

height of 6 mm. The length of the ridge is about two and a half centimetres. In the bregma region the anterior 2 cm. of a sagittal crest is well preserved. Although the preserved anterior part of this crest is shorter than that in *SK.49*, it is already higher at the point at which the break occurs and was therefore almost certainly an appreciably larger crest. Nevertheless, this specimen, like *SK.49*, did not have a continuous or shelf-like nuchal crest.

Zuckerman says that my description of *SK.48* differs from the 'official' one. Broom<sup>4</sup> said that "all the lower part of the occiput is preserved, but much crushed forward and upward into the brain region"—which says nothing about the state of preservation of the occiput, merely that in the crushing of the skull it has been displaced forward and upward. I stated<sup>1</sup> that "the greater part of the occiput is present but is a bit distorted and displaced", that is, it is not only displaced but also distorted. Except that Broom said nothing about the distortion, our statements differ only in regard to the exact degree of displacement—which tells nothing about the amount of detail to be observed on the occiput. Zuckerman<sup>2</sup>, on the other hand, referring to *SK.48* and *SK.46*—which were at that time the only skulls mentioned in the literature as having sagittal crests—says, "Unfortunately the occipital region of both skulls is lacking". It might be added that in the introduction to the volume which Zuckerman regards as official we state that it is "only a preliminary account".

Zuckerman doubts the correctness of referring the pelvis and spinal column from Sterkfontein to the Sterkfontein australopithecine on the grounds that "a manifestly human mandible has been found in the same deposits as have yielded the australopithecine apes". The 'human' mandible is presumably that of *Telanthropus*. The pelvis and spinal column were recovered from Sterkfontein, from the same single mass of consolidated breccia as were the several score of australopithecine remains. No other hominoid remains have been found at this site. The *Telanthropus* remains occurred *in situ* at Swartkrans, nearly a mile away, in company with the remains of an australopithecine quite different<sup>5</sup> from that at Sterkfontein. Swartkrans is geologically more recent than Sterkfontein—as is clearly shown by the fact, among others, that *Equus* and *Papio* occur at the former site but not at the latter. To doubt the relationship of the pelvis to the cranial remains at Sterkfontein because *Telanthropus* occurs in a quite different and geologically younger site is clearly inadmissible.

Zuckerman has given much information about the occurrence of nuchal crests associated with sagittal crests in many different primates. The question whether these two were also associated in the australopithecines will not be solved by studying bigger and better collections of modern pongids, monkeys, etc., but by studying australopithecines. So far they have yielded no evidence in support of this thesis, but some direct evidence against it.

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Transvaal Museum,  
Pretoria.  
Sept. 9.

<sup>1</sup> Robinson, J. T., *Nature*, **174**, 262 (1954).

<sup>2</sup> Zuckerman, S., in "Evolution as a Process" (Allen and Unwin, London, 1954).

<sup>3</sup> Dart, R. A., *Amer. J. Phys. Anthropol.*, n.s., **6**, 259 (1948).

<sup>4</sup> Broom, R., and Robinson, J. T., *Transvaal Mus. Mem.*, No. 6 (Pretoria, 1952).

<sup>5</sup> Robinson, J. T., *Amer. J. Phys. Anthropol.*, n.s., **12**, 181 (1954).

THE essential point at issue, which Dr. Robinson contested in his first communication<sup>1</sup>, is the general proposition<sup>2</sup> that the presence of a sagittal crest in the skull of an Old World primate implies the presence of a nuchal (= occipital) crest; and further, that if one of the two is absent, it is usually the sagittal crest. "Unless *Paranthropus crassidens* is the one exception to a morphogenetic process common to all known Primates", I therefore suggested that the fact that two presumed female *Paranthropus* skulls were furnished with high sagittal crests implied that they had also possessed powerful occipital crests and an ape-like planum nuchale. In turn this implied a nuchal musculature and a carriage of the head on the vertebral column of the kind that is seen in the ape. I also suggested that this conclusion was consistent with certain other features of the Australopithecine skull.

Dr. Robinson now admits that *SK.49*, a specimen to which he referred before<sup>1</sup> in a few lines, and which he now describes for the first time—and all students of the subject will be grateful to him for this description—has a nuchal crest which is drawn out into a ridge that projected 3 mm. He also now states that the corresponding figure in *SK.48*, which he previously described as having a "well-marked occipital crest"<sup>3</sup>, is 6 mm. Nuchal crests which are no more prominent—and indeed some less prominent—will be found in many adult apes. He and I have, therefore, no argument, regardless of the concluding sentence of his communication. Both his specimens possess nuchal or occipital crests, and both conform to the generalization to which he had previously taken exception. His observation that the crests were deficient in the mid-line also fits in with what I was at pains to point out in my previous communication<sup>4</sup>—namely, that in the ape the least prominent part of the nuchal crest is not infrequently in the mid-line, where, indeed, it is sometimes deficient.

For the rest, I fear that I still find it difficult to equate Broom and Robinson's<sup>3</sup> description of the occipital region of *SK.48* as "very considerably crushed upwards and forwards" with Robinson's present statement<sup>1</sup> that it is merely "a bit distorted and displaced". Nor do I share his assurance (a) that it is possible to assess the maturity or otherwise of a fragment of one skull by appealing, via an apparent correspondence of sutural closure, to the dental wear of another specimen; or (b) that the question of the relation of post-cranial to cranial fragments in the deposits in which the South African australopithecine fossils have been found is as simply settled as he would have us believe. All that need be said about the belief that *SK.49* possessed a low sagittal crest anterior to its bregma, but none in the region of the lambda, is that if this condition is regarded as characteristic of all *Paranthropus* skulls, the temporal muscles in this beast must have developed somewhat differently from the way they do in the great apes, and that the condition presumably corresponds to those unusual cases in the gibbon when the temporal lines meet each other, and fuse, just behind the bregma, to form such a crest.

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<sup>1</sup> Robinson, J. T., *Nature*, **174**, 262 (1954).

<sup>2</sup> Zuckerman, S., chapter in "Evolution as a Process", 300 (Allen and Unwin, London, 1954).

<sup>3</sup> Broom, R., and Robinson, J. T., *Transvaal Mus. Mem.*, No. 6 (Pretoria, 1952).

<sup>4</sup> Zuckerman, S., *Nature*, **174**, 264 (1954).