

coides centered in Palestine, rather than from the wild *T. araraticum* found in south Turkey, north Iraq, and west Iran. He also points out that bread wheat would seem to have originated in the area of wild *Aegilops*, a grass found primarily in northern Iran—a point of some potential interest in terms of the origin of the bread wheats found further east.

Perhaps the most interesting paper of the Near Eastern group is that of Flannery who deals with questions of cultural ecology and cultural change from the point of view of the underlying dynamics of population growth and environmental carrying capacity. He suggests a model in which population pressure on the carrying capacity of the local environment creates a disequilibrium that brings about various kinds of change. For this model he utilizes Binford's equilibrium model for the Upper Palaeolithic in which, theoretically, the hunting population, once reasonably adapted to its local environment, would have tended to remain stable at a density below the point of resource exhaustion. Adaptation to a different pattern would have occurred only as the result of (1) a shift in available food resources within the area or (2) a demographic change causing the population to increase up to or beyond the carrying capacity of the area. Either of these developments or both together would have caused the occupation of more marginal habitats around the optimal ones initially selected. In these new areas that were constantly being occupied by groups "budding off" from the optimal centers of population increase, the need for adequate resources would have led to intensified exploration for new food sources. In this quest two genera of cereal grass and two of small ungulates were exploited and lifted out of their normal habitats. The consequent variation in form provided changes advantageous to man, which combined with technological innovations (irrigation, etc.) led to even greater dependence upon them. The hypothesis is a provocative one and should lead to some interesting discussion and even more interesting attempts at documentation in the field.

While a number of papers like Flannery's contain a good deal of hypothesizing, they all have one point in common. They are very cautious in their conclusions and very critical of many conclusions already reached and embedded in archeological literature. They are all in agreement that the evidence available is

very unsatisfactory in terms of the questions asked. And they are all in agreement that great opportunities for advancing our knowledge of this most important subject lie in the immediate future for those willing to master the requisite background in natural science.

Une cabane acheuléenne dans la grotte du Lazaret (Nice-Alpes-Maritimes). HENRY DE LUMLEY, ed. Mémoires de la Société Préhistorique Française, 7. Paris: Société Préhistorique Française, 1969. 234 pp., figures, illustrations, maps, tables, chapter bibliographies. 38F (paper).

Reviewed by KARL W. BUTZER
University of Chicago

The Grotte de Lazaret is situated at 28 m above sea level, on the cliffed Mediterranean coast within the city limits of Nice. Hand-axes were first discovered here in 1879, and excavations have been underway since 1950. This report, coauthored by a team of twenty-six people, describes the results of a six-week excavation in 1967 devoted to a part of one occupation level of the cave. Successive chapters describe the methods of excavation; geology and overall stratigraphy; sediment and heavy mineral analyses; paleontology, palynology, and macrobotanical remains; environmental reconstruction and paleoclimatology; bone mineralization and charring; the artifact assemblage and archeological associations, a reconstruction of human activities; and finally the human fossils. The presentation is concise, informative, and effective, and eleven plates provide reconstructions of the geographical setting and of the prehistoric structure that forms the center of interest.

The Lazaret cave is a solution cavity along a joint system in Mesozoic limestone. Originally a sea cave, the oldest deposits consist of several marine conglomerates, the youngest of which is attributed to the Tyrrhenian I (22–23 m, "Mindel-Riss"). These beds are overlain by three generations (6 m) of colluvial silts with frost-weathered scree, separated by two horizons of partial decalcification, and attributed by indirect argument to three stages of the Riss Glacial ("Riss I, II, III"). The prehistoric structure comes from the last of these units, a complex of twelve horizons with a thickness of 75–100 cm. These "Rissian" strata are capped by a truncated clayey soil, preserving prismatic structure

and attributed to a warmer period of weathering, designated by the authors as the Riss-Würm Interglacial. The final deposits, of Late Pleistocene age, include two generations of frost-weathered scree. The basic interpretation of these strata is reasonable, although the lack of uranium dates on shell as well as the absence of unequivocal stratigraphic markers above the Tyrrhenian I beach detract from firm correlation with either the Alpine glacial sequence or the Mediterranean glacioeustatic succession.

