of tribal conflicts. Thus the natural conservatism of the sex not only ensures the perpetuation of traditional methods of decoration and technique amongst her own people, but also the mingling of these traits with those of her conquerors, as when dragged to the kraal of a new master she carries on her tribal methods with alien clay and thus adds a new thread to the skein of his tribal pottery.

This is a matter of first-rate importance to our enquiry, for where one tribe overruns another we shall be certain to find that the subsequent pottery industry of the conquerors will be tinged with elements from that of the conquered. We believe the converse also holds good, and when no relation can be traced between an industry and the one which succeeds it, we must conclude that no contact took place between the peoples who produced them.

The curious persistency of decorative motifs amongst Bantu peoples is shown by examining any representative collection of their work. For example, the Zulus decorate their pottery with squares and crescents formed by a series of projecting discs with rounded edges, and the same motif appears on their carved soapstone pipe bowls and on the carved wood vessels made by the Swazi, to whom they are linguistically related.

It has been assumed that the whole of the pottery we are to describe is of Bantu manufacture. In case this may seem to be a begging of the question, we state our reasons briefly:

1. All the pottery, even that from the earliest strata, shows it had a long technical tradition behind it when it appeared south of the Limpopo.

2. The only other known pottery industries are those of (*a*) the Bushman, (*b*) the Hottentot peoples.

(*a*) The Bushman seems to have derived his pottery from his nearest neighbours, and from first to last to have been a pottery-using rather than a pottery-making people. This accounts for the discovery of comparatively fine wares in association with stone implements, as at the Salisbury Commonage Sites and Cathkin Park, also for the crude imitations of Hottentot or Bantu pottery which are occasionally found in Bush fasces, as at Isipophu.

None of the pottery from Mapungubwe seems to belong to this category.

(*b*) Hottentot pottery. Judging from the descriptions published by Laidler, this ware is characterized by

(1) Fine ribbon technique and excellent burning.
(2) Few and simple ornaments.
(3) An oval shape.
(4) Horizontally pierced lugs.

All of these are distinct from anything we have to describe. The resemblance noted in one fragment applies to the decoration only and not to the fabric of the ware; it is therefore probably accidental.

3. All the pottery has affinities with the wares of existing Bantu peoples.

SUMMARY

1. We are of the opinion that the language groups which exist amongst the Bantu people form a framework into which the pottery techniques can be placed.
2. That divergences or resemblances in pottery technique indicate divergences or resemblances between the makers of such pottery.
3. That decorative motifs are very persistent, and can be traced through the products of associated people.
4. That all the pottery is of Bantu manufacture.

SECTION No. 1
OF MAPUNGUBWE AND BAMBANDYANALO

In common with many of the earlier inhabitants of South Africa the Mapungubwe people had the habit of heaping up their village sites with earth. Judging from the massed accumulation of generations, it would appear that every time a hut was burned down it was customary for the owner in rebuilding to raise the floor level by a couple of feet, and apparently in the intervals between rebuilding the levels of the surrounding yard were raised time and again until, in many cases, the floor level of the hut was lower than the yard. The process is revealed by the thin yellow lines of old floor surfaces which ran through the side walls of trenches in a bewildering intricacy.

This practice gave rise to another, that of occasionally levelling up the area with an infilling of stone brought to a roughly vertical face along the edge (which was usually from 4 to 5 ft. in height) and tapered back to the level of the higher part of the site. In one case this process has been carried out a second time on the same place, and thus gives the effect of a wall some 10 ft. in height. These walls occur on the top of Mapungubwe Hill, and in a well-defined series in front of the Western Ascent, but the largest of all are those on the northern and southern edges of the Bambandyanalo kopje. These last have never been used, but remain as long heaps of stone showing that the old inhabitants did not die out slowly, but either deserted the place or were driven off when their numbers and culture were at their height.

The walls make an interesting parallel to the earliest work on the Acropolis at Zimbabwe, where the restricted area of the summit forced the old builders to place their revetments one on top of another until with the accumulated rubbish of a long occupation the walls grew to a height of 30 ft. The same principle of construction also gave rise to the infinitely better built walls of the "wedding cake" type of building as at Khami and Dhlo-Dhlo in Southern Rhodesia.

All the excavations on the hill were taken down to bed rock, where, not only did we find pottery and occupational debris, but we uncovered the mortar holes which the earliest settlers cut in the rock for the purpose of pounding up their meat or grinding their corn.

We must therefore conclude that before the occupation began Mapungubwe was a bare rock destitute of earth or vegetation, and that the present soil cap, which is in places 10 ft. deep and weighs at least 20,000 tons, is entirely artificial. But, besides this, there can be no doubt but that the unstratified midden deposit, which surrounds the hill on all sides to an average depth of 6 ft. over a width of 100 yards, is nothing but occupational refuse from the top of the hill.

The pottery recovered from trenches driven through these masses of soil is usually in small fragments but it is invaluable in proving (as far as Mapungubwe is concerned) that although pottery from different areas varied considerably, the pottery from any one area was constant throughout, showing that whatever the conditions were at the beginning of the occupation they were much the same at its end.

In the natural formation named the "Bowl" which is weathered out of the northern edge of the hill, we were fortunate to discover a deep pit, of a kind which is

common in these cave-sandstone kopjes. It was surmised that this might prove to have been a trap into which the odds and ends of the kitchen refuse of the very first tenants of the hill had fallen, and so it was cleaned out with the greatest care. The pit proved to be 6 ft. across and 8 ft. deep; for the first 4 ft. of the depth the river sand with which it had been filled proved to be absolutely sterile. Then a piece of pottery (pl. xxxii, 3), of which only about half a dozen similar fragments have been found at Mapungubwe (and which we consider to have been an imported ware), came to light; below that again to rock bottom ten sherds showing decoration or rims were found, and of these one was a fragment of a beautiful bellied pot (similar to pl. xx, 4) at least a foot across. The ware is fine and finished outside with a brilliant black burnish; the decoration was cut on the wet clay with mathematical regularity, the lines being only $\frac{1}{32}$ in. apart; despite the size of the pot the thickness of the fragment is only $\frac{1}{4}$ in.

One of the sherds was a piece of the neck of a large pot with a diameter of 12 in. over the rim, in a coarse light grey ware burned to a smooth yellow-brown at surface. This is a characteristic sherd of a style quite distinct from the bellied pot described above, and of which many hundreds were found in the valley directly south of the Bambandyanalo kopje. Another sherd of this style shows the very common decoration of a line of loops filled in with coarse hatching.

Then there are three sherds which appear to be intermediate between our coarse and our fine ware.

In a similar manner collections of sherds were made from the rock surface in all the principal trenches and particularly from trench JS *2a* in front of the third wall. The details of these finds have been recorded in the schedules which form Appendix I at the end of this report.

Our pottery was not only derived from the excavated material of hut foundations. At the western end of the Mapungubwe Hill are several large boulders directly below the escarpment, behind which trees grow now, and probably grew in the past, for we found the pottery which had fallen from the hill surface was not so shattered here as elsewhere. This accumulation of pottery, bones and ash we called the Western Midden, and from it came many of the best examples of beaker bowls.

The pottery found in middens and hut debris is usually of the coarser household kinds, such as cooking or storage pots, and taken alone would give a poor idea of any industry. The more unusual wares are only found in graves: as seven were found at Bambandyanalo and eleven on Mapungubwe Hill, a really comprehensive collection of pottery has been formed.

OF SIBSEY AND RIET

The site of Sibsey is on a farm of the same name lying directly to the east of Haddon. No excavation has been done there, but the whole place is strewn with sherds, the result of the labours of generations of ant bears and spring hares. There is also a large hut mound about 8 ft. high with stone revetment which is similar to the two mounds near Mapungubwe, and which may prove to be an integral part of this culture.

Mr Neville Jones had the opportunity of visiting and collecting pottery from the sites on these farms. This pottery proves beyond doubt that these places were occupied by a branch of the same people who colonized Mapungubwe and whose fine pottery we describe as Class M_1. At these two places, however, they seem to have been uninfluenced by the makers of the coarser class of pottery.

The paste used is coarser than at Mapungubwe, and contains a large amount of grit. The black burnish seems to be the exception rather than the rule, and all decoration is cut on the wet clay. One fragment of a shouldered pot from Riet (pl. xxxiii, 8) shows detail very similar to sherds from JS *2a* at foot of third wall, and another fragment (pl. xxxiii, 7) shows the use of dots in a manner quite unlike anything discovered elsewhere.

The range of shapes includes the shallow bowl (pl. xxxiii, 1) with moulded rim, the deep bowl (pl. xxxiii, 4), the bowl with plain rim (pl. xxxiii, 11 and 12) and the shouldered pots, which may be either large or small.

From a collection of sherds from Riet in the University of the Witwatersrand Medical School, it is evident that Riet was occupied in the post-Mzilikazi Period (No. 11 of the suggested chronology), as two fragments belong to that time.

It is interesting to note that examples of repair holes were found at both places.

OF PARMA AND PONT DRIFT

Parma and Pont Drift present us with the converse of the conditions which obtained at Sibsey and Riet, for while at the latter two sites Class M_1 pottery was found uninfluenced by Class M_2, at the former Class M_2 seems to have been produced for a considerable period quite untouched by any influence from Class M_1.

The Parma site is on a high kopje just north from the southern beacon of the farm of that name. The kopje is surrounded by precipitous krantzes, and access has been made more difficult by building up the weak points with rough stone scherms.

The only practicable ascent is at the west end where

the path leads up the steep slope of the talus to an open space flanked with masses of rock and defended by two loopholed stone walls. Beyond these lies the central area of the place, rising with a gentle slope towards the east, overgrown with a tangle of dead grass and surrounded with natural walls of rock, between which access can be gained to other smaller areas on the south and east and to the rock shelters on the north.

The floor of rock shelter No. 1 was covered with a layer of ashes mixed with late pottery, and in the centre of a small rock-enclosed forecourt, about 6 ft. across, was a heap of stones resting on a cement floor and covering the shell of a large tortoise.

The whole of the floor was removed and a bed of ash was disclosed which rested on bed rock. In the ash were many sherds conforming with Class M_2 pottery in many respects, but differing in the use of a clay burnt to a brick red, and also a frequent tendency to carination in the shouldered pots (pl. xxvii, 11) emphasized by a row of dots along the ridge.

The ash bed continued into a rock passage opening off the west side of the forecourt, and in it several additional sherds were found, notably the neck illustrated on pl. xxvii, 2.

The rock shelter proved disappointing, as the floor was covered with fallen slabs of rock which defied our efforts either to remove or to break them.

The other shelter yielded a quantity of pottery (pl. xxxv, 1) and small objects belonging to the third occupation.

Directly facing the first shelter a trench was cut across the area. It was found that all the soil had been brought into the place, a Herculean task in face of the difficulties of the way, and that it had been laid on the debris of a Middle Stone Age factory site, which in turn overlaid bed rock.

A further trench was taken towards the east at right angles with the main trench. It was discovered that during the latest occupation a pit had been sunk into the bed rock and then filled in with sand, in which were a quantity of beads.

A further trench was sunk beside the inner wall and it was found that the foundations rested on a bed of ashes and debris of the preceding occupation.

The soil in the other areas was found to be shallow, and the only important piece found was the beaker bowl illustrated on pl. xxiv, 2. A large collection of the surface pottery was made and all were found to conform to the post-Mzilikazi period. One piece (pl. xxxv, 2) seems to show a carrying of the M_2 decorations into the subsequent period, for it shows the characteristic upturned hatched loops. The body of the pot is burnished with graphite and the loops are left in the natural light brown. This is the only example found to combine M_2 design with polychrome decoration.

The decoration of one other piece from the last occupation resembled work from Bambandyanalo (pl. xxxv, 15), but as each is the only example found it would be unsafe to generalize.

The description of the latest pottery from Parma is best considered with similar examples of the same period from other sites, but the results may be summarized as follows:

The investigation at Parma revealed three distinct occupations:

1. A Middle Stone Age industry with a late Levallois facies.

2. A culture in all respects similar to that found at Bambandyanalo, except that at Parma no graves were discovered, and therefore the most distinctive pottery is lacking.

3. A culture characterized by pottery and beads similar to those taken in other fortified kopjes and by loopholed walls built on the debris of the second occupation.

The discovery of gun caps and modern glass with the pottery overlying the cement floor outside rock shelter No. 1 suggests that this latest period dates from after the time of Mzilikazi, that is about 1830.

The site at Pont Drift lies about 50 yards to the north of Mr Heydenrych's homestead. About two years ago a grave was opened here and a most characteristic beaker was discovered (pl. xxv, 3) which is reproduced through the kindness of Mr Heydenrych, in whose possession it is, and who lent it to us for illustration here.

The pot stands $5\frac{3}{4}$ in. high and measures $4\frac{5}{8}$ in. over the rim, the sides slope slightly outwards forming a projecting foot; the rim is rounded and has two vertically pierced lugs, and on one side between these the rim is decorated with a frieze of diagonal lines reduced slightly in depth at the ends, and on the other side there is a line of dots. The body of the pot has a meandering line of dots on one side and a swan neck similar to pl. xxv, 2 on the other side. All the decoration was cut in the wet clay.

The paste is grey, finished with a dull burnished surface varying from grey-brown to dark grey.

A small badly broken beaker was found here last August, with a number of rims and other sherds which showed clearly that the pottery industry was identical with M_2 (pls. xxvii, 5; xxix, 10).

All the pottery from these sites is covered with a grey surface deposit easily washed off in water except when the sherds came from the rock surface, in which cases it would only yield to acid.

Hall seems to have noted something of the same sort at Zimbabwe for he reports:

> The best quality of pottery was found on one of the lowest floors of the Elliptical Temple. The fragments are very heavy for their size, and the surface is coated with soapstone clay, giving them a light greenish grey colour. These must be exceedingly old if not ancient (*G.Z.* p. 130).

This deposit is not found on the surface of pottery from the Venda and post-Mzilikazi sites.

SUMMARY

1. Before the occupation of Mapungubwe, the place was a bare stone kopje. The present soil cap, which weighs at least 20,000 tons, is the result of the construction of hut platforms, which were occasionally revetted with stone.

2. The pottery was derived from trenches driven through this artificial soil, from midden deposits and from graves.

3. This pottery falls into two well-defined classes:

(1) A fine ware, usually finished with a black burnish.

(2) A coarse ware, usually finished with a brown burnish or a matt surface.

4. These wares are found together at Mapungubwe and Bambandyanalo, the fine ware preponderating at the former, and the coarse ware at the latter place.

At Riet and Sibsey only the fine ware was found.

At Pont Drift only the coarse ware was found.

At Parma three successive occupations were found, viz.

(1) A Middle Stone Age industry with a late Levallois facies.

(2) A culture in all respects similar to that found at Bambandyanalo, except that the fine ware was entirely absent, and that no graves were found.

(3) A culture characterized by pottery and beads similar to those from fortified kopjes.

DISCUSSION OF THE POTTERY FROM MAPUNGUBWE, BAMBANDYANALO, RIET, SIBSEY, PONT DRIFT AND PARMA (SECOND PHASE)

I. CLASSIFICATION

Almost from the commencement of our work it became apparent that we were dealing with at least two classes of pottery:

(1) A fine ware of which the best examples are beautifully decorated and burnished a deep black.

(2) A coarse ware usually finished with a brindled burnish and of which the commonest decoration was a line of diagonally hatched loops. In many examples we found the lines of the decoration were engraved on the burnt pot. This class also shows a much greater variation of shape, i.e. spouts, lugs, pedestals, etc.

Both these classes were found in varying proportions wherever a representative collection of pottery was made, but the first class was more common on the top of the hill and the second class at Bambandyanalo.

The classification was confirmed by the discovery of each of these classes existing quite independently on other sites, Class 1 at Riet and Sibsey and Class 2 at Parma and Pont Drift.

Another class was made by grouping all the pottery which seemed to be imported ware into a third class. In describing this pottery we propose to make use of the following symbols:

M_1 for the fine black ware;

M_2 for the ware from Bambandyanalo;

M_3 for all pottery of which there is reason to believe that it was imported from neighbouring tribes using a different Pottery Tradition.

Class M_1

All the pottery found at Mapungubwe is hand-made without a wheel, but some of the best specimens of both M_1 and M_2 are so fine that it seems probable that the pots were raised from a lump of clay placed in the hollow of an old potsherd which was rotated as the potter worked up the walls just as Lemba women work their pottery to-day.

The clay has been very carefully selected and varies in colour from nearly black to light grey, that of the fine pots being free from all grit, while that for the large pots was coarser. In some pieces the sparkle of fine quartz sand can be seen.

The decoration, with perhaps one exception, was cut into the wet clay, and was generally based upon the inverted hatched triangle with the occasional use of rectangles and diamonds. In the best examples the designs are cut with an amazing regularity and trueness of line.

It is evident that a black colour was greatly admired, and it was perhaps to preserve this that the pots were underburnt, a most unfortunate circumstance, as many of the best worked examples have perished for lack of firing.

The surface was usually burnished black after burning. In the best examples a brilliant sheen was obtained, the medium being probably a compound of soot, for, with one exception (pl. xviii, 12), no example of graphite burnish has been found amongst many hundreds of sherds of this class which have been examined.

(*a*) Golden bowl. (Original gold burial.)

(*b*) Terra cotta bowl. (Grave Area, body No. 11.)

The principal forms of pottery represented in this class are:

1. SHALLOW BOWLS.

(*a*) Undecorated, pl. xviii, 2 is 5 in. in diameter by $1\frac{1}{8}$ in. in depth. No. 9 is $9\frac{1}{2}$ in. in diameter by 3 in. in depth.

(*b*) Undecorated with moulded rim. Pl. xviii, 1, $8\frac{3}{8}$ in. in diameter by $2\frac{3}{8}$ in. in depth. No. 5, 6 in. by 2 in. in depth. No. 6, $4\frac{1}{4}$ in. by $1\frac{1}{4}$ in. in depth.

(*c*) Decorated with moulded rims in great variety. Pls. xvii, 1–12; xxxiii, 1.

(*d*) Decorated with rims bevelled to the outside. Pl. xxii, 1, 2, 3. The last is from burial No. 11 on Mapungubwe and is one of the most beautiful pieces of pottery discovered there.

(*e*) Bowl cover. It is probable that all bowls were used both as dishes and as the covers of other vessels. In three examples the underside of the bowl is decorated and in the fourth it is of an unusually flat section (pls. xvii, 20, 21; xviii, 8; xxii, 1).

2. DEEP BOWLS.

(*a*) Undecorated, pls. xviii, 3, 4, 7, 10; xxii, 7, 8, 9; xxxiii, 11, 12. The largest is 14 in. in diameter by 5 in. in depth.

(*b*) Decorated in great variety. Pls. xvii, 13–19; xxxiii, 2, 3, 4. The largest, pl. xvii, 16, is $14\frac{1}{2}$ in. in diameter by about 5 in. in depth.

It would appear that there are two main varieties of both (*a*) and (*b*), one with the rim bent inwards, rounded and slightly everted (pl. xvii, 13–16) and the other in which the rim is thickened and rounded (pls. xvii, 18 and 19; xxxiii, 2, 11).

3. SHOULDERED BOWLS.

These bowls form an intermediate group between the decorated shallow bowls with moulded rims and the shouldered pots, the distinction between the types being the ratio of the rim diameter to the depth (pls. xviii, 11, 12, 14, 19–23; xix, 7; xx, 1, 3; xxi, 2, 3, 4, 7).

The bowl illustrated on pl. xviii, 19 is the only example we have of a carinated shouldered bowl. This shape may be related to the shallow bowls (pl. xvii, 7, 10), or it may be derived from the Sotho carinated type, of which two specimens were found in the Western Midden (pl. xxxii, 1).

4. SHOULDERED POTS.

These pots are very characteristic of Class M_1 pottery and were found in greater abundance than any other type. One (pl. xviii, 18) which was found at rock bottom in the "Bowl", must be one of the oldest pieces of pottery recovered at Mapungubwe, and though probably used by the first settlers, yet it differs in no respect from others of its kind which were made generations later, and which may have been used after Mapungubwe had been deserted (pl. xxxiv, 32).

These pots vary in size from a few inches in diameter and height, to large vessels, such as pl. xxxii, 11, which had a capacity of about nine gallons, and pl. xix, 2, which is even larger. Several examples are illustrated on pls. xviii–xxi.

5. BELLIED POTS.

These differ from the shouldered pots only in a greater projection of the body beyond the line of the neck.

The one illustrated (pl. xx, 4) was reconstructed from fragments found on Mapungubwe Grave Area, and is a superb specimen of the potter's art. Technical ability of a very high order was shown in hand-moulding such a pot with the relatively heavy neck supported on the body which was nowhere more than $\frac{1}{4}$ in. in thickness. The decoration of large diagonally hatched triangles is carried out with great skill and sureness of touch.

This pot is very similar to that shown in the illustration in *A.R.R.* facing p. 90; of it R. N. Hall remarks in *G.Z.* p. 130, "of very old Makalanga work, of which many scores are found represented at Zimbabwe".

The shouldered bowl (pl. xix, 4) is very similar in rim section and is equal in decoration and design.

The bellied pot (pl. xviii, 16) is also a fine piece of work and the decoration is unusual; similar treatment is used on the bowl cover (pl. xvii, 20) and on a shallow bowl from Sibsey (pl. xxxiii, 10). A fragment of a still larger bellied pot was found on the surface to the east of the north end of trench JS 1. Unfortunately the rim was missing. The base of the neck was surrounded with a band of counter-hatched triangles, similar to pl. xx, 7 but of much finer execution.

6. SUBSPHERICAL BOWLS.

This is a favourite form (pl. xxii, 5 and 6). Usually they are of small size and are decorated round the rim with detached hatched triangles, one example showing a hatched rectangle set diagonally (pl. xxii, 11) and another (pl. xxii, 12) has a raised disk and a diagonally hatched lozenge (probably as a recurring motif) and a third (pl. xxii, 13) has three parallel rows of dots.

The bowl illustrated (pl. xxii, 4) is probably an unusual variety of this type in which the rim is raised to form a short neck.

The gourd-shaped pot (pl. xxii, 10) is perhaps another variety. This example was the only one recovered at Mapungubwe, but the shape is common amongst the Venda who make the pot much larger and decorate it with alternate vertical stripes of red and black.

7. Beaker Bowls.

These bowls (pl. xxi, 6, 9, 10–14) we believe were derived from the Class M_2 types, but the technique of the manufacture and the decoration are clearly more akin to Class M_1.

The gourd-shaped pot (pl. xxii, 10) is technically similar to these beaker bowls.

Class M_2

The chief characteristic of Class M_2 pottery is the range of its varieties, which includes:

Vessels with flat bases (pl. xxv, 1, 3).
Pedestals (pls. xxv, 4; xxx, 12).
Spouts (pl. xxx, 1, 2).
Perforated rims (pls. xxiii, 21, 23; xxiv, 5; xxv, 4).
Vertically perforated lugs (pls. xxiv, 3, 6; xxv, 3).

One example was found with a well-shaped handle (pl. xxv, 2).

The clay also varies greatly; occasionally pieces were found which equalled in fineness anything in Class M_1 pottery (pl. xxx, 4) but more often it is very coarse (pl. xxiv, 1). The surface of the ware is commonly finished to a matt yellow or brown. When it is burnished it is usually brindled, but a black burnish similar to Class M_1 ware is found, and occasionally a pot is burnished with one side black and the other side brindled.

The inverted triangle with diagonal hatching is unusual in this class (pl. xxiii, 4, 12, 15). When it is found the triangle generally points towards the lip of the vessel (pls. xxv, 4; xxvi, 6; xxviii, 9), but more commonly, instead of triangles, we find hatched loops (pls. xxv, 2; xxvi, 8; xxvii, 14; xxix, 1, 7, 8, 13, 15) and sometimes a vertical member is placed between the loops (pl. xxviii, 6)

The practice of engraving the decoration after burning resulted in the adoption of bands of lattice (pl. xxviii, 11) and narrow hatched bands, as being better suited to this technique than the usual loops or triangles (pl. xxiv, 5, 8). One of these patterns (pl. xxiv, 5) seems to have been adopted for plastic work probably with a form similar to that on the beaker bowl (pl. xxvi, 2) as an intermediary and developed into a curious swan-neck ornament.

The use of a wire bangle for making impressions round the necks of shouldered pots is of fairly common occurrence (pl. xxvii, 18). The same decoration has been noted on pottery from Salisbury Commonage (*S.C.S.* p. 776). Strings of beads appear to have been used for the same purpose (pls. xxvii, 3, 6; xxxi, 7).

Many examples were found of the use of the comb (pl. xxvii, 1, 5, 8–12).

A stylus, either round or triangular, was used, also impressions were made with small objects such as thorns or a bird's limb bones.

One fragment of a large pot, has, just below the lip, a curious ornament formed by scraping a wire bangle over the wet clay (pl. xxx, 3).

A large shouldered pot was decorated along the edge of the rim with impressions from a comb with two points (pl. xxvii, 17).

Edge decoration is recorded also on three bowls (pl. xxiii, 5, 6, 12).

The principal types of pottery represented in this class are:

1. Bowls.

(*a*) With flattened lips (pl. xxiii, 1, 7, 9–13).
(*b*) With lips bevelled to the inside (pl. xxiii, 2–6).

A sherd with this type of rim from the Niekerk Ruins is illustrated by Maciver (*M.R.* pl. xi, 1) another piece with rim decoration was taken at Dzata (pl. xxxiv, 9), and another was found at Umhloti, Natal, this showing how widely this peculiar type of rim is distributed.

(*c*) Crude bowls with incurved lips (pl. xxiii, 22, 24).

2. Beakers.

This type includes:

(*a*) Small beakers with flat bottoms and nearly vertical sides. These are usually decorated with a band of hatching or impressions (pls. xxiii, 20, 25; xxvi, 9); an undecorated specimen was found at Pont Drift.

(*b*) Beakers with curved sides (pls. xxiv, 2, 3, 4, 6, 7; xxvi, 3, 5, 6). This type is the commonest form of beaker and is found both decorated and undecorated; the lip is usually either perforated or provided with lugs.

(*c*) Tumbler-shaped beakers (pls. xxiii, 21; xxiv, 5, 8; xxv, 1, 3). The finest beakers belong to this type, the bottom is flattened and occasionally quite horizontal. In one example (pl. xxv, 3) a projecting foot was made. Pl. xxiv, 1 conforms in some respects to this type but it is exceptionally wide and heavy.

3. Beaker Bowls.

These are similar to our small beakers, type 2 (*a*), but are much larger, one (pl. xxiii, 17) measuring 8 in. in diameter by $6\frac{1}{2}$ in. in depth. The decoration usually takes the form of a band on the lower part of the pot; both rounded and flattened bottoms are found.

The most remarkable of the series is that illustrated in pl. xxv, 2, which has a well-formed handle on one side and a knuckle-like boss opposite to its lower end on the other side. As the upper part of the handle is pierced it is probable that there was a lug in addition to the boss. Unfortunately the paste had been very badly fired and much of it had weathered away.

4. Shouldered Pots.

(*a*) *Shouldered pots with incurved necks* (pls. xxvii, 13, 14; xxviii, 8, 10; xxix, 1, 7, 14, 15). These are very similar to Class M_1 types (pl. xix, 2, 3), and are usually decorated round the neck or shoulder with roughly executed loops. They vary greatly in size, the smallest (pl. xxix, 1, 2, 16) having a capacity of a pint or less, while the largest could contain several gallons (pl. xxix, 14).

(*b*) *Shouldered pots with vertical necks* (pls. xxvii, 18; xxviii, 6, 8, 9; xxix, 9; xxxi, 9). This last is most unusual, as the comb work with which it is decorated is similar to modern Sotho pottery.

(*c*) *Shouldered pots with flared necks* (pls. xxv, 4; xxvii, 1–10, 12; xxviii, 1, 2, 3, 7, 10). It would be possible to make a series of these necks showing every angle between the vertical and that of 60°.

Two necks (pl. xxviii, 1, 2) are similar to pottery from Natal sites, particularly the University site, Durban, where it is associated with iron smelting. Pls. xxviii, 6 and xxix, 4, 11 are identical with pottery from Natal coastal middens and also have something in common with the rims illustrated in *Zimbabwe Culture*, pl. lxix, 5. Pl. xxvii, 5 is similar to pl. xviii, 7 of that work.

(*d*) *Carinated shouldered pots* (pl. xxvii, 11). Several sherds with a ridge at the shoulder decorated with comb impressions were found at Pont Drift, and at Parma Kopje below the cement floor outside Rock Shelter No. 1. Unfortunately all except one were badly broken and had no rims. The one illustrated is very similar to the only example taken at Bambandyanalo. Three other sherds (pl. xxvii, 8, 9, 10), the first two from below the cement floor at Parma and the last from Bambandyanalo, have the line of comb impressions but the ridge is absent.

(*e*) *Shouldered pots with tall necks* (pl. xxix, 5, 8).

The first one is different in shape from any example of Class M_2 ware, but the decoration of an elongated boss is similar to pl. xxvi, 3.

The second is similar in shape. The decoration and surface finish are both characteristic of Class M_2.

Only one complete example of a shouldered pot with a pedestal was discovered (pl. xxv, 4) but another broken pedestal came to light (pl. xxx, 12) which was in every way similar.

5. Spherical Pots.

This type of pot seems to have been very common indeed (pl. xxx, 5–8) and varied considerably in size and thickness of the pot wall. The smaller examples are oval rather than spherical in section (pl. xxx, 7). The rim shown (pl. xxx, 4) is probably from such a pot, but the reduction of the base is still more accentuated.

One example only of ornamentation was found in this type—that illustrated on pl. xxx, 8.

Fourteen examples of spouted spherical pots were found, of these eleven have channel spouts (pl. xxx, 1) and three have tubular spouts (pl. xxx, 2).

6. Bellied Pots.

Only one example of this type was found (pl. xxix, 3) and that in an incompleted condition. It is probable that the shape of these vessels rendered them very liable to destruction.

Class M_3

Under this head are grouped all the pottery which, it seems probable, had been imported from other tribes, of which unfortunately we know very little.

M_3a (pl. xxxii, 1).

This is a boldly designed ware with a well-marked carination and vertical rim, in a very coarse and gritty brown paste. The interior of the neck is coloured red; the exterior is decorated with:

(1) A band of graphite burnish;
(2) A band of herring-bone hatching coloured brown;
(3) A band of graphite;
(4) A band of alternating red and black triangles;
(5) A line of diagonal strokes along the ridge of the carination;
(6) A band of graphite burnish;
(7) Red colour over the remainder of the pot.

Fragments of two of these pots were found in the Western Midden. One of these had the exterior burnished all over with graphite.

M_3b (pl. xxxii, 2).

This is another variety of polychrome ware, resembling the last described in the coarseness of the paste, and in the red colouring of the interior, but the shape seems to be oval, and the herring-bone decoration is in tapering triangular masses round the neck. One fragment shows two small bosses just below the rim. Fragments of four pots of this ware were found; the position of one at the base of the third wall in trench JS 2*a* and another from the "Bowl" indicate a date not far removed from the first occupation of the place. The largest piece was a surface find on the top of the kopje immediately to the north of Mapungubwe.

M_3c. This is probably a ware connected with M_3b.

The fragments of two pots were found, one in the Excavation Area of JS 2*a*, and the other on the surface of Hilda Kopje. All appear to belong to bowls with a slight shoulder and all are decorated round the neck

with a wide band formed of rows of herring-bone decoration between two lines of sloping dots all cut on the wet clay. The paste is a light grey and gritty; one pot seems to have been blackened externally, the others are burnt to a buff colour. The distribution of these fragments is interesting, for the piece from the JS 2*a* must have been deposited very early in the history of Mapungubwe, while it is unlikely that the fragments from Hilda have any great age, for the place was apparently unoccupied before the beginning of the eleventh stage in the proposed chronology.

M_3d (pl. xxxii, 10).

One sherd was taken in the Excavation Area JA 2*b* of a large shouldered pot, 8 in. across the rim. The paste is grey, coarse and gritty, the external surface has been burnished to a dark brown, and the interior coloured red but unburnished. The neck is decorated with deeply incised herring-bone pattern.

M_3e (pl. xxxii, 12).

Fragment of a small carinated pot, about 5 in. over the keel, in dark grey paste, coloured red externally, and blackened with use. The horizontal surface of the ridge is decorated with a lightly cut line of diagonal cross hatching (cf. pl. xviii, 19).

M_3f (pl. xxxii, 8, 11).

Several small fragments were found of pots decorated with a wide band of dots in which a chevron or similar simple form was left blank. The paste is a medium grey finished externally with black burnish. Unfortunately the parts recovered are too small to attempt reconstruction.

M_3g (pl. xxxii, 9).

Three fragments were found of large bellied pots decorated with a raised band of clay round the horizontal outcast of the body, and which had been applied separately after the pot had been formed. One was taken at the Western Midden, one at the Grave Area, Bambandyanalo, and one in trench JS 5, 30 ft. × 2ft. × 1 ft. Unfortunately all were too badly broken to show a rim or much of the neck. In the one from the Western Midden the band is decorated by diagonal cuts in the wet clay, the others show counter-hatched triangles made in the same manner.

M_3h (pl. xxxii, 13).

The rim fragment illustrated is unlike any other ware found at Mapungubwe, but seems to have something in common with a piece from Haddon (pl. xxxiv, 43) although this last is not so well made.

Miscellaneous Pottery

The fragment from Schroda.

Several pieces of pottery were discovered which seem to be unrelated to any known pottery industry. Of these the most unusual is the fragment from Schroda, illustrated on pl. xxx, 9.

It appears to have been part of the neck of a bellied pot with a neck diameter of about 3 in. in the clear. It is evident that the pot was constructed first, and then an outer coating of clay was applied with considerable force and in it the flutes were scooped out in a masterly manner. It is evidently hand-made and therefore it is improbable that it was imported from overseas.

The bowl cover from the Western Midden (pl. xxxi, 1).

This piece undoubtedly belongs to Class M_2, but its unusual character makes it advisable to consider it here.

The cup was made first, evidently on a whirler, for the central cone is well formed; while still wet the lower rim was pressed on to it in the form of a saucer-like ridge.

The whole of the exposed surface is burnished black. As the underside of the "saucer" is not worn it is probable that it was used as a pot cover rather than as a bowl.

Pottery spoons (pl. xxxi, 1*a*).

Several broken spoons were found; all should probably be regarded as M_2 ware, for the black burnish indicates such a classification and they were found more frequently at Bambandyanalo than elsewhere.

Grating bowl.

A fragment of a grating bowl was found at the base of wall 1, trench JS 2*a*. It appears to be part of a bowl about 18 in. across, the paste is $\frac{5}{8}$ in. in thickness and is burnt through to a good brick red (perhaps accidentally). The outside is finished matt, and the inside crisscrossed with hatched triangles cut on the wet clay to give a grating surface.

Another grating bowl was found on the midden of a modern kraal. It is 7 in. in diameter, very roughly made and badly burnt; the interior is scored with lines converging from the rim to the centre.

Children's toy pots (pl. xxxi, 2–6).

These miniature pots were found in all trenches and are probably the prentice pieces of little Bantu maidens.

SUMMARY

1. The pottery from the sites at Mapungubwe, Bambandyanalo, Riet, Sibsey, Pont Drift, and Parma (second occupation) has been classified as:

Class M_1. A fine ware, of which the best examples are beautifully decorated on the wet clay, and burnished a deep black.

Class M_2. A coarser ware, usually finished with a brown or yellow matt surface, or a brindled burnish.

The decoration was either cut on the wet clay or engraved on the burnt pot.

Class M_3. Includes all pottery of which there is reason to believe that it was not of local manufacture.

2. *Class* M_1.

The principal types in this class are:

Shallow bowls:
- (*a*) Undecorated.
- (*b*) Undecorated with moulded rim.
- (*c*) Decorated with moulded rim.
- (*d*) Decorated with rim bevelled to the outside.
- (*e*) Bowl cover.

Deep bowls:
- (*a*) Undecorated.
- (*b*) Decorated.

Shouldered bowls.
Shouldered pots.
Bellied pots.
Subspherical bowls.
Beaker bowls.

3. *Class* M_2.

A great range of varieties is found in this class, viz.:

Pots with flat bases.
Pots with pedestals.
Pots with spouts.
Pots with perforated rims.
Pots with vertically perforated lugs.

One example with a well-shaped handle.

The commonest form of decoration is the hatched loop or triangle pointing towards the rim of the vessel. The comb, the wire bangle, the string of beads, and the stylus are frequently used in decoration.

The principal types in this class are:

Bowls:
- (*a*) With flattened rims.
- (*b*) With rims bevelled to the inside.
- (*c*) Crude bowls with incurved lips.

Beakers:
- (*a*) Small beakers with flat bases and nearly vertical sides.
- (*b*) Beakers with curved sides.
- (*c*) Tumbler-shaped beakers.

Beaker bowls.

Shouldered pots:
- (*a*) With incurved necks.
- (*b*) With vertical necks.
- (*c*) With flared necks.
- (*d*) Carinated.
- (*e*) With tall necks.

Spherical pots.
Bellied pots.

4. *Class* M_3.

The pottery classified as M_3a, M_3b, M_3d, M_3e and M_3h are the only examples of polychrome ware found at Mapungubwe.

M_3c is uncoloured but has much in common with M_3b.

M_3f ware is decorated with a stippled surface in which chevrons and circles were left blank.

M_3g ware is decorated with a raised band of clay applied to the shoulder of the pot before baking and decorated with simple patterns.

5. *Miscellaneous pottery.*

This includes spoons, children's toy pots, and a unique sherd from Schroda, which was decorated with bold flutes made in an applied clay band.

II. COMPARISON WITH THE POTTERY FROM OTHER SITES

Class M_1

ZIMBABWE. More attention has been given to Zimbabwe than to any other Bantu site, but, unfortunately, the earlier explorers paid so little attention to the pottery they found that no stratigraphical details have been preserved.

Bent (*R.C.M.* p. 206) illustrated a fine example of the shoulder and neck of a bellied pot of better design than any found at Mapungubwe but sufficiently similar to be classed as M_1.

Hall (*G.Z.* pp. 129–30) describes Makalanga pottery he found as follows:

> It is generally found to be black with a highly polished surface. The bowls and pots have a lighter and more delicate appearance, and the excellent quality of clay used, and its thorough manipulation, enables it to be much thinner in make yet equally as strong as those of coarser make; the coloured decoration also is altogether absent, while the pattern is more neatly executed, and is enclosed in encircling bands of from only half an inch to one inch in depth. Further, the Makalanga have always decorated their pottery with protruding bosses of shapes and designs peculiar to themselves, the female breast pattern predominating. The pot shown in the illustration facing p. 90 of *The Ancient Ruins of Rhodesia* is of very old Makalanga work of which many scores are found represented at Zimbabwe.
>
> Old Makalanga smeared the body of a pot with several thin coats of different coloured clays and sections of such pottery show the lines of smearing very distinctly.
>
> The best quality pottery was found on one of the lowest floors of the Elliptical Temple. The fragments are very heavy for their size, and the surface is coated with soapstone clay, giving them a light greenish grey colour. These must be exceedingly old if not ancient.

Now all of this is very like the Class M_1 pottery from Mapungubwe, the absence of colour, the use of bosses,

the narrow bands of decoration, the highly polished black surface, and a comparison between Hall's illustration in *The Ancient Ruins of Rhodesia* and pl. xx, 4 of this report shows that a great similarity, amounting to identity, exists between the two industries.

Hall's statement regarding the use of different coloured clays is difficult to understand and seems at variance with his previous description which ascribes polychrome pottery to the Rozwi. Certainly no such ware was discovered at Mapungubwe, and we have no other record of its occurrence elsewhere than at Zimbabwe.

All the pottery belonging to Classes M_1, M_2 and M_3 were covered to a greater or lesser extent with a light greenish grey coating, probably due to having been buried in occupational debris; this coating becomes soapy when wet, but we doubt if it is soapstone clay.

Hall never regarded the Makalanga or Shona as being anything but squatters behind the ramparts erected by the "Ancients". Although he supposes that these people occupied Zimbabwe in their thousands he never describes the pottery he found associated with their gold and soapstone bowls, only remarking that it was so hard that the fragments found in streams were quite unworn and that it differed greatly in form, pattern, colouring and decoration from that found at Khami, Dhlo-Dhlo and Nanatali (*P.R.* pp. 264 and 376). Unfortunately not a sherd of this interesting and peculiar pottery has been preserved.

Maciver tells us very little about Zimbabwe pottery; his illustrations seem to refer to varieties of the Rozwi pottery, which we shall here describe under the Second or Venda Period.

Caton-Thompson has given us in *Zimbabwe Culture* the first description which combines stratigraphical details with illustrations and sections, and, moreover, we have not only had the advantage of this work but of examining the material she collected.

From this we can say without hesitation that the Class M_1 ware from Mapungubwe is indistinguishable from the Class B ware from Zimbabwe, particularly such as is described as "frequently discoloured grey by the damp" (*Z.C.* p. 38).

It would appear that the pottery from Zimbabwe was much more fragmentary than the Mapungubwe material and that this has led Caton-Thompson to believe that more of her Class B ware was undecorated than was the case. One fragment from the Mauch Ruins is exactly similar in section to our pl. xviii, 17; the decoration consists of a narrow hatched band, so like our example that it might have been made by the same hand.

Another fragment of a large shouldered pot is very similar in every way to our pl. xx, 6.

A comparison between pl. lxx of *Zimbabwe Culture* and our sections will show how close is the relationship in many of the pieces.

It is interesting to note that the ornamented sides of the soapstone bowls are divided into sections by projecting lugs in a manner not at all unlike the bowl from Grave 11 on Mapungubwe Hill (pl. xxii, 3).

No example of the ribbed pottery from Zimbabwe Class B_1 was found at Mapungubwe nor any pottery lids, though the carinated bowls (pl. xvii, 7, 10) may have served the same purpose.

Class M_2

Zimbabwe. This class of pottery has generalized resemblances to Caton-Thompson's Class A, which we might expect if both wares were made by different branches of the same people.

Both show the use of a comb in decoration.

Both show a curious thickening of the rim, and both have certain sections in common (cf. pls. xxvii, 6; xxix, 4, 11 with *Z.C.* pl. lxix, 5).

Serowe. Sherds collected from an old hut site at Serowe by the Rev. Neville Jones are identical with pl. xxvii, 12, and others show a striking resemblance to pl. xxiii, 16.

There can be no doubt therefore but that the makers of this ware were directly related to the Mangwato.

Zeerust. The excavations carried out by van Hoepen and Hoffman at Buispoort and Braklaagte to the north-west of Zeerust have brought to light a quantity of pottery which seems to be related to our Class M_2 ware, particularly the large base (*A.N.* pl. x, 1) which resembles the one illustrated (pl. xxx, 12).

The Zeerust ware was certainly made by a branch of the Hurutsi, and thus confirms our ascription of Class M_2 pottery to people of Sotho stock.

Natal Coastal Pottery. The rims mentioned above (pls. xxvii, 6; xxix, 4, 11) are identical with material from the Coastal Shell Middens, and, further, the sections (pl. xxvii, 2, 4) are very similar to rims from University site, Durban, where they are associated with an iron smelting industry.

We believe that future investigation will prove this class to be linked to the Sotho Group, but at present the necessary material to verify our conjecture is not forthcoming.

Class M_3

The carinated pot (pl. xxxii, 1) has a very wide distribution. Laidler (*B.P.I.* p. 782) attributes it to "the Sechuana-speaking peoples of the west", and in this we agree with him, for these pots have only been found in areas in which, at some time or other, the Sotho have made their home.

CATHKIN PARK. A carinated pot has been described by Wells from the Inkosazana Shelter ("Ancient metal-working ceramics and beads from Cathkin Park", *Bantu Studies*, vol. VII, p. 185). It was found in conjunction with stone artifacts, and in this it doubtless reflects the excellent relations which were maintained between the Bush and the Sotho on the east of the Drakensberg (*H.B.* p. 21).

WATERBERG. In the Museum of the Medical School, Witwatersrand University, are fragments of a polychrome ware closely resembling this pot.

HEILBRON SITES. Laidler has published examples of similar but very fragmentary material from these sites (*A.P.S.H.A.* p. 45).

M_3f (pl. xxxii, 8, 11). Pottery of a similar design but burnished red was found by R. F. A. and W. Hoernlé at Tafelkop near Bethel and is illustrated (*A.P.S.H.A.* pl. iv, 2).

Another similar piece from Mshosho is illustrated (*Z.C* pl. xxxi, 2 (17)).

SUMMARY

1. *Class* M_1.

Comparative material has been recorded from:

Zimbabwe:

(*a*) Bent illustrates a bellied pot in a ware similar to this class (*R.C.M.* p. 206).

(*b*) Hall's description of Makalanga pottery shows it to have been similar to this class (*G.Z.* pp. 129–30).

(*c*) Caton-Thompson's description of her Class B and B_2 wares shows that these have a strong affinity with our Class M_1, and with Hall's Makalanga (*Z.C.* p. 38).

2. *Class* M_2.

Zimbabwe: Caton-Thompson's Class A pottery seems to have a generalized resemblance to our Class M_2.

Niekerk Ruins: Maciver illustrates a bowl with the rim bevelled to the inside (*M.R.* pl. xi, 1).

Serowe: pottery from an old hut site is identical with some of our pottery.

Zeerust district: Dr van Hoepen's recently discovered material resembles ours in the use of the base.

Natal coastal pottery: resemblances in rim sections have been noted.

3. *Class* M_3.

The carinated section of our M_3a has been described by Laidler as of Sotho origin. It has been found at Cathkin Park and at St Lucia. Polychrome ware closely resembling this example has been recorded from Waterberg and Heilbron. Ware similar to our M_3f has been found at Tafelkop near Bethel.

III. HISTORICAL

Ellenberger concludes his introduction to his genealogies of the Sotho Tribes as follows:

> The Bafokeng (Tlhaping) and Barolong...seem to have crossed the Zambesi about the same time and during the eleventh or twelfth century, and for our own part, we have arrived at the certainty that they are the parents of all the Bantu tribes of Central South Africa except the Hereros and Bavenda. (Ellenberger and MacGregor, *History of the Basuto*, p. 333.)

We have no knowledge of the events which led up to the invasion of what we now call the northern Transvaal by peoples of the Sotho stock. We can only surmise that great events must spring from great causes and suppose that an invasion on an equal, if not greater scale, must have beset their ancestral homes and forced these people to risk the unknown dangers of the south rather than the certain destruction coming from the north.

We may conclude from the Portuguese records that an invasion on a large scale took place at a date not far removed from the beginning of the sixteenth century, for when these records begin we find the Mokaranga Empire of the Monomotapa in a state of decay. It is reasonable to assume that this Empire was not more durable than that of other South African potentates, and that the invasion which spread the power of the Monomotapa from the Zambesi to the Limpopo took place somewhere about $\pm$ 1450.

We judge from the relative excellence of the earliest types of pottery, when compared with the later types found on Bantu sites of Heilbron and Aasvoëlkop in the Transvaal (*A.P.S.H.A.* p. 52), that the wave of Sotho immigrants swept rapidly southward until it reached the 27th parallel where it halted and its force was dissipated in the dissensions with which most of the tribal histories commence. Further, a progressive degeneration of culture was brought about by the fusion of the Bantu with the Bushman, until, as Laidler says of the Heilbron Area: "It is evident that the line of distinction between Bantu influenced by Bushmen and Bushmen influenced by Bantu must have tended to become very obscure" (*A.P.S.H.A.* p. 56).

The pottery which has been recovered from these Bantu sites certainly confirms Ellenberger's dictum regarding the Sotho origin of the tribes of the Transvaal, for it shows a tendency towards polychrome surface decoration, and the use of the comb in both of which it anticipated modern Sotho practice. But besides looking forwards it also looks backwards, and provides us with

the clue which may unravel the mystery of Zimbabwe. For the pottery recovered from the oldest levels at Aasvoëlkop, near Johannesburg, shows such similarity to Caton-Thompson's Class A pottery that there can be little doubt but that both are the work of people of the same, or a nearly related tribe, separated, it may be, by several generations.

This is a matter of great archaeological interest because the available evidence seems to show that Class A pottery was made by the people who built the first primitive enclosure on the Zimbabwe Acropolis, thus commencing the composite revetment walls which form part of the accumulated occupational debris they support. These walls stand to-day to a height of 29 ft. and undoubtedly served as the prototypes of the girdle walls of the Elliptical Temple.

Now the occupation of Mapungubwe seems to have been due to two distinct peoples who lived there in an easy symbiosis:

(1) The makers of Class M_1 pottery who were undoubtedly of Shona stock.

(2) The makers of Class M_2 pottery who were probably of Sotho stock.

The first, the people who made the fine pottery termed M_1, were a chiefly clan, judging from the relative rarity of their ware, and the occurrence of the best of it only on top of the hill, where it had been found in graves containing hundreds of ounces of gold. With them there was associated from the very earliest date of the occupation, a people who made and used a pottery of much coarser fabric and decoration, but which had a great variety of forms, spouts, bases, lugs, etc. Excavation on other sites shows that these peoples did exist separately, the M_1 people at Riet and Sibsey to the east, and the M_2 people at Parma and Pont Drift to the west —Mapungubwe representing the overlapping of the two cultures.

Cultural divergence is also indicated by their burial customs, the M_1 people using the sitting position, while the M_2 people buried their dead on the right side with the body flexed.

From the association at Mapungubwe of gold beads, gold plating and gold tacks with a fine Class M_1 pottery, which shows a strong resemblance to Caton-Thompson's Class B and B_2 Zimbabwe pottery, it is certain that these people formed a link with the Zimbabwe culture at its most flourishing period of the Second Phase, and should therefore be classed with the Shona.

Of the origin of the M_2 people we can suggest that since their pottery is so similar to that of the Mangwato, they were related to those people and were therefore of Sotho stock, and since their pottery shows a generalized resemblance to Zimbabwe Class A pottery, that they are probably distant connexions of the first occupants of Zimbabwe.

Of the date of this occupation of Mapungubwe we can only give the vaguest estimate based on the following inadequate data:

(1) We must account for the vast quantities of occupational debris on and around Mapungubwe Hill and also those at Bambandyanalo.

(2) There are on the cave-sandstone kopjes of the neighbouring farms of Armenia and Little Muck numerous rock paintings which we must regard as the legacies of a considerable Bushman population.

Now in the presence of a large population of pastoral and agricultural Bantu the Bushman is either absorbed or exterminated, and in either event will stop painting.

Since the paintings cannot be of any great age, three or four centuries at the most (for the cave sandstone, as its name implies, is not a durable material), it follows that the occupation of Mapungubwe cannot go further back than A.D. 1500, if indeed it is as old.

The fact that two pieces of Sung Period celadon porcelain were discovered on the top of the hill does not vitiate this conclusion, for although both pieces belonged to the same vase, they were about 250 ft. apart, one was found at a depth of 4 ft. beneath the surface and the other at a depth of 12 in. It is evident, therefore, that a considerable period elapsed between the time that the first piece was placed where we found it and the date when the second piece was buried. This confirms Caton-Thompson's suggestion that these old peoples treasured mere scraps of porcelain (*Z.C.* p. 187), a custom which still prevails in Northern Rhodesia and Nyasaland ("Bowstand or trident?" A. I. Richards, *Man*, Feb. 1935, pp. 30 and 31).

The finding at all levels of a few fragments of pottery with characteristics different from our typical classes shows that throughout the occupation of the place the people were in touch with other Bantu tribes, of which one, probably of Sotho stock, occupied the Waterberg district.

The occupation came to a sudden end, for the terrace walls on Bambandyanalo Kopje had never been filled in with earth but had been abandoned after the stonework had been built.

As no example of the typical band-and-panel Venda pottery has been found at Mapungubwe, we conclude that this happened ± A.D. 1750, which is the date at which we have assumed the Venda invasion took place, and from which we propose to date the Second or Venda Period.

Apparently the site at Mapungubwe was never reoccupied, but at Parma Kopje the M_2 folk were succeeded, after a definite break, by people who found it

necessary to fortify the place, who used firearms, beads of modern types, and who made pottery indistinguishable from that of other post-Mzilikazi sites.

Traditions

Two traditions dealing with Mapungubwe have recently been brought to our notice.

The first, said to have currency in Bechuanaland, is to the effect that the hill was an outpost of the Monomotąpa's Empire and takes its name from the regiment that held it.

According to the second, which comes from Southern Rhodesia, the King of Zimbabwe visited Mapungubwe and died and was buried there.

We have no information regarding these traditions which, however, contain nothing contradictory to our reading of the history of Mapungubwe. The place was undoubtedly an outpost of a Shona culture showing many signs of contact with Zimbabwe. It lay in the midst of Sotho peoples who were directly connected with the Mangwato or their ancestors, and therefore if legendary history still survives, Serowe is the most likely place to find it, and we trust that the whole matter will be investigated with as little delay as possible.

We would also recommend that the site of the old Mangwato village in the Kutawo Hills, about 9 miles to the south of Serowe, should be inspected and, if possible, pottery collected from it.

SUMMARY

1. The Sotho peoples appear to have crossed the Limpopo about the middle of the fifteenth century, in response to the growing pressure from the invading Shona, and to have spread rapidly over the country about the 27th parallel, absorbing in the process a large Bush element.

The sites at Aasvoëlkop, Heilbron, and Tafelkop have all produced pottery which anticipates the modern Sotho wares, and also, in the case of the first named site, reproduces features which occur in Zimbabwe Class A pottery. Since the available evidence goes to prove that this class of ware was made by the people who constructed the first primitive enclosures on the "Acropolis", we suggest that we have here a clue to the riddle of Zimbabwe.

At Mapungubwe, the Sotho and the Shona appear to have lived peacefully for many generations, for we have abundant evidence that their distinct pottery industries were practised concurrently. These we have termed

Class M_1 made by the Shona,

Class M_2 made by the Sotho.

The first, from its association with gold and its comparative rarity, was probably the ware of a chiefly clan.

The second is much coarser but has a greater variety of forms, and closely resembles modern pottery from Serowe.

2. The date cannot be placed much before A.D. 1500 because Bushman paintings on perishable cave sandstone exist in the neighbourhood.

As the characteristic Venda band-and-panel ware was not found at Mapungubwe, it is probable that the end of the occupation coincided more or less with the Venda invasion. It is improbable that it ceased long before, because a sherd of a Class M_1 shouldered pot was found at Haddon.

The date suggested for the Venda invasion is $\pm$ 1750.

3. The connexion between Zimbabwe and Mapungubwe is reflected in current traditions in both Southern Rhodesia and Serowe.

SECTION No. 2
OF DZATA, VERDUN, MARYLAND AND HADDON

The ruins of the old Venda village of Dzata stand on gently sloping land about a mile to the north of Mphephu's village and 13 miles to the east of Wylie's Poort on the main road from Louis Trichardt to Messina.

The general plan has much in common with the modern village. In both, the chief's quarters are on the north-east, the cattle kraal—with the Court House opening on to it—towards the south, and the people's huts on the west, and Dzata, like its modern counterpart, was originally surrounded by a stockade of pointed tree trunks.

The most striking features of the ruins are the three walls built of flat pieces of stone, which occupy the Central Area. These walls are slightly curved on plan with the ends rounded, and stand, in places, 6 ft. high. In one side of each there is a niche about 4 ft. wide by 3 ft. deep, and built tapering towards the back. It was in one of these niches that the chief used to sit while his counsellors, grouped before him on the ground, discussed the affairs of State and endless pots of beer. These walls were decorated along the crest with upright shafts of stone measuring about 4 ft. in height, all of which have fallen. The facing stones used in the construction were witness to the chief's power for, according to tradition, all had been brought from great distances as tribute, some say from Zimbabwe. This is however impossible, as none are of granite, but they are certainly quite different from the rounded boulders of country stone which is used for the centre of these walls and for the entire construction of all the other walls on the place.

Of the remaining walls those which formed the outer defences are certainly the foundation of stockades, for they are no more than two or three courses in height, and as there is an absence of debris they could never have been much more. According to tradition these and the inner walls also (some of which are about 4 ft. in height) were surmounted with stockades in the same manner as the walls of the present village.

Of the huts of the chief and his family nothing remains but the foundation, formed with one or two courses of country rock, and mounds of debris in which traces of clay floors can be seen.

There are two small stone circles about 9 ft. in diameter, which were pointed out to me as being seats for the chief. In the centre of each there once stood a stone post. My guide was careful to point out how one of these had been defaced with the names of visitors.

The sites of the huts of the common folk can only be traced from the mounds to which they have been reduced.

The cattle kraals seem to have been outside the stockade; the site is marked by mounds of fine ash. I was informed that these kraals had been used as a dancing place, my guide striking the ground to show how resonant it was. Within living memory the mounds have been greatly reduced through weathering.

The importance of Dzata to our enquiry lies in the fact that it can be dated, and that there are living traditions concerning it which can be drawn upon to interpret other sites which have been completely forgotten. Chief amongst these are Verdun, Maryland, and Haddon, all of which are named after the farms on which they stand.

Each of these sites presents the same feature of a well-built wall standing independently of any enclosure. In each case, I believe, the wall served the same purpose as the chief's seats or khoro at Dzata.

The khoro at Maryland is built with the greatest care, for the hard quartzitic sandstone facings have been knapped to shape, and the joints are finer and the masonry better than anything at Zimbabwe.

At Verdun there is a khoro with a niche which reproduces the Dzata examples very faithfully.

The wall at Haddon is almost as good as Maryland, the one at Kearskraal is much rougher but is, nevertheless, a sound piece of work.

If other structures ever existed, they were probably of timber as at Dzata, or like modern kraals, they may have been surrounded with a thorn hedge, which in a country so prolific of thorns is the most natural form of defence.

Excavation was only possible at Maryland and Haddon. Unfortunately the deposits at both the places were so slight that stratigraphy was impossible.

DISCUSSION

I. CLASSIFICATION

Dzata

The pottery from Dzata falls into two distinct classes:

Class V_1. A coarse light grey ware with a large amount of grit in the paste, which is burned to a light grey. The exterior is decorated with plain bands and hatched panels with lines cut on the wet clay.

The bands are burnished with graphite and the panels either coloured red or left the natural colour of the pot. Only one fragment shows a rim, with a roll on the outside (pl. xxxiv, 1, 2, 6).

Class V_1a. The ware is similar to the last, but the rim is square and either directly below it or separated from it by a band of graphite burnish is a band of counter-hatched triangles (pl. xxxiv, 11, 12, 13).

Class V_2. A coarse ware with a dark grey gritty paste, burnt light buff or brown.

With the exception of three bowls, all the sherds from Dzata appear to belong to spherical pots.

Two of the bowls (pl. xxxiv, 7, 8) are similar to Class M_2 ware; cf. pl. xxiii, 22, 25 with the former and pl. xxiii, 14 with the latter.

The third bowl (pl. xxxiv, 9) was about 10 in. in diameter and is represented by a fragment of its bevelled rim. The paste is gritty and of a buff colour, the bevelled rim surface is decorated with a hatching of wide shallow lines, and a band of similar decoration runs round the bowl, below the rim externally. The surface of the band is self-coloured, and the remaining surface of the bowl is burnished with graphite.

This bowl seems to conform to none of our classes, but has certain resemblances to a bowl in the Transvaal Museum, which belonged to Chief Mapiela, a Matabele of the Langa Clan, Maukopani Location, Potgietersrust, who died in 1825.

Maryland

The pottery from the Maryland site is very similar to that from Dzata.

Class V_1 is represented by several sherds (pl. xxxiv, 20, 21, 23) in which the lines have been engraved on the pot after burning. The paste is a light grey burnt to red. The outside is decorated with chevrons of graphite burnish alternating with red, which is apparently self-coloured, with a dull burnish. The rim is boldly rolled, everted and undercut. Another fragment shows a panel filled in with dots, probably impressions from a bangle made on the wet clay.

Class V_2. This class has several additional forms, the rims are slightly raised giving an effect of shouldering to the pot; the decoration becomes simpler and the

single line with cross-strokes often takes the place of the more elaborate hatching (pl. xxxv, 22).

A sherd of a bowl in this class ware has the hatched band directly under the rim, a pattern which is still in use (pl. xxxiv, 27).

Class V_3. This ware is similar to the last but the rims are strongly everted, in one case with a distinct trench between the neck and the body (pl. xxxiv, 14) (cf. *M.R.* pl. xi, 4).

Another feature of this class is the reinforcing of the inside of the neck with clay apparently folded back from the rim (pl. xxxiv, 17, 24). This is also found on necks of pottery from the sites which were occupied during last century and which we have classified as belonging to the Third Period.

Pottery collected by A. Y. Mason from pit circles at Penhalonga also show this neck thickening ("The Penhalonga Ruins", p. 575, Fig. 4 F and O, *S.A.J.S.* vol. xxx).

The paste used in this ware varies very considerably, that of the thicker pots being very coarse and gritty. Several of the finer pieces are burnished with graphite.

Haddon

With the exception of the slightly convex neck of a shouldered pot, all the pottery from Haddon conforms to the types from Maryland, proving conclusively the identity of the pottery from both places.

A piece of Class M_1 shouldered pot, 16 in. in diameter at the rim, was found here. The ware is dark grey and gritty, the shoulder is decorated with inverted cross-hatched triangles, and the surface is very much decayed (pl. xxxiv, 32).

This was a most fortunate discovery, for it suggests that Mapungubwe was deserted before Haddon was occupied, otherwise it is difficult to understand why such a prolific industry should be so poorly represented on a neighbouring site.

With one exception (pl. xxxiv, 44) all the sherds of Class V_1 from this site have the lines of decoration cut on the wet clay, and the panels are either stippled, covered with horizontal lines or with hatching (pl. xxxiv, 39, 40, 42, 43). One of these (39) appears to have had the lines filled in with a black tar-like substance.

II. A COMPARISON WITH THE POTTERY FROM OTHER SITES

1. Zimbabwe.

There can be no doubt at all but that our Class V_1 pottery is identical with Caton-Thompson's Class D (*Z.C.* p. 49) and with the pottery found at Dhlo-Dhlo, Khami and Nanatali by Maciver (pls. xxxiii, xxxiv, *M.R.*). That this pottery was made by the Rozwi seems clear from Hall's account:

> The patterns are large bold and entirely geometrical painted in strong contrast to the general colour of the pot. Thus black patterns are laid on yellow and red grounds, red patterns on yellow and black, and yellow patterns on black and red. A collection of Barotse pottery made by Major Corydon from north of the Zambesi is a facsimile in make and design of the Barotse pottery found at Thabas Imamba, Khami, Zimbabwe and other ruins known to have been occupied by Barotse up to seventy years ago. A collection of pottery from Khami... was at once claimed by the local Barotse as being of Barotse make, while the local Makalanga not only emphatically denied that it was of their class of make and design, but added that it was the work of the Barotse people. (*G.Z.* p. 129.)

We had the good fortune to find the ware on sites which had not, like Zimbabwe, been subject to several occupations and therefore we feel justified in correlating much of Caton-Thompson's graphite burnished Class B_2 pottery with her Class D and our Class V_1. The resemblance between the rim shown on *Z.C.* pl. lxx, 42 and pl. xxxiv, 20, 23 is inescapable, and a comparison between the actual sherds has convinced us of the identity of the cultures.

We consider that our Class V_2 is very similar to, if not identical with, Caton-Thompson's Class C.

The spherical pots of this class are still the commonest form of Native pottery in the district; some of the sherds are so rough and degenerate that they are probably due to very recent occupation (pl. xxxiv, 25).

2. Khami.

One fragment from Haddon (pl. xxxiv, 44) has bands of graphite, red and herring-bone decoration on buff, all the lines being engraved in a very rough manner after burning. It appears to be identical with a fragment from Khami Ruins illustrated by Balfour (*Man*, No. 11, 1906, p. 17, pl. B, 11).

3. Penhalonga.

In addition to the neck thickening already mentioned, several of the finer Class V_3 rims are identical with material from Penhalonga (A. Y. Mason, "The Penhalonga Ruins") (pl. xxxiv, 19, 34).

4. Heilbron.

One fragment (pl. xxxiv, 38) is very similar to material with a brown burnish from the Heilbron sites (*A.P.S.H.A.* p. 44).

III. HISTORICAL

Basing our judgment on the similarity which we have noted between their respective potteries, we might assume a corresponding similarity to exist between the Rozwi and the Venda. This is indeed the case for both Lestrade (G. P. Lestrade, "Some notes on the Ethnic

History of the Ba Venda and their Rhodesian Affinities", *S.A.J.S.* vol. XXIV, pp. 490–1) and Stayt (*Z.C.* p. 250) agree that the Venda are specially connected with the Rozwi, and therefore with those Rhodesian Ruins with which the latter are associated, particularly Dhlo-Dhlo.

Now since the finds made by Caton-Thompson at Dhlo-Dhlo definitely assigned that place to the end of the seventeenth century, or even later, it would seem reasonable to date the Venda incursion into the northern Transvaal as ±1750, for it seems probable that Dzata was deserted ±1800, and time must be given for the growth of the very considerable rubbish heaps of that place.

The date of ±1750 may be taken as that of the desertion of Mapungubwe as we found no examples of Venda pottery amongst the many thousands of sherds we examined, while at Haddon a single piece of typical Class M_1 pottery occurred (pl. xxxiv, 32).

We conclude, therefore, that the Venda invasion coincided with the end of the occupation of Mapungubwe. This Second or Venda Period appears to have continued until the time of Mzilikazi, that is about 1830.

SUMMARY

1. Dzata. Concerning the ruins of Dzata, there are living traditions amongst the local Venda, from which, with the evidence of the neighbouring village, we can reconstruct the place with certainty.

In the centre of the town were segmental stretches of walling, about 6 ft. high, in the convex face of which a niche-like seat was contrived for the chief. On the north-east were the quarters of the chief, on the west the huts of the common folk. The whole place was surrounded with a stockade, on the outside of which towards the south were the cattle kraals.

2. The remains of Verdun, Maryland and Haddon are much smaller. At Verdun there exists a chief's seat, but at the other places there are only well-built stretches of walling.

3. The pottery collected has been classified as:

Class V_1. Decorated with hatched panels coloured red or buff and separated by graphite burnished bands. The clay is very coarse and gritty. This ware we have termed "Band-and-Panel" and is characteristic of Venda work.

Class V_1a. Similar to the last but with a single band of decoration below the rim.

Class V_2. A coarse ware in a dark grey gritty clay burnt to a light buff or brown. Usually decorated with a single line of cross strokes.

The principal types noted in these three classes were:

Bowls.
Spherical pots.
Shouldered spherical pots.

Class V_3. This ware is similar to the last, but the rims are everted, and in some examples a distinct neck is formed.

Another feature is the reinforcing of the interior of the neck with clay folded back from the rim. The clay varies greatly, in the large pots it is coarse and gritty, but the fine pots are often well made and burnished with graphite.

4. Comparative material has been recorded from the following sites:

Class V_1.

Zimbabwe. Pottery identical with our Class V_1 has been described by Hall, who attributed it to the Rozwi (*G.Z.* p. 129), Maciver and Caton-Thompson. Caton-Thompson terms it Class D, and it is evident from her illustrations that much of the ware included in her Class B_2 really belongs to this group.

Khami, Dhlo-Dhlo and Nanatali. These sites have all yielded similar pottery to our Class V_1.

Class V_2.

Zimbabwe. Caton-Thompson's Class C seems to be very similar to this ware which also has much in common with modern local pottery.

Class V_3.

Penhalonga. The fine pottery described by Mason is similar to this ware in texture, burnish and neck reinforcement.

Heilbron. One fragment with a brown burnish resembles ware from this site.

5. We judge this pottery to have been the work of the Rozwi-Venda because

(*a*) It is very similar to ware from Dhlo-Dhlo and Khami which are known to have been Rozwi centres.

(*b*) The walling at Verdun, Maryland and Haddon resembles that at Dhlo-Dhlo.

(*c*) The Venda maintain they are related to the Rozwi.

(*d*) This relationship is confirmed by their language.

The Rozwi-Venda seem to have entered Southern Rhodesia about the end of the seventeenth century. Dhlo-Dhlo, at least in part, dates from the eighteenth century, and we may therefore date the arrival of these people in the northern Transvaal at about A.D. 1750.

SECTION No. 3

OF THE FORTIFIED KOPJES, RATHO, PARMA (LAST PHASE), HILDA, SHIRBEEK, SINGALELE, KANJILI AND ISLET

There are in this part of the Limpopo Valley a number of kopjes fortified by rough walls. In the largest, such as Parma, Ratho and the kopje lying across the Limpopo directly to the west of Ratho (which for brevity we shall call the West Kopje), these walls are pierced by small square loopholes, which would be useless for any weapons except firearms. In none of these places is there any depth of debris, and in all where search has been made, the large blue hexagonal and the large blue annular beads have been found.

All these places differ from such sites as Dzata, Maryland and Haddon in the following ways:

(1) The sites are on inaccessible kopjes instead of open ground.

(2) The sites are not surrounded by wooden stockades as at Dzata, but defended by rough stone walls with loopholes.

(3) The khoro, or khotla, where present, is roughly built, as at Ratho, and West Kopje. There is no trace of the fine stonework found at Maryland or Haddon.

DISCUSSION

The pottery from these places, which we shall term Class P.M., is directly connected with Classes V_1a, V_2 and V_3.

The pieces found are very coarse and degenerate into a type which can be described as "just pot" (pl. xxxv, 18).

The polychromic tradition is maintained throughout with diminished glory, until as at Parma, Phase 3, and Ratho, it degenerated into a light buff ware on which bands of purple colour had been roughly daubed, of such poor quality that we are inclined to regard the pieces which maintain any excellence of technique as being survivors from a more prosperous past.

The principal types recorded are:

1. Bowls (pl. xxxv, 1–8).

These bowls, with the exception of Nos. 5 and 8, are all decorated with a band of hatching directly below the rim, which seems to be a characteristic feature of this class. No. 1 is burnished with purple and Nos. 2 and 4 with graphite. No. 2 is exceptional as it alone shows the hatched loop we met so frequently in Class M_2.

2. Shouldered Pots (pl. xxxv, 9, 13, 18).

These are difficult to distinguish from the spherical pots. No. 9 is decorated with purple colour brushed on to the pot after burning and then burnished.

3. Spherical Pots (pl. xxxv, 11, 16, 17, 21, 22).

This is by far the commonest type; No. 11 is very similar in treatment to the bowl (No. 1) and has a band of purple burnish beneath the hatching.

It is probable that bowls 1 and 4 are of Sotho origin for the former is very similar to modern pottery from Maseru. In both there is a band of hatching directly below the rim and both are burnished with the same purple colour which had been brushed on to the burnt surface of the bowls. In the modern example this colouring is blood and there can be little doubt but that blood, too, was used for the older bowls.

The design of No. 4 is precisely similar except that graphite is used instead of the purple burnish. Bowls very similar to Nos, 3, 5, 7 and 8 are still made in the locality.

The recurrence of the hatched loop motif need not necessarily be ascribed to a survival from Class M_2 as it is possible that both were derived independently from a common source.

The spherical pot (No. 11) is obviously in the same tradition as the bowl (No. 1); in both the hatching is directly beneath the rim and in both the same purple burnish is used.

Both shouldered and spherical pots are very similar to modern Venda work.

One fragment from Singalele (pl. xxxv, 19) shows decoration similar to Class M_3f and may be a link between that technique and the band and panel of Class V_1.

Two sherds from Hilda (pl. xxxii, 4) are worthy of note as there is a definite link with very early times at Mapungubwe and also with a rim from Parma (pl. xxxii, 7).

We believe it would be reasonable to regard the whole Class P.M. as due to the invasion of Sotho polychrome pottery and to the fusion of this ware with the Venda forms, a condition which reflects both the racial and linguistic conditions obtaining in this territory.

OF OTHER SITES

There are three other sites on which low stone walls of good workmanship have been found.

Weipe. The wall is about 10 ft. long and 2 ft. high, and probably was a khoro of which the upper portion was made stockade fashion.

A few fragments of polychromic ware in red, black and yellow were found; all were too small for identification.

Mapungubwe East. This site is about a mile to the east of the hill. The most prominent feature is a large hut platform about 7 ft. high and 20 ft. across made of earth faced with stone. A hundred yards to the west is a khoro similar to that at Weipe.

This site resembles Weipe in every way.

It is to be noted that there are no enclosing walls at these sites, nor is there any depth of midden, which makes it certain that the occupation was very short lived.

MALANGA is a hilltop site about 40 miles to the east of Messina. There is a wall similar to Maryland, but not so well built. There appears to be about six feet of occupational debris over the site which is about half the area of Mapungubwe Hill.

Two sherds are illustrated (pl. xxxiii, 23, 24) and fall in with none of our classes.

SUMMARY

1. The fortified hill sites differ conspicuously from the sites already described, for the walls with which they are defended are loopholed for firearms.

The pottery which we have described as Class P.M. is derived from the Venda wares with an admixture of Sotho traditions.

2. The principal types are:

(*a*) Bowls. Decorated below the rim with a band of hatching, the body being burnished with purple or graphite.

(*b*) Shouldered pots with everted rims. Sometimes decorated bands and strips of purple roughly brushed on to the pot.

(*c*) Spherical pots. Usually with a rolled rim, and decorated with a hatched band below the rim or with a line and cross strokes.

All these types are similar to modern local ware.

3. The beads and other material found make it certain that these sites were occupied during and after the Matabele invasions of about a century ago.

SECTION No. 4

OF THE TECHNIQUE OF POTTERY MANUFACTURE IN THE MAPUNGUBWE DISTRICT

All the pottery discovered has been made by either one of or a combination of the following methods:

(1) RAISING FROM THE LUMP. That is by kneading the mass of clay into the required shape.

(2) BUILDING UP. In which additional pieces of wet clay are added to the original mass and shaped to form the vessel.

(3) PRESSING. In this process the clay is pressed into a prepared mould, usually a large sherd, which then forms a whirler upon which the potter rotates the vessel, while she is shaping it, and adding fresh pieces as required.

In no instance was pottery found that had been made on the wheel, or which had been built up with a spiral ribbon or roll of clay.

In order to work the clay in these ways it must be exceedingly plastic, and it is probable that our potters anticipated the modern Native practice in seeking their clay along the borders of ditches and water courses, where, owing to the existence of a trace of tannic acid derived from the decay of vegetable matter, the clay, which may be full of grit, has the property of being sufficiently plastic while it is wet for the work of moulding.

It is for these reasons we discount the suggestion that grit or ground quartz was ever added to the clay for the purpose of giving it strength (*M.R.* p. 33) and we hold that the grit in the coarser wares is of natural origin.

Moreover, the presence of quartz is likely to be detrimental to the pottery, for when it is heated it readily decomposes and expands, thus destroying the surface of the work. This is to be seen in several sherds in the collection, notably in the spouted spherical pot illustrated (pl. xxx, 1).

In a few cases pounded potsherds have been added to the clay used in the large pots (e.g. pl. xxiv, 1). This material would prevent very effectively any undue shrinking during the process of drying, and may have been used for this purpose, but it would weaken the burnt pot considerably.

Clays were undoubtedly sought out with the object of obtaining consistent results. Of this the persistence of the brindled burnish, so characteristic of Class M_2 (e.g. pl. xxvi, 3, 4) in modern Sotho pottery, is sufficient proof. On the other hand, we noted that the use of different clays at Bambandyanalo and Parma made it in most cases a simple matter to distinguish sherds from the two places, although they were identical in design and decoration. For this reason we have judged it unwise to classify the pottery by the kind of clay used in its manufacture.

The burning usually amounts to little more than dehydration as a kiln was apparently never used. In every case in which the pottery had been thoroughly fired it is probable that this had happened accidentally as the result of a hut fire or the like.

All except the roughest and coarsest wares had been decorated by either one or a combination of the following methods:

1. BY MOULDED DECORATION:
   (*a*) Shaping the rim and the body of the pot.
   (*b*) Raising the wet clay into bands.
   (*c*) By applying such decoration to the wet clay.

2. By Surface Decoration:

(*a*) Smoothing the pot while wet with a piece of raw hide, or similar material.

(*b*) Colouring the pot after drying or after burning, with ochres, graphite, or a mixture in which soot was the colouring agent.

(*c*) Burnishing the pot after burning by rubbing it with a smooth pebble.

3. By Incised Decoration:

(*a*) Cut into the wet clay.

(*b*) Engraved on the burnt pot.

(*c*) Cut into the dry unburnt clay.

(*d*) Impressions made with a stylus or comb.

1. Moulded Decoration

(*a*) Shaping the rim.

The variations of this method of decoration can be seen from the illustrations and an attempt has been made elsewhere in this report to correlate these with what is known of other pottery industries from other sites.

(*b*) and (*c*) Raising out of the wet clay or planting on to it bands or bosses.

Only two examples of raised bands were noticed, the one is illustrated on pl. xxviii, 4, and the other on pl. xxxi, 6, and these seem to have no relation to the Caton-Thompson Class B pottery from Zimbabwe (*Z.C.* p. 49).

With the bosses the case is different for several examples can be classified as M_1, e.g. pls. xxi, 3, 7 and xxii, 12. Class M_2 is represented by pls. xxiv, 7, xxvi, 3 and xxix, 5. The boss shown (pl. xxx, 10) is quite unusual and finds its nearest known counterpart in a sherd from Port Alfred (*H.B.P.* pl. xi, E).

Of these or similar bosses Hall remarks:

> The Makalanga have always decorated their pottery with protruding bosses of shapes and designs peculiar to themselves, the female-breast pattern predominating. There are at least fifty different sorts of such protruding designs found on undoubted Makalanga floors. (*G.Z.* p. 129.)

Balfour also mentions finding pottery with "raised bands and bosses" at Khami (*Man*, vol. VI, p. 17).

With bosses we should consider the lugs which form such a characteristic feature of Class M_2 pottery. All the examples found have vertical perforations (pls. xxiv, xxv). In some the lug is placed below a rim perforation (pls. xxiv, 4 and xxv, 1) where it might serve as a stop to a wire handle.

Three examples of planting bands on to the shoulder of a bellied pot were noted (pl. xxxii, 9). Unfortunately, in each case the rim was missing and reconstruction was impossible.

2. Surface Decoration

(*a*) The smoothing of the surface to give a matt finish is common in all classes of pottery and is the one most frequently used by modern potters. The finest example of this finish is the shallow bowl illustrated on pl. xxii, 3.

(*b*) and (*c*) Nearly all the pottery assigned to Class M_1 was blackened, probably soot mixed with some colloidal surface filler was used; it was applied after firing and then burnished with a smooth pebble, the marks of the polishing being usually quite clear.

Only one example of the use of graphite on Class M_1 pottery was found at Mapungubwe (pl. xviii, 12) and none at all was found at either Pont Drift, Riet, Sibsey or below the cement floor at Parma; on the other hand the graphite burnish is common on those sites which we assign to the Venda and post-Mzilikazi Periods.

The modern Venda appear to use both the soot and the graphite burnish.

The brindled burnish with which so many of the Class M_2 pots were finished, seems to have been produced by smoothing with a pebble before burning and by the use of a surface filler and burnishing after burning.

The red colour may have been produced by rubbing the dried ware with haematite.

The purple colour on the pots from Parma and Ratho was applied with some sort of a brush, for the marks are clearly visible (pl. xxxv, 9). It is probable that, as amongst the modern Sotho, the medium used was blood painted on to the pot after it had been burnt, and as the colour is identical with that on pots from other sites, it seems probable that the same method was used elsewhere.

One fragment (pl. xxxiv, 38) decorated with a light brown burnished lozenge on a matt purple field was found; it seems probable that we have here a link with the Heilbron Area where Dr Laidler found pottery decorated with "plain water burnish" combined with brown burnished strips (*A.P.S.H.A.* p. 44).

3. Incised Decoration

(*a*) The incised decoration on the wet clay show several interesting varieties.

From the lower levels we noticed that in many sherds the lines seemed to have been cut in a very wet surface and then rubbed over while the material was still soft (e.g. pl. xviii, 12). The same effect was noted on a sherd from Riet (pl. xxxiii, 1).

In other sherds the impressions were lightly scratched on the surface (e.g. pl. xxiii, 21) while in others the lines are made with a precision which is truly masterly. On one fragment from Haddon (pl. xxxiv, 39) the lines appear to have been filled in with a black tar-like substance.

(*b*) The engraved decorations from Mapungubwe appear with one exception (pl. xxiii, 14) to belong to Class M_2.

Again we found a great difference in line; the light scratchings on the beaker illustrated on pl. xxiv, 8 contrasts with the abraided lines on the bowls shown on pl. xxiii, 8, 12.

The engraved designs are made up of straight lines rather than curves; in some cases they are quite different from those cut on the wet clay and form the only variants we noted to the hatched triangle and its derivatives. In most cases the motifs conform to the common tradition and are obviously better suited for cutting on wet clay than for engraving on the burnt ware, cf. pl. xxiii, 13 with pl. xxix, 1 and pl. xx, 7 with pl. xxix, 3.

From this it would appear that the introduction of engraving on the burnt ware is a comparatively recent event in the history of this pottery industry, and since the engraved pieces were found mostly in the deeper deposits we conclude that the practice had fallen into disuse before Mapungubwe was abandoned.

One or two examples were found in which the decoration had been made by both methods (pls. xxviii, 7 and xxxiv, 38) and in one (pl. xxxiv, 10) the design cut on the wet clay had been touched up after burning. No other example of the practice of scoring on the burnt pot the lines made on the plastic clay, described by Balfour (*Man*, vol. VI, No. 11, p. 19), has been noted on any of the pottery from the Mapungubwe district.

No examples of engraved polychrome pottery were found at Mapungubwe, all such pieces were found either at Maryland or Haddon. We discovered nothing to support Balfour's suggestion that stone flakes were used to engrave this ware, but it is noteworthy that a fragment from Haddon (pl. xxxiv, 44) resembles very closely the piece he illustrates (*Man*, No. 11, 1906, p. 17, pl. B, 11). The lines of the former appear to have been abraided or filed out rather than engraved and differ in this respect from all other examples found.

(*c*) A few examples of cutting the decoration on the dried pot before burning were noted (pl. xxiii, 4, 21). The subspherical pot (pl. xxii, 5) shows a roughly lozenge-shaped patch of diagonal cross-hatching made on the wet clay and surrounded with a line cut after the work had dried. A precisely similar detail is to be seen on one of the small pots associated with the grave of the woman and child on Mapungubwe.

(*d*) The use of the round or triangular stylus is fairly common in Class M_1 pottery (pls. xvii, 3, 13; xxi, 1, 2; xxii, 3, 13). In only one instance (pl. xxii, 2) was the use of a square stylus noted, and in this case the effect of a raised trellis had been produced by a very careful use of the tool. The comb does not appear to have been used in the decoration of Class M_1 pottery.

In Class M_2 pottery the triangular stylus (pls. xxvi, 7; xxvii, 16) was frequently used; the comb also was much in evidence (pls. xxvii, 8–12; xxix, 10; xxxi, 9), and one (pl. xxvii, 17) showed that the edge of the rim had been decorated with impressions from a comb with two points. Wire bangles were occasionally used (pl. xxvii, 18) and strings of beads (pls. xxvii, 3, 6; xxxi, 7).

The use of punctured decorations continued into the Venda Period (pl. xxxiv, 40) but seems to have subsequently fallen into disuse, and at the present time is seldom seen.

Many examples (pls. xix, 2; xxxiii, 4; xxxv, 4) from several sites, including Zimbabwe, have been found of pots both large and small, which have been repaired by drilling holes on both sides of a fracture, with the obvious intention of binding the pieces together. As a similar procedure is used by the Venda in the repair of calabashes, it would be unsafe to ascribe the practice to any particular race or period.

SUMMARY

1. All the pottery described was made by either one or a combination of the following methods:

(1) Raising from the lump.
(2) Building up.
(3) Pressing.

2. No examples of either wheel turning or ribbon technique were found.

It is probable that the clay was placed on a large potsherd, which formed a primitive whirler, and rotated by hand.

3. The only ingredient certainly added to the clay was the crushed sherds occasionally used in thick ware. All other included material, such as sand or quartz particles, was probably of natural origin.

