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A PRELIMINARY ACCOUNT OF THE WONDERWERK CAVE, KURUMAN DISTRICT.

SECTION I: SITE AND ARCHAEOLOGY

BY

B. D. MALAN,

Bureau of Archaeology, Johannesburg.

SECTION II: THE FOSSIL REMAINS,

BY

H. B. S. COOKE,

Department of Geology, University of the Witwatersrand.

With 5 Text Figures.

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SECTION I.

INTRODUCTION: The Wonderwerk Cave has long been known as a site at which prehistoric rock paintings occur. It was first described by Methuen in 1846 but its importance recently became more apparent when the Bureau of Archaeology received from Mr. J. D. Malan of Blikfontein, a small collection of fossil bones and teeth. Included with this collection were a few human artifacts and in consequence of the interest of this association a preliminary inspection of the cave was carried out on the 16th May, 1940. It is proposed to conduct detailed excavations at a later date.

The cave is situated in dolomite, probably of the Campbell Rand Series, with a clearly defined dip of 15° to the east. It occurs at the base of a 400 foot conical hill a few hundred yards south of the homestead of the owner, Mr. N. J. Bosman. The farm takes its name from the cave. The entrance faces north and is approximately 50 feet wide. From the drip-line the opening runs southwards into the hill for a distance of 300 feet and then veers eastward for some 75 feet, when the back of the cave is reached. The rear portions of the cave are in complete darkness.

The roof is flatly arched, the walls being practically parallel and perpendicular. At the entrance the roof is about 15 feet above present floor level, but it slopes to about 7 feet where light fails. A few poorly developed stalactites

are seen. The present floor of the cave consists of an extensive deposit of occupational material and bat guano. It is level until near the back of the cave where it appears to have sloped upwards slightly before disturbance by recent excavations for fertilizer. A single large irregular stalagmite stands in the centre of the light portion of the cave and reaches to about 8 feet above present floor level. Paintings, much obliterated by visitors, adorn both walls from the entrance inwards for a distance of about 60 feet, beyond which point the light fails.

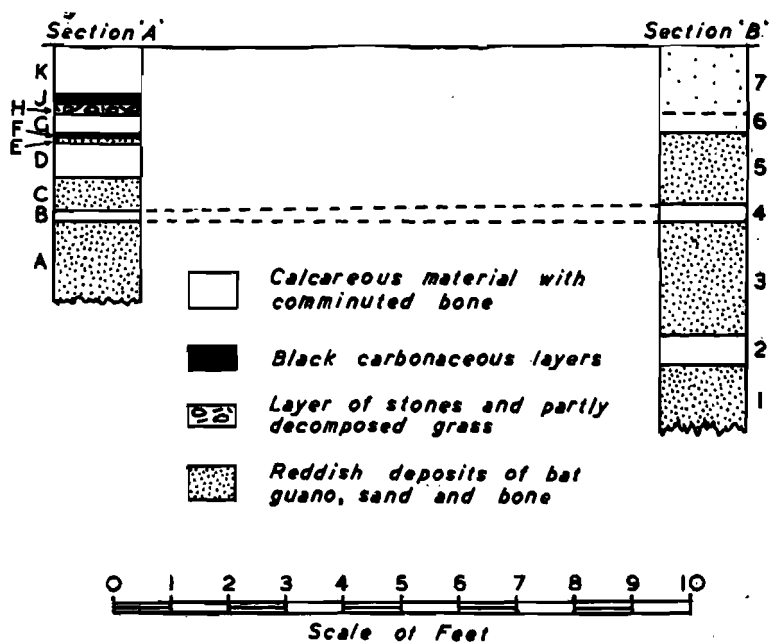


Fig. 1. Scale sections through the excavated area in the Cave.

A comparatively small area of the deposit has recently been excavated to a depth of some 4-5 feet for fertilizer, but the writer was informed that work has been discontinued on account of the disappointing results obtained. These excavations have left a vertical face of considerable length at the point where the cave veers to the east. As time did not permit of a complete record of the whole section being made, sections from two portions of this face were recorded and are shown in Fig. 1. The face reveals a number of layers, mostly well demarcated vertically and grading or disappearing laterally.

