

## **ERBABA: THE 1977 AND 1978 SEASONS IN PERSPECTIVE**

**Jacques BORDAZ - Louise Alpers BORDAZ**

The long range objective of the Beyşehir-Suğla Basin Project, initiated in 1964, has been to document and explain through archaeological and palaeoecological investigations on the fundamental changes which accompanied the beginnings of sedentism, agriculture and herding in this largely unknown region of South-Central Turkey.

We would like to express our appreciation to the Turkish Department of Antiquities which not only authorized but greatly facilitated the fieldwork. Grants awarded by the National Geographic Society in 1977 and 1978 to the joint University of Pennsylvania / Columbia University Beyşehir-Suğla Basin Project supported the continued exploration of the Neolithic settlement of Erbaba in South Central Turkey. The 1977 session consisted of an excavation season conducted between July 8 and August 14. The permanent staff consisted of co-principal investigators Jacques Bordaz and Louise Alpers-Bordaz, as well as graduate students Stuart Fiedel and Willene Hull of the University of Pennsylvania and Theresa Hersh of Columbia University. Palaeobotanist Yvonne Koster of the University of Groningen (The Netherlands), archaeologists Ülge Göker of İstanbul University / the British Institute of Archaeology in Ankara and Ayyüz Sabuncu of İstanbul Technical University, and graduate student Patrick Vaughan of the University of Pennsylvania also participated in the Project for extended periods of time. Emin Başaranbilek of the İstanbul Archaeological Museum served as the government representative. The 1978 season

was devoted to the analysis of the archaeological material excavated during the 1977 campaign. This research was carried out between July 5 and August 24 by a team composed of J. and L. Bordaz, S. Fiedel, and T. Hersh in the Archaeological Museum of Konya. The fundamental premise underlying the research has been that only an extensive, interdisciplinary program focused on one circumscribed environmental zone could yield the data requisite for such a study. The natural geographic unit the Beyşehir and Suğla Lakes Basin was originally selected for examination within the broader context then accelerating research into the Neolithic of Southwest Asia and on the immediate evidence yielded in an exploratory archaeological and geological survey in the Basin by Ralph S. Solecki and William Farrand (Solecki 1965).

The first stage of the Project was realized with the excavation by J. Bordaz in 1964 and 1965 of Suberde, an aceramic Neolithic site dating to the first part of the seventh millennium B.C. (radiocarbon dates, Libby half-life, uncalibrated). The National Science Foundation supported the two excavation seasons at Suberde, located 11 kilometers southeast of the town of Seydişehir near Suğla Lake, and a summer study session of the material in 1966; all three were conducted under the auspices of New York University and staffed in the field by graduate students from that institution (Bordaz, 1965, 1966, 1969, 1973). An especially notable result of the Suberde excavations was documented by the collaborating palaeozoologists Dexter Perkins, Jr. and the late Patricia Daly Perkins. It has been established on the basis of their faunal analysis that, despite the permanent nature of this small village of mud-brick structures, the inhabitants continued to pursue a traditional subsistence pattern based on the hunting of wild sheep, goat, cattle and pig (Daly, Perkins and Drew, 1973); Drew, Perkins and Daly, 1971; Perkins, 1973; Perkins and Daly, 1968). This interpretation was suggested as well by the predominance of projectile points in the chipped stone collection. The economic reconstruction is currently being investigated with reference to the plant consumption of the Suberde population by palaeobotanist Willem van Zeist of the University of Groningen.

The second phase of the Beyşehir-Suğla Project commenced in 1969 with the excavation of Erbaba, a small settlement situated 10 kilometers north-northwest of the town of Beyşehir, 1 ½ kilometers to the east of Lake Beyşehir, and 50 kilometers to the north-northwest of Suberde. This site had been selected during the course of a survey conducted by the Project in 1965 and 1966 in accordance with the decision to investigate - subsequent to Suberde - a somewhat later, ceramic Neolithic village in the region. Only 5,000 square meters in area and lacking any post-Neolithic occupation, Erbaba seemed to offer an excellent opportunity for the extensive sampling necessary to obtain the data requisite for a comparative study of Neolithic sites in the Beyşehir-Suğla Basin, Turkey, and Southwest Asia.