No classification based on the nature of the clay has been attempted, as the clay used was found to vary greatly from site to site, even when the technique remained the same.

4. No evidence of the use of the kiln for burning was found, most of the pottery having been dehydrated rather than burnt. It is probable that the examples of thorough burning found were accidental.

5. All except the coarsest pottery was decorated by either one or a combination of the following methods:

(1) By moulded decoration:
  (*a*) Shaping the rim and the body of the pot.
  (*b*) Raising the wet clay into bands.
  (*c*) By applying such decoration to the wet clay.

(2) By surface decoration:
  (*a*) Smoothing the pot whilst wet with a piece of raw hide, or similar material.
  (*b*) Colouring the pot after drying or after burning, with ochres, graphite, or a mixture in which soot was the colouring agent.
  (*c*) Burnishing the pot after burning by rubbing it with a smooth pebble.

(3) By incised decoration:
  (*a*) Cut into the wet clay.
  (*b*) Engraved on the burnt pot.
  (*c*) Cut into the dry unburnt clay.
  (*d*) Impressions made with a stylus or comb.

SECTION No. 5
OF POLYCHROMIC POTTERY

We consider that the modern polychromic pottery of the northern Transvaal flows from two sources:
(1) Sotho pottery.
(2) Venda pottery.
These industries, which have different origins and which were at one time quite distinct, are at present tending to fuse.

Sotho Pottery.

We also consider that Sotho pottery is again divisible into two traditions:
(1) A tradition in which polychromic decoration was used for some wares.
(2) A tradition which did not use this decoration.

Our knowledge of the first is confined to the fragments of polychromic ware from Mapungubwe which we have included in Class M_3, and to material from Aasvoëlkop, Klein Letaba, Waterberg and Heilbron, of which the common Sotho pottery of the Pretoria district is the modern form.

The second is best known from our Class M_2 ware and also from some sherds from Serowe.

The Antecedents of the Venda Polychrome Pottery.

The antecedents of this ware are well known from the descriptions of Hall and Maciver, and it has been dated by Caton-Thompson's work at Dhlo-Dhlo as being not older than the beginning of the eighteenth century. It was brought south of the Limpopo about 1750 and forms the characteristic pottery of our Second or Venda Period. At present it is represented by modern Venda pottery.

On the Rhodesian sites, and also at Maryland and Haddon, examples are found in which the dividing lines between the coloured areas have been cut into the burnt pot. The introduction of the practice seems to have come at a comparatively late date in the history of the industry, it seems to have been used concurrently with and to have been eventually ousted by the more usual method of cutting the decoration on the wet clay.

The correlation of these two traditions with the two oldest divisions of the Sotho people—the Rolong and the Tlhaping—would fit our theories admirably, but at present we have insufficient evidence to support such a conclusion. We can be sure, however, that during our First or Mapungubwe Period both these traditions were being carried on independently of one another in the Limpopo valley.

A superficial comparison between this Sotho and the Venda pottery shows that more colours are used in the former than in the latter:

Sotho		*Venda*	
Brown	Burnish	Red	Burnish
Brown	Matt	Black	Burnish
Purple	Burnish	Graphite	Burnish
Purple	Matt	Buff	Matt
Red	Burnish		
Red	Matt		
Buff	Matt		
Graphite	Burnish		
Black	Burnish		

The coloured decorations of the Sotho ware are usually confined to a series of bands of alternating triangles with the containing lines made in the more recent wares with a comb.

The Venda ware is decorated with bold chevrons and in the older ware with panels of hatching or stippling divided by plain bands. When bands only were used they were decorated with counter-hatched triangles.

The shapes of the pots are also different, the Venda using principally spherical pots, gourd-shaped pots and bowls, while the Sotho make great use of shouldered pots and, as far as we know, do not make the gourd-shaped pot.

We have no information as to where or when polychromic decoration of pottery arose. It seems unlikely that both the Sotho and the Venda hail from the same area for if our dating is correct the earliest example of the Sotho polychrome ware must antedate the Venda by 150 years or more, and until we have further data from Rhodesia, we must let it rest at that.

SUMMARY

1. The modern polychromic pottery of the northern Transvaal is derived from Sotho and Venda sources, which are at present tending to fuse.
2. Sotho pottery represents two traditions:
(1) One in which polychrome decoration was used.
(2) One in which polychrome decoration was not used.

The first is known from our Class M_3 material, from Aasvoëlkop, Klein Letaba, Waterberg and Heilbron, from which the modern Sotho pottery of the Pretoria district is derived.

The second is known from our Class M_2, the material from the Zeerust district, Serowe and the Natal Coast.

3. Rozwi-Venda pottery. It is clear from Caton-Thompson's work at Dhlo-Dhlo that this ware, in that area, dates from about A.D. 1700, at which time the practice, since abandoned, of engraving the decorative lines on the burnt pot was still in use.

4. The colours used seem to be:

Sotho		*Venda*	
Brown	Burnish	Red	Burnish
Brown	Matt	Black	Burnish
Purple	Burnish	Graphite	Burnish
Purple	Matt	Buff	Matt
Red	Burnish		
Red	Matt		
Buff	Matt		
Graphite	Burnish		
Black	Burnish		

SECTION No. 6

GENERAL CONCLUSIONS

We have throughout this report endeavoured to place the pottery industries which we have been describing within the framework of the Language Groups which have been formulated by Schapera and others, and which alone seemed to offer us a foundation upon which we could base our investigation.

We believe we have shown that a very close connexion exists between the respective pottery industries of the members of any one Language Group and we hope we have indicated the lines along which future researches will be able to trace the movements of the Bantu tribes in their migrations.

In doing this we have neglected, or treated as of secondary importance, the more spectacular evidences of Bantu culture, such as their stone buildings and the like, and have restricted ourselves primarily to the consideration of pottery, which from its durability and its ubiquity forms the most reliable gauge we possess of the cultural kinships of vanished peoples.

If this should seem strange we would remind our readers that stone architecture is fundamentally a matter of geology. Quite a short migration might take a tribe from a locality where stone is abundant to one in which it is scarce, and at once their architecture will be changed. We have only to look around us to see how readily our traditional architecture of brick and stone can be abandoned for one, based on our ancient forms it is true, but translated into terms of corrugated iron and matchlining. Then as with us permanent buildings demand security and stable conditions before they can be attempted, and when these conditions cease, effort is at once directed into other channels.

We consider the division of our field into three great areas, each representing a separate Period, to be fundamental to the study of the recent prehistory of the northern Transvaal.

The First or Mapungubwe Period (1500–1750)

This period represents the intrusion of Shona culture to the south of the Limpopo, and at Mapungubwe the fusion of that culture with a branch of Sotho culture.

The Second or Venda Period (1750–1830)

This period coincides with the advent of the Venda. Its beginning coincides approximately with the abandonment of Mapungubwe, and it terminates with the Matabele invasion.

The Third or Post-Mzilikazi Period (1830–1898)

This period commences with the Matabele invasion of the first quarter of last century which resulted in the dislocation of Bantu civilization over the greater part of the subcontinent and the establishment of the hill fortress as the focus of tribal life, and it continues down to the European occupation.

Classification of Pottery

The pottery industries which coincide with these periods we have called respectively Class M, Class V and Class P.M.

We do not suppose that this classification is much more than a codifying of the results of our observations, and will doubtless be modified by every worker who follows us in the field.

Our Class M_1 is perhaps the most homogeneous for in it more than in any other the different types are related one to another. But even so the complex character of Shona culture is clearly shown by such pieces as the beautiful red bowl (pl. xxii, 3) which we should have regarded as being imported ware had it not been for the discovery of a couple of sherds which fill the gap between it and more ordinary bowls.

Class M_2 is certainly much less uniform, the variety of the traditions it represents being reflected in its general complexity. For example we can be certain that our shouldered pots with vertical necks (type 4*b*) were made by a people directly connected with the Mangwato, but we cannot be definite concerning the beakers nor the bowls with engraved decoration, for comparative material is completely lacking. Sufficient is known

however to enable us to describe the whole class as being due to a branch of the Sotho people, who did not adopt polychrome decoration.

Class M_3. As we have explained elsewhere, these imported wares are also of Sotho origin, but belong to the polychromic branch of that culture.

Classes V_1, V_2 and V_3 we consider to be due to the Venda tradition. That there should be affinities with pottery from Penhalonga may be expected, if the Venda have an eastern origin as suggested by Lestrade ("Some notes on the Ethnic History of the Ba Venda and their Rhodesian Affinities", *S.A.J.S.* vol. XXIV, p. 487).

Class P.M. seems to be a mélange of Sotho and Venda traditions and thus it represents correctly the ethnic conditions in the area under review.

CHRONOLOGY

The following chronology must be considered as being purely provisional but it is one which appears to us to be coincident with all the known facts:

1. Occupation of Zimbabwe Acropolis by people of Sotho stock—probably before ± A.D. 1300.
2. People of this stock cross the Limpopo ± A.D. 1450.
3. Zimbabwe deserted by the Sotho people ± A.D. 1450.
4. Zimbabwe re-occupied by people of Shona stock probably shortly after ± A.D. 1500.
5. People of this stock occupy Riet, Sibsey, and Mapungubwe where they fuse with people of the Sotho stock ± A.D. 1500.
6. Great increase in the prosperity of the peoples occupying Southern Rhodesia during which Dhlo-Dhlo, Regina, Nanatali and Khami were built by people of Rozwi-Venda stock, and the great walls at Zimbabwe and Mshosho were built by the Shona ± A.D. 1725–± 1825.
7. Desertion of Mapungubwe, Parma, etc., shortly before ± A.D. 1750.
8. Invasion of northern Transvaal by Venda ± A.D. 1750.
9. Desertion of Dzata about, or later, ± A.D. 1800.
10. Mzilikazi's invasion A.D. 1830.
11. Revival of Venda power in northern Transvaal A.D. 1830–98.
12. European occupation after A.D. 1898.

APPENDIX I

Index No.	Description	Rim section	Surface finish	Decoration	Class
	SCHEDULE No. 1. Pottery from rock surface. Trench No. JS 1. 25–60 ft.				
1	Deep bowl, 14 in. over rim	As pl. xxiii, 7	Black burnish	None	M_2
2	,, ,, 10 in. over rim	As pl. xxiii, 9	Matt umber	,,	M_2
3	Shouldered bowl, 5 in. over rim	As pl. xviii, 20	Grey burnish	On shoulder band of counter-hatched triangles cut on dry clay	M_1
4	,, ,, 8 in. at shoulder	None	Black matt	Band cut on wet clay as pl. xx, 6	M_1
5	,, ,, 16 in. at shoulder	,,	Grey burnish	Rough hatched loops cut on dry clay as pl. xxix, 13	M_2
6	Shallow Bowl, 10 in. over rim	Pl. xvii, 12	,, ,,	Diagonally hatched triangles cut on wet clay	M_2
	145 ft. to south end of trench				
7	Shouldered bowl, 4 in. over rim	Pl. xviii, 20	Black burnish	Cross-hatched band on shoulder cut on wet clay	M_1
8	,, ,, 16 in. at shoulder	None	Grey burnish	Band as pl. xx, 3 cut on wet clay in a fine style	M_1
9	,, ,, 12 in. at shoulder	,,	,, ,,	Hatched band at shoulder cut on wet clay	M_1
	SCHEDULE No. 2. Pottery from a depth of 4 ft. at third wall. Trench No. JS 2*a*				
1	Bowl, 11 in. diameter	As pl. xvii, 9	Black burnish	None	M_1
2	,, 10 in. diameter	Pl. xvii, 11	,, ,,	Rounded triangles cut on wet clay	M_2
3	Bellied pot, large	None	,, ,,	Cross-hatched triangles cut on wet clay as pl. xxxiii, 8	M_1
4	,, ,, $5\frac{1}{2}$ in. over rim	Pl. xviii, 16	Black matt	Cut on wet clay	M_1
5	Shouldered bowl, 8 in. over rim	Pl. xxi, 4	Black burnish	Band of hatching cut on wet clay	M_1
6	,, pot, 6 in. over rim	Pl. xxi, 5	,, ,,	,, ,, ,, ,,	M_1
7	Beaker bowl, 9 in. over rim	Pl. xxi, 9	,, ,,	Band of hatching and stippling cut on wet clay	M_1
8	Deep Bowl, 10 in. diameter	Pl. xvii, 17	,, ,,	Band of herring-bone hatching cut on wet clay	M_1

Index No.	Description	Rim section	Surface finish	Decoration	Class
		Pottery from base of third wall			
1	Bowl, 12 in. diameter	As pl. xxiii, 12	Brindled burnish	None	M_2
2	,, 9 in. diameter	Pl. xxiii, 5	Sepia matt	Engraved on edge	M_2
3	,, 10 in. diameter	As pl. xviii, 7	Black burnish	Engraved loops as pl. xxiii, 8	M_2
4	,, 10 in. diameter	As pl. xxiii, 8	,, ,,	Inverted diagonally hatched triangles cut on wet clay	M_2
5	,, 16 in. diameter	As pl. xxiii, 3	,, ,,	None	M_2
6	,, 10 in. diameter	As pl. xxiii, 11	,, ,,	None	M_2
7	Shouldered pot, fragment	None	,, ,,	Engraved hatched triangles	M_1
8	,, ,, fragment	,,	Grey burnish	,, ,, ,,	M_1
9	,, ,, fragment	,,	Black burnish	Hatched triangles cut on wet clay	M_1
10	,, ,, fragment	,,	Pink buff matt	Hatched triangles as pl. xxxiv, 26 cut on shoulder	?
11	,, ,, 7 in. over rim	—	,, ,,	Light scratches cut on wet clay round shoulder	?
12	,, ,, about 6 in. over rim	As pl. xxvii, 14	,, ,,	Hatched loops cut on wet clay round shoulder	M_2
13	,, ,, 4 fragments	As pl. xxvii, 14	,, ,,	Hatched loops cut on wet clay round shoulder	M_2
14	,, ,, 8 in. over rim	As pl. xxix, 12	Light buff matt	Triangular impressions on wet clay as pl. xxvii, 16	M_2
15	,, ,, 6 in. over rim	As pl. xx, 2	Brown matt	None	M_1
16	,, ,, 6 in. over rim	As pl. xviii, 16 (but thinner)	Black burnish	,,	M_1
17	,, ,, 8 in. over rim	As pl. xxi, 10	,, ,,	,,	M_1
18	,, ,, 8 in. over rim	As pl. xx, 7	Black matt	,,	M_1
19	,, ,, 4 in. over rim	As pl. xx, 6	Black burnish	,,	M_1
20	,, ,, 12 in. over rim	Pl. xxviii, 8	,, ,,	Cut on dry clay	M_2
21	3 spherical bowls, about 10 in. diam.	—	—	—	M_2?
22	Gourd-shaped bowl	Pl. xxii, 10	Black burnish	Band of hatched triangles cut on wet clay	M_1
23	Beaker, 5 in. diameter	None	,, ,,	Engraved band of hatched triangles	M_2
24	,, fragment of base	As pl. xxiv, 4	Black matt	None	M_2
25	,, 4 in. diameter	Rounded rim	,, ,,	Roughly scratched on wet clay	M_2
26	,, 4 in. diameter	As pl. xxi, 9	Black burnish	None	M_1
27	Beaker or beaker-bowl, fragment	None	,, ,,	Engraved	M_2
28	,, ,, fragment	,,	Fine black burnish	,,	M_2
29	,, ,, fragment	,,	Black burnish	Band cut on wet clay	M_1
30	,, ,, fragment	,,	,, ,,	Scratched band on wet clay	M_2
31	,, ,, fragment	As pl. xxxii, 2	Polychrome	Cut on wet clay	M_3b
32	3 bowls, 14 in. diameter	Pl. xxiii, 15	Black burnish	Engraved	M_2
		Schedule No. 3. Pottery from rock surface. Trench No. JS 2*b*			
1	Bowl, 12 in. diameter	Pl. xxiii, 14	Fine black burnish	Engraved triangles	M_2
2	,, 14 in. diameter	Pl. xxiii, 15	,, ,, ,,	,, ,,	M_2
3	Bowl(?), fragment	Pl. xix, 1	,, ,, ,,	Cut on wet clay	M_1
4	Beaker, 4 in. diameter	None	Grey matt	None	M_2?
		Schedule No. 4. Pottery from rock surface. Trench No. JS 3			
1	Bowl, 10 in. diameter	As pl. xviii, 7	Fine black burnish	Engraved hatched band	M_2
2	Beaker-bowl, 6 in. diameter	None	Grey matt	Hatched band cut on wet clay as pl. xxi, 14	M_1
3	Fragment	,,	Black burnish	Cut on wet clay	M_1
4	,,	,,	Pinkish grey matt	,, ,,	M_2?
5	,,	,,	Black burnish	,, ,,	M_1
		Schedule No. 5. Pottery from pit in the "Bowl". Trench No. JS 6			
1	Bellied pot, 12 in. diameter	None	Fine black burnish	Cut on wet clay as pl. xx, 4	M_1
2	Shouldered pot, 4 in. over rim	As pl. xviii, 22	,, ,, ,,	Cut on wet clay as pl. xxxiii, 2 with panels on shoulder	M_1
3	,, ,, fragment	None	Grey burnish	Cut on wet clay as pl. xxxiii, 6	M_1
4	,, ,, fragment	,,	Black burnish	—	M_1
5	,, ,, fragment	,,	,, ,,	Large hatched triangles on shoulder cut on wet clay	M_2
6	,, ,, 12 in. over rim	As pl. xxvii, 16	Yellow-brown matt	None	M_2
7	,, ,, $5\frac{3}{4}$ in. over rim	Pl. xviii, 18	Grey-brown burnish	Inverted diagonally hatched triangles cut on wet clay	M_1
8	2 fragments	None	Grey burnish	Hatching cut on wet clay	M_1?
9	,,	,,	Black matt	Cut on wet clay as pl. xxxiii, 8	M_1

APPENDIX II

OF THE DATING OF THE ZIMBABWE POTTERY

The pottery discovered by Caton-Thompson at Zimbabwe in 1929 was classified by her under the following heads:

Class A. "A coarse red-brown to dark grey hand-made ware, gritty with quartz particles and badly fired; the rims have a flat overturned lip, and are sometimes decorated with diagonal or other arrangements of shallow square or round impressions in the wet clay. In other cases the lip is plain and the decoration appears as a band on the neck."

On 651 sherds from the Mauch Ruins only four came from above the cement floor and all of these were found in hut foundations. (*Z.C.* p. 25.)

Class B. "It is of finer texture, also hand-made, and the outer face is provided with black slip; the paste is fired a reddish grey. It is undecorated and the bevelled rim is slightly flared. This class of pottery is abundant in the post cement strata on all sites and much of it has a bright metallic and very effective sheen, produced by a graphite polish."

Only five sherds were found below the cement floor.

It resembles the present day black Native pottery of some districts. (*Z.C.* p. 25.)

Class B_1. "A similar ware but decorated with ribs raised out of the clay."

A whole pot of this ware was discovered 6 ft. below the surface of a gold mine, at Que Que, and is now in Salisbury Museum.

Class B_2. Similar to Class B, but decorated with a narrow band of cross-hatched incisions with suspended chevrons incised with diagonal lines. (*Z.C.* p. 73.)

Class C. Decidedly thicker and coarser than Class B. B and C pottery are found together and were probably made by the same people for different purposes.

Class D. Incised with bold chevrons and squares coloured yellow, red or black and only six sherds found. (Hall *P.R.* p. 262; quoted *Z.C.* p. 49.)

DISCUSSION OF THE POTTERY CLASSIFICATION

Regarding this classification we have to remark that:

Class A pottery.

Since we have found sherds of this ware embedded in the mass of occupational debris which forms the core of the "Acropolis" Ruin, we regard it as having been made by the earliest inhabitants of the place.

Since the ware resembles very strongly pottery from Aasvoëlkop, which we consider to have been made by Sotho people, we regard Class A pottery as having been made by the same, or closely related, people but at an earlier date.

Since this pottery shows no sign of fusion with the succeeding classes, we consider that Zimbabwe lay vacant for an unknown length of time between its desertion by its original inhabitants and its occupation by the people who made the Class B pottery.

Class B pottery.

Caton-Thompson has grouped together two separate pottery industries under this heading:

(i) Pottery made by the Shona peoples who succeeded the Sotho in the occupation of Zimbabwe and whose pottery is described by Hall (*G.Z.* pp. 129, 130) as Makalanga and which is closely related to the Class M_1 pottery from Mapungubwe.

(ii) Pottery of the Rozwi-Venda people (one type of which she calls Class D) described by Hall as "Barotse", and which is identical with our Class V_1 and V_1a of the Second Period and found on the Venda sites of Dzata, Maryland and Haddon.

Class B_1.

We have nothing to add save that we found a few sherds with raised bands (pls. xxviii, 4; xxxi, 5, 6) and that the presence of this ware at Zimbabwe shows that place to be contemporary with the gold mining industry at Que Que.

Class B_2.

It would appear that this class is entirely composed of material which really belongs to Classes B and D.

Class C.

This ware is connected with Class D and our Class V_2.

Class D.

This class relates to one type only of Rozwi-Venda ware, and it may be to only one pot.

It will be seen therefore, that but for the dating of the place (which Caton-Thompson assigns to the period between the tenth and the thirteenth century), the pottery sequences at Zimbabwe fit very closely with those at Mapungubwe.

Now there can be no doubt but that the Class B pottery and the characteristic Zimbabwe walling of the Elliptical Ruin and the Mauch Ruins were made by one and the same people, and if we can discover a means of

dating these walls, then we shall have taken a great step forward in the solution of the problems of the place.

1. Evidence from the use of Timber in the Walls.

Fortunately for our enquiry the builders of these walls made use of timber for bridging some of the entrances. This important fact was noted by the early explorers, but their evidence has been so persistently forgotten or neglected that we give it in full.

Dr Karl Mauch in the first modern description of the Zimbabwe ("Reisen im Inneren von Süd-Afrika 1865–1872", Ergänzungsheft, No. 37, zu Petermann's *Mitteilungen*) refers to the covered passages on the "Acropolis" as follows:

> Over the opening of such a passage I discovered a tree trunk, unhewn, and holding well, in spite of the fact that it carries the weight of the wall over it.

In the "Temple" he refers to one entrance only—"wide enough for a single person": here were traces of wood which he took to be cedar.

In April 1873 the *Natal Mercury* published a letter from Dr Mauch, under the heading of "Discovery of the Queen of Sheba's Palace", and which was reprinted in their issue of 13 April 1933:

> I believe I have found the real Ophir in latitude 29 deg. 15 min. S. Longitude 26 deg. 30 min. E. The ruins which are so often spoken about are composed of two masses of edifices in a tolerably good state of preservation. The first is on a mountain of granite; and among other constructions is one which is an imitation of Solomon's Temple, being fortress and sanctuary at the same time, the walls of which are built of wrought granite without mortar and still being more than 30 ft. high. Beams of cedar served as ceiling to the narrow and covered galleries. In reality no inscription exists, but only some special designs of ornamentation which announce a great antiquity. The second mass of ruins is situated to the south of the mountain. It retains a well preserved circular form with walls constructed as a labyrinth also without mortar. A tower still exists 30 ft. high, 17 ft. diameter at the base and 9 ft. at the top.... I was confirmed by the natives themselves that these ruins date from the Queen's (of Sheba) times; for about 40 years before the irruption of the Matabele from the west and the Zulu from the east sacrifices were still offered up on the mountain. The natives still call the building the House of the Great Princess.

The first edifice is the ruin now called the "Acropolis", and the second is still called the "Temple" or the Elliptical Ruin. We do not endorse the learned doctor's views on the origins of the place, which only serve to emphasize the fact that when he visited the ruins in 1872 the timber door lintels were still in existence.

The next description of Zimbabwe is from Theodore Bent who stated (*J. Anthrop. Inst.* 1892, p. 540):

> The middle entrance was evidently only a hole in the walls, or sally port, probably of later construction, with wooden beams supporting the superincumbent structure, and which have entirely given away.

In another place (*R.C.M.* p. 109) he says, referring to the same entrance:

> The lintel had consisted of wooden beams, which had been burnt, and on their giving way, the wall above had also fallen down.

There is no doubt that Bent was wrong in believing that the wall at the north-west entrance (to give it the modern name) is less ancient than any other part of the Girdle Wall, indeed there seems to be no question but that the whole is contemporaneous. His evidence, holding the views he did on the antiquity of the place, is second only in value to Mauch's.

Hall describes the original wooden lintels over the western entrance of the "Temple" as follows:

> The problem as to the entrance having ever been covered over is at present an open one, and there is much to be said on either side. The old men of the Amangwa state that it once had wooden beams across, and that the entrance was blocked up with stones. (*G.Z.* p. 223.)

In describing the winding stairs on the "Acropolis" he states:

> The foot of the stairs where they turn towards the south, is covered by a narrow wall supported by an old wooden beam. (*G.Z.* p. 316.)

That such lintels are not confined to Zimbabwe is shown by Hall and Neal who, describing the Umnukwana Ruins (*The Ancient Ruins of Rhodesia*, p. 231) state:

> The entrance to the natural platform at the entrance west of these ruins has a lintel made of a piece of wood about five feet in length, across which the wall is carried along.

In the latter part of 1914 the repair of the West Wall of the "Acropolis" was undertaken by the Public Works Department of the Chartered Company. On 9 December 1914, Mr H. B. Douslin, Director of Public Works, reported to the Secretary:

> The breaches on the main wall of the Acropolis are now well in hand. The removal of the debris accumulated in the largest breach has disclosed an ancient circular passage. The passage runs right under the main wall of the Acropolis, some eight feet below the present ground level. The main wall was carried on wood lintels, still in a fair state of preservation, but for the sake of safety and greater strength these have been replaced by stone.

The "circular passage" is the entrance to the "Acropolis". Why it is termed circular is unknown, as it runs straight through the Great Wall of the "Western Temple" and forms the principal entrance to the place.

At the present time the grooves in the buttresses on either side of the large entrances and in the jambs of other entrances form one of the most striking details of the architecture of the place.

We have carefully examined these grooves and have come to the conclusion that while in some of them slate

posts had been used, in the majority a circular wooden post had been built in during the construction. Needless to say that all the woodwork has disappeared, but writing in 1904 Hall states:

> Slate beams used as entrance posts in portcullis grooves were erected before the building of the entrance, as the enclosing blocks follow the irregularities of the beams. Wood posts found in some portcullis grooves in poorer built walls are not considered ancient, and their comparative modernity is testified to by experienced builders who have very recently examined a collection of such posts. Mopani hard wood and Mohobohobo have not been used in all such instances, some of the posts being of soft wood. Wooden posts have not so far been found in well-built entrances. (*G.Z.* p. 180.)

Now timber can last for an indefinite period when it is either kept dry, as in an Egyptian tomb, or wet as in Caligula's galleys, but when it is in a state continually alternating between wet and dry, when it is directly supporting masonry, and has, in the pockets between the rounded sections of the logs, the moist unventilated recesses forming ideal nurseries for the moulds and fungi which cause dry rot, then its life is to be reckoned in decades rather than centuries.

It may be urged that the lintels described by Mauch, Bent, Hall and Douslin were not the original and replacement had taken place time and again. We do not believe this would be possible because there is no evidence of repair work having been carried out in this way, for such repairs would require the new stonework to be bonded into the old, but bonding was never done, for all the junctions between walls were made with straight joints. The skill required to carry out such repairs would be much greater than that required to build the walls in the first place, and there is nothing to justify the assumption that the builders possessed such skill.

2. Evidence from Trees in the Elliptical Ruin.

Another set of facts which has an important bearing on our subject is brought out by a study of the trees growing in the place. It has been shown that none of these trees are yet a century old ("Zimbabwe: a critical examination of the Building Methods employed", J. F. Schofield, *S.A.J.S.* vol. XXIII, p. 982).

In this Hall entirely agrees with us:

> The present trees appear to be the first that ever grew within the Temple area. In the soil removed from ancient floors there were no signs of any older generations of trees having existed. (*G.Z.* p. 146.)

Now, wherever a high tree stands near the walls the wind has swept the branches against the upper courses and has dislodged the stones in an easily recognizable way; this has happened in a number of places inside the Elliptical Ruin, and in one place on the exterior of the Girdle Wall. In every case where this dilapidation has occurred, the tree responsible, or its stump, was still to be seen in 1925, thus proving beyond all doubt that the place was occupied and the vegetation was being controlled down to about one hundred years ago.

3. Evidence from Surface Levels.

Bent, in the report quoted above, noted that:

> A curious conduit about a foot square, regularly constructed, runs right through the thickness of the outer wall at its thickest point.

This is the earliest reference we have to the existence of the drains which were constructed in the Girdle Walls of the Elliptical Ruin at the level of the original floors. It is important since it proves that before the place had been excavated one of these drains, at least, was still to be seen.

Now the occupation of any place by barbaric people always results in a raising of the surface level, and since no change sufficient to bury the conduits had taken place between the construction of the wall and the date of Bent's visit, it is impossible for us to come to any other conclusion than that the Girdle Wall was built only a short time before the place was deserted; in other words, towards the end of the eighteenth century.

A Dating Evidence from the "Gap" in the Elliptical Ruin

We are justified in considering that the Girdle Wall was constructed not long before the final desertion took place, because it remained incomplete and the "Gap" in the wall, which, in our opinion, is the ramp up which the material was carried to the builders, was never filled in.

Conclusions

The picture we must make is, first of all, a Zimbabwe consisting of what we now call the "Acropolis", but without the Great West Wall. With scattered enclosures occupying the valley at the foot of the hill, of which two were at a much later date surrounded by great walls and now form the inner buildings of the Elliptical Ruin.

The place was occupied by people of one of the older tribes of the Sotho group.

After a long occupation these people abandoned their homes, probably because they heard of the advancing armies of the Monomotapa and journeyed to the south-west where they multiplied exceedingly and gave rise to many of the Sotho tribes of the Transvaal.

In the present state of our knowledge of Sotho pottery it is impossible to state definitely which tribe was responsible for the work. We believe that Ellenberger is right in maintaining that the Rolong and Bafokeng (Tlhaping) are the most ancient of the Sotho

tribes. We have seen that we have two different pottery traditions attributable to them, and it is certainly an attractive suggestion to associate our Class M_2 ware from Bambandyanalo, Parma and Pont Drift through the Mangwato and the Hurutshi with the Rolong. This would leave the honours of Zimbabwe to the Tlhaping, a speculation not entirely without foundation, for Aasvoëlkop, where pottery with a strong Zimbabwe flavour has been found, was at one time in the area occupied by that tribe (*H.B.* p. 17).

After being desolate for an indefinite period Zimbabwe was re-occupied by the Shona and was seen by the traders who began to penetrate the country offering cloth and beads in exchange for ivory and gold.

It was from these people that the Portuguese heard garbled and exaggerated reports (including a tower 72 ft. in height and square buildings of huge stones) which may or may not refer to our "Acropolis".

The period from the middle of the sixteenth century to the first quarter of the nineteenth century appears to have been one of steadily rising prosperity brought by the increased trade and intercourse with the outside world, which followed the disorders of the Portuguese occupation. This increase of wealth culminated in the construction of the Great Wall on the "Acropolis", the Elliptical Ruin in the form in which we know it, and the buildings in the valley of the Ruins.

Elsewhere in Rhodesia similar causes brought similar conditions and the beautiful walls of Dhlo-Dhlo, Regina and Nanatali were built only to be deserted when the Swazi hordes swept through the land, exterminating the inhabitants or driving them into their hilltop fortresses, where the memories of their ancient dwellings were lost in the limbo of forgotten things.

But that all these buildings were due to the Shona, Rozwi and Venda peoples there need be no doubt; their dates have been definitely established from the finds at Dhlo-Dhlo, and we can be certain that at that time these were the only peoples on the spot, and therefore must be credited with the construction of buildings far in advance of anything their descendants can achieve.

SUMMARY

1. Caton-Thompson classified her Zimbabwe pottery as:

Class A. (i) This ware has been found in the earliest occupational layers of the "Acropolis".
(ii) It is decorated with the comb.
(iii) It resembles ware of Sotho origin from Aasvoëlkop.
(iv) It shows no signs of having fused with the succeeding classes.

Class B. Two pottery industries have been included under this head, viz.:
(i) Shona pottery, described by Hall (*G.Z.* pp. 129–30) as Makalanga, and closely related to our Class M_1.
(ii) Rozwi-Venda pottery, described by Hall as Barotse, and closely related to our Class V_1 and Class V_1a.

Class B_1. No certain examples of this ware occur on our sites.

Class B_2. This class seems to comprise Class B and Class D material.

Class C. This class is connected with Class D and our Class V_2 material.

Class D. This class was formed for one type of Rozwi-Venda ware.

We therefore conclude:

(*a*) That the first occupants of Zimbabwe were of Sotho stock, and made Class A pottery.

(*b*) That after lying desolate it was re-occupied by people of Shona stock, who made Class B pottery.

(*c*) That these people had relations with the Rozwi-Venda.

(*d*) That the Zimbabwe and the Mapungubwe pottery series are closely related.

(*e*) This relationship has led us to a re-examination of the available evidence for the dating of Zimbabwe, which is given by Caton-Thompson as being between the tenth and thirteenth centuries. We cannot accept this date for the following reasons.

2. There can be no doubt but that these Shona makers of Class B pottery also built the Great Walls and the distinctive Zimbabwe masonry with which that ware is associated. In dating these walls the following evidence must be considered.

(*a*) *Evidence from the use of timber in the Great Walls.*

The existence of timber lintels over the doorways is recorded by Mauch, Bent, Hall and Neal. As all of these men held exaggerated views regarding the antiquity of the place, their evidence is most impressive. In 1914, Douslin discovered portions of such lintels in the entrance to the "Acropolis", and describes them as being "still in a fair state of preservation". Hall also notes the use of posts of soft wood in the "portcullis grooves" of the buttresses which flank many entrances.

As there is no evidence that any restoration work was ever done in the old times, we must accept the stonework as being of the same age as the woodwork, and reckon it in decades rather than centuries.

(*b*) *Evidence from trees in the Elliptical Ruin.*

It has been shown that none of these trees are as yet a century old. Hall's statement that all these trees are of the first generation, is confirmed by the fact that existing

trees have caused all the damage to the wall crests by wind-driven branches.

(*c*) *Evidence from the surface levels.*

As a drain hole in the Girdle Wall was still to be seen when Bent visited the place, it is evident that little if any surface change had taken place since the wall was built. This can only be consistent with a late date.

(*d*) *Evidence from the "Gap" in the Elliptical Ruin.*

As the "Gap", which was the ramp up which the stone was carried to the masons during the building of the wall, was never filled in, we conclude that the Elliptical Ruin was incomplete when it was deserted.

3. We conclude therefore that there were two phases at Zimbabwe:

PHASE I

From an unknown date to A.D. 1450 or later, construction of the "Acropolis" Ruin and probably portions of the inner enclosures of the Elliptical Ruin, by people of the Sotho stock, who were the makers of Class A pottery.

PHASE II

From ±A.D. 1500 to 1825.

The place was re-occupied by people of the Shona stock who constructed all the most characteristic relics of the Zimbabwe culture, including the Great Walls, the soapstone carvings, the goldwork, and the Class B pottery.

In the latter part of this occupation these people seem to have been in contact with Rozwi-Venda people.

APPENDIX III

MODERN BAVENDA POTTERY

Amongst the BaVenda, pottery is made exclusively by the women of the BaLemba tribe, a tribe of craftsmen which lives in easy symbiosis with their overlords who give them grain and other agricultural produce in exchange for their work.

The pottery is of two kinds:

(1) Globular pots with beaded rims and a hatched line round the shoulder finished a smooth brown and made in all diameters from a few inches to a couple of feet.

(2) A polychrome ware in black, red and yellow:

(*a*) The commonest shape is the globular pot decorated over the upper two-thirds with bands and chevrons in alternate red and black, with the colours separated with lines incised in the wet clay, both graphite and soot being used for the black.

(*b*) A gourd-shaped vessel with beaded rim and decorated over the whole surface with vertical sections of red and black or yellow and black.

(*c*) A bowl used alternatively as a cover with base and square cut rim; sometimes the interior is scored over with lines on the wet clay and is used as a grater for tobacco, etc.

(*d*) Cups with handles and bases.

POT MAKING

Mphephu's kraal

A Malemba woman took a lump of tempered clay about the size of her two fists and placed it upon a piece of potsherd.

She then proceeded to knead the clay into a rough saucer-shape, and then to work the clay out of the centre to form the walls of the pot with her left hand. She then revolved the pot from left to right at the same time smoothing the outside with a triangular piece of horn, moistening both hands and horn in a small pot of water.

The horn smoothing tools are about 3 in. in length and $1\frac{1}{2}$ in. in width, the angles are rounded off. The long side is slightly concave in the one used for the outside of the pot and convex in that used for the interior.

When the pot wall had been raised to the required height, more clay was added in order to bring in the top of the pot to its central opening.

This done, the interior of the pot was smoothed off with a convex tool selected from a number kept in the water pot.

The next operation was to nip off the surplus clay from the lip of the opening between the thumb and index finger, the lip was then turned up slightly, cut on the outside with the concave tool and finished off by being rubbed with a soft leather soaked in water.

The body of the pot was now complete, and the decoration, consisting of two lines, was put on by holding a large thorn against the side of the pot and slowly rotating it. A few hatching lines were then added with the thorn and the pot was finished.

The colour is said to be added by rubbing red ochre and plumbago into the dried pot before burning.

The burning is done with wood after the pots have been thoroughly dried. This we had no opportunity of seeing.

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PLATES XVII—XXXV

PLATE XVII

Class M_1

1. A shallow bowl, 10 in. in diameter; of fine grey paste beautifully burnished inside and outside. The rim is bent inwards, rounded and slightly everted. The decoration was cut on the wet clay with an unsurpassed precision. From collection in the Transvaal Museum.

2. A shallow bowl, probably 14 in. in diameter; of coarse light grey paste burnt to a light brown on surface which is burnished inside and outside. The rim rounded and tilted outwards, and joins the body with a slight quirk. The decoration was cut on the wet clay. From trench JS 1, 30 × 2 × 1 ft.

3. A shallow bowl, probably 10 in. in diameter; of fine light grey paste burnished light grey inside and outside. The rim is similar to No. 2 but smaller. The decoration was neatly cut on the wet clay, the impressions in the central upper triangle were made with a triangular stylus. From Excavation 00. Mapungubwe Grave Area.

4. A shallow bowl, about 10 in. in diameter; of grey paste, black to grey burnish inside and outside. The rim is similar to Nos. 2 and 3, but is tilted inwards. The decoration was lightly scratched on the wet clay. A surface find.

5. A shallow bowl, about 9 in. in diameter; of fine grey paste with a beautiful black burnish inside and outside. The rim is thickened on the inside, rounded and everted. The decoration was very carefully cut on the wet clay. From trench JS 1, between 8 and 60 ft. at a depth of 4 ft.

6. A shallow bowl, about 10 in. in diameter; of fine dark grey paste with a black burnish inside and outside. The rim is rounded and slightly everted. The decoration was roughly scratched on the wet clay. Surface find.

7. A shallow bowl, about 10 in. in diameter; of fine dark grey paste burnt to a lighter grey at surface which is finished with a poor black burnish inside and outside. The rim is rounded and everted and joins the body with a well-marked set-back. The decoration was roughly cut on the wet clay. From trench JS 5, 30 × 1 ft.

8. A shallow bowl, about 9 in. in diameter; of fine grey paste with grey burnish inside and outside. The rim is similar to No. 2. The lines of the decoration were pressed into the wet clay, the dots were made much deeper, the four in the centre being deeper than the others. From trench JS 4, 34 × 1 ft.

9. A shallow bowl, 8 in. in diameter; of gritty dark grey paste, finished with black burnish inside and outside. The rim is bevelled inwards and rounded. The lines of the decoration were lightly scratched and the impressions were made with a triangular stylus on the wet clay. Surface find.

10. A shallow bowl, 10 in. in diameter; of coarse gritty paste burnt to brownish grey with poor burnish. The rim is similar to No. 7. The decoration was poorly scratched on wet clay. From trench JS 1, 0–17 ft. × 5 in.

11. A shallow bowl, 10 in. in diameter; of grey paste finished with grey burnish inside and outside. The rim is flattened horizontally with rounded projections on both sides. The decoration was incised with a bold sharp line on the wet clay. From trench JS 2*a*, 4 ft. from surface at third wall.

12. A shallow bowl, similar to the last. The rim is bevelled inwards with rounded projections on both sides. From trench JS 1, 25–60 ft. at rock bottom. Decorated as last but with diagonally hatched triangles. A similar piece to Nos. 11 and 12 is in the Transvaal Museum.

13. A deep bowl, 10 in. in diameter, of fine grey paste with fine black burnish inside and outside. Decoration cut on wet clay. From Excavation 00. Mapungubwe Grave Area.

14. A deep bowl, 10 in. in diameter; in gritty light grey paste burnt to grey-brown with matt finish. The rim is bent inwards, rounded and slightly everted. The decoration was cut on wet clay in a poor style. From Western Midden.

15. A deep bowl, about 12 in. over the rim; in grey paste finished with a grey matt surface. The rim is bent inwards, thickened, rounded and slightly everted. The decoration was cut on the wet clay.

16. A deep bowl, 14½ in. in diameter by about 5 in. in depth, of coarse grey paste finished with black burnish inside and outside. The rim is bent inwards, rounded and slightly everted. The decoration was cut on wet clay in a poor style. From trench JS 2*a*, 50 × 1 ft.

17. A deep bowl, about 10 in. in diameter; in grey paste finished with black burnish inside and outside. The rim is rounded and everted. The decoration is in an unusual style and was cut on the wet clay in a fine manner. From trench JS 2*a*, 4 ft. deep at third wall.

18. A deep bowl, about 7 in. in diameter; of grey paste finished with dark grey burnish on the inside and outside. The rim above the decoration is burnished to a deep black, it is thickened and rounded on the inside, flattened horizontally and slightly splayed on the outside. The decoration was scratched on wet clay. From trench JS 2*a*, 6 ft. deep at third wall.

19. A deep bowl, about 14 in. in diameter; in a gritty grey paste burnt to a grey brown at the surface which is finished matt. The rim is rounded with a slight projection on both sides. The decoration was cut in a poor style on the wet clay. From trench JS 2*a*, 50 × 1 ft.

20. Bowl cover, about 12 in. in diameter, in grey paste finished with grey matt surface. The rim is rounded and slightly everted. The decoration was neatly cut in wet clay. The style is unusual and is similar to that of the bellied pot (pl. xviii, 16). From surface near trench JS 2*a*.

21. Bowl cover, about 9½ in. in diameter; dark grey paste burnt to a lighter grey at surface which is finished matt. The rim is rounded and flattened. Decoration was cut on the wet clay. From trench JS 2*a*, at top of third wall.

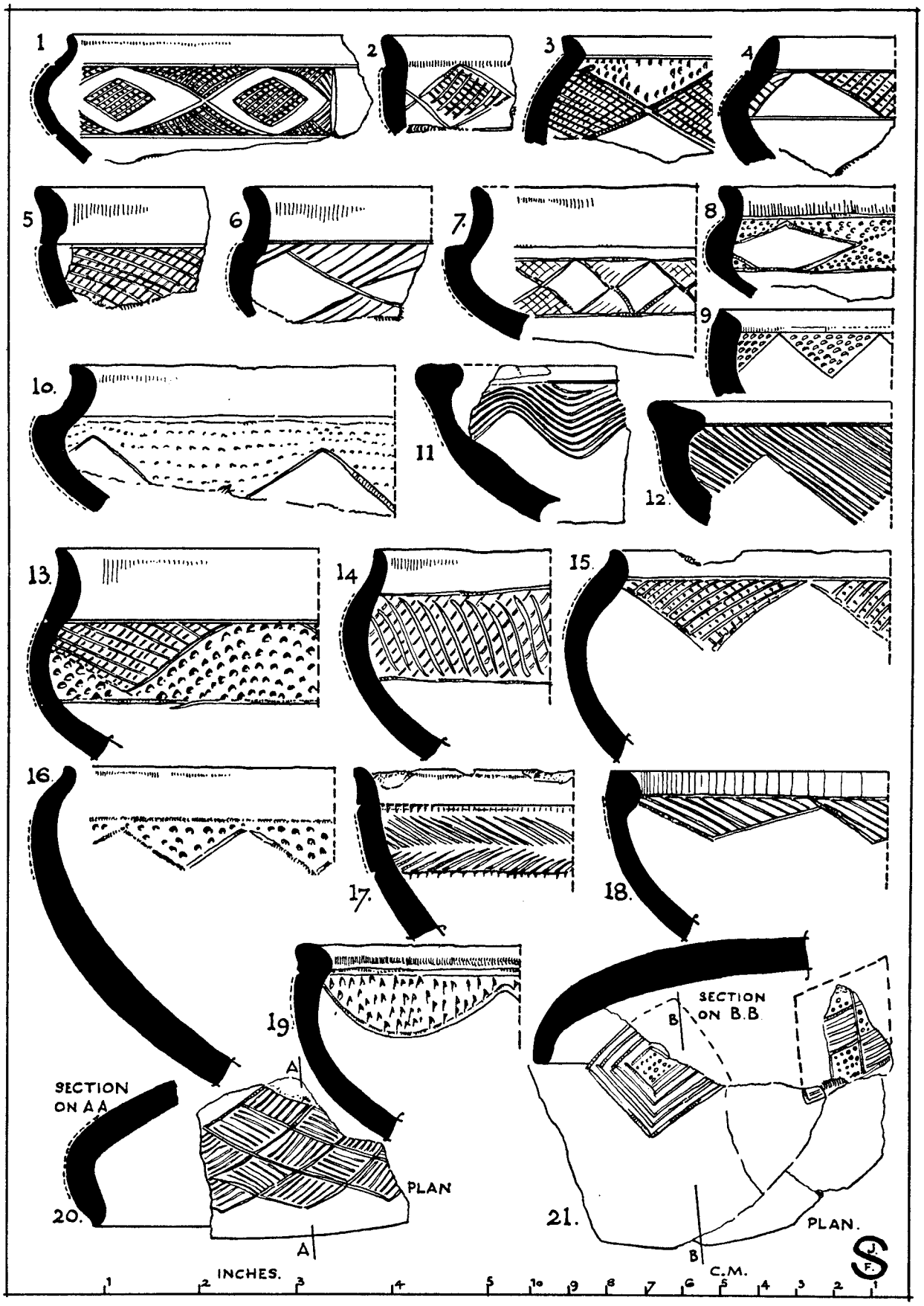


PLATE XVIII

Class M_1

1. Shallow bowl, $8\frac{3}{8}$ in. in diameter and $2\frac{3}{8}$ in. in depth in black ware with a fine burnish. The rim is thickened on the inside and slightly everted. From the original grave at Mapungubwe. Now in the Transvaal Museum.

2. Shallow bowl, 5 in. in diameter and $1\frac{1}{8}$ in. in depth. In fine grey ware finished matt on the inside and with a black burnish on the outside. The rim is rounded. From surface at 50 ft. point trench JS 4.

3. Deep bowl, 14 in. in diameter by about 5 in. in depth. In fine grey paste, originally finished with a black burnish on the outside and matt on the inside. Burnt to a light brick red in hut fire. The rim is slightly reduced on the outside and bevelled towards the interior with a slight projection. From floor of burnt hut at 50 ft. point trench JS 4.

4. Deep bowl, $10\frac{3}{4}$ in. in diameter by about $3\frac{1}{4}$ in. in depth. In gritty grey paste, interior finished grey with matt surface, exterior probably finished with black burnish, the present brown to black matt surface is probably due to a secondary burning. The rim is flattened horizontally with a projection on both sides and is $\frac{5}{8}$ in. in width. From Western Midden.

5. Shallow bowl, about 6 in. in diameter and 2 in. in depth, of fine grey paste finished to black matt surface on the inside and with a black burnish externally. The rim is flattened horizontally with a projection on both the inside and outside. From Excavated Area, trench JS 2*b*.

6. Shallow bowl, $4\frac{1}{4}$ in. in diameter and about $1\frac{1}{4}$ in. in depth. Fine grey paste finished with black matt surface on the inside and a black burnish on the outside. Found on surface near trench JS 2*b*.

7. Deep bowl, 12 in. in diameter and about 6 in. in depth. In fine black paste, finished with a black burnish on the inside and the outside. The rim is flattened horizontally with a slight external projection. From Western Midden.

8. Cover bowl, 10 in. in diameter with a depth of about $1\frac{3}{4}$ in. In grey paste finished with a black grey matt surface. The rim is rounded and turned inwards. From the point $60 \times 2 \times 1$ ft. in trench JS 4.

9. Bowl, $9\frac{1}{2}$ in. in diameter with a depth of 3 in.: in grey paste finished matt grey internally and black to grey externally, with slight burnish. The rim is rounded. From the point $100 \times 2 \times 1$ ft. in trench JS 4.

10. Deep bowl, about 16 in. in diameter and about 7 in. in depth, in grey paste burnished black on the surface. The rim is bent inwards, thickened on the inside and rounded. From point $8 \times 2 \times 1$ ft. in trench JS 1.

11. Shouldered bowl, 12 in. in diameter over the rim and probably 3 in. in depth; in grey paste burnished grey black on the outside and round the neck internally. The rim is turned outwards, the neck is canted inwards, the bowl is bellied outwards slightly below the neck and was decorated with bold pendant triangles filled in with horizontal rows of incisions between lightly pressed lines, all of which were made on wet clay. From Excavated Area, trench JS 2*b*.

12. Shouldered bowl, 8 in. in diameter over the rim and probably 4 in. in depth; in gritty grey paste, the exterior and the neck internally is burnished with graphite. The rim is slightly everted and flows outwards into a slight belly. The shoulder was decorated with a band of counter-hatched triangles which were roughly incised on the wet clay in a manner common on ware from the deeper levels. From Excavated Area, trench JS 2*b*.

13. Deep bowl, 14 in. in diameter in similar style to No. 11. The rim is curved slightly inwards and the inverted triangles were decorated with impressions made with a rounded stylus or wet clay. From Mapungubwe Grave Area, Excavation No. 00.

14. Shouldered bowl, 4 in. over rim, $5\frac{1}{2}$ in. over belly and 3 in. deep. In fine grey paste burnished black outside and on the inside. The rim is rounded and everted, the neck canted inwards and terminates in the bellied shoulder which was decorated with pairs of hatched lozenges coupled vertically at $1\frac{3}{4}$ in. centres. Reconstructed from sherds in the Transvaal Museum.

15. Bellied pot, $3\frac{3}{8}$ in. over rim, $6\frac{5}{8}$ in. over the belly and $4\frac{3}{4}$ in. deep. In fine grey paste burnished black on the outside and on the inside of the neck. The rim is slightly everted and the neck curves into the belly without a break. The shoulder was decorated with cross-hatched lozenges between inverted cross-hatched triangles on wet clay very similar in style to the shouldered pot (pl. xix, 7). From Mapungubwe Grave Area, Excavation No. 00.

16. Bellied pot, $5\frac{1}{2}$ in. over rim, the dimension over the belly was probably not less than 12 in. In coarse grey paste, the exterior and interior finished black with matt surface. The rim is arris rounded, slightly flattened and everted. The neck sweeps into the body with a quick curve. The junction was decorated with a band of basket pattern incised on wet clay. The style is very similar to the cover bowl (pl. xvii, 20). A fragment of a similar but larger bellied pot was found at the surface near west end of trench JS 1. From trench JS 2*a*, at a depth of 4 ft. from surface at third wall.

17. Bellied pot, 5 in. over rim. In fine grey paste finished to a grey matt surface inside and outside. The rim is strongly everted and sweeps into the body with slight break, the shoulder was decorated with a boldly hatched band spaced with an unhatched lozenge, below this a cross-hatched lozenge is placed. All incised on wet clay. The decoration is very uncommon, but is similar to that shown on the bowl (pl. xvii, 17). From Excavated Area, trench JS 2*b*.

18. Shouldered pot, $5\frac{3}{4}$ in. over the rim. In grey paste with grey brown burnish externally and interior smoothed. The rim is rounded and with the neck leans outwards from the shoulder which was decorated with a line of inverted hatched triangles incised on wet clay. From rock surface in the "Bowl", trench JS 6. This is one of the oldest sherds found at Mapungubwe; the type remained the commonest throughout the occupation.

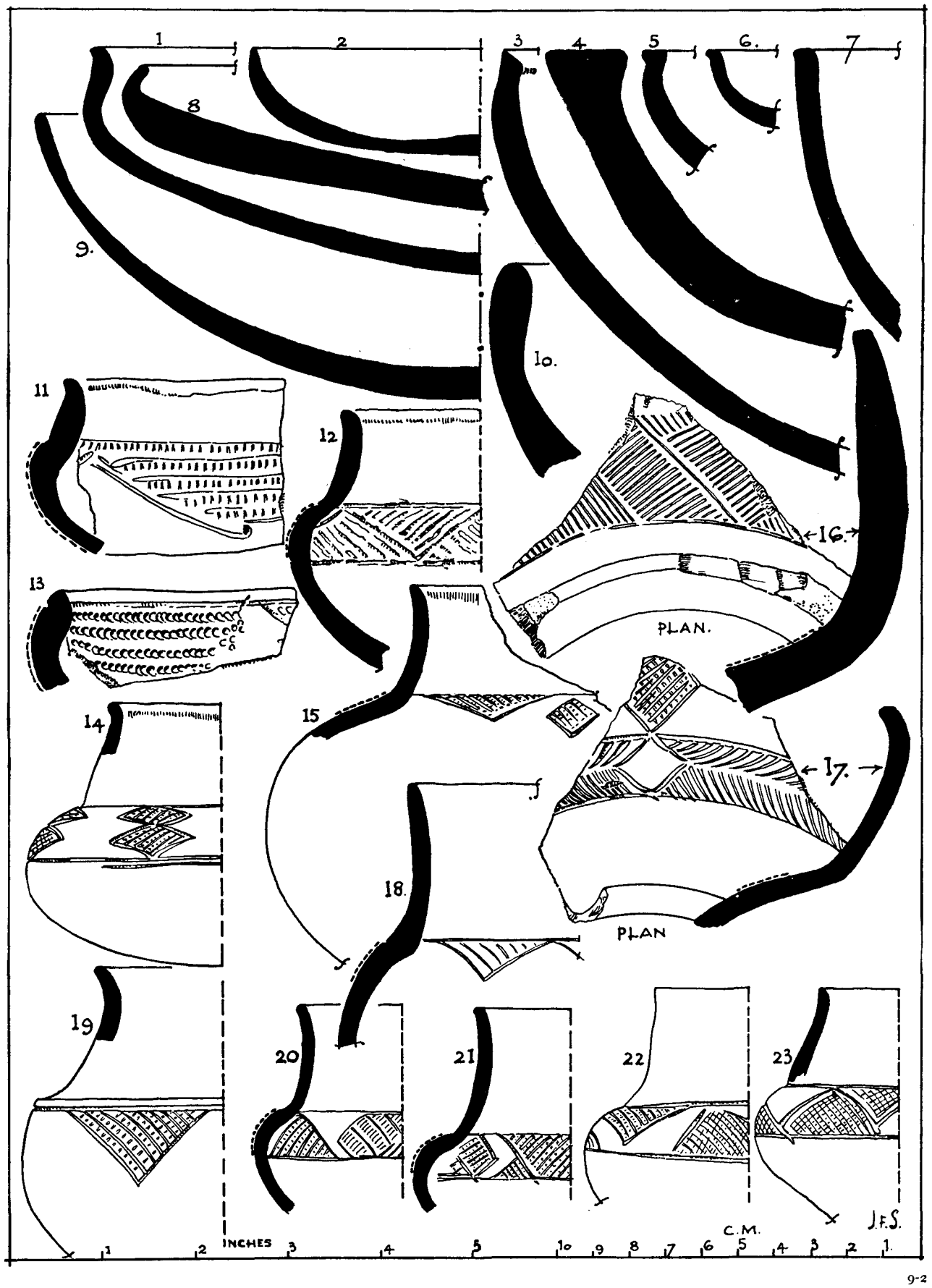
19. Carinated shouldered bowl, $4\frac{1}{2}$ in. over the rim, 6 in. over belly and $4\frac{3}{4}$ in. deep. In grey paste with grey matt finish to surface both inside and outside. The rim is rounded and everted, the neck is curved and joins the body at an angle, directly below this is a line forming the base of inverted cross-hatched triangles cut on wet clay. Reconstructed from sherd from Excavated Area, trench JS 2*b*. (Cf. pl. xxxii, 12.)

20. Shouldered bowl about 4 in. over rim, in fine grey paste, black burnish outside and grey matt surface internally. The rim is rounded and flared, the neck curves downwards towards the body, which it joins with a slight break. The shoulder was decorated with a cross-hatched band interspersed with plain surfaces cut on the wet clay. From trench JS 1, 145 ft. at rock bottom.

21. Shouldered bowl, very similar to the above from trench JS 5, at point $25 \times 2 \times 1$ ft.

22. Shouldered bowl, about 6 in. in diameter, similar to the above but of coarser workmanship. From Mapungubwe Grave Area, Excavation No. 00.

23. Shouldered bowl about 6 in. over rim, similar to the above, but finished externally with a grey burnish. The band is formed with alternating and plain and cross-hatched triangles, cut on wet clay. From Mapungubwe Grave Area, Excavation No. 00.



9-2

PLATE XIX

Class M_1

1. Fragment, probably of large shallow cover bowl. In a grey paste finished on both sides with a fine black burnish. The convex surface is decorated with a diaper of diamonds alternately cross-hatched and plain, cut on the wet clay in a very good style. From 11 ft. below datum, trench JS 2*b*.

2. Shouldered pot, 12 in. over the rim, 17½ in. at its greatest diameter, and about 18 in. deep. In a gritty black paste, burnt brown and finished with a matt surface to the outside and the inside of the neck. The rim is rounded and slightly flared. The pot has been drilled for repairing. From trench JS 4, at 60 × 2 × 3 ft.

3. Shouldered pot, 10 in. over the rim, 14 in. at its greatest diameter. In a light brown paste burnt to a red brown surface, originally burnished on the outside and on the inside of the neck. Present colour probably due to secondary burning. The rim is rounded and slightly everted. The shoulder was decorated with a line of inverted diagonal cross-hatched triangles in a rough but free style on the wet clay. From surface between north end of trench JS 1 and JS 6.

4. Shouldered pot, 9 in. over the rim, 13½ in. at its greatest diameter and about 12 in. deep. In fine grey paste, with a grey burnish to the outside, the inside of the neck is matt. The rim is rounded, everted and undercut. The neck sweeps outwards to the shoulder in a graceful line. The shoulder was decorated with a band of triangles separated by plain bands; the work was done on the wet clay in a very fine style. From the surface between the original Grave Site and south end of trench JS 6.

5. Shouldered pot, about 13 in. at its greatest diameter. In fine grey paste with a black burnish externally. The rim is missing. The junction of the neck and shoulder was decorated with a line from which depends a hatched strip nearly 3½ in. long cut on the wet clay in a good style. From the surface near the north end of trench JS 1.

6. Shouldered pot, 7 in. over the rim. In coarse paste which has been subjected to a secondary burning; the surface is a brick red. The rim is rounded and slightly everted and the shoulder is decorated with a line of impressions on the wet clay made with a small bone or similar implement. From floor of burnt hut at trench JS 4, at 50 × 4 ft.

7. Shouldered bowl, 6½ in. over the rim, 9 in. at its greatest diameter and about 5 in. deep. In fine black paste, with a black burnish externally and to the inside of the rim. The rim is rounded and slightly flattened, the shoulder was decorated with diagonally cross-hatched inverted triangles with a cross-hatched rectangle set diagonally between them. All the decoration was cut on the wet clay in a bold style. From the surface on Mapungubwe Grave Area.

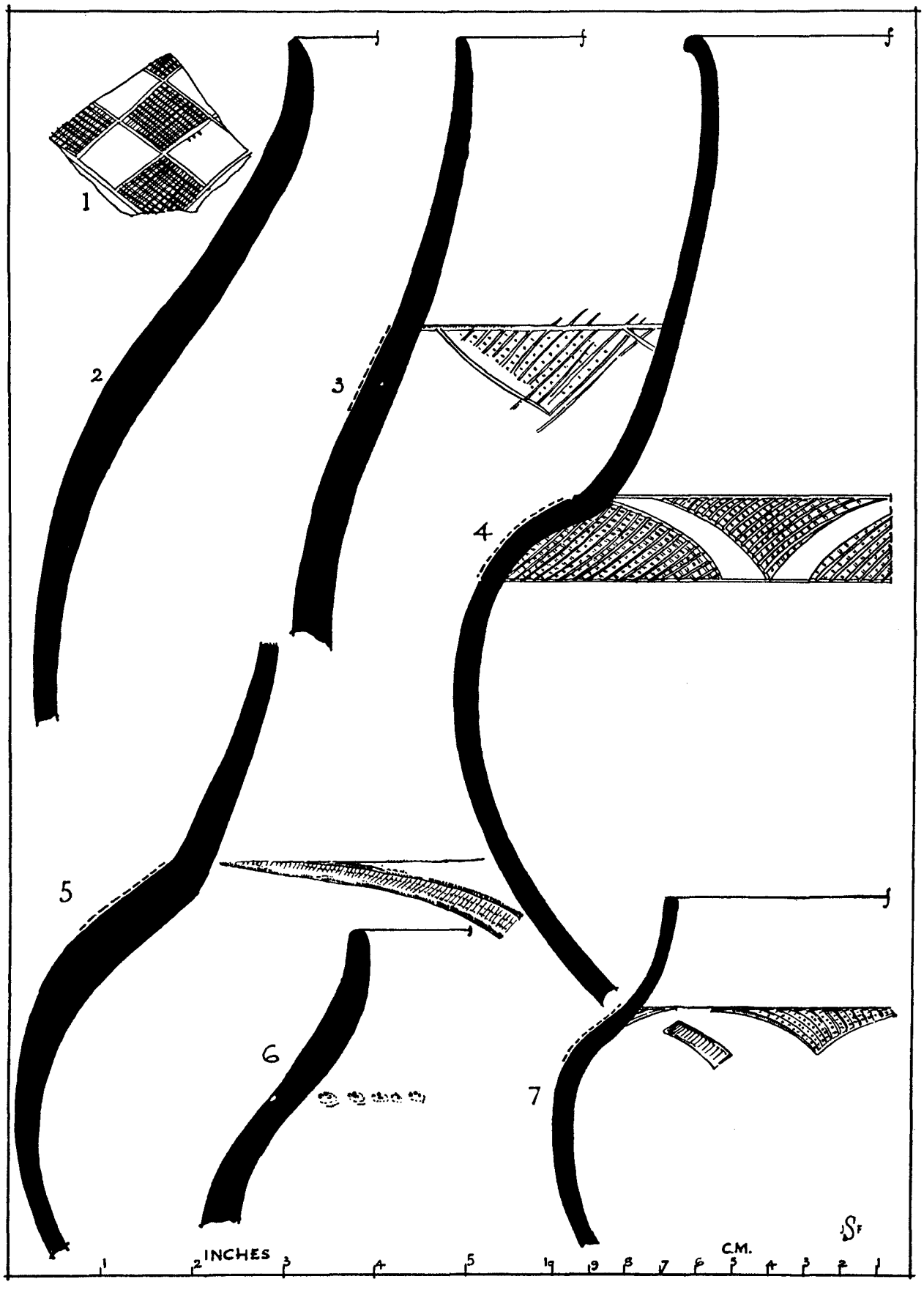


PLATE XX

Class M_1

1. A shouldered bowl, probably 8 in. over the rim and 5 in. deep. In light grey paste with a black burnish inside and outside. The rim is rounded and slightly everted. The neck runs downwards and slightly outwards to the body. The shoulder was decorated with a band of diagonal cross-hatching in which irregular plain diamonds have been left, all cut on wet clay. From Mapungubwe Grave Area, Excavation No. 00.

2. A shouldered pot, 6 in. over the rim and probably about 4 in. deep. In grey paste, smooth inside and burnished black to deep grey on the outside. The rim is much worn, it is probable that it was originally rounded and slightly everted. The neck runs outwards to the body, the shoulder was decorated with a band of hatched triangles lightly scratched on the wet clay. From Excavated Area, trench JS 2*b*.

3. A shouldered bowl, 8 in. over the rim and about $4\frac{1}{2}$ in. deep. In grey paste black burnished on the outside and matt on the inside. The rim is rounded and slightly everted, neck is nearly vertical, the shoulder was decorated with a wide band of diagonal cross-hatching surrounding a large diamond which is divided into four smaller diamonds, the upper and the lower being hatched diagonally. All the decoration was cut in very fine style on the wet clay. From Mapungubwe Grave Area, Excavation No. 00.

4. A reconstructed bellied pot, $5\frac{1}{4}$ in. over the rim and 15 in. over the belly and $14\frac{1}{4}$ in. deep. In fine grey paste, burnished brown grey on the exterior and for a part of the interior of the neck. The rim is rounded outwards, everted and slightly undercut, the neck runs outwards to the body. The shoulder was decorated with four large cross-hatched triangles and a cross-hatched lozenge. From Mapungubwe Grave Area, Excavation No. 00.

5. A shouldered pot, 5 in. over the rim. In grey paste finished a grey brown matt externally and smoothed internally. The rim is rounded, everted and undercut. The neck slopes outwards to the shoulder which was decorated with a band of plain diamonds, with horizontally hatched triangles between them, all cut on the wet clay in a rough but vigorous style. From Mapungubwe Grave Area, Excavation No. 00.

6. A shouldered bowl, $5\frac{1}{2}$ in. over the rim and probably about $4\frac{1}{2}$ in. deep. In grey paste, the exterior and the interior of the neck is burnished black. The rim is rounded and slightly everted, the neck curves inwards towards the shoulder which was decorated with a band of hatched triangles cut on the wet clay. From Mapungubwe Grave Area, Excavation No. 00.

7. A bellied pot, $11\frac{1}{2}$ in. in diameter, 6 in. over rim and 8 in. deep. In grey paste, the exterior and the interior of the neck is burnished black. The rim is rounded and slightly everted, the neck is vertical and the shoulder was decorated with a band of diagonal cross-hatching on the wet clay. From trench JS 2*a*, 5 ft. from surface second wall.

8. A shouldered pot, 6 in. in diameter. In grey paste with grey burnish externally and matt surface internally. The rim is rounded and the neck nearly vertical, the shoulder was decorated with a large and a small cross-hatched triangle cut on wet clay. From 3 ft. level Bambandyanalo Trial Pit.

9. A fragment of a shouldered pot, about 6 in. in diameter at the base of the neck. In grey paste with a grey burnish externally. The shoulder was decorated with a rectangular hatched panel enclosing a plain diamond, cut in a very good style on the wet clay. From Mapungubwe Grave Area, Excavation No. 00.

10. A shouldered pot about 6 in. in diameter. In dark grey paste with fine black burnish externally and smoothed internally. The rim is missing, the shoulder was decorated with inverted hatched triangles and a hatched rectangle made with a broad line on the wet clay. From Excavated Area, trench JS 2*b*.

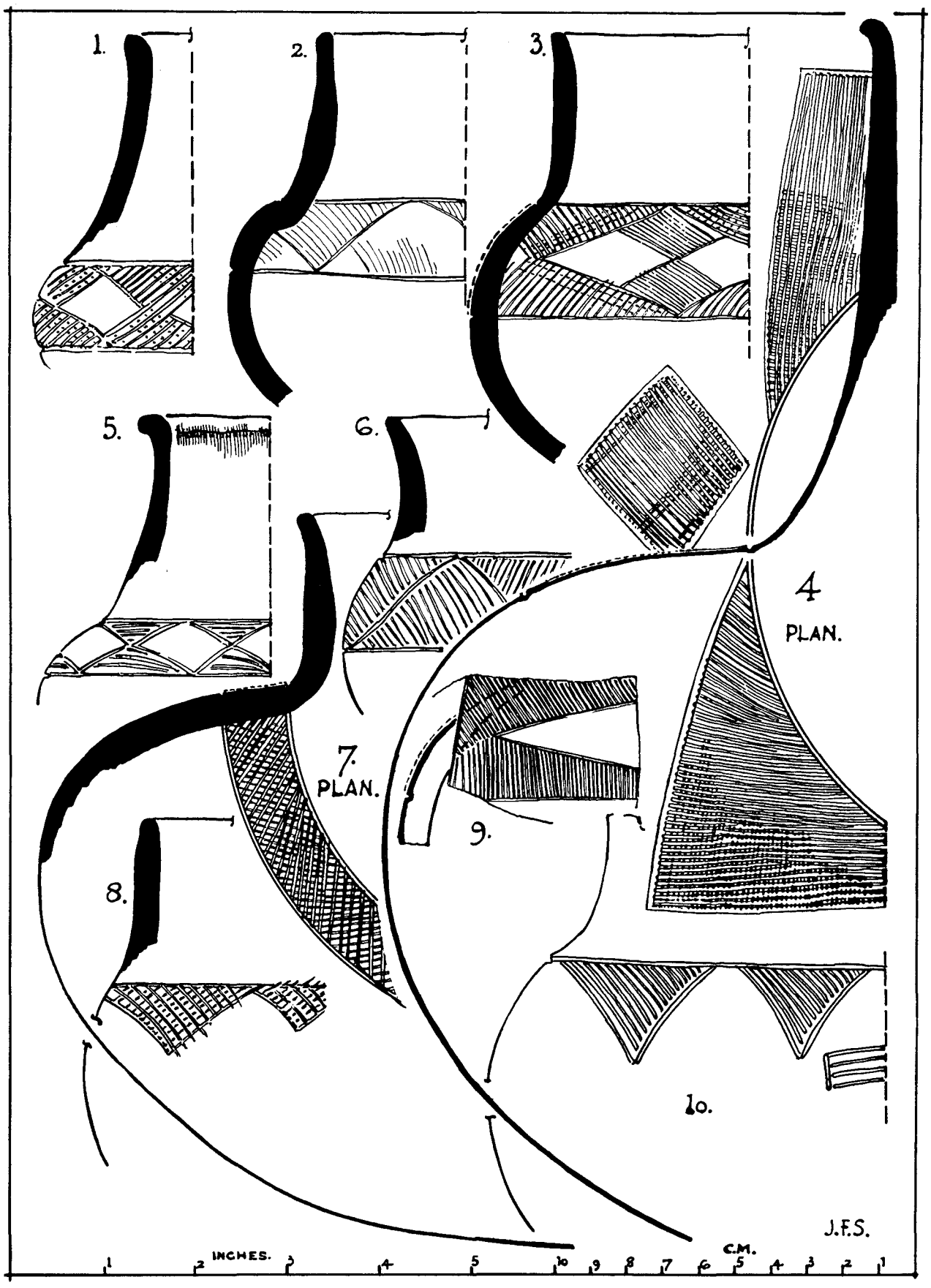


PLATE XXI

Class M_1

1. A shouldered bowl, 6 in. over the rim. In grey paste burnished sepia on the outside and round the neck internally. The rim is rounded and slightly everted, the shoulder was decorated with inverted triangles, formed with wide pressed lines between which are triangular impressions made on the wet clay. From Western Midden.

2. A fragment of a shouldered bowl, with a maximal diameter of about 8 in. In fine grey ware, with a grey burnish on the outside, the shoulder was decorated with three very neat lines below which is a lozenge filled in with the impressions of a round stylus. From Mapungubwe Grave Area, Excavation No. 00.

3. A shouldered bowl reconstructed, 5 in. over the rim by $3\frac{3}{4}$ in. deep. In coarse brown paste finished externally and round the neck internally with dark brown matt surface. The rim is tapered on the outside and rounded, round the shoulder is a band of diagonal hatching roughly scratched on the wet clay and interspaced with lugs which project singly and in pairs. From collection in the Transvaal Museum.

4. A shouldered bowl, about 8 in. over the rim. In coarse grey paste burnt to a light brown and finished with a brindled surface to the outside and to the inside of the neck. The rim is rounded and flared, the shoulder was decorated with a band of diagonally hatched triangles on the wet clay. From 4 ft. below the surface at wall 3, trench JS 2*a*.

5. A shouldered pot, about 6 in. over the rim. In grey paste with black burnish externally and matt surface internally. The rim is rounded and flared, the shoulder was decorated with a band of diagonal cross-hatching cut on the wet clay. From 4 ft. below the surface at wall 3, trench JS 2*a*.

6. A fragment of a beaker bowl, about 8 in. in diameter in fine grey paste with a grey burnish to the surface. The rim is flattened and rounded. Decorated with a band of nine wide horizontal lines, crossed by diagonal lines all pressed into the wet clay in a fine style. Surface find near foot of Mapungubwe.

7. A fragment of a shouldered bowl, about 8 in. at greatest diameter. In grey paste with black burnish externally. The shoulder was decorated with a band of diagonal cross-hatching interspaced with plain diamonds and a pair of projecting lugs. From Mapungubwe Grave Area, Excavation No. 00.

8. A shouldered pot, 6 in. over the rim. In grey paste with black burnish externally and smooth self colour internally. The rim is rounded and bent outwards. The shoulder was marked by a strongly incised line and inverted diagonally cross-hatched triangles. From Excavated Area, trench JS 2*b*.

9. A beaker bowl with slight shoulder, about 9 in. in diameter. In black paste with black burnish internally and externally. The rim is flattened, rounded and slightly flared. The shoulder was decorated with a band of diagonally hatched triangles alternating with stippled triangles all done on wet clay. From depth of 4 ft. below the surface wall 3, trench JS 2*a*.

10. A large reconstructed beaker bowl, $8\frac{1}{4}$ in. in diameter and 7 in. deep. In grey paste with fine black burnish inside and outside. The rim is slightly flattened and rounded. The band of counter-hatched triangles was made with wide lines on the wet clay. From Western Midden.

11. A beaker bowl, 9 in. in diameter. In grey paste with a fine black burnish inside and outside. The rim is tapered and rounded. The band of counter-hatched triangles was cut with a fine line on the wet clay. From Western Midden.

12. A beaker bowl, 7 in. in diameter. The rim is rounded and flared, otherwise as No. 11.

13. A beaker bowl, 8 in. in diameter. In a gritty grey paste with a fine black burnish externally and a black matt finish internally. The rim is slightly flattened and rounded. The band of counter-hatched triangles was formed with a wide shallow line pressed into the wet clay and probably had two projecting oval bosses. Two other similar bosses have been taken. In one the triangles were cut after burnishing, and in the other they were cut in the wet clay. From Western Midden.

14. A beaker bowl, 10 in. in diameter and about $5\frac{1}{2}$ in. deep. The rim is tapered, rounded, slightly everted and flared, otherwise as No. 11.

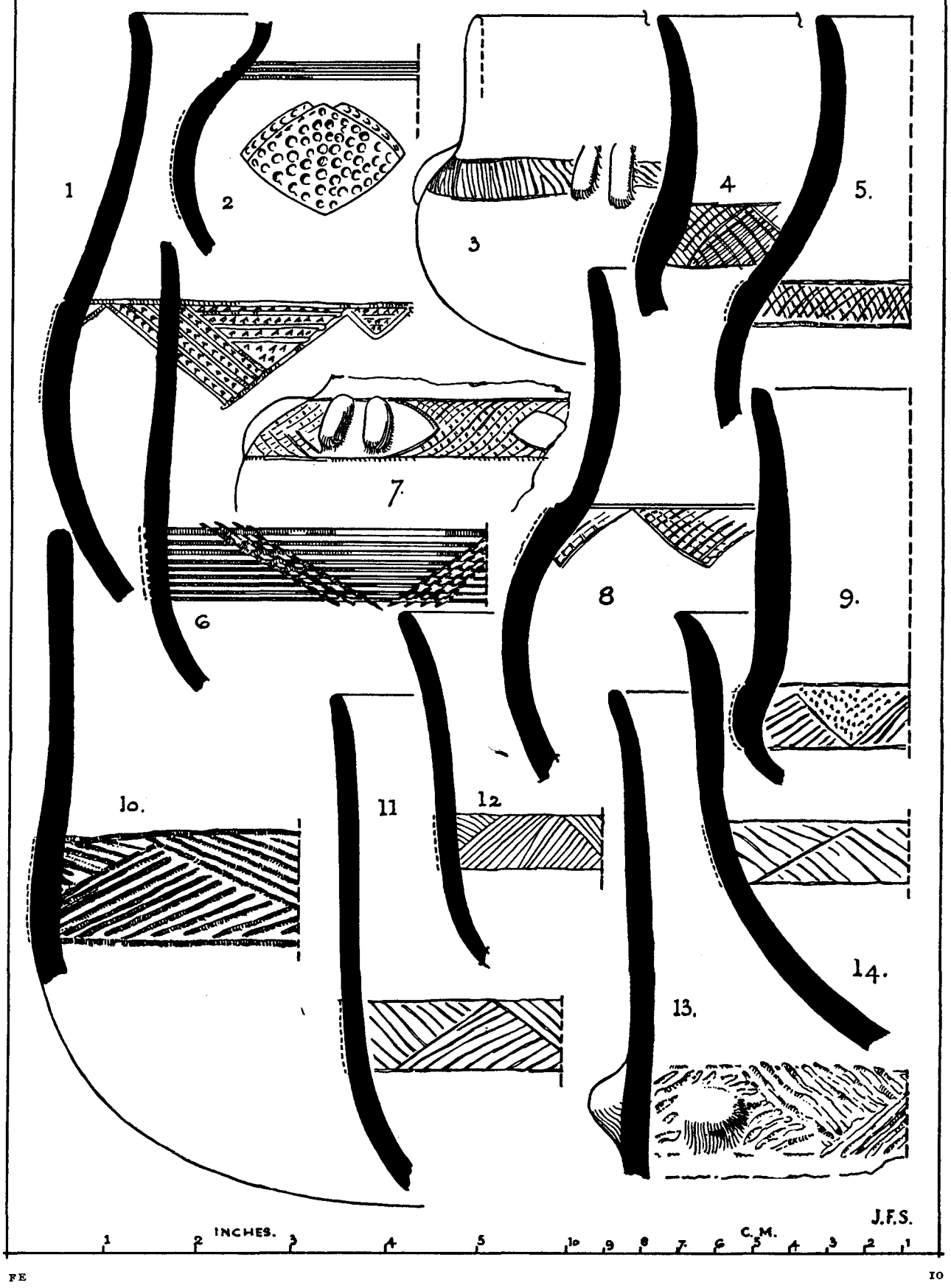


PLATE XXII

Class M_1

1. Cover bowl, about 9 in. in diameter, and probably the same depth as No. 3. The paste is black and is finished with fine black burnish on all surfaces. The rim is strongly moulded and slightly everted. The exterior was decorated with hatchings divided into panels by elongated lugs which were formed with four projecting mouldings. The underside was hatched diagonally. From Mapungubwe Grave Area, Excavation No. 00.

2. Shallow bowl, about 9 in. in diameter, and similar to No. 3. In grey paste finished with a black burnish. The rim is bevelled to the outside and directly below it is a band of impressions formed with a stylus to make a very neat trellis pattern. From trench JS 1, 25 × 1 × 1 ft.

3. Shallow bowl, $8\frac{3}{4}$ in. in diameter and $2\frac{7}{8}$ in. deep. In red paste finished with matt surface to a fine Indian red. The rim is bevelled to the outside, and is divided by three projecting lugs, each of which has two deep rounded grooves on the face and a lightly scratched chevron along the surface of the bevel. The panels between the lugs were decorated with the impressions of a round stylus made in the wet clay, and a festooned effect is produced by making them narrower at the ends than in the middle. From Grave 11, Mapungubwe Grave Area.

4. A subspherical bowl, reconstructed, 8 in. in diameter, $4\frac{3}{8}$ in. over the rim, and 4 in. deep. The surface is brindled with a matt finish. The rim is rounded and slightly everted, the neck is short and is splayed out to the body at an angle of 45°. The shoulder was decorated with large inverted triangles alternating with a pair of small triangles, each having a quarter the area of the large ones. The main lines of the design are made with dots set closely together, the cross-hatching is lightly incised, all was done on the wet clay. From Excavated Area, trench JS 2*b*.

5. A subspherical bowl, 9 in. in diameter, $5\frac{1}{4}$ in. across the opening, and $4\frac{3}{4}$ in. deep. In grey paste burnished black on the outside and smoothed on the inside. The rim bent slightly downwards, splayed and rounded. The exterior shows a patch of cross-hatching on the wet clay, surrounded with irregular lines cut after the clay had dried to form a rough lozenge. From base of wall 1, trench JS 2*b*.

6. A subspherical bowl complete, 5 in. in diameter, $2\frac{1}{4}$ in. over the opening, and $2\frac{1}{4}$ in. deep. Surface is grey with a matt finish. The rim is splayed and slightly rounded and decorated with four inverted hatched triangles cut on the wet clay. From trench JS 5.

7. Bowl, reconstructed, $10\frac{1}{2}$ in. over the rim and $5\frac{1}{2}$ in. deep. The paste has been subject to a secondary burning and is a light brick red. The surface was originally burnished black. The rim is rounded and bent outwards. From floor of a burnt hut, trench JS 4, at 50 × 4 ft.

8. Bowl, reconstructed, $6\frac{3}{4}$ in. over the rim and $4\frac{5}{8}$ in. deep. The rim is flattened, rounded and bent inwards, otherwise the bowl is as No. 7.

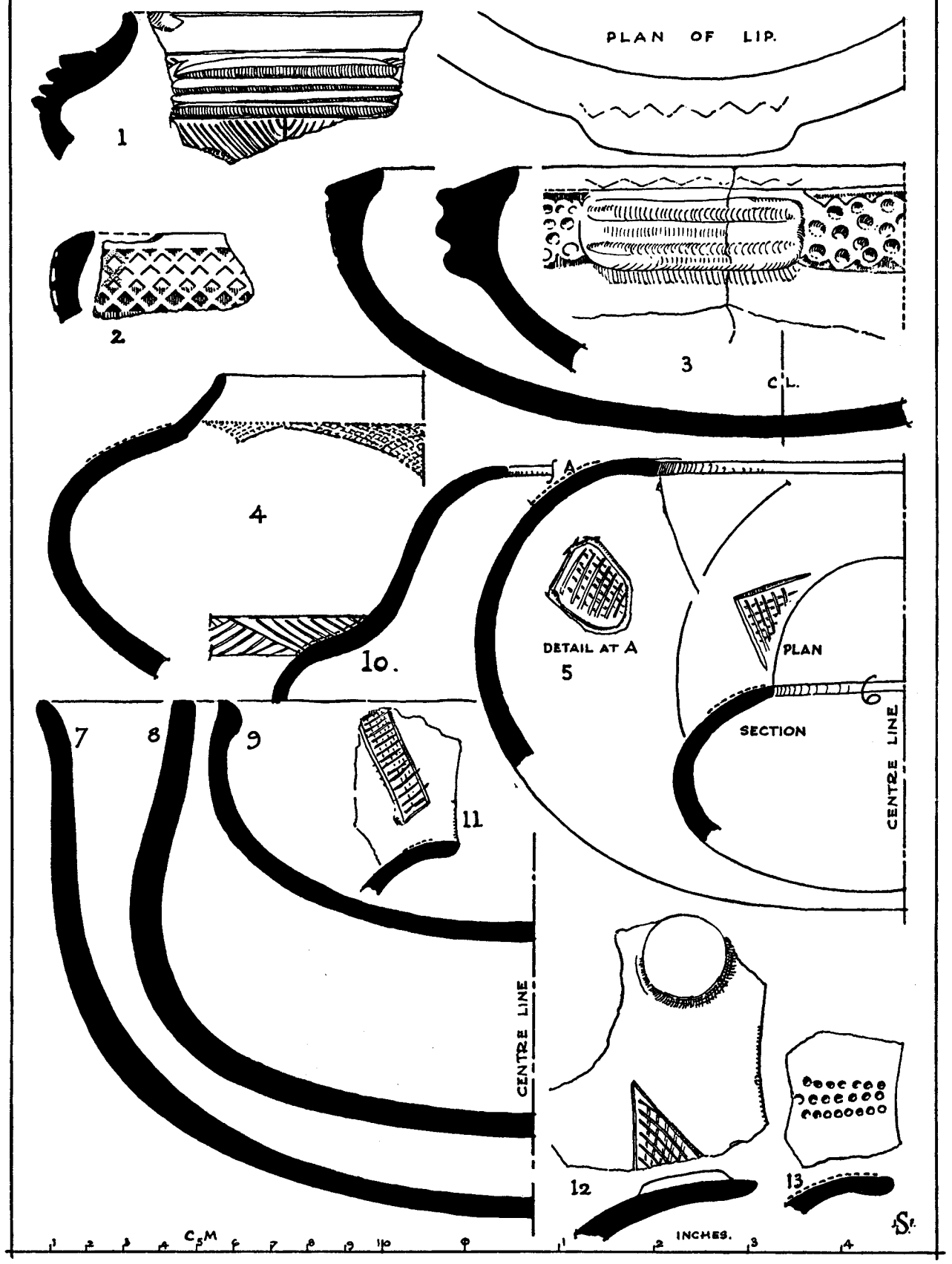
9. Bowl, $6\frac{3}{4}$ in. over the rim. The paste has been burnt to a brick red in a secondary burning. The surface was probably burnished black. The rim is thickened on the inside, bevelled, rounded, bent inwards and slightly everted. From Mapungubwe Grave Area, Excavation No. 00.