The deposit at this point contains only very few fragments fallen from the roof of the cave. A few feet to the east of Section A the face revealed a series of four well separated layers of dried grass and small stones. These appear to have been beds, though the reason for the stones is problematical. From amongst the grass of the topmost of these beds, some 6" below the surface, was recovered a smooth, straight stick 14½" in length and of ¾" diameter, which may well be an arrow-shaft. The wood is well preserved and despite the dryness of the deposit cannot be of extreme age. No fossils were found *in situ*. A heavy circular scraper of possibly Middle Stone Age character, made on a tabular fragment of chert was found in the lowest layer exposed at the time of the inspection, Layer 1 of Section B. Six flakes were recovered from the residue of the farmer's sievings, and their exact horizon in the deposit is therefore not known. The largest of these is 7" in length, 1½" broad and ¾" thick. has a well faceted striking platform, and shows distinct features characteristic of the Levallois technique. Adhering to the chert of which the flake is made is a little deposit suggesting that it came from one of the reddish layers of bat guano. Two of the remaining flakes also show Levallois technique, and one of these has been utilised. A good "ordinary" burin showing several burin facets was also recovered. These specimens strongly suggest the occupation of the cave by people who were masters of the Levallois technique during Middle Stone Age times.

A fragment of a bored stone and an end-scraper of Smithfield type were found on the surface outside the cave and indicate the occupation of the cave also by Later Stone Age man. The end-scraper has been twice worked, and if patina can be trusted, may have been made by Middle Stone Age man and retrimmed during the Later Stone Age. Occupation of the cave in Later Stone Age times is confirmed by the presence of the paintings on the cave walls.

THE PAINTINGS: In the well-known Report submitted to the Cape Legislative Assembly in 1906 (C4 and C4A—'06) the following appears:

"*Kuruman*: The only paintings known, representing the different local antelopes, are in a cave on the mountain side near the Koning Native Reserve. They have nearly all been destroyed, visitors having scribbled over and otherwise defaced them."

There can be little doubt that the site referred to is the one known as Wonderwerk.

The limited time available did not permit of the paintings being copied or of a detailed record being made. Many of the paintings have suffered through natural weathering, but far greater damage has been done by thoughtless visitors to the site. They show a variety of colours, styles and subjects, but with the exception of certain animals outlined in black, no polychromes occur.

The following examples were noted :

Dark red monochrome :	geometrical designs.
Black monochrome (superimposed over light red) :	geometrical designs, "aprons", and water fowl.
Yellow monochrome :	elephant, antelope.
Red monochrome :	various animals.
White monochrome :	various animals, ostriches, eland, wavy lines and geometrical designs.
Red monochrome with black outline :	antelope.

The black monochrome and dark red geometrical figures were the most recent. They appear superimposed and are also better preserved than the other series. More detailed superpositions could no doubt be noted in the course of a fuller study.

ACKNOWLEDGMENTS.

The generous co-operation which Mr. J. D. Malan accorded to the Bureau of Archaeology was instrumental in bringing the site to our notice, and the writer is indebted to him for his donations and for accompanying him at the time of the inspection. To Mr. N. J. Bosman he expresses his thanks for permission to work and for his kind hospitality.

(B.D.M.)

SECTION II.

INTRODUCTION : A small collection of bone fragments and teeth sent by Mr. J. D. Malan to the Bureau of Archaeology early this year were handed to the writer for a report. An upper equine molar was provisionally identified as the extinct *Equus cawoodi* Broom and the remaining few as upper and lower teeth of the living *Equus burchellii* Gray. More material was requested, and some thirty broken bones and

horn cores and forty teeth were soon received. This collection also included three artifacts and more of the large teeth of the extinct horse, and it was decided that the cave itself should be investigated without delay. A preliminary inspection of the site was carried out by Mr. B. D. Malan of the Bureau, whose account of his visit appears above. On his return he brought with him a further large number of bones, horn cores and teeth and the whole collection now comprises 43 bones, 23 horn cores and horn fragments and 173 teeth. All these came from only a comparatively small and shallow excavation and bear witness to the richness of the site. The precise distribution of the fauna in the deposit and the association with the implements is not yet known, but it appears probable that the bulk of the material is Later Stone Age and partly Middle Stone Age.

