EARLY MAN IN SOUTH AND EAST AFRICA*

By LOREN C. EISELEY

I

IN THE years before Darwin, a French scientist is reported to have described a tribe of Negroes in Central Africa as furnishing the long-desired connecting link between man and monkeys. He argued that these men had not become sufficiently accustomed to the sitting posture to wear off the tail, an organ which he observed to be some four inches in length among these people.[1]

The comments which follow are not intended to confirm the truth of this observation, but to emphasize the fact that this ancient anticipation that Africa holds great secrets of the human past is not without justification. There we still hunt with avidity the "missing link" even though in a more sophisticated manner, and with some clearer realization that the links are many and not one. That the field is rich but comparatively unexploited, the "ifs, buts, and maybes" of my remarks will show. They are nothing more than the tentative anticipation of things to come.

II

A find which received publicity in the pages of *Nature* as long ago as 1943 has just recently received extended attention in the pages of the *Illustrated London News*.[2] From this source it has been noted in the American press where, in some cases, it has been hailed uncritically as a new human ancestor. The remains, which consist of an almost complete mandible, as well as some stray teeth and a maxillary fragment of the face, were found by Dr. L. S. B. Leakey in Miocene deposits on Rusinga Island in Lake Victoria. Dr. Leakey published a short note upon the mandible in 1943,[3] and the paleontologist MacInnes treated it in detail in the same year,[4] assigning it to a Miocene genus of anthropoid ape which had previously been termed *Proconsul africanus* by Hopwood in 1933, on the basis of much more fragmentary material. Hopwood had regarded *Proconsul* as on the direct ancestral line of the modern chimpanzee.

Leakey's material is more complete, however, and in his eyes, as well as in those of MacInnes, it introduces some complicating features of possible bearing upon human evolution. Leakey, in particular, regards it, together with certain of the genus *Dryopithecus* from the Siwalik beds of India, as possibly lying near the point of divergence of the pro-ape and pro-human stem. Indeed he indicates it on his phylogenetic tree in the *Illustrated London News* article as lying directly on the human line of ascent.

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[1] Smith, 1851, p. 19.

[2] Leakey, 1946a.

[3] Leakey, 1943.

[4] MacInnes, 1943.

This divergence from the earlier views of Hopwood he bases on the following facts:

1. The lack of a simian shelf "such as is seen in modern apes and also in *Dryopithecus*."

2. A definite convergence forward of the molar rows, whereas these rows are parallel or even backwardly divergent in the existing chimpanzee and gorilla.

3. Tooth wear which is flat and suggestive of the rotary human type mastication rather than the differential wear typical of the great anthropoids.

4. The form of the symphysis, which approaches the more vertical arrangement visible in fossil men.

All of these peculiarities are indeed of a very intriguing character. Nevertheless their significance cannot be fully weighed without some idea of the existing state of our knowledge of the Miocene anthropoids. We know that these animals ranged over a very wide area of the Old World land mass, and that they were a markedly variable group, some of which undoubtedly stood closer to the human threshold than others. To complicate matters, many of these forms are known only from fragments. The details of the symphyseal region are unknown for any but a very few specimens. Thus Leakey's statement about the lack, in *Proconsul*, of a simian shelf such as is observable in *Dryopithecus* is not entirely accurate. No less an authority than Gregory pointed out as long ago as 1926 that in *Dryopithecus fontani* and in *Dryopithecus pilgrimi* "the plane of the digastric fossa is nearly vertical and this region is not produced backward into a 'simian shelf' as it is in many anthropoids."[5] A similar condition has also been noted by Lewis and his co-workers in *Ramapithecus*.[6] Sir Arthur Smith Woodward has commented that the configuration of the symphyseal area in some, at least, of the Dryopithecines, appears to be structurally ancestral to the condition in both human and modern anthropoid jaws.

As a consequence of these observations, we cannot sustain Leakey's contention of 1943 that this is a human character not evinced by other Miocene apes. In fact, in his latest publication of 1946 Dr. Leakey himself seems to have begun to entertain doubts on this score, because he suggests that the simian shelf may be a relatively recent specialization within the anthropoid line. This latter view is more tenable than his earlier statement, but still errs by its too sweeping quality. The simian shelf is observable in *some* Miocene anthropoids as well as modern ones, but not in all. It is not a sure test of the human character of *Proconsul*. It merely establishes the presence of a generalized symphyseal character which does not remove *Proconsul* from possible human affinities.

[5] Gregory and Hellman, 1926, p. 32.

[6] Gregory, Hellman and Lewis, 1938, p. 22.

The convergence forward of the molar rows is also interesting. Here again, however, we have to remember that our knowledge of the conformation of the mandible of the Miocene apes is even less extensive than is our information about the symphysis. There is every reason to suspect that more than one genera of these early primates lacked the flaring fore-muzzle of the existing anthropoids, which is partly the product of the great tusk-like canines. It is again a sign of the more generalized structure of these early forms. It is not, at this stage of our researches, a sure indication of human qualities.