10. Gourd-shaped pot, 6 in. across the rim and about $10\frac{1}{2}$ in. in diameter at the belly. In fine grey paste finished at surface with black burnish. The rim is rounded and the shoulder was decorated with a band of hatched triangles cut on the wet clay. From 8 ft. below the surface in front of wall 3, trench JS 2*a*.

11. Subspherical bowl, about 4 in. across the opening. In grey paste finished with a black burnish on the outside and smooth on the inside. The rim is rounded and decorated with a cross-hatched rectangle set diagonally. From trench JS 1.

12. Subspherical bowl, opening about 8 in. in diameter. In grey paste, black burnish on the outside and smoothed on the inside. The rim is rounded and the exterior was decorated with a raised disk and a diagonally hatched lozenge cut on the wet clay. From Mapungubwe Grave Area.

13. Subspherical bowl, opening about 4 in. across. In grey paste black burnished externally. The rim is rounded and decorated with three lines of dots pressed into the wet clay. From Excavated Area, trench JS 2*b*.



10·2

PLATE XXIII

Class M_2

1. Bowl, 12 in. in diameter. In coarse grey paste burnt to brick red on surface which is finished smooth. The rim is slightly flattened. From below the cement floor of Rock Shelter 1, Parma Kopje.

2. Bowl, about 12 in. in diameter. In light grey paste. Inside burnished brown to black, outside burnished brown, probably as the result of accidental burning. The rim is bevelled internally. From trench JS 2*b*, Excavated Area.

3. Bowl, 9 in. in diameter. In grey paste burnt to a yellow ochre on surface which is finished matt on both inside and outside. The rim is bevelled internally. From below the cement floor of Rock Shelter 1, Parma Kopje.

4. Bowl, 14 in. in diameter. In light grey paste. Inside burnished brown to black, outside finished brown with matt surface. Rim bevelled internally, decoration probably cut on dried clay. This is a well finished piece of work. From Bambandyanalo Grave Area.

5. Bowl, about 9 in. in diameter. In fine grey paste, surface light sepia with matt finish. Rim bevelled to the inside with slight projection externally. The bevelled face was decorated with hatched triangles pointing towards the outside and engraved after burning. From trench JS 2*a*, base of third wall.

6. Bowl, about 9 in. in diameter. In gritty grey paste, burnished light burnt umber on surface. Rim bevelled to the inside and decorated with hatching engraved after burning. From trench JS 2*b*, 5 ft. below surface in second trench.

7. Bowl, 8 in. in diameter. In gritty grey paste burnt to a light brick red at surface which is finished matt. The rim is bevelled slightly towards the interior with a slight projection. From below cement floor of Rock Shelter 1, Parma Kopje.

8. Bowl, 8 in. in diameter. In gritty grey paste with black burnish inside and outside. The rim is thickened and rounded towards the interior, and decorated externally with hatched loops engraved after burning. From trench JS 2*a*, unstratified midden.

9. Bowl, 10 in. in diameter. In light grey paste burnt to a raw umber on the surface which is finished matt. The rim is slightly bevelled towards the interior. From trench JS 2*a*, unstratified midden.

10. Bowl, 9 in. in diameter. In gritty grey paste with black burnish internally and externally. The rim is slightly bevelled towards the interior and decorated externally with a band of counter-hatched triangles scratched roughly after burnishing. From trench JS 1, 1–8 ft., 1 ft. from surface.

11. Bowl, 9 in. in diameter. In dark grey paste burnished black inside and outside. The rim is flattened with rounded projection on the outside and decorated externally with hatched triangles roughly engraved after burning. From Bambandyanalo Grave Area.

12. Bowl, about 9 in. in diameter. Grey paste, burnished black internally and black and brown externally, probably due to secondary burning. The rim is flattened with slight rounded projection to the outside and is decorated with a line of hatching. The exterior directly below the rim has a hatched band with inverted triangles, all the decoration was engraved after burning. Provenance uncertain. Transvaal Museum Exhibit.

13. Bowl, 10 in. in diameter. In coarse gritty grey paste burnt to a light burnt umber on surface which had a matt finish. The rim is rounded and slightly bevelled towards the interior, and is decorated externally with a narrow band and hatched triangles roughly engraved after burning. This decoration is very similar in design to that illustrated on pl. xxix, 1, except that the latter is cut on the wet clay. From Bambandyanalo Grave Area.

14. Bowl, about 12 in. in diameter. In grey paste with fine black burnish both inside and outside. The rim has a bold curved bevel with a rounded projection externally and undercut on the inside. The exterior of the fragment was decorated with a boldly cut hatched triangle engraved after burning. The work is in very good style, similar to No. 15. From trench 2, JS 2*b*, at rock bottom.

15. Bowl, probably 14 in. in diameter. In dark grey paste, burnished black inside and outside. The rim is similar to No. 14 but not so pronounced, the exterior was decorated with a large inverted hatched triangle, engraved after burning. From trench JS 2*a* at the base of the third wall. Two similar fragments were taken at the same place and another in trench 1, JS 2*b*, at rock bottom.

16. Beaker bowl, with flattened bottom, probably 8 in. in diameter. In dark grey paste with poor black burnish inside and outside. Decorated round base with a single line and large chevrons engraved after burning. From Bambandyanalo Trial Trench.

17. Large beaker bowl, 8 in. in diameter. In coarse ware finished with brindled matt surface. The rim is rounded to the inside and is very irregular. From Western Midden, Index No. P 23.

18. Large beaker bowl, $6\frac{7}{8}$ in. in diameter. With flattened bottom. In coarse ware finished with brindled burnish externally and smoothed internally. The rim is slightly everted, rounded to the inside and is very irregular. From Burial No. 2 (G), Bambandyanalo Grave Area, Index No. P 37.

19. Beaker bowl, $5\frac{3}{4}$ in. in diameter. Coarse ware with flattened rim rounded internally. Finished with a poor brindled burnish. From Western Midden, Index No. P 24.

20. Beaker, with flattened bottom, $4\frac{1}{4}$ in. in diameter. Medium ware finished with a grey brindled matt surface. The rim is rounded internally and slightly everted, the base was decorated on wet clay with a band consisting of three lines with oval impressions between them. From Burial No. 4 (A), Bambandyanalo Grave Area, Index No. P 41.

21. Beaker, 6 in. in diameter. In fine grey paste, burnished black inside and outside. The rim is bevelled to the inside and slightly everted. The exterior was decorated with a wide band of fine hatching probably cut on the dried clay. The rim is pierced. From trench JS 2*b*, Excavated Area.

22. Bowl, $4\frac{1}{2}$ in. in diameter. Very coarse gritty ware with rough finish, probably light brown colour. The rim is rounded and slightly constricted but is very irregular. From centre of stone circle on surface at 25 ft., trench JS 1, Index No. P 16.

23. Beaker bowl, $5\frac{1}{4}$ in. in diameter. In coarse gritty ware finished with a rough brindled surface. The rim is rounded on both sides. The perforation was made before burning. From Western Midden, Index No. P 20.

24. Bowl, $6\frac{1}{2}$ in. over the rim. In fine paste probably finished with a raw umber burnish, but surface is much decayed. The rim is rounded and slightly constricted. From Burial No. 2 (F), Bambandyanalo Grave Area, Index No. P 36.

25. Beaker, $3\frac{7}{8}$ in. in diameter. In coarse grey paste finished inside and outside with a poor black burnish decorated round base with a roughly scratched band of hatching. From Western Midden, Index No. P 28.

26. Beaker bowl, about 7 in. in diameter. In light grey paste burnt to a brown at the surface and finished inside and outside with a brindled burnish. Decorated round base with a band of small punctures between two lines, all of which were made on wet clay. From Bambandyanalo Grave Area.

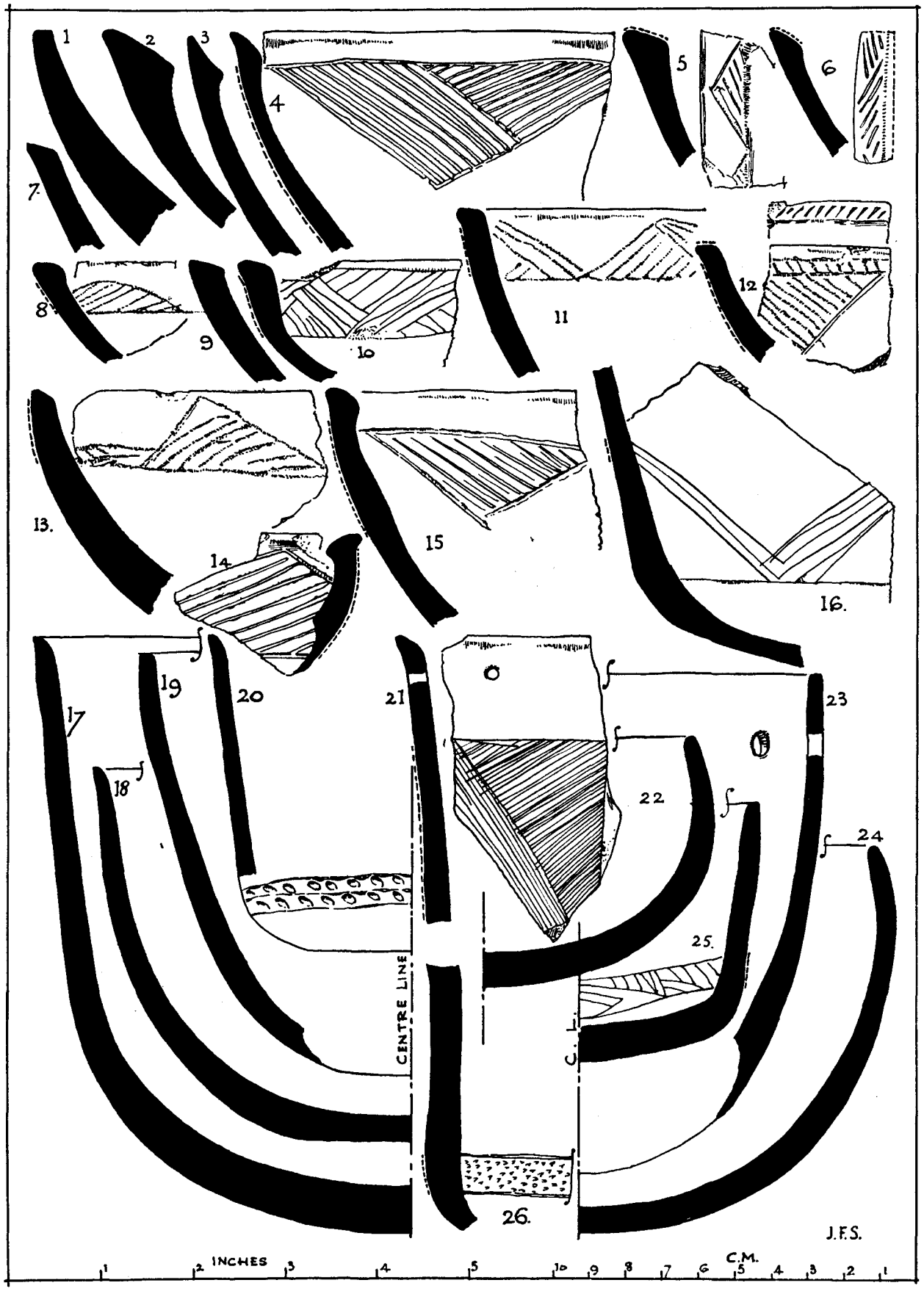


PLATE XXIV

CLASS M_2

1. Beaker, 8 in. over the rim by 5½ in. deep. In very coarse grey paste, in which ground pottery was incorporated. The surface is smoothed and grey. The rim is rounded and everted, and the exterior was decorated with a rough zig-zag line drawn on the wet clay. From the base of wall 1, trench JS 2*a*.

2. Beaker reconstructed, 4½ in. over the rim by 4¾ in. in depth. In coarse grey paste finished with dark grey burnish externally. The interior is finished with a grey matt. The rim is rounded and very irregular. The exterior was decorated with a line with inverted hatched loops carelessly scratched on the wet clay. From south area, Parma Kopje. -

3. Beaker, reconstructed, 3½ in. over the rim and 4 in. in depth. In coarse paste finished with a brindled burnished surface externally. The rim is rounded and bent inwards and has a vertically pierced lug set a little obliquely and rising to a higher level than the rim. From Bambandyanalo Grave Area.

4. Beaker, reconstructed, 3⅜ in. over the rim by the same depth. In coarse grey paste with black burnish externally. The rim is rounded and bent outwards. It is pierced and below the hole is a small boss. The exterior was decorated with a band of vertical lines scratched on the burnt clay after burnishing. From Bambandyanalo Grave Area.

5. Beaker, 4 in. over the rim. In fine grey paste with black burnish externally and black matt finish internally. The rim is rounded and everted and was pierced before burning. The decoration was engraved on the burnt clay after burnishing. From Bambandyanalo Grave Area.

6. Beaker, reconstructed, 3½ in. over the rim by 3⅝ in. in depth. In grey paste with a good black burnish externally. The rim is rounded and everted with a vertically pierced lug. From Bambandyanalo Grave Area.

7. Beaker, reconstructed, 4¾ in. over the rim and 5½ in. in depth. In coarse paste finished with a brindled matt surface. The rim is irregularly rounded, the base was decorated with a slightly projecting boss and a line of hatched loops cut on the wet clay. From Bambandyanalo Grave Area.

8. Beaker, reconstructed, 3½ in. over the rim by 4 in. in depth. In fine grey paste burnt to a dark red and burnished black externally. The rim is rounded and flared, the decoration was engraved on the burnt clay after burnishing. From Bambandyanalo Grave Area.

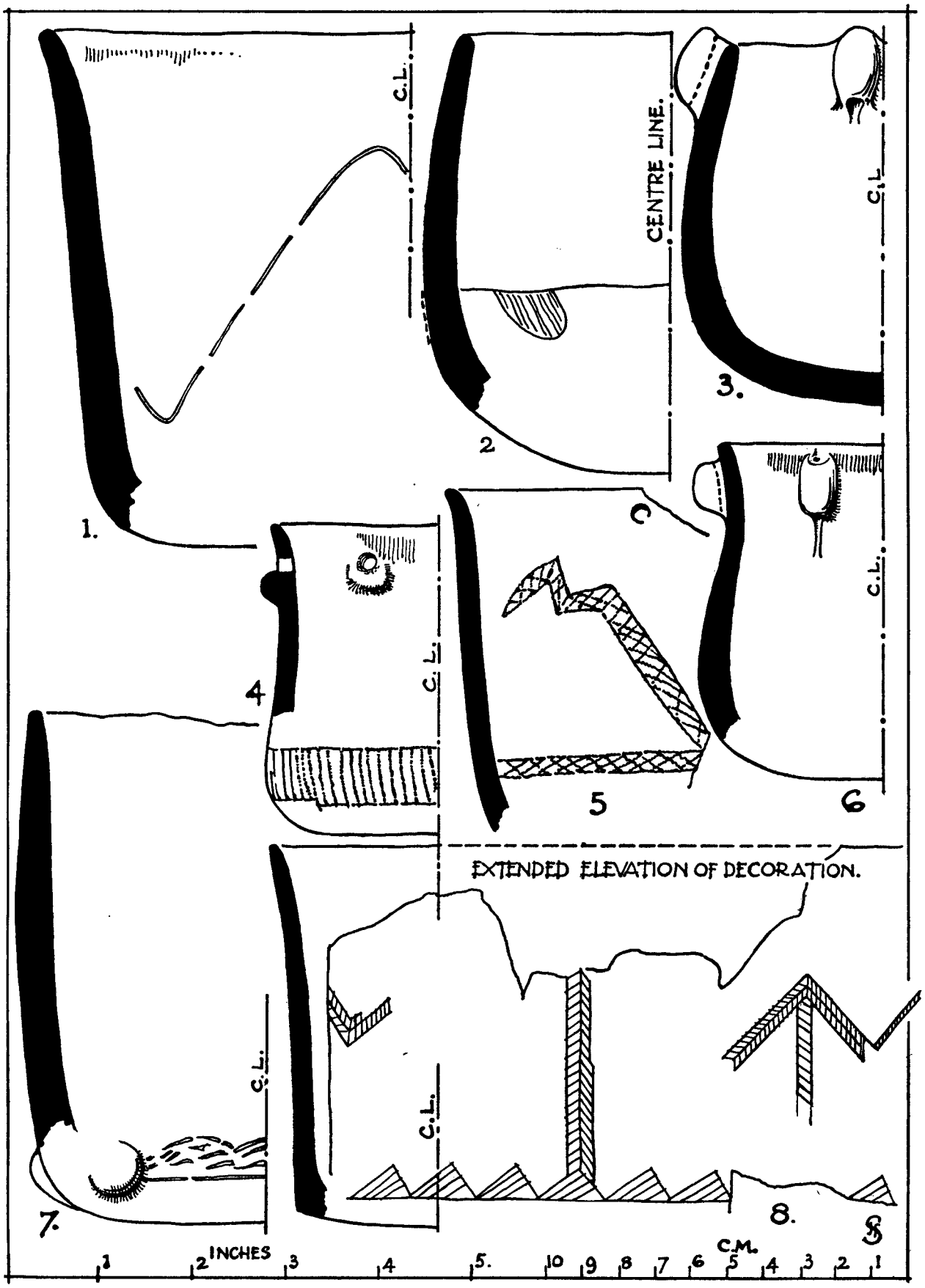


PLATE XXV

Class M_2

1. A beaker, reconstructed, $4\frac{3}{8}$ in. over the rim and $5\frac{5}{8}$ in. deep. In coarse brown paste, probably finished with a black burnish, but the surface is badly decayed. The rim is tapered, rounded and flared; it was pierced on both sides before burning and below the holes are small bosses. The base was decorated with a line of dots made on the wet clay. There are traces of line ornaments similar to pl. xxiv, 8. From Bambandyanalo Grave Area, Burial No. 2 (A) (P 38).

2. A beaker bowl, reconstructed, 6 in. over the rim and $4\frac{7}{8}$ in. deep. In coarse paste finished with a black burnish. The rim is tapered and rounded. On the left side is a handle connecting a vertically pierced lug and a knuckle-shaped boss; on the right side the boss only has survived, but it is probable that there was a lug on that side. Below the rim there is a diagonally hatched band and above the base there is a line of horizontally hatched loops with the curious swan-neck ornament (cf. pl. xxiv, 5) between the loops. All the decoration was engraved on the burnt clay after burnishing. From Bambandyanalo Grave Area, Burial No. 1 (4) (P 30).

3. A beaker, reconstructed, $4\frac{5}{8}$ in. over the rim and $5\frac{3}{4}$ in. deep. In coarse grey paste with brindled matt surface. The rim is tapered, rounded and slightly everted with a vertically pierced lug. The base has been brought out to form a well-defined foot. The rim is decorated with a line of punctured dots on one side of the lug and a diagonally hatched band on the other. The body has a meandering line of dots and a similar line runs round part of the base. A portion of a swan-neck on the reverse side of the pot. All the decoration was made on the wet clay. From Pont Drift Grave Area. This beaker is in the possession of Mr Heydenrych of Pont Drift Farm.

4. A shouldered pot with pedestal, $4\frac{1}{8}$ in. over the rim and $6\frac{3}{4}$ in. in height. In coarse paste finished with a grey brindled matt surface. The rim is rounded and flared. It was decorated with diagonally hatched triangles in a bold but rough style and was pierced before burning. The decoration was made on the wet clay. From Bambandyanalo Grave Area, Burial No. 2 (C) (P 33).

A precisely similar pot without the pedestal was taken in the same grave (P 35).

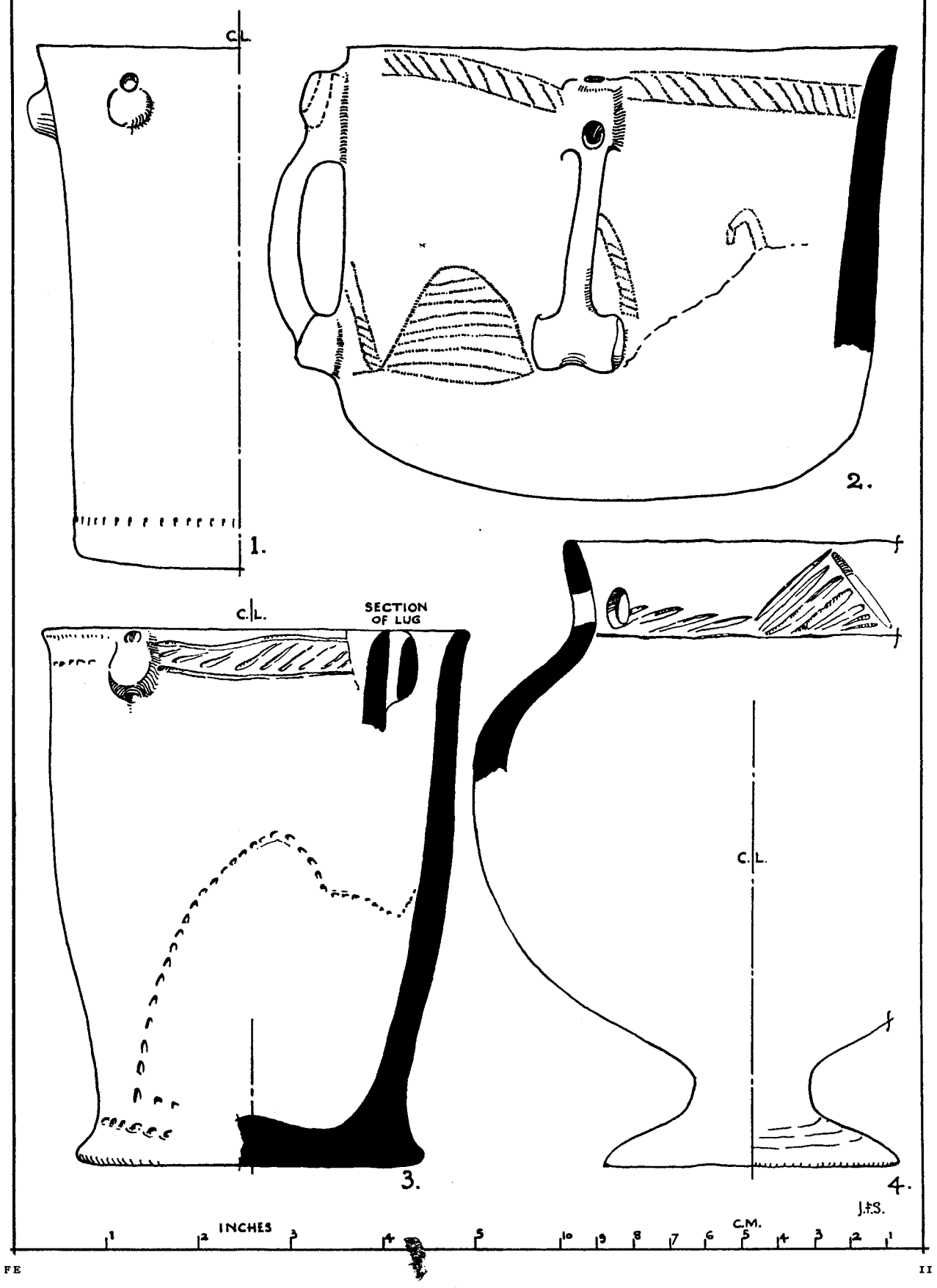


PLATE XXVI

Class M_2

1. A beaker bowl, 10 in. over the rim by about 5 in. in depth. In fine grey paste, finished with a brindled burnish externally and a black matt surface internally. The rim is rounded and slightly flared. The pot was decorated by a band of herring-bone hatching scratched on the wet clay. From Bambandyanalo Grave Area.

2. A beaker bowl, 7 in. over the rim. In a gritty grey paste, with a light brown burnish outside (probably due to a secondary burning) and a brown matt surface inside. The rim is bevelled, rounded and slightly flared. The pot was decorated with a band of horizontally hatched triangles with a hatched strip, all scratched on the dried clay before burning. From Bambandyanalo Grave Area.

3. A beaker, reconstructed, 5 in. over the rim by $5\frac{3}{8}$ in. deep. The surface is brindled and burnished. The rim is rounded and slightly everted; $1\frac{3}{4}$ in. from the base is an elongated boss. The decoration of inverted diagonally hatched loops was scratched after burning. From Bambandyanalo Grave Area, Burial No. 3 (C) (P 40).
A similar beaker (P 37), but measuring $5\frac{1}{4}$ in. by 4 in., was recovered from the same grave.

4. A fragment of a larger beaker bowl. In grey paste with a brindled burnish. The decoration was engraved after burnishing. From Bambandyanalo Grave Area.

5. A beaker 5 in. in diameter and about the same depth. In gritty grey paste, with yellowish grey matt surface. The rim is rounded and everted; the chevron decoration was cut on the dried clay before burning. From Bambandyanalo Grave Area.

6. A beaker, 5 in. over the rim and $4\frac{1}{4}$ in. deep. In gritty dark grey paste with grey matt surface. The rim is rounded and everted and the body is decorated with a double band of horizontally hatched triangles cut on the wet clay. From Mapungubwe Grave Area, Excavation No. 00.

7. A beaker bowl, 8 in. over the rim. In grey paste with a brindled burnish. The rim is bevelled to the inside and slightly everted. The pot was decorated with a band of lines and triangular impressions on the wet clay. From Bambandyanalo Trial Trench.

8. A beaker bowl, 6 in. over the rim and about 4 in. deep. In grey paste with a black burnish. The rim is flattened, the pot was decorated with a line of diagonally hatched triangles scratched on the burnt clay after burnishing. From Bambandyanalo Grave Area at a depth of $3\frac{1}{2}$ ft.

9. A beaker, reconstructed, $4\frac{3}{4}$ in. over the rim, and $3\frac{3}{4}$ in. deep, finished with a brindled burnish. The rim is flattened and flared. The base was decorated with a band of diagonal hatching scratched on the burnt clay after burnishing. From Western Midden (P 27).

10. A fragment very similar to No. 7.

11. A fragment similar to No. 7, but with a light grey burnish. From Bambandyanalo Trial Trench.

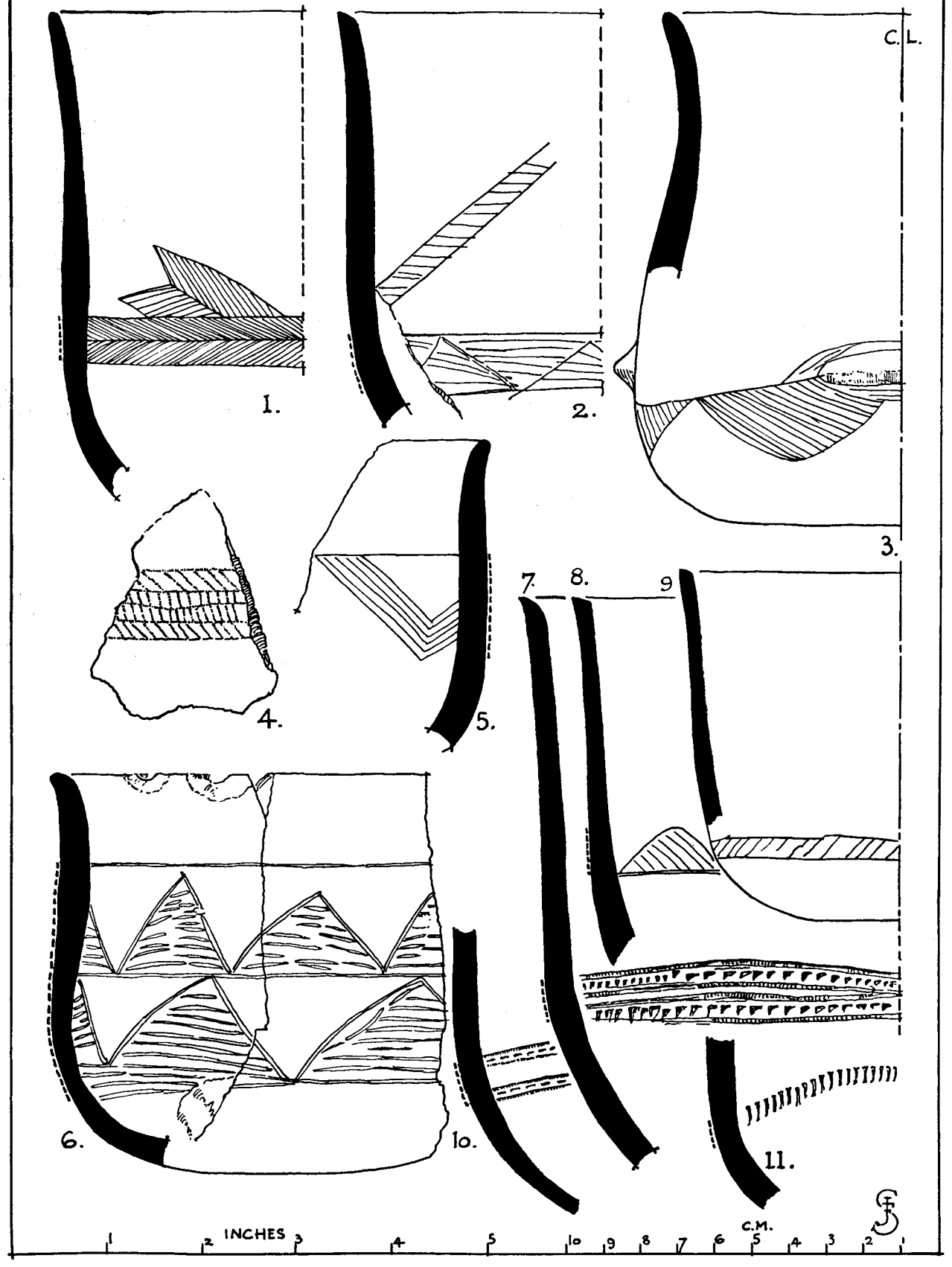

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PLATE XXVII

Class M_2

1. Shouldered pot, 7 in. over rim. In coarse gritty sepia paste, finished on the outside with a brown matt surface and smoothed on the inside. The rim is rounded on the inside and slightly everted, the neck is flared and was decorated with impressions on the wet clay made by a comb with five or six points. From Bambandyanalo Grave Area.

2. Shouldered pot, 7 in. over rim. In coarse gritty black paste, burnt to a reddish brown, finished on the outside with a brown matt surface and smoothed on the inside. The rim and neck are similar to No. 1, the neck is slightly thickened and was decorated with three or four parallel lines pressed into the wet clay with a blunt implement or string. From beneath the cement floor of Rock Shelter 1, Parma Kopje.

3. Shouldered pot, 8 in. over rim, the material and finish as No. 2. The rim is rounded and thickened and the neck is flared and decorated with irregular impressions on the wet clay made apparently with a string of beads. From Rock Shelter 1, Parma Kopje.

4. Shouldered pot, 5 in. over rim, umber coloured paste burnt to reddish brown, finished to light brown matt surface on the outside and on the inside. The rim is rounded and thickened on the outside and the neck was decorated with lines pressed into the wet clay with a blunt implement or string. From Bambandyanalo Grave Site.

5. Fragment of rim of a shouldered pot. In coarse black paste burnt to light reddish yellow. The rim is rounded on the inside and is thickened, the neck is flared and decorated with three lines of shallow impressions made with a comb. From Pont Drift.

6. Shouldered pot, about 9 in. over rim. In coarse sepia paste burnt to lighter colour, finished with matt surface outside and smoothed inside. The rim is rounded and slightly everted. The neck was decorated with two lines of impressions from a string of beads made on wet clay. From Bambandyanalo Grave Area.

7. Shouldered pot, rim missing. In coarse grey paste burnt to yellowish brown and finished with a matt surface. Decorated externally with large triangles, the lines scratched on wet clay with a sharp implement. From Bambandyanalo Grave Area.

8. Shouldered pot, 6 in. over rim, the edge of which has been worn away. In black paste burnt to a light brown, finished matt outside and smoothed inside. The neck is flared. Decorated below the rim with two lines of rough comb impressions and just above the shoulder with a single line of these impressions, all made on wet clay. From below the cement floor of Rock Shelter 1, Parma Kopje.

9. Shouldered pot, 6 in. over the rim. The paste has burnt to a light brick red, and probably finished matt on the surface. The rim is rounded and slightly thickened. The neck is flared, and decorated below the rim with five lines of shallow comb marks on wet clay. The upper three run diagonally. A similar line of comb marks runs round the pot just above the shoulder. From below the cement floor of Rock Shelter 1, Parma Kopje.

10. Shouldered pot, 7 in. over the rim. In gritty black paste, burnt brown, finished with brown burnish to neck internally and probably to the outside as well. The rim is rounded and flared. Decorated below the rim with diagonal lines round the neck between two horizontal lines and a single line just above shoulder; all have been made with a fifteen point comb on the wet clay very neatly. From Bambandyanalo Trench 1.

11. Carinated pot, probably 6 in. over the rim, which is strongly everted. The paste is black and slightly burnt to a dark brown, finished matt externally with the inside smoothed below the rim. The neck just below the rim was decorated with three lines of large comb impressions with scratch marks between them. A line of similar comb marks runs round the angle of the keel. From below the cement floor of Rock Shelter 1, Parma Kopje.

A precisely similar pot in coarse black ware was found at Trench 4, Bambandyanalo.

12. A very similar pot to No. 10, except that the comb markings on the neck are roughly made and the lower line is missing. From below the cement floor of Rock Shelter 2, Parma Kopje.

13. A shouldered pot, 6 in. over the rim. In coarse gritty black paste burnt to a yellow ochre, the outside and inner surface of the neck finished matt. The rim is rounded and slightly everted. Decorated round the neck with inverted hatched loops roughly but boldly cut into the wet clay. From Bambandyanalo Trial Trench.

14. Shouldered pot, 6 in. over the rim. In coarse light brown paste, outside finished matt and the interior smoothed. The rim is rounded on the inside and flattened. The shoulder was decorated with hatched loops pointing upwards. Roughly but boldly cut into the wet clay. From Bambandyanalo Grave Area.

15. Shouldered pot, 6 in. over the rim, which is sharply cut. In coarse gritty black paste, burnt light brick red. Outside and interior of neck finished matt. The neck decorated with horizontal line below diagonal hatching roughly but boldly cut into the wet clay. From Bambandyanalo surface.

This piece differs markedly from the others described but is similar to pl. xxxv, 15.

16. Shouldered pot, 13 in. over rim. In very coarse light grey paste burnt to a yellow ochre and surface finished matt. The rim is rounded and thickened on the outside, the neck is flared and decorated with bold chevrons formed with two lines having triangular impressions between them; all was cut on the wet clay. From Bambandyanalo Trial Trench.

17. Probably a bellied pot, 10 in. over the rim. In coarse grey gritty paste burnt to a yellow ochre, the surface is slightly burnished on the outside and the interior smoothed. The rim is flattened and everted and decorated along the edge with impressions made with an implement with two points. From Bambandyanalo Trial Trench.

18. Shouldered pot, 8 in. over rim. In coarse grey gritty paste burnt to a grey brown and probably burnished externally and finished smooth internally. The rim is much broken but appears to have been tapered and rounded. The neck is vertical and was decorated with impressions of a wire bangle on the wet clay. This pot shows signs of long use for cooking. From Bambandyanalo Trench 1.

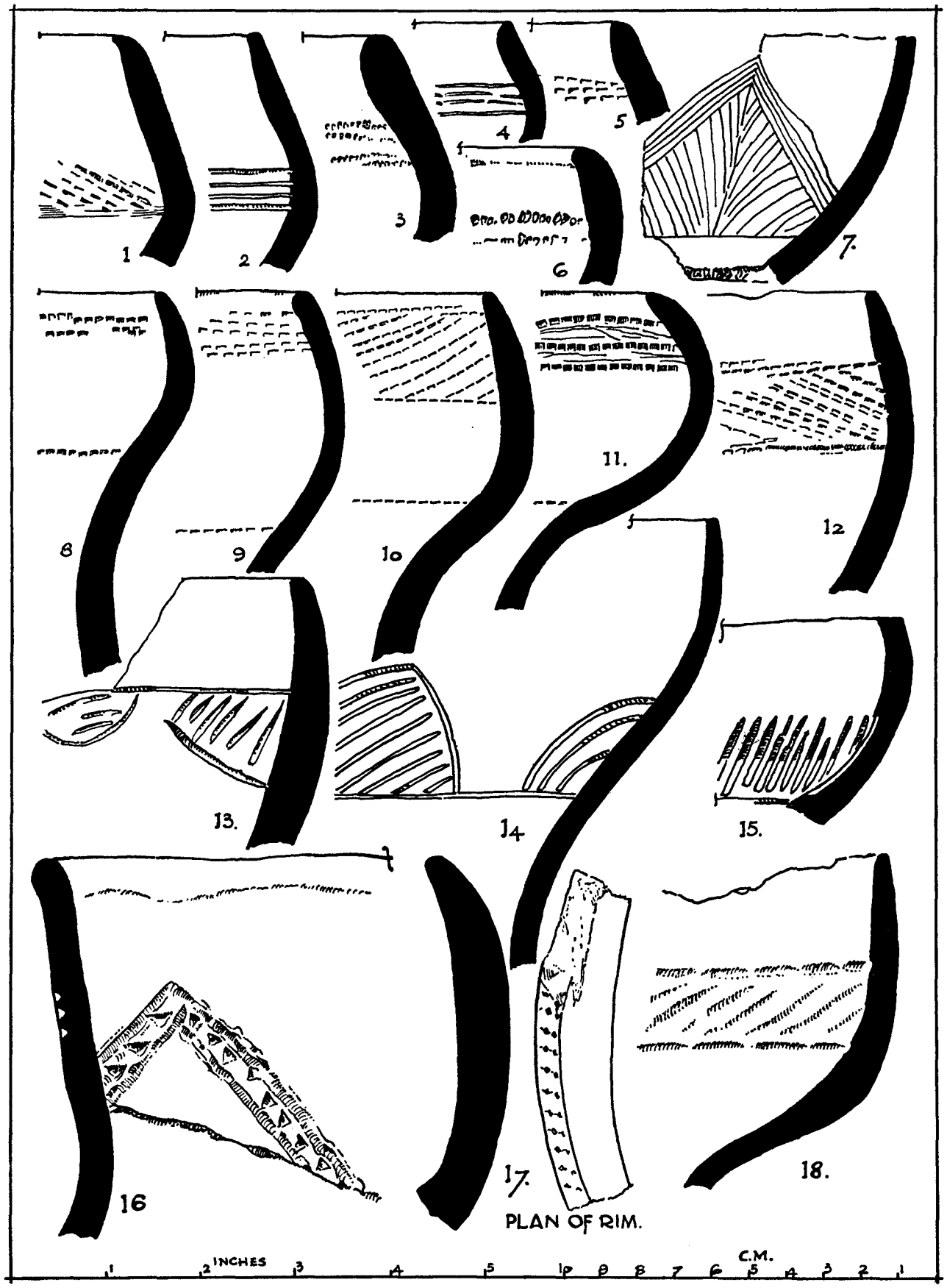


PLATE XXVIII

Class M_2

1. A shouldered pot, 10 in. in diameter over rim; of coarse red paste, with a matt finish. The rim is rounded and flared. The decoration was cut out boldly on the wet clay. From Bambandyanalo Trial Trench.

2. A shouldered pot, 8 in. diameter over rim; of coarse grey paste, finished with a brown burnish externally. The rim is rounded and flared. The decoration was carefully incised on the wet clay. From Bambandyanalo Trial Trench.

3. A shouldered pot, 8 in. diameter over rim; of coarse brown paste, with a reddish matt finish. The rim is rounded and thickened on the outside. The decoration consists of deep incisions on the wet clay. From Bambandyanalo Trial Trench.

4. A shouldered pot, 6 in. diameter over rim; of coarse light grey paste, burnt light brown on the surface, with a raised band worked up out of the paste. The rim is rounded. From Bambandyanalo Grave Area.

5. A shouldered pot, 3 in. diameter over rim; of coarse grey paste, burnt grey externally and internally. The rim is rounded and flared. Rough deep incisions on the wet clay formed the decoration. From Bambandyanalo Trial Trench.

6. A shouldered pot, 6 in. diameter over rim; of coarse grey paste, burnt dark brown at surface with no burnish. The rim is rounded. The decoration was deeply incised in the wet clay. From Bambandyanalo Grave Area.

7. A shouldered pot, about 6 in. diameter over rim; of yellowish grey paste, burnt to yellow brown on surface. The rim is rounded and flared. The decoration was roughly cut on the wet clay. From Bambandyanalo Grave Area.

8. A shouldered pot, 12 in. diameter over rim; of coarse dark grey paste, burnished black inside and outside. The rim is bevelled to the inside and is almost vertical. The decoration was cut on dry clay. From trench JS *2a*, 8 ft. from surface at third wall.

9. A shouldered pot, 10 in. diameter over rim; of coarse light grey paste, burnt light brown. The rim is rounded and slightly bevelled to the inside. Bold incisions on the wet clay form the decorations. From Bambandyanalo Trial Trench.

10. A shouldered pot, of uncertain diameter; of coarse brown grey paste, burnt light brown at surface, which is burnished on the outside. The rim is slightly flattened and flared. The upper decoration was cut on the wet clay and touched up after burning, the lower decoration being engraved after burning. From Bambandyanalo Grave Area.

11. A vertically-sided pot, 12 in. diameter across rim; of fine grey paste, burnished black, inside and outside. The decoration was engraved after burning. The rim is bevelled to the inside with a slight projection on the outside. From Bambandyanalo Grave Area.

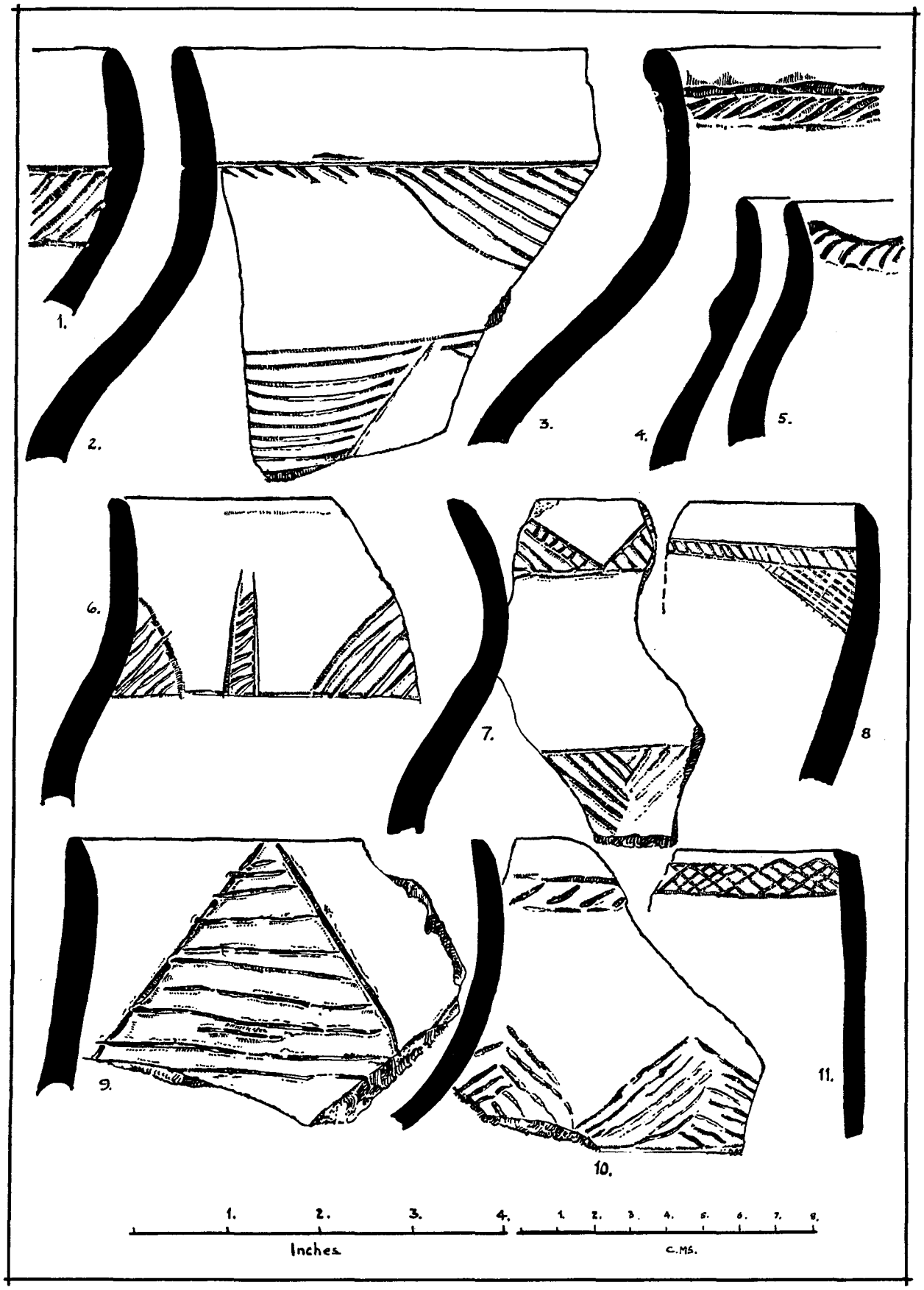


PLATE XXIX

Class M_2

1. Shouldered pot, 5 in. over the rim. In fine grey paste with black burnish externally and black matt finish internally. The rim is rounded to the inside. The decoration was formed by a band of triangles, roughly cut on the wet clay on the shoulder of the pot. From Western Midden.

2. Shouldered pot, 4 in. over the rim. In grey paste finished with a matt surface. The rim is rounded and slightly everted. The decoration was formed by a band with diagonal lines roughly cut on the wet clay below the rim. From Bambandyanalo Grave Area.

3. Fragment of a large bellied pot, about 8 in. over the rim and 18 in. over the belly. In coarse grey paste finished externally with a black burnish. The decoration, consisting of a hatched band with a parallelogram hatched as shown attached to it, was scratched on the burnt pot after burnishing. From Western Midden.

4. A shouldered pot, about 6 in. over the rim. In coarse gritty paste finished smooth on the inside and with a sepia matt surface on the outside. The rim is rounded, bent outwards and slightly thickened on the outside. The decoration consists of two string lines made in the wet clay on the neck. From Bambandyanalo Grave Area.

5. A shouldered pot, about 8 in. over the rim. In fine dark grey paste finished with black burnish round the inside of the neck and over the outside. The rim is rounded internally and the neck is nearly vertical. The junction of the neck and shoulder is decorated with an elongated boss, raised out of the material and placed between bands of deeply punctured impressions. From trench JS 3.

6. Fragment of the neck of a large shouldered pot. In coarse light grey paste burnished yellow ochre externally and smoothed internally. The decoration was roughly but boldly cut on the wet clay. From Bambandyanalo Grave Area.

7. Shouldered pot, $3\frac{1}{4}$ in. over the rim and $6\frac{1}{8}$ in. at its greatest diameter. In a brown paste with a matt finish at the surface. The rim is rounded and very slightly everted. The decoration of hatched loops was roughly but boldly cut in the wet clay. From Western Midden.

8. Shouldered pot, 6 in. over the rim. In black clay burnt to a sepia at surface which is burnished externally and round the neck internally. The rim is rounded and slightly everted. The shoulder was decorated with a line of very neatly drawn hatched loops which were cut on the wet clay. From the talus 50 yards to the west of Western Midden.

9. Shouldered pot, about 6 in. in diameter. In gritty dark grey paste burnt to a yellow ochre at the surface which is smoothed. The rim is tapered and rounded, the neck is vertical and decorated with two or three string lines made on the wet clay. From Parma Kopje, below the cement floor of Rock Shelter 1.

10. Shouldered pot, 6 in. over the rim. In grey paste burnt to a light brick red externally, the surface finished matt. The interior is a greyish yellow and smoothed. The rim is tapered and rounded, the neck is vertical and decorated with comb impressions. From Pont Drift.

11. Shouldered pot, about 5 in. over the rim. In gritty light grey paste, burnt sepia at surface, which is matt on the outside and smooth on the inside. The rim is rounded and everted, the neck was decorated with rough scratches made on the wet clay. From Parma Kopje, below the cement floor of Rock Shelter 1.

12. Shouldered pot, about 8 in. over the rim. In grey paste burnt to a light brick red, and finished with a matt surface. The rim is rounded and slightly thickened on the outside. The shoulder was decorated with rows of impressions made with a small object similar to a bird's limb bone. From Bambandyanalo Trial Trench.

13. Large shouldered pot. In gritty light grey paste burnt to a light brick red at the surface which is smooth. The rim is rounded and slightly flared. The shoulder was decorated with a line of large hatched triangles. From Parma Kopje below the cement floor of Rock Shelter 1.

14. Shouldered pot, about 7 in. over the rim. In coarse brown paste, with a matt surface externally and smoothed internally. The shoulder was decorated with groups of cuts made on the wet clay. From Western Midden.

15. Large shouldered pot. In light grey paste burnt to a light brick red at the surface which is smooth. The rim is rounded and the shoulder was decorated with a hatched loop above three or four lines all deeply cut on the wet clay. From Parma Kopje.

16. Shouldered pot, 4 in. over the rim. In fine grey paste burnt to a light red, the exterior has been finished with a black matt surface and the interior is smoothed. The rim is rounded and slightly everted. The shoulder was decorated with lines and dots roughly pressed into the wet clay. From Bambandyanalo Trial Trench.

17. Shouldered pot, about $3\frac{1}{2}$ in. in diameter. In gritty grey paste, the interior of the neck and the outside are finished with a poor black burnish. The rim is rounded and everted. The shoulder is decorated with a band of diagonal lines roughly but boldly cut on the wet clay. From Western Midden.

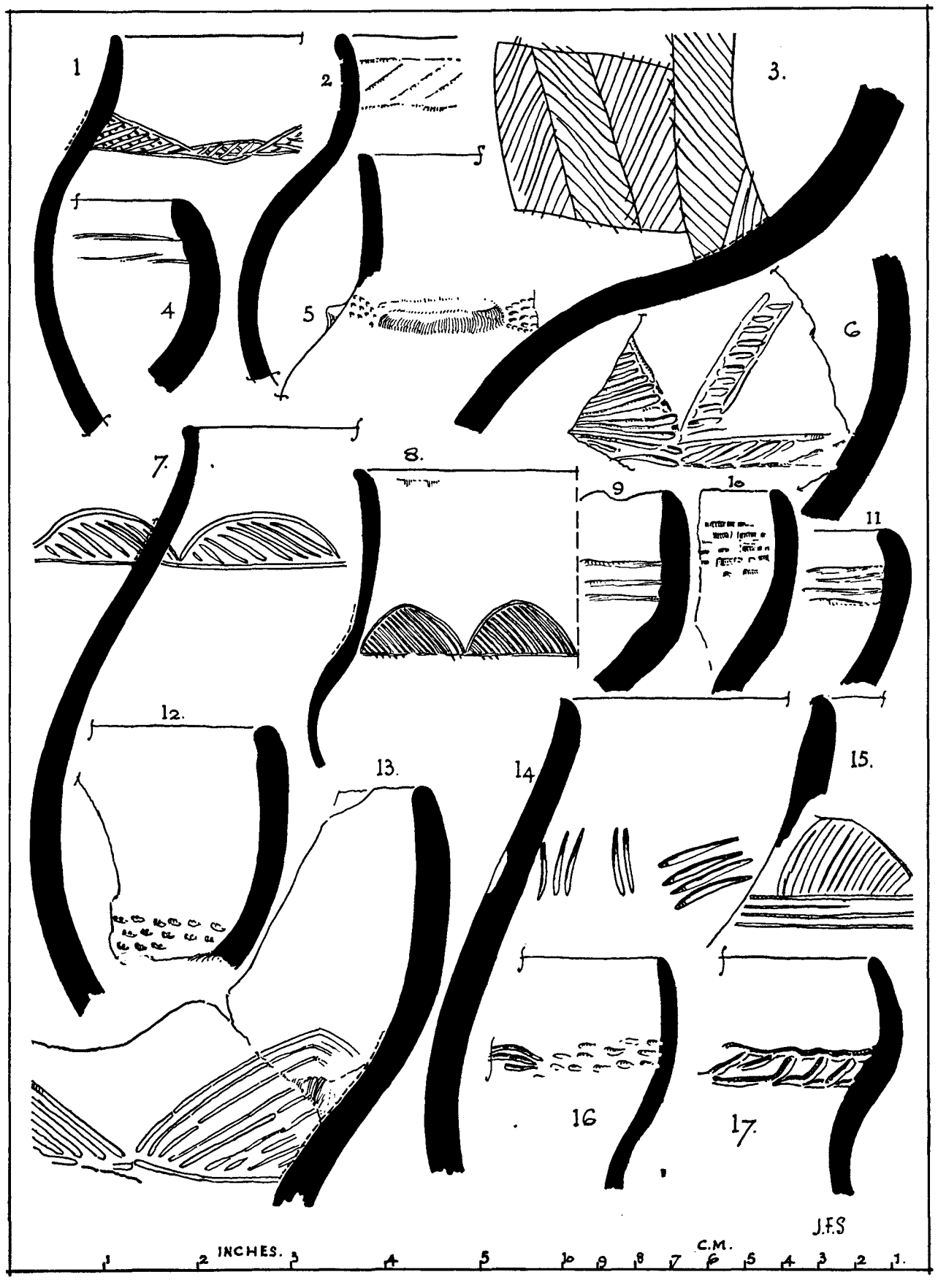


PLATE XXX

CLASS M_2

1. CHANNEL SPOUT:

(*a*) A spherical bowl with a channel spout, about 9 in. in diameter, opening 6 in. in diameter. In light brick red paste, surfaces burnished. This piece has been subject to a secondary burning which has caused included fragments of some foreign material in the clay to expand and "blow" the surface. The rim is rounded. From Bambandyanalo Grave Area.

(*b*) Very similar to No. 1 (*a*); in a dark grey paste with grey burnish outside and smoothed surface inside. From Bambandyanalo Grave Area. (Not illustrated.)

(*c*) Very similar to No. 1 (*a*), but in a grey paste with a black burnish externally. From Bambandyanalo Grave Area. (Not illustrated.)

(*d*) Similar to No. 1 (*b*). The spout has completely broken away showing it has been added after the pot had been formed. From Bambandyanalo Trench 4 at a depth of 2 ft. from the surface. (Not illustrated.)

(*e*) Very similar to No. 1 (*c*) above. The rim has been cut square and slightly rounded. From Bambandyanalo Grave Area. (Not illustrated.)

(*f*) Similar to the above. Rim is rounded and the surface is matt. From trench JS 2*b*, Excavated Area. (Not illustrated.)

(*g*) Similar to No. 1 (*b*). From Bambandyanalo Grave Area. (Not illustrated.)

(*h*) Similar to No. 1 (*a*). From surface at western end of the hill. (Not illustrated.)

(*i*) Similar to No. 1 (*e*). From trench JS 3. (Not illustrated.)

(*j*) Similar to No. 1 (*b*). From Western Midden. (Not illustrated.)

(*k*) Smaller pot in coarse paste. From Western Midden. (Not illustrated.)

2. TUBULAR SPOUT:

(*a*) Spherical pot, the opening appears to have been about 6 in. in diameter. In a gritty grey paste, exterior black burnished, interior smoothed. From trench JS 2*b*, Excavated Area.

(*b*) Similar to the last, but the paste is very coarse and the finish poor. From Bambandyanalo Grave Area. (Not illustrated.)

(*c*) Material is very similar to No. 1 (*a*). From Bambandyanalo Grave Area. (Not illustrated.)

3. Fragment of a large pot. In gritty grey paste burnt to a raw umber at surface, burnished inside and black burnished outside. The paste has been worked up below rim and irregular impressions from a wire bangle made on it. From Bambandyanalo Trial Trench.

4. Bowl, about 10 in. in diameter. In very fine grey paste burnt to a raw umber, burnished outside and black burnished inside. The rim is rounded. From Bambandyanalo Trial Trench.

5. Spherical pot, about 13 in. in diameter, with an opening about 8 in. across. In coarse grey paste burnt to a light umber, burnished outside and smooth inside. The rim is rounded. From below the cement floor Rock Shelter 1, Parma Kopje.

6. Spherical pot, 8 in. in diameter, with a $3\frac{3}{4}$ in. opening. Sepia burnish on the outside, the inside smooth. The rim is rounded and bent downwards. From Burial No. 2 A, Bambandyanalo Grave Area.

7. Small round pot, $3\frac{1}{2}$ in. in diameter with a 2 in. opening. Surface has decayed; it was probably burnished sepia. From trench JS 5, P 19.

8. Spherical pot, the opening was about 10 in. across. In light grey gritty paste, burnished raw umber outside and inside. Rim is rounded. Exterior decorated with an inverted chevron cut on dried clay. From Bambandyanalo Grave Area.

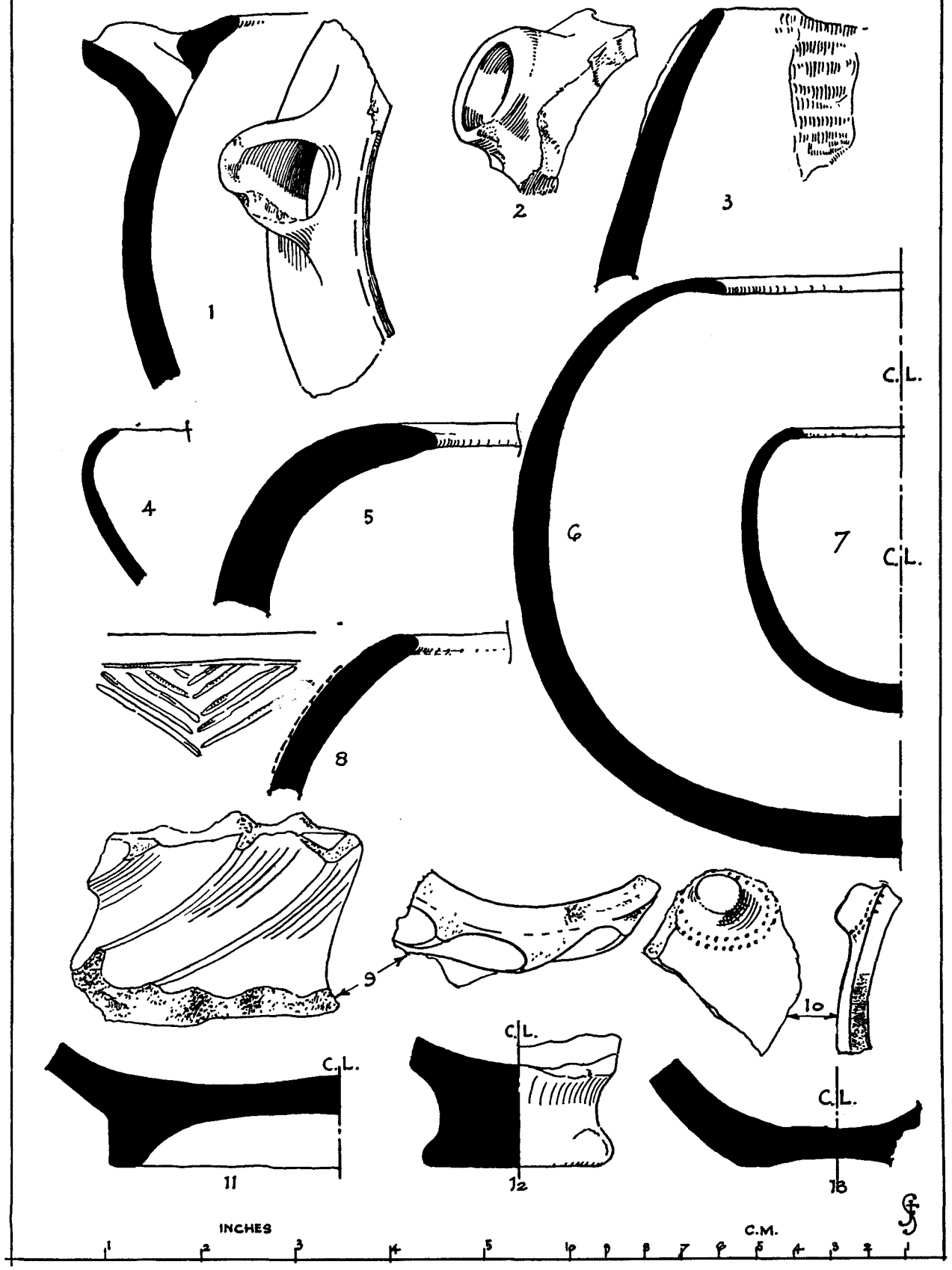
9. Fragment. Probably part of the neck of a bellied pot, the interior diameter of the neck being about 3 in. In a greyish paste burnt to a yellow ochre at surface which is finished matt. The exterior was decorated with bold flutes about $\frac{7}{8}$ in. across, worked in applied material. This fragment is unique, it was found near the Farm House on Schroda Farm.

10. Fragment with projecting boss surrounded with a double row of punctures in dark grey paste containing quartz fragments, black burnish inside and outside. From collection in Transvaal Museum.

11. Ring base of a large pot, in dark brown coarse paste. The base is formed with a projecting ring $4\frac{7}{8}$ in. in diameter and was the only one of its kind taken. From Excavated Area, trench JS 2*b*.

12. Pedestal base. In grey paste; it is black burnished on both interior and exterior surfaces and probably formed part of a bowl. Cf. pl. xxv, 4. From Excavated Area, trench JS 2*b*.

13. Flattened base of a pot. In coarse gritty grey paste burnt to yellow ochre on surface which is finished matt. From Excavated Area, trench JS 2*b*.



I12-2

PLATE XXXI

1. Probably a bowl cover, 6½ in. over the rim and 3 in. deep. In grey paste with a black burnish to all surfaces. The rim is rounded and flared; the bowl shows the characteristic central lump caused by the use of a whirler. The "saucer" was run round the bowl after the latter had been made. From Western Midden. Class M_2.

1*a*. Spoon, in grey paste with a black burnish. From wall 1, trench JS 2*a*.
A similar piece was taken in Bambandyanalo Trial Trench. Class M_2.

2. Model of a shallow bowl, 3½ in. over the rim and 1 3/8 in. deep. In grey paste with a yellow burnish. The rim has a lightly scratched band on the outside. From Excavated Area, trench JS 2*b*.

3. Roughly made model bowl. From Bambandyanalo Grave Area.

4. Roughly made model pot. From Western Midden.

5. Model pot, with projecting band. Finished with a black burnish. From Western Midden.

6. Model pot, with projecting lug. From Bambandyanalo Grave Area.

7. Shouldered pot, reconstructed, 4¾ in. over the rim by 7¼ in. deep. In fine ware finished a brindled matt. The rim is rounded and slightly everted. The neck was decorated with a roughly made band of impressions from a fine wire bangle on the wet clay. Bambandyanalo Grave Area, Burial 2 (P 32). Class M_2.

8. Shouldered pot, 4⅞ in. over the rim and 6¾ in. deep. In coarse ware finished with a brindled burnish. The rim is roughly rounded and slightly everted. The neck has roughly made string marks and two large lugs which were applied after the pot had been moulded. Bambandyanalo Grave Area, Burial 2 (P 34). Class M_2.

9. Shouldered pot, 4½ in. over the rim and 6 in. deep. In coarse ware with a brindled burnish. The rim is vertical, tapered and rounded. The neck is slightly thickened on the outside and its junction with the body is covered with a roughly made bead moulding decorated with diagonal comb marks. The shoulder has a band of rough triangles made on the wet clay with a comb. From Excavated Area, trench JS 2*b* (P 22). Class M_2.

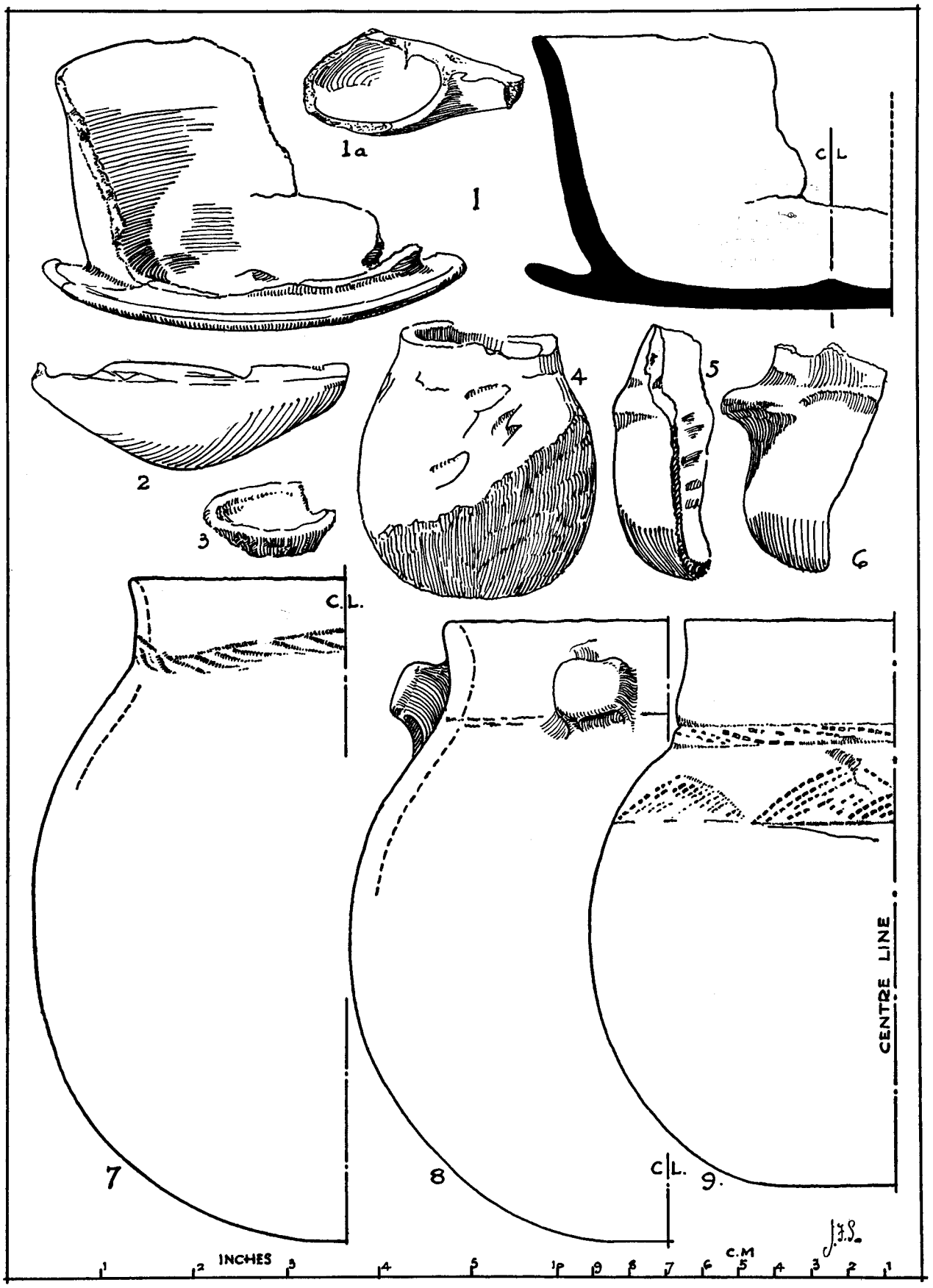


PLATE XXXII

Class M_3

1. Carinated pot, about 7 in. over the rim. In gritty sepia paste, burnished on the outside and coloured red and smoothed on the inside: the rim is rounded, directly below the rim is

(1) A band of graphite burnish,
(2) A band of herring-bone hatching,
(3) A band of graphite burnish,
(4) A band of alternating black and red triangles,
(5) A line of diagonal strokes,
(6) A band of graphite burnish,
(7) The remainder of the pot appears to have been coloured red.

From Western Midden.

1*a*. Similar to No. 1, but graphite burnished all over the outside. (Not illustrated.)

2. Bowl with vertical sides, 8 in. over the rim. In gritty light brown paste burnished purple on the interior. The rim is slightly bevelled and rounded. The exterior was decorated with a wedge-shaped area of herring-bone hatching, bounded by a line of dots all coloured a yellow ochre. There are two small bosses below the rim. The remainder of the bowl is burnished purple. Decoration worked on wet clay. From near Baobab Tree, kopje to north of Mapungubwe.

2*a*. Fragment of a similar bowl from trench JS 3. (Not illustrated.)

2*b*. Fragment of a similar bowl from base of wall 3, trench JS 2*a*. (Not illustrated.)

3. Smaller bowl, surfaces finished light brown matt. From 69·50 ft. level in "Bowl", trench JS 6.

4. Probably large shouldered pot. In gritty grey paste burnt to a light brick red, finished smooth. Rim rounded with cuts on the outside, below this is a band of irregular diagonal hatching finished with a line of small deeply punctured cuts. Decoration made on wet clay. From surface, Hilda Kopje.

5. Shouldered pot, about 8 in. over the rim. In very gritty grey paste with matt finish to surface. The rim is rounded and the neck is decorated with a band of herring-bone hatching 2 in. wide. Decoration made on wet clay. From Excavated Area, trench JS 2*b*.

6. Rough bowl, about 6 in. in diameter. In coarse ware, rounded rim, decorated with line of deep cuts on the wet clay. From Excavated Area, trench JS 2*b*.

7. Pot, 6 in. over the rim. In coarse grey paste burnt to a brick red at surface and finished matt. The rim is rounded and bent outwards and decorated on the exterior with a line of triangular punctures. The short neck has a line of diagonal hatching below which is a single horizontal line. All decorations were cut on the wet clay. From below the cement floor of Rock Shelter 1, Parma Kopje.

8. Fragment. Dark grey paste, grey burnish on the outside, smooth on the inside. Decorated with chevrons formed with dots on the wet clay. From Mapungubwe Grave Area, Excavation No. 00.

9. Fragment of a large bellied pot, in coarse grey paste finished with a matt sepia surface. The shoulder decorated with an applied band with cross cuts made on the wet clay. From Western Midden.

10. Shouldered pot, 8 in. over the rim. In gritty grey paste, burnished dark brown outside and smoothed and coloured red on the inside. The rim is rounded, bent outwards and decorated with a band of deeply cut herring-bone, which is extended down the neck at intervals From Excavated Area, trench JS 2*b*.

11. Shouldered pot, in all respects similar to No. 8. From Excavated Area to east of trench JS 1.

12. Carinated pot (small), about 5 in. over the keel. In dark grey paste, burnished dark brown or black below the keel; above the keel it is finished red with matt surface. A narrow band of diagonal cross-hatching runs round the pot above the keel. From Excavated Area, trench JS 2*b*.

13. Rim of a bowl, 6 in. in diameter. In a gritty grey paste, the surface finished with a brown burnish. The rim is rounded and slightly everted. The shoulder was decorated with a diagonally hatched inverted triangle incised with wide lines on the wet clay in a very good style. From trench JS 1, 60–70 × 2 × 2 ft.

Note. Graphite burnish is indicated by light vertical hatching. Red colour is indicated by light horizontal hatching.

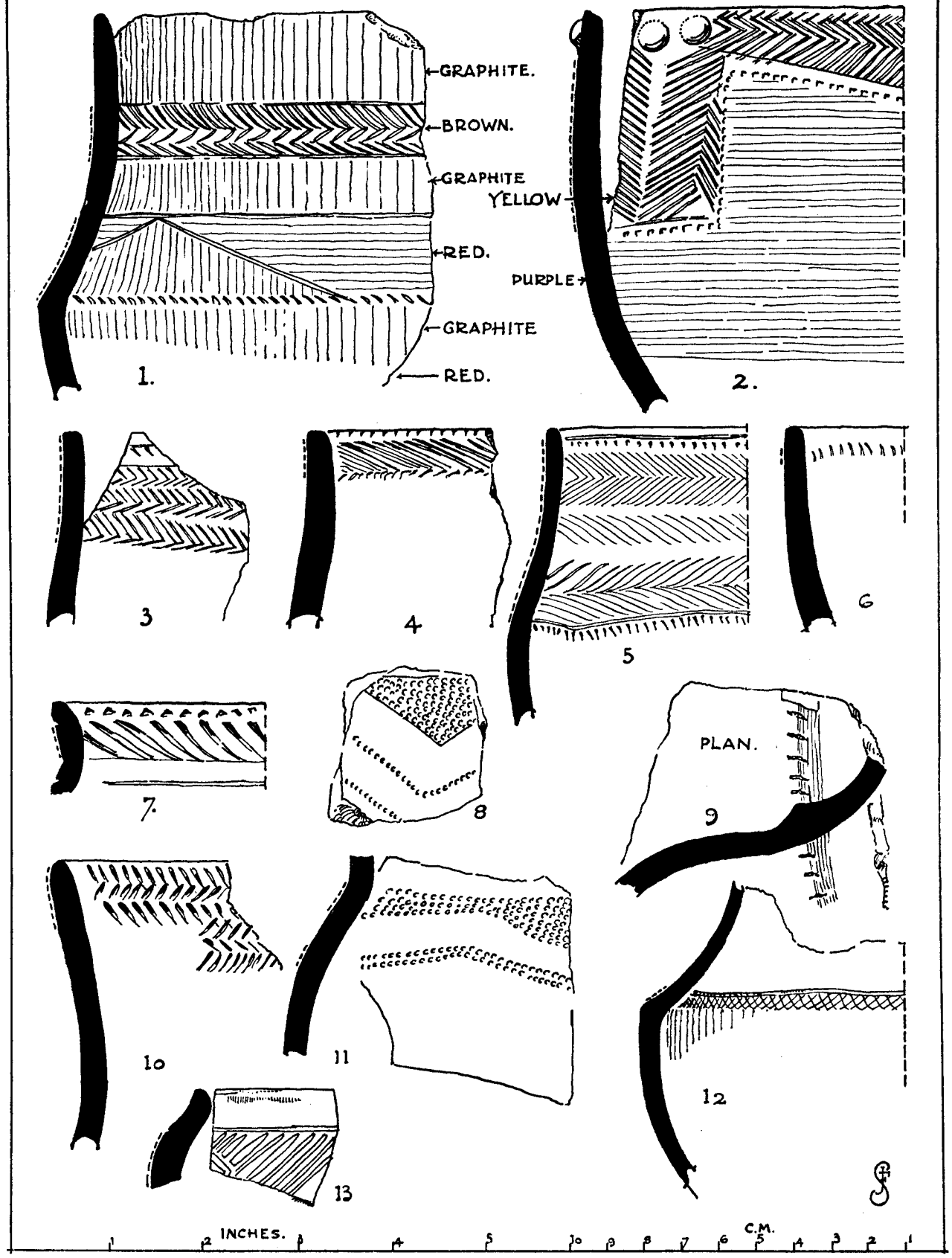


PLATE XXXIII

RIET, SIBSEY AND MALANGA

1. Shallow bowl, 10 in. over the rim by 2¾ in. in depth. In a very gritty dark grey paste enclosing large fragments of quartz, finished with a black burnish internally and with a smooth surface externally. The rim is rounded and everted and joins the body at an angle. The decoration of a diagonally cross-hatched band was cut round the shoulder and had been rubbed over before the ware was burnt. From Riet Farm.

2. Bowl, about 10 in. over the rim. In a gritty grey paste finished with a smooth yellowish grey surface inside and outside. The rim is thickened and rounded on the inside and slightly everted. The decoration consists of a line of inverted diagonally hatched triangles cut on the wet clay just below the rim externally. From Riet Farm.

3. Bowl, about 10 in. over the rim. In a very gritty light grey paste, burnt to a brick red on the surface which is finished matt. The colour is probably due to a secondary burning. The rim is rounded and slightly everted. The decoration, consisting of a diagonally cross-hatched triangle, was pressed with a smooth implement into the wet clay. From Riet Farm.

4. Bowl, about 12 in. over the rim. In a very gritty light grey paste with a yellowish grey matt surface. The rim is bent inwards, rounded and slightly everted. The decoration, consisting of a rough cross-hatching, was cut on the wet clay just below the rim externally. The sherd was bored after burning, probably to repair it; the hole has a slightly "hour-glass" section.

5. Fragment of a shouldered pot, about 8 in. in its greatest diameter. In a light grey gritty paste which includes large particles of quartz, the surface is a light buff with a matt finish. The shoulder was decorated with a diagonally cross-hatched band cut on the wet clay. From Riet Farm.

6. Fragment of a large shouldered or bellied pot; in a coarse grey paste finished externally with a greyish yellow matt surface. The shoulder was decorated with a boldly incised band of diagonally hatched inverted triangles on the wet clay. From Riet Farm.

7. Fragment, in coarse grey paste which includes visible particles of quartz, finished externally with a smooth blackish surface. The decoration of lines and punctured impressions was made on the wet clay. From Riet Farm.

8. Fragment of a large shouldered pot, about 10 in. in diameter at the shoulder. The paste is dark grey, very gritty, coarse and badly burnt. The interior is a dark grey and smooth, the exterior is finished with a pinkish buff matt surface. The shoulder was decorated with a line of diagonally cross-hatched inverted triangles roughly cut on the wet clay. From Riet Farm.

9. Fragment of a large shouldered pot; in coarse light grey paste, which includes visible particles of quartz; the surface is light buff and apparently weathered. The shoulder was decorated with large inverted hatched triangles made on the wet clay in a very bold, free style. From Riet Farm.

10. Bowl, about 12 in. over the rim. In fine grey paste, finished with a greyish black burnish on the surface. The rim is moulded, slightly everted; below the rim is a band of hatching, cut on the wet clay in very good style. From Sibsey Farm.

11. Bowl, about 5 in. over the rim. In fine grey paste with a black burnish to the surface. The rim is thickened on the inside and rounded with a slight projection on the outside. From Sibsey Farm.

12. Bowl, about 10 in. over the rim; in fine grey paste with a black burnish internally and a grey burnish externally. The rim is thickened and rounded on the inside and finished with an arris on the outside. From Sibsey Farm.

13. Rim fragment, probably from a large shouldered bowl. In grey paste finished with a black matt surface. The rim is rounded and slightly everted externally. From Sibsey Farm.

14. Rim of a shouldered pot, about 6 in. over the rim. In a fine grey paste, finished with a black burnish to the surface. The rim is rounded and slightly flared. From Sibsey Farm.

15. Fragment of a shouldered bowl, about 12 in. in diameter. In grey paste, finished with a black burnish to the surfaces. The shoulder was decorated with a band of diagonal cross-hatching on the wet clay. From Sibsey Farm.

16. Fragment of a large shouldered pot. In coarse grey paste with a grey burnished surface externally. The shoulder was decorated with a band of diagonally hatched triangles pressed into the wet clay. From Sibsey Farm.

17. Fragment of a shouldered pot. In coarse gritty grey paste, finished externally with a light grey burnish. The shoulder was decorated with a line of inverted diagonally hatched triangles cut on the wet clay. From Sibsey Farm.

18. Fragment of a shouldered pot. In gritty grey paste with black matt surface on both sides. The shoulder was decorated with a line of inverted diagonally hatched triangles cut deeply on the wet clay. From Sibsey Farm.

19. Fragment of a shouldered bowl. In grey paste with a black burnish on both sides. The shoulder was decorated with a large hatched triangle, the lines were pressed into the wet clay. From Sibsey Farm.

20. Rim of a small shouldered pot, 4 in. over the rim. In a grey paste with a black burnish on the outside and a grey burnish on the inside. The rim is rounded, flattened, slightly everted and the neck is curved outwards. From Sibsey Farm.

21. Fragment of a shouldered bowl. In grey paste with a black burnish on both sides. The shoulder was decorated with hatching on the wet clay in a neat style. From Sibsey Farm.

22. Rim of a spherical pot. In a coarse light grey paste, the surfaces are smooth and of a light buff colour. The rim is squared and angle rounded. The edge of the rim is decorated externally with a line of diagonal cross-hatching. From Riet Farm.

23. Rim of a bowl. In fine grey paste with a grey burnish internally, and a grey burnish externally below the lip which is burnished with graphite. The decoration of hatched lines was cut on the wet clay in a very good style. From Malanga.

24. Fragment. In coarse gritty grey paste, outside finished matt with a graphite burnish, and decorated with a hatching of lines formed with small dots. From Malanga.

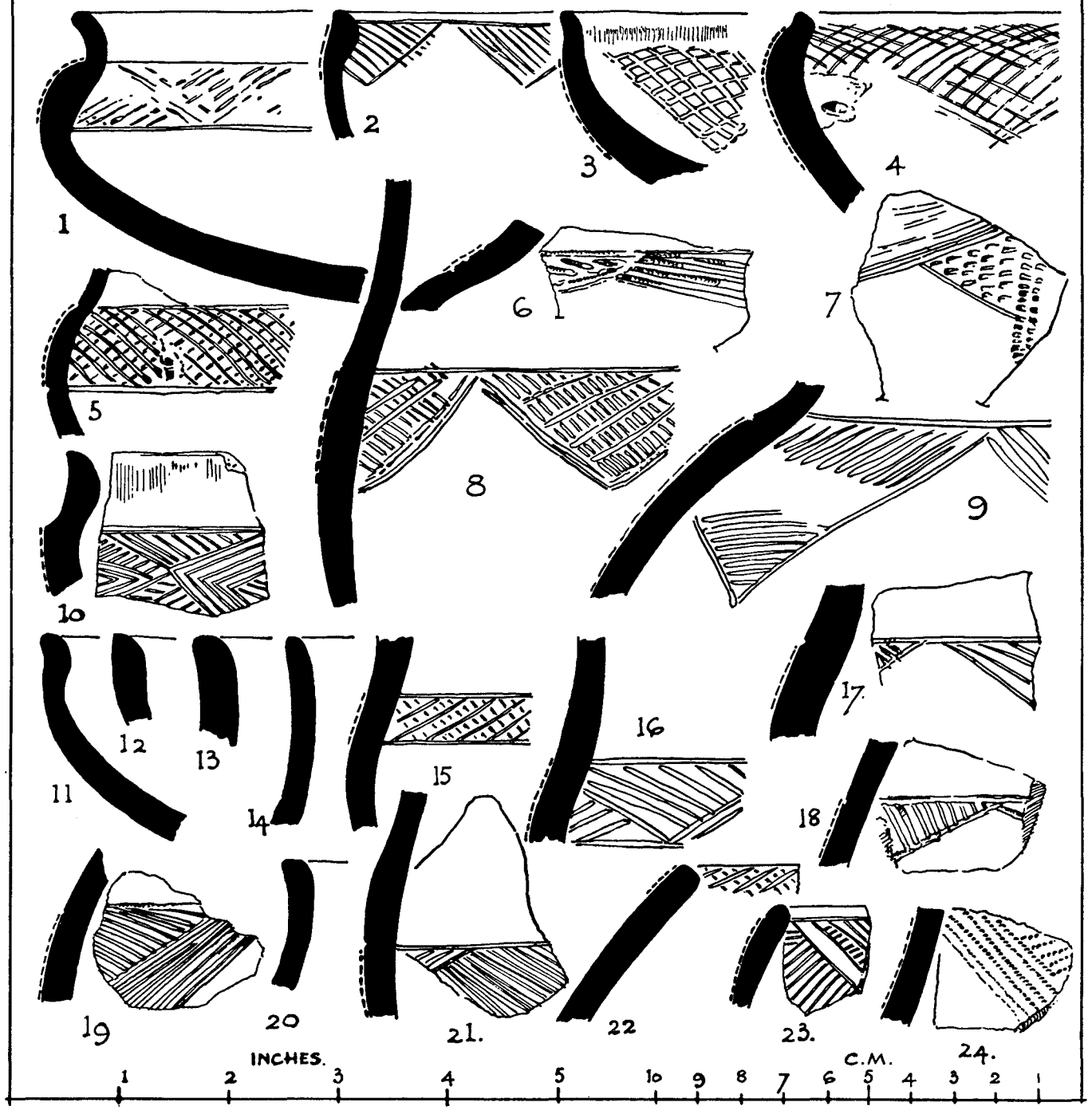


PLATE XXXIV

DZATA, MARYLAND AND HADDON

Dzata.

