

disease, since renal failure is often associated with haemorrhagic diathesis and about which there are numerous reports of thrombocyte abnormalities (LEWIS, ZUCKER, FERGUSON<sup>6</sup>, TRIANTAPHYLOPOULOS<sup>7</sup>, BONNIN, CHENEY<sup>8</sup> and others).

**Methods.** The principle of the method used involves a thromboelastograph for determining serum antiheparin activity, and has already been published (VAVŘÍK<sup>4</sup>), so that we shall here merely summarize it. Serum to be tested is mixed with a constant amount of heparin and added to whole blood of a healthy donor in thromboelastograph cuvettes. The measure of antiheparin activity is the change in coagulation activity (clotting time) as compared with a control mixture containing blood and heparin, but physiological saline instead of serum.

By means of the thromboelastograph we determine simultaneously: (a) clotting time ( $rF$ ) of the coagulation system: 1 ml blood + 3 ml physiological saline (pH 7.4), where  $rF$  min are set at 100% coagulation activity. (b) clotting time ( $rS$ ) of the system: 1 ml blood + 1 ml serum + 2 units of heparin contained in 2 ml of physio-

logical saline. The degree of serum antiheparin activity is then given by the expression:  $rF/rS \cdot 100$ .

Serum antiheparin activity was determined from venous blood samples which had clotted in a water bath at 37°C, following which they were centrifuged at 2000 RPM for 10 min. The sera were tested up to 1 h after sampling.

**Results.** In this manner we determined the serum antiheparin activity in 18 patients with chronic renal disease of at least 1 year's duration, and with a glomerular filtration rate less than 25 ml/min at the time of investigation. These data were compared with values from 20 healthy control subjects in the same age group as the patients. The results are presented in tabular form.

Serum antiheparin activity in chronic renal failure was found to be markedly lower than in control subjects ( $p < 0.001$ ). The values in the patient group showed no correlation with the red blood cell count or the thrombocyte count, and low values were recorded in patients with neither clinical nor laboratory signs of haemorrhagic diathesis (Duke bleeding time, Lee-White clotting time, Quick prothrombin time, the thromboelastogram).

**Conclusions.** So far as any relation can be stated to exist between serum antiheparin activity and thrombocytes, the functional capacity of the latter elements, rather than their number, must be involved.

The above data present a new demonstration of a disturbance in haemostatic homeostasis in chronic renal failure determined by a new method. Since the nature of the antiheparin activity of serum is unknown, interpretation of the above data is difficult and further investigation of the nature of this phenomenon is in progress.

**Zusammenfassung.** Die Antiheparinaktivität des Blutserums bei Personen mit chronischer Niereninsuffizienz erweist sich statistisch gesichert niedriger als bei Gesunden ( $P < 0,001$ ). Der Befund scheint auf einen Zusammenhang mit dem funktionellen Zustand der Thrombocyten hinzuweisen.

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<sup>6</sup> J. H. LEWIS, M. B. ZUCKER, and H. FERGUSON, *Blood* 11, 1073 (1956).

<sup>7</sup> D. C. TRIANTAPHYLOPOULOS, *Canad. Med. Less.* 7, 122 (1957).

<sup>8</sup> I. A. BONNIN and K. CHENEY, *Brit. J. Haemat.* 7, 512 (1961).

## Early Man in East Africa: New Discoveries

LEAKEY, TOBIAS, and NAPIER<sup>1</sup> have recently announced a series of important human fossils from the lower levels of the famous Olduvai Gorge and a new site near Lake Natron, which greatly widens our knowledge of early human evolution, or rather, will do so, because the present contribution contains only a few small-scale photographs and practically no measurements.

First of all it is of great importance that in the same and in older layers than *Zinjanthropus* (who belongs to the Australopithecinae) a more advanced hominine has

been found, and that from Lake Natron a beautiful lower jaw of *Zinjanthropus*-type has been obtained together with a fauna corresponding to Bed II of Olduvai. This proves that in East Africa, at the same time, two different types of hominidae were contemporaneous. It is therefore no longer necessary to regard *Zinjanthropus*, brain capacity 530 cm<sup>3</sup>, as the maker of the Olduvai pebble culture. 'While it is possible that *Zinjanthropus* and *Homo habilis*

<sup>1</sup> L. S. B. LEAKEY, P. V. TOBIAS, and J. R. NAPIER, *Nature* 202, 4927 (1964).

both made stone tools, it is probable that the latter was the more advanced tool maker... This settles the controversy of *Zinjanthropus* being the tool maker of Olduvai Bed I, and of its possible relationship within the hominidae. As could already be concluded from the dentition with oversized molars and ultrahominid reduced canines and incisors, *Zinjanthropus* is apparently the terminal form of the *Australopithecus* line, which, from its overspecialized dentition and a pertinent low brain capacity, has to be separated from the line leading ultimately to *Homo sapiens*.