Similarly, the steep symphysis and vertical depth of the mandible are characters known to be highly variable among the Dryopithecines, among which the European forms in general seem to be noticeably deep. The significance of tooth wear need not be lingered upon, since it was long debated in connection with the Piltdown mandible. It is true that differential wear upon the molars is marked in the great apes, but there is variation here, according to age and other factors as well. Conditions of cusp wear similar to those emphasized by Leakey in connection with *Proconsul* have been noted in *Ramapithecus brevirostris*. Moreover it must be noted that MacInnes, in his description of 1943, comments that "unfortunately the teeth are severely affected by weather action so that the finer details of structure are obscured, but it is clear that they are well worn, and that the animal was fully adult." This cautious comment should, I believe, prevent any enormous significance being attached to the type of molar wear in this specimen of *Proconsul*. I do not mean by this comment to minimize the fact that the condylar structure of *Proconsul*, as well as certain other features, may be more human than those of the existing apes.

It is the designation "more human" which is in itself misleading. If we bear in mind the specialized nature of the existing anthropoids, we might more readily say that some of these characters of *Proconsul* may be quite typical of a number of the Miocene apes, and that in the retention of certain of these characters, modern man is less specialized than his tree-dwelling brethren. Leakey himself in his latest essay seems much more inclined toward this interpretation. When it is remembered that this mandible is the most complete ever recorded for a Miocene anthropoid, and when, in addition, we know that the fragmentary remains of other species and genera hint at similar generalized structures, it becomes unwise to label *Proconsul* as a definite human precursor. In fact the heavy canines also weigh against this interpretation, as the dating for the Australopithecines, with their humanized dentition, is lowered to a point uncomfortably close to *Proconsul*.

III

Almost twenty years ago, Dr. Aleš Hrdlička, in discussing the Rhodesian cranium, termed it "a comet of man's prehistory." Its peculiar features, the lack of a satisfactory associated index fauna, led to estimates of age ranging

from recent times to far downward in the Pleistocene. Although much of this data is still unsatisfactory, the passing years have, it seems to me, begun dimly to clarify the provenience of this strange fossil. The diminished third molars, for example, were made much of as suggesting recent age. Yet today we know that this tooth shows wide variations even in the Miocene anthropoids. Its index and taxonomic value may prove in the years to come to be relatively slight.

Nevertheless it is not upon physical characters that certain provocative suggestions as to the position of *rhodesiensis* in human prehistory can now be made. We have to turn, instead, to archeology—a science which has made tremendous strides in Africa since the day of the Broken Hill skull.

Sketchy though many of our African datings are, two things have been accomplished, and they have never been placed in their proper relationship to the Rhodesian discovery. The first of these significant developments has been the working out of a series of cultural sequences which carries man of the *sapiens* type, and in fact of a very highly specialized type indeed, back into times roughly approximate to the upper paleolithic of Europe. I refer, of course, to the Boskopoid people, whose remains seem associated with various phases of the "middle stone-age complex" assignable, in Africa, to late Pleistocene or early recent times. There is thus nothing to substantiate the survival of so primitive a being as *rhodesiensis* into the recent period. It is a matter of reasonable assumption that, whatever his dating, it is Pleistocene and very likely to be considerably lower than the Boskop horizon.

Oddly enough, a late find of Dr. Leakey's in Kenya Colony far to the north has thrown new light on this situation and centered attention, as well, on the oft-debated question of whether a *sapiens* type was the maker of the African hand-ax cultures.[7] Dr. Leakey, as we know, has long contended for the antiquity of *Homo sapiens* in Africa. I respect his labors and materials. I do not wish, here, to be drawn into a general discussion on the antiquity of *Homo sapiens*, a subject too much debated upon too little evidence. What I do intend is to draw attention to certain cultural materials which, I believe, hint at the cultural affinities of the skull from Broken Hill. A few stones from that mine have become, in the light of recent events, the most important pebbles in the world. They may hold the secret of the antiquity of our own species, at least in this part of the African continent.

It has long been known that the association of the artifacts of Broken Hill with Rhodesian man is of a very tenuous character. F. P. Mennel had pointed out, years before the discovery of the fossil cranium, that the cave deposits of Broken Hill contained human implements, and that several occupation levels were represented. We know that the Rhodesian skull was recovered from the very lowest levels of the cave, but it has never been established that

[7] Leakey, 1946b.

the artifacts and other human fragments afterwards retrieved from Broken Hill came from the same levels. Leakey, in fact, has maintained that a good deal of the fauna and presumably the artifacts were derived from upper and younger levels of the cave.

Nevertheless, a curious circumstance now comes to the fore. In 1942 near Lake Magadi, Kenya, Dr. Leakey discovered huge quantities of hand-axes eroding out of a series of old land surfaces. Associated with this Acheulian industry are a number of extinct animals of the earlier African Pleistocene. Most important of all, however, there appears in this site, in considerable numbers and under circumstances permitting no doubt of their identity and use, the round pebbles used with the hurling weapon known as the bola. The Acheulian hand-ax users apparently made extensive use of this implement, and it can be regarded as a part of the hand-ax artifact complex in Africa.

