science news

Anthropology: Fossil find fills a gap

A man-like ancestor extends man's age to four million years

In 1924, thanks to a find by anatomist Dr. Raymond A. Dart in a Pleistocene stratum in South Africa, the first fossil remains of the Australopithecine species were uncovered; it was then the earliest known ancestor of today's Homo sapiens. Though precise dating was then impossible, Australopithecus was believed to be more than a million

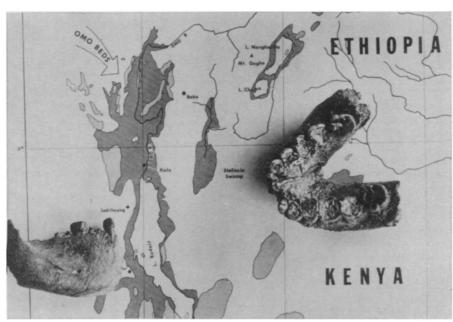
Since 1924, there have been numerous paleoanthropological finds, not only of early man, but also those that trace ape-like hypothetical ancestors of man back to a possible 25 million years (SN: 11/25/67, p. 514).

But there was a gap of some 12 million to 13 million years in the fossil record between the latest Ramapithecus -a smaller primate considered to be a possible ancestor of man-and the earliest Australopithecus.

Dr. Louis S. B. Leakey, in 1959, sliced back into that gap when he added 600,000 years to human prehistory by unearthing an Australopithecine fossil from the Olduvai Gorge in East Africa. This put the history of man back to almost two million years.

Another bite out of the gap has now been taken, this time by an international expedition to southern Ethiopia which has found man-like fossils which push the history of man back to four million years, more than two million years beyond the Leakey find.

Nearly 40 hominid teeth and two lower jaws have been found in an ancient stream bed north of Ethiopia's



Photos: University of Chicago Omo beds—site of four-million-year-old Australopithecine fossil finds.

Lake Rudolph by an American team led by Prof. F. Clark Howell of the University of Chicago. It included members of the University of California at Berkeley and the University of Ghent

in Belgium. Another group of scientists from the National Museum of Natural History in Paris worked with the American expedition.

The fossils represent two different species of prehuman man.

But the fact that no evidence of toolmaking has yet been found with these remains indicate that theories of prehuman man may have to take a new turn.

The lower jaws are massive and robust. Prof. Howell feels they are definitely related to the more robust form of Australopith, or man-ape, of the Paranthropus group. This represents a longer evolutionary history for this creature than was already known from other deposits in South Africa and Tanzania.

Most of the teeth, as well as two incomplete lower jaws recovered, seem to represent another prehuman species. There is not enough material to identify it precisely, but what there is suggests that it is related to the smaller form of Australopith, from South Africa, in direct lineage to man. This is the Australopithecus africanus—the same one originally found by Dr. Dart. If these fossils do turn out to be the smaller form of Australopith, its age will have been determined more accurately than ever before.



Prof. Howell with man-like fossils.

The mandibles were discovered last summer in a series of old swamp and deltaic deposits in the basin of the lower Omo River in the Eastern Rift Valley north of Lake Rudolph. Prof. Howell, for the past few years, has led expeditions in this remote area favored for its strata older than those at Olduvai

The team dug in the river channel beds of the large delta, in the muddy shores of Lake Rudolph and in gravel beds around the area. The fossils that

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were found show evidence of having HIDDEN WARFARE been transported in water.

Finding stone tools with hominid fossils has, in the past, been a criterion for deciding the man-like culture of the creatures. Dr. T. Dale Stewart of the Smithsonian Institution in Washington, D.C., says that there is no definite date when toolmaking came into existence. So far, what sets the Australopithecus apart from ape-like creatures like the Ramapithecus is the fact that the Australopithecus began to stand erect, be gan to use his hands and eventually learned to make and use stone tools.

But no evidence of stone-toolmaking has yet been found with these latest man-like fossils. If there were tools with the fossils, they, too, would probably have been transported. And Prof. Karl W. Butzer, a member of the expedition from the University of Chicago, feels if there were tools they probably would have already been found. Prof. Howell, only a little less pessimistic, believes "there is still a 50-50 chance of finding tools."