1. Large spherical pot in a light buff paste. The rim is finished with a roll, directly below the roll is a band of diagonal cross-hatching coloured buff; the remainder of the sherd is decorated with diagonally hatched triangular panels coloured red, separated from each other and from the hatched band by plain surfaces or bands, burnished with graphite. The roll and the interior of the pot down to the level of the lower edge of the hatched band are similarly burnished, the remainder of the interior is buff. All the decoration was cut on the wet clay. This is a typical example of "Band-and-Panel" decoration. Class V_1.

2. Similar ware but with the panels coloured buff. Class V_1.

3. Fragment, probably of a spherical pot, in a light buff paste, finished externally with a graphite burnish above the hatched band, the remainder is coloured red, probably the result of secondary firing. The hatched band was cut roughly but boldly on the wet clay. Class V_1a.

4. Fragment of coarse gritty ware, similar to the last but without the graphite burnish. Class V_1a.

5. Fragment of a diagonally hatched band, the lines were cut on the wet clay in a very good style. The paste is a light buff colour, the outside red and the inside black. Class V_1a.

6. Fragment of band-and-panel decoration, cut on the wet clay. The panel is roughly hatched, it appears to have been divided diagonally and is of a light buff colour. The bands are burnished with graphite. The paste is a light buff and very gritty, the interior is smoothed. Class V_1.

7. A bowl, 6 in. over the rim, in a gritty light buff paste, the exterior is burnished with graphite and the interior left rough. The rim is rounded and the exterior is decorated with a band of herring-bone hatching, probably cut after burnishing. Similar to Class M_2.

8. A bowl, about 6 in. in diameter, in gritty black paste burnt to a brown at the surface, which appears to have been burnished with graphite on both sides. The exterior shows a diagonally hatched triangle cut on the wet clay. Similar to Class M_2.

9. A large bowl, probably 10 in. over the rim, in a very gritty buff paste. The rim is bevelled towards the interior with a rounded projection on each side. The exterior is decorated with a band of diagonal hatching with wide smooth lines on the wet clay. The surface of the bevel had similar work on it. The band was left a dark buff, and the remainder of the rim and the interior was burnished with graphite.

10. A spherical pot, 6 in. over the rim, in a gritty black paste burnt to a brown at the surface, the interior is smoothed and the exterior finished matt. The rim is rounded to the inside and projects slightly on the outside. An inch below the rim is a roughly hatched band, with a hatched panel running up to the rim, part of the panel hatching was engraved after burning, and the remainder was done on the wet clay. Class V_2.

11. A spherical pot, about 6 in. over the rim, in a gritty brown paste. The rim is squared with a slight burr on the outside, $\frac{3}{4}$ in. below the rim is a band of counter-hatched triangles lightly cut on the wet clay, finished a light red. The remainder of the surface, both inside and outside, was burnished with graphite. Class V_1a.

12. Similar to the last. The rim is cut square and slightly rounded on both sides. The hatching is much coarser and comes directly under the rim. The exterior of the pot is light red and the interior, including the edge of the rim, was burnished with graphite. Class V_1a.

13. Fragment of the rim of a bowl or spherical pot, in gritty grey paste. The rim is tapered and squared, $\frac{1}{2}$ in. below the rim is a panel of counter-hatched triangles cut on the wet clay, which was left self colour, the remainder of the surface being graphite burnished. Class V_1a.

Maryland.

14. A shouldered pot, about 8 in. over the rim, in very gritty buff paste. The exterior is finished a self-coloured matt and the interior is much worn. The rim is everted and has an ogee section, the neck joins the body with a distinct break. Cf. *M.R.* pl. xi, 4. Class V_3.

15. Large pot, probably 8–10 in. over the rim, in a gritty light grey paste, burnt to a warm buff at the surface which is much worn. The rim is rounded and strongly everted. Class V_3.

16. Similar to the last, the surface is a light burnt umber colour and the outside was burnished with graphite. Class V_3.

17. Large pot, about 10 in. over the rim, in a coarse gritty light grey paste burnt to a buff at the surface, the interior is smoothed and the exterior is very rough. The rim is everted and the neck is tapered. The neck has been thickened on the inside in a similar manner to sherds from Penhalonga Pit Dwellings, collected by Mason and now in the Medical School, Witwatersrand University. Class V_3.

18. Rim of a large pot, about 10 in. in diameter, in a gritty brown paste finished with a light brown matt surface. The rim is rolled and everted, the neck is slightly thickened to the outside. Class V_3.

19. Rim of a pot, about 8 in. in diameter, in fine grey paste, finished with a graphite burnish externally and a light brown matt surface internally. Probably Class V_1.

20. Rim of a spherical pot, about 8 in. over the rim, in a gritty light grey paste, burnt to a light brick red. The exterior, including the upper surface of the rim, is burnished with graphite, the interior is smoothed. The rim is rolled, everted and undercut and slightly thickened on the inside. The exterior shows the part of a chevron scratched on the burnt pot and coloured a light brick red. Class V_1.

21. Fragment of a spherical pot, probably 13 in. in diameter in a gritty brick red paste, the interior is smooth and the exterior burnished self colour with the areas indicated by vertical hatching burnished with graphite. The large chevrons were cut on the burnt pot. Class V_1.

22. Fragment of a rim similar to No. 14 but surface was a light brick red matt finish. Class V_3.

23. Fragment of a rim of a shouldered pot similar to No. 20. Class V_1.

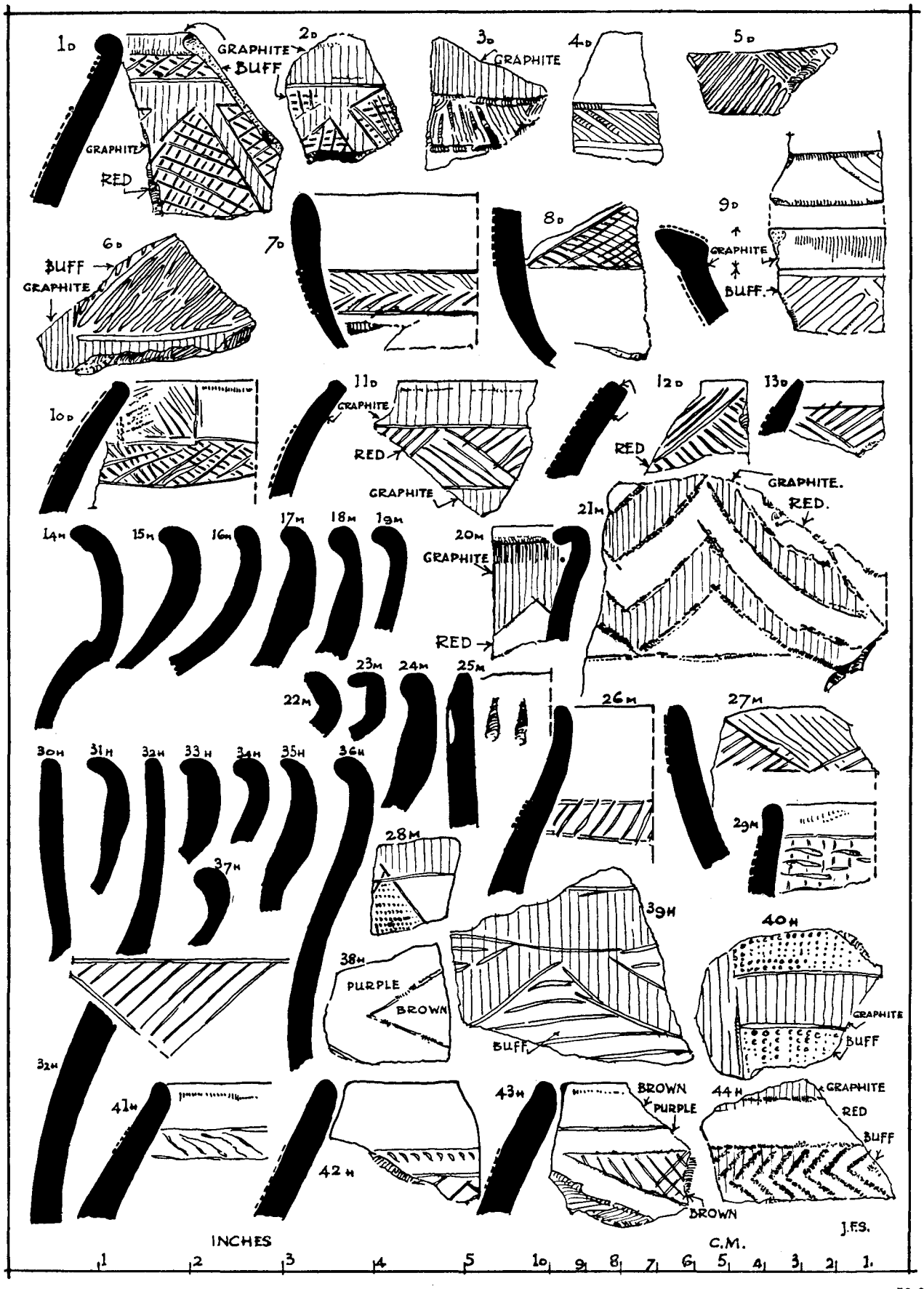
24. Fragment of a rim of a shouldered pot in a coarse gritty light brick-red paste, the interior is smooth and coloured grey, the exterior was probably finished with a black matt surface and has been accidentally burnt to a light brown. Class V_3.

25. Fragment of a vertically sided bowl, in a gritty coarse grey paste, with a roughly finished surface. The rim is tapered and the exterior was decorated with a line of rough slots, which were made in the wet clay. Probably Class P.M.

26. Shouldered bowl, 8 in. over the rim, in a gritty light grey paste, burnt to a light brown at the surface which is finished smooth. The rim is rounded and slightly everted, and the neck was decorated with a hatched band cut on the wet clay. Class V_2.

27. Bowl, 10 in. in diameter, in a gritty dark grey paste, the interior is burnished with graphite and the exterior is finished with a dark brown matt surface. The rim is rounded and decorated with a band of counter-hatched triangles scratched on the wet clay. Class V_2.

28. A fragment in a coarse gritty grey paste, the interior is finished with a smooth brown surface, the exterior shows parts of a band of triangles apparently plain red alternating with a decoration formed with the horizontal lines of impressions made with a string of small beads or a fine wire bangle. All made on the wet clay. The surface above the band was burnished with graphite. Class V_1.



13-2

29. A bowl, in a coarse gritty dark grey paste with a rough finish. The rim is rounded and slightly everted, the neck has a rough band of cross-hatching which was made on the wet clay. Probably Class P.M.

Haddon.

30. Neck of a shouldered pot, about 6 in. over the rim, in a gritty buff paste, smoothed internally and finished with a graphite burnish externally. The rim is rounded and the neck swells to the outside. This was the only example of this type of pot taken.

31. Similar to No. 19, but the ware is coarser. Probably Class V_1.

32. Shouldered pot, 6 in. over the rim, in a gritty light grey paste burnt to a buff at the surface which is much corroded. The rim is rounded and the neck inclines slightly outwards, the shoulder is decorated with a line of diagonally hatched inverted triangles cut on the wet clay. Class M_1, cf. pl. xviii, 18 and pl. xx, 10.

33. Fragment of a rim in a coarse gritty buff paste, smoothed on the inside and finished with a brown matt surface on the outside. The rim is roughly finished with a roll and is heavily reinforced on the inside. Class V_3.

34. Rim of a shouldered pot in a coarse gritty brown paste finished with a brown matt surface. The rim is rounded and everted. Class V_3.

35. A shouldered pot, about 6 in. over the rim, similar to No. 31, but rather coarser. The graphite burnish is carried round the neck internally. Class V_3.

36. A shouldered pot similar to the last but rather coarser, the surfaces are buff, finished smooth. The rim is not reinforced. Class V_3.

37. A fragment of a rim similar to the last, but more roughly finished. Class V_3.

38. A fragment in a coarse gritty light grey paste burnt to a light brown and finished smooth internally. The outside was decorated with a lozenge of light brown burnish separated by a line cut after burning from a matt purple field, the line at the lower left-hand corner was cut on the wet clay. This is the only example of this ware found.

39. A fragment in a coarse gritty light grey paste burnt to a light buff, the interior is a smooth self colour and the exterior is decorated with band-and-panel, the bands being burnished black and the panels horizontally hatched and finished self colour; the lines seem to have been filled in with a black plastic substance. All the lines of the decoration were cut on the wet clay. A similar fragment, but with bands and panels black burnished, was also taken. Class V_1.

40. A fragment of dark grey gritty paste burnt to a light buff at surface, the interior finished smooth. The exterior was decorated with graphite burnished bands and panels stippled with small round impressions and coloured a greyish buff. Class V_1. All lines and impressions were made on the wet clay. Several fragments of a similar ware in which the panels were coloured a purple brown were found, also one piece with both bands and panels were of the same purple colour. One fragment of this ware was found at Maryland. Class V_1.

41. A shouldered pot, 8 in. over the rim, in a coarse gritty black paste with a rough surface finish, the rim is rounded and slightly everted. A rough band of hatching was scratched on the wet clay just below the rim. Class V_2.

42. Fragment of the rim of a spherical or shouldered pot in a gritty light buff paste finished to a light brown matt surface externally and smoothed internally. The rim is rounded and the exterior seems to have been decorated with self-coloured bands and panels. Probably Class V_1.

43. Fragment of the rim of a shouldered or spherical pot in a light grey paste finished smooth internally. The rim is rounded and slightly everted. The exterior was decorated with band-and-panel, the bands are burnished a purple brown; the panel is diagonally hatched, coloured an unburnished brown; the space between the upper band and the rim, including the rim itself, is burnished brown. All the lines were cut on the dried clay. This piece resembles in some respects a fragment from JS 1, 60–70 × 2 × 2 ft. See pl. xxxii, 13. Class V_1.

44. A fragment in a gritty buff paste, the interior is smooth and buff coloured, the exterior is decorated with
(1) A band of graphite burnish,
(2) A band of vermilion red,
(3) A herring-bone band partly black and partly buff.
All the lines in the decoration appear to have been abraided on the burnt pot. This was the only piece found of this type of ware.

Note. A black burnished surface is indicated on this plate by light vertical hatching.

PLATE XXXV

PARMA (THIRD PHASE), RATHO, HILDA, SHIRBEEK, ISLET, SINGALELE

1. Bowl, 9½ in. over the rim, in light brown paste. The rim is flattened and rounded with a slight projection on the outside. A band of cross-hatching cut on the wet clay, 1 in. wide, ran round the outside ⅜ in. below the rim. With the exception of the band, which was a light brown, the exterior to a distance of 3½ in. below the rim was coloured and burnished purple. Below this the surface was finished smooth to a light brown with a vertical strip of purple. The inside was finished light brown with the exception of a 1⅜ in. band of purple directly below the rim. From Parma Kopje, Rock Shelter 2. Class P.M.

2. Bowl, 9 in. over the rim by 4⅝ in. in depth. In a gritty grey paste burnt to a grey brown at the surface. The rim is rounded and the exterior was decorated by a line of ten roughly hatched loops cut on the wet clay. With the exception of the loops (which are self coloured) the exterior was burnished black to an indefinite distance below the rim. From surface, Parma Kopje. Class P.M.

3. Bowl, about 6 in. over the rim, in a light grey gritty paste burnt to a light brick red at the surface which is finished smooth. The rim is rounded and the exterior was decorated with a band of hatching roughly cut on the wet clay. From surface, Parma Kopje. Class P.M.

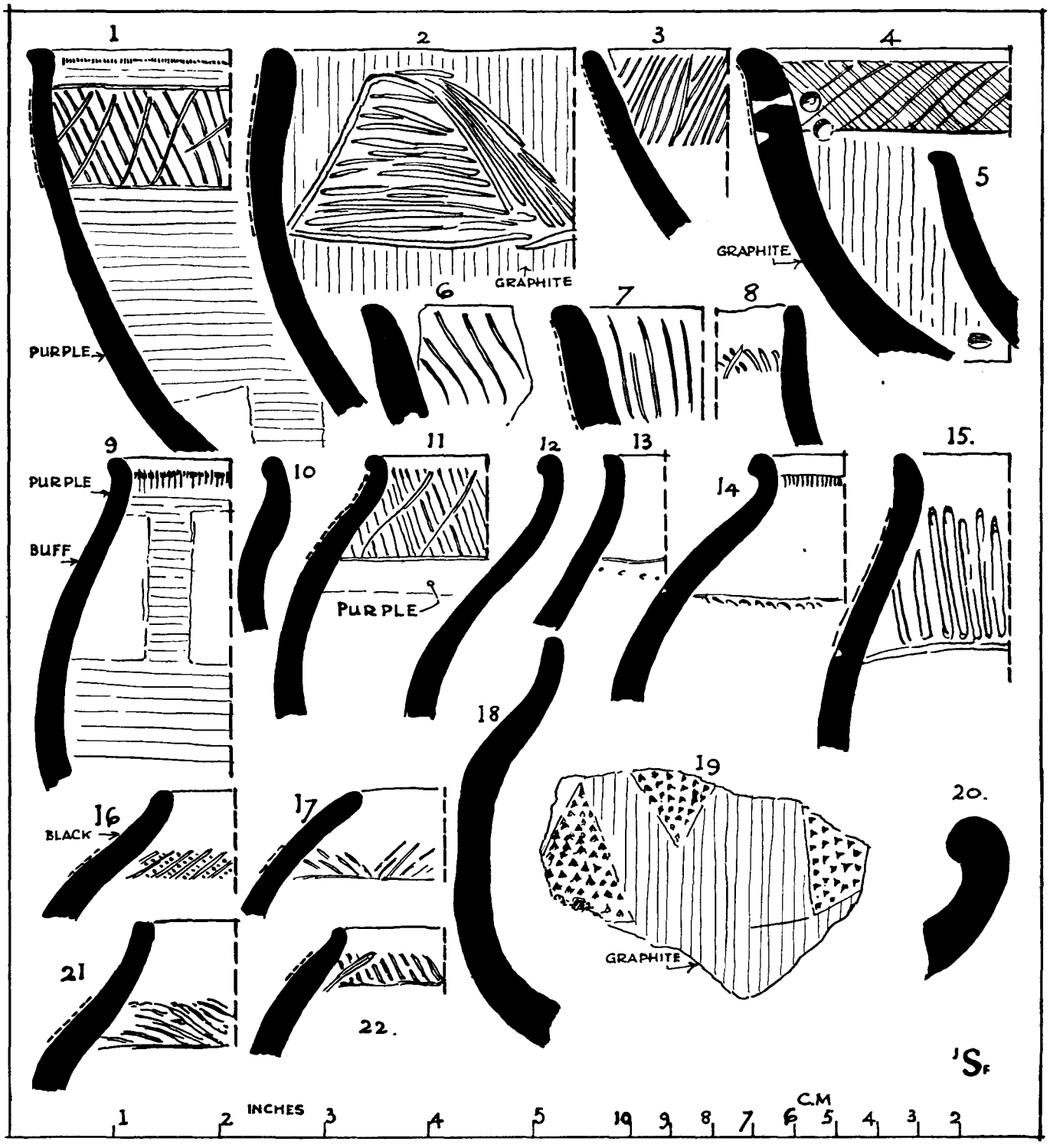
4. Bowl, 10 in. over the rim, in a light grey sandy paste. The rim is rounded and everted and decorated with a band of diagonal cross-hatching on the outside. The band is a light brown colour, unburnished, the surface below the band was burnished with graphite, the inside had a brindled matt finish. Three repair holes had been made in this sherd, the upper and the lower had been pierced, the middle one had been left unfinished. From Shirbeek. Class P.M.

5. Bowl, about 6 in. over the rim. In a gritty grey paste burnt to a brown at the surface which is smoothed. The rim is flattened and rounded with a slight projection on the outside. From Hilda Kopje. Class P.M.

6. Bowl, about 10 in. over the rim. In light grey gritty paste burnt to a light brown at the surface. The rim is rounded and slightly everted, below the rim a band of hatching was cut on the wet clay. The interior was burnished a deep red, the band is self colour, unburnished. From surface, Parma Kopje. Class P.M.

7. Similar to last but the interior has a black burnish. From surface, Parma Kopje. Class P.M.

8. Bowl, 6 in. over the rim. In poor grey paste smoothed on the outside and rough on the inside. The rim is rounded



and slightly everted, the exterior was decorated with a line of rough hatching on the wet clay. From surface, Parma Kopje. Class P.M.

9. Shouldered pot, about 4 in. over the rim, in a light grey paste burnt to a buff at the surface which was finished matt on the outside and smooth on the inside. The rim is rounded and everted. The rim on both sides is coloured purple, a band of purple an inch wide ran round the belly, a vertical strip $\frac{3}{4}$ in. wide of the same colour ran between this band and the rim. The parts coloured were burnished. From surface, Parma Kopje. Class P.M.

10. A fragment of a shouldered pot similar to the last but the rim is thickened internally and the exterior was burnished with graphite. From surface, Ratho Kopje. Class P.M.

11. Spherical pot, $5\frac{1}{2}$ in. over the rim and 5 in. deep. In a gritty black paste burnt to a sepia at surface which is finished smooth. The rim is rounded, everted and rolled; the exterior was decorated with a hatched band immediately below the rim, below this was a $\frac{3}{8}$ in. band of purple burnish. From surface, Ratho Kopje. Class P.M.

12. Spherical pot, about 10 in. over the rim. In a gritty black paste burnt to a sepia at surface which is finished matt on the outside and smooth on the inside. The rim is rounded, everted, rolled and slightly undercut. From Islet. Class P.M.

13. Fragment of a spherical or shouldered pot. In a dark grey gritty paste burnt to a light brown at surface, finished as last. The rim is flattened and rounded on the inside. The shoulder was decorated with a line and small deep impressions on the wet clay. From surface, Parma Kopje. Class V_2 or P.M.

14. Spherical pot, about 10 in. over the rim. In a gritty light grey paste burnt to a light buff at surface, the outside is finished matt and the inside smoothed. The rim is rounded, everted, rolled and undercut, and the shoulder was decorated with a line of impressions on the wet clay. Class V_2 or P.M.

15. Large spherical pot, in a coarse gritty brown paste. The rim is rounded on the inside, and the shoulder was decorated with roughly drawn hatching cut on the wet clay. The exterior with the exception of the hatching and the interior of the neck is burnished brown. From Ratho. Class P.M.

16. Spherical pot, 6 in. over the rim. In a coarse grey paste finished smooth outside and to just below the neck inside. The rim is rounded and slightly everted, the shoulder was decorated with a band of diagonal cross-hatching cut on the wet clay. The neck between the rim and the band was coloured black. From Shirbeek. Class V_2 or P.M.

17. Spherical pot, 6 in. over the rim. In a gritty light grey paste, burnt to a light brown with a matt finish on the outside. The rim is rounded and the shoulder was decorated with a line of hatching cut very roughly on the wet clay. From Shirbeek. Class V_2 or P.M.

18. Shouldered pot, 4 in. over the rim and about $4\frac{1}{4}$ in. deep. In very coarse gritty light grey paste burnt to a greyish buff at the surface which is rough on the inside and smooth on the outside. The rim is rounded. From Islet. Class P.M.

19. Fragment, probably from a spherical pot. In a gritty grey paste burnt to a light grey. The exterior was decorated with triangles stippled with triangular impressions which were left self colour, the areas between being burnished with graphite. From Singalele. Perhaps Class V_1.

20. Fragment of a rim, probably of a large spherical pot. In a coarse gritty light grey paste, the interior is a pinkish buff, the exterior light grey, both have a matt surface. The rim is rounded and rolled. From Hilda Kopje. Class V_2 or P.M.

21. Rim of a shouldered or spherical pot. In coarse light grey paste burnt to a light brick red at the surface; the exterior is finished matt and the interior is smoothed. The rim is flattened and slightly rounded on both sides. The shoulder was decorated with a band of very rough hatching in the wet clay. From Islet. Class V_2 or P.M.

22. Fragment of the rim of a spherical pot. In a gritty paste, the surface is finished matt, the outside being greyish and the inside black. The rim is rounded on the inside and slightly everted, and just below it is a band of hatching roughly cut on the wet clay. From Islet. Class V_2 or P.M.

Note. Graphite burnish is indicated by light vertical hatching. Purple burnish is indicated by light horizontal hatching.

PART IV

THE BEADS OF THE MAPUNGUBWE DISTRICT

The beads sent over by Mr Neville Jones are made of several different materials. Many are from Mapungubwe itself, whilst others come from allied sites.

The different sites have letters allotted to them. All the sites in Mapungubwe itself have letters between A and P, whilst the allied sites have letters between Q and X. There is no L.

The report, which treats of the beads in order of their materials, is divided into the following sections:

Introduction.	Shell beads.
Small glass beads.	Stone and pottery beads.
Large glass beads.	Conclusions.
Beads from Shirbeek (V).	Additional note.
Metal beads.	Note on beads from Dzata.

Introduction

List of strings of beads sent

A_1	Mapungubwe	JS 2*b* area. Glass.
A_2		JS 2*b* area. Shell.
B	Mapungubwe	From a site on the south side of the hill. This site is the latest occupational area.
B	Mapungubwe	JS 2*a*. From a burnt hut floor and older than A. These beads (red, blue and black only) were found in great quantities.
C	Mapungubwe	JS 2*a*. Below top cement (?) floor. From the floor below B, and associated with a great quantity of burnt ostrich egg-shell beads.
D_1	Mapungubwe	JS 2*a*. Rock bottom.
D_2		JS 2*a*. Midden. From the 8 ft. midden below the later occupation layers. Older than C. It will be noticed that those beads which came from rock bottom are separately threaded.
E	Mapungubwe	JS 1. Rock bottom 20–60 ft. From a trench (JS 1) on the summit of the hill. From bed rock at a depth 4–6 ft. from ground level.
F	Mapungubwe	JS 1. Second level. From trench JS 1. On summit. 2–4 ft. from ground level.
G	Mapungubwe	No label. From trench JS 1 on summit. Surface to a depth of 2 ft.
H	Mapungubwe	From trench JS 4 in association with large gold beads, and within 12 in. of the surface.
I	Mapungubwe	Mahobe's trench. From what is known as Mahobe's Kraal site, the tradition being Mahobe, the reputed sister of Mapungubwe, lived there. There are no apparent evidences of its having been occupied any later than the occupation area (see A).
J	Mapungubwe	Bowl 8 ft. below datum level. As these beads would have fallen in when the bowl was open to bed rock, they are probably the earliest on the site. They owe their freshness to having been buried in the sand which was evidently carried up the hill and thrown in in order to level up the surface. From the "Bowl", a basin-like depression on the summit of the hill (north-east).
K	Mapungubwe	No label. From the grave area at the summit, at which a hoard of gold was found last year. Note the beads contained in envelope H came from a trench a few yards to the north-east.
M_1	Mapungubwe	No label.
M_2		Gold pellet in bottle. These beads were found together and in considerable quantities. With them was the small pellet of gold, enclosed. From the summit of the hill in the grave area.
N	Mapungubwe	N. Talus (west). From the western Talus which has received material from the grave site on the summit.
O	Mapungubwe	No label. Beads found with skeleton 5, grave area.
P	Mapungubwe	Beads from the grave area associated with burials.
P_1		Bambandyanalo, burial 3.
P_2		Grave area, skeleton 1.
P_3		Grave area, pot 1.
P_4		Grave area, pot 2.
P_5		Burial site.

Other sites

Q	Bambandyanalo	
Q_1		Bambandyanalo, trench 2.
Q_2		Midden.
Q_3		Burial 1.
Q_4		Grave area.
Q_5		Burial 3.
R	Maryland	A copper smelting site with two walls of Zimbabwe type.
R_1		From the wall area.
R_2		From a much later occupation area at the foot of the hill on which the ruins stand.
S	Haddon	In enclosed area with Zimbabwe type walling.
T	Singalele	A kopje where copper smelting has formerly been extensively carried on.
T_1		Found in a pot lodged in a crevice.
T_2		From occupational area.
U	Islet	Associated with late walling.
V	Shirbeek	An old Bavenda kraal vacated within the last 50 years. An old Bavenda woman, when shown these, said that they were beads worn by the Shangaans.
W	Ratho	Associated with late walling.
X_1	Parma	Late walling. Sieved from occupational area.
X_2		From Midden Pit.

Small Glass Beads

The small glass beads vary a good deal in size. Most of them have a diameter of from 0·10 to 0·15 in., and a length of about the same amount. Some of the smaller ones have a diameter of only 0·07 in. and a length of 0·08 in., whilst some of the larger ones have a diameter of 0·18 in. and a length of 0·20 in.

The beads are almost exclusively cane beads[1] and the shapes vary from roughly cylindrical to spherical. The cross-section of the beads is almost always circular, and when this is not the case the deviation from the true circle is only accidental.

The beads are fire polished. They do not show signs of any subsequent grinding or polishing, a method sometimes employed to alter the shape. In this they differ from the Matabele heirloom beads, many of which have an axe-shape cross-section, and have the original surface of the bead ground away (see Thaga Matabele beads in Kimberley Museum).

There are numerous small glass beads on nearly all the strings sent, whether from Mapungubwe itself or from the associated sites. Critical examination of these beads for several weeks makes me think that there is a real difference between the beads from Mapungubwe and those from the other sites, the former being much more nearly allied to the beads from Zimbabwe.

The string V from Shirbeek seems to me altogether more recent than the remainder. There are a number of beads on it obviously of modern manufacture, some are of a type I have not seen before on strings from Africa, and others are identical with beads now being sold in Bechuanaland. A further note on this string is given later.

In order to examine the differences between the distribution of the various kinds of beads, I have made a chart showing how the 2000 odd beads sent for examination have been arranged, and the percentages of the different kinds sent. Below this is the percentage of similar beads found in the bed-rock layer at Zimbabwe. Later I shall show that there are some striking similarities between the Zimbabwe and Mapungubwe beads and some equally striking differences.

The beads sent over for examination are not the complete number found, nor have they necessarily the same percentage of the different types the total number found would have, but the chart forms a rough index which becomes specially important when similar beads are found in numerous sites. For instance, the Indian red beads are discovered in all the sites of Mapungubwe itself except M, O and P.

The difference between pale blue and pale green has not been very carefully made. The changes of colour are quite gradual. Most of the beads entered on the chart as green have a very decided green colour. Another examiner would probably have made a difference in this division.

To test the kind of glass used I decided to take the specific gravity of one of the strings. I selected J from the "Bowl" and got the following result:

	2·37 to 2·45	2·45 to 2·5	2·5 to 2·55	2·55 to 2·6	2·6 to 2·65	2·65 to 2·68	Over 2·68	Total
Indian red	—	4	1	3	1	—	—	9
Dark blue	—	—	—	8	—	—	—	8
Pale blue	—	—	—	1	17	—	—	18
Black	3	3	—	13	1	—	—	20
Colourless	—	—	—	—	—	—	1	1
Yellow	—	—	—	—	—	6	2	8
Orange	—	—	—	—	—	—	3	3
Total	3	7	1	25	19	6	6	67

Other beads tested at various times seemed to confirm this result. This shows that the great majority of the beads have a sp.gr. of between 2·55 and 2·65 and therefore contain little, if any, lead. The heaviest specimens, some of the yellow and the orange, are only just over 2·68.

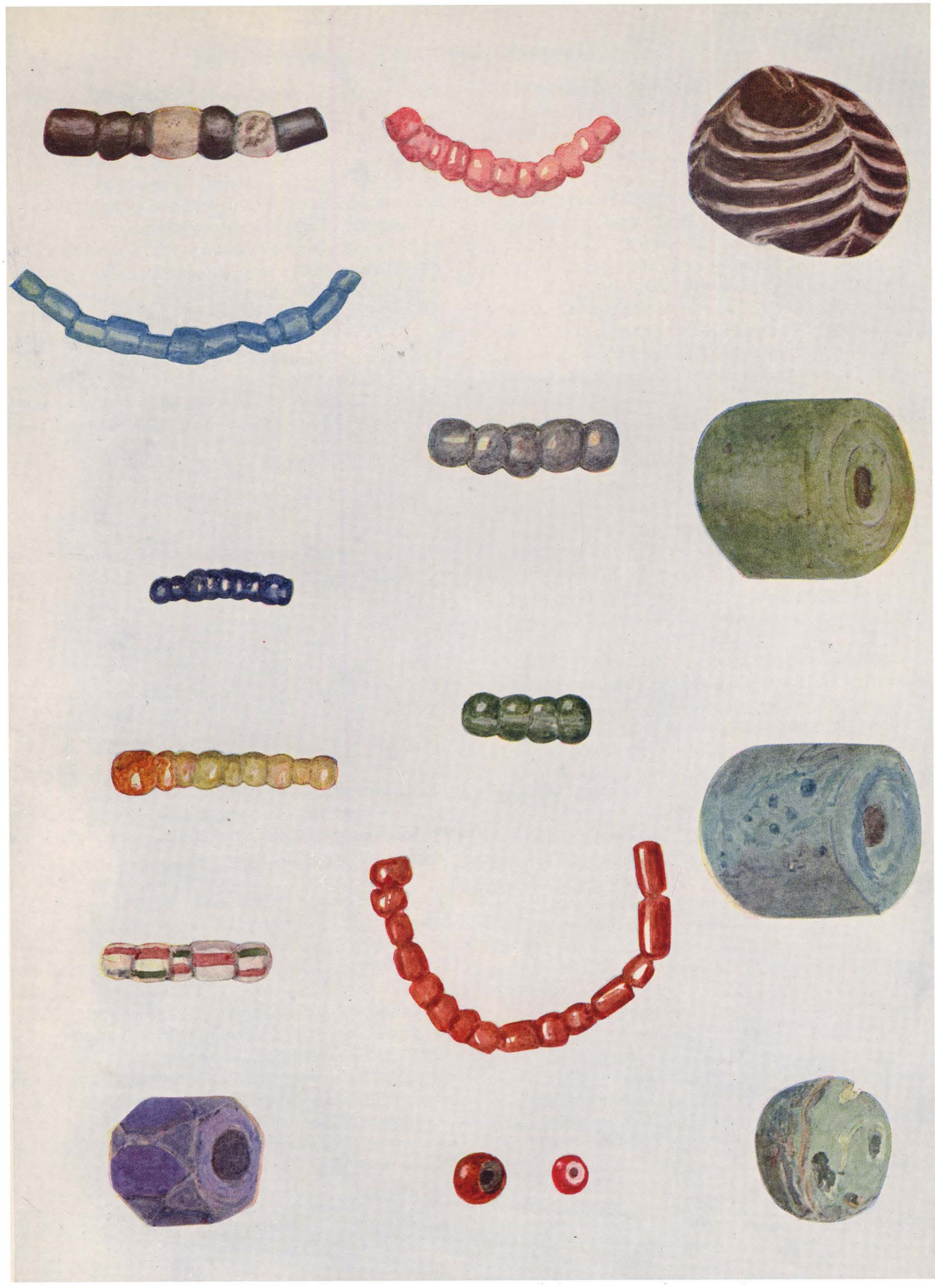
Some very similar beads from Zanzibar with a sp.gr. of 2·6 contained 5 per cent of lead and 56 per cent of silica.

I will now discuss the beads according to their colour and after that make some comparisons between beads from Mapungubwe and Zimbabwe.

The black glass beads. Two different materials have been used for colouring the glass of which the black beads have been made. One material is probably iron which gives the colour of green, through brownish green to brown. Frequently the colour is very unevenly mixed with darker and lighter veins twisted together, but it extends to the centre of the bead (see pl. xxxvii, 1, 2).

The second material used gives a purple colour and

[1] Glass beads are divided into two main groups according to the method of manufacture; on the one hand are the wire-wound or wound beads and on the other the cane beads. In the former the bead is made by winding a fine thread of plastic glass round a wire. In many such beads the place where the thread is broken off shows quite clearly, in others the thread does not fuse sufficiently to smooth the surface which looks like a badly wound reel of cotton. In yet other specimens, although they may have been fused sufficiently to smooth the outer surface the position or shape of the bubbles may enable one to see that they were made by this method. The second great division, the cane beads, are made from long hollow canes of glass which are pulled out with a central hole, like macaroni. These canes are chopped up and the pieces used for beads; some are used without any further work on them. Others are rumbled or even reheated to take away the sharp edges. Sometimes this is done to such an extent that it is impossible to say how the bead was originally made, but usually small striations parallel to the axis, or bubbles pulled out into thread-like tubes, enable one to see that they have been made from canes.



Glass beads (all × 3).

1. Black glass beads, two showing white corrosion.
2. Pale blue beads (A_1).
3. Dark blue beads (O).
4. Yellow and orange beads (G).
5. Striped beads (T_1).
6. Blue hexagon bead (E).
7. Pink beads (R_2).
8. Grey beads (T_1).
9. Green beads (T_1).
10. Indian red beads (A_1).
11. (*a*) Red on green (R_2); (*b*) Red on white (R_2).
12. Wire-drawn or combed bead (Grave Area).
13. Green cylinder bead (P_1).
14. Blue cylinder bead (P_1).
15. Oblate green bead (Grave Area).

is almost certainly manganese. In beads coloured with this material the colour is generally much more even and free from veins in the centre of the specimen, but is excessively dark on the surface. In a thin section the edge shows deep purple whilst the centre of the bead is almost colourless. With a rather thick section the base shows purple and the edge layer becomes opaque.

A chemical test was made on one of the brown glass beads which showed that there was iron in it, but I have not had a complete analysis made so there may be other colouring agents also present. These two glasses closely resemble the glasses used at Zimbabwe.

A careful examination of all the beads from Mapungubwe itself shows that they are all of the green brown or iron glass, none of the purple glass beads being found there. The specimens which are the most green are:

A_1 (JS 2*b*) (MS. 1135).
B (JS 2*a*) (MS. 1136).
E (JS 1 rock bottom) (MS. 1131) (pl. xxxvii, 1).
P_2 (M, grave area, skeleton 1) (MS. 1141).

The following specimens are more brown:

D_1 (JS 2*a*, rock bottom) (MS. 1130) (pl. xxxvii, 2).
F (second level, JS 1) (MS. 1137).
H (from trench JS 4) (MS. 1138).
I (Mahobe's trench) (MS. 1139).
J (bowl 8 ft. below datum level) (MS. 1132).
K (grave area) (MS. 1140).
U (Islet) (MS. 1142).

Strings M, N, P_5, Q, W and X have black beads on them, but they appear so similar to specimens examined on the other strings that I have not considered it necessary to make microscopic preparations from them.

The iron beads are mostly oblate or annular, but there are a certain number of cylindrical beads, most of which are about standard.[1]

The second variety of black glass coloured purple by manganese is only found on strings R_2 (MS. 1134) and V (MS. 1143) from Maryland and Shirbeek respectively. I think that these two strings are definitely later than the others.

It is very interesting to compare the Mapungubwe beads with those from Zimbabwe. The green iron beads are identical with the bed-rock beads at Zimbabwe itself (MS. 962); the brown iron beads are identical with the beads from Chibvumani (MS. 304) and Mauch (MS. 303), also of the bed-rock period, whilst the material of the purple coloured beads is identical with that of the beads from Dhlo-Dhlo (MS. 1033) which were dated to about the seventeenth century A.D.

[1] A standard bead is one in which the diameter and length are approximately the same.

I have also a modern string of beads from Bechuanaland. This string has beads made of the same material as the purple glass beads from Shirbeek and Singalele. These modern beads are probably not more than 50 years old.

Unfortunately these conclusions do not make it possible to put definite dates to the black beads, but it is quite reasonable to infer that the majority of the beads may be of the same date as those from Zimbabwe, whilst the purple glass beads may be from any date between the seventeenth century and the last 50 years. I should think that the beads from Shirbeek are a great deal more modern than those from Singalele. The Shirbeek black beads have a considerable amount of iridescence but this is not very important as several of the iron glass beads have a very similar form of corrosion.[1]

The red glass beads. There are three varieties of red glass beads of which the most important are the Indian red.

Indian red glass beads (pl. D, 10). These are made of a copper glass in which the copper is held in the form of minute particles of metal. Under the microscope a section shows as a copper colour when viewed with light thrown down from above, but it shows as a blue grey when seen by transmitted light.

This is a very common form of glass and has been made from at least as early as 1500 B.C. It is the most numerous type of red glass found at Mapungubwe: nearly 20 per cent of the total number of beads found at Mapungubwe itself are made of this glass.

Red glass beads on green base (pl. D, 11*a*). These beads are closely allied to the ordinary Indian red beads. The red glass, however, is only a comparatively thin layer on a green base. This type is generally modern, but one was found in the bed-rock layer at Zimbabwe, and I have seen specimens from Egypt which were stated to be Roman.

A ship with a cargo of beads of this type was lost off the coast of the Scilly Isles about 150 years ago. Fragments of the beads can still be picked up on the neighbouring beach.

Red glass beads on a white base (pl. D, 11*b*). These are another type of red bead. I do not know what the colouring matter of the red is, but it is quite transparent. These beads also are exactly like some of the trade beads, and I always considered them as modern, until I found one on an ear-ring from the Fayum which cannot possibly be more recent than A.D. 200.

The probable explanation of these anomalies is that

[1] The method employed to test the black bead for iron was to grind up a portion of a corroded bead in hydrochloric acid and then test with the ferrocyanide test.

trade beads were usually copies of beads which were antique and were already valued.

The disposition of the three varieties of red beads is interesting. The most numerous are the Indian red beads which have the same colour through the bead. Almost 20 per cent of the total number of beads sent over from Mapungubwe itself are this type, whilst only two beads (1 per cent) were discovered at Zimbabwe. The allied sites from which beads were sent for comparison contributed 8 per cent of this glass.

The distribution of the other two varieties of red glass is equally surprising. No beads of red on green glass or red on white glass are found on any of the strings from Mapungubwe itself, whilst on strings from allied sites there are 11 per cent and 4 per cent respectively. The number from Zimbabwe is in both cases under $\frac{1}{2}$ per cent.

This great number of Indian red beads from Mapungubwe, and their great scarcity at Zimbabwe, is the most striking difference between the glass beads from the two sites. A bead of this type has been found at Kuala Selinsing in the Malay States, where it is dated provisionally to the fourth century A.D. Beads of both these types are found among the Bechuana and Mashona heirlooms. These are bigger than those from Mapungubwe.

The great difference between the numbers and kinds of beads found on the sites in Mapungubwe itself and those from the allied sites sent for comparison is very striking, and makes me think that the latter are later.

Orange beads (pl. D, 4). These, although not very numerous, are found on eight of the strings from Mapungubwe itself, and are not found on any of the strings from the allied sites. The numbers approximately agree with the proportion from Zimbabwe.

These beads are rather denser than most of the beads, so they probably contain a little lead, but this is not certain, as other materials can easily raise the specific gravity considerably higher.

The colouring matter is iron, probably in the form of ferric oxide, and is carried in crystals of spinel. These are very clearly seen in a small fragment of one of the orange beads on string H (MS. 1144) (pl. xxxvi, 1).

Opaque yellow glass beads (pl. D, 4). These beads are very similar to the orange beads, but the colouring matter is either held in very much smaller crystals or in amorphous masses.

This glass is found very extensively amongst antique beads. It was made as early as the eighteenth dynasty (1500 B.C.) in Egypt, and perhaps a few centuries earlier in Mesopotamia, and it continued to be made as late as Saxon times. Some similar beads from Pemba and Zanzibar were analysed and found to contain 56 per cent of silica and 5 per cent of lead. Their sp.gr. was 2·70.

The series of yellow beads from Mapungubwe, which were systematically tested, had all the yellow beads between 2·65 and 2·68. The analysis of some of the Mapungubwe beads would probably show a very similar result to the one from Zanzibar.

Very pale and transparent yellow beads are found on some of the strings. A bead from string Q_5 was examined and proved to be a very similar glass to the opaque yellow. The transparency is due to the very much smaller size of the amorphous or crystalline particles which contain the colouring material. The brilliant yellow cylinder beads on string V are made of similar glass.

The examination of all the kinds of yellow and orange beads shows that they all fluoresce to a very considerable extent. I do not think that this is due to uranium, as that mineral has a much greener fluorescence.

Pale blue beads (pl. D, 2). These are the most numerous beads sent for examination, 28 per cent of the total number of beads from Mapungubwe itself and from the allied sites being of this colour.

They have a similar density to the other beads sent, the sp.gr. of those tested being between 2·55 and 2·65. The colouring material is probably copper. The great majority are very ordinary small beads varying from oblate to cylindrical. A few exceptions are mentioned later. They resemble the Zimbabwe beads although the latter have a rather lower sp.gr.

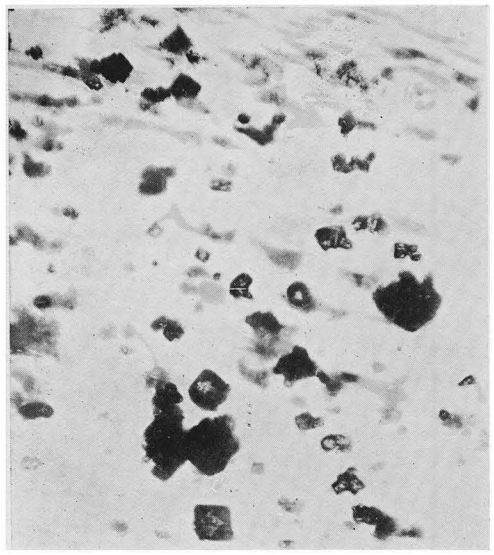
A microscopic examination of the glass used to make these beads shows that it has a very similar construction to the yellow glass. The inclusions, however, are arranged in layers which are concentric with the axis of the beads, and are of varying degrees of density.

These beads show some fluorescence, but not nearly as much as the yellow ones.

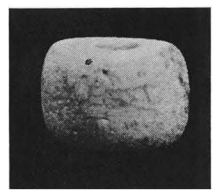
Dark blue glass beads (pl. D, 3). These beads, in some cases, and probably in all, are coloured with cobalt. A microscopic examination shows that the glass is excessively clear, being entirely free from enclosures with the exception of long strings of minute bubbles. The sp.gr. of the actual specimens tested was between 2·55 and 2·60.

Green glass beads (pl. D, 9). These beads are probably coloured by copper and some other colouring agent, but a spectroscopic test of a similar bead showed that there was no iron. There seems to be more than one variety. In a specimen taken from string A (MS. 1150) there are a large number of extremely small enclosures. These may be spherical, and seem to enclose the colouring material. The structure of this specimen is not like that of the light blue glass.

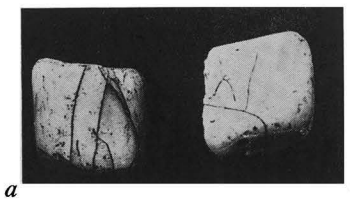
Another fact which shows that there is considerable difference amongst the green beads is that some of



1. Section of orange glass (× 200).



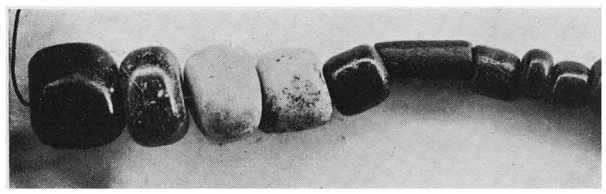
2. Crackle bead from String W.



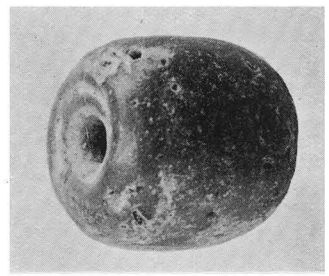
a *b*

3. Crackle beads (*a*) Zimbabwe, (*b*) Malaya.

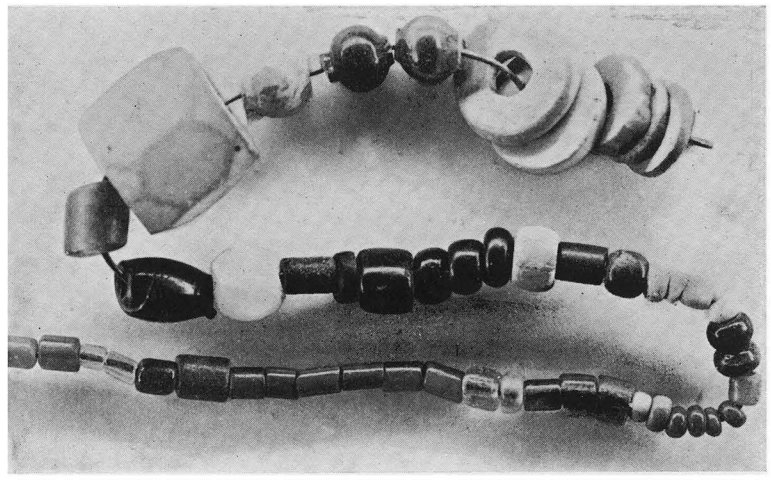
a *b* *c*



4. Glass beads from String A (intermediate size): (*a*) Indian red, (*b*) black, (*c*) corroded blue beads.

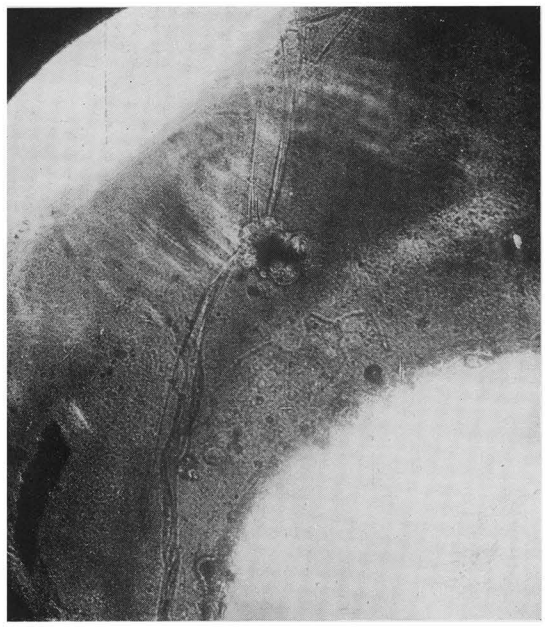


5. Blue cylinder bead from Q_1.

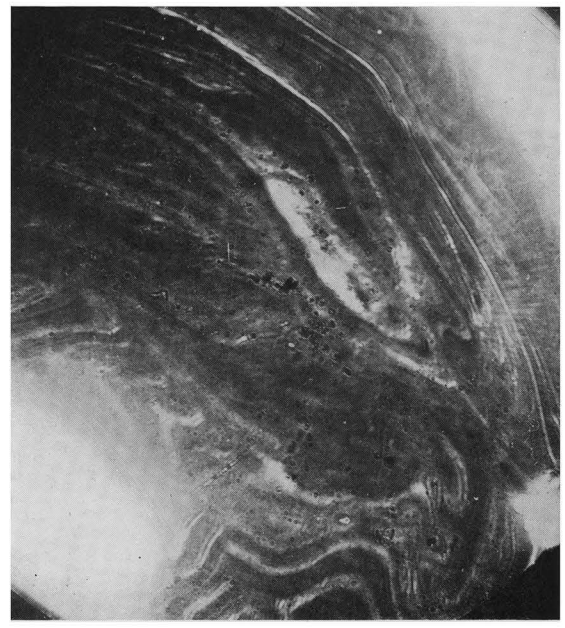


6. Beads from Shirbeek.

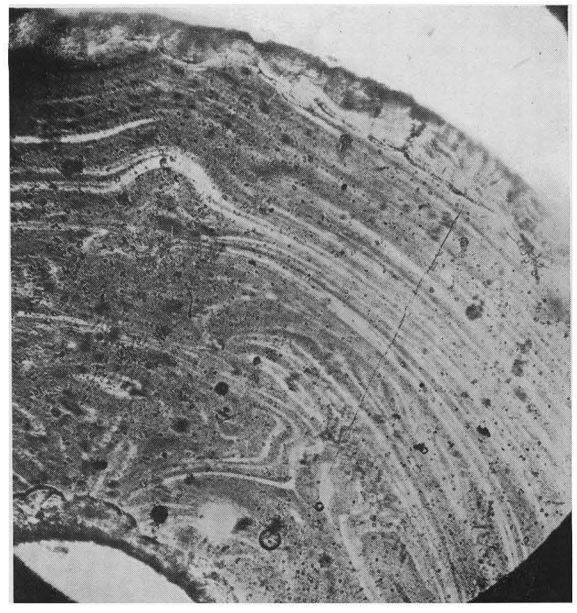
PLATE XXXVII



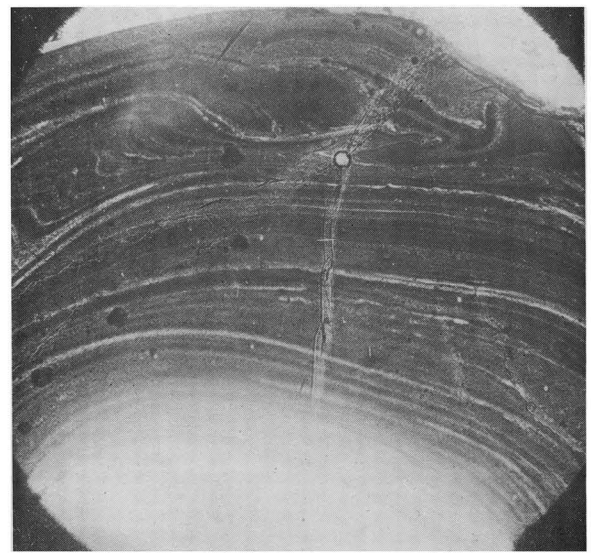
1. Black bead, green by transmitted light, from String E, JS 1. Rock bottom.



2. Black bead, brown by transmitted light, from String D_1.



3. Black bead from Mapungubwe with heavy white corrosion.



4. Black bead from Zimbabwe for comparison.

SECTIONS OF BLACK GLASS BEADS (ALL ×60)

them have a very strong fluorescence whilst the majority have very little.

Glass beads covered with white corrosion (pl. D, 1). Amongst the black, blue and a few of the red beads, there has been a very extensive white corrosion. In many cases this white layer is so complete and so thick that it is impossible to say what the original colour of the bead was. In some cases the decomposition has affected at least two-thirds of the bead. The layer of corrosion is shown in pl. xxxvii, 3.

Why this should occur on so many of the beads from both Mapungubwe itself and the allied sites, and not on those from Zimbabwe, is a mystery, but it certainly points to there having been a considerable difference either in the glass used or in the quality of the earth in which the beads were buried.

Owing to the difficulty of telling the original colour of some of these beads I have put them into a group by themselves.

White glass beads. These beads are made from a good quality opal glass. They are another instance of the difference between the beads from Mapungubwe itself and those from the allied sites. No specimen of these beads was found amongst the 1360 beads from Mapungubwe itself, whilst there were 64 specimens amongst the 790 from the allied sites.

A number of white beads was found at Zimbabwe, but they were made of a glass with a sp.gr. about 3·2, whilst the Mapungubwe beads have a sp.gr. of 2.

Pink glass beads (pl. D, 7). These beads furnish another instance of the difference between Mapungubwe itself and the allied sites, none of them being found in the former whilst 86 were found in the latter.

The material of which they are made is brown to transmitted light and the colouring agent seems to be contained in an excessively large number of brown specks. There are also a number of large crystals.

I do not know what the colouring material is, but pink glass of somewhat the same colour was made by the Romans, and it has been stated that they used gold as a colouring agent. The Assyrians are also stated to have used gold for the same purpose.[1]

Grey glass beads (pl. D, 8). There are a few grey beads on string S from Haddon, one of the allied sites. They appear to be an opal glass with the addition of a little colouring matter.

Plum-coloured glass beads. One specimen of these has been sent over on string X_2 from Parma midden. It is almost certainly coloured with manganese. Three such beads were found amongst the bed-rock layer at Zimbabwe.

[1] See *Chemistry of the Ancient Assyrians*, R. CAMPBELL-THOMPSON.

Longitudinally striped glass beads (pl. D, 5). These beads again show the difference between the beads from Mapungubwe itself and from the allied sites. For whilst none was sent from the former sites, sixteen specimens were found amongst the beads from the latter. All except one of the specimens sent have a white base which extends from the surface to the perforation, whilst many of the trade beads which have a great resemblance have a coloured base, sometimes extending to the surface, at other times covered with a thin layer of white glass on to which the coloured longitudinal stripes are attached.

Beads exactly similar to the Mapungubwe beads have come from Egypt and are stated to be Coptic, but I do not think that the date is very certain.

There are several varieties. On string T_1 there are six beads which have alternate red and green stripes on a white base. There are four stripes on each bead, but in most cases the coloured stripe is made of two bands of the same colour with a fine white line showing in between. In a few cases the bands are touching so as to form a single stripe. Some very small specimens on X_2 have only three stripes and these are all red. One bead on the same string has a rather buff-coloured base, but I think the colour is chiefly due to corrosion. There are four stripes on this bead, alternate red and black, but originally they were red and blue.

In some of the beads the stripes consist of three bands instead of two, but in this form also they sometimes run together and make a single stripe.

LARGE GLASS BEADS

There are a few glass beads of considerably larger dimensions than the small beads already referred to.

Green and blue glass beads. There are two blue and one green cylinder of very considerable size, the blue cylinders are on strings P_1 (pl. D, 14) and Q_1 (pl. xxxvi, 5). The green bead is on string P_1 (pl. D, 13).

These beads are not made from cane but are wound beads (see note, p. 104). They seem to me to be beads of a considerable age.

Amongst the beads in a small box marked "from the burial area" is a green bead (pl. D, 15) which, except for a trifling difference of shape, is identical with the bead 4H on the frontispiece of Miss Caton-Thompson's book on Zimbabwe.

The weight and sp.grs. of these beads are as follows:

Large green cylinder on string P_1: weight 4·031 g., sp.gr. 2·40.

Large blue cylinder on string P_1: weight 3·953 g., sp.gr. 2·25.

Large blue bead cylinder on string Q_1: weight 4·687 g., sp.gr. 2·34.

Oblate green bead from grave area: weight 1·211 g., sp.gr. 2·40.

Blue and white hexagonal beads (pl. D, 6). These hexagonal beads are similar to a bead found in Ndanga's cave (Caton-Thompson, *Zimbabwe Culture*, p. 238) and to a string of early trade beads probably from the Soudan. The specific gravity is very similar. They are probably of European manufacture as almost identical beads can be seen on showcards issued by Messrs Levin between 1800 and 1850 A.D. At that time they were used for the slave trade.

There are seven blue and one colourless specimen amongst the beads sent over for examination. They were distributed as follows:

String E, 1 blue bead: weight 0·546 g., sp.gr. 2·47.

String V, 1 blue bead.

String X_1, 4 blue beads: these have a white core.

From grave area, 1 blue bead: weight 1·76 g., sp.gr. 2·30 (pl. D, 6).

String X_1, 1 colourless bead.

From their appearance these beads all look some considerable age, though the actual appearance of beads is not much to go on, as under suitable conditions some trade beads corrode very rapidly.

These beads fluoresce to a certain extent, but not all equally, the bead from E being much more brilliant than the one from the grave area.

Larger Indian red bead. Another bead, of which there are two specimens, is a rather larger variety of the small Indian red bead. They both have a diameter of 0·3 in. One is on string A, pl. xxxvi, 4*a*, and the other from the grave area; the latter has a weight of 0·322 g. and sp.gr. 2·46.

Larger white glass bead. This bead is on string W. The glass is a typical opal but it develops a crackle effect on the surface. Except for the fact that the cracks are not so clear, it is exactly the same as the Zimbabwe bead shown on Fig. 26 in Miss Caton-Thompson's book on Zimbabwe. A similar bead has been found at Kuala Selinsing in the Malay States in a site provisionally dated to the fourth century A.D. Pl. xxxvi, 2, 3 shows the specimen from string W, the specimen from Kuala Selinsing and a half bead from Zimbabwe, not previously published.

Black and white wire-drawn fragment. Perhaps the most interesting specimen sent is the fragment of a black and white wire-drawn (or combed) bead from the grave area (pl. D, 12): weight 2·352 g., sp.gr. 2·25.

This bead has been made by a process used as early as the 18th dynasty in Egypt (about 1500 B.C.) and which continued to be used up to the Roman Period. Somewhat similar designs were occasionally made by the Saxons and Vikings. I have not seen any mediaeval or trade beads like this, although wire-drawn beads of a different type are made at Venice.

This fragment is the only specimen sent over which suggests a really early date, and it has a distinct resemblance to beads made from 200 B.C. to A.D. 300.

The white stripes on this fragment are fluorescent.

Beads from Shirbeek (V)

This string seems so much more modern than any of the others that I think it is worth while to make a note of it.

Although the great majority of the beads are so modern, there are one or two which the owner had probably picked up, and also a few shell beads which he may or may not have made.

The three blown beads with almost iridescent colouring are a relatively modern type, but one of them shows some signs of wear. As there are no other beads of the same sort on any of the other strings, he may have got them when he got the little blue, yellow and green cylinders. Some of these I believe to be attempts to copy the old Bavenda beads. The ones sent over are practically identical to the beads now being sold and worn in Bechuanaland. These probably originated in Czechoslovakia, and I should think that they are not earlier than the beginning of the present century and may be only a few years old.

The large seven-sided cylinder of blue glass has already been mentioned. Such beads have no doubt been exported in vast quantities from England and other countries for the slave trade. It is known that these beads were being exported about a hundred years ago, but the trade in them may have started a very long time before and may have been continued to the present day.

Metal Beads

The metal beads sent over are either gold or a metal which is chiefly copper. Some of the gold ones, however, have a very low specific gravity, and may be alloyed with a considerable amount of a base metal.

Gold beads. These are confined to small oblate or short barrel beads, a few of which have flutes round them. A gold spiral, supposed to be part of a bracelet, is also sent. It came from the grave area.

Comparatively few of the strings of beads sent have gold beads on them. They are as follows:

H. Seven gold beads, including one fluted one (pl. xxxviii, 1*c*). Each specimen has been tested separately, and the results are given later.

I. One small bead. From its colour it looks very pure, but has not been tested.

K. Fifteen gold beads, mostly very small, K_1 and K_2 tested separately, the remainder examined together. See results later (pl. xxxviii, 1*b*) (K_1 and K_2 not shown).

M_2. This is a nugget of gold of great purity (pl. xxxviii, 1).

N. Three small gold beads.

From grave area. A gold spiral like one of the copper bracelets (pl. xxxviii, 3*a*).

I have been privileged to see the very interesting report by Dr Weber of Johannesburg on four small gold beads which he obtained from Mr Schofield. These were all of one sort with a sp.gr. of 18·8 to 19.

I had a larger number of beads to examine, and found that they varied considerably both in the purity of the gold and in the method of manufacture. Some gave results which very closely approximated to his. For instance, H_1 with sp.gr. 19·2, H_6 with sp.gr. 18·1 or the nugget M_2 with sp.gr. 18·7. On the other hand, the beads from string K, with the exception of K_1, are approximately 14.

Again, although I think that some of the beads are cast, others have undoubtedly been bent round from rods, and the ends butted together; this shows very clearly in the bead second from the end in the left-hand side of pl. xxxviii, 1*c*.

The results of testing the specific gravity of the gold specimens are as follows. Some of the beads were very small so that there are probably considerable errors in the results; but check readings were made which gave satisfactory results.

For instance, bead H_3 read 15·4, and a second reading at a different time gave 15·6.

Again, No. 6 on the same string gave 18·2 and 18 for two separate readings:

No.	Length in.	Diameter in.	Weight g.	Sp.gr.	
H_1	0·128	0·055	0·101	19·2	
H_2	0·105	0·063	0·137	17·4	
H_3	0·157	0·089	0·352	15·5	Average
H_4	0·160	0·082	0·323	17·3	
H_5	0·140	0·086	0·229	15·6	Fluted bead
H_6	0·155	0·090	0·247	18·1	Average
H_7	0·126	0·062	0·102	18·4	Butted ends
K_1	0·080	0·054	0·026	17·4	Very approximate
K_2	0·105	0·038	0·075	13·9	
K_3	0·062	0·037	0·020		
K_4	0·057	0·035	0·574	13·7	Average of 13 beads
K_3–K_{15}	0·057–0·103	0·035–0·067			
M_2	—	—	0·554	18·7	
N_1	0·09	0·059	0·079	14	Very approximate
N_2	0·09	0·06	0·081	19½	
N_3	0·07	0·03	0·033	15	
Gold spiral			0·509	16·1	

Copper beads. If the long metal spirals which are probably bracelets or necklaces are omitted comparatively few copper beads were sent over. They are the following:

String R_1, three beads.

A cylindrical bead from JS 2*a*.

String X_1, six beads.

Two cards with twelve beads sewn on to them.

There are also a large number of spiral wires which may have been used as necklaces or bracelets. Some of these are wound round a bundle of vegetable fibres, some are round very small bundles of about half a dozen fibres, others have large bundles about 0·2 in. in diameter and remind one very strongly of the fine ropes of plaited hair which the Egyptians covered with a woven covering of beads.

The ends of some of these beads suggest very strongly that they were made of two pieces of metal bent round so as to leave a cavity which was either left empty, or filled with some substance such as sand to increase their size.

Another reason may have been to make the outer surface of a better quality material. One bead, R_1 (pl. xxxix, 1*d*), suggests this very strongly. The extreme blackness of the outer layer on this bead made me think that it was silver, but I could not get any reaction on a minute chip which I tested chemically.

The copper beads had weight and sp.gr. as follows:

No.	Weight g.	Sp.gr.
(1) R_1 (the largest on R)	0·380	6·00
(2) R_1 (the medium)	0·286	4·2
(3) R_1 (the smallest)	0·185	6·8
X_1 (six beads taken together)	1·556	5·79

All these beads are very corroded, and probably enclose a considerable amount of air and sand which would account for their low specific gravity.

The six beads on string X_1, when first tested, gave a reading of 5·45 for the sp.gr., but after they had been immersed in water for 3 hours the figure had risen to 5·79.

Again, R_1 gave a reading of 4·90 until a large bubble was removed, when the reading became 6·00.

As some of these beads had a corrosion which looked like rust, I tested bead (1) R_1 and one of the X_1 beads for iron with the ferrocyanide test, but could find no trace of iron.

Some of the copper beads have an extraordinary resemblance to two strings of copper beads called money, now in my collection. These are certainly from Africa, and one is said to come from the Congo. There are a very large number on each string, and, from their condition, they must have been used fairly recently; on the other hand, these beads must have been imported not less

than about a hundred years ago (see pl. xxxix, 1*c*, *f*). Mr Laidler has also sent me samples of similar beads from East London which he says are currency (pl. xxxix, 1*a*, *b*).

Finally the metal beads from Revue contained a number of this pattern (see pl. xxxix, 1*g*, *h*, *i*).

From these facts it appears that in some parts of the country such metal beads are found amongst the glass beads from deserted sites, whilst in other parts of the country they are still being used as currency, and presumably are still being manufactured.

A peculiarity of the copper bead (2) R_1 (pl. xxxviii, 2*c*) is that, when the wire was pulled out of the bead, it pulled with it the beginning of a coil of wire like the so-called spiral bracelets. This wire was quite loose at one end, but may be attached lower down. It is probably the corrosion and the air which have accumulated round this wire that has caused the low sp.gr. of 4·2.

The use of spiral wires of various shapes in making beads is a common practice of many nations since the discovery of copper and gold. Gold wire beads of this sort are found in the Bronze Age deposits of Europe. These were sometimes left unattached, and at other times the edges of the wire were soldered.

Bronze spiral beads as long as 6 in. have been found with Etruscan remains (see Classification of beads, etc., p. 15, Beck).

I do not suggest that all the small spirals sent were intended for beads, but I think the large cylinder JS 2*a* (pl. xxxviii, 2*c*) may be made in that way.

The extremely neat way in which the spirals are wound out of wire with a square or oblong section should be noted. The square or oblong shape must have been made before the spiral was wound. The specimen on the same card as the gold spiral from Mapungubwe grave area is a good example of spiral wound round a small bundle of fibres. I cannot tell from examining whether the wire was actually wound round the fibres or whether the fibres were inserted after the spiral was wound. Some of the copper spirals are very small. The specimen shown double size in pl. xxxviii, 5*b* is made of square wire the sides of which are 0·017 in., and the complete diameter is 0·075. This specimen comes from the old Bavenda Kraal at Shirbeek.

Dr Goulding of the Imperial Institute, who has made a special study of fibres, very kindly examined some of these fibres. He reports as follows:

> The material, of which the specimen from the Mapungubwe Ruins labelled "Metal spiral round fibres" was composed, has been investigated microscopically. The individual strands, when examined by the naked eye, were suggestive of bundles of bast or similar fibres. Under the microscope, however, it was found that their structure was quite otherwise. On the examination of transverse sections each strand exhibited a structure and appearance resembling that of a fibrous root of a monocotyledonous plant, such as grass. The fibrous roots of some grasses are of considerable toughness and flexibility, and, when dried, would form suitable material for the "core" of such an object as that under discussion. The material is much decayed, and some tissues have disappeared; positive identification is thus extremely difficult. We can only suggest therefore that the strands which we have examined consist of fine, fibrous grass roots.

Shell Beads

Complete shells. Two varieties of shell are found as more or less complete shells. One is a cowry (*Cypraea Annulus* Linn.). The other is a form of sea shell (*Polinices Manilla* Linn.).

There are three specimens of the cowry, two on string A_2, and one on Q_1. There are five specimens of *Polinices*, three on string O and one each on A_2 and I_1.

From this it will be seen that, of the eight more or less complete shells sent over, seven are from Mapungubwe itself, and only one from an allied site. Also, as both these varieties of shells are sea shells, they must have been carried over land from the sea.

Achatina. The small disk beads are made of two totally different kinds of shell; one variety is the shell of a large land snail called *Achatina*, whilst the other is ostrich egg-shell.

The achatina shells are numerous; they appear in strings A_2, C, D_2, I and J, from Mapungubwe itself, and in (1) R_1, T_2, W, X_1 and X_2 from the allied sites.

Such beads come from various sites in almost all parts of Africa. Their date is not known. Although they are found in some of the Nilotic districts, I do not recollect having seen specimens amongst Egyptian beads.

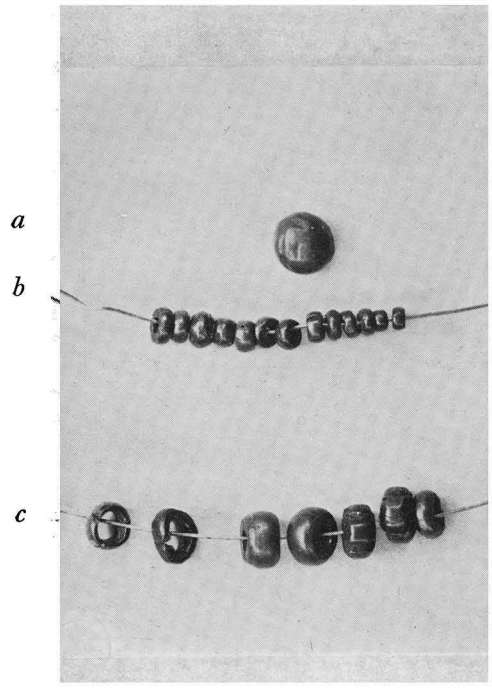
Most of the achatina beads vary in size between 0·12 and 0·25 in. but there are a few bigger. One specimen on string A_2, which I think is achatina, is 0·45 in. in diameter.

Ostrich shell. The beads made of ostrich egg-shell are of two varieties. One is made out of the shell in its natural or white condition, and the other is made out of shell which has been artificially blackened.

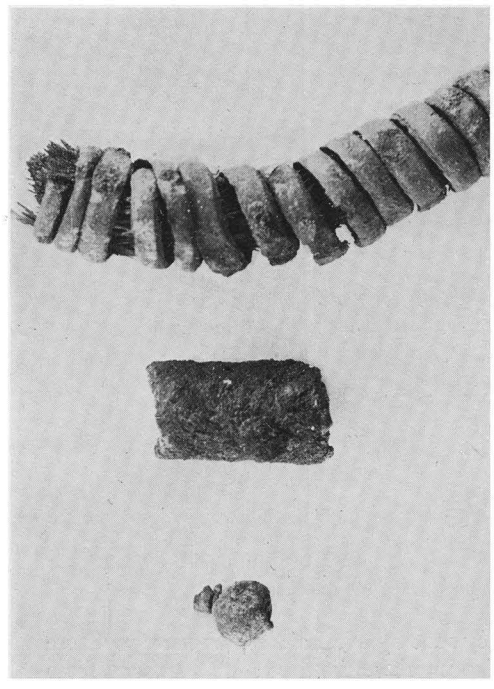
The white beads are very numerous; they vary greatly in size and in the extent of corrosion. They are found in twelve of the strings from Mapungubwe itself, and only on three, and two doubtful, from the allied sites.

Black ostrich shell. There are a large number of these. They appear on six of the strings from Mapungubwe itself, but on none from the allied sites.

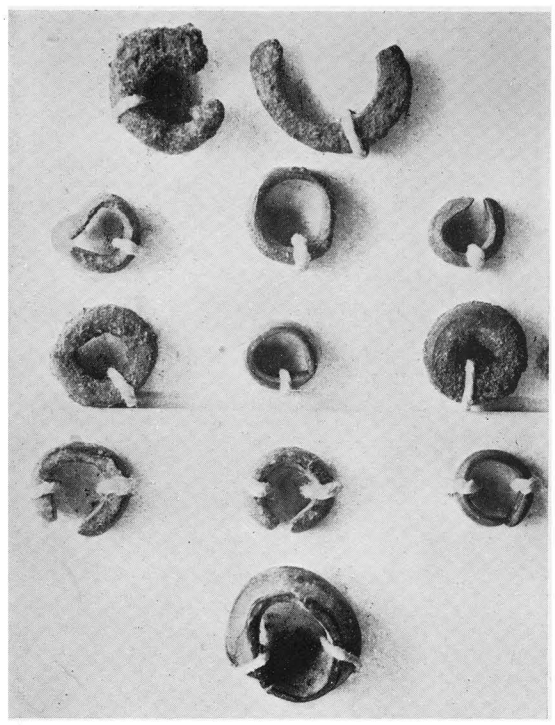
Black beads of this type are rare. Leakey found them at Elmenteita, Seligman found them in the Faragab mound in northern Kordofan, they have now been found at Malta, a single specimen was found in Palestine and another among the odd beads from Ur.



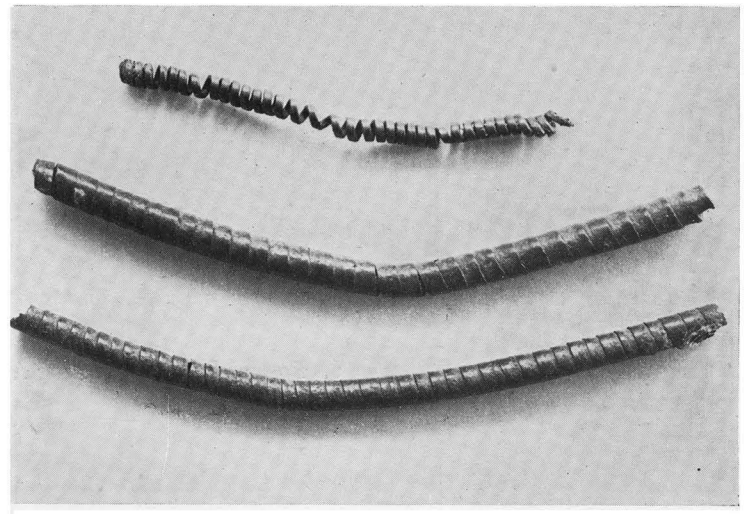
1. (*a*) Gold pellet from M_2, (*b*) gold beads from K, (*c*) gold beads from H.



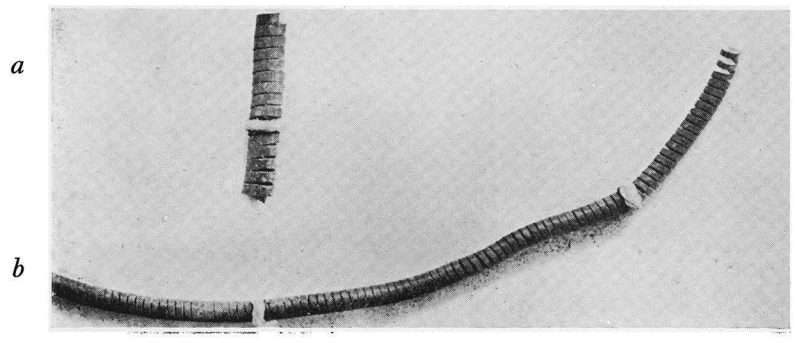
2. (*a*) Copper coil round fibre from JS 2*b*, (*b*) copper bead from JS 2*a*, (*c*) copper bead with spiral attached from String R.



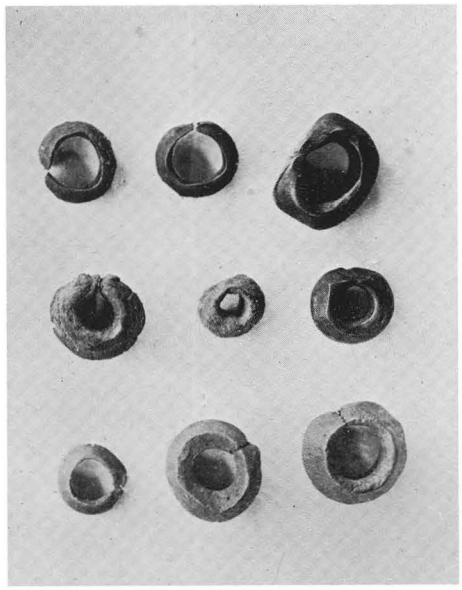
4. Copper beads or currency; eight upper figures from Ratho; four lower figures from Parma.



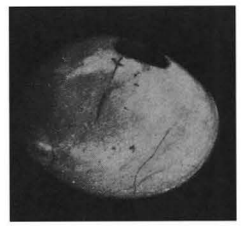
3. (*a*) Gold spiral from Grave Area, (*b*) copper spiral from Grave Area, (*c*) copper spiral from Grave Area.



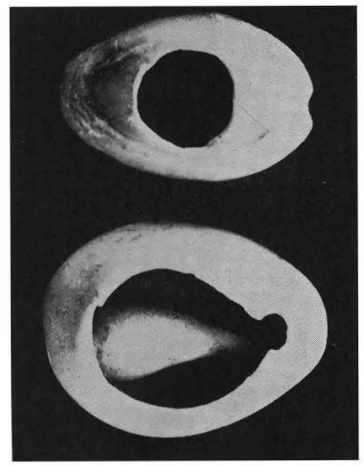
5. Spiral coils from Shirbeek.



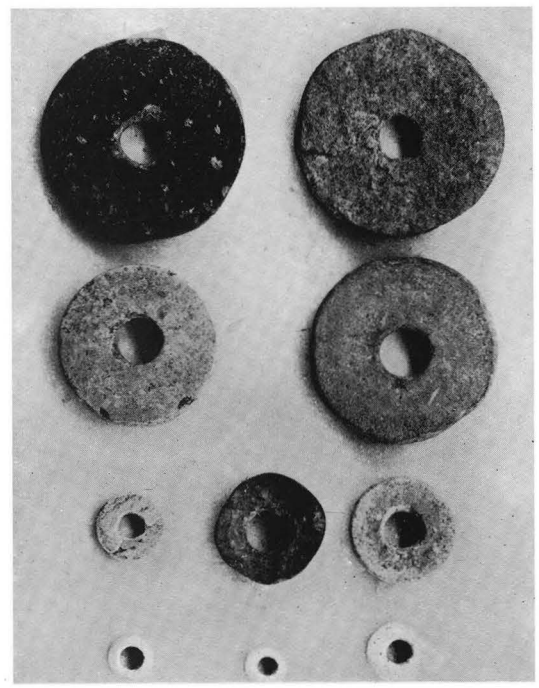
1. (*a*, *b*) Currency sent by Mr Laidler, (*c*) currency from Congo, (*d*, *e*) Mapungubwe from R_1, (*f*) currency from Congo, (*g*, *h*, *i*) beads from Revue.



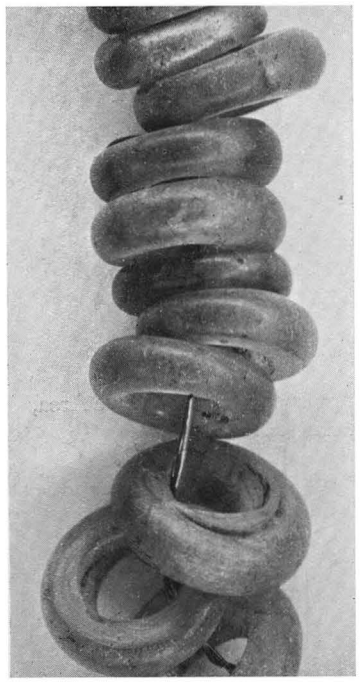
2. Polinices Manilla from A_2.



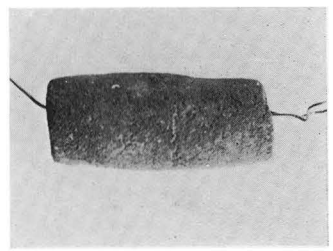
3. Cowry (Cypraea Annulus) from A_2.



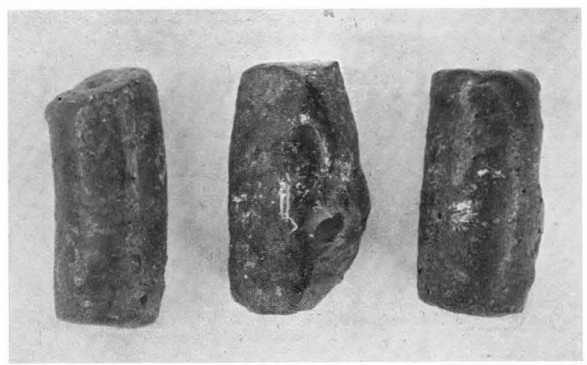
4. Three upper rows ostrich shells; lowest row Achatina from A_2.



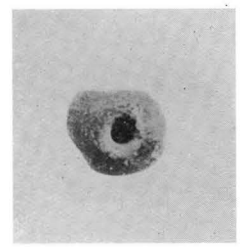
5. Annular beads.



6. Pottery bead from string A.



7. Glass beads.



8. Calcite bead from Grave Area.

I believe that these beads are made by carefully heating them until they are red hot, possibly in a muffle furnace. It has been stated that the black colouring matter was iron. There has been no trace of iron in any of the beads I have tested, and I have tested specimens from several sites. I think that the black is carbon. The black is intensely opaque. A section 0·003 is practically completely opaque in a brilliant light.

A number of beads on string O may be cut from achatina shells or possibly from a large sea shell.

It is impossible to date ostrich shell beads, as this shell has been a favourite material for making beads since the Stone Age, and it is still being used. The beads from Mapungubwe, however, in most cases show considerable signs of weathering. This, however, depends very largely on the place of burial, as some of the specimens from Neolithic sites in the desert are still in marvellous preservation.