The fauna of the occupation horizon are of limited stratigraphic value in this late Middle or early Upper Pleistocene time range. It does, however, allow some ecological deductions and the inferences for subsistence patterns are of considerable interest. Included are at least two specimens of *Canis lupus*, one each of *Vulpes vulpes*, *Lynx spelaea*, *Felis* sp., *Panthera* sp., and *Equus caballus*, six *Cervus elaphus*, five *Dama* sp., one *Rupicapra rupicapra*, six *Capra ibex*, a large bovid, forty-five rabbits, a hare, four marmots, and an exceptionally wide spectrum of micromammals and birds. This is a mesic Palearctic fauna, compatible with the hilly and often stony terrain of the local habitat. Some of the rodents and birds are confined to higher latitudes or elevations today, suggesting a cooler climate. The marine mollusca also include a species of periwinkle not now found in the Mediterranean Sea but in cooler Atlantic waters. Three pollen spectra show 80-90 percent *Pinus silvestris*, with only 3.5-5 percent NAP. This is amplified by carbonized wood of pine and hardwoods (oak and *Buxus sempervirens*?). On the basis of this geological and biological evidence, De Lumley suggests a cold-temperate climate, moist in autumn and winter but relatively dry the remainder of the year. A 1000 m depression of the altitudinal vegetation belts is suggested, although the oxygen isotopic paleotemperature determination from marine shells (Mediterranean surface waters 6°C. colder) cannot be accepted quantitatively (see W. Dansgaard and H. Tauber, *Science* 166:499-502, 1969).

It is believed that a 10-20 cm horizon (level 5) (see stratigraphic profiles facing p. 18, and generalized column p. 30) of limestone rubble, with a matrix of clayey or sandy silt, accumulated during *one year*. This is inferred from the frequency curve of frost-cracked rocks, the presence of two juvenile ibex of five months' age in the basal laminae (mid-Novem-

ber?), and the presence of several marmots which come out of their burrows in the spring—in the top laminae (mid-April?). Such a rapid rate of sedimentation seems quite unreasonable to this writer. Unfortunately, all the inferences of settlement are based on the validity of these dubious premises. The artifact assemblage is lumped for the total vertical thickness of level 5 and all horizontal associations contemporary with the structure (from the middle of this horizon) are also lumped in the same way. The total collection includes 911 stone objects (125 tools) and 19 bone artifacts. The former lack bifaces entirely, although there are 13.6 percent choppers and pebble-tools. Side-scrapers are most abundant, and the *débitage* is non-Levallois. On the Bordes' cumulative frequency graphs, this industry is intermediate between Acheulian and "Pre-Mousterian." The structure itself is inferred on the basis of (1) localization of stones larger than 20 cm major diameter, (2) localization of stones "probably placed intentionally," (3) local rock rings interpreted as supports for posts, (4) zones of tool and hearth concentration (lumped from levels 5a, b, and c!), and (5) the elevation of the sloping wall and roof of the cave. The presence of some structure—about 11 m long and 3.5 m wide—against the back of this large cave is clearly indicated, particularly since the habitation residues are essentially confined to it. However, in the absence of convincing post holes or impressions, De Lumley's elaborate reconstruction of the superstructure must be considered as interesting but speculative.

In overview, this Lazaret report provides a large amount of excellent information on a cave occupation during a phase of cold-temperate climate, possibly late Riss. The structure that formed the focus of habitation was a shelter of some kind built against the back wall of a cave. Whether it was occupied during one winter only must remain questionable. It seems equally doubtful that all of the cultural materials from a 10 to 20 cm horizon accumulated in less than one year or that they were all associated with a single structure. Nonetheless, this team of enthusiastic excavators must be congratulated on a fascinating report, brought out rapidly and in an attractive format.

The La Tène Cemetery at Münsingen-Rain: Catalogue and Relative Chronology. FRANK ROY HODSON. Acta Bernensia V. Beiträge