

work to individuals receiving a health degree intermediate between the bachelor's degree and M.D., is seen essential to providing sufficient health manpower and to leaving highly and expensively trained physicians free to focus on serious health problems. The medical schools of Duke University in Durham, N.C. (SN: 1/25/69, p. 97), the University of Colorado in Denver and the University of Washington in

Seattle are cited as pacesetters with various programs of this kind.

Finally, naming Johns Hopkins in Baltimore as an exemplary pioneer, the commission urges major university centers to take an active role in health care research and in establishing systems for providing care to persons in the inner city and to those living in rural or suburban areas surrounding these centers. □

PREGLACIAL EVIDENCE

Early man in America



Photos: R. D. Simpson

Calico site: Six years of excavation have turned up claims of ancient man.

It is generally believed that man came first to America from Asia, crossing the Bering Strait when there was a land bridge joining the two continents. From Alaska, so the theory goes, he spread throughout the Northern and Southern Hemispheres.

There is ample evidence that man has been in America at least 11,000 years, and probably more. Since the 1920's, stone projectile points have been found with extinct animals in many geological strata that could be dated, and in fact the human bones recently found in the Marmes rock shelter in Washington state (SN: 1/24, p. 91) have been estimated to be between 10,800 and 13,000 years old.

For periods earlier than that there is an abrupt drop-off in artifacts and other evidence. And archaeologists had what they felt was a good reason why: The glacial ice that covered much of North America in earlier times, blocking any migration, is estimated to have receded at about this time, opening up a corridor through which men could have passed southward from Alaska.

But some archaeologists have refused to accept the 11,000 or 12,000 year upper limit on human presence in the continent. The search has continued for older evidence—evidence of a stage that is sometimes called pre-projectile point, to distinguish it from the later pointed-stone cultures. Although several sites are claimed to be older, there



Leakey inspects wedge-shaped stones.

is still controversy about the reliability of the evidence.

The most ambitious project has been in an alluvial fan stretching out from the Calico Mountains near San Bernardino, Calif. There for six years a team, put together by Dr. Louis S. B. Leakey of African archaeological fame and directed in the field by Ruth Dee Simpson of the San Bernardino County Museum, has carefully dug through a surface level of material to a stratum of rock which they estimated to be 50,000 to 100,000 years old.

In that stratum, Dr. Leakey announced at an international gathering of archaeologists that ended last week,

the diggers found many stone objects that he regards as clearly having been made by man.

Even more important, they found a group of wedge-shaped stones that form what could have been a hearth or fireplace about 17 inches wide. There were nine rocks all about the same size, and nine smaller rocks. The small ends of the rocks were all pointed inward like wedges of a pie.

Tests of one of the rocks, reported Dr. Rainer Berger of the University of California at Los Angeles, showed that the smaller end had a higher amount of magnetism than the bigger end, indicating that it could have been subjected to high heat. He plans to do similar tests on another rock from the opposite side of the group to see if its smaller end also shows higher magnetism. This would go far toward eliminating chance magnetic anomalies as a possible cause. Some doubts would remain, however, about the claim that the rocks formed a manmade hearth. There are no signs of fire, points out Dr. T. Dale Stewart, retired director of the Smithsonian Institution's Museum of Natural History: no charcoal, no cracks or discolorations in the rocks as are usually found in a hearth.

But if man came from Asia 50,000 or 100,000 years ago, how did he cross the glacier-blocked North? The theory, says Miss Simpson, is that there were successive progressions and recessions of the glacial ice in the millennia preceding the last great opening out about 12,000 years ago. As the glaciers formed, they drew water from the Bering Strait, exposing a land bridge between the continents. But they also drew water from along the continental shelf of the West Coast, exposing a strip of land several miles wide, down which animals, and man living off them, gradually extended their range throughout America. There was no need for them to come through the ice-blocked passage down the center of the continent.

Although Miss Simpson and her co-workers, including Dr. Leakey, are confident that the evidence they have uncovered will convince the rest of the profession, the chances are that skepticism will continue. So much of archaeology is guesswork that proof is hard to come by.

"For establishing man's presence," says Dr. C. Vance Haynes Jr. of Southern Methodist University in Dallas, "the minimum requirements (are) a human skeleton, or an assemblage of artifacts that are clearly the work of man . . . within undisturbed geological deposits. . . . The minimum age of the site must be demonstrable by primary association with fossils of known age or with material suitable for reliable isotopic age dating." Those requirements have still to be met at the Calico site. □