Stone and Pottery Beads

One of the most astonishing things about the beads sent over from Mapungubwe and the allied sites is that there is only one pottery bead (pl. xxxix, 6), only one stone bead (pl. xxxix, 8) and no faience bead.

The clay or pottery bead is on string A_1. It is a roughly made long cylinder of dark grey pottery. It is very soft, and I am not sure if it has been baked or only sun dried.

The stone bead was picked up on the grave area. It is a small almost spherical bead of calcite (pl. xxxix, 6). It is very roughly made, but the cleavage planes are quite clear on one side. The weight is 0·3825 g. and the sp.gr. 2·69.

Both these beads are distinctly unusual, and raise the possibility of local manufacture.

Conclusions

Comparing the beads from Mapungubwe itself, the beads from allied sites and from the bed-rock layer at Zimbabwe, brings out clearly that there is great divergence between the first two, a decidedly greater divergence than between Mapungubwe itself and the bed-rock layer of Zimbabwe (referred to as Zimbabwe in future). But, although the beads themselves are extremely similar, there are differences in the percentages found that are very difficult to explain.

The most striking difference is in the small Indian red glass beads. These beads are one of the chief features of the Mapungubwe beads, they represent 19½ per cent of the total beads sent from Mapungubwe itself, whilst less than ½ per cent were found at Zimbabwe. At the allied sites near Mapungubwe 8 per cent were found. As the two main sites are only about 200 miles apart, this difference points more to one of date than of position.

The next most striking difference between the beads from Mapungubwe and Zimbabwe is in the beads which were originally black, blue or red, and have corroded over with a completely white surface. In some cases the white corrosion goes through at least two-thirds of the bead. These beads, which represent 3 per cent of the beads from Mapungubwe itself, and 6 per cent of those from the allied sites, have been put in a different column in the chart owing to the difficulty of finding out what they originally were. Theoretically these percentages should be added to the totals of the various colours.

Although the Zimbabwe beads appear to be exactly the same as the Mapungubwe beads, I have not found a single instance of this extensive corrosion among them.

There is also a difference in the percentage of dark blue beads, as there are 9½ per cent and 7½ per cent respectively from Mapungubwe and the allied sites as against 1½ per cent from Zimbabwe.

In addition to the peculiarity of the solid Indian red beads, the red on green and the red on white are different. The red on green beads at Zimbabwe are only ¼ per cent and there are none at Mapungubwe, but 11 per cent at the allied sites. This all points to the allied sites being later, because the red on green beads are a type which has been exported recently from Europe. At the same time red on green beads are found in India on sites which are probably as early as the eighth century A.D. The same thing happens about the red on white beads which show none for Mapungubwe, 1½ per cent for Zimbabwe, and 3 per cent for the allied sites.

The striped beads are again similar, the figures being none for Mapungubwe itself, 2 per cent for the allied sites, and ½ per cent for Zimbabwe. The grey beads only appear among beads from the allied sites.

In spite of these differences, chiefly in the percentages of the different sorts, there is a great similarity in the beads themselves. The most noticeable difference is the fact that so many have developed a white corrosion. But this may be due to the way they have been buried. In any case, the black beads from Mapungubwe itself and most of those from the allied sites are coloured in a similar way to the Zimbabwe and Matendere beads, and the only beads which show the purple glass like the Dhlo-Dhlo beads are two strings from the allied sites.

The small beads also generally show a resemblance to beads from the Indian middens which are supposed to date back as early as the eighth century A.D.

CHART OF SMALL GLASS BEADS

No.	Pale blue	Dark blue	Black brown to green	Purple black	Indian red	Yellow	Green	Corroded from blue or black to white	White
A_1	31	—	24 1135	—	27	15	19 1150	2	—
B	37	—	33 1136	—	32	—	—	—	—
C	—	—	15	—	24	—	—	16	—
D_1	—	—	2 1130	—	15 1125	—	—	8	—
D_2	9	—	17	—	32	3	—	—	—
E	24	7	23 1131	—	20	3	—	—	—
F	78	6	24 1137	—	24	12	2	6	—
G	24	1	—	—	24	10	8	1	—
H	12	—	20 1138	—	8	5	3	1	—
I	9	2	12 1139	—	18	6	—	—	—
J	18 1148	8 1144	20 1132	—	9	8	—	—	—
K	11	1	33 1140	—	13	3	7	2	—
M	—	—	44	—	—	44 1145	—	—	—
N	91	8	36	—	19	15	—	16 1151	—
O	—	83	—	—	—	—	—	—	—
P_2	7	—	2 1141	—	—	—	—	2	—
P_3	5	5	—	—	—	3	—	1	—
P_4	5	11	1	—	—	5	—	—	—
P_5	4	1	36	—	—	—	—	—	—
Total from Mapungubwe	365	133	342	—	265	132	39	55	—
% of do.	28	9½	25	—	19½	9½	3	3	—
Q_1	31	—	2	—	17	4	—	—	—
Q_2	38	—	—	—	2	—	2	—	—
Q_3	38	—	—	—	—	5	—	—	—
Q_4	4	—	7	—	15	—	—	—	—
Q_5	12	—	12	—	—	*24	4	4	—
R_1	6	6	4	—	—	2	1	—	—
R_2	12	—	—	12 1134	12	—	—	14	—
S	6	—	1	—	—	2	—	—	—
T_1	6	6	18	—	—	6	12	—	12 1156
T_2	9	—	3	—	8	10	—	—	—
U	4	—	2 1142	—	4	7	—	11	11
V	2	3	—	2 1143	1	8 1146	6	6	4
W	3	—	3	—	—	—	1	—	2
X_1	48	—	15	—	—	7	—	—	11
X_2	16	—	—	—	—	—	—	—	26
Total from other sites	235	15	67	14	59	75	26	35	66
% of do.	30	2	8½	2	8	9½	3	4½	8
Grand total	600	148	409	14	324	207	65	90	66
% of all small beads	28	7½	19	½	15	9½	3	4	3
Zimbabwe % of beads from bed-rock layer	22·3	1·5	30·6	—	0·5	15·4	20	—	2·1

* 12 transparent (1147).

My impression of the Mapungubwe beads is that they come from a very similar civilization to the Zimbabwe ones, but that they are not quite so early as the bed-rock layer.

Additional Note

Pl. xxxix, 5. These annular beads are probably trade beads, as great numbers of them have been shipped from Europe. They are now worn by elderly women in Portuguese East Africa.

Pl. xxxix, 7 (sp.gr. 2·10–2·25). These three beads are very unusual, I have not seen any exactly like them, but they have a considerable resemblance to specimens from the Gold Coast, where beads are being made from coloured glass such as broken beads, which the Natives grind up and use in the following manner. They put the different coloured glass powders in layers in moulds made of a special clay, as many as 60 bead moulds are made in a single block. When the moulds are full of the layers of powdered glass they are fused in a fire, and a series of very rough beads are made which show some resemblance to your beads. Such beads have a much greater value among the Natives than the better quality European beads from which they are made.

CHART OF SMALL GLASS BEADS (*continued*)

Orange	Pink	Colourless	Red on green	Red on white	Grey	Plum colour	Striped	Metal*	Total
2	—	1	—	—	—	—	—		121
—	—	—	—	—	—	—	—		102
—	—	—	—	—	—	—	—		55
—	—	—	—	—	—	—	—		25
—	—	—	—	—	—	—	—		61
1	—	—	—	—	—	—	—		78
—	—	—	—	—	—	—	—		152
3	—	—	—	—	—	—	—		71
2 1144	—	2	—	—	—	—	—		53
2	—	—	—	—	—	—	—		49
3	—	1	—	—	—	—	—		67
1	—	—	—	—	—	—	—		71
—	—	—	—	—	—	—	—		88
8	—	—	—	—	—	—	—		193
—	—	—	—	—	—	—	—		83
—	—	—	—	—	—	—	—		11
1	—	—	—	—	—	—	—		15
—	—	—	—	—	—	—	—		22
—	—	—	—	—	—	—	—		41
23	—	4	—	—	—	—	—		1358
2	—	½	—	—	—	—	—		100
—	—	—	—	—	—	—	—		54
—	—	—	—	—	—	—	—		42
—	—	—	—	—	—	—	—		43
—	—	—	—	—	—	—	—		26
—	—	—	—	—	—	—	—		56
—	3	—	5	3	—	—	—		30
—	12 1152	—	12 1154	12 1153	—	—	—		86
—	—	—	—	—	12 1155	—	—		21
—	—	—	12	12	—	—	6		90
—	—	—	—	—	—	—	—		30
—	—	—	6	—	—	—	—		45
—	—	—	5	—	—	—	1		38
—	6	—	—	—	—	—	—		15
—	12	—	7	—	—	—	5		105
—	23	—	39	—	—	1	4		109
—	56	—	86	27	12	1	16		790
—	7	—	11	3	1½	—	2		100
23	56	4	86	27	12	1	16		2148
1	2½	—	4	1½	½	—	½		100
2·3	—	—	0·25	—	—	—	0·75	4·3	100

* Metal and large glass beads not included in this chart.

This method of manufacture was discovered by Captain Wild who procured some of the moulds.

Microscopic examination shows that the red glass is made of two different sorts of glass fused together, one sort is full of metallic copper and is similar to the Indian red glass of which so many of the Mapungubwe beads are made.

Note on Beads from Dzata

The beads from Dzata are extremely similar, and probably identical with the beads from the bed-rock layer at Mapungubwe.

The black beads are made of the early brown black glass, and not of the later purple black glass.

The half beads of Indian red colour are similar to beads of the same colour from Mapungubwe. This colour is due to immense numbers of small specks of metallic copper held in suspension in the glass. It is blue by transmitted light.

The copper spirals are wound round a fibre in the same manner as those from Mapungubwe.

PART V

METALLURGICAL MATERIAL FROM MAPUNGUBWE

I. NOTES ON SOME ANCIENT GOLD ORNAMENTS

Introduction. I have here before me four small gold beads and a little golden spike or nail, which were left with me on 8 May by Mr Schofield in Messina.

These ancient ornaments come from Mapungubwe, where Mr Neville Jones is at present exploring.

I divide these notes into Part I, direct observations, and Part II, remarks and deductions.

My ignorance in such matters is so profound that I am naturally looking forward with some interest to the echoes which my probably unorthodox remarks will produce.

Part I

General Descriptions

Pl. xl, 1 shows the material with the marks A, B, C, D, E, used in these notes.

(1) The beads and the spike are made of gold of a high degree of purity.

(2) The only visible impurity consists of a bluish white metal (more bluish than silver) which could not be determined without hurting the surface of the ornament by the use of microchemical methods.

The largest exposure occurs on the bead C, hexagon side. It measures here 0·013 × 0·02 mm. It has one perfect cleavage, does not mix with gold and is much harder than gold and resists in consequence abrasion much better. It generally occurs in small flakes which seem to have a tendency to come to the surface. This may give a wrong impression as regards the percentage. I do not think that the total mass of this impurity is enough to affect seriously the value of the gold.

(3) The gold is almost pure. One gravity test gave 18·8 sp.gr., another 19·02 sp.gr.

(4) The total volume of the beads would be equal to that of 10·8 mg. water.

(5) The total weight of the four beads is 205·5 mg. and the weight of the little nail is 51·15 mg.

(6) The gold is crystalline, porous and full of surface cavities. It is doubtlessly cast gold.

(7) *Work done after casting.*

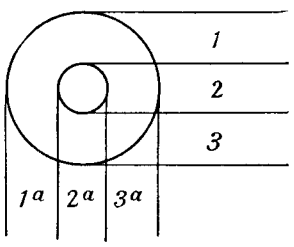
(*a*) The hexagon shown clearly in pl. xl, 2 of C seems to be a cast impress.

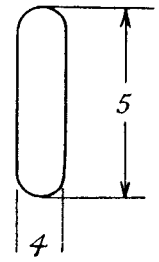
(*b*) The tapering little nail E has been shaped by hammering, both on the sides (six-sided) and on the head. It must have been driven in with some force as its head has been flattened out and the stem has been bent in the process; but no marks show on the sides.

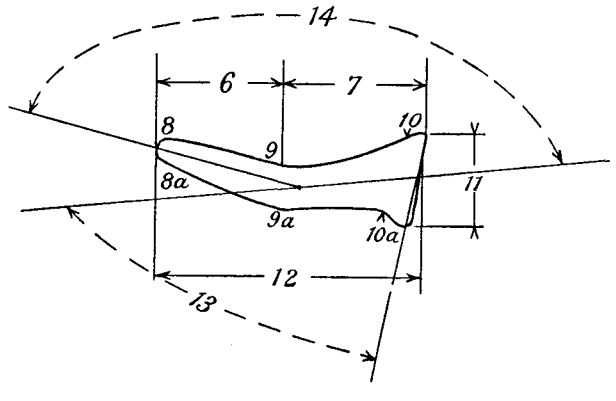
(*c*) The bead A shows grooves on its outer surface (see pl. xl, 4) which indicate a rough attempt at turning the outer periphery. Later by some peculiar wear or partial abrasion the turning grooves have been partly removed.

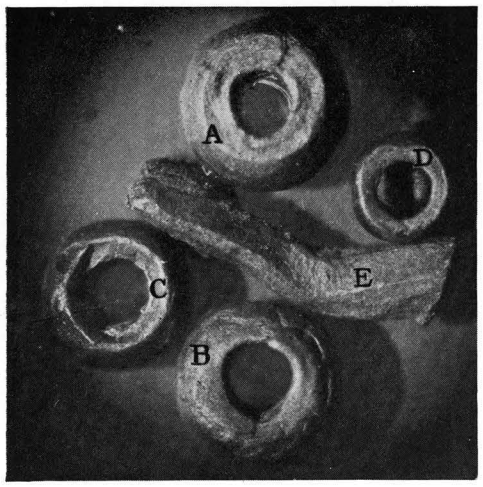
(8) The dimensions of the different pieces are given in the following tabulation: for Nos. 1, 2, 3 two values are given, the second being at right angles to the first. The little sketches illustrate the method of numbering. Nos. 13 and 14 give the angles of the bend and the slant of the head of the nail E:

	1	2	3	4	5
A	0·72	0·90	0·72	1·31	2·31
	0·81	0·75	0·75		
B	0·59	1·0	0·62	1·3	2·34
	0·50	1·12	0·69		
C	0·65	0·78	0·69	1·12	2·06
	0·59	0·81	0·72		
D	0·34	0·81	0·34	0·81	1·5
	0·43	0·75	0·34		
	6	7	11	12	8
E	1·8	2·6	4·37	0·5	0·87
					0·49
	9	10	13	14	
			degrees		
E	0·87	1	63	156	
	0·9	1·2			

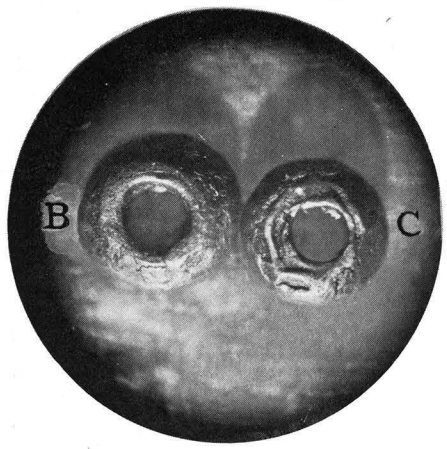




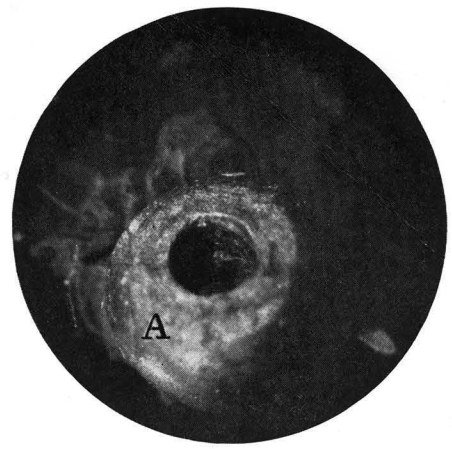




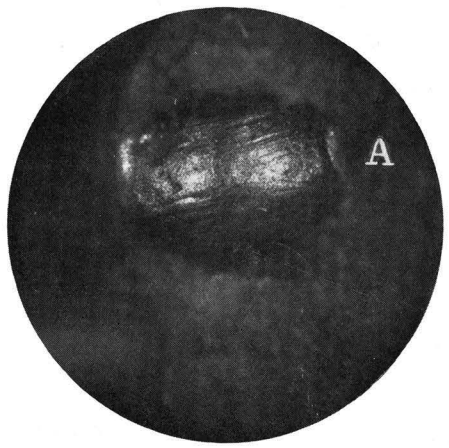
1 (D. 1 × 10)



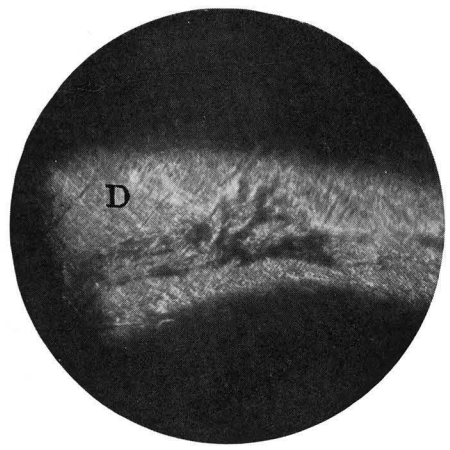
2 (D. 1 × 9·3)



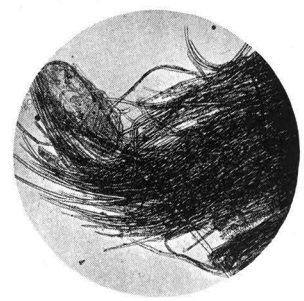
3 (D. 1 × 12·3)



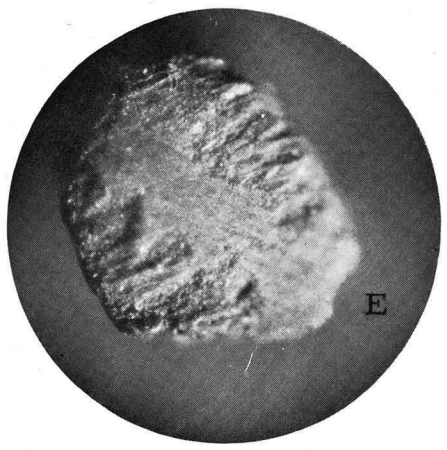
4 (D. 1 × 13)



5 (D. 1 × 100)



5A



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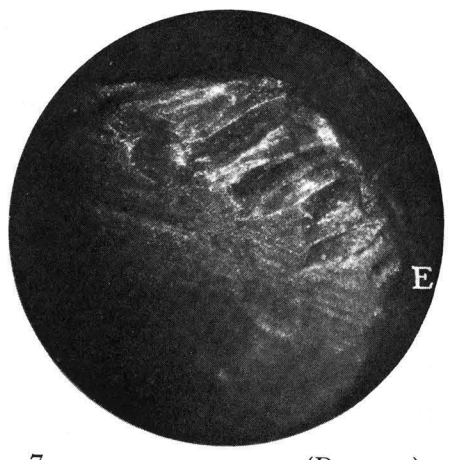

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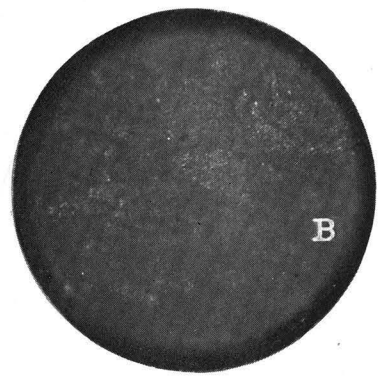
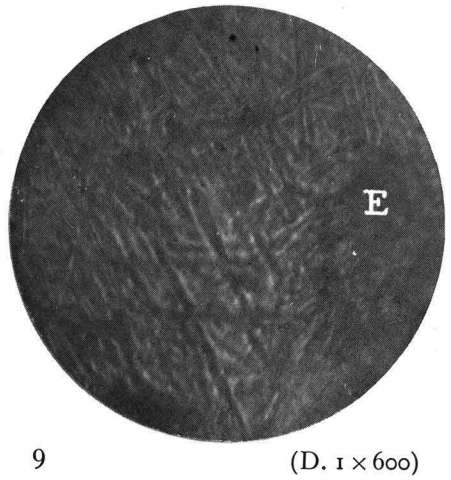
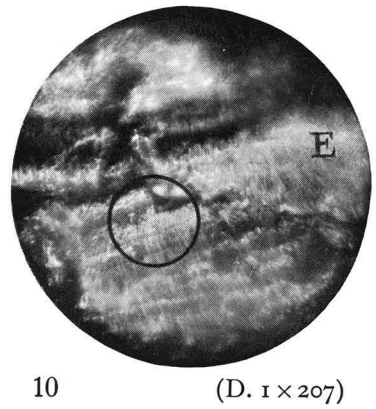


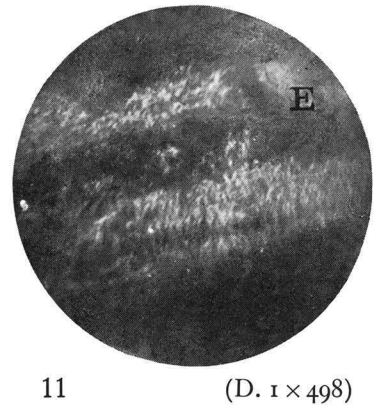
8 (D. 1 × 95)



9 (D. 1 × 600)



10 (D. 1 × 207)



11 (D. 1 × 498)

METALLURGICAL SPECIMENS FROM MAPUNGUBWE

(*a*) The tabulation shows that in the worst case, A, the holing is out of centre by, or the hole (No. 2) oblong by, only 0·15 mm., B 0·12 mm., C 0·03 mm., D 0·06 mm. More remarkable still is that the difference in thickness of the rims measured for each bead in two radially normal directions would have to be expressed in $\frac{1}{100}$ mm.

(*b*) The inner walls of the holes seem to be accurately normal to the flat sides.

(*c*) The ratio of the thickness and the diameter of the beads is very nearly 1 : 2 in all cases.

(*d*) Some of the edges of the holes are countersunk in form.

(9) *The interior walls of the holes.* A, very scaly and uneven, high points show smoothing polish which the deeper parts do not show.

B, many flaky layers on inner walls, some scratches run in the direction of the axis of the hole; no rotary scratches.

C, very bad casting with deep cavities; some glittering rotary lines on high points, one side only, probably made by me; a few lines in the direction of the hole axis are old.

D, full of casting holes and flakes. There is one non-continuous old scratch near the edge of the hole and some bright new ones, which I may have made.

I do not believe that these holes have been drilled.

Part II. The Surface of the Ornaments

This gold is very soft, rubbing with the soft skin of the fingers produces a glittering face, on which the microscope shows a multitude of apparently deep cuts (see pl. xl, 5).

As in spite of the diffusing effect of the maze of scratches, this surface has the full brilliance of gold metal reflection, an explanation of the dull, frosted appearance of the surface of the ornaments, especially of the undoubtedly worked surfaces, where the casting tarnish would have been removed, must be sought.

This investigation requires high-power magnification on uneven surfaces and this almost excludes descriptive photography.

Every protruding portion will naturally show scratches which can be of any age and will hide or eliminate the oldest surfaces. In other words, if the flat portions surrounding the holes in the beads have ever been worn, as they would on a string, then these surfaces have been etched, because they show to-day the hypidiomorphic granular structure, and the unevenness (see pl. xl, 8) one could expect on a polished plate, after etching. Unfortunately we cannot prove that this face had been worn, it may be a casting face, although in the bead B there is an almost eliminated trace of a hexagon. A casting face might naturally show the crystalline appearance described and gold avoids sharp idiomorphic crystal forms and tends to take curved and difficult twinning forms.

In the little nail, however, we have positive proof of the existence of different worked faces. The little nail has six flattened sides near the head and more near the tapering end. It must have been driven with some force as its head is flattened and its stem bent, but no marks show on the stem. The nail head shows a greater swelling on the offside of the bend and it appears likely that this swelling was caused during an attempt to bring the bent nail back to the straight line by one-sided blows. The marks on the nail head (see pl. xl, 6, 7) belong in all probability to two widely separated periods. There are old cuts partly removed by polishing.

The older, roughly parallel, narrow, deep non-continuous grooves are in places separated from each other by delicately thin walls (see pl. xl, 7). Some of the cuts are quite 1 mm. deep. It is not clear whether these marks were made by a "filing" action or whether they are the result of driving blows made with a sharp, hard instrument. The rough but marked parallelism of these marks or cuts speaks for the former, the depth and non-continuity and the peculiar sharp division of single marks by thin partitions for the latter possibility.

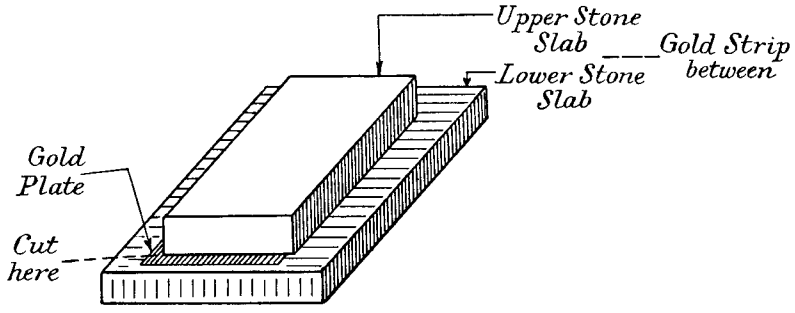
These older cuts have been removed in the higher lying central portion of the nail head evidently (see pl. xl, 7) by some grinding or polishing action. This polishing process left a fairly flat surface covered by polishing scratches running in different directions (see pl. xl, 9).

The upper ridges of the older cuts are also covered by these polishing scratches but in the depth of the cuts no such scratches can be found. Pl. xl, 10, 11 show the deepened bottom of a deep valley of the older cuts. It lies 0·008 and 0·012 mm. below the cut valley and has as far as I can make out been deepened by a process which eliminated the cut and shows in its place a crystalline surface which to my mind has been formed by an etching process.

Conclusion

1. I believe that the beads have been made as castings.
2. I do not think that the holes could have been drilled on account of the casting cavities on the walls of most of the holes. I think that holes were part of the castings and the hexagon design was traced on the mould.
3. I am under the impression that the ornaments had undergone some etching process before the polishing scratches in the high middle portion of the nail head were made.

4. I am well aware that the ferrisulphate solution of gold is being discredited in the latest works and that for instance Behrend and Berg speak only of free chlor, or a combination of HCl and HNO_3 as likely solvents for the formation of which they require hydrolysis (for the HCl) and bacterial action for HNO_3, but we have on the other hand many believers in the action of organic acids. I will quote here only Fred. W. Freise, *Economic Geology*, vol. XXVI, p. 421. Processes like those described by him could easily have happened to the ornaments and could surely have accomplished the etching of the protected portions of the man-made deep grooves, which have in parts been changed from smooth scratched gold surfaces to a delicately crystalline rough surface.



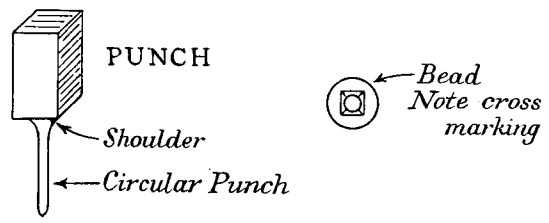
II. GOLD FROM MAPUNGUBWE

Spiral bangles. An examination of the gold strips from which the spiral bangles are made does not suggest they were made by drawing through a plate. A draw plate even of primitive type would leave indications on the metal and to draw strips 0·017 in. thick, 0·06 in. wide, 3–4 ft. long would be exceedingly difficult; also a number of measurements show a maximum variation in thickness of 0·003 in. and in width of 0·016 in. Such variations are hardly possible in a drawn strip. There is a distinct "burr" on both edges on the same side, also inconsistent with drawing. I suggest that after the gold was beaten to the required thickness, it was held between two heavy flat stones, one of which had a reasonably straight edge to act as a guide—the plate would project the required distance beyond the guide and be cut almost through by gently tapping a fairly long knife blade, then bending the nearly severed strip until it broke off. The appearance mentioned above is consistent with this method. The small piece of smaller cross-section could be made in a similar manner, then beaten in a groove and abraided by rolling or rubbing with a stone and perhaps sand.

Spiral bangles are made by wrapping the gold strip round stranded vegetable fibre. Apparently five strands were used. The fibre, after fraying in caustic alkali, was magnified by 100 and photographed, it proved to be sisal. The method of jointing is ingenious, for a distance of $\frac{1}{4}$–$\frac{3}{8}$ in. where wrapping commenced a space equal to the width of strip is left at each turn; on completing the circular bangle, these spaces are filled by the last turns of the strip, making at this joint a right and left helix, the extreme end of strip being sharply tapered. The joint is strong and difficult to see even when magnified.

Beads. Certain beads have a cruciform marking which is most probably due to the shoulder of the punch used to make a hole. It is probable the gold was beaten into rod form of roughly circular cross-section, pieces cut off and a punch driven through. Assuming the punch was a rod of square section roughly ground to required size and shape, then, on being driven through the gold the marking would result. A slight "burr" is noticeable due to the exit of punch.

An examination of small beads, $\frac{3}{32}$ in. diameter and less, suggests they were formed by flattening golden globules of suitable size and then driving a punch through the disk. Experimental beads are similar in appearance. The original globules probably resulted



from either pouring from a height molten gold into water or spilling the molten metal on a flat surface which causes innumerable globules of all sizes to form as the metal rolls. The hole is of the shape associated with a punch slightly dragged at entry and parallel at the opposite side where no doubt the "burr" was rubbed off. The smooth appearance of the hole may be due to pulling to and fro on a "bark" string greased and sprinkled with fine grit.

I think it is obvious the workmen used some process of refining the raw gold as millesimal fineness up to

945·0 would be unusual; also Native gold is generally too brittle to beat into plates no more than $\frac{8}{1000}$ in. thick.

In one parcel of gold there was a piece of brittle lead plate containing possibly 5 per cent zinc, also two tapered iron pins or tacks much rusted.

To produce gold plate of remarkably uniform thickness, free from holes, and of considerable area, necessitated much skill and time, and it would tax the capability of a modern gold beater to do this work with what were no doubt very primitive tools. Gold plate on the "Sceptre" (skeleton 10) is $\frac{4}{1000}$–$\frac{5}{1000}$ in. thick.

III. MAPUNGUBWE METALLURGICAL MATERIAL

The examination of the material submitted to me helps to confirm the impression that the practice of iron smelting among pre-European African peoples was almost as widespread as that of pottery manufacture and other domestic arts.

The specimens submitted by Mr Neville Jones are such as would be made by simple Native methods of smelting; while two pieces of the metal product similarly exhibit the characteristic features of such material from other ruins, including Zimbabwe, as well as of modern Native-made metal. These features are lack of homogeneity, inclusion of slag, and partial carburization, with corresponding variation in quality.

There is but little, however, to indicate that non-ferrous smelting was practised here at Mapungubwe, or that copper, bronze or gold were fabricated. It is, on the contrary, perhaps more probable that articles made of these metals were brought from elsewhere, and in this I am inclined to agree with Mr Weber. Nevertheless, they present many points of interest, on which the following comments are offered.

With regard to copper, the only specimen, other than metal, submitted to me, which can be connected with copper smelting is a piece of copper sulphide (technically known as matte). I am not aware, however, of any evidence that such was used in primitive South African metallurgy, at least by itself, as a source of copper. It is generally assumed that it was the oxidized, i.e. carbonate ore (malachite), which was smelted by Natives and this piece may therefore have been merely an object of interest, i.e. a sort of curio, as is possible also in the case of the piece of greenish stone also submitted, which consists of a zeolite (prehnite) of no metallurgical significance.

The short *copper rod* has apparently been cast into almost its present shape, but has received a certain amount of hammering and reduction in diameter during and after which it has been annealed to soften it. This apparently is a kind of material from which certain copper bangles were made. It may also have been the raw material for manufacture of wire, but not necessarily at Mapungubwe.

The *flat wire bangles*, both gold and bronze, have quite definitely been made by hammering out the metal into thin sheets and then cutting it into narrow strips in the manner suggested by Mr Pearson, though I think a chisel-like tool was probably used. This is indicated by the irregularity in width and by the fact that overlapping cuts have been observed.

Further, in winding over the fibre core, ends of successive lengths of wire strip are trimmed to fit and neatly interwoven, and the surface, I feel sure, was finally burnished to give the final smooth and almost solid appearance. This is indicated by the close fit of the somewhat irregular edges. The micro-structure shows that the metal has been annealed.

The *round wire* of the other bangles I have studied very carefully and have come to the conclusion that it has been produced by "wire drawing".

Though not circular in section, the cross-section is so uniform, allowing for the somewhat worn outer face of the bangle, and the length so considerable that I cannot believe that it can have been made in any other way. Moreover, when unwound, the inner unworn surface is seen to be fibrous in appearance, presenting parallel striations over long distances as if drawn through a somewhat rough hole, and further, etching (the gold wire) in cyanide solution shows it to possess a long stranded fibrous structure.

Curiously, the modern platinum wire on which the beads were strung, shows somewhat the same appearance.

The micro-structure is markedly crystalline and twinned, indicating annealing at relatively high temperature to finish with: in fact the end of one wire examined has been partly melted. It is, of course, quite possible that the thin strip was first produced as in the case of the other kind of bangle, and then finished by drawing, instead of drawing down a relatively thick rod. There is not sufficient evidence on which to base an opinion as to which of these two alternatives was employed.

The *bronze sheet* is smooth—though scratched—on one side and rough on the other (as is the gold strip of the bangles) and I think this indicates that it was hammered out on a stone (no doubt smooth for a stone but nevertheless rough) by aid of a smooth iron hammer.

The *beads* also are of two kinds, the one clearly made

by bending short pieces of wire to the required shape, and the other probably by cutting off small pieces of thick wire, hammering them to the required flattened spherical shape and then perforating with a small round punch with a square shank resembling an ordinary bradawl.

The hole is not circular enough to have been drilled, and on the other hand the micro-structure shows that the metal has been annealed during manufacture, but that subsequently the work both of shaping and perforating has been finished cold, i.e. the interior is coarsely crystalline and twinned, while the exterior and perforated surfaces show much distortion of the crystals and "flow structure".

Mr Pearson's conception of the use of gold globules is possibly correct, but I think this less probable, and there would appear to be no reason for smoothing the interior of the hole as he suggests. More likely it is the result of rubbing on the connecting string while adorning the owner.

With regard to his suggestion that a refining process was used, this is very interesting and by no means impossible, but I think it more probable that any refining occurred incidentally to its melting and oxidation in a crude form of furnace. In any case alluvial gold, at least, of such fineness is not known.

Mr Weber's observation of the presence of a light coloured flaky material in the interior is probably due to the presence of pieces of scale of iron oxide—perhaps originally iron—from the surface of the punch used in forming the hole, and serves as confirmation of that method of perforation; while the rough porous surface may be due to the impression of the surface of the hammer or anvil used in shaping the bead by hammering.

The concentric marks are certainly puzzling, but may have been the result of abrasion by other and larger beads of different material in contact on a string, or by a cupped support used when perforating, or may even be the remains of the marks made in cutting up the length of wire from which, I suggest, the bead was made.

I certainly do not think the beads were made by casting; and the hexagon referred to is clearly the imprint of the butt of the punch. Etching by corrosion is by no means precluded however, in spite of the low solubility of gold. Some of the surfaces I examined did possess such an appearance and moreover exhibited a distinct reddish coating but I was not able to confirm the presence of gold in this. But this applied to exposed polished surfaces, and Mr Weber explains the rough appearance of the hollows by this assumption, but that I think was due rather to rough surface working during manufacture.

His observations with respect to the marks on the head of the tack are simply explained as being due to the top surface projecting somewhat above the surface of the plate which it was doubtless attaching to some wooden object and consequently suffering wear in use.

Mr Beck's comments that one bead appeared to have been made of two pieces of metal bent so as to leave a cavity appears to parallel an observation of mine relative to another site in which a bronze coating over copper was used, as was also tubular metal in forming a "bent" bead. It is, however, very exceptional.

The general absence of any silver renders his remarks respecting bead R_1 of exceptional interest. I think, however, that the black coating was possibly black copper oxide. His other observations have been dealt with in commenting on the results of Mr Weber and Mr Pearson. In conclusion, I would only observe that the Mapungubwe material appears to present just the same general characteristics as that from similar sites in Rhodesia.

PART VI

REPORT

ON CERTAIN ETHNOLOGICAL INVESTIGATIONS IN CONNEXION WITH THE ARCHAEOLOGICAL DISCOVERIES AT MAPUNGUBWE[1]

1. Object of the Investigations

The investigations covered by this report were undertaken with a view to throwing such light upon the archaeological discoveries at Mapungubwe as could be obtained from the tribes at present in occupation of the country in which the site is situated, namely those of the Venda-Lemba-Shona nexus of the northern Transvaal and Southern Rhodesia. In the limited time available for these investigations, no attempt could be made to investigate either intensively in one or more areas or extensively over the whole area covered by these tribes. It was therefore determined to make short sample investigations at various points in the area, and to regard the results there obtained as no more than clues for later, more intensive, investigations. Within the general object of the investigations undertaken, the primary one was to obtain, if possible, identifications of, and parallels with, the objects actually unearthed in the course of the various excavations, together with such information relative to their origin, manufacture and use as could be obtained. The results of the work are presented below.

2. Places Visited and Informants Consulted

Three trips were made:

(*a*) The first, in September 1933, lasting only a few days, was made to Messina, where two informants, Tshiwana and Dijane, petty chiefs living in the immediate vicinity of the site, were consulted.

(*b*) The second, in August 1934, was made to (i) the western Vendas at the headquarters of Chief Mbulaheni Mphephu (several days), (ii) Thonga-Shangaans at Elim Mission Station (several days), (iii) Lembas and Shonas at Masase and Mnene, Belingwe district, Southern Rhodesia (several days).

(*c*) The third, in October 1934, was made to the eastern Vendas, at the headquarters of Chief Ratshimpi Tshivhasa (several days).

At all these points, numerous Native informants of the Venda, Lemba, Shona, Sotho and Thonga-Shangaan tribes were consulted mainly upon the following points:

(1) The ethnic history of their tribe.

(2) Their ability to identify specimen objects taken from the site of excavation.

(3) Their ability to describe the manufacture and use of these objects.

(4) Their ability to explain the origin of these objects.

Numerous photographs were taken of the various informants and of some of the more interesting parallels to the objects which it was sought to parallel.

3. Acknowledgements

Special acknowledgements have been made to individuals in the course of the various preliminary reports handed in to the Committee, and it is not proposed to repeat them here. But it would be ungracious to omit general acknowledgements to all those who by word and deed assisted in the investigations—my fellow-workers of the University of Pretoria and others who took part in the various special aspects of the whole problem of the finds, government officials in the Union and Southern Rhodesia, who did all in their power to make travelling in, and access to the Natives in, their area quick and easy, missionaries who placed at one's disposal not only their unbounded hospitality but also their knowledge of the local Natives and their history and customs, private individuals who for no reason but sheer interest in the work helped with time and trouble to make the investigations whatever success they may turn out to be; last, but by no means least, the Natives themselves, both chiefs and tribesmen and women, who came, sometimes long and weary distances, to give the information that was sought, and who submitted patiently and in many cases with eager willingness to being plied with hosts of questions about their tribal lore and usages, in many cases of an intimate and sacred nature, such as Natives are usually most loth to com-

[1] *Note on spelling of Mapungubwe.* Professor Lestrade in this report spells Mapungubwe *Maphungubwe,* giving the phonetic aspirated form of *p*; but in order to avoid a rendering of phonetic *ph* as *f* by the lay reader, ignorant of Bantu orthography, the Editor has altered the spelling to the earlier form that has been in current use since 1933. He hopes to be forgiven for what he considers a necessary action.

municate to a white man, and who, for little or no reward, spent endless time and trouble, and extended hospitality which in many cases they could ill afford, for the benefit of white men whom at first sight they must have instinctively heartily distrusted, and who had, as it appeared to them, committed grave desecration of sacred precincts and sacred objects for the sake of satisfying what must to them have been little else than a curious and irrational whim, boding no good to themselves. That, under such circumstances, a good deal of the information given, sometimes not under any reasonable conditions of privacy, must be regarded with a critical eye, is no wonder: it is even surprising that the information, collected at various times and in various places from informants who had had no opportunity of communicating with each other should tally as much as it did, and should give such a harmonious, if scant and broken picture of the facts of the case.

4. Other Sources of Information Consulted

In addition to first-hand work on Native informants, as described above, a number of authorities were consulted who had done previous work on one or other aspect of the problem in hand. The available literature on the Venda, Lemba, Shona, Sotho and Thonga-Shangaan peoples was consulted, and in addition much information and a number of clues were gathered from other workers who have not yet published the results of their investigations. To these, also, detailed acknowledgement is not possible; but it hardly needs statement that any worker in the field must feel himself under a deep debt of obligation to all other workers who, sometimes directly and sometimes indirectly, provided him with pieces of information or clues which aid him materially in his own work.

5. Results of Investigations

(*a*) *Ethnic history of area of site*

The whole of the area occupied by the site, as well as the adjacent area, appears to have been occupied from the earliest times to which oral tradition goes back by tribes of the Shona-Venda nexus and the Sotho nexus respectively. There is no tradition extant of any tribes other than those falling within one or other of these two groups having ever inhabited the area, nor do they do so at the present time.

Most informants, further, agreed that Shona-Venda clans preceded Sotho clans in the occupation of the area.

The present population of the area is racially and culturally complex, being for the most part a heterogeneous composite containing Shona-Venda and Sotho elements in various proportions. The chief Shona-Venda factors are (*a*) a Shona strain, occurring only slightly and comparatively rarely, (*b*) a Venda strain, occurring predominantly, and (*c*) a Lemba strain, occurring sporadically. The chief Sotho factor is a Kwena strain, occurring relatively frequently and widely dispersed. These strains are found in the racial make-up as well as in the general cultural composition of the population, and occur so miscellaneously as to justify the assumption that we have to do with a population in which racial intermixture and cultural fusion has been going on for a very considerable time.

Under these circumstances it need cause no surprise to notice that the oral traditional history of the area is in an extremely confused state, and the conclusion forced upon us to the effect that this tradition is of little value in determining the ethnic history of the area and in particular of the site, while regrettable, is equally inevitable.

Such tradition as there is may be briefly summarized, for what it is worth, as follows:

(i) *Earliest traditional occupation by Shona-Venda clans.*

Two clans of the Shona-Venda nexus are mentioned, the *Lea* and the *Thwamamba* respectively, as having been in occupation of the site and the area generally from the earliest traditional times. Representatives of both these clans are still quite numerous in the area: both clan-names are given by Bullock (*The Mashona*) in his list of Shona clans, and are also mentioned by Stayt (*The Bavenda*) as occurring among the Venda people. Stayt maintains that these clans are of Sotho stock, and have their affinities with Sebula's people in the Blaauwberg area. Personally I believe the weight of evidence to be against this, and rather regard Sebula's Sothos as being of originally Shona-Venda stock. The chiefs of the site area seem to have belonged to the *Lea* clan. In a short and confused genealogy of these chiefs Tshiwana, who is the present petty chief of the site-area in Native eyes, though not recognized as such in any way by the government, mentioned the name of one *Mapungubwe*, and stated that it was this latter chief who gave his name to the site. Such a possibility is by itself not inherently improbable, but the suggestion must be treated with extreme reserve in that it was encountered only once, in the evidence of a somewhat unwilling and not too honest witness, at a stage when he was particularly tired both of the subject and of his questioner. At the same time there does appear to be some traditional connexion between the site and the name Mapungubwe, since to this statement of Tshiwana's we must add the fact that the name Mapungubwe

was given to Professor Fouché by Native informants at the time of the discovery of the finds, as being the Native name of the place, and a third fact which, if it cannot be said to have any direct bearing on our problem, is at least a very curious coincidence. P. M. Sebina, of Serowe, B.P., in a manuscript called *Bakalanga Sketches*, which I saw, has worked up into fiction-form certain historical traditions of the Kalanga people, collected from an old man of that tribe. In one of these, describing the end of a Kalanga chief, it is related that a certain one of the regiments, stationed in the extreme south of the chief's territory, an area obviously including that of our site, was called by the name *Mapungubwe* and that there was a place called after it by the same name, while another regiment, stationed a little more in the north, was called *Madzimbabwe*. Sebina had, of course, heard of the Zimbabwe ruins when he wrote his sketches, but maintains that he had finished them long before he ever heard of Mapungubwe. If we may accept his statement, then it is at least a remarkable coincidence that these two regiments should have been called by the names of two places like Zimbabwe and Mapungubwe, and the assumption that there is some legendary connexion between the name Mapungubwe and our site is somewhat strengthened.

(ii) *Advent of Sotho clan and conquest of Shona-Venda clans.*

Tradition now goes on to say that, at some period difficult to fix precisely, but which, speaking very roughly, may have been between about 150 and 200 years ago, there occurred an invasion of the site-area by people of the Sotho nexus. These Sothos are related to have conquered the inhabiting Shona-Venda clans, to have taken possession of the land, and to have dispossessed the ruling Shona-Venda line of chiefs, substituting a Sotho line therefore. Both Tshiwana and his full brothers like Dijane are apparently descendants of this line. They both called themselves Sotho, and gave their totem as *kwena* (crocodile), but Dijane also stated that their mother was a *Lea*. Tshiwana volunteered the information that the paramount chief to whom he and former chiefs of the site-area looked up was Sebula of the Blaauwberg area.

As to the manner of the conquest, I have not personally met any definite tradition about this, and so am unfortunately quite unable either to confirm or deny accounts that have been suggested or published in this connexion. All I could ascertain was that there had been a conquest, but as to whether it was violent or comparatively peaceful, slow or rapid, thorough or superficial, I was not able to elicit any facts.

I may further draw attention to the lack of knowledge shown about Mapungubwe by any people I worked amongst except those immediately on or adjacent to the very site itself. Not only did the people in cases like the western and eastern Vendas, the Lembas *passim*, and the few Thonga-Shangaan and the Karanga people I met with not recognize the name *Mapungubwe* as that of a site such as the present, but I had considerable difficulty in indicating its location to them, though they had all heard of Zimbabwe and knew about the nature of the finds there.

I may say finally in this connexion that no facts of any importance for the Mapungubwe problem were elicited further regarding the ethnic history of the adjacent areas, though a number of ethnological facts were found which will be mentioned and discussed later.

There is no need to mention here the general ethnic history of the peoples who have in one way or another contributed to the culture of the Mapungubwe site and area. What is known about this is to be found in the various standard publications, and need not be repeated. It will, however, be cited as occasion requires.

(*b*) *Ability to identify specimen objects taken from site*

I had with me a number of specimen objects taken from the Mapungubwe excavations, consisting of fragments of gold plating, gold beads, other beads including ostrich egg-shell, and some potsherds, all of which I exhibited to nearly every informant I consulted, with the object of ascertaining whether the thing in question was known, and if so what was known about its manufacture, origin and history. This part of the investigation may be described as follows under the various heads named.

(1) *Pottery*. All the peoples visited use pottery, and the art of making it is known everywhere. But in each community the actual exercise of the craft of pot-making is confined to a limited number of individuals; and among the Venda people it is exercised almost exclusively by Lemba women. It is to these individuals, then, and to Lemba women in particular, that special appeal was made in connexion with the pottery material.

It may be observed that present-day pottery found in this area, though variable in size, is monotonous as to shape, consisting almost exclusively of the round pot and the round dish. Particularly at chiefs' kraals, however, one may see other varieties of pottery, the commonest and perhaps most notable of which is the spouted pot, either without or with a wider opening independent of the spouts. I was told that the number of spouts varies, but have myself seen only pots with four spouts. All modern pots are decorated in poly-

chrome, red ochre and black graphite, and all Lemba pots are engraved in addition, the decoration consisting of bands, triangles, lozenges etc. of colours contrasting with the colours of the adjacent figures or background, and separated from such figures or background by the incised lines which form their borders. I was told, however, that formerly polychrome was unknown, and that the only decoration on pottery was either plain engraving, uncoloured, or bas relief designs, consisting usually of four nipple-like projections placed close together and repeated in a group at intervals, or of raised line-designs. Photographs are available in the collection made by me of the spouted and nippled variety of pot. These pots are in the possession of Mrs E. D. Giesekke, of Tshakoma, who very kindly let me photograph them. A sample of another type of spouted pot was obtained as a present from Chief Ratshimpi Tshivhasa.

This is, perhaps, as good a place as any to record the fact that unusual shapes and designs such as those described are found only in the case of pots themselves known to be old, as in the case of Mrs Giesekke's rain-pot, or of such as are modelled after old-fashioned designs, as in the case of Tshivhasa's spouted pot, which is itself fairly new, but modelled after an old design. Further, it would appear that all such old or old-fashioned pots are invested with some ritual significance and some sacred nature. Mrs Giesekke's nippled rain-pot is a case in point, as is Tshivhasa's spouted pot, which is used in the Venda *thevhula* ceremony. Descriptions and discussions of such ceremonies are to be found in Stayt, and need not be introduced here. I had first-rate evidence of the sacred nature of the spouted pot. Tshivhasa had promised it to me in a moment of expansion, though I had only asked for permission to photograph it. When I wanted to take it away with me, however, one of his chief counsellors, horrified at the impending commission of what he regarded as sacrilege, effectively prevented me from departing with the pot, and, though it was eventually obtained, it took some bribery and some semi-official pressure to do so.

When, then, the various typical Mapungubwe pot-sherds were shown to the various informants, they identified the pots as being the kind of thing that used to be made "long ago", though at the same time admitting that none of the present pottery they could show us was identical with any of it bar the very latest polychrome ware. Some of the shapes described above are indeed striking parallels to the Mapungubwe spouted pot and nippled pot, but it must be confessed that no evidence was offered of the actual existence at any time of, for instance, a square beaker or a toggle, though both were claimed as having existed at one time.

As regards design, it has already been stated that the polychrome colours are contained inside figures bordered by incised lines, and that the pattern of these incised lines forms a sort of design in itself. It is of course quite likely, as some informants actually claimed, that the idea of adding polychrome was superimposed upon the idea of engraved design, and it does not need very bold imagination to guess that in that case the present relative simplicity of engraved design on modern Lemba pots represents a retrograde stage, and that pre-polychrome Lemba engraving may have been of a complexity and beauty equal in all respects to those of the finest Mapungubwe type. In this connexion I may say that, though no Lemba woman pot-maker whom I interviewed, out of about a dozen, could spontaneously produce a design comparable to the engraved designs on Mapungubwe pottery, several could, after two or three seconds' glance at my sherds, put on pots which they made for me designs quite comparable to the Mapungubwe designs, though much less carefully executed.

(2) *Beads.* In addition to modern trade beads, worn universally among the peoples visited, there are preserved in all areas, especially among the Venda and Lemba people, beads of a different calibre, which are esteemed for their rarity and which are very highly valued. A number of beads found at Mapungubwe are superficially at least sufficiently different from the modern trade bead and sufficiently like the older bead to make a comparison of some value.

Stayt has listed the kinds of beads found among the Vendas, with their names, and this information need not be repeated here. It must however be pointed out that not all the beads mentioned by him are found in any one area, that beads are also found which are not mentioned, and that some of the beads he mentions have names different from those he assigns to them in addition to the names given, while some of the names appear to be applied to beads other than those to which Stayt says they are applied. I may say that I believe Stayt's information to be perfectly correct as far as it goes, but that he has omitted to note and report all the facts also seems clear. Those responsible for the technological report will have to take account of these facts in the course of their work.

Now while I have no idea of the results of a technological comparison of the Mapungubwe beads with modern Venda beads, and while I am bound to give my personal impression that many an ethnological identity has been established on a similarity far less than these two series of beads appear to me to show, I am also bound to record the fact that, with one exception, at Tshivhasa's, all the Venda bead experts refused to admit identity between our beads and theirs, though all ad-

mitted similarity of type. As one old lady put it, "You might call this bead (meaning our small red bead) a *mukuvhibvu* if you liked, but if you compared it with a real *mukuvhibvu* (pointing to her own) you would know that that isn't it." Yet I am a little doubtful of this persistent discrimination on the part of a people which, like all primitive peoples, shows a curious inability to generalize and abstrahize when it comes to concrete things, and I must record that it did appear to both Mr Schofield, who was present on the occasion mentioned, and to myself, that regularity and preservation of shape and size and colour of the beads seemed to count tremendously, and that in this respect there was certainly considerable contrast between the old Venda beads, which were uniform in shape and size and colour, and beautifully preserved and regularly strung, and our own beads which were irregular in size, slightly so in shape and colour, badly preserved and, I fear, even worse strung. The lady at Tshivhasa's who had beads just as battered and heterogeneous as ours, and just as unsymmetrically strung, had no hesitation in saying that the beads were identical.

Of course none of what has been said above applies to the ostrich egg-shell and gold beads; nor, curiously enough, does it apply to the large blue glass beads, those of ours which we had being everywhere recognized as perfectly genuine.

(3) *Gold beads and plating*. The first thing that struck one in this connexion was the apparent difficulty the various informants had in identifying gold as a metal, and in distinguishing and naming it separately from other metals like copper and brass. Indeed it was some time before I was able to grasp the import of the linguistic terminology employed in this connexion. The term *muswuku*, derived from the root *-swuku*, *red*, is in use for both gold and copper and even brass; the name *musina* (between which and the name Messina there is some connexion, though whether *musina* is derived from Messina or Messina from *musina* is still somewhat doubtful), is equally applied to copper and brass and in some instances to gold as well; while finally the name *mutobvu* is applied to gold and lead, and sometimes to copper, but not to brass. It would appear that these names are not specific names for the metals, but descriptive referring to different qualities possessed by various metals, which are then grouped together and designated under the name denoting that quality: thus *muswuku* denoting redness, *mutobvu* denoting softness, malleability. I cannot at the moment suggest a satisfactory etymology for *musina*; as we have seen, however, it appears to equate in usage with *muswuku*.

Metal beads, whether of gold or copper or brass, are called *thuthu*, and our gold beads were quickly identified and called by this name. It was otherwise with our fragments of gold plate and tacks. They were readily identified as *muswuku* or *musina* or *mutobvu* by various informants, but none could without prompting suggest any use for these objects, and even after prompting many of them were quite nonplussed.

At the same time I knew from previous observation that the Vendas, especially the eastern subdivision, practise the art of covering snuff calabashes with thin strips of lead, which are nowadays usually countersunk but which formerly were apparently tacked on. These strips of lead when fixed on, by whatever process, cover only part of the calabash, but by constant rubbing with some hard object the metal is spread out over the whole surface of the calabash from these isolated strips, until the lead covers the calabash entirely. I saw and photographed one of these calabashes in its finished state, and have in my possession another which is in the initial stage, i.e. with only the countersunk strips of isolated unrubbed lead. The fixing on of the strips of metal, whether by countersinking as now, or whether by tacks as apparently formerly, is called by the verb *mametshedza*; the rubbing out and spreading of the metal is called by the verb *fhoma*, the same word as is applied to the putting on of red ochre or black graphite as decoration for pots. I was assured that the *mametshedza* process was formerly done by means of tacks which the smiths themselves manufactured, but that with the event of Europeans factory-made tacks were soon used, and that after a while even this was dropped in favour of countersinking. As to the *fhoma* process, I was informed that this, as well as the *mametshedza* process, was formerly used for other metals than lead, and for other objects than calabashes, but that nowadays it is confined to this metal and to this type of object.

As to the winning of metals generally, and their working, other investigators with more expert knowledge can report better than I. I can only state here one or two traditions which came to my notice in this regard from an ethnological point of view:

(*a*) Copper is stated to have been smelted by the Venda people, in and about Messina, and cast into ingots of the mushroom and headed rod shapes, which were then disposed of to Lemba smiths who worked them into objects such as beads, coils, wire, and plates, as well as into armlets, bangles etc.

(*b*) As to gold, I was told once, and once only, under conditions of secrecy, that Lemba smiths used formerly in considerable measure, and nowadays extremely rarely are enabled, to practise the working of this metal, which was obtained from a far-off source, not disclosed to me, and which is nowadays obtained presumably in a somewhat illicit manner.

(c) *Origin of the objects and their use*

I may be allowed here to state my own conclusions as to the origins of the various objects and the use to which they were put.

(1) *Pottery*. This is, as far as I can see, entirely indigenous. The origin of the various shapes and decorations must of course still be traced, and it is possible that some foreign influence may be found in this regard. But the objects themselves are of local manufacture, and I do not so far see any reason for assuming a non-Bantu influence here.

(2) *Beads other than gold*. The origin of these must be left to bead experts to determine. I am here only concerned to state the two traditions which I met in this regard with reference to the immediate source of them for the tribes concerned.

With regard to the large blue beads, the commonest tradition was that they came from the coast of Mozambique, *via* some place in the eastern Transvaal which was not named to me. In Southern Rhodesia, however, I also came across a tradition that they came from the west, from the direction of Bechuanaland.

As far as the other non-metal beads were concerned, these were reported as having been very old, but I met no definite tradition as to their place of origin.

I may further note an interesting fact with regard to the name applied to the large blue beads in Tšwana. It is *talama*, pl. *ditalama*, which equates with such forms as Venda *ndalama*, used of the shell of a mollusc, worn as an ornament at the back of the neck by Venda women, Shona *ndarama*, gold, precious thing, money, Nyanja *ndarama*, gold, and which originates in the Greek word *drachma*, through an intermediate Arabic form *dirhem*. I have no doubt that this word and its variants was introduced into Africa by Arab traders, originally perhaps used to mean money only, but soon transferred to designate anything precious, whether money, metal, or any other object of value such as the large blue beads.

(3) *Gold beads and plating*. Metal-working is known over most parts of Africa, and the employment of metal for making objects of ornament as well as of use is common all over the continent. There is, however, very little if any evidence to show that gold was regarded with any special esteem, or that it was treated in any way differently from other metals, except in areas in Africa which have come under strong alien influence, particularly Arab influence, as on the West African coast and along the coast of East Africa, in both of which places Arab influence was strong from relatively early times, and from both of which a strong Arab influence has spread inland and up and down the coast where it was first felt. It is conceivable, and to me the most probable explanation of the facts with which we are faced in this connexion, that the Arabs' special regard for gold, together with their technique in working it and their use of it for plate and bead ornamentation when worked, is what we have reflected in the Mapungubwe gold, its working and its employment. If this is so, the question arises as to how this Arab influence reached the Mapungubwe area, and how it was incorporated into the Mapungubwe culture.

I believe the answer to this question to lie in the presence of the Lemba people, and some ethnological peculiarities connected with them.

It is well known that the Arabs on the east coast of Africa intermarried considerably with the indigenous populations they met, and large numbers of people in that area are wholly or partly Arabicized racially and culturally. The best example of this that we have is in the Swahili people, who both racially and culturally show in a very remarkable manner the very strong influence of the Arabs. Many Swahilis show a marked Arab cast of countenance, most of them are professing Mohammedans, their language is riddled with Arabic words and idioms, their literature and many of their social practices are largely Arabic, though of course with a basis of Bantu.

All the accounts we have of the Lembas, e.g. in Stayt's book, and in papers by Junod, senior, and Jacques, as well as my own information, go to show that we have in these people a close parallel to the Swahilis, though admittedly the Arab features, whether racial or cultural, are not nearly so marked in them as in the latter people. A glance at the numerous photographs of Lemba types which I was able to secure is sufficient, I submit, to bear out the assertion that these people show distinct traces of Arab admixture. This is not confined, however, to their purely racial features. Some of their names, a number of which are given by Jacques, are Arabic in form, and quite a number of their religious practices, cited by the various authors who have written about them, are distinctly Semitic, and most probably Mohammedan. A further point of interest is their tradition of their ethnic origin, which I was able to obtain in vague outline, and which states that they originated far to the north-east of where they live at present. Nothing seems more likely to me than that these people, at some period in their past, lived in close contact with people who, if not pure Arabs in race and culture, must have been impregnated with Arab blood, and, what is more important for our present purpose, with Arab cultural features, including the gold-complex, and that the Lembas learned the art of gold-working, in particular gold-plating, at this stage in their history and brought it down with them to their present home.

PART VII

WORK DONE IN THE SUMMER OF 1934–5

At the end of September 1934, Messrs Jones and Schofield had to cease operations. Their assistant, Mr P. W. van Tonder, volunteered to remain on the site alone and carry on the work through the unhealthy summer months. After considerable hesitation, the Archaeological Committee accepted his offer. He accordingly carried on through the summer 1934–5. His courage and tenacity were richly rewarded, for he soon made spectacular discoveries.

1. *Important finds by van Tonder.* His first find was a burial on the summit of Mapungubwe, from which some 70 oz. of wrought gold were recovered in the form of beads, bracelets and the sheathing of a staff of office. Masses of glass beads were also found.

These new finds at once threw light on earlier discoveries. Thus the gold sheathing of what must have been a staff of office,[1] its circular base, ornamented with chevron and herring-bone patterns, still in position, together with the sheathing of the point or tip, enables us to identify with reasonable certainty the similar base and tip found with the original gold burial.[2]

No trace of a rhinoceros or any other animal was found with this burial, whereas with another in the same area (No. 14) the curious ornaments with a motif of animal heads, figured in colour pl. B, were found.

2. *The Grave Area discovered.* The discovery of this new gold burial led to others. Soon a regular cemetery was uncovered—the Grave Area.[3] This is a well-defined area on the lower western slope of the hilltop. Here van Tonder in the course of the next few months exposed twenty-three skeletons, including those of women and children.

This was a discovery of the first importance. Zimbabwe has not yet yielded any skeletal material; and the skulls found at Dhlo-Dhlo by Miss Caton-Thompson[4] have not, as far as I know, been subjected to a sufficiently critical examination and comparison with those of other South African Native types. This would therefore be a great opportunity for our physical anthropologists.

3. *Professor Malan's report on faunal remains.* Mr van Tonder notified the Committee of his finds; and, in accordance with the Committee's instructions, made no attempt to remove any skeletal material or grave furniture until these had been examined *in situ* by Professor D. E. Malan, Head of the Zoology Department of the Pretoria University. Professor Malan had been from the outset charged with the examination of all faunal remains, and he superintended the removal of these human bones from Mapungubwe. From his report dealing with the skeletal material and, in the case of human remains, with the mode of burial, the following extracts are made:

> The condition of the bones in general leaves much to be desired, as they are all in an extremely friable condition. This state is to be ascribed to the nature of the soil and climate. The soil is impregnated with a very large percentage of wood-ash and is in addition very porous and light.
>
> None of the human skeletons was at any greater depth than a couple of feet and the majority were within about 8 or 10 in. from the surface. They were thus subject to great variation in temperature. The nature of the rainfall in this area has also to be taken into account, in that it consists chiefly of short, heavy downpours alternating with long periods of drought. It is thus not a matter for surprise that bones lying in a strongly alkaline environment, exposed to great heat and cold and alternately soaked and desiccated, should fairly rapidly be reduced to a condition in which they crumble as soon as the supporting soil round them is removed.
>
> *A. The human skeletal material.* Beads and potsherds were found with only a few of the infants, the majority having been buried without accessories. Glass beads and sherds were found in association with all the adults. Only in the case of Nos. 10 and 14 were gold objects associated with the burials. As in other respects also these two skeletons give evidence of particular ceremonial burial, they are described in greater detail.
>
> *Skeleton No.* 10 ("Sceptre" skeleton). This body had been buried in the sitting position and with the knees probably drawn up to the chest. It was facing west. The remains of the skull were resting on the front of the pelvis only about 6 in. below the surface of the soil. The femora extended forwards diverging at a slight angle. The right humerus lay across the right femur. The right radius and ulna were flexed to the humerus on the right side of the femur; lying in the angle formed by the right upper and lower arm bones was found the bossed and spirally twisted gold casing of a stick ("sceptre"). The left arm bones were disposed in a similar position to the left of the skeleton. The impression gained was that the body was buried in a sitting position with the arms folded round the front of the knees, the right hand grasping the "sceptre". About a hundred small gold beads and two pierced cowries lay among the vertebrae and pelvic bones, apparently the remains of a disintegrated necklace. Unfortunately, of the skull only the basal portion was still extant, the entire dome having disappeared. The greater part of the rest of the skeleton was recovered.

[1] More fully described below (next column).
[2] Cf. colour pl. A.
[3] Cf. pl. ii, p. 3.
[4] Cf. *Zimbabwe Culture*, p. 244.

Slightly in front and to either side of the knees were two flat black bowls of the M_1 type. One bowl was broken in half. The other, which was entire, was inverted. The contents of the bowls, if any, had perished without trace.

Skeleton No. 14 ("Gold" skeleton). This was also buried in the sitting position and was also facing west. In general the various bones occupied the same position as in the case of skeleton No. 10. It was, however, much deeper than usual, being about 2 ft. below the surface of the soil. Unfortunately, the bones were very friable.

This burial was remarkable for the large amount and variety of the objects associated with the bones. The legs had been wreathed in over a hundred bangles constructed of coiled wire. Several pieces of beautifully worked gold plating were also found, as well as about 12,000 gold beads. The skeleton was surrounded by a large quantity of glass beads, as if it had been buried wearing bead garments or girdles. Behind it there was a cylindrical pile of beads about 12 by 8 in., as if a bag full of beads had been put into the grave behind the body. In addition, several earthenware pots were found close to the bones.

B. The non-human skeletal material. Systematic collections of bone fragments were made at several of the excavation sites and subsequently examined. The vast majority of these belong to the ox and to the sheep or goat. It is impossible in the case of fragments, and even of entire bones in most cases, to distinguish between sheep and goat. This is a matter for regret since it would have been of considerable interest to determine whether the inhabitants of Mapungubwe kept sheep or goats or both. That most of the bones, the remains of food, should belong to domesticated animals, shows that we have here to do with a pastoral people.

Professor Malan's statement that "the vast majority" of animal bones identified were found to be those of domestic animals, is of special interest. When questioned as to the proportion of domestic to wild animals represented, he stated that of the bones identified by him, 95 per cent were those of domestic animals. He had not wished to be more definite in his report, since he had naturally only been able to examine a small portion of the material represented by the 20,000 tons of midden on Mapungubwe. He added, however, that his experience of the many sites examined suggested that this proportion would be found to hold good.

We may, therefore, safely accept Professor Malan's conclusion, that the Mapungubwe people were a race of pastoralists.

4. *Human remains examined by School of Anatomy, Witwatersrand University.* The treasure trove of human remains was so important, that the Committee, in consultation with Professor Malan, decided to invite Professor R. A. Dart, Head of the Anatomy Department of the Witwatersrand University, and the team of specialists in physical anthropology whom he has trained, to examine and report on this skeletal material.

Professor Dart at once agreed, and, as his own engagements did not permit him to give any time to the work, he asked Dr A. Galloway, Senior Lecturer in his Department, to take charge of the investigation.

Dr Galloway and his assistants had to work at very high pressure, as the time at their disposal was very limited. They cheerfully devoted weekends and holidays to the task, and have put the Committee under a great obligation to them for the care and the promptness with which they have carried out their investigations.

Their conclusions, which threaten to upset some of our fundamental concepts with regard to the character and history of what we have hitherto rather loosely called the Bantu races, are sure to evoke the liveliest interest.

Dr Galloway's report forms Part VIII of this volume.

5. *Captain G. A. Gardner takes over.* Mr van Tonder worked on alone at Mapungubwe until the end of June 1935, when Captain G. A. Gardner, who had excavated in the Fayum with Miss G. Caton-Thompson, came to take charge of the more extended operations of the winter season.

It is pleasant to be able to record that the work done by Mr van Tonder while he was the only European at Mapungubwe and was carrying on under the most trying climatic conditions, has yielded such interesting and important results.

Captain Gardner was asked to examine Bambandyanalo more particularly, as besides the very interesting types of pottery found there (some of which are discussed by Mr Schofield) many burials had also been uncovered on that site.

The results of these further investigations will be recorded in a second volume, which the Archaeological Committee hopes to publish in due course.

PART VIII

THE SKELETAL REMAINS OF MAPUNGUBWE

INTRODUCTION

While at least twenty-four skeletons were unearthed at Mapungubwe, the human skeletal material available for analysis consists of bones, more or less fragmentary, of eleven individuals. It is to be regretted that, owing to the extreme fragility of this material, so little could be preserved. The bones available reveal such a physical homogeneity—that is, they all show a very great proportion of similar physical features—that further evidence to substantiate or disprove this physical homogeneity would have been welcomed.

For purposes of description the skeletons have been labelled M_1 to M_{11} inclusive.

Field No.	Department No.	Descriptive No.
Original "gold" skeleton	A 620	M_1
—	A 620B	M_1A
6	A 621	M_2
7A	A 622A	M_3
7B	A 622B	M_4
10, "sceptre" skeleton	A 619	M_5
11	A 627	M_6
14, "gold" skeleton	A 623	M_7
16	A 624	M_8
17	A 625	M_9
20	A 626A	M_{10}
22	A 626B	M_{11}

The material has been reconstructed mainly by Mr Trevor Jones and Mr L. H. Wells. They were fortunate in finding so many anatomical landmarks on the fragments that the reconstructions are as accurate as could be expected in view of the marked distortion and crushing sustained by the material. Because of this marked distortion little reliance can be placed on the measurements.

In 1934 a team of science research students in the Department of Anatomy described the physical anthropology of the Bush skeleton. This work implied an accurate comparative knowledge of physical types in South Africa. I am fortunate and grateful that in this analysis I have had the help of members of this team. Mr L. H. Wells prepared reports on the non-metrical features of the skulls, the vertebrae and on the bones of the hands and feet. Mr G. F. Berry analysed the cranial metrical features and Mr R. E. Bernstein has given me a report on the bones of the upper extremity and Mr J. J. Prag, the lower extremity. Miss Margaret Orford has examined the pelvic bones, while Mr G. W. H. Schepers analysed the mandibles and Mr Trevor Jones, the teeth. My duty has been one of supervision and of welding these results into a unity.

Various workers in this department, and elsewhere, have over a period of years been convinced of the fact that, generically, peoples called Bushmen, Hottentots and Strandlopers are one.[1] To these ethnological groups the name Bush Race has been applied. The name Bush is applied to a bone, whether recent or prehistoric, the features of which are seen in the majority of known Bush skeletons. Many prehistoric human bones, as well as some recent ones, while similar to Bush, are cast in a larger mould than that of the Bush bones. Many of their features are ultra-Bush, while some of them resemble features in bones from known pre-Bush horizons at Boskop, Matjes River, Zitzikama and Fish Hoek. Such a bone is labelled Bush-Boskop or Boskop-Bush, depending on which features predominate. This is synonymous with Drennan's "Hottentot",[2] while Broom's "Korana" type[3] is merely a Matjes River variant.

At least three distinct types of Boskop man are known: the Boskop type, typified by the original Boskop skull,[4]

Note. Footnotes referring to published works already quoted give journal and year only.

[1] DENIKER, J. (1926). *Les races et les peuples de la terre*, p. 584. Paris: Masson. HRDLIČKA, A. (1928). Catalogue of human crania in the United States National Museum Collections. Australians, Tasmanians, South African Bushmen, Hottentots and Negro. No. 2696, *Proc. U.S. Nat. Mus.* **71**, 107–13, and p. 122. DART, R. A. (1929). Anthropology, in *South Africa and Science*, p. 270. Edited by H. J. Crocker and J. McCrae. Johannesburg. MAINGARD, J. F. (1932). Physical characteristics of the Korana. *Bantu Studies*, **6**, 176. GALLOWAY, A. (1933). The Nebarara skull. *S. Afr. J. Sci.* **30**, 593. MAINGARD, L. F. (1934). The linguistic approach to South African prehistory and ethnology. *S. Afr. J. Sci.* **31**, 129.

[2] DRENNAN, M. R. (1936). Report on a Hottentot femur resembling that of *Pithecanthropus*. *Amer. J. Phys. Anthrop.* **21**, 205–16.

[3] BROOM, R. (1923). A contribution to the craniology of the yellow-skinned races of South Africa. *J. R. Anthrop. Inst.* **53**, 132–49.

[4] HAUGHTON, S. H. (1917). Preliminary note on the ancient human skull remains from the Transvaal. *Trans. Roy. Soc. S. Afr.* **6**, 1–14.

the Matjes River type described by Sir Arthur Keith[1] and the Zitzikama type.[2] This last is exemplified by a very small face and a large vault instinct with foetal features. It is this Boskop variant which Drennan used for his brilliant pedomorphic concept.[3]

The term "Bantu" has as little significance in physical anthropology as the term "European" would have. Not only does it confuse physical anthropologists, but it is a constant source of annoyance to social anthropologists and ethnologists who fail to see how a linguistic name can ever be a physical term. To obviate this confusion research is being carried on in this department to assess the relative values of "Bantu" physical features. Facial features in the "Bantu" may be classified as Bush, Armenoid, Mediterranean, Mongoloid or Negro. The Bantu-speaking peoples are known to be fundamentally Negro from the physical point of view. The Negro in his African migrations hybridized with other strains in Africa and finally, in South Africa, he added Bush features to this make-up. The descendants of the first Bantu migrations have on the whole more Bush features than the later migrators. Thus any so-called "Bantu" will show some physical features of the pre-Bantu indigenes but the majority of the features are Negro, with maybe a few features of the above-mentioned types.

The homogeneous and essentially Negro physical character of the Bantu-speaking peoples of South Africa has so impressed itself upon physical anthropologists that the term "Bantu" has been used by them instead of South African Negro. Hence, in quotations from older publications the term "Bantu" will be found used as a physical term. It is synonymous with Negro and with the "Kaffir" of the earlier writers. In my Negro metrical analysis it has been assumed that, since Negro is the fundamental type, and since no suitable metrical standards are available, the two central quartiles of a frequency curve will give a tentative range of Negro normal variation.

The material used for comparison has been the physical anthropological collection of this University. The Negro collection consists of some 300 skeletons from material used in the dissecting rooms, about which the name, age, sex, tribe and cause of death are known. The Bush material is a collection of *known* Bush skeletons. Skeletons with a Bush facies but about which little is known have not been used. There has been frequent reference to Bush data collected for the description of the Bush skeleton,[1] from the McGregor Memorial Museum, Kimberley, Collection. For Boskop comparative material, published and unpublished data have been consulted liberally. Much has been made of the Kalomo[2] and University of Cape Town[3] Boskop material. Both specimens are recent, but both show whole regions which are identical with material from a Boskop horizon. Again, both have many features which are not known in Bush and Negro collections and are so unique that they are accepted as Boskop features. Since the publication of the Kalomo paper, specimens have come to hand from pre-Negro horizons which have verified some of these Kalomo features as belonging to a Boskop type and not being sporadic at Kalomo.

From the numerous published descriptions of Bush and Boskop bones, a fairly comprehensive picture of their physical nature can be obtained. We are indebted for this to Haughton[4] and Keith[5] for their descriptions of the original Boskop fragments; to Dart[6] and Gear[7] for their Zitzikama studies; to Drennan for his work on the Plettenburg Bay[8] and Fish Hoek skulls[9]; and finally to Sir Arthur Keith[10] for his account of the Matjes River people.

Our knowledge of the Bush physical type is got largely from Shrubsall's metrical analysis,[11] reinforced by the descriptive studies of Broom[12] and Slome.[13] Such data were verified by the Symposium on the Bush skeleton prepared by members of this department.[14]

Contrary to expectations our knowledge of the South

[1] KEITH, A. (1933). A descriptive account of the human skulls from Matjes River cave, Cape Province. *Trans. Roy. Soc. S. Afr.* **21**, 151–85.

[2] DART, R. A. (1923). Boskop remains from the south-east African coast. *Nature*, **112**, 623–5. GEAR, H. S. (1925). The skeletal features of the Boskop race. *S. Afr. J. Sci.* **22**, 458–69. (1926.) A further report on the Boskopoid remains from Zitzikama. *S. Afr. J. Sci.* **23**, 923–34.

[3] DRENNAN, M. R. (1931). Pedomorphism in the pre-Bushman skull. *Amer. J. Phys. Anthrop.* **16**, 203–10.

[1] THE DEPARTMENT OF ANATOMY, UNIVERSITY OF THE WITWATERSRAND (1934). Abstract of the Symposium on the skeleton of the Bush race. *S. Afr. J. Sci.* **31**, 569–85.

[2] GEAR, H. S. (1926). A Boskopoid skeleton from Kalomo, Northern Rhodesia, *Bantu Studies*, **2**, 217–31.

[3] DRENNAN, M. R. (1925). Was South Africa the cradle of mankind? *Ill. Lond. News.* ii, Sept. 5, p. 432.

[4] HAUGHTON, S. H. (1917). *Trans. Roy. Soc. S. Afr.*

[5] KEITH, A. (1929). *The Antiquity of Man*, 2nd ed. rev., **1**, 364–76. London: Williams and Norgate.

[6] DART, R. A. (1923). *Nature.*

[7] GEAR, H. S. (1925, 1926). *S. Afr. J. Sci.*

[8] DRENNAN, M. R. (1931). *Amer. J. Phys. Anthrop.*

[9] DRENNAN, M. R. (1930). *A short course on Physical Anthropology*, 2nd ed., pp. 49–51. Cape Town: Mercantile Press. KEITH, A. (1931). *New discoveries relating to the Antiquity of Man*, pp. 126–40. London: Williams and Norgate.

[10] KEITH, A. (1933). *Trans. Roy. Soc. S. Afr.*

[11] SHRUBSALL, F. C. (1898). Crania of African Bush races. *J. R. Anthrop. Inst.* **27**, 263–92. (1906–9.) Notes on some Bushmen crania and bones from the South African Museum, Cape Town. *Ann. S. Afr. Mus.* **5**, 263–92. (1911.) A note on craniology of South African Bushmen. *Ann. S. Afr. Mus.* **8**, 202–8. (1922.) A note on Bushmen craniology. *Man*, **22**, art. 107.

[12] BROOM, R. (1923). *J. R. Anthrop. Inst.*

[13] SLOME, D. (1929). The osteology of a Bushman tribe. *Ann. S. Afr. Mus.* **24**, 33–60.

[14] DEPARTMENT OF ANATOMY (1934). *S. Afr. J. Sci.*

African Negro is limited in print to Shrubsall's metrical analysis of the A-Bantu[1] and to scattered references in literature. To rectify this omission in our knowledge of South African Native types, a study on the anatomy of the South African Negro skull is being prepared.

In this paper, for comparison with the Mapungubwe skeletons, a collection of fifty-five Transvaal Basuto skulls has been chosen, because it is the tribe I have proceeded furthest with in this larger work, and because these Transvaal Basuto skulls represent the descendants of the oldest Negro inhabitants of the northern half of the Transvaal. In taking such a group, I may lay myself open to the censure of the ethnologist, since the Transvaal Basuto are not regarded by him as an ethnic group. On examination, however, the skulls show as close a homogeneity as any other group would. At the least, they are a very representative Negro collection which now occupy a large area of the northern Transvaal. I therefore give here a summary of my findings.

The Basuto Skull

On norma verticalis the cranial form[2] is ortho-ellipsoid, more so than ortho-ovoid. The skull is dolichocranial with a normal range of index from 70 to 73. The frontal region is an even curve in all directions. There is no frontal narrowing, the skull being eurymetopic with a fronto-parietal index range of 71–76. A metopic ridge is very infrequent. The smooth convexities of the vault are not interrupted by post-coronal flattening, and there is no inter-parietal flattening. On the whole, the norma verticalis of the Basuto skull shows no Bush or Boskop features.

On norma lateralis the skull is seen to be orthocranial; the altitudinal index normal range is 70–73; while the auricular height index range is 59–62. The range of the vertical index is 97–102, the skull therefore being more acro- than metrio-cranial. The cranial contour may be summarized as follows: the glabella and supra-ciliary ridges are more often prominent than otherwise, the forehead recedes in an even uninterrupted low convexity which reaches a highest point vertically above or behind porion; from this highest point the contour of the parieto-occipital region is hemispherical; the nuchal plane is convex, facing downwards and backwards.

The region above asterion is not flattened but evenly convex. The parieto-squamous suture is convex, rising well above the level of pterion. The posterior part of the suture, instead of continuing the convexity of the anterior portion, may descend as a high oblique line.

The shape of the mastoid process is very variable but on the whole is more likely to be large flattened-mammilliform in type than otherwise. The digastric fossa is a deep uniform gutter excavating the medial aspect of the mastoid process, rather than being a groove on the base of the skull. If its posterior portion is exposed posteriorly when viewed from norma lateralis, the exposure is only slight; more frequently it notches the posterior border of the mastoid process.

The presence or absence of a sterno-mastoid ridge is an expression of the size of the mastoid process. If the mastoid process is large, then the area for the attachment of the sterno-mastoid is a flat linear impression, but if it is small, this area is raised into a ridge. Since the mastoid process is usually large in the Basuto a sterno-mastoid ridge is not usually present. The supramastoid groove is more often a definite, but shallow, groove, in contradistinction to the Bush type, where it is either very faint or absent, and to the prominent deep groove of the Boskop type. The line of the supramastoid crest is a backward production of the line of the zygomatic arch as against the Boskop type, where it rises sharply upwards at a right angle just behind porion, then passes forwards as a low-set superior temporal line. The supra-meatal triangle is not the inconspicuous thing it is in the Caucasian of text-book description, but is a definite trihedral excavation.

The tympanic plate of the temporal bone is a thick rugged plate or has a marked element of thickness in it. The posterior root of the zygoma has a tendency to be massive, with a rounded or sharp lateral border. The lateral border is seldom a plane surface. The *mons temporo-sphenoidale* and the inferior frontal eminence are not features of the Basuto skull. The superior temporal line curves forward in a bold wide arc and continues into the posterior border of the zygoma.

A fair degree of total prognathism is the rule in the Basuto, with marked subnasal prognathism. Dental prognathism is present or absent in an equal number of cases and cannot be used as a criterion of racial diagnosis in the Basuto.

The facial indices show that the total face is of more than medium length (87–94), while the upper facial index is mesene (51–55). The difference in the range of these two indices is due to the characteristically deep symphyseal region of the mandible.

On norma facialis the contour of the frontal region is an even curve. The glabella is raised and the supra-ciliary ridges are prominent. The lateral supra-orbital region and its associated external angular process form a narrow area whose margins are only slightly convergent. It is not excavated, it tends to point downwards rather than to be laterally projecting and there is no grooving by the branches of the supra-orbital nerve.

[1] Shrubsall, F. C. (1899). A study of A-Bantu skulls and crania. *J. R. Anthrop. Inst.* **28**, 55–94.

[2] Gear, J. H. (1929). Cranial form in the native races of South Africa. *S. Afr. J. Sci.* **26**, 684–97.

The orbits are high-rectangular to almost square in shape (the normal range of orbital index is more hypsiconch than meso-conch (81–89)), with their transverse axes set obliquely. The superior margins are rounded and more often slender than blunt; they are not everted, since eversion is an expression of excavation of the lateral supra-orbital region. The normal range of the inter-orbital index is from 22 to 25. The nasal index is characteristically chamaerhine (50–57).

The nasal processes of the maxilla face almost anteriorly and carry narrow nasal bones which are either arched or flat. Ridging of the nasal bones is not common. The nasal aperture is pyriform in shape, but has little tendency to be squat. The nasal spine is fairly prominent; the inferior margin may show either a nasal gutter or a subnasal fossa, a definite sharp margin, or sill, being unusual. The subnasal alveolus is deep, prognathic and corrugated by the alveoli. When this depth is expressed as an index of the upper facial length the normal range of the index is from 25 to 29.

The infra-orbital region—that is, the region limited above by the inferior orbital margin, bounded laterally by the prominence of the malar bone and medially by the nasal aperture and the nasal process of the maxilla—is excavated, but the true canine fossa of anatomical description, though present, is faint. The malar region presents an even convex contour, its main surface, which is vertical, faces anteriorly and laterally.

Norma basalis shows a foramen magnum which is typically oval, somewhat elongate, and has little tendency to become circular (index 76–82). The condyles overhang its anterior quadrants, sometimes to a marked degree. The glenoid fossa is deep and narrow, the articular tubercle and the post-glenoid tubercle are prominent, the Glaserian or petro-tympanic fissure is inconspicuous, and there is little or no backward extension of the articular surface on to the tympanic plate.