The bones are on the whole little impregnated but do show a certain amount of leaching and alteration. The teeth also are only mildly impregnated, though the larger equine molars appear more thoroughly petrified than the others. Two antelope teeth have been severely charred. Whether this has occurred recently or not cannot be ascertained. The anterior part of the lower jaw of a quagga is completely blackened though it has not been charred, and it may well have acquired its colour by burial in the black carbonaceous layers such as F and J (Section A, Fig. 1). The carbonaceous matter of these layers cannot definitely be ascribed to ash as microscopic examination shows vegetable matter in a sufficiently advanced stage of decomposition to give the layer its character. Certain of the layers, notably layer 2, (Section B, Fig. 1) are crowded with small fragments of bat, bird and rodent bones, but in the samples collected no identifiable material was found. The greatest interest of the fossil remains lies in the equine teeth, and these will be discussed at some length. Apart from some of the equidae and with the probable exception of a very large antelope, the species represented are not extinct forms, but it is of considerable interest to record the entire assemblage. Identifications have been based on the horns and teeth only, as the numerous bones are of little classificatory value.

ORDER RODENTIA—FAMILY HYSTRICIDAE.

Hystrix africae australis Peters: Two incomplete rami and an isolated tooth of the porcupine constitute the only recognisable rodent remains, but very many of the ungulate bones show evidence of the gnawing of these animals.

ORDER ARTIODACTYLA—FAMILY BOVIDAE.

Syncerus caffer (Sparrmann): The Cape buffalo is represented by a portion of the rugose base of a horn.

Peloroceras helmei (Lyle): There are in the collection ten teeth whose size equals or exceeds that even of the kudu or eland. In form these molars clearly belong to a member of the Alcelaphinae but exceed in size the largest wildebeest teeth known to the writer, and indeed, resemble the teeth of the hartebeest and blesbok rather than the gnu. Lyle (1931) refers a third upper molar "like that of a hartebeest but very much larger" very tentatively to her species *Bubalis helmei*, which was created on horn cores. Van Hoepen (1932) placed this form in a new genus—*Peloroceras*. The present teeth may also be described as similar to the hartebeest but much larger and they are therefore also tentatively referred to Lyle's species since they resemble teeth from the Floris Bad site and this species appears to be the only one into which they might be fitted. Two lower teeth are shown in Fig. 2, in comparison with the corresponding molars of the hartebeest.

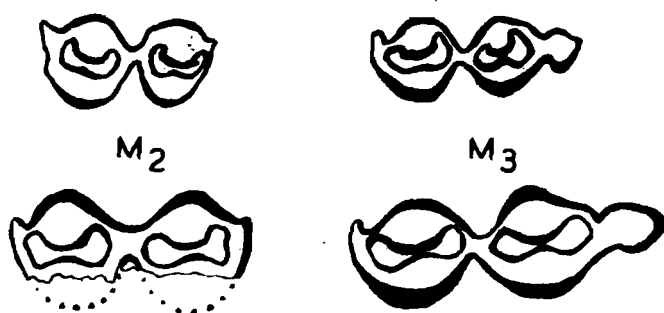


Fig. 2. Teeth of the large antelope (? *Peloroceras helmei*) compared with the corresponding lower molars of *Alcelaphus caama* (above).

Alcelaphus caama (Cuvier): This living hartebeest is well represented by two almost complete horns and seven fragmental horns and cores. There are also seven typical teeth, two of which were used for the comparative drawings in Fig. 2, above.

Connochaetes sp. Eight wildebeest teeth occur in the collection, and there are also two horn fragments which probably belong to this genus.