Now that the coexistence of two different types of hominids at Olduvai has become evident (there was already an indication in the presence of a large australopithecoid molar in Bed II, regarded by LEAKEY as 'Homo'), LEAKEY, TOBIAS, and NAPIER<sup>1</sup> have called the new hominid *Homo habilis*. It is not the place here to deal with such a tricky question as the taxonomy of the fossil hominids, neither do we think it necessary or advisable to call the new species simply *Homo*, of which the type is large-brained *Homo sapiens*. We have not yet sufficient knowledge to tell exactly which fossil hominid is our direct ancestor. The revised diagnosis of the genus *Homo*, as given by the authors, includes too many stages, which had better remain separated. If we take the Australopithecinae: in 1945 SIMPSON still classified them with the Pongidae, while MAYR in 1950 wanted to include them in the genus *Homo*. LEAKEY et al.<sup>2</sup> want to set *Australopithecus* apart. Within the Hominidae 'we accept the genus *Australopithecus* with, for the moment, three subgenera (*Australopithecus*, *Paranthropus* and *Zinjanthropus*)'.

The genus *Homo* at least should be subdivided equally. Hominids in the Lower Pleistocene seem to evolve rapidly along different lines, which, at the moment, except for the South African Australopithecinae, cannot be sufficiently separated. And here the question might be raised whether or not the subdivision into the two main branches did not start with the oldest *Australopithecus*, so that this species might with the same right be included in the genus *Homo* too....

What the authors have called *Homo habilis* are the hominids – altogether, the remains of 7–8 individuals – from Bed I and the lower part of Bed II at Olduvai. Already the marked difference in the size of the mandibles from FLKN I and MNK II, coupled with a long interval of time – lower part of Bed I said to be 1,800,000 and lower part of Bed II 500,000 years old – might be taken as a sign that we are dealing not with one, but with two hominid forms. As in Java, the larger dentition comes from the lower level; reduction in size of the jaws is typical for the hominid, increase in size for the australopithecine line of evolution.

The type of *habilis* coming from the pre-*Zinjanthropus* level and catalogued as Olduvai Hominid No. 7, consists of a mandible (with the third molars non-erupted and, on the right side, M<sub>2</sub>–M<sub>3</sub> missing) an upper molar, parietals, and handbones of a single juvenile specimen. After a careful reconstruction of the biparietal arch, TOBIAS<sup>3</sup> arrives at the conclusion that the brain capacity can be

estimated at about 680 cm<sup>3</sup>, which would be more than in the Australopithecinae but less than in *Pithecanthropus*.

The paratype, MNK II (No. 13) consists of the vault of a small cranium (no estimate of the brain capacity given) a fine mandible with complete dentition (already mentioned above), and a large part of the palate.

Supported by a grant from the University of Utrecht, the author was able to compare, together with Prof. TOBIAS, at Cambridge, the Javanese and the East African original material. We found that the lower jaw FLKN I comes close to *Meganthropus palaeojavanicus*. The same mesio-distal elongation of the premolars exists; in the African mandible, the first premolar with two subequal cusps might be regarded as more primitive. There was a close resemblance between *Pithecanthropus modjokertensis* (*Pithecanthropus* IV WEIDENREICH) and the maxillae and mandible MNK II, both in size and proportions. Both show the dominance of the second molar in the upper and of the third molar in the lower jaw, and the same proportions in the premolars. Upper canines and incisors are missing from the Olduvai specimen. The Javanese jaw is more primitive in the quadratic outline of the upper second molar and the possession of three roots (Olduvai two roots) of the upper anterior premolar. A joint paper about our studies is in preparation.

To this we might add that the unnamed skull from the upper part of Bed II at Olduvai and the mandibles from Termifine can be compared with *Pithecanthropus erectus* and *Sinanthropus*, while the upper paleolithic Solo skulls from Java are close to those of Rhodesia and Saldanha. We arrive at the conclusion of a strikingly close parallel evolution in Africa and Asia, of probably a constant exchange of types at all levels of human evolution, even before the emergence of *Homo sapiens*.

*Zusammenfassung.* In Olduvai wurden in Bed I und unteren Schichten von Bed II neue Hominidenfunde geborgen, die als *Homo habilis* benannt wurden. Sie zeigen, dass in Ostafrika zur gleichen unterpleistozänen Zeit zwei Hominidentypen lebten und *Zinjanthropus* nicht länger als Träger der Olduvai-Kultur angesehen werden muss. Die Funde können zwei verschiedenen zeitlich aufeinander folgenden Formen zugeordnet werden, von denen der Typusunterkiefer aus Bed I enge Beziehungen zu *Meganthropus palaeojavanicus* zeigt, Maxillae und Mandibel von MNK II aus Bed II aber ausserordentlich stark *Pithecanthropus modjokertensis* ähneln.

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<sup>2</sup> L. S. B. LEAKEY and M. D. LEAKEY, *Nature* 202, 4927 (1964).

<sup>3</sup> P. V. TOBIAS, *Nature* 202, 4927 (1964).