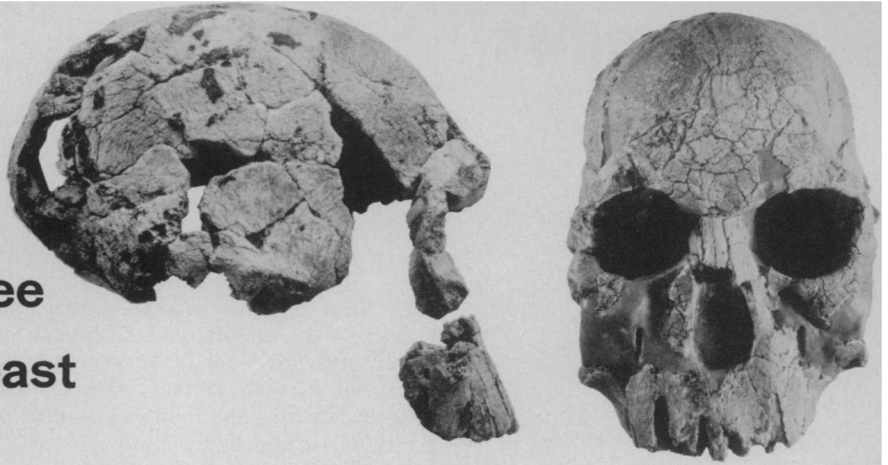


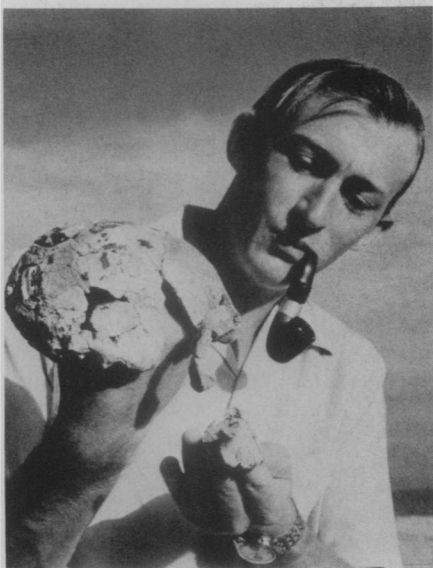
## Leakey's new skull changes our pedigree and lengthens our past



Photos: Bob Campbell/National Geographic Society

East Rudolf it seems, like Olduvai, is destined to become an anthropological gold mine for the excavators of man's past. At Rudolf, as at Olduvai, some of the principal workers of the mine are members of the Leakey family. Last week in London, Richard E. Leakey announced the unearthing of a handful of fossil nuggets that, when fitted together, turned out to be "what is almost certainly the oldest complete skull of early man."

Since 1968 when the eastern shore of Lake Rudolf in Northern Kenya was first investigated, Leakey has been working there in an attempt to trace man's ancestry to its roots. Many anthropologists believe that *Australopithecus africanus* (a 3-million-year-old man-like creature) gave rise to *Homo erectus* (man's direct ancestor) only 1 million years ago. Leakey, like his late father, holds that *Homo* and *Australopithecus* had a common ancestral line from which *Homo* broke off about 4 million years ago (SN: 2/26/72, p. 133). *Homo* then lived as a contemporary of *Australopithecus* and eventually developed into *Homo sapiens* while *Australopithecus* died out.



Leakey with man's newest ancestor.

Last year Leakey and his co-workers found three jaw bones, leg bones and more than 400 manmade stone tools. The specimens were attributed to the genus *Homo* and were dated at 2.6 million years.

With this season's finds, Leakey and the expedition's co-leader, Glynn Isaacs of the University of California at Berkeley, say "there is now clear evidence that in eastern Africa, a large-brained truly upright and bipedal form of the genus *Homo* existed contemporaneously with *Australopithecus* more than 2.5 million years ago." With this evidence, they say, "it seems certain that *Australopithecus*, as known, can be excluded from our known line of ancestry."

Richard Leakey's wife Meave and Alan Walker of the University of Nairobi pieced the skull together from hundreds of fragments found eroding from the side of a hill. The skull is different from *Homo sapiens*, says Leakey, but it is also different from all other known forms of early man and does not fit into any of the presently held theories of evolution. The brain, for instance, is large. It has a cranial capacity of about 800 cubic centimeters. The average cranial capacity of *Australopithecus* at that time was below 500 cm<sup>3</sup>. That of modern man is about 1,500 cm<sup>3</sup>. Leakey further described the whole shape of the brain case as remarkably reminiscent of modern man, lacking the heavy and protruding eyebrow ridges and thick bone characteristic of *Homo erectus*.

In addition to the as yet unnamed skull, the expedition turned up parts of the leg bones of two other individuals. These fossils surprisingly show that man's unique bipedal locomotion was developed at least 2.5 million years ago.

"What all this means," says J. Lawrence Angel, curator of physical anthropology at the Smithsonian Institution, "is that before 2.5 million years ago our ancestors had become different enough, through their use of culture [stone tools], from *Australopithecus* so that the two groups could co-exist in the

same territory." This is a little difficult for some anthropologists to swallow. Evolutionary theory says it is impossible for two similar groups (having the same environmental and ecological needs) to live sympatrically. One would rapidly displace the other and evolution would go on with the more hardy group. Leakey's evidence suggests that the groups in question co-existed for more than 1 million years. "Some scientists don't like this degree of overlap, but it looks like they are going to have to put up with it now," says Angel.

Other questions can be raised. The intricate rebuilding of the skull, for instance, could be in error. Or, suggests Angel, the thin bones of the skull could be the result of disease. But Angel agrees with Leakey that the find is exciting. Perhaps most important is that it gives more time for the process of human evolution through selection than we thought we had. □

## Lack of S waves tell of a liquid lunar core

Last week Gary Latham found what he has been waiting for for three years—seismic signals from a meteorite impact on the far side of the moon that allow him to "see" the moon's deep interior. (Latham, who recently joined the staff of the Earth and Planetary Sciences Division of the University of Texas' Marine Biomedical Institute in Galveston, is the principal investigator for four seismometers now operating at the Apollo 12, 14, 15 and 16 sites.)

This latest impact, says Latham, "is the most direct source of evidence for a molten segment in the core that we have yet had." (The impact actually occurred July 17, but because of delays at the Manned Spacecraft Center, Latham just analyzed the tapes last week.) Impacts cause two kinds of seismic waves—shear (S waves) and compressional (P waves). Shear waves cannot pass through liquid; P waves can. Latham says he sees P waves but