Damaliscus cf. *pygargus* (Pallas): There are four teeth belonging to this genus, but the specific distinction is uncertain.

Antidorcas marsupialis (Zimmermann): The upper half of the horn of a female springbuck is present and a very worn pre-molar may possibly also be referred to this species.

Hippotragus sp.: Three teeth show the characters of this genus, but lack of comparative material renders specific identification difficult. No teeth of the historically extinct blaauwbok *H. leucophaeus* (Pallas) are available and both the Roan and Sable differ slightly from these teeth, though they are very near the latter species.

Taurotragus oryx (Pallas): Two excellent and almost complete horn cores of the eland are present in the collection, and there are also seven teeth differing very little from the living form.

FAMILY SUIDAE.

Phacochoerus cf. *aethiopicus* (Pallas): One warthog third molar occurs, but since it is practically unworn and incompletely erupted it cannot be distinguished with any certainty from *P. africanus*.

ORDER PERISSODACTYLA—FAMILY RHINOCEROTIDAE.

Ceratotherium simum (Burchell): The upper half of the slender anterior nasal horn of the white rhino represents this family in the collection.

FAMILY EQUIDAE.

As has already been mentioned, the major interest of the collection lies in the equine remains. It is astonishing to find that four species appear to be represented amongst the 119 molar teeth of this family. One of these is the living Burchell's zebra or Bontequagga, and one is the historically extinct Quagga, these two species comprising 102 out of the 119 molars. Of the remaining 17, twelve are at once distinguished by their great size, and the remainder are intermediate between these and the living forms. The enamel characters support entirely this rough classification on a size basis.

Equus burchellii (Gray): Seventeen upper teeth and sixteen lower teeth have been ascribed to this species.

Equus quagga Gmelin: Forty-one upper and twenty-eight lower teeth are referred to the recently extinct quagga. One front portion of a lower jaw and fragments of an upper jaw carrying incisors may belong to this species.

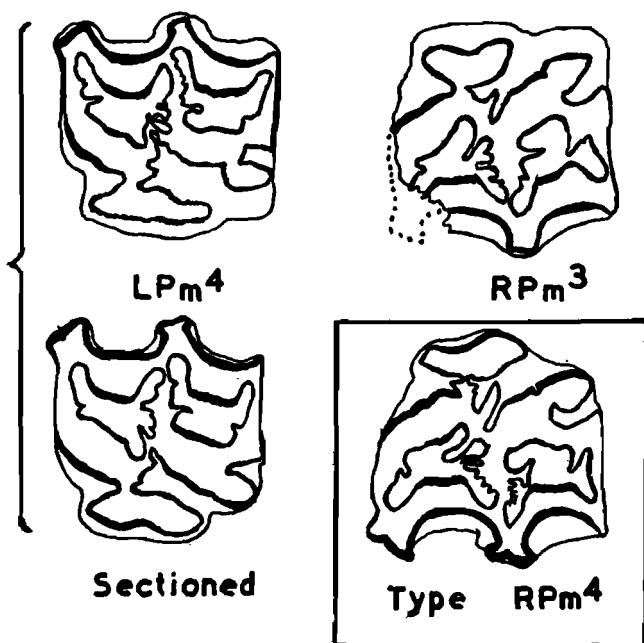


Fig. 3. Upper pre-molars of *Equus kuhni* Broom. The figure on the lower left is the sectioned surface of the little worn molar above; in the frame, the type molar of *E. kuhni* drawn from the original specimen.

