News of Science

Swanscombe Man

Two fragments of human skull, comprising the occipital and left parietal bones, were found *in situ* in the Middle Gravels at Swanscombe in Kent, England, by A. T. Marston in 1935 and 1936. Associated with the human bones were remains of other mammals and flint artifacts of the middle Acheulian phase of paleolithic culture. Except for their unusual thickness—which, however, can be matched in modern skulls—the human cranial fragments differ in no manner from the corresponding bones of modern or sapiens man. The Middle Gravels are generally accepted as belonging to the second interglacial period, some 200,000 to 300,000 years ago. That the skull fragments are indigenous to the stratum in which they are found and do not represent the remains of a burial or other artificial instrusion is not disputed.

On 30 July 1955 J. Wymer recovered the right parietal bone of a human skull from the same stratum as that in which the occipital and left parietal were found in 1935 and 1936 [*Nature* **176**, 426 (3 Sept. 1955)]. The three bones fit each other so well that there appears to be no doubt that they belong to the same skull. Numerous bone fragments, presumably of other animals, were found with the new parietal; these have been deposited at the British Museum (Natural History) for eventual identification.

Almost 300 primary and finishing flint flakes, 4 small, primitive hand-axes typical of the Acheulian industry of Swanscombe, as well as the point of a larger, finely finished hand-axe and a magnificent flake "knife," were found during the excavation. There can be no doubt that they are contemporaneous with the skull.

The positions at which the three skull bones were discovered form the vertices of a triangle with sides of 51, 49, and 24 feet. Inside this triangle remains a mound, of which a part is definitely undisturbed gravel of the skull zone. This area is now adequately protected and is being systematically excavated.

Through the kindness of K. P. Oakley, the undersigned was privileged to examine the newly discovered right parietal at the British Museum this past August. He harbors no reasonable doubt, in view of its morphology, that the new fragment belongs to Marston's original skull discovered some 20 years earlier. Also, in company with Wymer and Oakley, the writer visited Swanscombe and was permitted to participate in a day's excavation. During that time at least one nonhuman bone and numerous flint artifacts were unearthed, some of them within a few inches of the place where the new parietal had been found.

The Swanscombe skull is of the highest importance because of its relatively great age—being exceeded in age among the fossil remains of man in Europe only by the enigmatic Heidelberg jaw; for it not only is considerably older than the classic Neanderthalers of the fourth glacial period but also older than the earlier, more generalized Neanderthalers and the fragmentary Fontéchevade skulls of the third interglacial period, which are claimed by some to represent a sapiens type of man. Because the Swanscombe fragments are indistinguishable from the corresponding cranial bones of modern man, some enthusiasts have been led to accept as an established fact the existence of a true sapiens type in Europe contemporaneous with or even antedating the Neanderthalers. However, there is an apparent low degree of correlation between the braincase, face, and jaws of men during the first half or more of the Pleistocene epoch. In view of this, the fact that for Swanscombe man not a single scrap of the braincase or jaws—not even of the frontal bone, which might yield some clue to upper facial development—has as yet been discovered, makes such a conclusion premature, to say the least.

It has recently been claimed that the Steinheim skull, which combines a Neanderthaloid face and a substantially sapiens braincase, is second interglacial in age—rather than third glacial or third interglacial as formerly believed—and thus virtually contemporaneous with the Swanscombe skull. In consequence, it has again been suggested—as it was at the time of the original Swanscombe discovery—that the missing parts of the skull of Swanscombe man would resemble those of Steinheim man and thus would be Neanderthaloid rather than sapiens [*Science* **121**, 416 (25 March 1955)]. It must again be emphasized that this is quite as much of a guess as is the attribution of sapiens face and jaws.

The solution may lie within the mound inside the triangle at Swanscombe. Since the skull fragments already recovered exhibit very little abrasion from rolling, it seems not too much to hope that Wymer and his associates may eventually come across other, critical parts of the skull, and even of the postcranial skeleton, which would definitely reveal the true nature of the Acheulian man of Swanscombe.—W.L.S., JR.

Evaporograph

A new instrument, an evaporograph (EVA), that makes it possible to see in the dark has just been shown to the public for the first time by Baird Associates, Inc., Cambridge, an affiliate of American Research and Development Corporation. Using the device, which utilizes no electronic circuitry, a man can see a house a mile away in total darkness.

In operation the evaporograph is similar to a camera. The unit collects infrared radiation emitted from an object and focuses it as an image onto an oil film. The oil then evaporates away from point to point at rates varying with the amount of radiation received at each point. Seen in reflected light, these differences in oil film thickness appear as different colors, like oil films on water.

A detailed thermal picture of the field of view is thus obtained in color. This picture can be viewed directly or a photographic record can be made with a camera that is incorporated in the apparatus.

The unit is designed to observe radiation ranging from one to several thousand degrees F, and has a sensitivity that ranges down to about two-tenths of a degree. Accurate temperature measurements can be made either visually or photographically from this image.

EVA is housed in a cabinet 18 by 14 by 11 inches. Infrared radiation enters through a lens on one side and the operator views the oil film image through an eyepiece on the other. To date, Baird has built about a dozen of these devices for the military, each at a cost of about $9500.

The principle of operation was first demonstrated in Germany by M. Czerny. Work at Baird was originally suggested by Paul Ovrebo of the U.S. Air Force at Dayton, Ohio, and has been carried on there for the past five years. Much of the development, which has only just been declassified, was carried out under Signal Corps sponsorship. Bruce Billings, formerly research director and now vice president and general manager of Baird