I have said this is a curious circumstance. It is so because, among the artifacts picked up in the dumps at Broken Hill and featured in Pycraft's original monograph on the Rhodesian remains, is a beautifully rounded bola stone. This, one is apt to counter, is interesting, even suggestive, but how are we to associate it with the levels from which the Rhodesian skull was derived? How are we to be sure that it does not belong to one of those younger levels from which Leakey supposes a great deal of this material was obtained? The answer is that we cannot do so directly; we can do so only by inference, but the circumstances are powerful.

Not in far-off Kenya, but in northern Rhodesia itself, F. B. Macrae, in a now forgotten dig at Mumbwa,[8] found *in the lowermost strata* of a cave site, hand-axes associated with round bola balls similar to those we have just mentioned.[8a] There is thus very strong presumptive evidence that the bola stone at Broken Hill was from the cave's low horizon, not the upper, and an accompaniment of paleanthropic low-browed *rhodesiensis*. If this thesis is sustained as the result of further excavation in Africa, the hand-ax industries may, after all, prove to be the product of some more primitive hominid than *sapiens*—a hominid of *rhodesiensis* or *Africanthropus* affinities. I do not mean at this point to minimize the very real possibility that *sapiens* may be old, but I do not believe that the appearance of this highly significant cultural item in the hand-ax industries of the Middle Pleistocene of Africa, and its similar appearance at Broken Hill in a site which has yielded one of our most primitive African human types, can be without significance.

Because of their inaccessibility, I have not been privileged to examine all of the papers dealing with the multitudinous phases of African prehistory.

[8] Macrae, 1926. Also referred to in Leakey, 1936, p. 127.

[8a] It must be realized, of course, that African chronology is nebulous for many areas. Goodwin, for example, suggests that in Rhodesia there is no clear vertical division between the hand-ax and flake cultures. (Goodwin, 1946, p. 57.)

With this qualification I should like, however, to comment that the bola does not seem to characterize the flake industries of the later African Pleistocene, and hence its use as an index artifact seems justified. Though I am well aware that cultural forms are capable of transference, there seems no indication that these artifacts survived their association with paleanthropic man in this area of the world. The way the cave at Broken Hill was excavated is proving more and more to be an archeological tragedy. Everything needed to resolve many of our African problems of prehistory at one stroke was present—everything, that is, but the trained intelligence and the time and funds necessary to have carried out a full stratigraphic investigation. Such sites do not come for the asking.

IV

My space is limited. I have tried to treat two discoveries of international importance, whose significance still lies somewhere in the advancing frontier of knowledge. A full coverage of South and East African developments would demand much more. It would demand an extended critical treatment of the newly lowered datings for the Australopithecines. It would demand a consideration of the phenomenon of heavy bone structure in that line of which the hominids seem members, but which is also a particular character of *Paranthropus*, and of certain less well-known Dryopithecids such as *D. frickae*, in which the corpus of the mandible is known to be remarkably robust, whereas in others, such as *Ramapithecus*, it is very thin. Are all the human forms derived from heavy-boned types of forerunners, as Weidenreich has suggested, or are they not? Is this character a sure humanoid index among the Miocene anthropoids?

To these questions we have at present no full answers, nor shall we have until something more than teeth and mandibular fragments is available, for, important though dentition is, it will not give us the full history of those creatures whose first gesture toward humanity was probably not in face and brain but in the tendency to assume a bipedal mode of progression.

One last question well worth more attention than it has received lies in the curiously specialized, almost more than modern, character of the Boskopoid line. By some writers, the development of *Homo sapiens* is correlated with civilization. It is pointed out that the Australian aborigines are macrodont and that civilized whites are microdont, and this is sometimes attributed (often with unconscious Lamarckian tendencies) to the influence of high culture.

That civilization has had, and is having, vast and unknown effects through selection upon human beings, it is not my purpose to deny. But the big-brained pedomorphic Boskopoids with their trend toward microdont dentition and reduced faces were no more civilized than the macrodont Australoids. They represent some strange inner hastening of change which cannot be correlated

with their cultural status. Many of their characteristics, if they existed among whites, would be used in invidious comparisons with other less civilized races. Somewhere in the mysterious chemistry of the endocrines, or beyond that in the chemistry of the genes, lies the possibility of bodily change which may outpace the purely cultural status of the type. From the standpoint of philosophical biology, this obscure people in what used to be one of the world's remote backwaters are, perhaps, weighted with the secrets of human destiny as well as the secrets of our past. Their origins and what produced their early specialization are a mystery just as much in need of solution as the problem of the antiquity of *Homo sapiens*. As a highly specialized, morphologically advanced type already in existence in the late Pleistocene, they constitute an eloquent and persuasive argument for the antiquity of the *sapiens* line. Nevertheless the mechanisms involved in such spectacular changes are unknown. The clock of change may have run fast or slow. To answer that one question out of the many that confront us is sufficient reason for the intensification of South African research.

UNIVERSITY OF PENNSYLVANIA
PHILADELPHIA, PA.

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