Equus kuhni Broom: Two upper cheek teeth, a left fourth pre-molar and a right third pre-molar measure respectively 27.5 and 28.5 mm. across the enamel from protocone to mesostyle and are thus rather larger than the living forms. In enamel complexity they also surpass the living species and both in size and enamel characters resemble the type molar of *E. kuhni*. The styles are not grooved, but in the type this grooving does not extend very far down the tooth and may not be important. One remarkable feature possessed by these two teeth and by the type is the relative isolation of the hypocone. In the present fourth pre-molar the deep caballine fold of the type is lacking, though present in the third pre-molar, but the fact that the caballine fold is frequently absent in individuals of living species renders

this of little importance. The fourth pre-molar is in a very early stage of wear (as also is the type) and its height is 77 mm. compared with 81 mm. in the type. The tooth has been sectioned 2.5 cms. below the grinding surface and a considerably simplified pattern is then exhibited as would doubtless also be the case if the type were to be cut. The two teeth, the enamel pattern of the sectioned surface and the enamel pattern of the type (drawn by the writer from the original) are shown in Fig. 3. It might be advantageous to designate the sectioned tooth a neotype of the species since it shows the simplified pattern consequent upon wear. Three lower teeth somewhat larger than those of the typical *E. quagga* may be lower teeth of *E. kuhni*.

Equus capensis Broom: There are five large lower teeth whose breadth over the enamel is 16 to 19 mm. and which correspond closely both in size and enamel pattern with the type series and neotype molar of *E. capensis*, and with the teeth described by Dreyer (1931) as *E. westphali* which Haughton (1932) referred to *E. capensis*. These teeth are shown in Fig. 4 together with the type series and neotype molar as figured by Broom (1928) and Haughton (1932) respectively. Broom's figure shows the protoconid and hypoconid as somewhat more rounded than they are in the actual specimen and the restoration of the metastylid is probably much too rounded. There appears, however, to be little doubt that these five teeth are *E. capensis* and the correspondence with the neotype is very close indeed.

There are also in the collection from the cave, seven upper cheek teeth which, in size, obviously correspond with the five lower teeth ascribed to *E. capensis*. Two of these teeth, a right second pre-molar and a left second molar are little worn and too brittle to section satisfactorily. The remaining five are shown in Fig. 5. Three of these teeth are in a correspondingly fairly advanced state of wear and are shown in their approximate relative positions, and a broken first molar of the opposite side may conceivably belong to the same dentition. The fifth tooth is a very little worn fourth pre-molar broken down its entire length so that only the fossettes and ectoloph portions remain. Its height is 91 mm. and its enamel pattern is considerably more complex than that of the other more worn teeth. In the form of the ectoloph and styles and in the degree of folding of the fossettes this tooth is very closely comparable with the little worn type molar of *Equus caioodi* Broom (1928). The height of