The normal range of the maxillo-alveolar index is from 107 to 116, which shows a wide variation from dolicho- to meso-uranic, and even reaching brachy-uranism. The palatal index shows a greater consistency, it is predominantly lepto-staphyline (73–82).

The dental arcade of the hard palate is **U**-shaped, the arms of which may diverge posteriorly. The depth is variable and the floor shelves downwards at the expense of the anterior quarter or third. A palatal torus is not a feature of the Basuto skull.

The grooving of the inner plate of the cranium by the branches of the middle meningeal artery is not well defined, nor is the sulcus for the sigmoid sinus prominent. The cribiform plate of the ethmoid is narrow and deep absolutely, but made more so, relatively, by the convexity of the orbital plate of the frontal bone. The *crista frontalis interna* is inconspicuous, while the cranial bones are thin.

The question at issue is: Are these Mapungubwe bones from a pre-Bantu indigenous population or do they represent a Bantu-speaking Negro population? If the latter is found to be the case, it will be necessary to enquire further to see if there is any evidence, from the degree of hybridization present, whether they represent an early or late phase in the history of the Bantu-speaking peoples in Southern Africa. Further, are any non-African physical types represented?

Full descriptions of the skeletal material have been given for three reasons. Some of the most valuable material has been published with descriptions, which are so scant as to give little or no evidence for the diagnosis, no matter how correct that diagnosis is (e.g. Fish Hoek, Florisbad, Springbok Flats, Dhlo-Dhlo, etc.). It is difficult to use such publications for comparison. Again some of the Mapungubwe skeletons are those of children or adolescents. Little is known of the features of adolescent South African types. This, coupled with the number of unique features which are present in this collection, alone makes full description necessary. Finally, full description allows other observers to judge more accurately, and from a physical point of view, the value of the diagnosis given here.

Following the description of the skeletal material, there are comparisons with collections of skulls from the same geographic area, to find out the relationship of the Mapungubwe remains to known material from this area. It is to be regretted that the skulls from Rhodesian ruins[1] are too inadequately described to permit of suitable comparison.

DESCRIPTION OF MATERIAL

M_1. Original Gold Skeleton

Fragments of the skull and mandible only are available for examination. The skull fragments comprise parts of the posterior portion of the frontal bone, the medial portion of the right parietal including part of the parietal eminence, the postero-medial angle of the left parietal and a number of fragments of the occipital. All the fragments are thick and massive as Keith[2] observes to be the case in the Boskop remains. Further, the meningeal and sinus grooves are deeply excavated, a character noted by Gear[3] in the Boskop material from Zitzikama.

[1] Keith, A. (1931). Report on the Dhlo-Dhlo skulls, in *The Zimbabwe Culture*, by G. Caton-Thompson, Appendix 2, pp. 244–7. Oxford: Clarendon Press.
[2] Keith, A. (1929). *Antiquity of Man*, **1**, 370.
[3] Gear, H. S. (1926). *S. Afr. J. Sci.*

This skull must have been very capacious and of a pentagonoid cranial form. The frontal region is tapering and has a distinct median ridge in its posterior part where the two frontal fragments articulate in the mid-line. The absence of the median anterior portion of the frontal bone destroys any evidence of a continuous metopic ridge. The frontal bosses must have been well marked. The temporal lines are strongly indicated on the frontal fragments and an inferior frontal eminence[1] is hinted at. The frontal bone is deeply grooved by the branches of the supra-orbital nerves, which emerge through foramina placed far back from the orbital margin—a feature characteristic of the Bush and Boskop types.[2]

The prominence of the occiput in norma lateralis is accentuated by a bilateral depression lying between the lambdoid suture and the superior nuchal line. This occipital prominence is a distinctly Boskopoid feature. The occiput itself is rounded. The superior nuchal line is elevated into a torus, made more marked by a deep transverse occipital furrow just below it. The *receptaculi cerebelli* are well filled.

The salient feature of these skull fragments is that all the characteristics they show are racially diagnostic of the Bush and Boskop types.

The mandibular fragments[3] consist of portions of the right ramus, the left junctional region between the ramus and the body, and the alveolar half of the symphyseal region.

The fragments are those of a very large, comparatively massive mandible. The ramus is tall and from the position of the lingula it must have been relatively broad. The shape of the ramus, which is very obliquely inclined to the body, must have been roughly a parallelogram.

The condylar process is stout and set on a broad base. The vertical axis inclines medially as it passes upwards. The remains of the condyle show that it possessed medio-lateral expansion.

The coronoid process, the tip of which is missing, is massive and its axis points upwards and forwards. The anterior border of the ramus is blunt. There is an incipient gutter between this anterior border and the alveolar arcade.

While the ramus angle is relatively obtuse it is not truncated. Eversion of the angle occurs chiefly at the expense of the lower border. The angle flange is very stout.

The medial aspects of the ramal fragments show prominent ramal stress-bars; consequently the depth of the wide groove leading into the mandibular foramen is exaggerated. The area for insertion of external pterygoid is barely distinguishable, while that for internal pterygoid is massively rugose.

The symphyseal region shows a small median tuberosity which is exaggerated by depressions on either side of it. When the fragment is oriented so that the alveolar sockets are vertical, the inner aspect of the fragment is an unexcavated plane lying at about 60° to the horizontal. If there was dental prognathism, the plane must have lain at about 45°. There is a suggestion of a transverse ridge on the inner aspect.

The large size of the fragments and their relative massiveness are distinctive features. The measurements agree with the Boskop Kalomo mandible. The mandibular angle, though very obtuse, is not much greater than that of Kalomo which has always been underestimated. The massiveness of the angle flange is only slightly less than that of Kalomo and is far greater than that of the Kopje Enkel, Negro or Bush mandibles.

This skeleton, though very fragmentary, shows sufficient features of racial diagnostic significance to place it definitely as a Boskopoid type with some Bush features and no Negro features.

Skeleton M_1 A

The specimen consists of the symphyseal region and contiguous parts of the body, as far back as the first molar teeth, of an adult mandible. It was found "in the original grave area", but there is no information as to whether it was found associated with any other object, or whether it was found on the surface or at depth. It is in a very fresh condition and shows none of the disintegration processes which are such a feature of all skeletal material from the top of the hill. From the strength of the fragment, and from the fresh unweathered nature of the fracture-surfaces, it is difficult to imagine that its fractures are due to weathering or other natural agencies. On these evidences alone, it would appear to be an extraneous element. I am informed by Professor Leo Fouché that a severe cloud-burst was responsible for the exposing of the original gold skeleton. He is of the opinion that this fragment could have been washed

[1] Wells, L. H. (1929). Fossil Bushmen from the Zuurberg. *S. Afr. J. Sci.* **26**, 806–34.

[2] Keith, A. (1933). *Trans. Roy. Soc. S. Afr.*

[3] References used in the description of the *Mandible* are: (*a*) Broom, R. (1929). The Transvaal fossil human skeleton. *Nature*, **123**, 415–16. (*b*) Gear, H. S. (1926). *Bantu Studies.* (*c*) Haughton, S. H. (1917). *Trans. Roy. Soc. S. Afr.* (*d*) Keith, A. (1933). *Trans. Roy. Soc. S. Afr.* (*e*) Schepers, G. W. H. (1934). The Bush mandible. In Abstract of the Symposium on the skeleton of the Bush race. *S. Afr. J. Sci.* **31**, 571–6. (*f*) (1935). A fossilized human mandible from Kopje Enkel, Western Transvaal. *S. Afr. J. Sci.* **32**, 587–95. (*g*) Wallis, W. D. (1926). The evolution of the human mandible and correlations with features of the skull. *Dent. Cosmos.* **68**, 107–19. (*h*) Wells, L. H. (1931). Growth changes in the Bushman mandible. *J. Anat.* **66**, 50–63.

down into the original grave area from the surface higher up.

Viewed from above, all the structures on the internal surface of the symphysis can be seen. There is a small genial depression but no true simian pit—for a pair of very prominent genial tubercles can be seen below it and there is no transverse tuberculated ridge above it. The internal contour forms a true parabola and the alveolar arcade has a horse-shoe contour.

The digastric fossae are 7 mm. apart, poorly defined, oval in shape and face downwards and backwards. The *incisura submentalis* is absent. There is a well-developed splenial element to the chin and marked alveolar prognathism. The poorly-marked median mental tuberosity has a relatively high position on the anterior surface of the symphysis. The infero-lateral mental tubercles are absent but the chin is not pointed. The mental foramen is situated opposite the second premolar, midway between the upper and lower borders of the body of the mandible.

The morphological and metrical features of this mandible are, therefore, predominantly Negro. Since its history and condition entitle us to separate it completely from the rest of the Mapungubwe collection, it will not be further discussed in this report.

Skeleton M_2

The remains of this skeleton consist of an almost complete skull, lacking only portions of the left parieto-occipital region, with its mandible, atlas and axis vertebrae. The upper first permanent molar has fully erupted, as have all the permanent incisors and the first premolars; the permanent canines are in process of eruption, but the right deciduous canine is still *in situ*. The right second premolar is fully erupted; on the left side the second milk molar is still in place. In the mandible, the first permanent molar and first premolar have erupted, while the second permanent molar and second premolar are just appearing. Therefore, these are the remains of a child of about 9–11 years. There is no indication of its sex. The cranial bones are much more massive than those of any immature Bush or Negro skull available for comparison. The meningeal and sinus grooves are well marked.

The skull

The skull is hyper-dolichocephalic, definitely chamaecephalic and has the enormous cranial capacity of 1500 c.c. The average adult Bush is 1200 c.c. and the average adult Negro is 1350 c.c. This figure, 1500 c.c., in an immature subject must be regarded as a Boskop feature.

In norma verticalis (Fig. 1) the cranial form is distinctive. The apparently wide parietal region tapers to a narrow frontal region (fronto-parietal index 69·6), a frontal taper which is exaggerated by a marked metopic ridge. The skull is thus trigonocephalic to an extent paralleled only by those from Outeniqua[1] and Matjes River.[2] All known skulls possessing this characteristic are frankly Boskopoid.

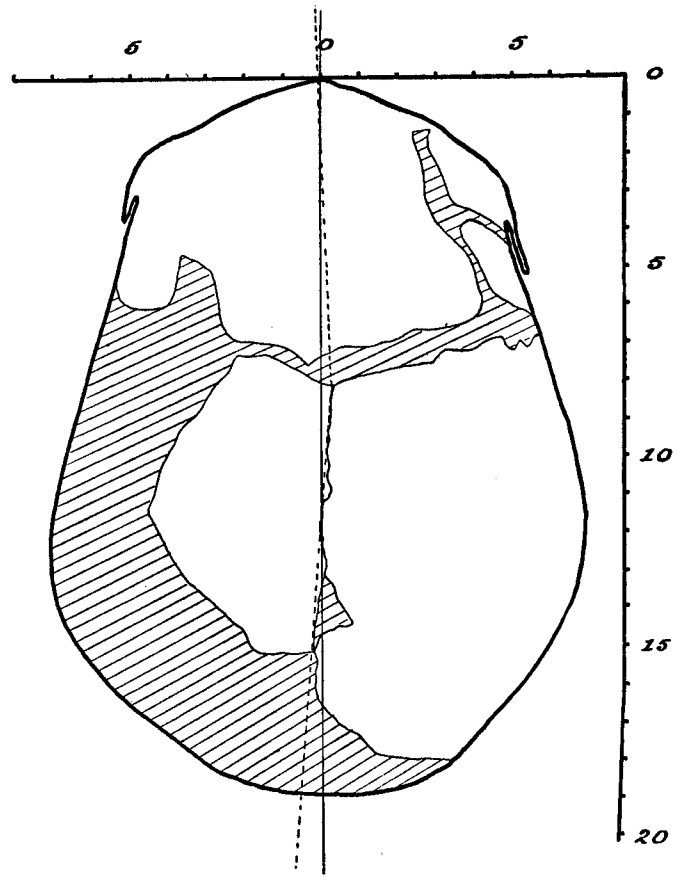


Fig. 1. Norma verticalis of skull M_2. Cross-hatched areas represent areas of reconstruction. Interrupted line represents true median line of skull.

The parietal bossing is infantile in type, the cranial form is therefore chamae-ovoid. The post-coronal bilateral depressions are absent, but the combination of trigonism and post-coronal depressions has not yet been reported. The Boskopoid inter-parietal groove[3] is distinct, the occiput is prominent and is defined laterally by exaggerated post-asterionic depressions.

On norma lateralis (Fig. 2) the brain-case is considerably larger in proportion to the small Bush type of

[1] Wells, L. H. and Gear, J. H. (1931). Cave dwellers of the Outeniqua Mountains. *S. Afr. J. Sci.* **28**, 444–69.
[2] Keith, A. (1933). *Trans. Roy. Soc. S. Afr.*
[3] Keith, A. (1929). *Antiquity of Man*, **1**, 370.

face than is usual at this age. Drennan[1] has stressed the pedomorphic persistence of a more juvenile cranio-facial ratio as a Boskopoid characteristic.

The median contour of the forehead is salient owing to the presence of the metopic ridge. This frontal contour passes into that of the vault by a gradual curve which sweeps upwards into bregma.

From that point the vault is flattened as far backwards as the level of the parietal bosses, where it curves abruptly downwards. There is marked parieto-occipital flattening and the occiput is prominent. The

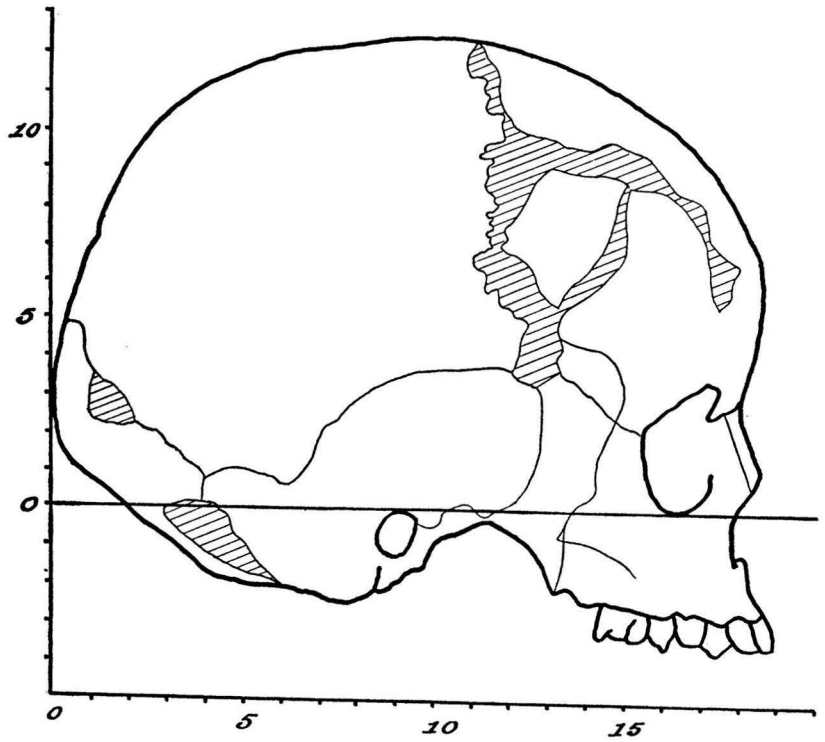


Fig. 2. Norma lateralis of skull M_2.

nuchal line is not strongly marked, and the upper portion of the nuchal plane is flat, but below it swells out into prominent *receptacula cerebelli*. Except for the height of the vault, the features of this profile are essentially Boskopoid.

As would be anticipated from the youth of the individual, the glabella and supra-ciliary eminences are not well defined. The external angular process, however, is thick and massive as in Boskop skulls.[2] There is a small inferior frontal eminence which is crossed and partially masked by the temporal lines. This feature has been noted in other skulls with strongly marked Boskop-

[1] Drennan, M. R. (1931). *Amer. J. Phys. Anthrop.*
[2] Keith, A. (1933). *Trans. Roy. Soc. S. Afr.*

oid features.[1] There is a slight *mons temporo-sphenoidale*,[2] merging into a general projection along the line of the parieto-squamous suture, a common feature in immature Bush and Boskopoid skulls. The upper limb of this suture is horizontal and lies just below the level of pterion, while its posterior part descends obliquely, a primitive feature observed in the Bush and Boskop types. The mastoid process is short, thick and blunt; the digastric fossa is only very slightly exposed posteriorly. This fossa is situated on the base of the skull, not on the mastoid process itself. The sterno-mastoid ridge is not strongly marked, nor is the supra-mastoid crest, but its line passes almost vertically upwards. The root of the zygomatic arch is slender. The tympanic ring, however, is relatively massive for an immature skull.

The face is orthognathous with slight subnasal prognathism. It has thus the profile characteristic of the Bushman.[3] The nasal processes of the maxillae are prominent, but the nasal bones are flattened and are concave on profile.

[1] Meaker, K. B. (1935). Human remains from the Hole-in-the-wall, Mqanduli, Transkei. In Symposium on human skeletal remains from the Cape Coast. *S. Afr. J. Sci.* **32**, 609–12.
[2] Dart, R. A. (1924). The Rooiberg cranium. *S. Afr. J. Sci.* **21**, 556–68.
[3] Keith, A. (1929). *Antiquity of Man*, **1**, 369.

Norma facialis (Fig. 3). The frontal region is high-vaulted and narrow, with a well-marked median ridge and infantile frontal bosses; it completely overshadows the tiny face. The ophryonic groove[1] is interrupted by the metopic ridge. There is no hollowing out of the supra-orbital trigone, and the external angular processes, though massive, are not laterally divergent. Accessory foramina for the supra-orbital nerves are present. The face, like the frontal region, is narrow compared with the greatest breadth of the skull. The orbits are large,

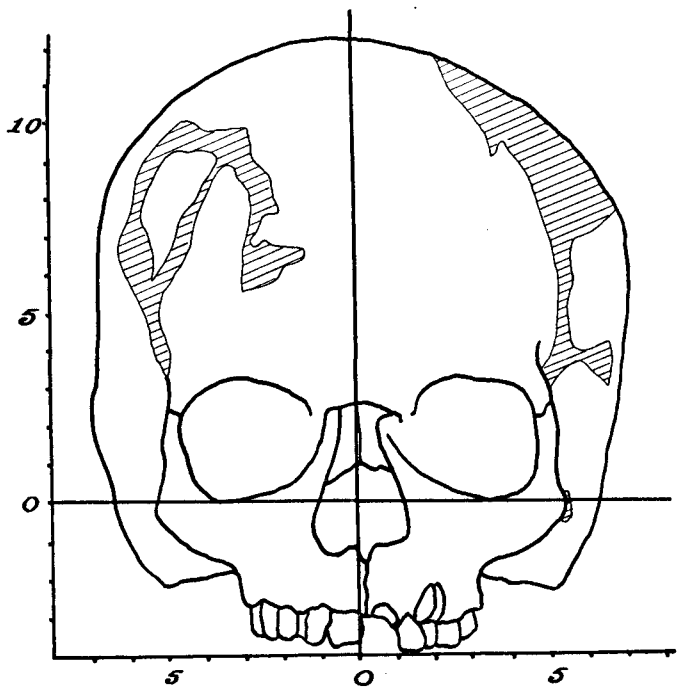


Fig. 3. Norma facialis of skull M_2.

low and sub-rectangular, and their axis slopes obliquely downwards and backwards as in the Boskop skull from Zitzikama.[2] Supero-laterally there is a very deep fossa for the lacrimal gland, as described in the Illovo skull.[3] There is a very slight orbital shelf.[4] However, the malar has a definite infra-orbital angulation and its main surface faces directly laterally.[3] The inter-orbital interval is broad compared with the face as a whole. This breadth is due principally to the nasal processes of the maxillae, the nasal bones near their root being narrow and slightly arched. Inferiorly the nasal bones are greatly expanded and flat, contrasting sharply with the everted and inflated nasal processes of the maxillae. The inferior margin of the nasal aperture bears a large subnasal fossa and a small nasal spine. There is a slight infra-orbital depression but no true canine fossa; the alveolar portion of the maxilla is shallow.

Norma basalis. The muscular impressions on the nuchal plane are not well marked. The foramen magnum is broad lanceolate and the occipital condyles are flat and elongated, a form seen chiefly in Bush skulls. The digastric fossa is narrow with a slight posterior expansion; it is flanked medially by a deep groove for the occipital artery. The glenoid fossae are relatively wide but deep, with a prominent articular tubercle; the petro-tympanic fissure is widely exposed in the floor of the fossa and the articular surface extends backwards on to the tympanic bone—characteristics of the Boskop type.[1] There is a small post-glenoid tubercle.

The palate is deep posteriorly, but shelving in its anterior third, and the anterior portion of the palate is distinctly narrowed. The surface of the palate is rough and there is a strongly marked *torus palatinus*.

The outstanding feature of this skull is the predominance in it of Boskopoid characters. Had it been obtained from a coastal cave it would have occasioned no remark. Though features regarded as Bush, and others which may be considered to be Negro, are present, they are completely subordinate to the Boskopoid element. These Negro features are the ovoid cranial form and the nature of certain features of the mastoid region. Ovoid cranial form is seen, however, in the pre-Negro Fish Hoek and Springbok Flats skulls. Again, the nature of the bosses in this skull is difficult to assess, being, as they are, in a transitional stage between the foetal and the infantile types.

The mastoid region shows a thick mastoid process which does not allow of much exposure of the digastric fossa. This may be regarded as Negro in type, but it would be foolhardy to regard this skull as Negro, since its salient features are of adult Boskop type. While the features of the skull of the Negro child are as yet undescribed, the two skulls of known Negro children in the Department collection show mastoid regions widely different from this one, which is almost adult in type. This skull then, in the light of present knowledge, must be called Boskopoid with some Bush admixture.

The mandible.

For a mandible of this age, this specimen is relatively large. From the superior aspect (Fig. 4), the internal contour of the body forms a "V" with its apex truncated owing to the prominence of the genial tubercles. The dental arcade is U-shaped, the molar teeth overhanging the internal contour of the body posteriorly. There is no gutter between the posterior end of the alveolar arcade and the anterior margin of the ramus.

[1] KEITH, A. (1929). *Antiquity of Man*, **1**, 369.
[2] GEAR, H. S. (1926). *S. Afr. J. Sci.*
[3] GALLOWAY, A. (1936). Some prehistoric skeletal remains from the Natal Coast. *Trans. Roy. Soc. S. Afr.* **23**, 277–95.
[4] KEITH, A. (1933). *Trans. Roy. Soc. S. Afr.*

[1] GEAR, H. S. (1926). *S. Afr. J. Sci.*

Most of the internal surface of the symphysis, but none of its anterior surface, can be seen from this aspect.

The shape of the ramus (Fig. 5) is roughly rhomboidal and the sigmoid notch is relatively deep. The condylar process is long and curved slightly forwards. There is no undue medio-lateral expansion of the condyle whose

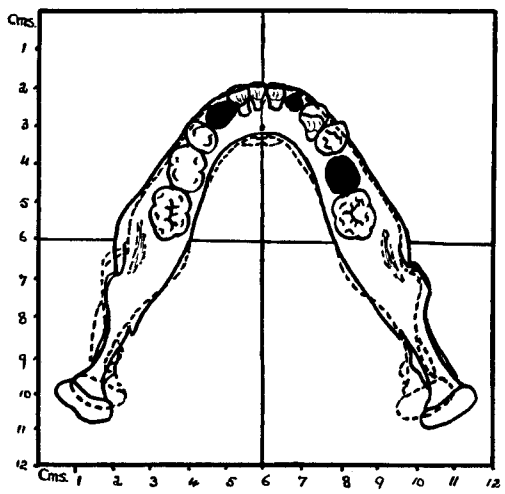


Fig. 4. Superimposition of superior aspect of mandible of M_2 on an *adult* Bush mandible (indicated by interrupted line).

articular surface, which is limited to the upper aspect of the condyle, is convex, rectangular in outline and faces forwards as well as upwards. The coronoid process is of the hooked variety. It is not powerfully developed, but its anterior border is blunt. There is slight eversion of the angle region at the expense of the lower border. The angle flange is truncated and thick. The posterior ramal border is blunt and rounded.

The body is not rectangular, the upper and lower borders diverge gradually anteriorly. The alveolar border is slightly concave in the molar region. The trihedral eminence is conspicuous, although the mandible is immature. The mental foramen is situated opposite the interval between the second premolar and first molar and midway between the upper and lower borders of the body.

The chin region is prominent owing to the presence of a well-developed medial mental tuberosity distributed partly over the splenial element of this region, and partly over the region just above it. The infero-lateral mental tubercles are incipient while there is a slight *incisura submentalis*. The inferior margin of the symphyseal region is broad, and on it are the impressions for the insertion of the digastric muscles, which occur as raised oval tubercles almost 1 cm. apart and facing downwards.

The genial tubercles are almost fused into one process, with slight depressions below and above it, but no true simian pit exists, owing to the absence of the transverse ridge.

The mylohyoid ridge is well defined and reaches very far forwards, as far as the second premolar alveolus. The ramal stress-bar is poorly developed and the mandibular foramen is small. There is a deep broad groove leading into both it and the mylohyoid groove, which is broad and deep. The lingula is poorly developed, having a posterior edge almost four times as long as the anterior. The areas for insertion of the pterygoid muscles and the external temporo-mandibular ligaments are well defined.

The large size of this specimen when compared with mandibles of the same age indicates that the adult bone was of similar dimensions to the other adult mandibles of this series. It is larger and much more massive than Negro juvenile mandibles of the same age (Fig. 5) and correspondingly exceeds, to an even greater degree, the juvenile Bush mandible. The significance of the morphological features is difficult to asses as so little is known regarding juvenile African types. The general impression is that the mandible is an adult Bush one. There is close agreement in size and in other features (Fig. 4), but analysis has revealed several differences, which may be Negro. On the other hand this *juvenile* mandible shows many features in common with the group of Boskopoid mandibles represented by the *adult* Kalomo type. Thus the condylar process is large and rounded;

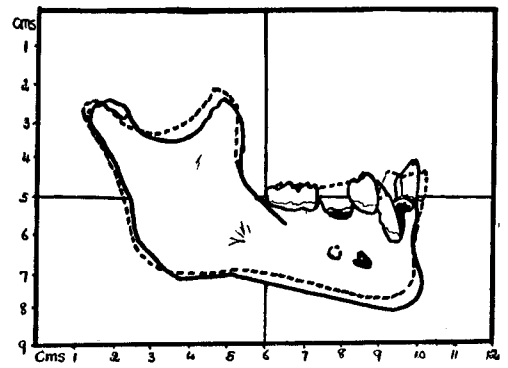


Fig. 5. Superimposition of lateral aspect of mandible of M_2 on a Negro mandible of the same approximate age.

the articular surface faces forwards and upwards; the molar region is high in spite of the great depth at the symphyseal region; the trihedral eminence is prominent; the splenial element of the body is well developed and there is a lack of prognathism in spite of the immaturity of the mandible; the angle flange is truncated and thick; the almost fused genial tubercles are set in a depression; the mandibular foramen is small and its smallness exaggerated by the large vestibule leading to it; the mylohyoid groove is deep and wide; the whole bone is

massive in all respects, particularly at the molar region. Finally, the prominence of the areas for ligamentous and muscular attachments at this stage of development is an unusual feature.

The evidence of these morphological features is corroborated by the material findings. The majority of the measurements correspond with those of the *adult* Bush mandible. The mandible shows Boskop affinities in the high ramal, body and symphyseal indices, and these findings correlated with the high body-symphyseal thickness index show that it is of the Kalomo type. The low body-symphyseal height index compares with the adult Negro mandible, and contrasts with the juvenile character of this mandible.

This mandible corroborates the puzzle of the skull. These bones are immature, yet their main features compare, not with other juvenile types, but with adult types. The features are mainly adult Boskop, with fewer adult Bush features and a sprinkling of adult Negro features, with a complete absence of any immature features apart from the dentition. There are definitely adult Negro features present, but no such adult features have ever been noted in juvenile Negro mandibles. To sum up then, this mandible is more massive than either Bush or Negro of the same age. Were its features those of adult Bush and Negro only, one would have been tempted in view of our ignorance of pre-Negro immature types to place it as a Boskopoid variant; but since it is saturated with adult Boskop features of the Kalomo type, its Boskopoid diagnosis is strengthened.

Vertebral column

The atlas and axis were found embedded in the matrix at the base of the skull. Both bones are practically complete.

The *atlas*, for an immature subject, is strikingly large and massive, the development of the lateral masses and anterior and posterior arches almost equalling that seen in the adult Negro, although their form is that of the Bush type. In marked contrast to the massiveness is the extreme dwarfing of the transverse processes, a feature emphasized by Levy[1] in his account of the Bush vertebral column. The well-defined anterior and posterior tubercles mentioned by that author are, however, not present; this is evidently due to the slenderness of the costal element of the transverse process. The grooves for the vertebral artery are shallow, a feature commoner in the Bushman than in the Negro, in whom they are deep and often bridged over. The areas of ligamentous attachment are strongly marked.

[1] Levy, S. J. (1934). A descriptive analysis of the Bush vertebral column. In Abstract of the Symposium on the skeleton of the Bush race. *S. Afr. J. Sci.* **31**, 578–81.

The strikingly massive *axis* is, proportionately, not so large as the atlas, nevertheless it slightly exceeds the size of the adult Bush axis (Fig. 6). The laminae are thick, with rounded margins and boldly convex surfaces. In the Negro these structures, though stout, are flattened; in the Bush they are thin and blade-like. The spinous process is correspondingly stout; in norma verticalis it is short, broad and flat-topped; in norma dorsalis it is V-shaped. The form of the spine gives the bone an aspect of compactness which is accentuated by the extreme dwarfing of the transverse processes. In norma verticalis these processes hardly emerge from beneath the superior articular surfaces. The transverse foramina are thus, as Levy describes them in the Bush, converted into U-shaped canals which deeply hollow out the lateral masses and their upper aperture is directed completely laterally. Such an arrangement

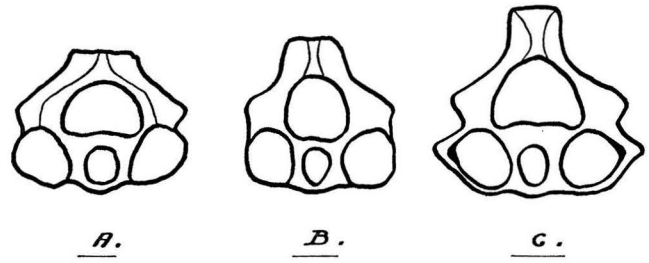


Fig. 6. Superior aspect of the axis vertebra of (A) M_2, (B) typical Bush adult and (C) typical Negro adult.

is not seen in the Negro, in whom the transverse process and foramen have the "textbook" or European form. In this bone also the ligamentous attachments are strongly marked.

The interpretation of these bones is hampered by the absence of any description of cervical vertebrae belonging to the Boskop race. From the foregoing description it appears that the bones conform in most essential features to the Bush type, and in some show an exaggeration of Bush peculiarities. In size and massiveness, however, although the vertebrae of an immature specimen, they exceed the adult Bush, and at least equal the adult Negro, but differ entirely from that type in their morphological features. Bones of an ultra-Bush facies, but larger and much more massive than the Bush type, fall in with our general conception of the character of the Boskop skeleton. There is, therefore, nothing in these bones to contradict, and much to strengthen, our belief that this individual was of Boskop or Bush-Boskop type.

All the features of racial diagnostic value in this skeleton are either Boskopoid or Bush. Certain minor features suggest some slight infiltration of Negro characteristics.

Skeleton M_3

The remains of this skeleton consist of portions of the skull and mandible and very fragmentary remains of bones of the vertebral column and lower extremity. The age of the individual, as indicated by the dentition, is about 10 to 12 years. The second lower permanent molar tooth is erupting, but the second premolar is unerupted, the milk molar being still present. The first upper permanent molars, the permanent incisors and the first premolar are erupted; on the right side the permanent canine is fully erupted while on the left it is still in the process of eruption. The second permanent molars are beginning to erupt, the left being more advanced. There is no evidence of the sex of the skeleton.

The skull

The skull consists of the greater part of the facial skeleton and the right side of the brain case. The skull is so distorted and warped that measurements have no significance, so diagnosis must be based on non-metrical features. There is a great deal of distortion in the frontal region. The calvaria is relatively broad with a considerable frontal taper. The foetal parietal bossing gives it a pentagonoid cranial form. The region of the metopic ridge is missing but from the coronal contour of the frontal bone it is doubtful if there was a metopic ridge. A well-marked post-coronal depression is present but there is no inter-parietal groove. From the occipital fragments the occiput seems to have been rounded.

The vault is flattened as far back as the level of the parietal bosses. There is no parieto-occipital flattening. The nuchal plane is flat in its upper part and faces backwards, and downwards. The skull appears to have been mesognathous with very marked alveolar prognathism.

The *mons temporo-sphenoidale* is prominent while the presence of an inferior frontal eminence is suggested. The anterior portion of the parieto-squamous suture is horizontal while the posterior limb descends obliquely. There is evidence of asterionic flattening. The mastoid process is broken off but its base is very small and almost circular; the digastric fossa, which is situated on the base of the skull, is broad and well exposed behind; the sterno-mastoid and supra-mastoid ridges are well developed and the latter has a Boskopoid tilt. The zygomatic arch is stout with a definite lateral surface; but the tympanic ring is slender. The glenoid fossa is wide and deep with its articular surface extending on to the tympanic plate; the articular tubercle is well developed. The petro-tympanic fissure is exposed and the post-glenoid tubercle ill-defined.

The orbits are relatively large and apparently rectangular in outline. There is no orbital shelf, but the malar is angulated and its main surface faces laterally. The nasal processes of the maxilla are prominently everted so that the nasal bones must have been arched or ridged, and the nose a prominent one. The inferior margin of the nasal fossa is rounded, with a small nasal spine. The infra-orbital fossae are excavated though there is no true canine fossa, and the alveolar portion of the maxilla is of medium depth. The palate is shallow with little or no shelving.

This skull shows less evidence of a Boskopoid element than does M_2. Its predominant characteristics in form, texture and morphology are those usually ascribed to the Bush type. Other features such as the globular occipital region, the depth of the glenoid fossa, the prognathism, especially the marked sub-nasal prognathism in such an immature specimen, are regarded as Negro.

The mandible

The mandible (Fig. 7) consists of the right half and fragments of the left half. The posterior portion of the right ramus and the condyle are missing. In its general appearance it closely resembles the M_2 mandible with some differences.

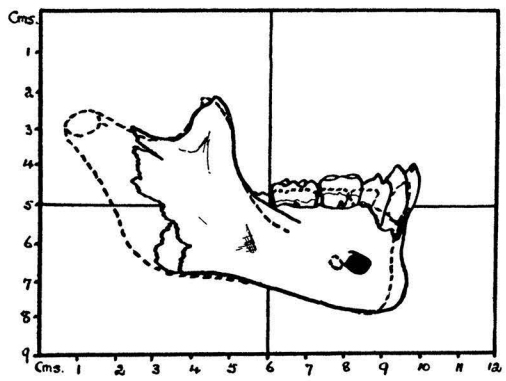


Fig. 7. Superimposition of lateral aspect of the mandible of M_3 on the Bush mandible from Matopo Hills (indicated by interrupted line).

The V-shaped character of the internal contour is more pronounced, there being less anterior truncation, the dental arcade is more angular, the line of the incisor teeth being almost a straight one. The guttering between the posterior alveolar border and the anterior ramal margin is less than in some other specimens of the series. Just below the tip of the coronoid process the posterior border has a marked projection into the shallower sigmoid notch. This projection makes the coronoid process triangular in type. On the medial aspect of the ramus there is evidence of the same large vestibule to the mandibular foramen, but the lingula is better developed.

The borders of the body diverge more as they pass anteriorly; the alveolar border is straight; the trihedral eminence is still more prominent; the mental foramen is larger and is situated opposite the second premolar tooth and nearer the lower border of the body. Prognathism in the symphyseal region is more pronounced and the infero-lateral mental tubercles are better defined. The *incisura submentalis* is deeper and wider. On the inner side of the mandible the genial tubercles are represented by an inconspicuous single element and the infra-genial fossa is less well defined.

The similarity between the mandibles of M_2 and M_3 is so great that it seems perfectly justified to regard them as closely related specimens. The latter contains slightly more adult Negro features but also it shows more close affinity with the Bush mandible from the Matopos[1] and with the Kalomo mandible.

Fragments of a number of vertebrae, principally cervical, are present. All are small, light and slender. Only the atlas and axis are sufficiently preserved to yield further information.

The *atlas* is smaller than that of M_2, being of Bush proportions, and very delicate in structure. The small transverse process shows almost complete absence of the costal element, an anomaly which, while it occurs in all races, is seemingly very frequent in the Bush type. The grooves for the vertebral artery are shallow. Ligamentous insertions are distinct for such a slenderly constructed bone.

Of the *axis* only the body is present. Like the other remains it is small and light. The canal for the vertebral artery has the deeply excavated and sharply angulated course distinctive of the Bush type; the transverse process evidently projected very slightly. The ligamentous markings are strong. The other vertebrae show the small bodies and thin, almost papyraceous arches of the Bush type.

All the ascertainable features of these bones are thus those of a Bush type.

The lower extremity

In the *femur*, apart from the absence of muscular markings, there is little of diagnostic significance. The platymeric index is 76·2; this is well within the range of the Bush and Boskop types[2] and quite outside the Negro range. Further, Cameron[3] states that platymeria increases until puberty so that this degree of platymeria in a child of 10 is very significant. There is little development of the linea aspera, the pilasteric index being 100.

The *tibia*, although it is that of a child, nevertheless shows features characteristic of the *adult* Kalomo[1] tibia. It is however in a very fragmentary condition.

The elongated depression between the anterior border and the interosseous crest, which is present in every Boskopoid tibia so far examined, is well defined and is a characteristic feature of the bone.

Just as in the adult Kalomo type, the anterior border of the tibia is well defined in the whole of its extent, only becoming rounded in its lower fourth. The platycnemic index is 70·8, thus closely corresponding to that of Kalomo.

The *fibula* is very thin and slender and the muscular markings are poorly defined. It, however, still shows Kalomo features, in that the middle third of the bone is flattened with a sharp anterior margin, and the distal third is triangular in outline.

There is an absence of Bush or Negro features in the bones of the lower extremity. The presence of the lateral depression in the upper third of the tibia, the condition of the anterior border of the tibia, the degree of platycnemia and the presence of a sharp anterior margin in the fibula reveal close affinities with the Kalomo Boskop type.

This skeleton shows many affinities with M_2 which is regarded as a Boskopoid variant, but it is more Bush in texture. Although immature, it shows *adult* Negro features in the skull and mandible. The limb bones, however, are definitely non-Negroid, but show marked similarities with the Boskop types from Zitzikama and Kalomo, especially the latter. The vertebrae have a Bush facies. This skeleton, then, may be diagnosed as a Bush-Boskopoid admixture with a slight Negro infiltration, if features of the Negro adult can be regarded as Negro in an immature subject.

Skeleton M_4

The remains of this subject comprise portions of the right posterior frontal and right parietal bones. There is no evidence as to sex, and except that the remains are not those of a young infant, no indication of age. The bones are of medium thickness, less slender than in M_3 but more so than in M_2.

The fragments indicate an elongated skull. The parietal boss is foetal in character, giving a pentagonoid cranial form. There is a distinct post-coronal depression. From a lateral view it is clear that the skull was low-

[1] Drennan, M. R. (1932). A report on human skeletal remains from a gold prospecting trench near the Matopo Hills. *S. Afr. J. Sci.* **29**, 651–4.

[2] Prag, J. J. (1934). The bones of the lower limb. In Abstract of the Symposium on the skeleton of the Bush race. *S. Afr. J. Sci.* **31**, 582–5. Wells, L. H. (1935). A fossilized human femur from East London, C.P. *S. Afr. J. Sci.* **32**, 596–600.

[3] Cameron, J. (1934). *The skeleton of British neolithic man*, p. 163. London: Williams and Norgate.

[1] Gear, H. S. (1926). *Bantu Studies.*

vaulted; this is confirmed by the very depressed course of the parieto-squamous suture. The median contour is flattened as far back as the level of the parietal boss. There is some bulging along the line of the parieto-squamous suture, and there are indications of the presence of a *mons temporo-sphenoidale*.

The features of these fragments are all such as are proper to a Bush or Bush-Boskopoid skull, but are too few on which to base any definite diagnosis.

phytic ridge which somewhat masks the posterior extension of the digastric fossa. This fossa is an excavation in the base of the skull. There is a very salient sterno-mastoid crest, separated by a deep and unusually broad supra-mastoid groove of the Boskop type[1] from the prominent supra-mastoid crest. This crest curves sharply upwards as in Boskopoid skulls, and on its antero-superior aspect bears a sharp flange for the attachment of the temporal fascia, a feature seen only in skulls of very powerful muscular development. The tympanic

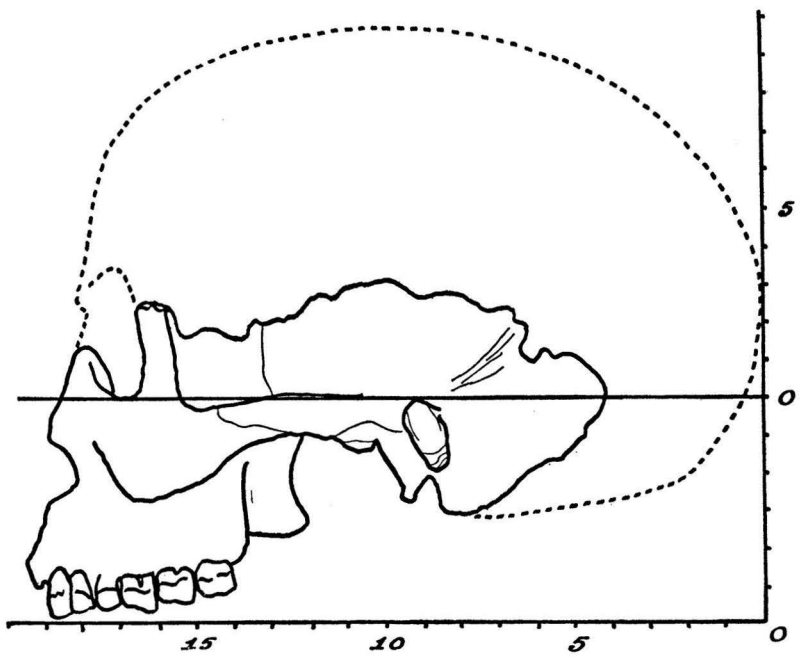


Fig. 8. Norma lateralis of skull M_5. (Interrupted line represents hypothetical cranial contour.)

M_5, The Sceptre Skeleton

The sceptre skeleton consists of a portion of the skull, part of the mandible, fragmentary portions of the bones of the vertebral column, shoulder girdle, and upper extremity and hand, incomplete pelvic bones and bones of lower extremity and foot. The remains are those of a middle-aged male whose stature must have been close on 6 ft.

The skull

This is represented by the nearly complete left temporal, part of the sphenoid, the left malar, and the maxilla and palatines. The cranial bones are large, massive and rugged and show prominent muscular markings. The internal aspect of the temporal bone shows a deeply-excavated groove for the sigmoid sinus, a feature characteristically associated with Boskopoid traits.

Norma lateralis (Fig. 8). The mastoid process is massive and of moderate downward projection. Its posterior margin is prolonged backwards as a denticulated osteo-ring is thick and rugged, but less so than would be expected from the general massiveness of the skull. The vaginal process of the styloid is expanded into a broad flat plate. The root of the zygomatic arch, and indeed the whole arch, attains gigantic proportions. This root presents a broad, flat lateral surface.[2]

The posterior portion of the squamous suture has a very depressed course, suggesting that the skull was low-vaulted. There is a prominent *mons temporo-sphenoidale*.

There is slight general prognathism, but no excess of subnasal prognathism. The nasal processes of the maxillae have a considerable anterior projection. From the direction of the alveoli for the incisor teeth it is clear that they did not continue the line of the maxillae, but were directed vertically downwards, as in the chimpanzee, in the supposedly acromegalic skull of Boskopoid

[1] Keith, A. (1929). *Antiquity of Man*, **1**, 369.
[2] Galloway, A. (1933). *S. Afr. J. Sci.*

type from Blaauwheuvel[1] and in an unpublished maxillary fragment from the Boskop horizon (15–18 ft.) in the Zitzikama cave.

Norma facialis (Fig. 9). The whole appearance of the face is strikingly similar in metrical and non-metrical features to that of the unpublished fragment from the Boskop horizon of the Zitzikama cave (Fig. 10).

The orbit is broad and clearly must have been relatively low. It is rectangular in outline, with the axis directed obliquely downwards and backwards as in M_2.

Norma basalis. The digastric fossa is broad and extends backwards far beyond the true posterior limit of the mastoid process. The glenoid fossa is shallow and of enormous extent. The articular tubercle is very flattened, but there is absolutely no trace of its being pathological. The petro-tympanic fissure is slightly exposed and there is a distinct backward extension of the articular surface on to the tympanic plate. There is a prominent slender post-glenoid tubercle closely resembling that of the Kalomo skull.

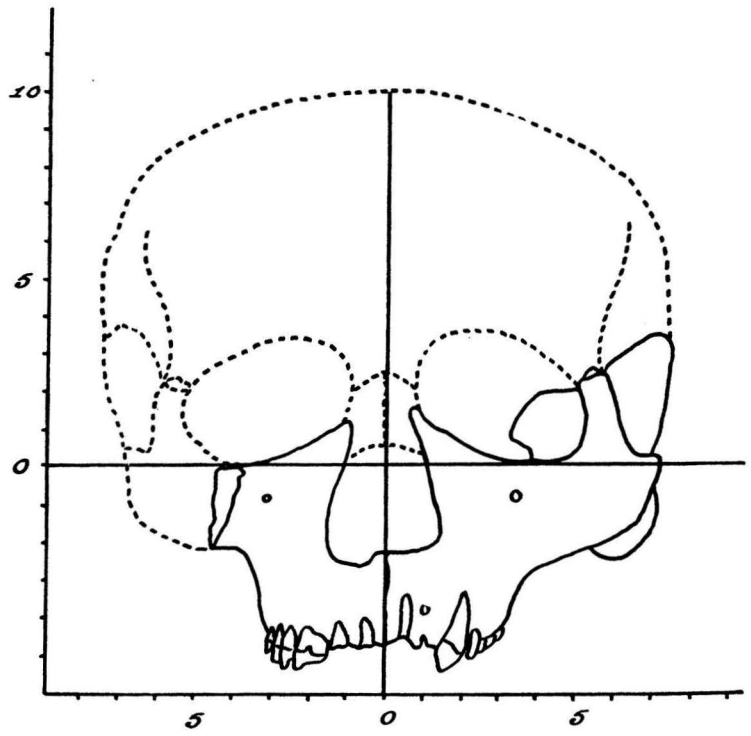


Fig. 9. Norma facialis of skull M_5.

There is a distinct orbital shelf. The nasal processes of the maxillae are everted and slightly inflated. In view of the condition in M_2, however, it cannot be inferred that the nasal bones were necessarily arched or ridged. These bones must have been relatively narrow above and expanded below. The nasal aperture is broad; its inferior margin bears large subnasal fossae, the anterior margins of which form a distinct sill; there is a well-developed nasal spine. The infra-nasal portion of the maxilla is shallow. Slight infra-orbital and very faint canine fossae are present. The malar bone has a sharp flexure and its outer surface is directed almost completely laterally. In addition, this surface faces upwards to a slight degree, somewhat as in the Boskopoid Illovo skull[2] and in the Fish Hoek skull.

[1] WELLS, L. H. and GEAR, J. H. (1931). Skeletal material from early graves in the Riet River valley. *S. Afr. J. Sci.* **28**, 435–43.
[2] GALLOWAY, A. (1936). *Trans. Roy. Soc. S. Afr.*

The palate is horseshoe-shaped and of large area, deep in its posterior portion but shelving in its anterior third. The surface is very rugged, with a well-marked *torus palatinus*. The medial portion of the palato-maxillary suture is curved boldly forward, so that the area of the horizontal plate of the palatine bone is increased at the expense of the palatine plate of the maxilla. This feature was present in the Nebarara skull[1] and in the above-mentioned Boskop fragment. It is therefore suspected of being of Boskopoid character.

This skull then, so far as it is preserved, is Bush-Boskop in character with no evidence of Negro infiltration.

The mandible

Like the bones of the skull, this mandibular fragment is large and strongly constructed (Fig. 11). The ramus

[1] GALLOWAY, A. (1933). *S. Afr. J. Sci.*

lies at right angles to the body and is roughly rectangular. The sigmoid notch is deep and narrow with a fair degree of bony buttress between the condylar and coronoid processes. The condylar process is long and relatively narrow at its base, is flattened antero-posteriorly and shows marked medio-lateral expansion. Its vertical axis passes upwards and medially. The upper

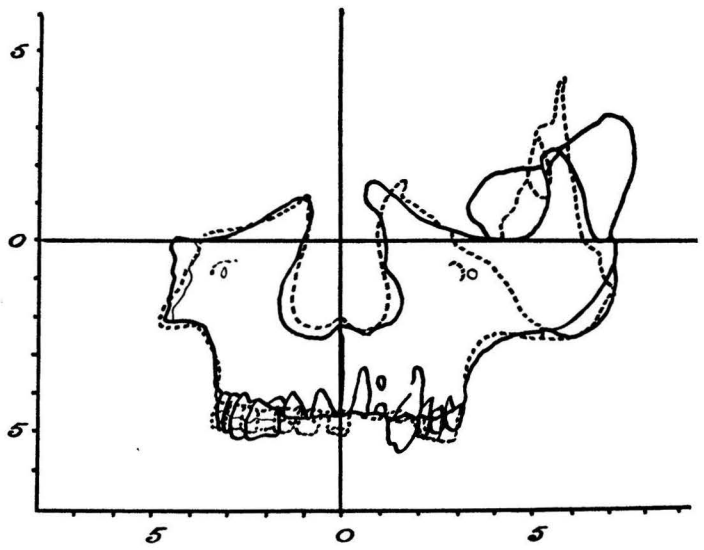


Fig. 10. Superimposition of facial skeleton of M_5 on the maxillary fragment from the Boskop horizon in the Zitzikama cave (indicated by interrupted line).

surface of the condylar process has the appearance of a markedly convex, elongated rectangle, whose long axis is transversely oriented with a slight tilt downwards. The articular area is limited to the upper surface. The attachment for the external temporo-mandibular ligament is extraordinarily developed but the area for attachment of external pterygoid is most inconspicuous.

The coronoid process is long and narrow but is truncated terminally with its axis directed upwards and forwards. Its free edges are almost straight lines. The anterior margin is blunt. Its medial surface is well supported by the anterior limb of the ramal stress-bar. It is thus a powerfully constructed flange of bone.

The medial aspect (Fig. 12) of the ramus shows several important features. The ramal stress-bar shows a prominent stem and anterior limb, but the posterior limb is completely suppressed. The mandibular foramen is large and of the open variety, leading off from a deep vestibule. The lingula is short, sharply pointed, and rests on a broad base. Its anterior edge is one-third of the posterior in length. The mylohyoid groove is broad and deep, but is not bridged over anywhere in its course. The spheno-mandibular ligament attachment is discernible, but it is hidden from view by a very conspicuous bony projection from the posterior margin of the ramus at the upper extremity of the area for insertion of the internal pterygoid. This area of insertion reaches high up the medial aspect of the posterior border.

There is only slight medial inclination of the ramus inferiorly. The posterior border is curved inwards along its upper half. There is a slight eversion in the angle region chiefly at the expense of the posterior border. The angle flange is not massive.

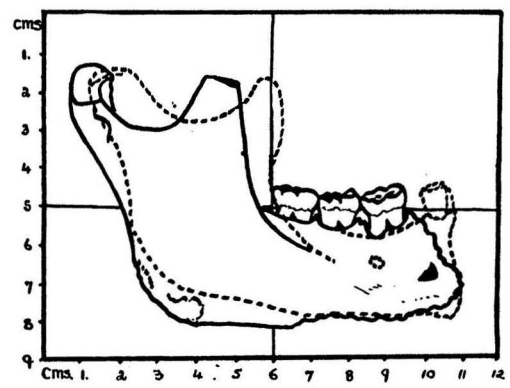


Fig. 11. Superimposition of the lateral aspect of mandible M_5 on the Boskopoid Kopje Enkel mandible.

The body has the shape of an elongated triangle. The alveolar border is slightly concave in the molar region. The large mental foramen is situated opposite the interspace between the second premolar and the first molar. The alveolar element is well developed. There is no true trihedral region, but opposite the first molar inter-

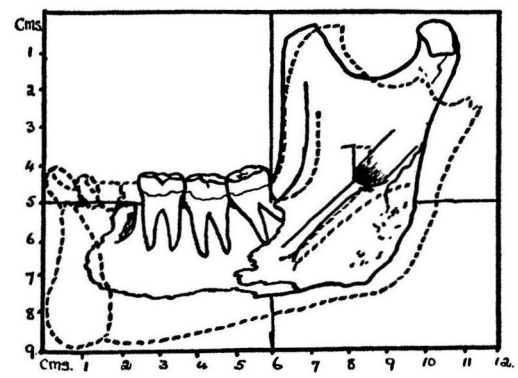


Fig. 12. Superimposition of the internal aspect of mandible M_5 on the Boskop Kalomo mandible.

space a slight prominence is produced by the sudden medial inclination of the body at this point. Between the anterior margin of the ramus and the molar alveolar margin there is a deep conspicuous gutter. The three, relatively small, five-cusped teeth are arranged in a straight line.

This mandible does not conform in the sum total of its features to any recognized South African physical type.

The shape of the mandibular ramus compares with that of the Kalomo (Fig. 12), although the sigmoid notch is deeper and the angle flange thinner than is common in mandibles of a Bush or Boskop facies. The condylar process and condyle are unique to this mandible. These features, like the nature of the muscular markings, have no counterpart in any Southern African mandible described in literature, or present in our collection.

The coronoid process has certain features reminiscent of the Negro, but terminal truncation has not yet been observed in the Negro. Although narrower, it has definite affinities with that of the Kalomo mandible. This coronoid process is definitely not Bush or Negro.

The prominent ramal stress-bar and mylohyoid groove resemble those of Kalomo; the large mandibular foramen has its counterpart in some Negro mandibles, but size of mandibular foramen is a very variable quantity in the Negro, while the lingula has no counterpart in our Negro collection, but has infrequently been seen in Bush mandibles.

The shape of the body, so far as it is preserved, resembles that of the Kopje Enkel and Kalomo mandibles (Figs. 11, 12). The gutter between the anterior border of the ramus and the alveolus is an almost constant Bush feature and one which has been inherited from the Boskop type, since it is a feature seen in the Kopje Enkel, and the original Boskop mandibles. The trihedral region is not Bush or Negro and can be compared only with the Kopje Enkel mandible.

The metrical analysis, again, shows that any features of this mandible which are found in the Negro are equally found in specimens which are not Negro. Apart from localized hyperostoses, the massiveness compares with that of the Negro and the Kopje Enkel mandible. The ramal height is that of Kalomo while the width is narrower and agrees with the Negro and Kopje Enkel. The ramal index is outside the Negro range. The height and thickness of the body in the molar region and the body index correspond with the Kopje Enkel mandible, but are not negroid. The ramal angle is even less than that of Kopje Enkel, while that of the Negro is at the other end of the scale.

While the skull then is Bush-Boskop, the mandible cannot be so easily placed. Its Negro features are features found in other mandibles to which it is impossible to give a Negro diagnosis. It seems to be related to such Boskop normal variants as Kalomo and Kopje Enkel.

Vertebral column

Of the vertebral column, there are present the axis, fourth, fifth and seventh cervical, and first and third thoracic vertebrae nearly complete, and fragments of the third and sixth cervical and of the lower thoracic and lumbar vertebrae.

The axis is large and stoutly built. The spine is high, bluntly pointed in a vertical view and T-shaped in a dorsal view. The laminae are of the same thick rounded type as in M_2. The transverse processes are small; they project from under cover of the superior articular surfaces, but do not extend so far laterally as to the inferior articular processes. In the Negro, as in the Caucasian, the reverse is the case. The canal for the vertebral artery is of the deeply excavated Bush type. All the areas of attachment are strongly marked, even the origins of the accessory atlanto-axial ligaments being prominent rounded tubercles.

The mid-cervical vertebrae are large but relatively light in build. Their spines are slender and short. In the third and fourth vertebrae the spines show incipient bifurcation of Shore's "Mediterranean" type,[1] an arrangement which is found occasionally in both Negro and Bush skeletons. The fifth vertebra shows the anomaly of *spina bifida*. Shore[2] pointed out the remarkably high incidence of this condition in South African Negroes, one of the evidences of instability of physical structure in this race. This may be regarded as a reflex of the Negro hybrid constitution. The laminae of these vertebrae are broad and flat, and thinner and more blade-like than in the Negro. The transverse processes are small, thin and slender, resembling on a larger scale those of the Bush type. The fourth and fifth vertebrae are completely co-ossified, and there is considerable arthritic change in the joints of other vertebrae.

The seventh cervical vertebra also is large, but in t he main delicate. Its transverse processes in particular are much less massive than in the a verage Negro, resembling the Bush type. The laminae are broad and flat, and the spine is sharply demarcated from them, whereas in many Negro specimens the laminae continue dorsalwards in a pyramidal fashion into the spine. The absence of this feature gives the spine a slender appearance, resembling the Bush type.

The spine of the first thoracic vertebra (Fig. 13) shows the same feature as that of the seventh cervical, again differing from the majority of Negro specimens examined. In this vertebra, and in the third, the transverse processes bear enormous tubercles for the attachment of the *erector spinae* muscles. It may be inferred from this that the individual maintained an upright posture by muscular action rather than by the intrinsic stability

[1] SHORE, L. R. (1931). A report on the spinous processes of the cervical vertebrae in the native races of South Africa. *J. Anat.* **65**, 482–505.

[2] SHORE, L. R. (1930). Abnormalities of the vertebral column in a se ries of skeletons of Bantu Natives of South Africa. *J. Anat.* **64**, 206–38.

of the vertebral column. This is confirmed by the great breadth and shallow antero-posterior depth of the quadrilateral vertebral bodies. Gear[1] has pointed out the same feature in the Boskop remains from Zitzikama.

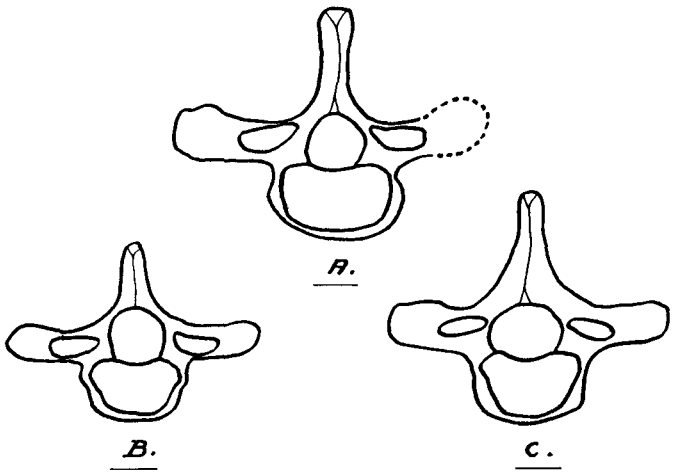


Fig. 13. Superior aspect of first thoracic vertebra of (A) M_5, (B) typical Bush and (C) typical Negro.

The third thoracic vertebra (Fig. 14) shows another feature of similarity with the Boskop type[1] in its short, broad, parallel-sided spine, of which the inclination is appreciably less than in the corresponding vertebra of the Negro.

The remains of the lower portion of the column reveal no features of diagnostic value. The evidence of the cervical and upper thoracic segments, however, shows definitely the presence of Bush and Boskop features.

Superior extremity

The *clavicle* fragments consist of left and right distal extremities and a left medial element. They show a delicate shaft and slender non-expanded extremities. The medial extremity shows little expansion when compared with the shaft, and the articular surface is very concave. The lateral extremity also is not expanded and the lateral end of the shaft is well curved, giving a high lateral angle of curvature.

Despite the fragmentary nature of the clavicle, it shows certain characteristic features, which are fundamental to racial diagnosis. It is definitely non-Negroid in type, as described by Terry[2] for the American Negro and confirmed from an examination of 50 pairs of clavicles of South African Negroes. Such clavicles are invariably massive with spatulate lateral extremities and expanded sternal extremities, with the articular facet showing its greatest diameter antero-posteriorly. The bone shows the general features of certain Bush skeletons,[1] and the Matjes River Boskopoids.[2] The extraordinary feature is the delicacy of these fragments in contrast with the massive scapula and upper extremity.

The *scapula* is of massive build and is long in comparison with its estimated breadth. The outline of the bone is acutely triangular and falls into Graves' slightly convex (v. 1) type.[3] The vertebral border shows several "buds", a feature often seen in such scapulae. The inferior angle region is broad and round and the teres major process merges with the axillary border in a graceful curve (non-Negroid features). The scapular spine is almost at right angles to the plane of the body of the scapula and the acromion is of the massive quadrangular type. The coracoid process is short and broad, and the adjacent scapular notch is deep and U-shaped. The glenoid fossa is pear-shaped (g.c.i. 70·4), a Bush-Boskop feature, in contrast to the circular cavity seen in Negroid scapulae; it is deepened by a considerable degree of glenoid lipping on its inferior surface. This ages the scapula as that of a middle-aged individual[4] and this is confirmed by the degree of clavicular facet lipping and the buckling of the subscapular surface. The bone is heavy, showing definite surface markings for muscles and well-developed stress regions.

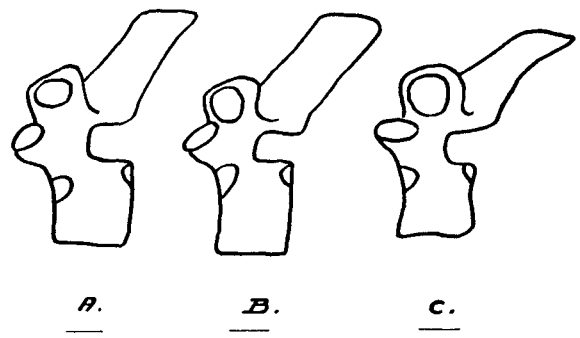


Fig. 14. Lateral aspect of third thoracic vertebra of (A) M_5, (B) Boskopoid type and (C) typical Negro.

The scapula, owing to its peculiar anatomical relations, is a bone that is particularly subject to stresses produced by the attached muscles, and therefore has a wide range of normal variation. It is therefore difficult to diagnose the racial identity from a single specimen.

[1] GEAR, H. S. (1925). *S. Afr. J. Sci.*
[2] TERRY, R. J. (1932). The clavicle of the American Negro. *Amer. J. Phys. Anthrop.* **16**, 351–80.
[1] BERNSTEIN, R. E. (1934). The bones of the shoulder and upper limb. In Abstract of the Symposium on the skeleton of the Bush race. *S. Afr. J. Sci.* **31**, 577–8.
[2] DREYER, T. F. (1931). *New fossil mammals and man from South Africa.* Bloemfontein: Nasionale Pers, Bpk. BERNSTEIN, R. E. (1935). Fossil remains from Keurbooms River, C.P. In Symposium on human skeletal remains from the Cape Coast. *S. Afr. J. Sci.* **32**, 603–7.
[3] GRAVES, W. W. (1921). The types of scapulae. *Amer. J. Phys. Anthrop.* **4**, 111–28.
[4] GRAVES, W. W. (1922). Observations on the age changes in the scapula. *Amer. J. Phys. Anthrop.* **5**, 21–33.

The *humerus* is a long massive bone from the right side with a length of 35·0 cm., a high calibre index of 21·2, and a humero-femoral index of 72·5. Such dimensions are to be seen in certain modern South African Negroes.

The non-metrical features are definitely non-Negroid. The lesser tubercle is a prominent bony development, and the intubercular sulcus curves sharply medially, caudal to the tubercle. There is a considerable heaping up of the bone in the region between the surgical neck and the deltoid tuberosity, giving the bone a peculiar quadrilateral cross-section contour in this area.

The olecranon fossa is small, oval and shallow, in contradistinction to the deep diamond-shaped fossa of the Negro; the posterior surface of the shaft cranial to it is distinctly convex.

The cross-section contour of the distal end of the shaft is flattened. The antero-lateral surface is bounded laterally by a well-ridged lateral border, and has an excavated appearance. The concave impression on the lateral epicondyle for the common extensor tendon is confluent with the lateral non-articular surface of the capitulum, but demarcated from the postero-lateral surface by a sharp ridge.

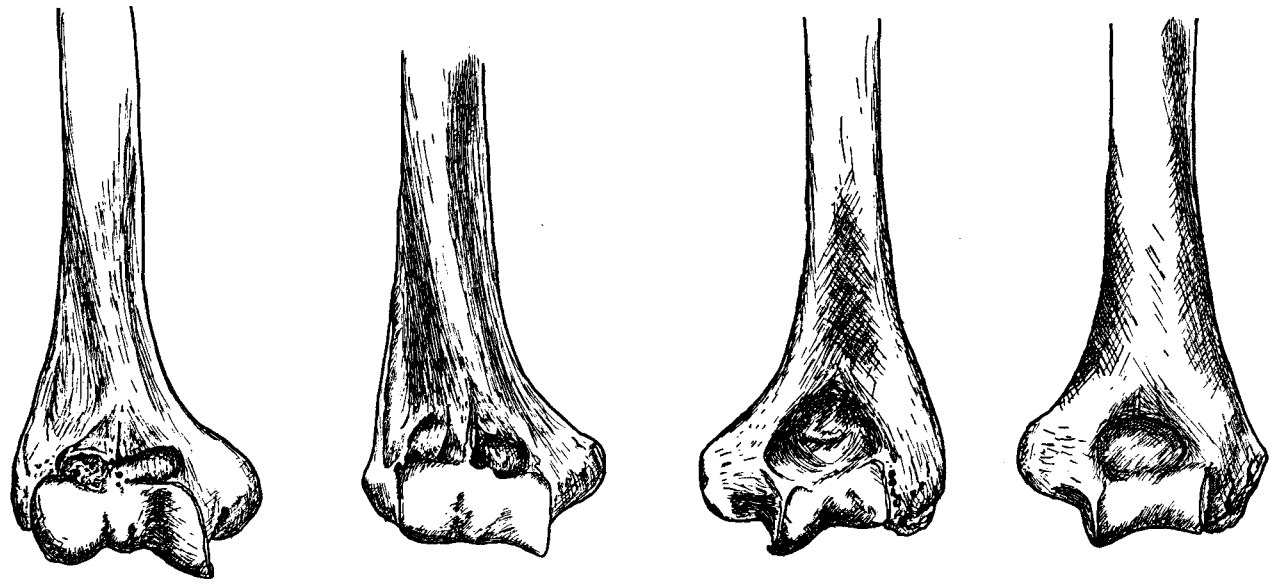


Fig. 15. The lower end of the humerus of (A) typical Negro (ventral aspect), (B) M_5 (ventral aspect), (C) typical Negro (dorsal aspect) and (D) M_5 (dorsal aspect).

The shaft has a marked lateral concavity in the region of the deltoid tubercle, but the antero-posterior contour is remarkably straight.

The distal extremity (Fig. 15) presents certain unusual features. The articular surface is at nearly right angles to the shaft (cubital angle 86°) and shows a very shallow concavity. The usual markedly elevated ridge separating the capitulum from the trochlea is absent. Its place is taken by a low, broad indefinite elevation which only slightly breaks the regularity of the concavity. The medial non-articular area of the trochlea does not incline towards the medial epicondyle, but its plane faces directly medially and forms an angle much wider than usual with the articular surface. These characters are entirely different from the inclined and lipped trochlea, with deep concave articular surface and well-defined eminence between capitulum and trochlea, of the South African Negro.

The distal third and articular surface are definitely non-Negroid.

Both right and left *ulnae* are exceptionally long bones (max. length 30·3 and 30·8 cm. respectively) and this accounts for the very low calibre indices of 11·8 and 12·3. The extremities and shaft are of delicate build. From the curvature indices it is seen that the shaft is remarkably straight; in section it is triangular with marked grooving dorsal to the inconspicuous interosseous crest. Immediately cranial to the distal articular surface the bone is extremely slender.

The distal extremity is delicate with a diminutive styloid process, demarcated from the articular surface by a deep groove. The styloid processes of Negroid specimens are invariably stout and project distal to the level of the articular surface.

The olecranon is short and broad in contrast with the relatively long and narrow olecranon of South African

Negroes. The narrow coronoid process forms a horizontal ledge with a slight coronoid lip. In the Negro the coronoid process is broad, lipped and shows a concave articular surface. The contour of the greater sigmoid notch is a wide U-shape with separation of the coronoid and olecranon articular facets. The radial notch is of small dimensions due to the shallowness of the radial capitulum.

The features of the humerus and ulna at the elbow joint are thus seen to be very characteristic. They result in a low joint-axis angle, due to the straight trochlea, shallow olecranon fossa and lateral direction of the olecranal articular surface. It is probable that this individual was not capable of full extension at the elbow-joint (carrying angle 167°; 171°). This contrasts with the full extension seen in Negroid elbow-joints.

The *radii* are long, relatively slender bones, with low calibre indices (15·5 and 15·2). The shaft is well curved (curvature index 5·0; 4·0). The breadth of the inter-osseous space is low, in contrast to the broad space of the South African Negro.

The vertical margins of the capitulum blend with the neck and are not sharply demarcated as in Negroid specimens. The neck is slender, while in the Negro it is very stout. The bicipital tuberosity is slight, and caudal to it the shaft narrows and then swells out into the eminence for the *pronator teres* insertion.

The radio-humeral index of 82·6 is exceptionally high due to the great length of the forearm element, a very primitive characteristic. The high inter-membral index (70·5) also indicates the great length of the upper extremity. It is much higher, and therefore more primitive, than the value given for the Negro.

There are present of the right *hand* the *multangulum majus* and first and third metacarpals; of the left, the capitate and all the metacarpals, also some phalanges. The carpal elements are smaller than those of the average Caucasian or Negro, a remarkable feature in view of the great size of the individual. Further, the metacarpals, though longer than those of an average Caucasian or Negro, are strikingly slender. It seems that this individual must have had notably long and delicate hands.

The slenderness of the bones and certain features of the clavicle and elbow-joint exclude the possibility of this upper extremity possessing Negroid affinities. Despite the tallness of the individual, his features are Boskop-Bush.

The pelvis[1]

The pelvic skeleton is incomplete. The pubis, ischio-pubic ramus and most of the ischial tuberosity are missing on both sides, as are the right ala, the right portions of first and second sacral pieces and the last sacral piece. The bones are large, massive and heavy, with pronounced muscular markings. The characteristics of the bones agree closely with those of the Zitzikama and Fish Hoek skeletons and are thus mainly Boskopoid, with slight Bush admixture. There is no feature present which is peculiar to the Negro pelvis alone.

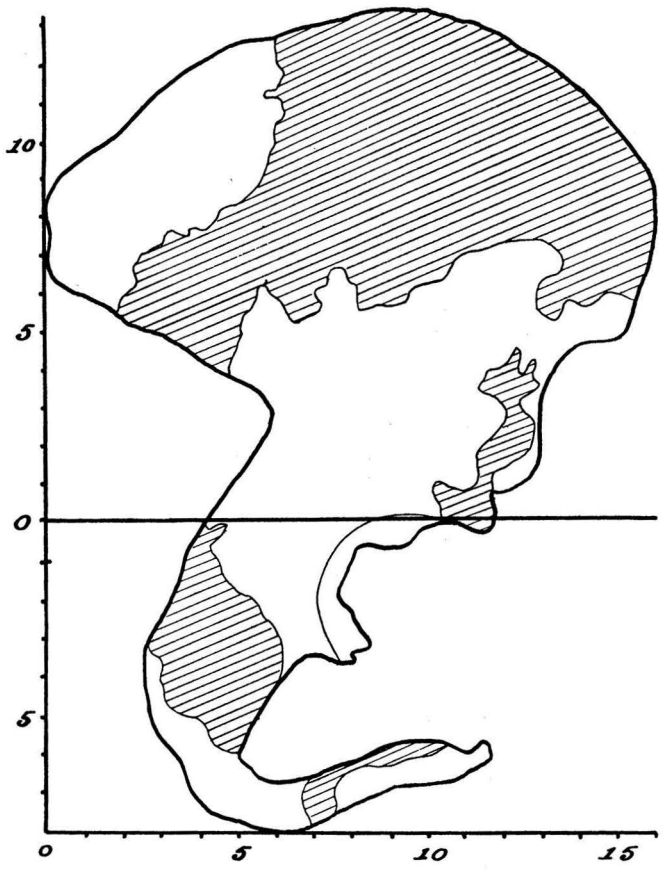


Fig. 16. Lateral aspect of right *os coxae* of M_5.

The *innominate bone* shows an innominate index of 72·2; the bone as a whole is therefore long and narrow. This figure is just within the lower limits of the Negro range, but is midway in Bush and Boskop series.

The anterior superior iliac spine is small and hook-shaped, a feature common to all three South African types. The anterior inferior spine is Boskopoid, in that it is large, prominent and round, while the inferior portion projects more than the superior portion (Fig. 16).

[1] References used in the description of the pelvic bones are: (*a*) GEAR, H. S. (1925). *S. Afr. J. Sci.* (*b*) GEAR, H. S. (1926). *Bantu Studies*. (*c*) GILLMAN, J. (1929). A review of some Bush and Bantu sacra, with special reference to the sacra of Rhodesian Man and Boskop Man. *S. Afr. J. Sci.* **26**, 602–22. (*d*) ORFORD, MARGARET (1934). The pelvis of the Bush race. *S. Afr. J. Sci.* **31**, 586–610. (*e*) WEINER, J. S. (1934). The sacrum. In Abstract of the Symposium on the skeleton of the Bush race. *S. Afr. J. Sci.* **31**, 581–2.

The anterior interspinous fossa is deep. Immediately below the anterior inferior spine, there is a broad deep groove occupying the usual area of attachment for the ilio-femoral ligament. Such a groove has not previously been seen or reported in the Negro or Bush pelvis. There is a well-marked area for attachment of the reflected head of *rectus femoris*.

acetabulum itself is placed more anteriorly than is customary for the Negro.

The *sacrum* was, at the most, of the five-piece variety, with the fifth piece partially detached, since the right side of the fourth piece has a clearly marked articular surface on its inferior aspect. The left side of the fourth piece is missing. The sacrum is slightly hypobasal, a

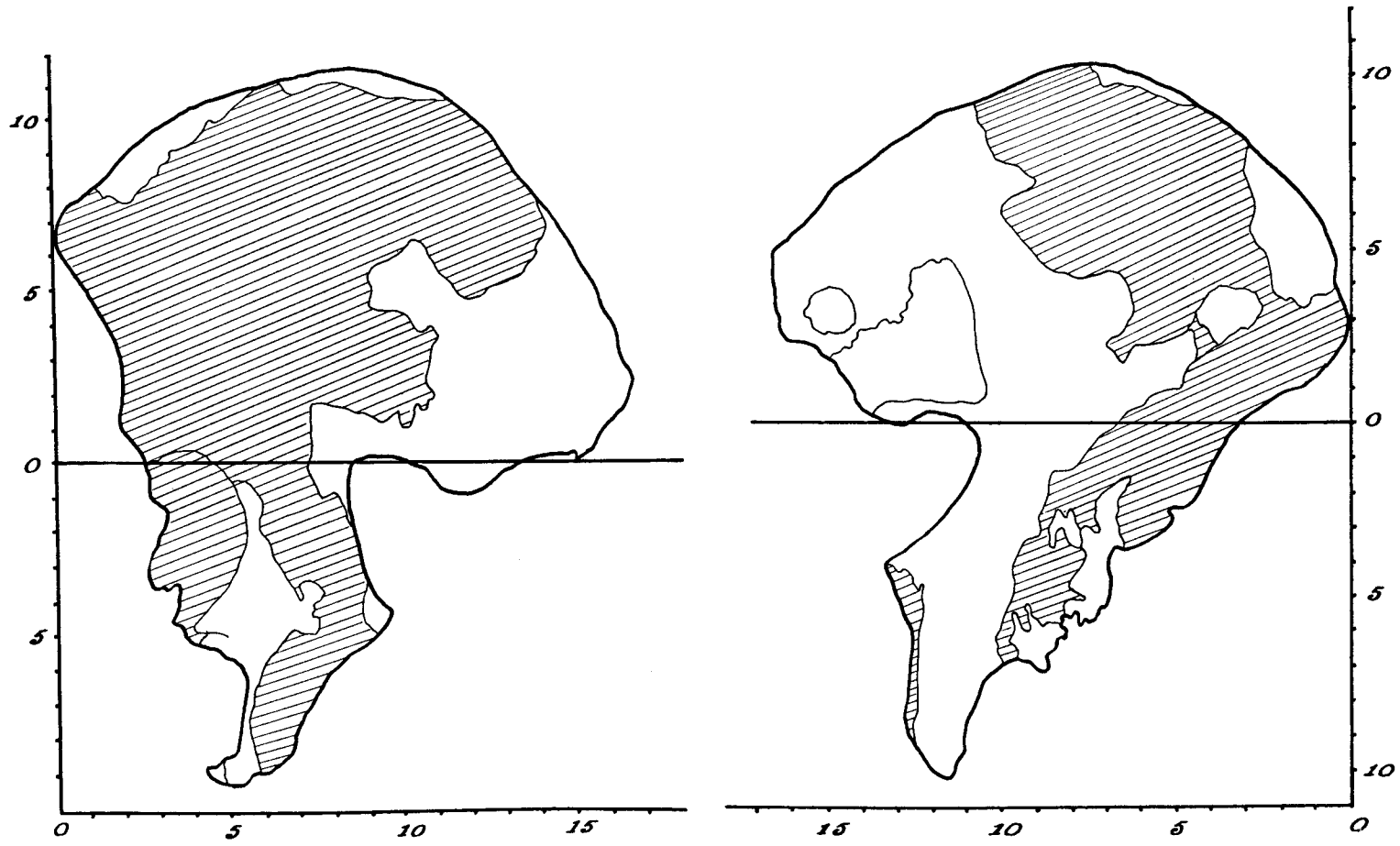


Fig. 17. Lateral and internal aspects of left *os coxae* of M_5.

The auricular surface (Fig. 17) has a Boskopoid configuration, in that its upper limb is small compared with the lower limb, while the angle between the two limbs is of Bush dimensions, being somewhat greater than a right angle. The anterior portion of the auricular surface is markedly hollowed. Just above the posterior portion of the horizontal limb, on the right side, there is an anomalous round articular facet which articulates with a protuberant facet on the lower portion of the first sacral piece. The ischial spine is small and triangular in shape; this form of ischial spine is seen only in Bush and Boskop pelves. The nature of the acetabulum, though incomplete, is Bush-Boskop in that the posterior part of the border is sharp and well defined, while the

feature common to the male sacrum of all three South African types. In length and narrowness it compares with the Bush and Boskop sacra. It is comparatively flat. The auricular surface is rough and the configuration of its limbs corresponds with that of the innominate bone. This surface is spread over the first two pieces only. The anterior sacral foramina are much larger than has been observed in the Negro and their diameter is at least three times that of the posterior foramina.

The *pelvis*, as a whole, is high in proportion to its length. This is a constant feature in Bush and Boskop pelves. The pelvic inlet was apparently highly dolichopellic. Looking through the pelvic inlet from above, the ischial tuberosities are seen to approach one another at

a sharp angle, giving the definitely Boskop transversely narrow outlet (the inter-tuberal width is approximately 5·5 cm.). This narrowness is a feature which has been noted in the male Boskop pelvis, especially in the pelvis of the modern Boskopoid skeleton from the Department of Anatomy, University of Cape Town.

These pelvic bones are definitely more Boskopoid than Bush in type. No features special to the Negro pelvis are present.

Inferior extremity

The massive *femur* measures 48·2 cm. in length, which is almost the same as that deduced by Gear[1] for the Kalomo femur (48·0 cm.), and slightly longer than that of the Zitzikama Boskop skeleton,[2] which measures 46·2 cm. The length-circumference index of 21·2 is much greater than that of Bush or Negro, which have indices of 18·9 and 19·2 respectively.

The femur is relatively straight with a slight forward convexity which is more marked in the lower fourth. The length-curvature index is 6·4, which is smaller than the Bush (7·4) but slightly greater than that of the Negro. The degree of torsion (26°) corresponds to that of the Bushman but exceeds that of the Negro (15°).

The articular surface of the head of the femur encroaches on the neck, a feature seen in the Zitzikama Boskop skeleton, but which is not present in the Negro. The index of the head (99·3) is greater than that of the Negro (97·8), the Bushman[3] (97·5) and the Boskop (97·6). The neck of the femur is short and stout and makes with the shaft an angle of 121°, which is smaller than that of the Bush or Negro (131° and 127° respectively).

There is a slight development of the gluteal tuberosity indicating a third trochanter. The platymeric index of 86·1 points to a marked eurymeria as compared with the Bush (80·5), and the Zitzikama Boskop (71·1); but it is close to that of Keurbooms River[4] (87·8), of Kalomo (86·8) and of the Negro (85·3).

The *linea aspera* exhibits widely separated medial and lateral lips, of which the latter is the more prominent. In this respect it resembles the femur of the Bush skeleton Za_2 from Zitzikama,[5] and is totally unlike that of the Negro. Pilastering is very well developed, with a pilasteric index of 118·2. This, though smaller than that of the Bush (121·0) and of the Zitzikama Boskop (129·0) approximates that of Kalomo (119·2) and is much greater than that of the Negro (105·8).

[1] Gear, H. S. (1926). *Bantu Studies.*
[2] Gear, H. S. (1925). *S. Afr. J. Sci.*
[3] Prag, J. J. (1934). *S. Afr. J. Sci.*
[4] Bernstein, R. A. (1935). *S. Afr. J. Sci.*
[5] Laing, G. D. and Gear, H. S. (1929). A final report on the Strandlooper skulls found at Zitzikama. *S. Afr. J. Sci.* **26**, 575–601.

On the upper half of the lateral surface of the *tibia*, between the anterior border and the inter-osseous crest, there is an elongated depression which is so defined as to be considered an outstanding feature of this bone. In this characteristic it is very similar to the Kalomo tibia (Fig. 18). This feature also distinguishes it from the Bush or Negro types, in which the depression is progressively smaller. The anterior border differs from that of the Negro, in that the upper three-fourths is prominent and becomes more rounded in the lower fourth where it fades away to end in the medial malleolus; in this feature also it resembles the Kalomo tibia.

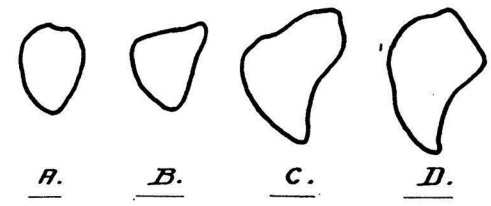


Fig. 18. Cross-sections of left tibia of (A) typical Negro, (B) typical Bush, (C) Kalomo Boskop and (D) M_5, taken 6 cm. below the nutrient foramen.

The platycnemic index is 70·3, approximating that of the Bush and Negro (70·0) and Kalomo (70·5). The impressions on the *fibula* denote large and powerful muscles, a feature seen also in the femur and the tibia. In the middle third of the fibula, the anterior border is very sharp, more so than in the Bush or Negro. Proximally the groove for the origin of *peroneus longus* is **U**-shaped in outline. This feature is characteristic of the Bush race, whereas in the Negro, the limbs of the **U** are more widely splayed. Distally, the bone, as in the Bush, is triangular in section; in the Negro, a triangular cross-section is not present to the same extent.

