The Atapuerca Sites and the Ibeas Hominids

The Atapuerca railway Trench and Ibeas sites near Burgos, Spain, are cave fillings that include a series of deposits ranging from below the Matuyama/Brünhes reversal up to the end of Middle Pleistocene. The lowest fossil-bearing bed in the Trench contains an assemblage of large and small Mammals including Mimomys savini, Pitymys gregaloides, Pliomys episcopalis, Crocuta crocuta, Dama sp. and Megacerini; the uppermost assemblage includes Canis lupus, Lynx spelaea, Panthera (Leo) fossilis, Felis sylvestris, Equus caballus einheimensis, E. e. e. germicus, Pitymys subterraneus, Microtus arvalis agrestis, Pliomys lenki, and also Panthera toscana, Dicerorhinus hemitoecbus, Bison schoetensacki, which are equally present in the lowest level. The biostratigraphic correlation and dates of the sites are briefly discussed, as are the paleoclimatic interpretation of the Trench sequences. Stone artifacts are found in several layers; the earliest occurrences correspond to the upper beds containing Mimomys savini. A set of preserved human occupation floors has been excavated in the top fossil-bearing beds. The stone-tool assemblages of the upper levels are of upper-medial Acheulean to Charentian tradition. The rich bone breccia SH, in the Cueva Mayor-Cueva del Silo, Ibeas de Juarros, is a derived deposit, due to a mud flow that dispersed and carried the skeletons of many carnivores and humans. The taxa represented are: Ursus deningeri (largely dominant), Panthera (Leo) fossilis, Vulpes vulpes, Homo sapiens var. Several traits of both mandibular and cranial remains are summarized. Preliminary attempts at dating suggest that the Ibeas fossil man is older than the Last Interglacial, or oxygen-isotope stage 5.

Key words: Pleistocene, middle —, cave infilling, fossil record, fossil hominids, occupation floor, acheulian.
Introduction

In the dismantled railway trench of the Sierra de Atapuerca, near Burgos, Spain, there are fissure-fill deposits of three main karstic cavities which outcrop up to 13 m (TN) and 20 m (TD) in depth. Excavations were begun in 1976 at TD ([locus IV-A-16 in the catalogue of natural cavities of Burgos province (MARTÍN-MERINO et al., 1981)] and TG, an exposed, almost filled gallery with a nearly horizontal roof, opening to a vertical duct, TN, on one side, and to an elliptical cave, TZ, on the other (IV-A-4 in the catalogue). Exploration sampling was started at TF (IV-A-10) and TP (IV-A-17) in 1986.

At TD, 12 m^2 have been excavated down to a depth of 5 m, the uppermost 4 m being sterile. At TG more than 25 m^2 were excavated to a depth of 4 m. A suspended square meter grid was established at each site. Preliminary sampling was performed at the TG-TN, TD and TF sections. Artifacts and fossils exposed by weathering have been recovered every year to prevent loss.

The Sima de los Huesos (SH), also in the Sierra de Atapuerca, and less than 1 Km from the T group of sites (Figure 1) is a crevice, nearly 15 m deep. It opens at the end of a side gallery, more than 400 m inside the Cueva Mayor, Ibeas de Juarros. The blind bottom of SH has a horizontal section of approximately 5 x 3 m^2; the height varies from 0 m to 3 m. Most of this room has been excavated over many decades by amateur speleologists, in search of bear canines. No less than 8 tons of bone bearing breccia were removed, and then left aside in the same place as a mass of bone fragments and mud debris (Figure 2).

The estimated 5 tons of discarded material, which have so far been evacuated, washed and sorted, contained nearly 9,000 identifiable fossils of carnivores, and more than 170 human remains. Initial excavation of undisturbed sedimentary material yielded seven pieces of fossil men. Profiles of the present cavity have been surveyed at each site, and transversely.

Zazo et al. (1983) studied the geological and geomorphological features and processes of the area, and made a geomorphic map.

Hundreds of cubic meters of sediment were washed and sifted in search of microvertebrates, and the main sections on the Trench were sampled for pollen analyses. Samples were also taken for paleomagnetic research at TD, and for isotopic dating at different levels in TG, as well as in SH.

Preliminary observations on geodynamics and stratigraphy

Atapuerca Hill consists of a monadnock of Cretaceous rocks, to the West of and detached from the main ranges of the Iberic System. It may have originated within the Oligocene, as the colluvial deposits of that age found on the slopes indicate. Peneplanation of the summit would have been completed sometime in the early Pliocene. Then the equilibrium thus established was disturbed by the Ibero-Manchega diastrophic phases I and II (AGUIRRE et al., 1975). The last main prograding land-forms were followed by the highest terraces of the Duero river system near the base of the Pleistocene, as the Northern Meseta basin began drained into the Atlantic Ocean.

In the area of Atapuerca and the middle Arlanzón river valley no more than 4 terraces are attributed to the Early Pleistocene. Zazo et al. (1983) assign the lowering of the water table, the exposure of the karst cavities and the beginning of the known depositional sequence in the Atapuerca Trench to the time of dissection of the 3rd terrace of the Arlanzón. The filling of that wide and important karst network ends nearly at the start of the Last Interglacial. Late Pleistocene and Recent activity in the Sierra de