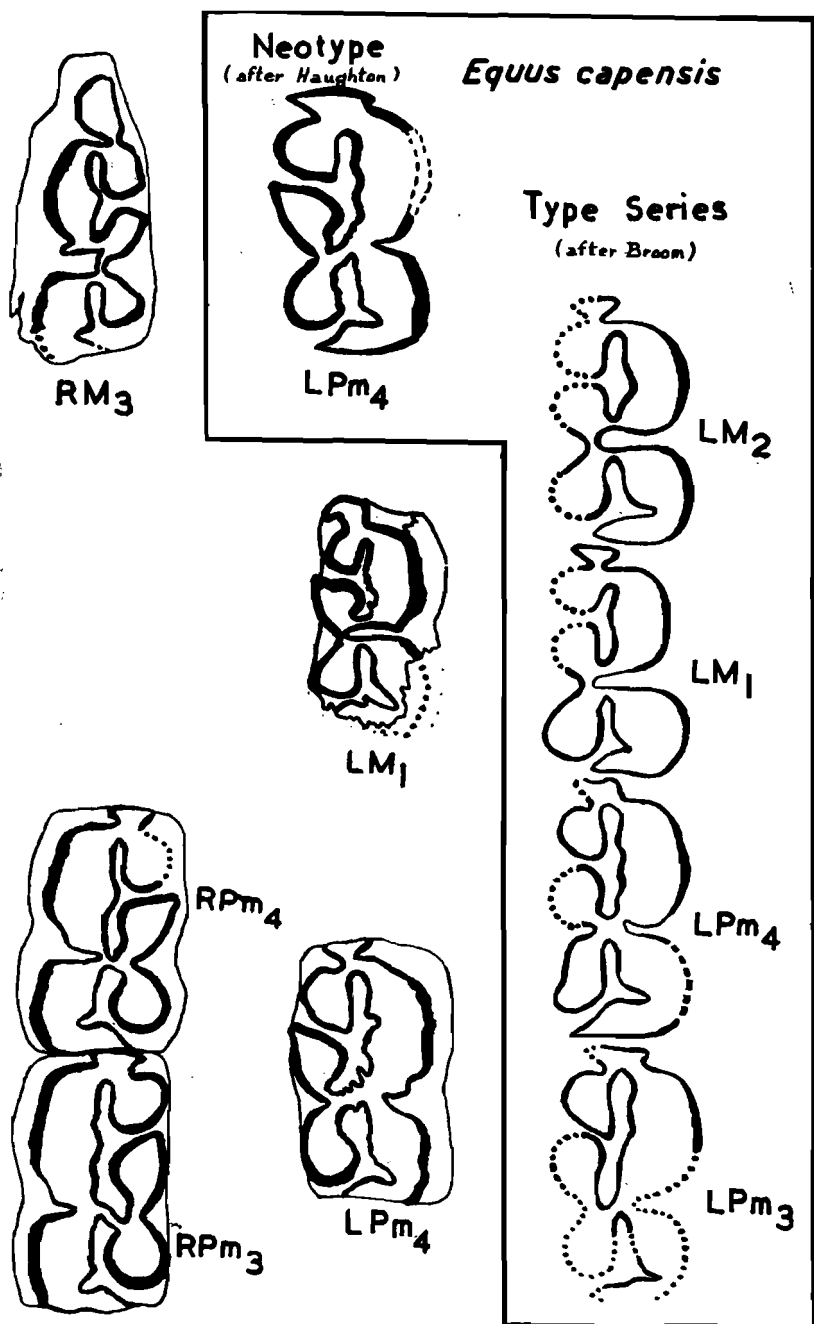


Fig. 4. Lower cheek teeth ascribed to *Equus capensis* Broom, and in the frame the type series and neotype for comparison.