The bones of the lower extremity then, in their diagnostic features can be definitely placed racially. The femur, while exhibiting a number of Negroid features, closely resembles that of the Boskopoid types of Zitzikama and Kalomo. It may be stated definitely that apart from the excessive degree of pilastering (which is characteristic also of the Boskop) there is no resemblance to the Bush femur. The tibia does not exhibit any features similar to that of the Negro, but it resembles the Kalomo tibia in almost every respect. The fibula, from its length and massiveness is unlike that of the Bush or Negro, but exhibits features similar to Kalomo.

The skeleton of the right *foot*,[1] with the exception of the phalanges, is complete and well preserved. The left foot lacks the second cuneiform bone, and several of the other tarsal elements are badly corroded.

[1] Wells, L. H. (1931). The foot of the South African native. *Amer. J. Phys. Anthrop.* **15**, 185–289.

The *calcaneus* is of large size (Fig. 19), its length (84 mm.) approximating the largest measured in Caucasian or Negro. In general appearance, however, it resembles the Bush type more than either the Negro or the Caucasian. This is borne out by a series of indices. Thus the minimum length-breadth index falls even below the average for the Bushmen, in which race it is lower than in either of the other two. This indicates the extreme relative narrowness of this bone. The length-height index, however, is not so low as in the Bush type, of this bone, viz. the extraordinary prominence of the lateral tubercle, which appears as a rounded tongue-like excrescence upon the infero-lateral border, with a lateral projection of nearly a centimetre. In no Bush or Negro bone examined in this Department, nor in any known literature, does the lateral tubercle constitute such a gigantic projection. It is noteworthy that the *peroneal process* (as defined by Wells), which is morphologically a continuation of the lateral tubercle, does not share in this prominence. On the contrary, it is much less pro-

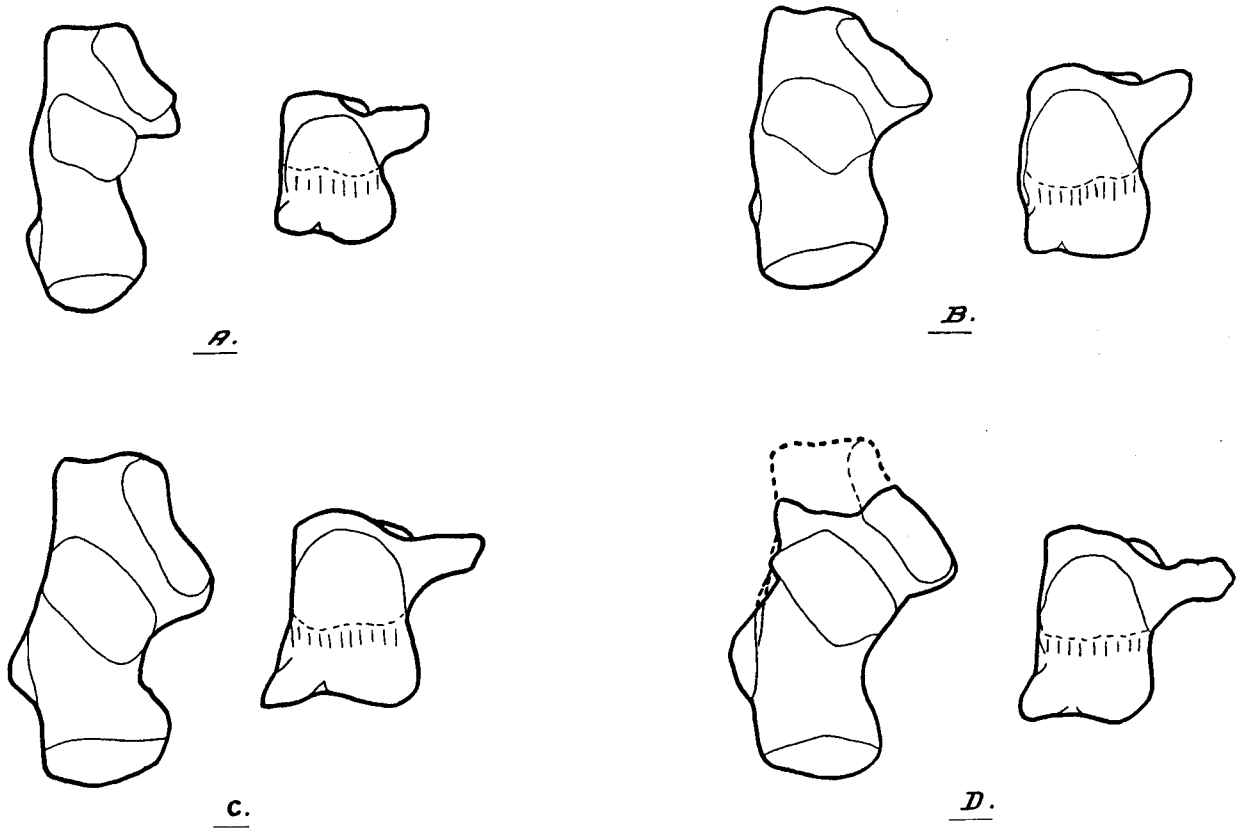


Fig. 19. Superior and posterior aspects of calcaneus of (A) typical Bush, (B) typical Negro, (C) M_5 and (D) M_7.

approximating to Negro values; thus this bone is not so markedly depressed as in the Bush type. The calcar length index, which measures the degree of backward projection of the heel, is equal to the average in the Bush race, which appreciably exceeds those of the other two races. Further, the medial projection of the *sustentaculum tali* forms 43 per cent of the total breadth of the bone; this is the average value in the Bush type, but considerably exceeds those found in Caucasian and Negro. Moreover, this process is inclined medially at an angle of about 5° to the horizontal, again resembling the Bush type; in the Caucasian and Negro, this angle is much less.

Fig. 19 also shows clearly a very remarkable feature nounced than is usual in either the Bush or the Negro. Further, there is on this bone no indication of the faceted *peroneal spine* or *trochlear process*. This feature, which is present in many Caucasian bones, has, according to Wells, not been observed in any Bush or Negro calcaneus.

In spite of its large size, the *talus* resembles that of the Bush race in its relative narrowness and lowness. The angle of the neck also has a value approximating to the average found in the Bush, but differing widely from the Negro figure. The measurements of the other tarsal bones afford no evidence of racial affinities. When the bones are articulated, however, it is seen that the form

of the tarso-metatarsal joint is that characteristic of the Negro and Bush, in contrast to the Caucasian type.

In common with the other bones of this skeleton, the *metatarsal bones* are of great length, equalling or exceeding the largest Negro specimens. The relations which the lengths of the metatarsals bear to one another, however, differ widely from those existing in Bush, Negro and Caucasian. These show that the relative lengths of the first and fifth metatarsals are the same as those in the average Caucasian and Bush, but differ from those obtaining in the Negro. The other three metatarsals, however, are unusually elongated, the increase being greater in the second than in the third and fourth. It cannot as yet be determined whether these peculiarities are of individual or racial significance.

It will be noted that such features of the skeleton of the foot in this subject as can be classified racially, are much more Bush than Negro. Unfortunately, the character of the bones of the foot in Boskop man is unknown. It cannot therefore be determined how far these Bush-like features occurring in bones of much greater size can be considered Boskop, or whether the anomalous features of the metatarsus can be ascribed to this origin. At all events, this individual must have been distinguished by very large feet, both the instep and the heel being definitely elongated.

From the analysis of this skeleton it is seen that the skull is more Boskopoid than Bush; the mandible may have some Negro affinities, but as they are features which are common to the three South African types, their diagnostic value is slight; no Negro features are seen in the shoulder girdle and upper extremity; the pelvis and lower extremity are more Boskopoid than Bush. Thus this skeleton must be regarded as a Boskop-Bush admixture, with some features which may be of a Negro facies, but which are relatively unimportant in racial diagnosis. This skeleton is of particular interest. Not only is it the most intact skeleton but its funerary adornments are unique to this series. This man was buried bearing a gold sceptre. It may have been that he was a bandit buried with his spoils, that he was this or that. It is more logical to accept the facts at their unromantic face value and to deduce that the sceptre, the emblem of his power while alive, was buried with him. He was a leader among his people. This, coupled with the absence of alien specific Negro features, is significant.

Skeleton M_6

The remains of this skeleton, which have only recently been handed over to us, are so fragmentary that neither reconstruction nor description could serve any purpose. It is important to note, however, the mode of burial. The skeleton was found lying on bed rock in a very charred condition. Professor Mackintosh, Professor of Forensic Medicine at this University and Government Pathologist, reports that the bones had been burned while the flesh was still on them. They had been subjected to a strong heat over a fairly long period. The charring cannot be due to adventitious burning such as the burning down of a hut, but to deliberate firing. Further, associated with these remains are charcoal fragments of a wooden vessel. The rim is bevelled from both faces and seems to have been undercut. Other fragments of the vessel show remains of an incised pattern. There are also evidences of iron ornaments.

M_7, The Gold Skeleton

Since this skeleton was associated with at least 70 oz. of gold in the form of gold bangles, it is presumed to have been female. It is the skeleton of a young adult and consists of fragments of skull and mandible, of the upper and lower extremity, and of the skeleton of the foot.

The Skull

These cranial fragments comprise the greater part of the frontal bone, nearly the whole of the left parietal, part of the right parietal, parts of the occipital squame and left temporal, also fragments of both maxillae and part of the infra-orbital portion of the right malar. The bones are moderately thick with well-developed meningeal and sinus grooves.

In norma verticalis the brain case appears elongated. The cranial index is 78·8. This is due to the greatest diameter being low-set on the temporal bone. It is metrio-metopic (fronto-parietal index 66·0). The infantile parietal bosses give it an ovoid outline. Its cranial form is therefore ortho-ovoid. There is no indication of a metopic ridge or of a post-coronal depression. An inter-parietal groove is however indicated.

In norma lateralis (Fig. 20) the glabellar region is missing. The cranial contour is Bush in nature.[1] The inion is very prominent.

The postero-inferior angle of the parietal bone is very much everted, a condition seen in the Fish Hoek skull, and very rarely found in the Negro. This accounts for the high maximal breadth. The mastoid process is broad, of moderate downward projection, flattened medio-laterally, and leaves the digastric groove slightly exposed posteriorly. This fossa is situated on the base of the skull. The sterno-mastoid crest is massive; there is a broad shallow supra-mastoid groove and a well-marked supra-mastoid crest curving boldly upwards. The tym-

[1] Slome, D. (1927). The curvature of the Bushman calvarium. m*mer. J. Phys. Anthrop.* **10**, 365–78. Macgregor, I. (1934). A *A*etrical analysis of the calvaria. In Abstract of the Symposium on the skeleton of the Bush race. *S. Afr. J. Sci.* **31**, 570–1.

panic ring is thick and rugged, and the root of the zygomatic arch massive, with an indication of lateral flattening. There is an indication of bulging along the parieto-squamous suture, the maximum breadth of the skull being apparently at this level. A very prominent inferior frontal eminence is present. The anterior end of the temporal line passes above this prominence, and then descends almost vertically to the fronto-malar suture. The form of the external angular process in this view is thus a truncated triangle, as in the Illovo skull.[1]

narrow and not markedly expanded posteriorly. The glenoid fossa is relatively shallow, with a widely exposed petrotympanic fissure. There is a considerable extension of the articular surface backwards on to the tympanic plate. The post-glenoid tubercle is well developed. The palate was evidently shallow, definitely horseshoe-shaped, and shelving in its anterior fourth.

Certain features of this skull, such as its ortho-ovoid cranial form, suggest a Negro element. A larger number, however, are unmistakably Bush or Boskopoid. There

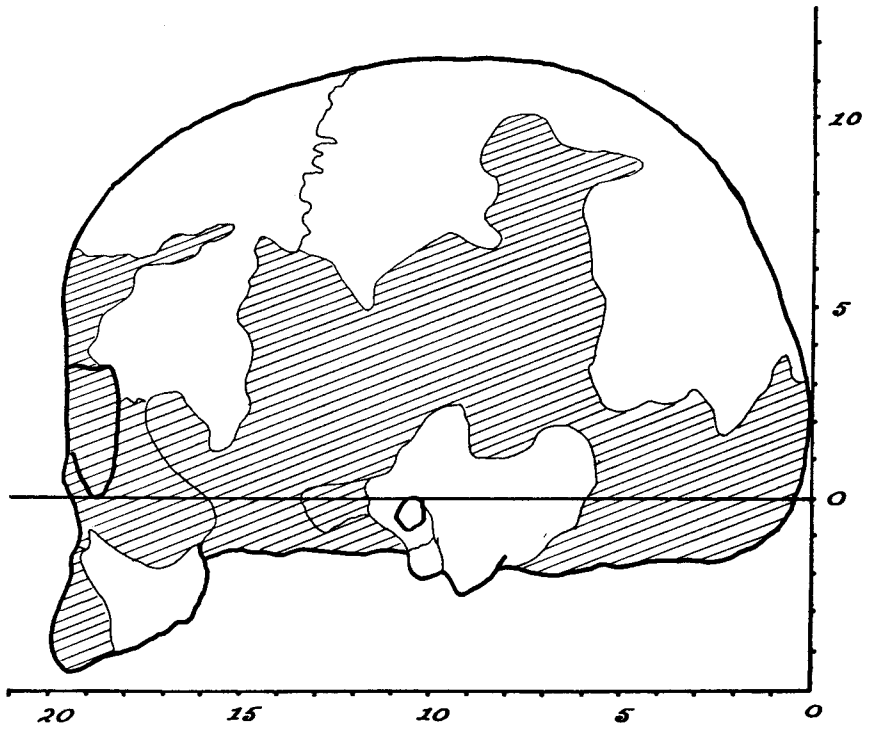


Fig. 20. Norma lateralis of skull M_7.

From the available fragments it is clear that the face was generally orthognathous, with apparently some subnasal prognathism.

In norma facialis the frontal region is low and rounded. The supra-orbital trigone is slightly excavated; its breadth at the base is greatly increased owing to the course taken by the temporal line. There is some grooving by the branches of the supra-orbital nerve; the orbital shelf is absent; there is a deep infra-orbital depression, but no canine fossa. The body of the malar is relatively shallow, but the depth of the infra-malar portion of the maxilla is great, so that the total infra-orbital depth is about average. The nasal aperture, which must have been broad, shows a large nasal gutter. The infra-nasal portion of the maxilla is shallow.

In norma basalis the digastric fossa is relatively

[1] GALLOWAY, A. (1936). *Trans. Roy. Soc. S. Afr.*

is a distinct resemblance to the fossilized skull of Boskop-Bush character from Smitsdorp (Pb_1) near Pietersburg.[1] When it is considered that the individual is probably female, the strength of the Boskop element is as evident in this skull as in M_5. It is therefore to be diagnosed as a Boskopoid-Bush type, probably with an added Negro strain.

The mandible

The mandible is represented by a fragment of the angle flange of the left side. The relative massiveness of the flange is an important feature. It suggests that it is a fragment of a large mandible. In addition to a prominently tuberculated, but small, area for the insertion of the internal pterygoid, which is restricted to the

[1] BERRY, G. F. (1935). Human skeletal remains from Smitsdorp. In Symposium on human skeletal remains from the northern and eastern Transvaal. *S. Afr. J. Sci.* **32**, 616–21.

region of the angle, conspicuous tubercles are present on the lateral aspect for the insertion of the masseter. The angle is everted at the expense of the posterior border, and it is markedly truncated. The mylohyoid groove is deep and narrow. It seems to be a fragment of a mandible of the Kalomo, with affinities to some other, type. There are no Negro features.

Vertebral column

The only portions of the vertebral column of this skeleton preserved are an incomplete mid-cervical vertebra and the body of a lumbar vertebra. The cervical vertebra agrees with those of M_5 in being large but light in build, with broad thin laminae; the spine is broken off. The lumbar fragment is large, and shows an extensive marginal spondylitis, rather surprising in a subject, who, from other evidence, was clearly not of advanced age. On account of this, and of the doubtful numerical seriation of the specimen, the lumbar index derived from it has no diagnostic significance.

Superior extremity

The shoulder girdle and upper extremity are represented by two scapular fragments, showing a short slender coracoid process and a small scapular spine, and a massive distal fragment of the left humerus. The trochlear surface of the humerus is inclined and has a very concave contour. The medial and lateral edges of the trochlea are inclined and show marked lipping. As a result the cubital angle is low. There is an area of non-articular surface on the ridge between the capitulum and the trochlea. The coronoid fossa is deep, showing a supra-trochlear foramen. The olecranon fossa is large, deep and triangular in shape.

The skeleton of the hand is represented by the proximal portion of the left fourth metacarpal. It is very slender in contrast to the massiveness of the humerus. This individual, like M_5, must have possessed very delicate hands.

There is an absence of features specific to the Negro type in these bones. Certain Bush features are present, as well as some Boskopoid features closely resembling the Matjes River type.

The lower extremity

The long bones were so fragmentary that reconstruction was impossible, nor was one able to find any features of racial diagnosis.

The *bones of the foot* present are the two tali, the left calcaneus, navicular and first metatarsal, all in a corroded state.

The *calcaneus* (Fig. 19) is incomplete, lacking its anterior process. It was clearly of prodigious length, appreciably exceeding that of skeleton M_5, which it closely resembles in general form. The breadth of the body of the bone is even less than in the former specimen, and the relative projection of the *sustentaculum tali* greater. In fact, this process constitutes 49 per cent of the total breadth of the bone, a proportion which considerably exceeds the Bush average, being almost simian. Further, the medial slant of the *sustentaculum tali* is even more than in skeleton M_5, being also ultra-Bush and simian in degree.

This bone shares with that of M_5 the exaggerated projection of the lateral tubercle. It seems, however, from the preserved portion that the peroneal process was better developed in this specimen.

As might be expected, the *talus* shares with the calcaneus its extreme elongation and narrowness. In these proportions, and in its relative lowness, it is indeed ultra-Bush. The angle of the neck of the talus is also much nearer to the Bush than to the Negro average. The other bones, beyond the fact that they are slightly larger than the corresponding bones of M_5, reveal no noteworthy features. Such measurable qualities as have been determined from these bones are Bush, or even ultra-Bush and simian in character. The reservations made in the case of the preceding specimen apply equally to this one. In general, it is clear that this individual possessed extremely large, or at least elongated though possibly relatively narrow feet.

M_7, like the preceding ones, is the skeleton of an individual resembling the Bush-Boskop type. Negro features are present to a slight degree, but are overwhelmed in the midst of so many specific Bush and Boskop features.

SKELETON M_8

This skeleton is in a very poor state of preservation and consists of fragments of most of the bones. Many of these are too fragmentary for reconstruction or description. That any of the remains at all were preserved is due to the careful excavation of Professor C. van Riet Lowe. It is the skeleton of a young adult female, whose stature was approximately 5 ft. 9 in. The bones of the skull are greatly crushed and markedly distorted.

The skull

The bones are of medium thickness with well-marked meningeal and sinus grooves. The *crista frontalis interna*[1] is well developed. The brain case is elongated and of ovoid contour. The posterior half of the frontal bone shows an incipient metopic ridge. There is no evidence of any post-coronal grooving or of an inter-parietal groove.

[1] GEAR, H. S. (1926). *S. Afr. J. Sci.*

Norma lateralis (Fig. 21). The glabellar region is very flat and the forehead high and slightly receding. There is a gradual transition to the vault, which is flattened from the mid-frontal to the mid-parietal region. The occiput is evenly rounded, with no parieto-occipital flattening. There is a distinct *torus occipitalis*; the nuchal plane is generally flattened, with slightly marked *receptacula cerebelli*.

There is distinct supra-asterionic flattening. The mastoid process is small, narrow and flattened, and process is massive, though not laterally divergent. The supra-orbital trigone is excavated and the superior orbital margin thick, blunt and greatly everted.

The inter-orbital interval must have been relatively narrow. The exact form of the orbits cannot be estimated, though their breadth must have considerably exceeded the height and the axis seems to have been oblique. There is evidence of a well-marked orbital shelf. The malar is angulated, and its main plane faces directly laterally. The nasal processes are not everted,

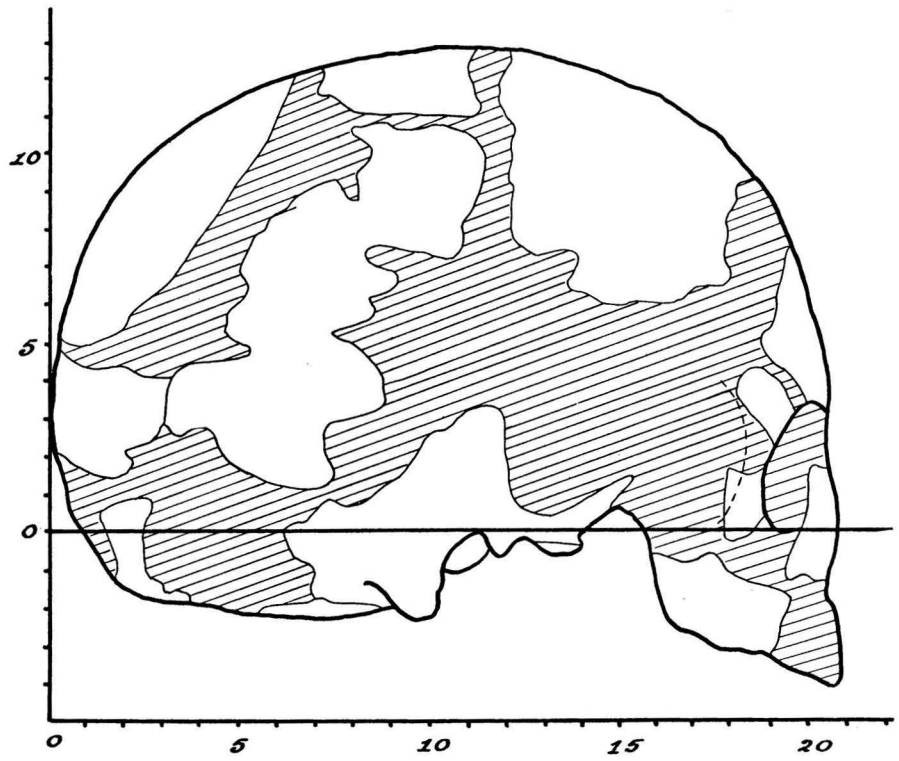


Fig. 21. Norma lateralis of skull M_8.

leaves the digastric fossa exposed posteriorly. The fossa is situated entirely on the base of the skull. There is no definite sterno-mastoid crest. The well-marked supra-mastoid crest at first proceeds almost horizontally backwards, then turns sharply upwards. The tympanic ring is not preserved. The root of the zygomatic arch seems to have been massive with a definite lateral plane and flanging out markedly from the side of the skull. A *mons temporo-sphenoidale* is indicated. The anterior end of the temporal line appears to have descended very obliquely and the external angular process forms a truncated triangle. The face does not seem to have been prognathic.

Norma facialis. The frontal region is high, narrow and somewhat peaked. The glabella and supra-ciliary eminences are very slightly marked, but the external angular but face more anteriorly than laterally. They appear to have been flattened in their upper portion. The infra-nasal portion of the maxilla must have been shallow. There is a deep infra-orbital fossa, but no true canine fossa.

Norma basalis. The foramen magnum is a broad oval, with small flattened condyles. The mastoid process is flattened medio-laterally. The digastric fossa is deep but broad and expanded posteriorly, the glenoid fossa seems to have been wide and shallow with a flattened articular tubercle and a very large post-glenoid tubercle. The palate must have been broad and very shallow.

The features of this skull are not Negro, except for the hemispherical character of the parieto-occipital region, and perhaps the cranial form which, owing to distortion and crushing, is difficult to assess. A few

minor details are Negroid in character. Otherwise, this skull, like the others, may be considered a Bush-Boskop hybrid with a few Negro features.

The mandible

The right half is fairly complete, but the left half less so. The condyles are missing, and the symphyseal region defective. Although the superficial layers of bone have

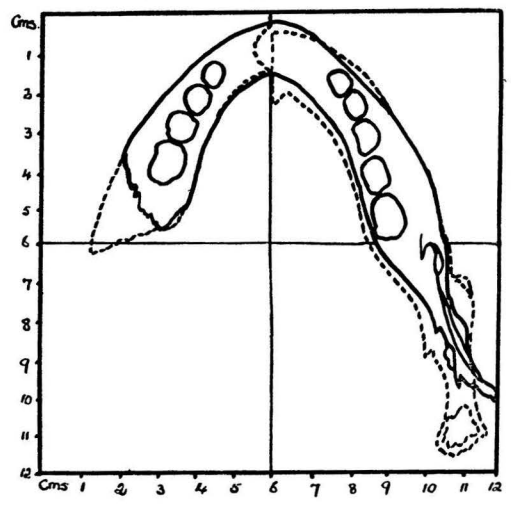


Fig. 22. Superimposition of superior aspect of mandible M_8 on the original Boskop fragment (left) and the Boskop Kalomo mandible (right).

scaled off through weathering, this is still a very heavily constructed and massive mandible. The mandible is slightly elongated and the ramus, while massive, is relatively small as compared with the body.

From the superior aspect the internal contour forms a "V" with a rounded apex (Fig. 22). The outline of the alveolar arcade is divergent U-shaped, the symphyseal portion of the arcade is evenly rounded and the maximum width is at the last molar. There is no gutter between the anterior border of the ramus and the posterior end of the alveolar arcade.

The ramus has the form of a relatively short parallelogram, not very obliquely inclined to the body (Fig. 23). The sigmoid notch is fairly wide and deep but its edge is poorly supported. The condylar process appears to have been long and narrow with no forward curve. The condyle itself must have been relatively small with a slight backward curve. A stress-bar is seen on the external surface, commencing below the midpoint of the coronoid notch and running upwards and backwards to give the condylar element its massive appearance. The coronoid process is large and triangular, slightly hook-shaped, and its extremity is pointed. The axis is directed upwards and forwards. The anterior edge of the ramus is sharp. The posterior border is not folded over, nor is it very blunt. The ramal angle tends to be rounded and there is some suggestion of a *processus angularis*. Eversion occurs at the expense of the inferior border only and is so pronounced that a large laterally projecting ledge is formed. The angle flange, however, is not massive. The area for insertion of the internal pterygoid is fairly well indicated but less so than in some of the other Mapungubwe mandibles. Further, it extends higher up the medial aspect of the posterior border than in the others.

The lingula is sharply pointed but short, its posterior border being about five times the length of the anterior. The mandibular foramen is small and has no associated vestibule. The mylohyoid groove is wide at its commencement, but becomes very narrow and deep further along. The ramal stress-bar is prominent, but the arms of the "Y" are truncated. The mylohyoid ridge is inconspicuous and extends forwards only as far as the second molar alveolus.

From the lateral aspect (Fig. 23) the body has a broad rectangular shape, with a straight upper margin. The lower margin, on the contrary, is markedly convex opposite the molar and premolar regions, consequently there is a deep wide *incisura submentalis*. The lateral surface is elevated over an extensive area in the region of the trihedral eminence, thus contributing to the comparative thickness of the bone here. There is no external oblique line. The large mental foramen is situated opposite the second premolars, midway between the upper and lower borders.

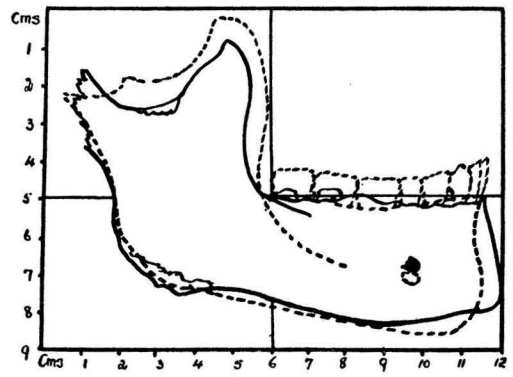


Fig. 23. Superimposition of lateral aspect of mandible M_8 on the Boskop Kalomo mandible.

The unevenly distributed massiveness of this mandible indicates a Boskopoid element found in the original Boskop and Kopje Enkel mandibles. Other Boskopoid features are the elongation of the mandible, the character of the mandibular foramen, lingula and mylohyoid groove, the rectangular outline of the body and the convexity of the inferior margin, the nature of the thickening of the body in the molar region, the width and depth of the sigmoid notch, the position of the mental

foramen, the contours of the body and alveolar arcade seen from above, the absence of alveolar guttering and the *incisura submentalis*.

The concavity of the posterior margin and the excessive degree of eversion of the lower border of the ramus may be seen in Bush mandibles, and are prominent in the Cape Town Boskop mandible.

The parallelogram shape of the ramus, and its smallness in relation to the size of the body, the sharpness of its anterior border, and the thinness of its angle flange may be interpreted as Negro, although the diagnostic value of the last point is negatived by the unique character of the angle. On the other hand, ramal parallelogram shape and smallness in relation to body-size are usually associated in the Negro with a definite obliquity of ramus to body, which is absent here. The ramus may be small in relation to the body, but its absolute dimensions are well outside the Negro range.

The metrical analysis shows that this mandible is large and in some instances exceeds the Kalomo mandible; other measurements compare with the original Boskop and Kopje Enkel types. The superimpositions given in Figs. 22 and 23 bear out these points. Such remarkable correspondence of contour between the body of this specimen and that of Boskop is seldom recorded.

The mandible is therefore predominantly Boskop, showing one or two features which may be Negro.

Vertebral column

The vertebral column is fragmentary. The only portion yielding evidence of diagnostic value is the *axis*, of which the body is preserved. This fragment is considerably smaller than that of M_5, being rather less than the Negro average in size, and is delicate in build. The canals for the vertebral arteries are deeply excavated as in the Bush type. This feature with the general structure of the bone is suggestive of a Bush element in this individual.

Upper extremity

The right *clavicle* is almost complete, lacking only the sternal end. It is a slender straight bone of medium length, with non-expanded extremities. Such features are typically Bush and are also seen in the Matjes River Boskopoids. The upper extremity consists of the shafts of the left humerus, ulna and radius. There are no Negroid affinities amongst these bones. Certain Bush-Boskop features are well marked, closely approaching the Matjes River race.

The pelvis

The pelvic bones are very fragmentary, but are massive with well-marked muscular and ligamentous impressions. The facts that the sciatic notch is wide, the bony prominences small in proportion to the size of the bones and the iliac fossa shallow, indicate that the bones are female.

The anterior inferior iliac spine is fairly massive, evenly rounded in contour, but not prominent. The upper limb of the auricular surface was apparently small and the angle between the two limbs markedly obtuse. The ischial spine is small and triangular. The few features which these fragments show are Boskopoid in nature.

Lower extremity

The average length of both femora is 47·25 cm., which although slightly smaller than M_5, approximates closely to the deduced length of the femur of Kalomo (48·0 cm.). The femora are relatively straight; the convexity, which is in a forward direction, is more marked in the upper three-fourths. The muscular impressions are heavy, being particularly exaggerated below the lesser trochanter.

It is impossible to estimate the degree of encroachment of the articular surface on to the neck of the femur owing to the fragmentary state of this part of the bone. The collo-diaphyseal angle is 120°.

The gluteal tuberosity of the right femur is exaggerated, giving an indication of a third trochanter. On the left femur, however, there is no sign of a third trochanter. The platymeric index is 74·3 which, although far removed from that of Kalomo (86·8), Keurbooms River (87·7), Negro (85·0), and Bush (81·0), approximates more closely that of the Zitzikama Boskop type (71·1).

The *linea aspera* is not as exaggerated as that of Kalomo or Zitzikama, giving a pilasteric index of 112·0, still, it is greater than that of the Negro (105·8).

The physiological length of the *tibia* is 41·7 cm., which length corresponds with that of M_5. There is so much distortion of this bone that little can be said of any features which would be of diagnostic value.

The *fibula* is in a very fragmentary condition, but the parts which are present show a close resemblance to the fibula of M_5. The muscular impressions are well defined and denote large and powerful muscles, and the middle third of the bone is flat with a sharp anterior border.

The few features which the bones of the lower extremity show are incompatible with the Negro type. They are more Boskop than Bush in character.

SKELETON M_9

This skeleton consists of fragments of most of the bones. The bones were so crushed, fragmentary and corroded that it has been possible to reconstruct and describe the skull, mandible, and axis vertebra only.

The Skull

The skull is represented by a number of markedly distorted fragments of the right side of the brain case and upper part of the face. The alveolar region was so corroded that the teeth were lying practically free in the matrix.

It is the skull of an adolescent of about 15 years. The sex is uncertain. For such a young subject the cranial bones are thick. The *crista frontalis interna* is strongly developed, and the vascular grooves well marked.

The distortion of the parietal bone has masked to some extent the bossing. This might have been foetal in type. At the most it was infantile. The cranial form may have been either pentagonoid or ovoid. There is marked frontal narrowing, and a well-defined metopic ridge produces a considerable degree of trigonism. The frontal bosses are poorly marked, being adult in development. There is an indication of post-coronal flattening.

The glabella is salient. There is ophryonic grooving laterally, but in the midline the metopic ridge carries the line of the glabella upwards as an even curve. The forehead is low, slightly receding, and passes by a gradual curve into the vault. From the mid-frontal to the mid-parietal region the contour is flat. The parieto-occipital and occipital contours are badly deformed. It appears, however, that the parieto-occipital region was flat and sloping and the occiput prominent, with a transverse occipital furrow and prominent *receptacula cerebelli.*

There is marked supra-asterionic flattening. The mastoid process is broken off; the supra-mastoid and sterno-mastoid ridges are very slightly marked. The tympanic ring is missing. The glenoid fossa is shallow with a slightly developed articular tubercle. The post-glenoid tubercle, however, is large and massive. The root of the zygomatic arch is stout but not massive. The squamous suture has an oblique and depressed course. There is evidence of a *mons temporo-sphenoidale.* The inferior frontal eminence is well marked, and is traversed by the temporal line as in skull M_2. The anterior end of this line descends vertically, so that the external angular process has the triangular form seen in M_7 and M_8. The face as a whole cannot have been prognathic.

The forehead, in its original state, must have been relatively low, and peaked owing to the presence of the metopic ridge. For an immature skull, the glabella is well developed, but the supra-ciliary eminences are faint. The supra-orbital triangle is not completely flat; the external angular process, though slender, has a considerable lateral projection. The orbits must have been large, with rounded margins. There is evidence of an orbital shelf. The malar was thus angulated and faced more laterally than anteriorly. The inter-orbital interval is relatively narrow. The roots of the nasal bones are flat, as were also the nasal processes of the maxillae.

This skull displays an array of unmistakably Boskopoid features, which are very noteworthy when its immaturity is taken into account. Of its other features, some appear to be Bush while others may be Negro. The skull may therefore be considered Boskop-Bush with some slight Negro features which are insignificant.

The mandible

The ramus is fairly complete as is the body as far as the first molar alveolus. The symphyseal region is less complete.

The outstanding proportions of the specimen are the relative shortness compared with its great width and the absolute smallness of the ramus, features which are definitely Bush. Viewed from above, the internal contour of the body is a narrow "U" with relatively short limbs which flare out laterally beyond the region of the third molar. The apex of the "U" is formed by the splenial element, while in Negro and Bush types it is formed by the alveolar element. The alveolar contour forms a wide "U" with slightly divergent limbs posteriorly, where the third molars are just erupting. The alveolar contour does not overlap the internal contour of the body. Such overlapping of contours is seen in Bush, Negro and Caucasian mandibles. The whole of the internal aspect of the symphysis can be seen and a simian shelf appearance is produced.

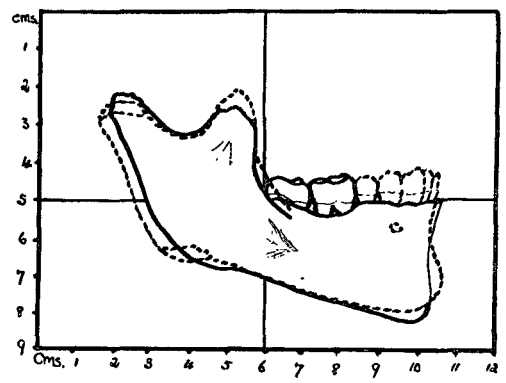


Fig. 24. Superimposition of lateral aspect of mandible M_9 – on a Bush mandible of approximately the same age.

The ramus (Fig. 24), which is parallelogram and almost rhomboidal in shape, is very obliquely inclined to the body. This obliquity is seen in Negro mandibles of the same age. The coronoid process is slightly damaged, it is very blunt, massive and short and, like the Bush mandible, it points upwards and forwards. The anterior border of the ramus is sharp. The condylar

process is long and slender. The condyle apparently had a Negro facies, in that the articular surface was small and flattened, and formed a narrow rectangle. The lateral surface of the ramus is markedly concave, and there is only slight eversion in the angle region, which is rounded.

The medial aspect of the ramus shows the following features. The areas for the attachment of the pterygoid muscles are not elevated above the surface. The mandibular foramen is small, and the groove leading into it is wide and shallow at first, but becomes deeper as it approaches the foramen. These two features may be Negro or Bush. The mylohyoid groove is narrow and deep. The stress-bar shows a poorly-developed posterior limb while its anterior limb is prominent and extends up to near the tip of the coronoid process, thus contributing to the massiveness of this process. This is seen in the Bush mandible and is a feature of Kalomo. The mylohyoid ridge is prominent opposite the second molar only.

From the lateral aspect, the body gives a triangular contour, for it is much higher at the symphysis than at the molar region. The alveolar border shows the Negro concavity but the inferior border is straight. There is no *incisura submentalis*. The trihedral eminence is Bush in configuration, being somewhat prominent and accentuated by the depression on the lateral surface of the ramus. There is a slight external oblique line extending anteriorly to this eminence.

The symphyseal region has a rounded lower border. The symphyseal height is great, the bicanine diameter very narrow, while the splenial element projects markedly backwards, so that a simian shelf is simulated. This region is neither Bush nor Negro (Fig. 24).

This mandible therefore is instinct with pre-Negro features. The few Negro features indicate a slight degree of Negro hybridization.

Vertebral column

Of the vertebral column only the *axis* is sufficiently well preserved to furnish information of diagnostic value. It is small, light and slender, resembling that of M_3. The spine, which is incomplete, is Y-shaped in norma dorsalis. The laminae are thin, with sharp anterior edges, resembling those of the Bush axis. The neural canal is relatively large in diameter, which accentuates the delicate appearance of the bone. Extreme dwarfing of the transverse processes is present, these structures being almost wholly concealed by the superior articular surfaces. In correspondence with this, the arterial canals have the tortuous course distinctive of the Bush type; they are so deeply excavated as to render the superior articular surfaces in part translucent. The character of this bone is thus strongly indicative of the Bush type.

This skeleton, then, has a majority of features which are Boskop or Bush and shows very few Negro features.

Skeleton M_{10}

The identified portions of this skull comprise portions of both parietals, the greater part of the frontal, the roots of the nasal bones, the body of the left malar and a fragment of the incisive portion of the maxilla, with a few isolated teeth. Judged from the evidence of these teeth, this is the skeleton of an adolescent which is in agreement with the general aspect of the cranial bones, which are light and slender. The *crista frontalis interna* however is very strong. No estimate of the sex of this individual is possible.

The calvaria is relatively large in its diameters, and an infantile parietal boss gives it an ovoid cranial form. The frontal region is broad. There is no metopic ridge, but a well-marked post-coronal depression. This is somewhat accentuated by a median ridge in the mid-parietal region; there is no inter-parietal groove.

In a lateral view (Fig. 25) the glabella and supraciliary eminences are very prominent, though the superior orbital margins are lacking. There is a well-marked ophryonic groove. The forehead is very low and somewhat receding, passing by a gradual curve into the vault. This is flattened from the mid-frontal to the mid-parietal region, and then curves evenly downwards to the lambda, there being no parieto-occipital flattening. Apart from this feature, however, the contour is frankly Bush-Boskopoid. A well-marked inferior frontal eminence is indicated.

The nasal bones at their insetting are narrow and flat and vertical in direction, implying an orthognathous upper portion of the face. The malar is slender, with broad flat frontal and zygomatic processes. The region of the orbital shelf unfortunately is missing, but there is definite evidence of angulation.

While the contour of this skull in norma verticalis is such as is regarded as Negro, that in norma lateralis is decidedly Bush-Boskopoid. Many distinctly Bush or Boskopoid features are present, but others whose presence might have been anticipated are absent. The skull may therefore be diagnosed as a blend of Bush-Boskopoid and Negro elements.

Skeleton M_{11}

This skeleton is represented by isolated and corroded bones of the vault, portions of the right temporal and sphenoid, the complete right malar and very crushed and corroded fragments of the other facial bones. The

mandibular fragments, very badly weathered, consist of the right coronoid process, the right body as far as the symphysis and part of the left horizontal ramus. The skeleton of the upper extremity consists of the distal extremity of the right radius and some bones of the hand. The femur is fairly intact, the tibia very fragmentary, while only the middle third of the left fibula is extant.

The remains are those of an adult which from its associations is concluded to be female. The stature is approximately 5 ft. 4 in.

The skull

The bones are of moderate thickness with well-marked meningeal grooves and a prominent deep groove for the sigmoid sinus.

The mandible

The mandibular fragments are those of a very large massive mandible. The ramus is elongated, and rather obliquely inclined to the body. The tip of the coronoid process is blunted and its anterior edge rounded. It points upwards and backwards. The anterior limb of the stress-bar is prominent and, on the whole, the process is powerfully constructed. There is only a slight gutter between the anterior border of the ramus and the alveolar margin. The lingula is stunted and poorly preserved and the mandibular foramen is small.

The body is roughly rectangular. The upper border is straight, but the lower shows a slight downward convexity opposite the molar region. The region of the trihedral area is flattened. The large mental foramen is situated opposite the interval between the first molar and second premolar. The symphyseal region suggests the presence of a prominent median mental tuberosity and a forwardly projecting splenial element.

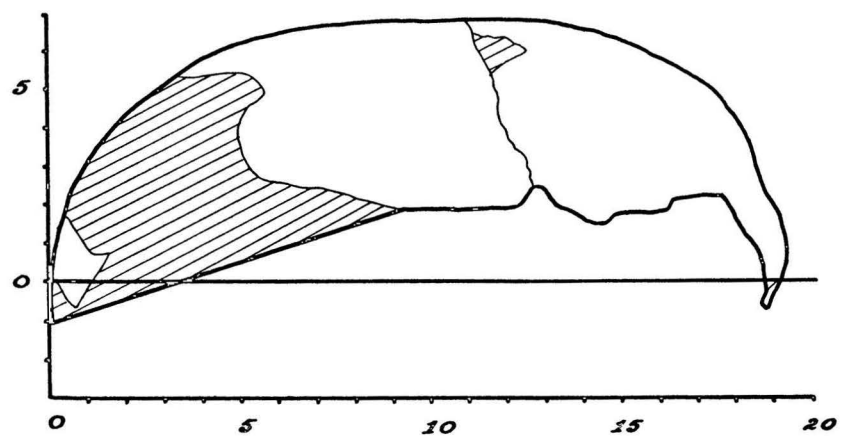


Fig. 25. Norma lateralis of vault fragment of M_{10} (the zero line passes through nasion and lambda).

The features present in this mandibular fragment suggest close affinities to the Kalomo type of Boskop mandible.

The mastoid process is short and flattened, and leaves the posterior expansion of the digastric fossa exposed. The fossa is situated on the base of the skull. The groove for the occipital artery is remarkably deep. The attachment of the sterno-mastoid does not form a definite crest; the supra-mastoid groove though broad is shallow, but the supra-mastoid crest is distinct and curves rapidly upwards. The remains of the tympanic ring are massive. The root of the zygomatic arch is of moderate stoutness; the glenoid fossa is deep, with a well-developed post-glenoid tubercle.

The malar is of very large size, but smooth, and not massive in build. The depth of the body of the malar is unusually great. There is an indication of an orbital shelf; the malar was definitely angulated and appears to have been directed laterally with a slight upward tilt.

Of the very few features on which racial diagnosis is based it is notable that several are distinctly Boskopoid. The prominence of these features is more striking since it is a female skeleton. They indicate a definite Boskop strain in this skull.

Upper extremity

The radius fragment is slender in contrast with the prominent extensor grooves.

Of the right *hand* there are present the capitate, hamate, metacarpals II–V and some phalanges; of the left hand the triquetrum, pisiform, hamate and base of the fifth metacarpal. The carpal elements are considerably larger than in M_5, being equal in size to those of the average Negro. The metacarpals are shorter than in M_5, but more massive. In contrast to M_5 and M_7, it seems that this individual possessed relatively short broad hands.

Lower extremity

The *femur* is slender. It measures 49·4 cm. in length, being slightly longer than the femur of M_5. The length-circumference index of 18·0 approximates that of the female Bush type.

Viewed from the lateral aspect there is comparatively little curvature. The length of curvature is only 2·4 cm., the length-curvature index being 5·0. Little significance can be attached to this figure, as the bone was very fragmentary and it was not possible to make a satisfactory reconstruction. For the same reason the degree of torsion of 17° is of little significance.

As in the femur of M_5 there is encroachment of the articular surface on the neck, a feature which Gear[1] noted in the Zitzikama Boskop femur. The head index of 97·6 also is identical with that of the Boskop femur from Zitzikama. The neck is short and stout and makes an angle with the shaft of 140°. This latter figure, again, cannot be regarded as characteristic, owing to reconstructional difficulties.

The third trochanter is much better defined than in M_5. In the Bushmen the third trochanter is always more prominent in female than in male specimens.[2]

The platymeric index is 85·7, a figure which approximates that of Kalomo and the Negro.

Little significance can be placed on any of the measurements or features of the *tibia*, because of the fragmentary condition of this bone. However, the anterior border, like that of M_5, is very well marked, being sharp and sinuous in the whole of its extent, becoming rounded only in its lower fourth, where it fades away to end in the medial malleolus. The convexity of the anterior border is directed outwards. This type of border is a feature of the Kalomo tibia.

The small facet-like area in the anterior intercondylar fossa, for the attachment of the anterior horn of the medial meniscus, is very well marked, being more apparent than in the Bush tibia, which, in turn, exhibits a better defined area than either the Negro or the Caucasian.

The platycnemic index of 69·1 is almost identical with that in the right tibia of the Bush skeleton Za_2 from Zitzikama.[3]

Only the middle half of the shaft of the left *fibula*, and the distal half of the shaft of the right fibula, are present. The fibula, while much more slender and with less characteristic muscular markings than the fibula of M_5, has an anterior margin in its middle third very similar to M_5, in that it is sharper than in the Bush, Negro and Caucasian. The distal end is triangular in outline, thus resembling the M_5 and Kalomo fibulae.

Only the two tali and the left calcaneus are preserved. The bones are smaller than those of M_5 and M_7, but considerably larger than the Bush average. The *calcaneus* lacks its anterior process, but was clearly shorter and relatively broader than either of the other specimens. In this respect it approximates to a greater degree towards the Negro type illustrated in Fig. 19 B. However, the great medial projection and marked medial slant of the *sustentaculum tali* are unmistakably Bush in character. The lateral tubercle is absent; the peroneal process is a prominent rounded mass, such as is seen in both Bush and Negro specimens.

In its relative narrowness and lowness, the *talus* resembles that of M_5 and is thus generally Bush in character. The angle of the neck slightly exceeds the Bush average, but is much nearer to it than to the Negro.

The bones of the lower extremity have features in common with the female Bush type. Except that the calcaneus has dimensions which may be Negro, all the features are either Bush or Boskopoid.

The fragments of this skeleton available for examination definitely show that, whatever the missing fragments might have revealed, this skeleton possessed a strong Boskopoid and Bush strain. Negro features are very scarce in these fragments.

DISCUSSION AND CONCLUSIONS

The reader, having read the foregoing analysis, will perhaps have been struck by the fact that, although in the Introduction I drew attention to the possibility of Asiatic, Mediterranean and other foreign physical characteristics being found blended with African physical features, yet it has been possible to interpret all of the physical features of the Mapungubwe remains in terms of the three well-known South African types, Negro, Bush and Boskop. While it is far from my intention to deny the possibility of such extra-African physical characteristics within this Mapungubwe collection, I must state that I have not been able to find any skeleton displaying extraneous features with sufficient clarity to enable me to diagnose the intrusive strain as Asiatic, etc.

As yet, we do not know enough of the modifications of features which occur when physical types blend to be able to diagnose the component elements of the blend. We can diagnose the presence of the extraneous element only when it is present in sufficient strength to mask a feature of the indigenous type, whatever it may happen to be. This is best exemplified by the occurrence of a

[1] Gear, H. S. (1925). *S. Afr. J. Sci.*
[2] Prag, J. J. (1934). *S. Afr. J. Sci.*
[3] Laing, G. D. and Gear, H. S. (1929). *S. Afr. J. Sci.*

few distinct Mongoloid features in the Outeniqua series, which enabled Wells and Gear[1] to demonstrate a Mongoloid infiltration in a pre-Negro indigenous South African type.

Before coming to a final decision on the racial type of the Mapungubwe series, I have compared the Mapungubwe skulls with two series of Transvaal skulls, one recent and one prehistoric, to see whether there were any affinities which could link up the inhabitants of Mapungubwe with the modern Native of the Transvaal. For this purpose, I have used my analysis of the Transvaal Basuto skull, summarized in the Introduction, and the material of the Symposium on skulls from the northern Transvaal.[2]

Comparison of types is limited to comparison of skulls for two reasons. The skull is the best known region in physical anthropology, and that of which the limits of racial variation are best established. Further, in the Mapungubwe series, it is only in the skull bones that any specific Negro features have been detected. The rest of the skeleton, in all cases, presents features which are Bush or Boskop, any Negro features being features common to all three South African types.

It has been postulated that the cultural remains at Mapungubwe are those of a Bantu-speaking people, an admixture of Sotho and Shona, and an earliest date of sixteenth to seventeenth century has been given for them. If this is so, then the skeletal remains will have a close resemblance to modern peoples of the same stock, because there is no biological process which could alter them radically in so short a time. An arbitrary system of awarding points for Negro diagnostic features was adopted. Some of these features are general to South African races, while a few, such as the infra-orbital excavation, are common to all types of *Homo sapiens*. Over 70 per cent of Basuto skulls showed a presence of at least 60 per cent of Negro features, metrical and non-metrical, while 60 per cent of skulls showed 70 per cent or more of Negro features. This indicates that the Basuto is a fairly homogeneous Negro type, and one which may be used for comparison. Omitting features general to South African types and to *Homo sapiens* races, these Basuto skulls would still be a homogeneity, and the percentages still as high.

The Mapungubwe skulls were submitted to the same system of assessment. Apart from M_{10}, which consists only of fragmentary portions of the right side of the vault and was 40 per cent Negro, the others ranged from 10 per cent to 20 per cent Negro. A feature common to all three types was awarded points for being Negro. Had the specific Negro features only been taken the percentages would have been much lower. For instance, the cribriform plate of the ethmoid in the Bush is narrow and deeply set between the arched orbital plates. Such a condition occurred so frequently in the Basuto skull as to be regarded as an almost constant feature in it. Shelving of the anterior portion of the hard palate recurs very frequently in the Basuto, but also in Bush types. Excavation of the infra-orbital region is common to all varieties of *Homo sapiens*. Again, owing to distortion, the nature of parietal bossing, the fundamental feature for estimating cranial form, was difficult to assess. In cases of doubt, the benefit was given to the Negro infantile rather than the Bush and Boskop foetal type. While the Bush face is orthognathous, and the Negro face prognathic, it was perhaps falling into a false syllogism, in the absence of any evidence as to the nature of gnathism in Boskop types, to call any prognathism a Negro feature. It will be seen, then, that the proof of the presence of Negro features *was squeezed to the limit*; yet apart from one fragmentary half of a vault, the greatest percentage of Negro features in any Mapungubwe skull is 26 per cent.

Despite the few skulls available for examination, and one realizes the danger of arguing with limited numbers, an examination of the individual regions is even more illuminating.

Frontal bossing is infantile in four, foetal in one and adult in one, while the definitely diagnostic parietal boss is foetal in three and infantile (some dubiously so) in four. Trigonism is present in four out of six, post-coronal flattening is present in three and absent in three, while the inter-parietal groove is present in three and absent in four.

The cranial contour in norma lateralis is definitely Bush or Boskop in four out of the seven skulls presenting sufficient evidence on which to judge this feature. The other three are Bush or Boskop except in one feature, the Negro hemispherical parieto-occipital region. Supra-asterionic flattening, a feature which Berry[1] found to be almost constant for Bush types, and which is infrequent in the Basuto, is present in the Mapungubwe skulls in six out of six cases. The parieto-temporal suture, every time it is present, is Bush-Boskop in nature, as is the shape of the mastoid process. The tympanic plate, which is usually massive in the Negro, is slender in two Mapungubwe specimens, medium in one and massive in two; but the posterior root of the zygoma, being massive with a lateral plane surface, is Bush-Bos-

[1] Wells, L. H. and Gear, J. H. (1931). *S. Afr. J. Sci.*

[2] Galloway, A. and others (1935). Symposium on human skeletal remains from the northern and eastern Transvaal. *S. Afr. J. Sci.* **32**, 616–41.

[1] Berry, G. F. (1934). A descriptive analysis of the skull. In Abstract of the Symposium on the skeleton of the Bush race. *S. Afr. J. Sci.* **31**, 569–70.

kopoid, and far away from the Negro type. The *mons temporo-sphenoidale* and the inferior frontal eminence, two features constantly recurring in Bush skulls, but absent in the true Negro type, are present in five out of five and six out of six cases respectively. The anterior extremity of the superior temporal line is Boskopoid in contour in five out of five cases. Total prognathism in some degree with marked subnasal prognathism characterizes the Negro skull, and the Basuto skull is no exception, but in the Mapungubwe skulls total prognathism is absent in four and slight in one, while there is slight subnasal prognathism in three and marked in one. The Bush skull is orthognathous with slight subnasal prognathism.

The contour of the frontal bone shows evidence of peaking, reminiscent of Matjes River trigonism, in four out of six, while the remaining two have the Bush vertical-sided, low flat contour of vault. The lateral supra-orbital region in the Negro is elongate with slightly convergent sides; it is flat and shows no grooves or accessory foramina for the branches of the supra-orbital nerve. In the Mapungubwe series four skulls have this region intact; all are broad triangular, none is flat, three show grooving, it being impossible to assess this feature in the fourth, since the superficial stratum of bone has been weathered off.

The orbital shelf,[1] so prominent a feature of the Matjes River race, is present in four and absent in two, while of the two superior orbital margins present, one is everted. The orbital axis extends obliquely downwards and backwards, as in Boskop types,[2] in two out of three specimens. The shape of the Negro orbit is high rectangular to square, in Boskop it is low rectangular; in the four specimens from Mapungubwe in which orbital shape can be estimated, three are low and one is medium in height, while three are rectangular in shape. The nasal aperture is complete in only one specimen, its shape is trapezoidal, as in the Bush; only two out of 55 Basuto skulls had this shape. As in the Negro skull, the inferior margin shows primitive features; two have a nasal fossa, one a nasal gutter, while one is rounded off.

The infra-orbital region is excavated in all cases where this region is preserved, but the true anatomical canine fossa, which, although faint, is a feature of the Negro skull, is absent in this series. The malar region of the Basuto is evenly convex, here it has the Bush-Boskopoid angulation, and faces laterally in four out of five cases, the fifth facing more laterally than anteriorly.

The norma basalis and interior of the Mapungubwe kulls show the non-Negro nature of the skulls even more so than the other normae. There are two intact *foramina magna*, both of which are wide and show no encroachment of the occipital condyles, in contradistinction to the rather elongate encroached Negro foramen, and are more akin to the circular unencroached foramen of the Boskop type. The digastric fossa is an excavation at the expense of the base of the skull and exposed posteriorly in six out of six cases as in Bush and Boskop types, while in the Negro it is a groove on the medial aspect of the mastoid, and is not truly exposed posteriorly. The shape of the hard palate, unlike the divergent U-shape of the Negro, is horseshoe-shaped in four out of five, the fifth being a truncated "V", similar to the dental arcade of certain Boskop types.

The grooves for the middle meningeal arteries and the sinuses are well marked in eight out of eight, and the *crista frontalis interna* is prominent in five out of five as in Boskop skulls. In the Basuto these grooves are not well marked, and the *crista frontalis* is slender and slightly developed. The Negro skull bones are thin; in Mapungubwe, like Boskopoid skulls, they are thick in seven, and thin in two only.

Thus, if the 55 Basuto skulls are a *Negro* homogeneity, then the Mapungubwe skulls are certainly not. This comparison and contrast shows them to be definitely non-Negroid of the Basuto type, but a stabilized Bush-Boskopoid group. Most of the features which are common to Mapungubwe and the Negro are features which are common to all three South African types.

A working definition of similarity in skulls is when they have in common a majority of features. If such a definition is accepted, then not one Mapungubwe skull comes within the range of similarity to any Basuto skull. The Basuto skull is too instinct with Negro features.

Since there is no comparison to be found between the Mapungubwe skulls and the skulls of the modern Negroes living in the northern Transvaal to-day, it will be well to compare them with a group of skulls from the northern Transvaal dating before European occupation of the localities in which the skulls were found. Such a group was described in 1935 in a Symposium of several research students in this Department, whose findings were correlated and discussed by myself.[1] These skulls are of various degrees of antiquity, and most of them are associated with cultural remains which indicate whether they belong to "Bantu" or to Bush-Hottentot groups.

Prior to this report, very little skeletal material of established antiquity had come to light from the northern Transvaal. Lebzelter[2] has described three "Old

[1] KEITH, A. (1933). *Trans. Roy. Soc. S. Afr.*
[2] GEAR, H. S. (1926). *S. Afr. J. Sci.*

[1] GALLOWAY, A. and others (1935). *S. Afr. J. Sci.*
[2] LEBZELTER, V. (1928). Old Negro skulls from caves in the Northern Transvaal. *Ann. Transv. Mus.* **12**, 376–9.

Negro skulls" from caves in this area, but his publication has little scientific value in this study, since it gives neither the exact location of these specimens, nor any account of their state of preservation and associations. Moreover, the fact that they are so definitely Negro negatives the value of any comparison with the Mapungubwe material.

The relation of the skeletal material, which forms the body of this Symposium, to that of Mapungubwe is best shown by quoting the general discussion:

> The remains described in these studies fall into four groups, and may be tabulated as follows, according to physical type, approximate age and culture:

Group	Locality	Skull No.	Racial diagnosis	Condition	Culture
1	Smitsdorp	Pb 1	Boskop-Bush	Heavily fossilized	—
	,,	Pb 2	Bush	,, ,,	—
2	Doornvlei	A 189	Bush-?Bantu	Slightly fossilized	—
	Smitsdorp	Pb 3	Bantu-Bush	Very slightly fossilized	Bantu
	,,	Pb 4	Bush-Bantu	,, ,,	,,
	,,	Pb 5	Bantu	,, ,,	,,
	Klein Letaba	A 416	Bantu-Bush-Boskop	Unfossilized	,,
	Naboomspruit	A 275	Boskop-Bantu	,,	,,
3	Kalkbank	A 219*a* and *b*	Bantu-Bush	,,	Bush-Hottentot
4	Steelpoort	A 42*c*	Bantu	,,	Bantu
	,,	A 42*d*	,,	,,	,,
	,,	A 42*a* and *b*	,,	,,	,,
	Mt Anderson	A 428	,,	,,	—

> The heavily fossilized skeletons from New Smitsdorp are clearly the oldest. They have no cultural association, yet there can be no doubt that they considerably antedate the rest of the material. Pb 1 and Pb 2 are, as may be anticipated from their age, Bush-Boskop in type with no evidence of Bantu admixture.
>
> Group 2 consists of a series of remains, all of which show in varying proportions evidence of Bantu admixture with the indigenous Bush-Boskop stock. The Doornvlei remains are essentially Bush in type, but show slight evidence of Bantu influence. In all the other specimens of this group the Bantu element is unmistakably present. In the Naboomspruit skeleton it is subordinate to the Boskop strain, while the others of this group are intermediate in character presenting an intimate mixture of Bantu and Bush-Boskopoid characters.
>
> This group of bones from the northern Transvaal reveals that a people, Bantu *if judged by their culture*, show a preponderance of Bush-Boskopoid features. On the other hand, the Kalkbank material represents by its associated culture a Bush-Hottentot people. Yet the physical features are as definitely Bantu as those of Klein Letaba and New Smitsdorp remains which are culturally Bantu.

From this quotation, it will be seen that the only skull which has any close correspondence with the Mapungubwe skulls is Pb 1, which is fossilized, of a chalky consistency, and in places much eroded and pitted. It shows no evidence of Negro infiltration.

Of the rest of the series, the one which shows the nearest physical similarity with Mapungubwe is the Naboomspruit skull. It was buried in the sitting position facing west, surrounded by a large number of potsherds of "Bantu" facies. This skull in all likelihood represents an early epoch, when the Negro was beginning to be a stabilized factor in South African civilization, for, in the skull, the Negro features, while obvious, are still subordinate to the Boskopoid strain. Nevertheless, it possesses far stronger and more clear-cut Negro features than are present in any of the skeletons from Mapungubwe. It is natural to conclude that the Mapungubwe remains represent a very early stage in the process of infiltration of Negro features into the aboriginal Bush-Boskop population.

It has been shown how widely divergent the Mapungubwe remains are from the modern Basuto Negro type. There can be no question of there being any direct filial relationship between the two peoples. If the modern Basuto has evolved from a parent Mapungubwe type in South Africa, the advent of the Negro into South Africa must be more remote than we think. Elliot Smith,[1] dealing with the very slow rate of physical evolution in man, states:

> Whatever the explanation, the fact remains that during the last sixty centuries, the distinctive features of the main subdivisions of mankind have undergone surprisingly little modification.
>
> The Negro was quite as definitely Negroid when we first meet with his sixty-centuries-old remains as he is now; the narrow-headed brunet of small stature, who has dwelt around the shores of the Mediterranean since the dawn of history, was almost, if not quite, as definitely differentiated from the round-headed Armenoids of Western Asia at the end of the Stone Age, as are their modern representatives; and all the millennia of exposure of their scattered descendants to vastly different climates and conditions of life have produced amazingly little effect upon their physical characteristics.

[1] Elliot Smith, G. (1915). The influence of racial admixture in Egypt. *Eugen. Rev.* Oct. 1915.

Man has made no appreciable advances in evolution of physical features over the last six thousand years. His evolutionary history is one of replacement of dwindling races. Any changes in features are those of racial hybridization attendant on this replacement. Hybridization never masks the fundamental type, but merely adorns it with a few new features. Man's history is one of social evolution of brain and mind.

If the Mapungubwe skulls represent the antecedents of a Sotho-Shona people, then to allow for this amazing biological change, the Negro must have entered South Africa and settled at Mapungubwe at least six thousand years ago—which is absurd.

The human individuals represented by the skeletons from Mapungubwe, although few in number show such similarity in their important diagnostic features that they constitute a much purer physical type than would be expected from such a site. It represents a homogeneous people, which had been stabilized over many centuries, since the racial features are so constant. It is a Bush-Boskop people showing sporadically a few Negro features.

The scarcity of Negro features can mean only one thing, that the Negro features are alien. These Mapungubwe people are of the same stock as the big-boned pre-Bantu-speaking people in whom, if there are foreign features, they must have been extraneous. The first Negro migration could not have reached as far south as Mapungubwe by the time of its original settlement, for there is no evidence to point to these bones being those of even a modest mingling of Negro and pre-Negro, as is shown in the Naboomspruit skull.

The few Negro features seen at Mapungubwe could have been caused by a single intrepid Negro who had entered as an alien into a foreign territory. The absence of Negro impurity in the "Sceptre" skeleton, presumably that of a leader among his people, and whose blood would unlikely be defiled by the arrival of a sporadic alien, is particularly striking in this connexion.

There is a resemblance here to the conditions found at Outeniqua.[1] The Outeniqua skeletal material was predominantly Bush-Boskop with slight Negro and Mongoloid elements. It comes from a Late Stone Age horizon in a district some two hundred miles distant from the nearest point of Negro penetration. These Negro features at Outeniqua could never be interpreted as evidence of Negro and pre-Negro *racial* admixture, any more than the Mongoloid features are evidence of a Mongolian-Bush *racial* admixture. They represent no more than the result of sporadic contact with alien peoples, just as the Negro features at Mapungubwe do.

The Kalomo and the University of Cape Town Boskop skeletons both show some Negro features, and demonstrate that an almost pure Boskop throwback may occur to-day amongst the Negro. It may be argued that if it can happen at Cape Town and Kalomo that an almost pure Boskop type can crop up amongst the Negro, why could such a phenomenon not have happened at Mapungubwe? Could not that be the explanation of the Boskopoid element in the Mapungubwe series? From amongst well over a thousand skeletons from a "Bantu" cultural horizon from the dissecting rooms of Cape Town and Johannesburg, and from finds all over Southern Africa from the same horizon, only two such Boskop throwbacks have occurred. Not a single Basuto skull out of a collection of 55 has any resemblance to the Mapungubwe skulls. Can atavism explain a Mapungubwe population, whose physical nature is so instinct with Bush and Boskop features?

No, Mapungubwe represents a homogeneous Boskop-Bush population physically akin to the post-Boskop inhabitants of the coastal caves.

I cannot end this work without putting on record the splendid and disinterested service I have received from Lawrence H. Wells, who has sacrificed much of his time that I might benefit by his assistance in collecting data, measurements, etc., and of his knowledge and experience. Without this help I could not have prepared this report in the short time at my disposal.

I regret that the preparations for, and the actual Kalahari Bushman Expedition, which coincided with this work, prevented me from benefiting from Professor R. A. Dart's help and criticism—a regret shared by him.

TABLES

Measurements marked (?) indicate a measurement involving a reconstructed area, or a part of one; those marked with an asterisk indicate measurements, which the author omitted from his published descriptions, and which have been taken from casts. All cranial capacities are estimated capacities, except in the case of the Bush.

Tables of non-metrical features of skull and teeth have been included so that comparisons and contrasts between the Mapungubwe material and the three fundamental South African types may be seen at a glance.

[1] WELLS, L. H. and GEAR, J. H. (1931). *S. Afr. J. Sci.*

APPENDIX

THE DENTITION OF THE MAPUNGUBWE SKULLS

It had first been intended to describe the teeth of each subject along with its bones. After the descriptions had been completed, it was discovered in conversation with Professor J. C. Middleton Shaw that certain criteria, such as taurodontism and the nature of the crown pattern, established by him in his works on the dentitions of South African races, and used in this work, were no longer held by him, in the light of his further researches, unless present in marked degree.

Until new criteria are laid down, therefore, one cannot dogmatize on teeth. However, no study of skeletal material is complete without a description of the teeth, so all the teeth have been described for the sake of future comparison and some tentative conclusions drawn from the description.

DESCRIPTION OF THE TEETH

Skeleton M_1A

None of the *incisors* are shovel-shaped; the central incisors are smaller than the lateral incisors. The roots of the central incisors are flattened mesio-distally and bear no traces of longitudinal grooving; those of the lateral incisors are single but bear no longitudinal groove.

The crown of the canine is incisor-like, an indication of the specialization of reduction from the canine form. The root is large, single and longitudinally grooved.

The first premolar bears a very worn external cingulum and a very slightly worn diminutive internal cingulum. The root is single and longitudinally grooved. The second premolar is a larger tooth and both cinguli are worn. The external is large while the internal is small. The root is small and curved distally.

The first molar is a large, rectangular quincuspid-crowned tooth. The roots are slightly divergent and both are longitudinally grooved, therefore showing a bifurcate tendency. The body is exceedingly short.

Skeleton M_2

The deciduous teeth. The *upper right canine* has a roughly oval crown bearing a powerful external cingulum and a fairly prominent internal one. When viewed from the labial side it has a triangular appearance. The root is single, oval and not longitudinally grooved.

The *left upper second molar* has a quadrilateral crown bearing four cusps, three of which are well developed. The talon is distinct but not well developed. The oblique line is very distinct. The roots are resorbed but their bases diverge from the short body. The labial root is bifurcate while the lingual root shows a bifurcate tendency.

The *left lower second molar* has a roughly quadrilateral crown and is quincuspid, the hypoconulid of which is very clearly marked. The mesial root shows a bifurcate tendency while the distal root is single.

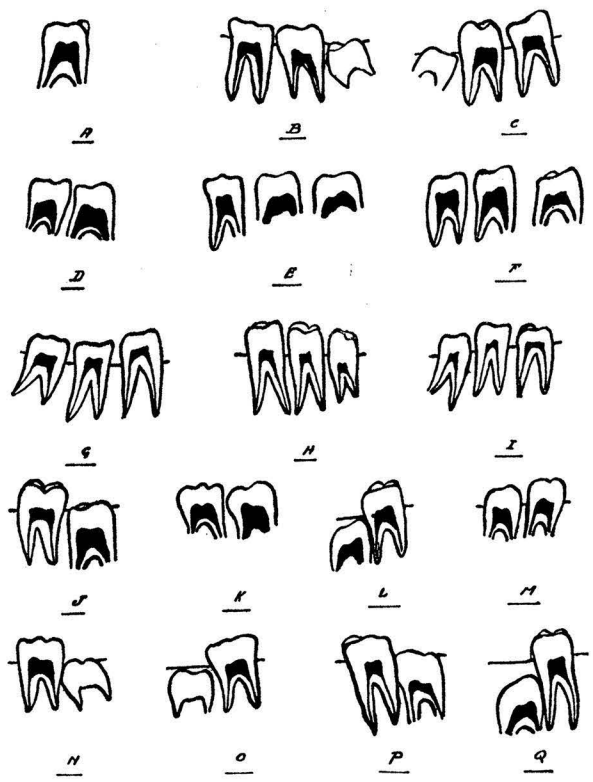


Fig. 26. Diagrams to show the degree of taurodontism in Mapungubwe dentition. (A) Lower molar M_{10}; (D) upper molars M_{10}; (B) left lower molars M_9; (C) right lower molars M_9; (E) left upper molars M_9; (F) right upper molars M_9; (G) right lower molars M_5; (H) left upper molars M_5; (I) right upper molars M_5; (J) left lower molars M_3; (K) right lower molars M_3; (L) left upper molars M_3; (M) right upper molars M_3; (N) left lower molars M_2; (O) right lower molars M_2; (P) left upper molars M_2; (Q) right upper molars M_2.

The permanent teeth. The *upper central incisor* is large, and in outline falls into Leon Williams 11[1] type of incisor outline; a type characterized by the mesial and distal borders converging so markedly that they would meet in a point near the root. The mesial border is slightly convex and the distal border slightly concave.

[1] Williams, J. L. (1914). A new classification of human tooth forms. *Dent. Dig.* **20**, 63–7.

The crown is very shovel-shaped. The roots are cone-shaped and taper to a slight point.

The *upper lateral incisors*, while smaller than the central ones, are of the same Leon Williams II type. The internal cingulum is well marked, and the tooth is shovel-shaped. Developmental tubercles are present on the incisal border.

The *left upper canine* has failed to erupt beyond the level of the alveolar margin. It has a large peg-shaped crown bearing an internal cingulum. The crowns of the two *upper premolars* are well developed and the internal cingulum is almost as well developed as the external.

The *upper first molar* is roughly quadrangular and bears four well-developed cusps and has a distinct oblique ridge. There are three roots, a vertical lingual root and two divergent labial roots. The *upper second molar* is just erupting and shows four well-developed cusps and a moderately well-developed oblique ridge.

The *lower central incisors* project above the level of the other teeth. They are of medium size and belong to Leon Williams II type and are incipiently shovel-shaped. They are single rooted but show longitudinal grooves on their mesial and distal surfaces. The *lateral incisors* are larger than the central, the roots are stouter and show a stronger tendency towards bifurcation.

The *lower left canine*, while not fully erupted, gives promise of being a large tooth with a large external cingulum and a small internal cingulum. The *lower first premolar* is large, and the crown bears well-developed internal and external cinguli. The root has not completely matured, but shows a bifurcate tendency.

The *lower first molar* is a large well-formed rectangular quincuspid tooth. The roots are well developed, but tend to converge at their apices. The mesial root is distinctly bifurcate at its apex, while the distal root exhibits a bifurcate tendency. The *lower second molar* is still unerupted. Its crown bears four well-developed cusps, but shows an ill-defined oblique ridge due to its unerupted state.

The dental arcade, both upper and lower, is U-shaped with slight divergence at the level of the second molar. The attrition is occlusal.

Skeleton M_3

The *upper incisors* are very pronouncedly shovel-shaped. The crown of the *central incisor* is large and solid; that of the *lateral incisor* is not pronounced. The central incisor is type II while the lateral incisor is type III (Leon Williams).

The crown of the *upper canine* is large and bears a powerfully developed external cingulum, but the internal cingulum is small. The root is single and flattened mesio-distally.

The crowns of the *upper premolars* are large and bear well-developed external and internal cinguli. The root of the first premolar is flattened mesio-distally and bears a longitudinal groove. The root of the second premolar is long and bifurcate in its lower half.

The crown of the *upper first molar* has three well-developed cusps, but the disto-lingual cusp is slightly reduced; the oblique ridge is well developed. The body is fairly deep and gives rise to three large roots, two divergent labial roots, and a single lingual one. The labial cusps of the *upper second molar* are well developed but the lingual cusps have fused, giving a tritubercular tooth pattern. The oblique ridge is very indistinct.

The *lower incisors* are shovel-shaped and type III in character. The *central incisor* shows developmental grooves and tubercles, while the root is single and ungrooved. The root of the *lateral incisor* is single, flattened mesio-distally and longitudinally grooved.

The crown of the *lower canine* bears a large middle cone with an insignificant internal cingulum and a powerfully developed external one. The *lower first premolar* has well-developed cinguli connected by a median ridge. The roots are flattened mesio-distally and longitudinally grooved.

The *lower first molar* is a large quincuspid tooth with all the cusps well developed. It has two roots, which are directed backwards and are longitudinally grooved. The *lower second molar* has four large cusps and a fairly prominent hypoconulid. The roots are distal and mesial; both are longitudinally grooved and directed distally.

The attrition is occlusal.

Skeleton M_5

The upper teeth. The *central* and *lateral incisors* have been lost *post mortem*, but the tooth sockets reveal that the central incisors were larger than the lateral, and that their roots almost pierced the lower margin of the nasal aperture. The roots of the central incisors were peg-like while those of the lateral incisors were flattened mesio-distally.

The *canine tooth* is premolariform in crown pattern. Its body is flattened mesio-distally and its long root tapers to a fine point. The *second premolar* is larger than the *first*. They are both flattened mesio-distally. The roots exhibit longitudinal grooves. The canines and first molars project further downwards than do the premolars.

The *upper first molar* is the largest of the molar series and possesses four well-formed cusps. The talon is powerful and the oblique ridge is distinct. The crown is

practically rectangular and shows considerable attrition. The body is short and carries three long divergent roots. The two labial roots diverge from each other and their tips tend to turn lingually. The lingual root exhibits a longitudinal groove.

The *upper second molar* is less quadrangular than the first and tends to be more obliquely distorted. It is definitely quadricuspid but its lingual cusps show a tendency towards fusion. The oblique ridge is well developed.

The *upper third molar* is the smallest of the molar series. Reduction has taken place in the mesio-distal direction. All the cusps are conspicuous and the oblique ridge is well formed. The crown and body are as well formed as those of the first two molars and its three roots are distinct and divergent.

The dental arcade is distinctly horseshoe-shaped. From an even curve at the incisor region the canines, premolars and the first two molars diverge. Distal to the second molar, the limbs of the horseshoe converge. The distance between the third molars is 1 mm. less than the distance between the first molars and 3 mm. less than the distance between the second molars.

Lower teeth. The *lower first molar* is the largest of the lower molar series. It is a well-formed rectangular tooth with a quincuspid crown pattern. The body is short and bears two roots. There is a tendency towards bifurcation of the mesial root. The cusp pattern of the *lower second molar* crown is distinctly quadricuspid and forms a distinct + shape on the occlusal surface, but there is no hypoconulid. The roots are large, the mesial root tends to be bifurcate.

The *lower third molar* is exceptionally large for a third molar. There are four well-developed cusps, a faint hypoconulid and a distinct + pattern. The body is relatively larger than the first two of the series and has two well-grown roots. The mesial root shows a bifurcate tendency. The distal root shows no tendency towards bifurcation and curves distally.

The dental arcade corresponds with that of the upper, and the attrition is occlusal.

Skeleton M_9

The *upper incisors* are large and very shovel-shaped, especially the central ones. All are larger than the *lower incisors*. Both upper and lower fall into type 11. The roots are flattened mesio-distally, except those of the lower central incisors which are peg-like. None show any bifurcate tendency.

The *canines* are large powerful teeth. The internal cinguli of both upper and lower are poorly developed. The external cinguli of the upper are very prominent, while those of the lower are tritubercular. The roots are large, flattened mesio-distally and show a bifurcate tendency.

The lower *premolars* are rounder than the upper and more caniniform. The cinguli of the first premolars are large and form a tritubercular crown. The external cinguli of the upper second premolars are well developed, but not so the internal cinguli. The cinguli of the lower premolars are well formed, except the internal cinguli of the first. The roots of the upper are completely bifurcate, while those of the lower are single.

The crown of the *upper first molar* is almost quadrangular and bears three well-developed cusps; the talon is present but is almost completely overshadowed by the large mesio-lingual cusp. The oblique ridge is prominent. The three roots diverge markedly; the lingual root is peg-like while the two labial roots are mesio-distally flattened.

The crown of the *upper second molar* has three well-formed cusps and a diminutive talon. The three roots, of which the lingual is the largest, diverge markedly. The *upper third molar* shows extreme mesio-distal reduction, which gives the tooth a very high dental index. The talon is not present and the disto-labial cusp is small. The two roots, a lingual and a labial, diverge markedly.

The lower first molar is a large rectangular tooth with five well-developed cusps. The two roots, mesial and distal, have a bifurcate tendency. The four cusps of the *lower second molar* are well formed, but the hypoconulid is absent on the right and insignificant on the left. The + shaped crown is distinct. Both roots show a bifurcate tendency. The crown of the *lower third molar* has four large cusps and a small hypoconulid.

Skeleton M_{10}

The *right upper lateral incisor* belongs to type 11 and is shovel-shaped. It shows developmental tubercles and grooves. The root is thick and longitudinally grooved.

The *right upper first molar* has four well-developed cusps and a distinct oblique ridge. Two labial roots diverge from a thick lingual root. The crown of the *right upper second molar* presents three well-developed cusps and a small, but distinct, talon; the oblique ridge is prominent. From the small body, two labial roots and one lingual root diverge. The crown of the *left third lower molar* has four well-developed cusps. The roots are broken off, but they must have been divergent.

ISOLATED TEETH

In the original grave area, several isolated teeth were found:

(1) A *right upper* and a *left upper deciduous first molar*,

both apparently from the same dentition. Both show four well-developed cusps, the talon in each case being small, but distinct. The oblique ridge is large in both teeth.

(2) A *right upper first permanent molar*, which presents three well-developed cusps with the talon slightly less well-developed, and a distinct oblique ridge. The body is short and the roots although broken off showed marked divergence.

(3) A *right lower first permanent molar* which has a rectangular, quincuspid crown and a short body. The roots, mesial and distal, are divergent and the mesial root, which is broken off, is so deeply grooved that it may have been bifurcate.

(4) A *left lower first permanent molar* which is rectangular in shape, and has a quincuspid crown with a well-developed hypoconulid.

DISCUSSION AND CONCLUSION

In analysing teeth it seems that only certain features may be used for diagnosis. These are the size and shape of the incisors, the nature of the canines, the reduction and nature of the molar series and the order of eruption. Features such as crown pattern, attrition and taurodontism are merely corroborative.

Size and shape. From Table V it will be seen that the majority of the measurements of the Mapungubwe teeth are outside the normal range of Negro teeth measurements. They are also larger than Bush teeth and equal the size of those Boskop teeth figures available for comparison. The majority of the incisors are type II (Leon Williams),[1] and are very definitely shovel-shaped. The Negro incisor is usually type III and not shovel-shaped, while Bush and Boskop teeth are type II and are distinctly shovel-shaped.[2]

The nature of the canines. The canines of the Mapungubwe series are premolariform in type. Such a canine, while it may occur sporadically in the Negro, is a specialized manifestation of the Bush dentition.[3]

Reduction and nature of the molar series. Drennan[4] found that in most cases the molar series in the Bush becomes progressively smaller from before backwards, i.e. in a mesio-distal direction. Oranje,[3] however, found that in most cases the second molar was the largest of the series. In the molar series of Boskop types, the upper first and second molars are the same size, while the lower first molar is the largest of the lower molar series.[1] In the Negro[2], molar reduction takes place in the mesio-distal direction, a phenomenon common to all living types of *Homo sapiens*. That the second molar was the largest in Oranje's Bush group, in contradistinction to Drennan's group, indicates that some Bush people may show this very primitive arrangement.

Mesio-distal reduction occurs in both the upper and lower molars in M_2 and M_{10}, while M_5 shows mesio-distal reduction in the upper molars, but in the lower series the first and second molars are of equal size. In M_3 and M_9 the second molars are the largest. Thus, from these features, M_2 and M_{10} may be Bush or Negro, M_5 may be Bush or Negro with Boskopoid admixture, while M_3 and M_9 are definitely Bush.

Order of eruption. In the Negro, both premolars erupt before the second molar; while in the Bush, the second molar erupts before the second premolar.[3] Nothing is known about the order of eruption in Boskop dentitions.

In M_2, the order of the eruption of permanent teeth is anomalous. All the incisors, first premolars and first molars are fully erupted. The canines, except the right lower, which is just appearing, are unerupted. However, the right second premolar is fully erupted, while the second left premolar is still concealed by the persistent deciduous second molar. The left upper deciduous second molar and both lower deciduous second molars are still *in situ*. The upper permanent second molars are just commencing to erupt, while the lowers are still below the alveolar margin. Nothing can be derived from the fact that the right permanent second premolar is ahead of the permanent second molar of the same side, since it has also outstripped the right canine. On the left side, the fact that the permanent second molar is ahead of the permanent second premolar may be an indication of a Bush order of eruption.

The order of eruption of M_3 is also anomalous. All the permanent incisors, the first premolars and the permanent first molars are fully erupted. In the upper jaw the right permanent canine is fully erupted while the left is unerupted. Both lower permanent canines are fully erupted. The right upper second premolar is fully developed, the left is semi-erupted, while the right lower is still crowned by the deciduous second molar. The left upper permanent second molar is in the

[1] WILLIAMS, J. L. (1914). *Dent. Dig.*

[2] SHAW, J. C. MIDDLETON (1931). *The teeth, the bony palate and the mandible in Bantu races of South Africa*, pp. 12–20. London: John Bale, Sons and Danielsson, Ltd.

[3] ORANJE, P. (1934). The dentition of the Bush race. In Abstract of the Symposium on the skeleton of the Bush race. *S. Afr. J. Sci.* **31**, 576.

[4] DRENNAN, M. R. (1929). The dentition of a Bushman tribe. *Ann. S. Afr. Mus.* **24**, 62–88.

[1] SHAW, J. C. MIDDLETON (1928). Taurodont teeth in South African races. *J. Anat.* **62**, 476–98.

[2] SHAW, J. C. MIDDLETON (1931). *The teeth, the bony palate and the mandible in Bantu races of South Africa*, pp. 17–25.

[3] DRENNAN, M. R. (1932). Some points in connexion with the eruption of the permanent teeth. *S. Afr. Dent. J.* **6**, 391–400. (1932.) L'ordre d'éruption des dents permanentes chez les Boschimans. *L'Anthropologie*, **42**, 491–5.

process of eruption, but is ahead of the right upper permanent second molar. The lower right permanent second molar is just appearing above the alveolar margin. In the upper jaw, then, the right second premolar is ahead of the right second permanent molar; on the left side both are in a similar state of eruption, while in the lower jaw the molar is outstripping the premolar. From this order of eruption all that can be said is that there is a Bush element in this dentition.