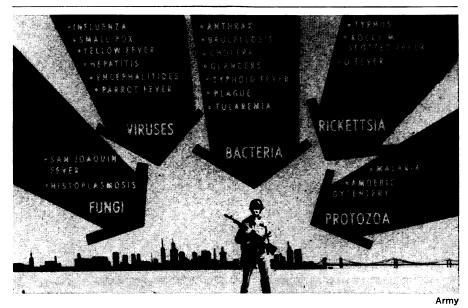
Because there is an absence of evidence of toolmaking in this find and because the exact date of tool using has not been determined, a new theory may be in the making. If no tools are found in future work, says Prof. Howell, "it will require some substantial modifications in certain theories of hominid origins, which have tended to stress capabilities for toolmaking behavior as being critical in the success of the earliest adaptation of Hominidae to life in open country environments."

Howell's expedition has found large collections of fossils of mammals and other vertebrates in the deposits: elephants, black and white species of rhinoceroses, three-toed as well as true equids, hippopotami, pigs, giraffes, a primitive camel, antelope and diverse varieties of carnivores. The Omo beds also revealed the first and oldest documented occurrence in East Africa of the camel, a species which appears at a comparable time in Asia and eastern Europe. There is also evidence that horses first appeared in East Africa about two million years ago.

The expedition has clarified the identity of previous paleontological finds in the area and nearly tripled the total number of mammals known. Most of the mammals that have been found are extinct species.

Prof. Howell's expedition will be returning this summer to the region to look for evidence of toolmaking. Further digs for prehuman man seem unlikely in that area. The next step is finding another area with still older strata so that the gap to knowledge of man's ancestors may be closed even more.

Tracking CBW



Public health in reverse: They come without warning from man-made vectors.

Within the last 10 years, the Army's chemical, biological and radiological weapons program dropped the word "radiological" to become known as Chemical and Biological Warfare (CBW). But the public, and for that matter the Congress, hardly noticed it. However, more than mere semantics was involved.

The distinction today is that the radiological weapons of yesterday have evolved into colossal offensive, defensive and tactical nuclear systems quite apart from the little-heard-from development of gas and germ war capability.

But in recent months, largely as a consequence of the massive sheep kill caused by a nerve-gas accident in Utah (SN: 4/6/68, p. 327), cbw has been getting its share of attention.

Currently, a handful of Congressmen and Senators are concerned that too little is known about the military's CBW research and development program or its position in military thinking. Its budget is hidden, and except for a rare disaster such as the Utah mishap, it is little publicized.

Most vocal among the program's critics is Rep. Richard D. McCarthy (D-N.Y.). So far, a series of briefings, including discussions with the secretary of defense, the secretary of state and classified conferences with the Army provided him little of substance, but rather amplified his belief in the need for a deeper probe.

Foreign policy implications led McCarthy to discuss his concern with Sen. J. W. Fulbright (D-Ark), chairman of the Senate Foreign Relations Committee, who responded by crowding the CBW issue into an already busy schedule of committee business. An initial hearing was held April 30; more will be held-presumably after the Senate vote on missile defense systems next month.

In addition to the more ominous spectre conjured by the possibility of global warfare involving CB weapons, McCarthy and Fulbright are concerned about the very real hazard associated with the research, production, transportation and stockpiling of these agents.

Last week, McCarthy raised a strong protest against what he described as Pentagon plans to tow 1,100 railroad cars full of World War II poison gas across country, load them aboard two old Liberty Ships, and sink them at sea. McCarthy said the Defense Department had received a waiver of normal precautions from the Department of Transportation for the shipment to the port at Earle, N.J., from Rocky Mountain Arsenal in Colorado, Pine Bluff Arsenal in Arkansas and Edgewood Arsenal in Maryland.

McCarthy expressed concern not only for marine pollution, but for the fact that the trains-restricted to 35-milean-hour speeds-would have to pass through some urban areas, including Indianapolis, Ind., and Elizabeth, N.J.

Because of the atypical forms of pathogens which have been adapted to the various criteria of weapon design, scientists are unable to predict the effects of biological agents. A very real possibility exists that these organisms have been so altered that there would be no way to contain the spread of