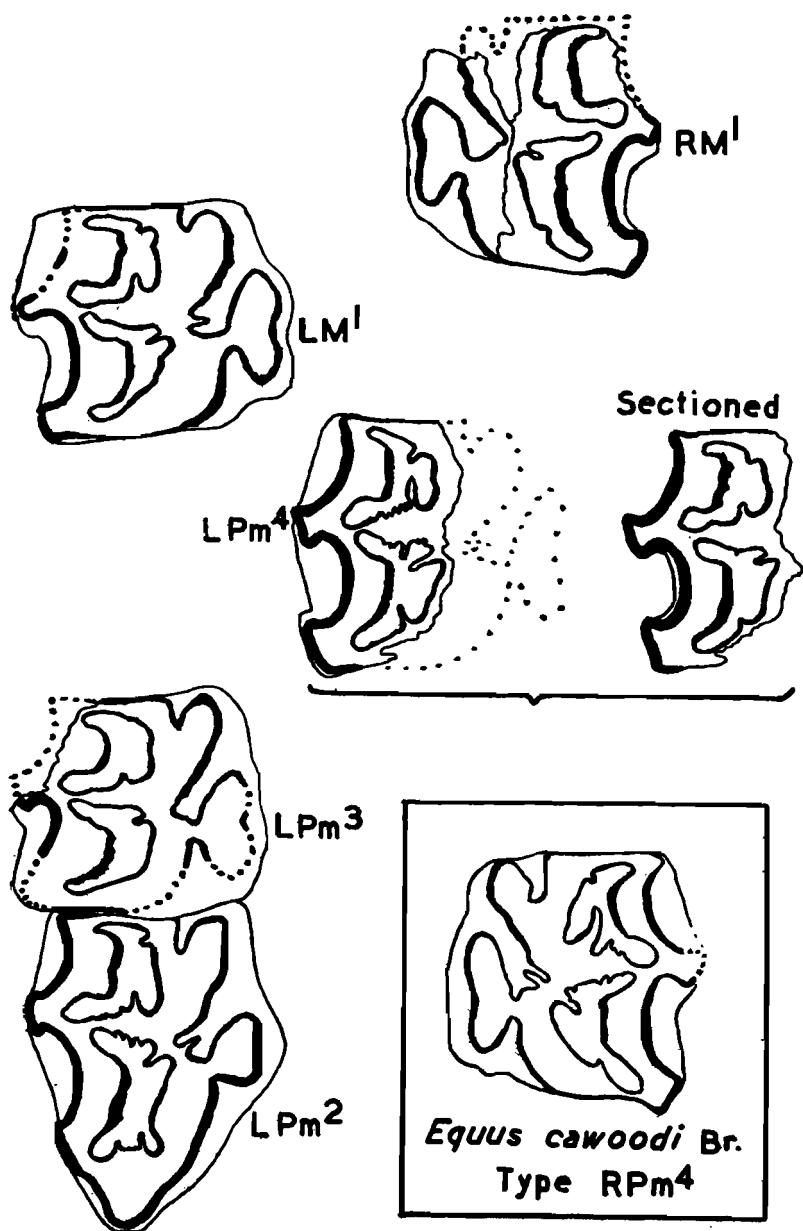


Fig. 5. Upper cheek teeth referred to *Equus capensis*. In the centre is the original surface and the sectioned enamel pattern of a little worn left fourth pre-molar; in the frame the type of *Equus cawoodi* Broom drawn from the original specimen.

this latter type is 78 mm. and its enamel pattern (drawn from the type by the writer) is shown in Fig. 5 for comparison. There can be little doubt of the identity of the broken molar with *E. cawoodi*. In order to ascertain the effect of more advanced wear on this tooth, it was sectioned at a height roughly corresponding to the state of wear of the other four teeth figured and it can be seen from the figured enamel pattern of this section that the complexity of the folding has been reduced to a degree comparable with that of the other four teeth. These upper teeth can therefore be said to belong with fair certainty to the same species, the simplified pattern being consequent upon wear. The only possibly significant difference between the type of *E. cawoodi* and these teeth is the slightly longer protocone of the type, though it may be noted that the protocone is commonly long in the fourth pre-molar of any species and is in living forms subject to a variation up to 30%. The upper teeth referred by Broom (1913) and Houghton (1932) to *E. capensis* agree with the present material very closely, and it would therefore appear that *E. cawoodi* represents merely a complex early stage of wear of the upper dentition of *E. capensis* and that the differences in complexity are due to varying stages of attrition and to the normal variation in complexity between pre-molar and molar teeth.

ACKNOWLEDGMENTS.

The writer is deeply indebted to Dr. L. H. Wells of the Medical School, University of the Witwatersrand, for his helpful readiness at all times to discuss various problems in connection with the identification of the material.

(H.B.S.C.)

SUMMARY.

The Wonderwerk Cave, which lies in the dolomitic limestone on the western side of the old Koning Native Reserve south of Kuruman, has yielded evidence of human occupation in Middle and Later Stone Age times. The walls of the cave are decorated with paintings and in the occupational material and bat guano which cover the floor of the cave to a depth of several feet, stone artifacts have been found. No human remains have so far been discovered, but a large number of fossilised animal bones and teeth have been removed. These remains include those of rhino, porcupine,

buffalo, wart-hog, eland, hartebeest and many other antelopes and also a large number of teeth belonging to four species of horse. One of these is the living Bontequagga or Burchell's zebra, one the historically extinct Quagga, and the other two are large extinct forms one of which is the giant *Equus capensis*. Discoveries of stone implements associated with fossils are very rare and this occurrence is one to which great scientific interest attaches.

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STUDIES ON A MUMMIFIED INFANT FROM PILGRIM'S REST.

- I. *The Technique of the Restoration of Mummified Tissues.*
- II. *Anthropological Observations on the Specimen.*

BY

L. STEIN.

*Department of Anatomy, University of the Witwatersrand,
Johannesburg.*

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