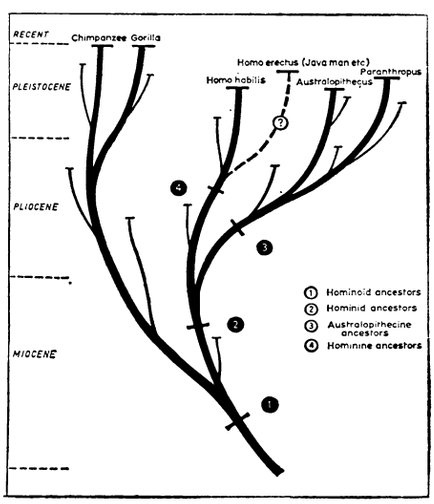
PALEOANTHROPOLOGY

Man and Pre-man: New Finds

Both human and prehuman evolution pushed further back in time by dating of ancient fossils from Africa.

The earliest known member of the human family lived some 2.5 million years ago, and the oldest known ancestor of man was roaming earth about 20 million years ago.

These new figures, based on fossil finds in Africa, push back the date for the earliest member of the human family yet found some 750,000 years and man's direct ancestral line about six million years.



New Scientist

Human evolution, Dr. Leakey's view.

The finds reported in the last two weeks won't alter the general lines of evolutionary theory but they may help settle the controversy over how and when man and his precursors first evolved, what they looked like and how they lived.

After millions of years, not many clues are left. But each one is mined by researchers.

Only a single tooth, for instance, tells them whether the ancient being was a monkey, an ape or possibly a man. The reason is that for at least 24 million years, the precursors of both man and the apes have had a characteristic, five-cusped molar. Baboons, derived from a different stock, have only four.

Man is classed as a hominoid, a man-like group that includes both apes and men, as well as chimpanzees, gorillas, gibbons and orangutans. The history of man's evolution from the rest of these hominoids, although still a very cloudy chapter with gaps of many millions of years in the history of life on earth, is now becoming clearer as scientists find some order and arrangement in the fossil remains of man and his precursors.

The hominid, or man, line probably branched off from the pongid, or ape, line sometime during the Miocene period, which lasted from about 25 million to 12 million years ago. The common ancestor of man and the apes may never be found, but Dryopithecus, an ape that lived some 25 million years ago in eastern Africa, is thought to be fairly close to this hypothetical common ancestor.

Of the other groups of hominoids that lived during the Miocene period, Ramapithecus, a man-ape from some 14 million years ago, was the most likely candidate for the oldest human ancestor until the announcement Jan. 14 of a 20-million-year-old precursor, possibly a more ancient Ramapithecus, found on Rusinga Island in Lake Victoria by the British anthropologist Prof. Louis S. B. Leakey.

Unfortunately, there is a 10 million-year gap in the fossil record between the latest Ramapithecus and earliest of the Australopithecus, or southern ape-man, of the early Pleistocene, which lasted from about three million to one million years ago. Now an arm bone fragment discovered in northern Kenya by Prof. Bryan Patterson, a vertebrate paleontologist at Harvard University, has pushed back the date of the earliest known of this species 750,000 years, or to 2.5 million years ago.

The significance of Dr. Leakey's findings are indicated by the fact that he was given nine pages in the Jan. 14 Nature in which to make his detailed report, showing that human precursors lived some 20 million years ago. Dr. Leakey puts his finds in the pre-man family because of the man-like arrangement of their teeth.

Paleoanthropologists were not surprised to learn that man's precursor was about six million years older than previously thought, no more than they would be surprised to find that he dated back even another five million or so years. They have suspected more ancient dates than fossils have shown, and are happy proof is now available.

Discovery of a bone from a human ancestor that lived 2.5 million years ago is considered even more important because it is the oldest specimen yet recovered from an Australopithecine, the fossil man from which today's Homo sapiens is directly descended.

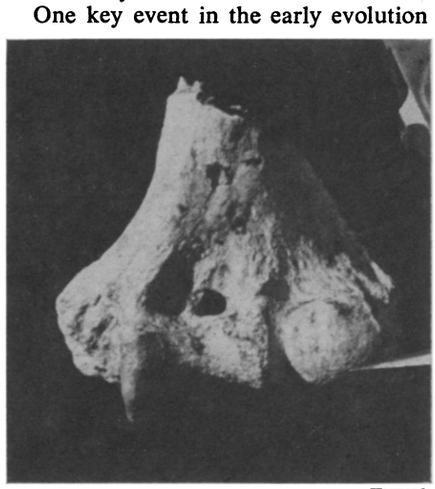
Australopithecus is thought to have been about five feet tall and to have had human-like teeth and an upright posture; but like apes it had a small brain and a thick, heavy jawbone.

How man became man, essentially the role of culture in man's evolution, is still an unsettled point. Until quite recently, many anthropologists believed that culture came at the beginning, a kind of "spark of life" that differentiated human-like forms from the apes.

Based on fossils uncovered mostly in the past decade or so, more and more scientists are supporting what they consider a more logical explanation for human evolution. They believe man did not become upright because of culture, but for some other reason, most likely climate changes that forced human precursors to descend from trees to find food.

Carrying the food back to home base required walking erect, and this trait is believed to have become more and more pronounced during a period lasting at least several hundreds of thousands of years.

One key event in the early evolution



Harvard

Dr. Patterson's African discovery.

leading to man-apes and then to man thus seems to be the development of the ability to walk on two feet, forced by the need to carry food. However, walking erect also freed the hands to make tools and to hunt with them.

During this same period there was also an increase in brain size. The likelihood is that walking erect and a larger brain developed simultaneously in a feed-back system.