Crown pattern. In the upper molars the disto-lingual cusp or talon has a tendency to undergo reduction. Marked talon reduction is seen in Bush and in Negro dentitions; no talon reduction has yet been observed in Boskop molars. The hypoconulid is a feature of the Negro lower second molar as opposed to its suppression in the Bush lower second molar.[1] Because of this suppression of the hypoconulid, the occlusal surface of the crowns of the Bush lower second molar is + shaped. In the Boskop lower second molar the hypoconulid is prominent.[2]

M_2 shows a well-marked talon on the upper first and second molars, while the hypoconulid of the lower second is present. The talons of the upper first and second molars of M_3 are reduced and the hypoconulid of the lower second molar is present, but not large. In M_5 the talon of the third molar only is reduced, while the hypoconulid is absent. M_9 has reduction of the talon in all the molars and no hypoconulid. In M_{10} the talon is present in both the upper first and second molars, unfortunately the lower second molar is missing. Judging from these features the teeth are Boskop and Bush-Boskop except M_3 which is Negro.

Attrition. The dental arcades of the Negro show inter-proximal attrition, but little or no occlusal attrition.[3]

In Bush dental types occlusal attrition is a constant feature but there is also a tendency to inter-proximal attrition.[4] In Boskop types the attrition is seen to be occlusal.[5] All the Mapungubwe specimens show occlusal attrition.

Taurodontism (Fig. 26). Keith[6] defined taurodontism as "the tendency of the pulp cavity to enlarge at the expense of the roots". The degree of development of the pulp cavity is best determined by X-ray analysis of the pulp cavities of the molars.

[1] SHAW, J. C. MIDDLETON (1927). Cusp development on the second lower molars in the Bantu and Bushmen. *Amer. J. Phys. Anthrop.* **11**, 97–100.
[2] SHAW, J. C. MIDDLETON (1928). *J. Anat.*
[3] SHAW, J. C. MIDDLETON (1931). *The teeth, the bony palate and the mandible in Bantu races of South Africa*, pp. 53–6.
[4] DRENNAN, M. R. (1928). *Ann. S. Afr. Mus.* ORANJE, P. (1934). *S. Afr. J. Sci.*
[5] SHAW, J. C. MIDDLETON (1928). *J. Anat.*
[6] KEITH, A. (1913). Problems relating to the teeth of earlier forms of prehistoric man. *Proc. R. Soc. Med.* **6**, pt. III, pp. 103–24.

Certain terms are used to designate the different types of pulp cavity: *cynodontism* is the term applied to a small pulp cavity limited to the body, as seen in Bush and Negro teeth. *Hypertaurodontism* is the reverse; it is a large pulp cavity, the enlargement taking place at the expense of the roots. This is best seen in the teeth of Boskop types and in the Neanderthal types such as Krapina.

Hypotaurodontism and *mesotaurodontism* are terms used to describe pulp cavities intermediate between these two extremes. They may result from an admixture of cynodontism and hypertaurodontism, as in a Bush-Boskop hybrid.[1]

In the analysis of the teeth of the immature Mapungubwe specimens, cognizance is taken of the fact that the pulp cavity in infancy and in adolescence is relatively larger than in adulthood.

In the fragment M_1A, the first molar only is present and is cynodont. This Negro condition is in keeping with the Negro type of mandible. In M_2 the upper and lower first and second molars are present. Their pulp cavities belong to the mesotaurodont type. Even though the pulp cavity decreases in size with age, at the most, the teeth in adult life would have been hypotaurodont, i.e. of a Bush-Boskop hybrid type. Upper and lower first and second molars are present in M_3. The pulp cavities are mesotaurodont but verge towards hypertaurodontism. These teeth, like those of M_2, are juvenile, and, like them, in adult life would likely have been Bush-Boskopoid hypotaurodont.

The complete upper molar dentition on both sides and the right lower molars of M_5 are present. The upper molars are cynodont, i.e. Bush or Negro in type, but the lower molars show the Bush-Boskopoid hypotaurodontism. The molar dentition of M_9, both upper and lower, is complete. All the molars are mesotaurodont, i.e. more Boskopoid than Bush. In M_{10} the upper first and second molars have hypertaurodont pulp cavities; the lower third molar is mesotaurodont. The dentition is thus more akin to Boskop dentition than Bush.

It will therefore be seen that apart from M_1A, which is not accepted as belonging to the skeletons but an extraneous element carried in from a later horizon, all the teeth have a frankly Bush or Boskopoid facies. M_3 however has more Negro dental features than any other but they are not present in sufficient quantity to mask the fundamental Bush-Boskopoid nature of the teeth. This, in general, is in keeping with the diagnosis arrived at from the skeletal material, where the skull of M_3 is seen to have a Negro element greater than that of the others.

[1] SHAW, J. C. MIDDLETON (1928). *J. Anat.*

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Table I. *Comparative Cranial Measurements and Indices*

	Negro (Basuto)	Bush	Boskop					Mapungubwe							
			Boskop	Zitz.	Fish Hoek	Matjes River		M_1 Adult	M_2 9–11 yr.	M_3 10–12 yr.	M_5 Adult	M_7 Adult	M_8 Adult	M_9 15 yr.	M_{10} 16? yr.
						1	5								
Measurements:															
Cranial L.	18·5	17·7	20·5	21·0	20·0	19·3	20·1	19·5	18·4?	17·2?	—	19·8?	20·2?	19·9	19·4?
Cranial B.	13·2	13·1	15·4?	15·0	15·1	13·1	13·5	14·1	13·8?	13·6?	—	15·6?	13·7?	15·2?	14·6?
Basio-breg. H.	13·1	12·2	—	—	12·3	—	—	—	13·6	12·6?	—	—	13·1?	—	—
Aur. H.	11·5	11·0	—	11·8	*11·4	11·4	11·8	—	12·7	10·1?	—	12·4?	12·6?	13·2?	—
Least fr. B.	9·7	9·2	10·3	9·9	*10·6	9·0	9·6	9·9?	9·6	9·6?	—	10·3?	9·7?	10·7?	—
Upper fac. H.	6·7	5·7	—	—	5·8	—	—	—	5·7	6·2?	—	7·9?	7·2?	—	—
Ext. biorb. B.	10·4	10·2	—	—	*10·9	10·2	11·2	—	9·9	10·0?	10·2?	11·2?	10·4?	11·2?	—
Bizyg. B.	12·9	12·2	—	—	13·0	—	13·0	—	11·4?	11·2?	13·2?	—	—	—	—
Orb. B.	4·0	3·9	—	3·9	4·0	—	3·9	—	3·8	3·9	4·2	—	4·0?	—	—
Orb. H.	3·8	3·1	—	2·9	3·0	—	3·0	—	3·1	3·3?	—	—	3·4?	4·4?	—
Interorb. D.	2·4	2·3	—	2·2	*2·8	—	2·7	—	2·2	2·2?	—	—	—	—	—
Nasal H.	5·0	4·4	—	—	4·2	—	—	—	4·0	4·5?	4·9?	6·2?	—	—	—
Nasal B.	2·7	2·6	—	—	2·5	—	—	—	2·5	2·5	2·8	—	—	3·7?	—
Max. alv. B.	6·5	5·8	—	—	7·2	—	—	—	6·2	6·1	6·7	—	6·9?	—	—
Max. alv. L.	5·8	5·0	—	—	6·1	—	—	—	4·9	5·1	5·9	—	—	—	—
Pal. B.	4·2	3·6	—	—	*4·1	—	—	—	4·4	4·5	5·5	5·3?	—	—	—
Pal. L.	4·8	4·1	—	—	*4·7	—	—	—	3·2	3·5	4·3	4·1?	—	—	—
Bican. B.	4·2	3·7	—	—	*4·0	—	—	—	4·0	4·4	4·2	—	—	—	—
For. mag. B.	3·0	—	—	2·5	*3·1	—	—	—	2·9	—	—	—	—	—	—
For. mag. L.	3·7	—	—	3·1	*4·1	—	—	—	3·7	—	—	—	—	—	—
Cr. capacity	1352	1205	1832	1600–1750	1566	1400	1490	—	1494	1121?	—	1738?	1591?	1791?	—
Indices:															
Cephalic I.	71·3	74·3	75·1	71·4	76·0	70·0	67·1	75·3	69·6	79·1	—	78·8	67·8	76·4	75·3
Aur. H. I.	60·5	62·8	—	56·2	57·0	59·1	58·7	—	69·0	58·0	—	62·6	62·4	66·3	—
Alt. I.	70·9	69·3	—	—	62·0	—	—	—	68·5	73·1	—	—	64·9	—	—
Vert. I.	98·0	93·4	—	—	81·5	—	—	—	98·8	92·6	—	—	95·6	—	—
Fron. par. I.	73·6	70·1	66·9	66·0	70·2	68·7	71·1	70·2	69·6	70·6	—	66·0	70·8	70·0	—
Upper fac. I.	52·3	46·5	—	—	45·0	—	—	—	50·0	54·0	—	—	—	—	—
Orb. I.	84·2	69·9	—	74·4	75·0	—	76·9	—	81·5	84·6	—	—	85·0	84·1	—
Interorb. I.	23·7	22·7	—	—	25·7	—	20·8	—	22·2	22·0	—	—	—	—	—
Nasal I.	61·5	58·7	—	—	60·0	—	—	—	65·0	55·6	57·1	—	—	—	—
Max. Alv. I.	112·2	114·6	—	—	118·0	—	—	—	126·5	119·5	113·6	—	—	—	—
Pal. I.	87·5	87·8	—	—	87·2	—	—	—	72·7	77·8	78·2	77·4	—	—	—
Bican. I.	64·6	62·7	—	—	55·6	—	—	—	61·5	72·1	62·7	—	—	—	—
For. mag. I.	79·3	—	—	80·6	75·6	—	—	—	74·4	—	—	—	—	—	—

Table III. *Comparative Measurements of Upper Extremity*

	Negro	Bush	M_5 Rt.	M_5 Lt.
Humerus				
Humeral length	31·7	28·4	35·0	—
Humeral circumference	6·5	5·4	7·2	—
Calibre index	20·4	19·2	21·2	—
Cubital angle	77°	83°	86°	—
Ulna				
Anat. length	26·9	23·4	30·3	30·8
Calibre index	15·3	12·7	11·8	12·3
Carrying angle	169°	169°	171°	167°
Joint axis angle	86°	87°	87°	83°
Longest perpendicular	0·5	0·6	0·5	0·3
Length of chord	20·3	20·4	23·5	25·5
Curvature index	2·4	2·7	2·1	1·2
Radius				
Length	25·4	21·0	28·9	29·0
Circumference	4·1	3·6	4·4	4·5
Calibre index	16·2	17·0	15·2	15·5
Collo-diaphyseal angle	173°	170·5°	169°	173°
Longest perpendicular	0·4	0·8	1·0	0·8
Length of chord	17·2	18·0	20·5	21·5
Curvature index	2·2	4·4	5·0	4·0
Skeleton proportion indices				
Radial-humeral index	80·1	74·5	82·6	—
Humero-femoral index	70·6	68·6	72·5	—
Intermembral index	70·6	65·8	70·5	—
Statures				
Humerus	162·4	151·88	171·9	—
Radius	163·0	147·5	180·5	180·8
Humerus-radius	165·6	149·1	177·4	—

Table II. *Comparative Measurements and Indices of Mandible*

Measurements and indices	Negro	Bush	Kalomo	Springbok flats	Kopje Enkel	*Fish Hoek	Boskop	M_1	M_1 A	M_2	M_3	M_5	M_7	M_8	M_9	M_{11}
Max. mandibular length	10·6	10·1	12·6	14·1	11·2	11·1	—	—	—	10·2	10·3	—	—	13·0?	10·0	13·0?
Bicondylar breadth	11·3	11·8	11·6	—	11·1	12·0	—	—	—	11·8	11·4	—	—	12·0?	11·5	—
Mandibular index	106·6	106·7	92·0	—	99·0	108·1	—	—	—	109·8	110·4	—	—	92·3	115·0	—
Bigonial breadth	9·5	9·2?	11·0	—	8·9	9·9	—	—	—	8·6	8·7?	—	—	9·5	10·0	—
Bicondylar-bigonial index	84·2	77·0	94·0	—	80·3	82·1	—	—	—	76·8	76·4	—	—	79·1	86·9	—
Bicoronoid breadth	10·2	9·1	11·0	—	9·3	9·4	—	—	—	8·6	8·6?	—	—	10·6	9·5	—
Bicondylar-bicoronoid index	90·2	75·6	95·0	—	83·7	78·4	—	—	—	76·8	75·8	—	—	88·3	82·6	—
Max. height of ramus	6·0	4·5	7·0	—	5·9	4·4	—	6·5?	—	5·1	—	7·4	—	6·5?	5·5?	7·0?
Min. height of ramus	4·7	3·7	5·3	—	4·6	4·2	—	5·4?	—	3·6	3·7	5·5	—	5·0	3·7	—
Max. breadth of ramus	4·5	4·5	5·3	4·8	4·7	4·7	—	—	—	4·0	—	4·6	—	4·8	4·3	—
Min. breadth of ramus	3·5	3·2	4·4	—	3·8	4·0	—	—	—	3·0	3·1	3·8	—	3·8	2·9	—
Ramus index	75·8	96·1	75·0	—	82·6	96·3	—	—	—	83·3	83·7	69·0	—	76·0	78·3	—
Min. height of body at molar region	2·5	2·3	3·0	—	2·7	2·3	2·7	3·0?	2·3?	2·0?	3·2	2·9	—	3·0	2·2	3·0
Max. thickness of body at molar region	—	1·6	1·8	—	1·5	1·9	2·2	—	1·6	1·7	1·7	1·6	—	2·1	2·1	1·7
Body index	—	68·4	60·0	—	55·0	80·4	79·0	—	69·5	85·0	73·9	55·1	—	67·0	95·4	56·6
Max. height at symphysis	—	2·8	3·5	—	3·0	3·8	2·7	—	3·6	3·1	3·2	—	—	3·0?	3·5?	3·2
Max. thickness at symphysis	1·4	1·4	1·8	1·8	1·3	1·5	*1·4	—	1·5	1·5	1·4	—	—	1·4	1·4?	1·4?
Symphysis index	—	47·4	51·4	—	41·3	39·4	49·0	—	41·1	48·4	43·7	—	—	46·6	40·0	46·0?
Molar-symphyseal height index	—	80·9	85·7	—	90·0	60·5	100·0	—	66·5	64·5	71·9	—	—	100·0	62·8	93·8?
Molar-symphyseal thickness index	—	86·0	100·0	—	83·3	96·7	61·4	—	93·7	87·0	82·4	—	—	66·7	66·7	88·2
Length of dental arcade	5·8	4·9	5·6	—	4·8	4·5	—	—	—	5·0	4·7	—	—	6·0	5·8	—
Width of dental arcade	6·9	6·4	7·0	—	6·2	6·3	—	—	—	6·5	6·6	—	—	7·5	7·0	—
Dental arcade index	84·5	76·1	80·0	—	77·3	71·4	—	—	—	78·4	71·5	—	—	80·0	82·9	—
Length of condyle	2·0	1·2	—	—	1·8	1·8	—	—	—	1·6	—	2·5	—	—	1·3	—
Breadth of condyle	0·8	0·9	—	—	1·1	1·1	—	—	—	0·7	—	1·1	—	—	0·6	—
Condylar index	39·7	53·1	—	—	61·1	61·1	—	—	—	44·0	—	43·7	—	—	46·1	—
Width of sigmoid notch	2·9	2·7	3·0	—	3·2	3·0	—	—	—	2·5	2·7	2·8	—	4·2	2·5	—
Depth of sigmoid notch	1·2	1·0	0·9	—	1·1	1·1	—	—	—	1·0	0·9	1·3	—	1·4	0·7	—
Sigmoid notch index	43·3	38·2	30·0	—	34·2	36·7	—	—	—	40·0	33·3	46·5	—	33·3	28·0	—
Angle to chin length	7·7	7·0	9·2	—	8·2	9·5	—	—	—	7·2	7·2	—	—	10·5	8·0	—
Thickness at angle	—	0·6	0·9	0·8	0·3	0·7	—	0·8	—	0·6	—	0·5	0·8	0·7	0·5	—
Bicanine width	3·6	3·0	3·4	—	2·8	3·1	—	—	3·2	3·3	3·3	—	—	4·4	2·5	—
Total molar-premolar length	5·0	4·5	4·7	4·7	4·3	4·1	—	—	—	—	—	—	—	4·7	5·2	5·2
Total molar length	3·5	3·1	3·4	3·0	—	3·0	—	—	—	—	—	3·5	—	3·3	3·5	3·6
Chin angle	74·9°	66·5°	75°	—	70°	—	—	—	78°	75°	80°	—	—	85°	85°	85°?
Alveolar-symphyseal angle	84·9°	91°	90°	—	95°	—	—	—	84°	94°	90°	—	—	99°	85°	100°?
Body-ramus angle	126°	125°	125°	—	118°	—	—	130°	—	120°	—	114°	—	125°	130°	—

Table IV. *Comparative Measurements and Indices of Lower Extremity*

	Negro	Bushman		Boskop		M_3	M_5		M_8		M_{11}	
		Male	Female	Zitzikama, B.Za_1	Kalomo		Right	Left	Right	Left	Right	Left
Femur												
Length	47·8	41·3	39·6	46·2	48·0	—	—	48·3	47·0	47·5	—	49·4
Length circum. index	19·2	19·8	18·9	—	—	—	—	19·4	19·4	19·4	—	18·1
Length curvature	7·6	7·4	7·4	—	—	—	—	—	—	—	—	5·0
Angle of torsion	15°	26·5°	26·0°	—	—	—	—	—	—	—	—	17·0°?
Angle of neck	127°	131°	138°	—	—	—	121°	121°	121°	122°	—	140°?
Vert. diam. of head	4·6	4·04	3·58	4·1	4·6	—	4·34	4·2	—	—	—	4·3
Trans. diam. of head	4·5	4·11	3·69	4·2	4·7	—	4·5	4·24	—	—	—	4·5
Index of head	97·8	97·5	96·0	97·6	97·6	—	96·6	99·1	—	—	—	97·5
D.-V. diam. of shaft below less. troch.	2·38	2·23	2·12	—	—	1·6	2·9	2·8	2·2	2·3	—	2·4
Trans. diam. of shaft	2·80	2·77	2·51	—	—	2·1	3·3	3·3	2·9	3·0	—	2·8
Platymeric index	85·0	80·5	81·9	71·1	86·8	76·2	86·1	86·1	74·7	73·8	—	85·7
D.-V. diam. of shaft at middle of bone	3·28	2·64	2·62	—	—	1·8	3·3	3·3	2·8	—	—	3·1
Trans. diam. of shaft	3·10	2·17	2·16	—	—	1·8	2·7	2·7	2·5	3·1	—	2·3?
Pilasteric index	105·8	122·0	120·0	129·0	119·2	100·0	118·0	118·2	112·0	—	—	137·7?
Tibia												
Length	—	34·08	33·25	—	—	—	—	42·3	41·5	41·8	36·4	—
Length circum. index	—	22·4	20·4	—	—	—	—	24·0	21·8	—	23·3	—
Angle of torsion	5°	21·0°	18·0°	—	—	—	—	48·0°?	—	—	—	35·0°
Angle of inclination	7°	9·1°	11·4°	—	—	—	—	6·0°	—	—	—	—
Trans. diam. of shaft	—	2·08	1·96	—	—	1·7	2·7	2·8	2·5	—	2·4	—
D.-V. diam. of shaft	—	3·1	2·55	—	—	2·4	3·9	3·9	3·6	—	3·5	—
Platycnemic index	88·0	67·6	72·8	—	70·5	70·8	70·4	71·2	70·0	—	69·1	—
Fibula												
Length	—	32·8	31·0	—	—	—	41·2	41·2	—	—	—	—
Circumference	—	3·88	3·55	—	—	—	6·2	6·2	—	—	—	—
Length circum. index	—	11·5	11·44	—	—	—	15·1	15·1	—	—	—	—
Stature												
From femur	—	155·1	144·7	167·6	—	—	—	179·5	176·5	177·5	—	—
From tibia	—	155·1	144·7	—	—	—	—	173·5	172·5	172·5	—	163·5
Limb proportions												
Tibio-femoral	81·5	82·4	83·9	—	82·0	—	—	90·9	—	—	—	—
Humero-femoral	70·6	69·3	67·2	—	—	—	—	72·5	—	—	—	—
Intermembral index	70·6	65·8	65·6	—	—	—	—	70·5	—	—	—	—

Table V.

Comparative Measurements of Teeth

Race	Upper jaw M.D.	L.L.	Index	Crown	Root	Total	Lower jaw M.D.	L.L.	Index	Crown	Root	Total
					Central incisor							
	mm.	mm.		mm.	mm.	mm.	mm.	mm.		mm.	mm.	mm.
Negro	9·1	7·0	77·1	9·8	13·5	23·3	5·1	5·6	108·4	—	—	—
Bush	8·3	6·5	78·4	9·3	12·5	21·8	5·0	5·2	104·6	6·8	12·0	18·8
Boskop	—	—	—	—	—	—	—	—	—	—	—	—
Zitzikama	—	—	—	—	—	—	—	—	—	—	—	—
M_1 A	—	—	—	—	—	—	5·5	6·5	118·2	7·3	11·7	18·0
M_2	9·0	8·0	88·8	10·5	—	—	5·5	6·2	112·8	10·0	12·0	22·0
M_3	9·7	8·0	82·4	12·0	14·0	26·0	6·7	7·1	106·0	10·0	—	—
M_5	7·5	7·0	93·3	—	—	—	—	—	—	—	—	—
M_9	9·5	8·3	87·4	11·0	17·0	28·0	6·5	7·0	107·7	9·0	—	20·0
M_{10}	—	—	—	—	—	—	—	—	—	—	—	—
					Lateral incisor							
Negro	6·8	6·0	88·1	9·5	13·5	23·0	5·9	6·0	102·6	8·0	13·7	21·7
Bush	6·7	6·0	89·1	7·9	12·5	20·4	5·6	5·6	99·6	7·1	13·4	20·4
Boskop	—	—	—	—	—	—	—	—	—	—	—	—
Zitzikama	—	—	—	—	—	—	—	—	—	—	—	—
M_1 A	—	—	—	—	—	—	6·5	7·0	107·7	7·3	11·7	19·0
M_2	8·0	7·0	87·5	10·5	—	—	6·5	6·9	106·5	10·0	12·0	22·0
M_3	7·5	7·0	89·7	11·2	—	—	6·7	7·1	106·0	10·0	—	—
M_9	8·2	7·9	96·3	11·0	13·0	24·0	6·7	7·3	108·9	8·0	13·0	21·0
M_{10}	8·0	7·3	91·2	10·5	11·5	22·0	—	—	—	—	—	—
					Canine							
Negro	7·6	8·1	107·3	9·1	16·1	25·2	7·2	7·4	102·9	9·4	16·1	25·5
Bush	7·5	7·8	104·1	9·7	16·3	24·2	6·8	7·0	103·7	8·3	15·3	23·6
Boskop	—	—	—	—	—	—	—	—	—	—	—	—
Zitzikama	—	—	—	—	—	—	—	—	—	—	—	—
M_1 A	—	—	—	—	—	—	7·0	8·3	118·6	7·0	18·0	25·0
M_2	—	—	—	—	—	—	7·5	—	—	13·5	—	—
M_3	9·0	9·6	106·7	12·0	—	—	7·9	8·9	112·7	11·8	—	—
M_5	8·0	9·5	102·7	7·0	17·5	24·5	—	—	—	—	—	—
M_9	9·0	9·5	105·6	11·0	19·0	30·0	8·0	8·3	103·8	10·5	17·0	27·5
M_{10}	—	—	—	—	—	—	—	—	—	—	—	—
					First premolar							
Negro	6·9	9·1	131·2	7·1	14·9	22·0	7·3	7·9	109·0	7·0	15·0	21·9
Bush	6·8	8·6	126·9	6·6	14·5	21·1	6·9	7·6	110·0	6·2	14·1	20·2
Boskop	—	—	—	—	—	—	—	—	—	—	—	—
Zitzikama	—	—	—	—	—	—	—	—	—	—	—	—
M_1 A	—	—	—	—	—	—	7·6	8·9	117·1	6·0	16·0	22·0
M_2	8·0	10·7	133·7	10·0	—	—	8·0	9·5	118·6	7·5	—	—
M_3	8·0	10·5	131·2	9·3	—	—	7·9	8·9	112·7	8·5	—	—
M_9	8·0	11·0	137·5	9·0	15·0	24·0	8·0	9·2	115·2	18·0	—	—
M_{10}	—	—	—	—	—	—	—	—	—	—	—	—
					Second premolar							
Negro	6·7	9·1	136·8	6·5	14·6	21·1	7·1	8·2	115·6	6·3	15·3	21·6
Bush	6·5	8·5	131·1	6·3	14·8	21·1	7·0	7·8	110·8	5·9	14·8	20·7
Boskop	—	—	—	—	—	—	—	—	—	—	—	—
Zitzikama	—	—	—	—	—	—	—	—	—	—	—	—
M_1 A	—	—	—	—	—	—	7·7	9·0	116·4	6·0	18·6	23·6
M_2	8·7	10·7	123·0	9·0	—	—	—	—	—	—	—	—
M_3	8·0	10·3	141·2	9·5	—	—	—	—	—	—	—	—
M_5	7·0	10·0	140·0	5·5	17·0	22·0	—	—	—	—	—	—
M_9	8·3	11·5	138·5	9·0	15·0	24·0	8·0	10·0	125·0	8·0	—	—
M_{10}	—	—	—	—	—	—	—	—	—	—	—	—
					First molar							
Negro	10·2	11·0	107·7	6·4	12·5	17·9	11·0	10·3	93·9	4·8	13·0	17·8
Bush	9·9	10·6	107·2	6·0	11·6	17·8	10·9	10·2	93·7	5·0	12·4	17·4
Boskop	10·5	12·5	119·0	—	—	—	12·5	12·0	96·0	—	—	—
Zitzikama	9·5	10·0	105·3	—	—	—	10·0	9·0	90·0	—	—	—
M_1 A	—	—	—	—	—	—	12·1	11·3	93·4	6·1	19·9	25·0
M_2	11·3	12·0	106·2	7·5	—	—	13·0	11·3	87·0	6·7	14·6	21·3
M_3	11·7	12·5	106·9	7·8	12·2	20·0	12·0	13·0	92·4	—	—	—
M_5	11·0	12·5	113·6	6·0	14·5	20·5	12·0	11·0	91·7	6·0	16·5	22·5
M_9	11·0	12·5	113·7	6·0	16·0	22·0	12·5	12·0	96·0	7·9	16·0	23·0
M_{10}	11·6	13·0	115·0	8·0	12·1	20·1	—	—	—	—	—	—
					Second molar							
Negro	10·0	11·6	115·9	6·3	10·0	16·3	11·1	10·3	93·0	5·5	12·9	18·4
Bush	9·7	10·6	110·2	5·8	12·6	18·4	10·6	10·1	94·8	5·6	13·1	18·6
Boskop	10·5	12·5	119·0	—	—	—	11·0	10·5	95·4	—	—	—
Zitzikama	9·5	10·0	105·3	—	—	—	—	—	—	—	—	—
M_1 A	—	—	—	—	—	—	—	—	—	—	—	—
M_2	10·5	12·0	114·3	—	—	—	—	—	—	—	—	—
M_3	11·0	12·2	111·0	—	—	—	12·5	11·0	88·1	7·0	—	—
M_5	10·5	13·0	123·9	6·0	10·0	16·0	12·0	11·5	95·8	7·0	14·0	21·0
M_9	10·3	13·0	126·3	6·0	14·0	20·0	13·0	12·0	92·4	7·5	12·5	20·0
M_{10}	11·0	13·0	118·2	8·5	—	—	—	—	—	—	—	—
					Third molar							
Negro	9·0	11·0	122·7	5·0	12·6	17·6	11·2	10·4	92·5	5·3	13·3	18·6
Bush	8·2	10·3	125·7	5·4	12·6	18·0	9·9	9·6	97·0	5·1	12·5	17·6
Boskop	—	—	—	—	—	—	—	—	—	—	—	—
Zitzikama	9·6	8·0	83·3	—	—	—	9·5	8·0	84·2	—	—	—
M_1 A	—	—	—	—	—	—	—	—	—	—	—	—
M_2	—	—	—	—	—	—	—	—	—	—	—	—
M_3	—	—	—	—	—	—	—	—	—	—	—	—
M_5	9·0	11·0	122·2	6·5	13·5	20·0	11·7	11·0	94·2	5·5	16·5	22·0
M_9	9·0	13·0	144·4	7·0	—	—	—	—	—	—	—	—
M_{10}	—	—	—	—	—	—	12·5	11·5	92·5	8·5	—	—

Table VII. *Comparative Non-Metrical Features of Teeth*

Feature	Negro	Bush	Boskop	M_1 A	M_2
Shape of incisors	Medium. Type III. Non-shovel-shaped	Small. Type II. Shovel-shaped	Large. Type unknown. Very shovel-shaped	Medium. Type III. Non-shovel-shaped	Large. Type II. Very shovel-shaped
Nature of the canines	Caniniform	Premolariform	Premolariform	Caniniform	Premolariform
Molar reduction	Mesio-distal	Mesio-distal or 2nd molar the largest	Upper molars equal Lower mesio-distal	—	Mesio-distal
Molar crown pattern: Upper talon	Talon reduction	Talon reduction	—	—	Talon reduction
Molar crown pattern: Lower hypoconulid	Present	Absent	Very large	Present	Present
Order of eruption	Premolars erupt before 2nd molar	2nd molar erupts before 2nd premolar	Not known	—	Anomalous
Attrition	Interproximal	Occlusal and interproximal	Occlusal	Interproximal	Occlusal
Nature of pulp cavity	Cynodont	Cynodont	Hypertaurodont	Cynodont	Mesotaurodont

Feature	M_3	M_5	M_9	M_{10}
Shape of incisors	Large. Types II and III. Shovel-shaped	Large	Large. Type II. Shovel-shaped	Large. Type II. Shovel-shaped
Nature of the canines	Premolariform	Premolariform	Premolariform	Premolariform
Molar reduction	Mesio-distal	Upper mesio-distal. Lower 2nd molar the largest	2nd molar the largest	Mesio-distal
Molar crown pattern: Upper talon	Talon reduction	No talon reduction	Talon reduction	No talon reduction
Molar crown pattern: Lower hypoconulid	—	Absent	Absent	—
Order of eruption	Anomalous	—	—	—
Attrition	Occlusal	Occlusal	Occlusal	Occlusal
Nature of pulp cavity	Mesotaurodont	Upper cynodont. Lower hypotaurodont	Mesotaurodont	Upper mesotaurodont. Lower hypertaurodont

PART IX

CONCLUSION

RESULTS OBTAINED AND PROBLEMS RAISED BY THE INVESTIGATIONS

Cultural evidence. Jones and Schofield come to the conclusion that Mapungubwe was occupied by two distinct peoples, living together in friendly fashion; the one was "undoubtedly of Shona stock", the other "probably of Sotho stock".

"The first," says Schofield, "the people who made the fine pottery termed M_1 were, from the relative rarity of their ware and the occurrence of the best of it only on top of the hill, where it had been found in graves containing hundreds of ounces of gold, a Chiefly Clan.

"With them there was associated from the very earliest date of the occupation a people who made and used a pottery of much coarser fabric and decoration but which had a great variety of forms, spouts, bases, lugs, etc. Excavation on other sites shows that these people did exist separately." Cultural divergence is further indicated by different burial customs.

"From the association of gold beads, gold plating and gold tacks with a fine pottery, which shows a strong resemblance to the Class B and B_2 Zimbabwe pottery, as described by Caton-Thompson, it is certain that these people linked with the Zimbabwe Culture at its most flourishing period of the Second Phase, and should therefore be classed with the Shona."

The second people, he thinks, came from the west. They were probably "distant connexions of the first occupants of Zimbabwe Acropolis, and belonged to one of the divisions of the Sotho stock".

The ethnological evidence adduced by Lestrade and the technological evidence of the metallurgists support the views of Jones and Schofield in every way.

From this evidence, then, we may conclude that the culture revealed at Mapungubwe is closely related to that of Zimbabwe. It is "Bantu", in the loose sense in which that term has been used hitherto. Further the archaeologists and the ethnologist appear satisfied that this culture is of Shona and Sotho origin, that is, the product of South African Negro stocks.

All the evidence on which these conclusions are based is purely cultural.

Physical evidence. The physical evidence, derived from the investigation of the skeletal material found on Mapungubwe, is of a very different character. It seems to contradict flatly the conclusion that the Mapungubwe people were a South African Negro race.

Dr Galloway believes that "the first Negro migration could not have reached as far south as Mapungubwe by the time of its original settlement".

"If", he continues, "the Mapungubwe skulls represent the antecedents of a Sotho-Shona people, then to allow for this amazing biological change, the Negro must have entered South Africa and settled at Mapungubwe at least six thousand years ago—which is absurd."

He concludes categorically: "Mapungubwe represents a homogeneous Boskop-Bush population, physically akin to the post-Boskop inhabitants of the coastal caves."

Here the physical anthropologist crosses swords with the cultural anthropologist.

Race and culture. It is common knowledge that the relations between these two branches of anthropology are very ill defined. In 1934 the Royal Anthropological Institute and the Institute of Sociology set up a committee to consider the significance of the racial factor in cultural development.

So far, this committee has only offered a series of definitions of "race". Definitions of "culture" and an examination of the relations between races and cultures are yet to come.[1]

How closely are race and culture related? Are they necessarily related? It is to be hoped that the committee of anthropologists will find some answer to these questions.

At Mapungubwe we are faced with this problem in an acute form. It is greatly complicated by our ignorance in regard to the origins of "Bantu" culture. Even when we confine the term "Bantu" strictly to the South African Negro races, we are still confronted with the fundamental question: "What non-Negro elements are present in this Negro culture?"

To assume that the Zimbabwe people were racially the same as the Mapungubwe people, because their culture is identical, and that therefore Zimbabwe was occupied by a Bush-Boskop race, would be quite unwarrantable. The available evidence points to a Negro race, the Barozwi, as the builders of Zimbabwe.

[1] Cf. *Race and Culture*, printed for the Royal Anthropological Institute and the Institute of Sociology, London, N.D.

If, on the other hand, we distinguish between race and culture, may we then envisage the same culture enjoyed simultaneously at Zimbabwe and at Mapungubwe by two totally different races? The Mwari, or Mwali,[1] the Supreme God of the Shona clans, has for centuries exercised his sway over the most diverse elements, including Transvaal tribes. Could this spiritual rule have embraced Mapungubwe and its alien race, as well?

It would be simpler to explain the connexion, as apparently some Native traditions do,[2] by regarding Mapungubwe as a southern outpost of the Mambo's Kingdom, where one of his regiments, known as "Mapungubwe", was stationed, to keep in check a subject (and alien?) race.

But a military occupation by Shona clans, one supposes, would have left definite traces in the blood of the subject race. Schofield refers to the dwellers on the hill as a "Chiefly Clan". But Galloway says of the "Sceptre" skeleton found on the hill: "The absence of Negro impurity in the 'Sceptre' skeleton, presumably that of a leader among his people, whose blood would unlikely be defiled by the arrival of a sporadic alien, is particularly striking in this connexion." In his view, "the few Negro features seen at Mapungubwe could have been caused by a single intrepid Negro who had entered as an alien into a foreign territory".

Non liquet!

More evidence necessary. So far, no true Negro remains have been found at Mapungubwe. Yet such remains may well exist there. Up to June 1935, some 2000 tons of midden had been examined; but on and around the hill there are probably 100,000 tons of midden, which have not been touched. At the time of writing, a second grave area has been uncovered. There may be a dozen more awaiting discovery.

If we postulate an alien race, ruled by a dominant minority, we would expect these two to bury their dead in separate areas; and all the more, if their burial customs were different.

During the winter of 1936 over 20 skeletons were uncovered in this second grave area (Bambandyanalo). These have not yet been examined. We can only hope that when they (and any others that may be found in the interval) have been examined, they will throw further light on the identity of the race, or races, which occupied Mapungubwe.

Secondary problems, such as the date of the first occupation of the hill, the date of its abandonment, and the reasons for this, will find their solution when the fundamental question has been answered.

[1] Cf. *infra*, p. 177. [2] Cf. Lestrade's Report, p. 121.

In the meantime, one conclusion at least emerges clearly from this discussion: the investigations at Mapungubwe must continue!

THE FUTURE

Co-operation in archaeology. The excavations at Mapungubwe, the most extensive scheme of archaeological research as yet undertaken in South Africa, are interesting from another point of view. They are being carried out with funds to which the Union Government, the Pretoria University, the Pretoria City Council and private individuals have contributed. But for this generous support from outside, the University could not have contemplated so ambitious a project.

Such co-operation affords gratifying proof of a growing interest in our past, an interest broad enough to realize that Mapungubwe and Zimbabwe do not stand merely for "Native stuff", but are equally important to all sections of the community, as part of their common heritage.

The greatly improved Act for the Preservation of Ancient Monuments, passed by the Union Parliament in 1934,[1] and the creation of the Government Bureau of Archaeology are further proofs that our rulers recognize the duty of preserving historic relics and of encouraging archaeological research.

The Government of Southern Rhodesia is apparently contemplating the institution of a similar bureau. It is earnestly to be hoped that this will soon be done[2]; for the researches at Mapungubwe have shown conclusively that in order to solve the problems of the ancient mining civilization of Southern Africa, which extended from the Belgian Congo to the Transvaal, joint action north and south of the Limpopo is absolutely necessary.

The various contributors to this volume, each bringing evidence from his own field of study, have established, as a fact beyond dispute, the essential unity of the pre-European civilization which occupied the Limpopo basin, at the time when the Portuguese first made vague contacts with it in the beginning of the sixteenth century.

The Empire of Monomotapa. The Monomotapa of the Portuguese was so nebulous, that we have been taught to regard it as a product of the times, when

> ...Geographers, in Afric maps,
> With savage pictures fill their gaps,
> And o'er unhabitable downs
> Place elephants for want of towns.

[1] The Natural and Historical Monuments, Relics and Antiques Act (No. 4 of 1934).

[2] Since the above was written, this has been done. In addition the Government of Southern Rhodesia has created an Historical Monuments Commission (Act No. 8 of 1936).

Nevertheless, it existed in fact. What is more, it was the most extensive, the most stable and enduring Native state South Africa has ever known.

As such, it deserves much closer investigation than it has so far received. The fascinating study of Posselt, "The Barozwi, or Mambo and his Court",[1] which seeks to reconstruct the fabric of Monomotapa, the ancient empire of the Mambos, is an example of the kind of enquiry, which, in the interests of all South Africa, one longs to see pushed to the furthest possible limits in all directions.

If the Barozwi were the tribal core around which the Mambo state was originally built up, as Posselt, Bullock and others think, then no other South African tribe can interest us half as much. Were they indeed the builders of Zimbabwe, the exploiters of the ancient mines? Was theirs an autochthonous state, or one like ours, where the Native masses live under the direction of a small minority of conquerors from overseas? Not only their language and traditions, but their entire past in all its aspects—social, political and religious—must be exhaustively explored in order to throw more light on the fate of the Mambo empire.

Mambo and Mwari. How did the Barozwi obtain their domination over neighbouring tribes?

"It is traditionally established", says Bullock,[2] "that their system of government was nearer an absolute monarchy than that of most tribes, and so better suited to obtain the obedience necessary for such works as the building of Zimbahwe (Zimbabwe), Matendere, Khami" ...etc.

Their ascendancy is explained in part by their religious predominance: "There is strong traditional support for the view that the WaRozwi used religion as a means of holding in subjection, or control, the chiefs of other tribes. Their emissaries claimed that 'they knew God' (that is, Mwari), and had been sent by Him to their nephews.... They claimed obedience in the name of Mwari, perhaps more than by the power of Mambo."[3]

Thus Bullock offers, "as a reasonable conjecture", that the Barozwi "were a 'Mashona' tribe, whose constructive instinct had developed to an unusual extent, and who took the lead amongst other kindred tribes for some centuries, largely because they had captured and organized the sacerdotal machinery and fulminations of the supernatural overworld. They had the political wisdom, also, not to depose the chiefs of other tribes, but to assist in their ceremonial appointment, investing them with regalia and emphasizing the formalities of patronage." It would seem, therefore, that the concentration of temporal and spiritual powers in the hands of the Mambos was the secret of their greatness. This gave them the hegemony over other tribes. When these two powers came into conflict (as they generally do in history) the Mambos came to their fall. The Mambo quarrelled with the Mwari, so Posselt relates,[1] and after a bitter struggle the spiritual power destroyed the temporal. An entertaining parallel to similar episodes in our own history!

The God outlived the Mambo, and survives to our day. His priests were still powerful enough in 1896 to produce a rebellion. In 1924 they threatened a drought, to punish the impious use of government poison to destroy a plague of locusts sent by Mwari! Ritual murder may be traced to the same influence.[2]

It is not only in his homeland, the Matopos, that the Mwari survives. His shadow is long. It falls far across the Limpopo and reaches to the Zoutpansberg. Fifty years ago the Mwari levied tribute from chiefs, great and small, all over the Zoutpansberg district in the Transvaal. These chiefs sent their trusted messengers with gifts of ivory and black beasts to propitiate the God in his Holy of Holies, a cave in the Matopos. The messengers were distinguished by a badge or passport, a necklace of large hexagonal beads, dark blue in colour,[3] by which they were recognized by the Great Ones, who received their offerings on behalf of the Godhead, in circumstances of terror and awe.[4]

Some say that tribute is still so paid to-day.

The "children of Mwari" are still distinguished by necklaces of black beads.[5] What is the history of these beads and of the dark blue "ambassador" beads found at Mapungubwe? And of the many other varieties also found there? As practically the only foreign (i.e. imported) article occurring in large quantities, their value as dating material would be immense, once their place and date of origin could be definitely established.

The story of Mambo and Mwari, as told by Posselt and Bullock, is of absorbing interest. One only regrets, in reading it, that they tell it so diffidently. They feel they have to, because they are not always sure of their ground. Small blame to them. They have done their best as individuals. What is required here is team-work. A dozen experts should be set to the task, each on his own side of it, in order to sweep away uncertainties and establish the true story of the rise and fall of the empire of Monomotapa.

The problem of the ancient mines. There remains the most difficult and complicated problem of all: the mystery of the ancient mines.

[1] F. W. T. Posselt, *Fact and Fiction*, pp. 134 *sqq.* (Bulawayo, 1935.)
[2] C. Bullock, *The Mashona*, p. 40. (Johannesburg, 1927.)
[3] *Ibid.* p. 42.

[1] Posselt, *op. cit.* p. 157. [2] Bullock, *op. cit.* pp. 123–7.
[3] Cf. colour plate D, fig. 6.
[4] Personal communications to the writer.
[5] Bullock, *op. cit.* p. 40.

The gold ornaments found at Mapungubwe may have been manufactured there, but this seems at present highly improbable. The gold itself certainly came from elsewhere. Whence? Where did the iron and copper ores come from that were worked at Mapungubwe? Who worked these? When? These are part of the big question: Who worked the ancient mines that stretch from the Pretoria district to the Zambesi?

Many answers have been offered, as we know. They range from King Solomon and the Queen of Sheba to the Makalanga of a few centuries ago. The problem seems too vast for individual investigators. Certainly it has baffled them so far.

We must agree with Wagner[1] and Posselt,[2] that only co-operative research on a large scale, carried out over a long period, can hope to find the solution. The University of Pretoria and the Union Government have co-operated to good purpose at Mapungubwe. But this problem needs more than one University, and more than one Government!

A plea for wider collaboration. To attack the problem of the ancient mines in earnest, the Government of Southern Rhodesia must co-operate. One government Bureau of Archaeology or one University could not undertake all the work. A careful plan for concerted action should be prepared by Union and Rhodesian archaeologists. The sister Universities of Cape Town, Stellenbosch and the Witwatersrand are all doing excellent work in ethnology and archaeology. They would be ready to combine with the University of Pretoria in a grand scheme of systematic exploration, under the aegis of the two neighbouring governments, and with their support.

At present, political boundaries are a serious impediment to the investigator. An example: It was very tantalizing to stand on the summit of Mapungubwe and look at certain hills in Rhodesia across the nearby border, knowing that these hills, in Native eyes, were like Mapungubwe, Forbidden Places, where the rash intruder would be struck dead by lightning. To be prevented by an imaginary line from examining these places, in order to determine whether the trail picked up at Mapungubwe led through them to the north—that was more than tantalizing—it was downright maddening!

True, an appeal to the friendly officials across the border would have been received in the most sympathetic spirit; but what tangles of red tape would have had to be faced at home! Proposing to spend funds earmarked for Mapungubwe outside the Union would be tantamount to tweaking the nose of the Auditor-General!

Only co-ordinated research carried out simultaneously north and south of the Limpopo can hope to succeed, where two generations of individual, piecemeal workers have failed.

Such a largely planned undertaking would investigate every phase of that ancient Native life—their mining activities and material culture, as revealed in excavations at various sites, their linguistic, political and religious characteristics, as preserved in dialects, traditions and customs.

The great mass of facts so accumulated could then be co-ordinated into a really authoritative picture of pre-European Native life in the Limpopo region. The scientific value of such a body of organized knowledge would be immense. No less so its practical value.

One cannot help believing that such a scheme would have commended itself to Rhodes. He saved the ancient ruins of his country from destruction and took a great delight in the study of its earliest history, when it was the seat of the greatest Native empire in our history.

It is wrong to continue to ignore the history of that state and the lessons it may teach. Our rulers are to-day, more than ever, concerned with the Native question and the right adjustment of the relations between Native and European.

All are eager to help the Native along the path of self-development. Only, they still grope for the means and fumble for a formula.

A deeper knowledge of Native achievements, successes and failures of the past, may aid us to appreciate their capacities and their needs of the present.

[1] Cf. *supra*, p. 4. [2] *Op. cit.* p. 1.

INDEX

Figures in clarendon type indicate the principal references to the subject

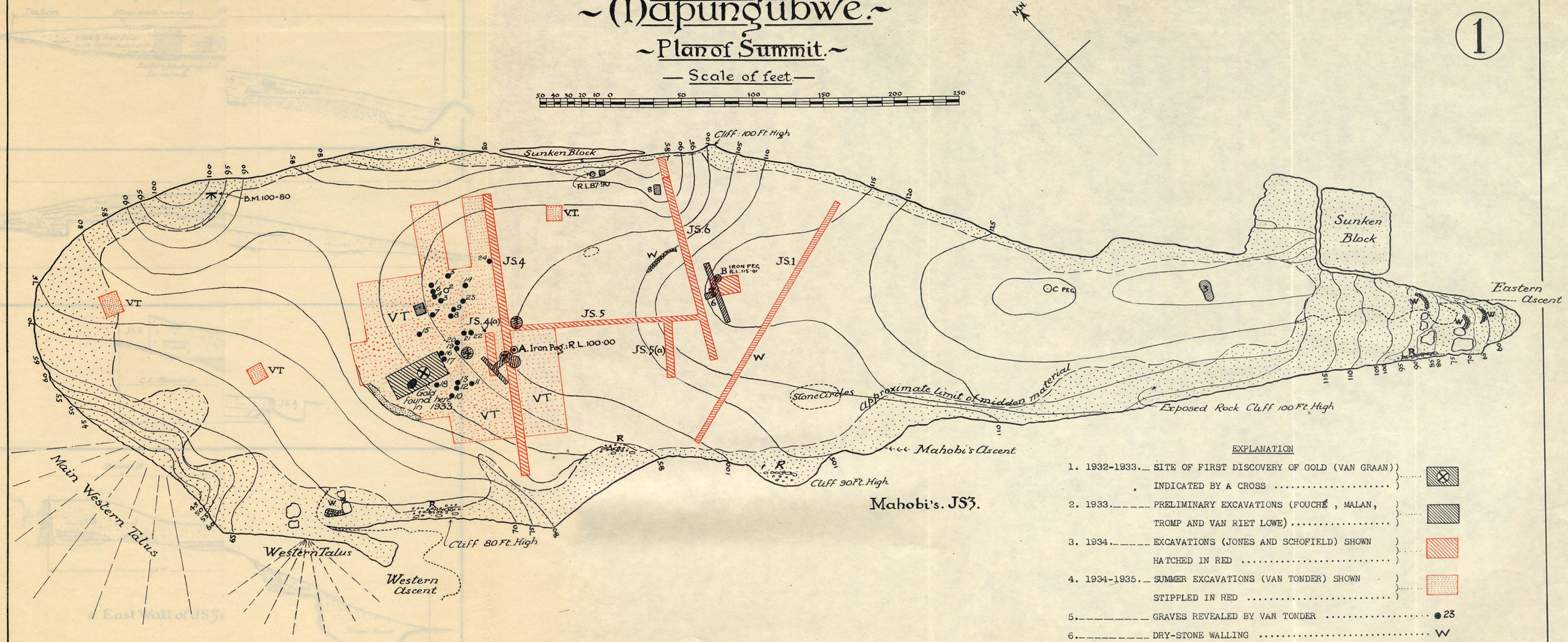
~Mapungubwe.~

~Plan of Summit.~

— Scale of feet —

50 40 30 20 10 0 50 100 150 200 250

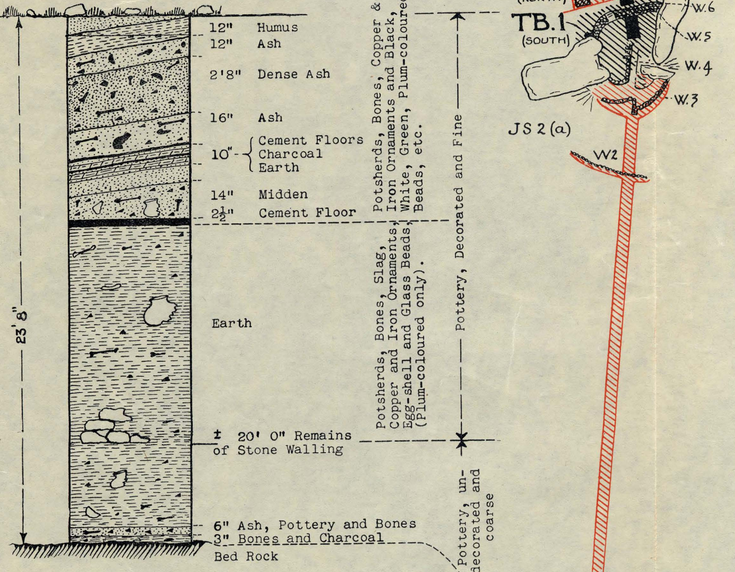
1

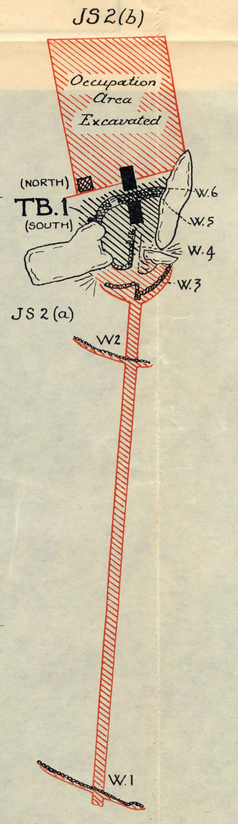


EXPLANATION

1. 1932-1933.— SITE OF FIRST DISCOVERY OF GOLD (VAN GRAAN) INDICATED BY A CROSS .....
2. 1933.——— PRELIMINARY EXCAVATIONS (FOUCHÉ, MALAN, TROMP AND VAN RIET LOWE) .....
3. 1934.——— EXCAVATIONS (JONES AND SCHOFIELD) SHOWN HATCHED IN RED .....
4. 1934-1935.— SUMMER EXCAVATIONS (VAN TONDER) SHOWN STIPPLED IN RED .....
5. ———— GRAVES REVEALED BY VAN TONDER ..... ●23
6. ———— DRY-STONE WALLING ..... W
7. ——— ——— REMAINS OF COLLAPSED WALLING ..... R
8. ———— DRAWING PREPARED ON ORIGINAL TACHEOMETRIC SURVEY MADE BY C. VAN RIET LOWE IN APRIL, 1933.

CROSS-SECTION OF T.B.1. (SOUTH) EXCAVATED (FOUCHÉ) 1933.



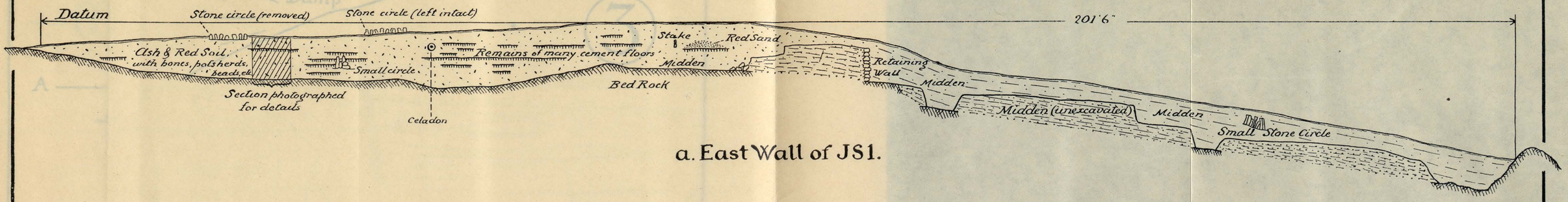


Mapungubwe. Sections on Summit.

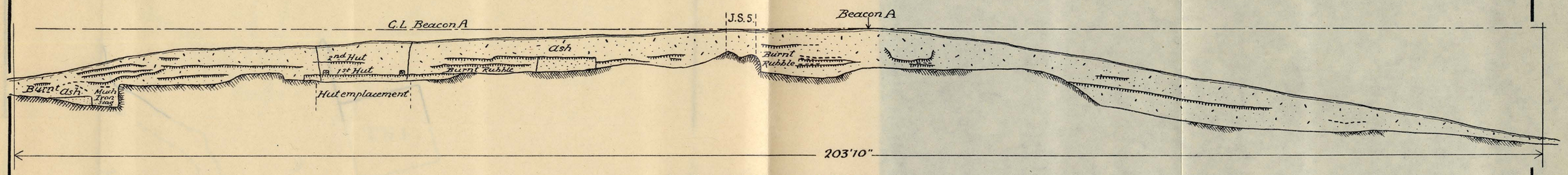
~Scale of feet~

10 5 0 10 20 30 40 50

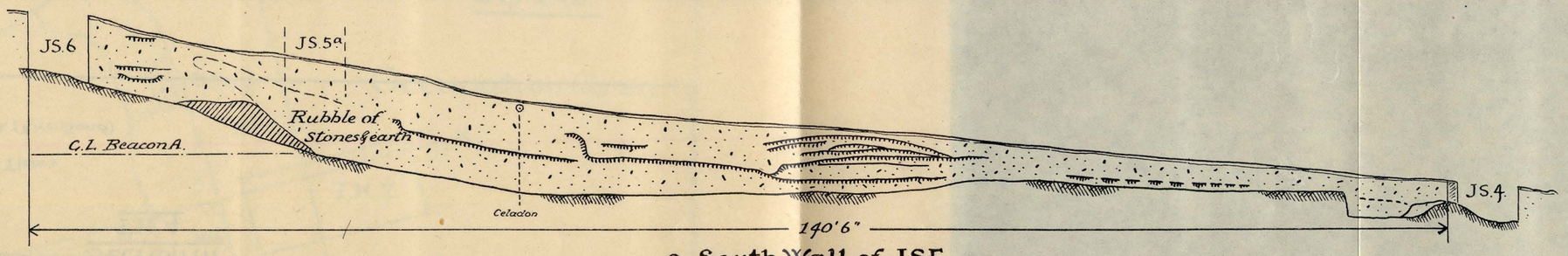
2



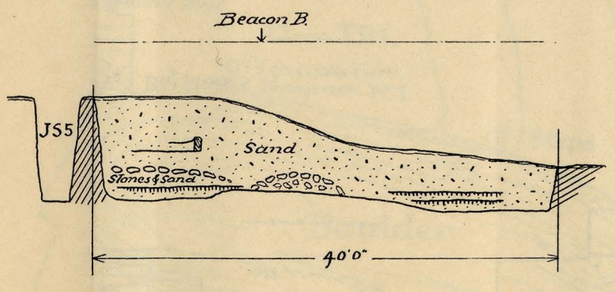
a. East Wall of JS1.



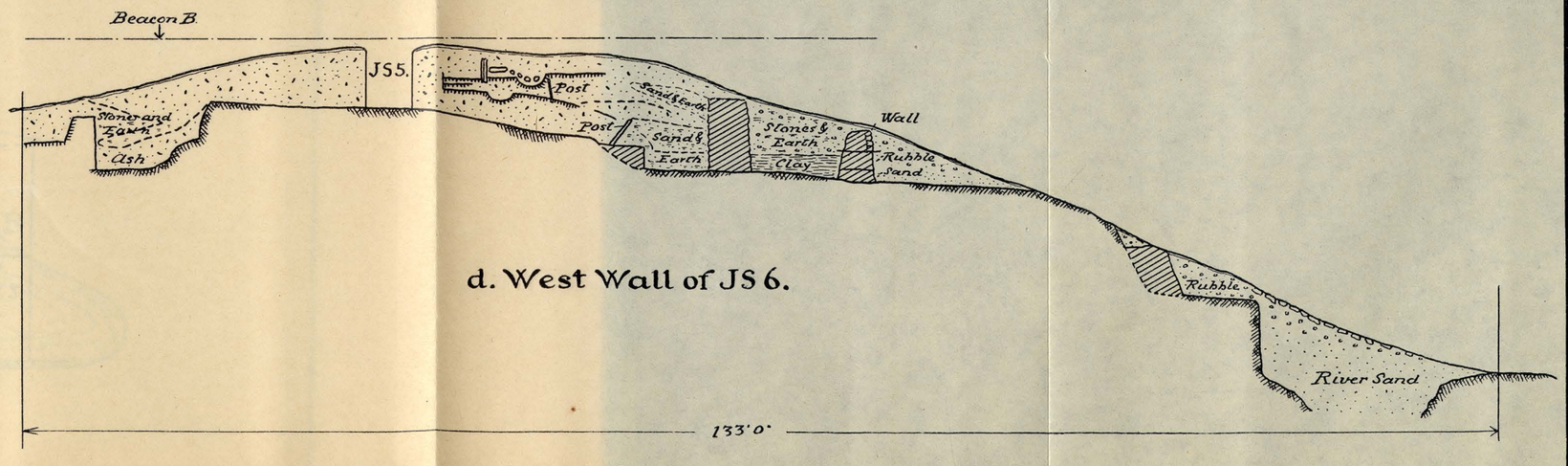
b. East Wall of JS4.



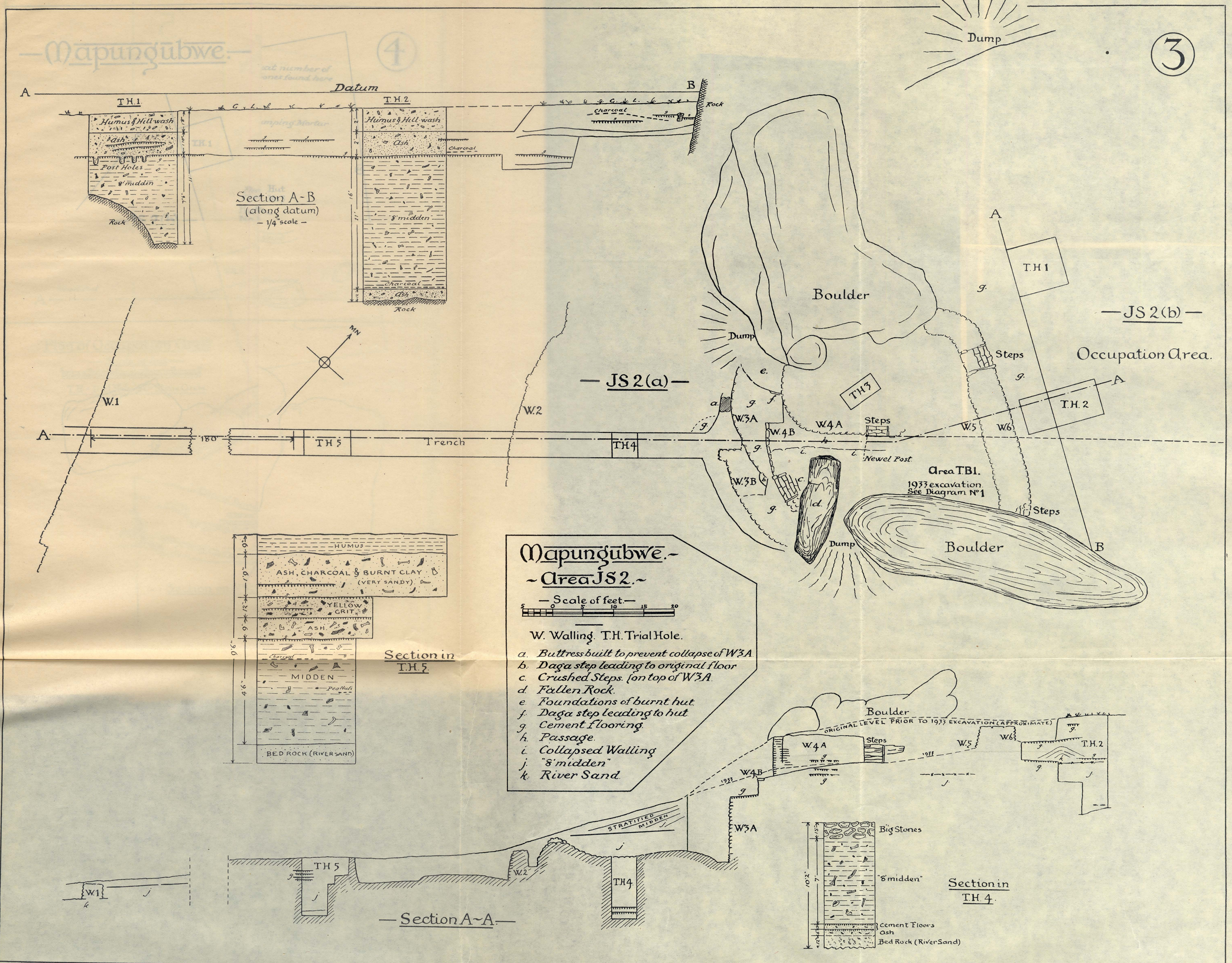
c. South Wall of JS5.



e. East Wall of JS5a

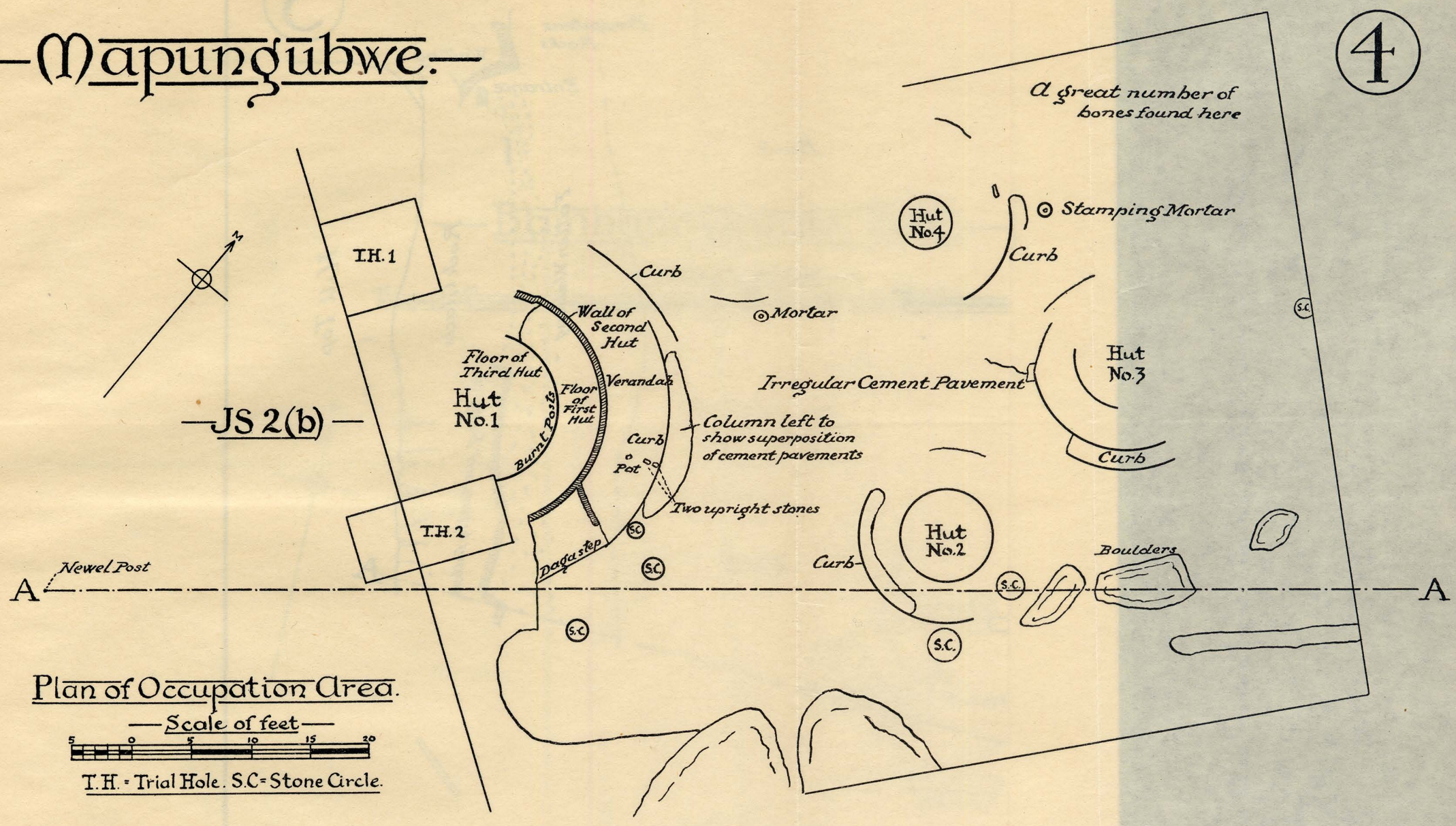


d. West Wall of JS 6.


3
Mapungubwe.-
~Area JS 2.~
— Scale of feet.—
5 0 5 10 15 20
W. Walling. T.H. Trial Hole.
a. Buttress built to prevent collapse of W3A.
b. Daga step leading to original floor
c. Crushed Steps. (on top of W3A.
d. Fallen Rock.
e. Foundations of burnt hut.
f. Daga step leading to hut.
g. Cement flooring.
h. Passage.
i. Collapsed Walling
j. "8" midden"
k. River Sand.
Dump
Datum
A
B
T.H.1.
T.H.2.
Humus & Hill-wash
Ash
Post Holes
8' midden
Rock
Charcoal
Section A-B
(along datum)
– 1/4 scale –
MN
W.1
W.2
— JS 2(a) —
— JS 2(b) —
Occupation Area.
Boulder
Steps
TH3
T.H 1
T.H. 2
W.3A
W.4A
W.4B
W.3B
W.5
W6
Newel Post.
Area T.B1.
1933 excavation.
See Diagram No 1
Trench
T.H 5
T.H4
180
HUMUS
ASH, CHARCOAL & BURNT CLAY
(VERY SANDY)
YELLOW GRIT
ASH
MIDDEN
BED ROCK (RIVER SAND)
Section in T.H.5
ORIGINAL LEVEL PRIOR TO 1933 EXCAVATION (APPROXIMATE)
STRATIFIED MIDDEN
— Section A~A.—
Big Stones
"8' midden"
Cement Floors
Ash
Bed Rock (River Sand)
Section in T.H 4.

—Mapungubwe.—

4

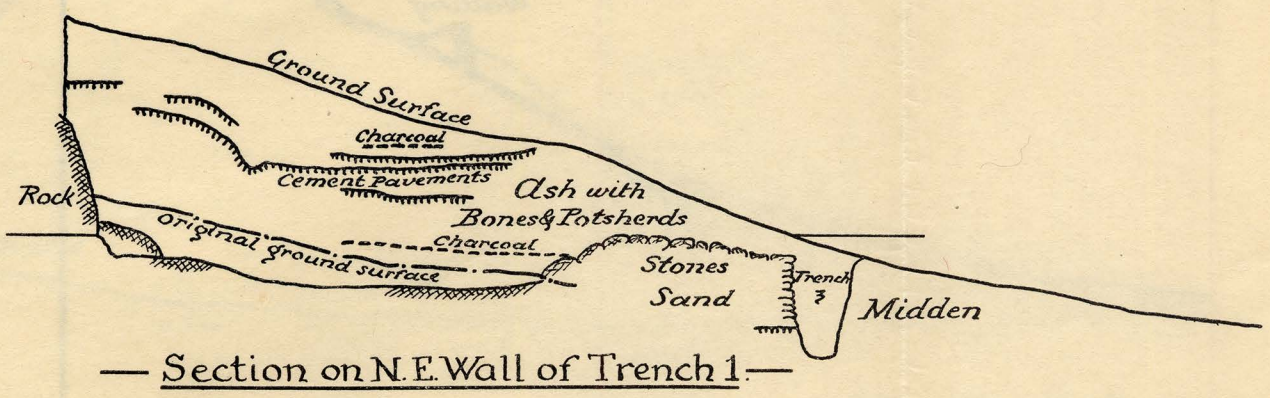


Plan of Occupation Area.

— Scale of feet —

5 0 5 10 15 20

T.H. = Trial Hole. S.C = Stone Circle.

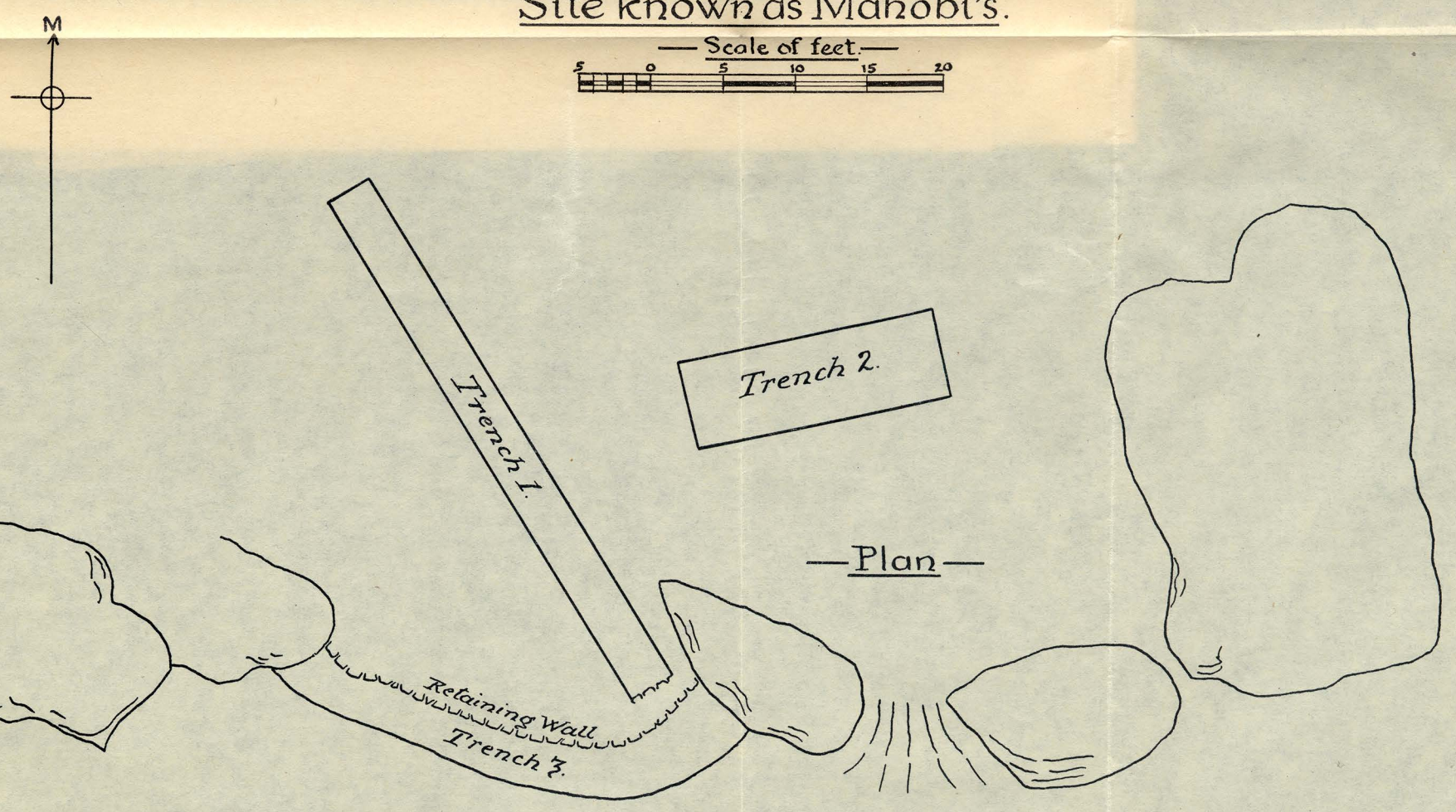


— Section on N.E. Wall of Trench 1 —

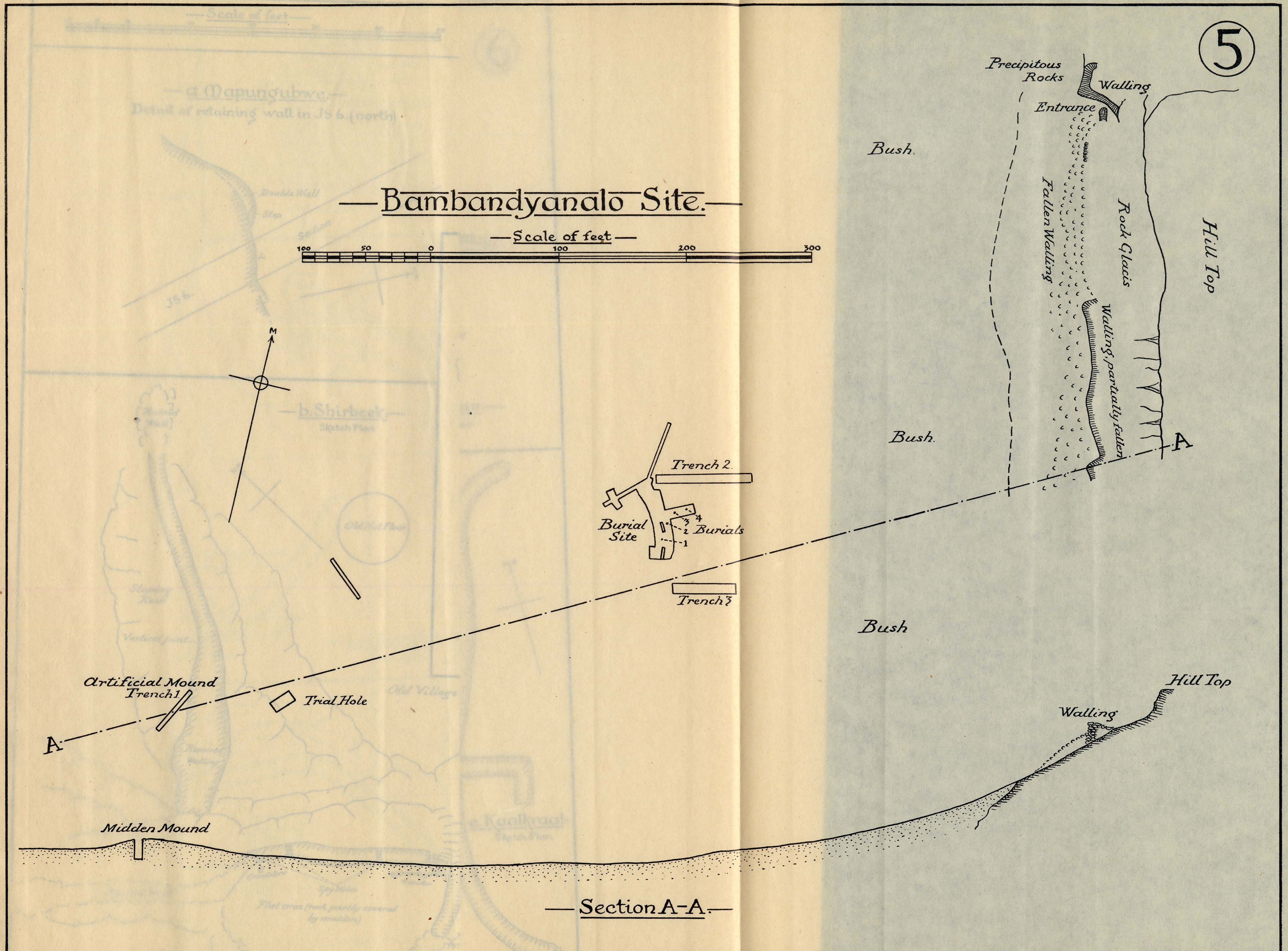
Site known as Mahobi's.

— Scale of feet —

5 0 5 10 15 20



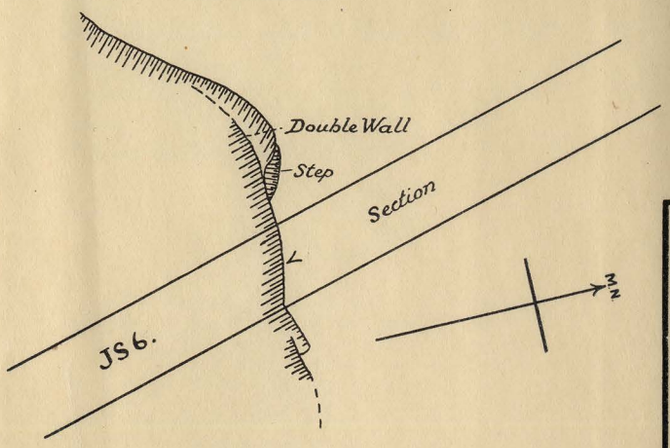
— Plan —

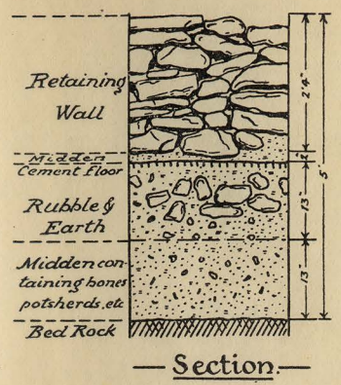

5
—Bambandyanalo Site.—
—Scale of feet—
100
50
0
100
200
300
Precipitous Rocks
Walling
Entrance
Bush.
Fallen Walling
Rock Glacis
Hill Top
Walling, partially fallen
Bush.
A
Trench 2.
Burial Site
4
3
2
1
Burials
Trench 3
Bush
Artificial Mound Trench 1
Trial Hole
A
Hill Top
Walling
Midden Mound
—Section A-A.—

Scale of feet
10 5 0 10 20 30 40 50

a. Mapungubwe.

Detail of retaining wall in JS 6.(north)

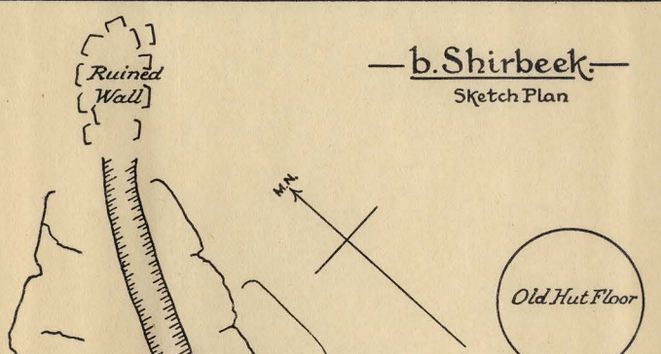


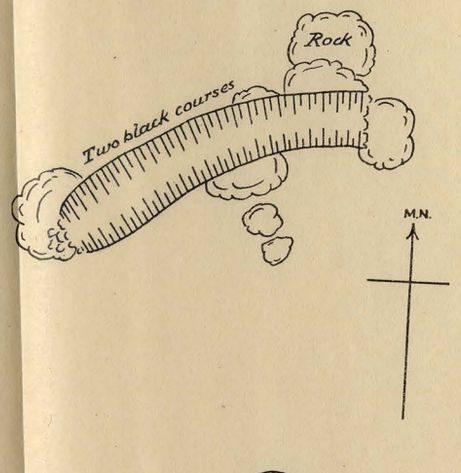


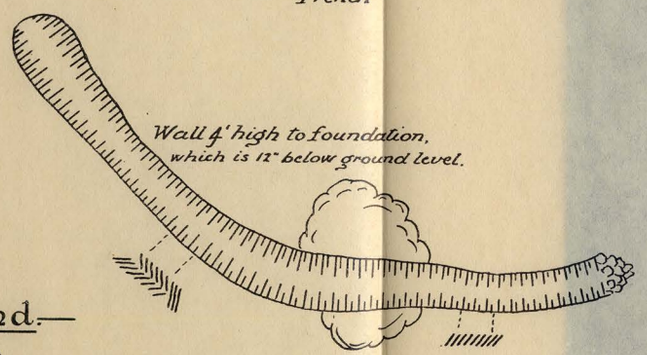
Section.

b. Shirbeek.

Sketch Plan

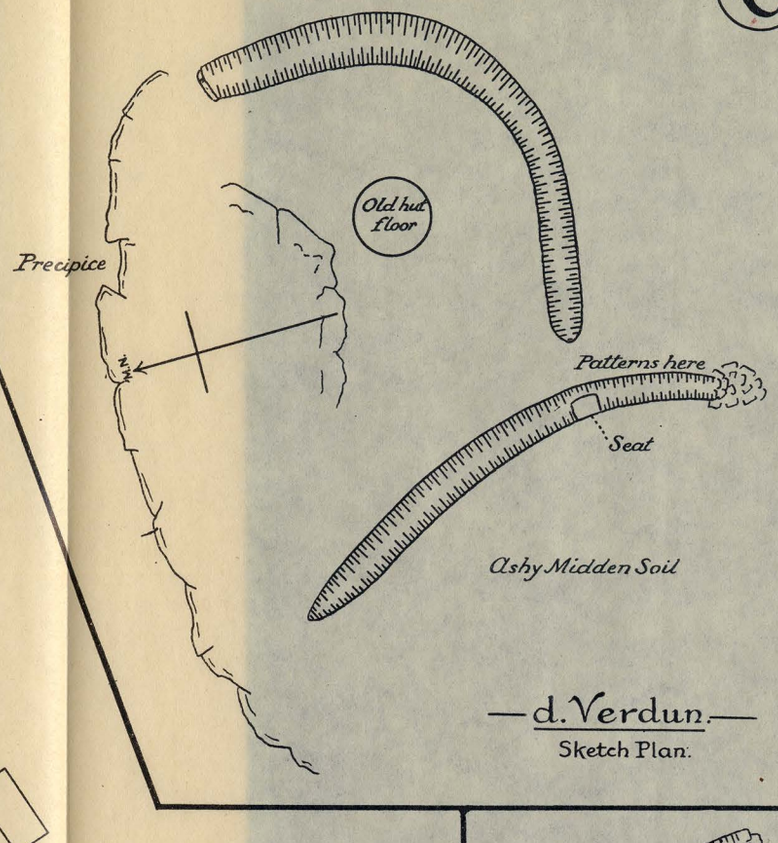






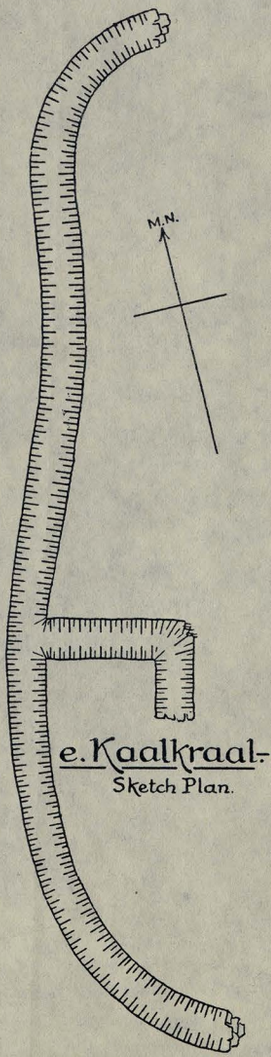
c. Maryland.

Sketch Plan



d. Verdun.

Sketch Plan.



e. Kaalkraal.

Sketch Plan.