

Letters to the Editor

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NOTES ON POINTS IN SOME OF THIS WEEK'S LETTERS APPEAR ON P. 398.

CORRESPONDENTS ARE INVITED TO ATTACH SIMILAR SUMMARIES TO THEIR COMMUNICATIONS.

Human Remains from Kanam and Kanjera, Kenya Colony

THANKS to facilities afforded by the Royal Society and to the courtesy of Dr. L. S. B. Leakey, I have recently had an opportunity of spending about six weeks with the East African Archæological Expedition in the Kendu district of Kenya. The chief object of my visit was to study the geology of the deposits from which the Kanam mandible and the Kanjera No. 3 skull fragments were obtained, for Dr. Leakey had come to the important conclusion that these remains of *Homo sapiens* type occurred *in situ* in beds of Lower Pleistocene and Middle Pleistocene age, respectively. Unfortunately, it has not proved possible to find the exact site of either discovery, since the earlier expedition (of 1931-32) neither marked the localities on the ground nor recorded the sites on a map. Moreover, the photograph of the site where the mandible was found, exhibited with the jaw fragment at the Royal College of Surgeons, was, through some error, that of a different locality; and the deposits (said to be clays) are in fact of entirely different rocks (volcanic agglomerate). Further confusion seems to have arisen over the photograph labelled as the horizon from which the Kanjera No. 3 skull fragments were obtained, this proving to be a cliff of volcanic ash situated some distance away. As the 1931-32 expedition spent three months in the area after the discovery of the mandible at Kanam (its activities being described in Dr. Leakey's field-reports circulated at the time), it is regrettable that the records are not more precise.

The excavations made by the 1934-35 expedition at sites which, one hoped, were close to those of the original finds, revealed the fact that the clayey beds found there had frequently suffered much disturbance by slumping. The date of entombment of human remains found in such beds would be inherently doubtful, and careful investigation of the deposits by an experienced geologist at the time of discovery would therefore be essential. Thus, in view of the uncertain location of the Kanam and Kanjera sites, and in view also of the doubt as to the stratigraphical horizons from which the remains were obtained and the possibility of disturbance of the beds, I hold the opinion that the geological age of the mandible and skull fragments is uncertain.

It will be recalled that on March 18-19, 1933, the Royal Anthropological Institute convened a conference at Cambridge to discuss the evidence of these early human remains¹. It would appear, from the circumstances just mentioned, that the evidence placed before the conference was unintentionally misleading. The Geological Committee at the conference prefaced its conclusion as to the stratigraphical age of the remains with the phrases "From the evidence supplied by Dr. Leakey, the Committee can see no escape from the conclusion. . . ." It seems likely that if the facts now brought forward had been

available to the Committee, a different report would have been submitted.

There still remains for consideration the state of mineralisation of the bones, and the succession of implements from the Kendu area. The degree of mineralisation is undoubtedly high, but such a feature can be used only comparatively and with due caution². I am satisfied, however, that the human remains in question are much more highly mineralised than are those excavated from shell-mounds in the district, believed to be Mesolithic, which are the only other human bones we have for comparison. The implements actually found in undisturbed deposits in the district are not numerous; they include a few pebble tools from the Kanam area, and a few Chellian tools from the Kanjera area four miles away. These occurrences appear to me to be far too meagre to constitute a succession of types similar to that at Oldoway, in Tanganyika³.

It is disappointing, after the failure to establish any considerable geological age for Oldoway man (of *Homo sapiens* type)⁴ that uncertain conditions of discovery should also force me to place Kanam and Kanjera man in a 'suspense account'.

Finally, it is a pleasure to record that, during the last week of my work in the Kendu area, I had the benefit of the wide experience and sound judgment of Mr. E. J. Wayland, director of the Geological Survey of Uganda. Without committing Mr. Wayland in matters of detail, I am able to say that he agrees with the main conclusions I have expressed above.

P. G. H. BOSWELL.

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¹ NATURE, 131, 477; 1933.

² See, for example, Andrews, C. W., *Geol. Mag.*, p. 110, 1912.

³ *ibid.*, Cambridge Conference, Archæological Committee's Report. "At Kanam and Kanjera, stratified deposits include a similar series of industries. . . ." (that is, similar to Oldoway).

⁴ *ibid.*, 131, 397; 1933.

Cosmic Rays and Novæ

PROF. W. KOLHÖRSTER¹ has recently described some fluctuations in the observed intensity of cosmic rays in December last, which he suggests may possibly be connected with the appearing of Nova Herculis at that time. Without venturing to judge of the reality of this particular correlation, one may inquire whether it is in general possible that nova outbursts could supply energy sufficient to maintain the supply of cosmic radiation, or a large fraction of it.

Let us suppose there is an average total liberation of cosmic ray energy E in a single nova outburst. The number of such outbursts in the galactic system is not known, but it has been estimated (Bailey) that there are one or two novæ per year of apparent