Modern Man: Mid-East origins?

Where did we come from? Ironically, we can answer the question of human lineage more confidently for periods of millions of years ago than for the last Ice Age. For years archeologists have known that rather suddenly, around 35,000 years ago, one group of prehistoric humans — Neanderthal — were replaced throughout Europe by another group — Cro-Magnon. But where our direct ancestors, Cro-Magnon, came from and where our distant cousins, the Neanderthals, went has remained a mystery.

A partial answer to both questions may lie in the Middle East, according to reports delivered at the 1979 Louis Leakey Memorial Lectures held last week in San Francisco. F. Clark Howell of the University of California at Berkeley summarized the spotty archeological evidence linking *Homo erectus* of a million years ago to the species *Homo sapiens*, which includes both Neanderthal and Cro-Magnon. And Bernard Vandermeersch of the University of Paris presented new evidence indicating that Cro-Magnon may have migrated to Europe from the Middle East, while at least one group of Neanderthals appears to have moved in the other direction.

Perhaps the best skeletal remains linking *Homo erectus* and *Homo sapiens* have been found in the cave of Petralona, Greece, and date to 500,000 years ago. Howell says the remains are complete enough to permit detailed comparisons and that the inhabitants clearly have already lost the distinctive features of *Homo erectus* but have not yet become Neanderthal. Similar skeletons, although not so complete, have been found in England, France, Germany and Ethiopia. And rich habitation sites (which have so far yielded no skeletons) have been found at Ambrona, Spain, and in Israel. The earliest of these remains are those at Ubeidiya, Israel, dating to 800,000 years ago. And while their position on the evolutionary ladder remains unclear, "we're on our way to Europe," Howell says.

By at least 300,000 years ago, hominids had spread through Europe to as far as Swanscombe, England, and Vandermeersch says that this line can now confidently be traced to Neanderthal. One of the links, which he is currently investigating, comes from Biache in France, where a clearly pre-Neanderthal culture existed some 250,000 years ago. From these and other discoveries, Vandermeersch told SCIENCE NEWS in an interview, "I am sure we have only pre-Neanderthal and no pre-*Homo sapiens sapiens* [modern humans] in Europe. The first European *Homo sapiens* [Cro-Magnon] came from somewhere else — Asia or the Mid-East."

The important evidence linking Cro-Magnon man to the Middle East came during Vandermeersch's excavations of Qafzeh cave near Nazareth, Israel. Some 16 skeletons, dating to around 50,000 to 70,000 years ago, were recovered and found to have features closer to modern man than to the Neanderthals already in Europe. Vandermeersch and Howell tentatively call this Mid-Eastern modern man "proto-Cro-Magnon."

John H. Douglas

Vandermeersch: More missing links.

But other skulls, which *do* resemble Neanderthal, have also been discovered in the Mid-East. Vandermeersch thus postulates the following scenario: that Neanderthal evolved in Europe and that a branch migrated to the Middle East around 100,000 years ago, while Cro-Magnon evolved at least partially in the Middle East and then moved to Europe during the last Ice Age.

Several mysteries still remain, however. The stone tools used by Neanderthals and proto-Cro-Magnons were virtually identical during the same time period, and a smooth transition to more sophisticated culture can be traced despite the sudden change in population type. No one knows why. Nor do we yet understand why Neanderthal suddenly disappeared. No evidence has been found to suggest the two groups of *Homo sapiens* ever met, much less fought, so the sudden transition remains unexplained.

Finally, the question of Cro-Magnon's origin remains. Although the gap from *Homo erectus* to some sort of early *Homo sapiens* is being filled in, and the lineage of Neanderthal is constantly being pushed back, no trace of Cro-Magnon has been discovered before his appearance in the Middle East relatively recently. Vandermeersch told SCIENCE NEWS he doesn't know the answer either, but when asked where he'd most like to look, he replied, "In the south of Asia. Perhaps southern Russia." □

Report counters NASA's shuttle schedule

Based on the space shuttle engine's past performance, additional problems will probably delay the first manned orbital space flight until April or May 1980, a National Research Council advisory committee told a Senate subcommittee last week. The target date for a test flight, which NASA now puts at Nov. 9, 1979 (because of the December 1978 ground test explosion), is too optimistic, "particularly... because of the existing shortage of development engines, spare parts and test stands," committee chairman Eugene E. Covert of Massachusetts Institute of Technology told the subcommittee on Science, Technology and Space.

The NASA schedule can be met "only if the engine testing program encounters minimal or no difficulties — an improbability, considering the previous test history of the shuttle's main engine," the report said. Though NASA associate administrator John Yardley, who also testified before the subcommittee, agreed that everything will have to go right to meet the November deadline, he gave no indication that NASA would change the target date.

This was the second report of recommendations made by the committee, which was formed December 1977 by NASA at the request of the Senate subcommittee. A report last spring gave similar observations about the shuttle schedule (SN: 4/8/78, p. 213).

Other committee recommendations that ran counter to NASA's plans include:

- The procedure for preliminary flight certification. Because it is the final step before actually flying the engine, the NRC committee believes certification should be delayed until the exact, tested components that will be used in the final engine are in place. NASA's current procedure is to begin certification testing, remove a component if a problem develops and determine the significance of the problem. If it is significant, the part is adjusted and certification testing is restarted. If it is not a significant problem, the part is adjusted and testing proceeds.
- The need for a test stand for component testing. In its first report the NRC committee proposed using a separate test rig to check components before they are actually used in an engine. NASA attempted such a procedure, but found the technical difficulties too overwhelming and instead began using the engine itself as a test rig for parts. While acknowledging that the method risks losing an engine, NASA believes it is the most appropriate and economical procedure. □