Prior to the National Geographic Society grant in 1977, three seasons of excavation had been conducted at Erbaba (Bordaz, 1970, 1971, 1973; Bordaz and Alpers-Bordaz 1976, 1977a, 1977b, 1978a, 1978b). The 1969 and 1971 field cam-

paigns and the 1970, 1972 analyses of the material carried out in the Konya Archaeological Museum were supported by the Canada Council; the 1974 excavation and the 1973, 1975, 1976 processing sessions in Konya were funded by the National Science Foundation.

These first three field seasons proceeded according to a sampling scheme based on combined stratigraphic-control soundings and horizontal exposures (see plan). As at Suberde, all deposits were dry-sieved and extensive samples collected for subsequent flotation. The internal stratification of this maximum 4 meter deep deposit was thus determined and the chronological assignment of Erbaba to the first half of the sixth millennium B.C. established (radiocarbon dates, Libby half-life, uncalibrated). A concentrated effort focusing on an area of 800 square meters in the southern quadrants of the site revealed, in the uppermost of the three major levels (Layer I), the ground plans of a stone architecture unique in the Central Anatolian Neolithic. Given the absence of doorways in what appear to be exterior walls, the 36 contiguous units comprising approximately 11 different complexes seem to have been entered from the roof (see plan).

In the course of these initial excavations, significant data relating to the subsistence base of the Erbaba inhabitants were collected (Perkins 1973). Analyses by Perkins and Daly Perkins of the 15,000 identifiable faunal specimens retrieved by 1974 indicated that cattle, sheep and goat were domesticated and bred throughout the history of the settlement, although an increasing reliance on cattle for meat gradually occurred (personal communication, 1976). This was determined by the observation that cattle represented only 5% of the faunal sample in the lowermost level (Layer III) and 27% in the uppermost level (Layer I); conversely, sheep/goat declined from 95% of the sample in Level III to 73% in Level I where they apparently also survived to an older age, thus suggesting an increase in their use for secondary products (i.e. wool, milk). A preliminary examination of the Erbaba botanical remains by van Zeist confirmed as well the existence of a domesticated floral complex (personal communications 1973, 1975, 1976). Consisting primarily of emmer and einkorn wheat, a naked barley, pea and lentil, the vegetal remains studied also included specimens of a free threshing wheat (either *Triticum durum* or *Triticum aestivum*) and a hulled barley. Although the diet of the Erbaba population was supplemented by fishing, the hunting of deer, boar, bird and the collecting of field weeds such as bitter vetch, these wild foods were represented only rarely in the sample.

This highly distinctive contrast between the subsistence patterns of Suberde and Erbaba was noted immediately in the artifactual assemblages as well. For example, of the approximately 1250 obsidian and flint chipped stone implements with specialized retouch analyzed as of 1976, only 3% were projectile points as opposed to 20% of these hunting weapons present in the Suberde collection. At Erbaba, the numerically most important classes represented in this sample were

notched and denticulated tools, backed and truncated bladelets, and sickle blades. Cores, core fragments, preparation waste and blades, bladelets and flakes with only use-retouch or very limited deliberate retouch comprised the remainder of the evidence. Other observed differences between Suberde and Erbaba (such as the relative reduction in production by-products at Erbaba, implying that raw material was obtained in the form of already roughed-out blanks) further underscored significant divergences between the technology as well as the economy of these two Neolithic sites in the Basin.

Ceramics, almost totally absent from Suberde, contributed extensively to the initial interpretation of Erbaba with reference both to internal and external chronological relationships. By the end of the 1976 study season, 55% of the 32,000 sherds recovered to date had been categorized on the basis of attribute combinations relating to shape and manufacture. A stratigraphic distributional study of these sherds within the site was completed at that time, resulting in the isolation or refinement of certain features as valid time indicators. In technological terms, a thin, gritty fabric was confirmed as characterizing the lowermost Layer III, with intermediate Layer II and latest Layer I identified by an industry comprised of 1/3rd gritty ware and 2/3rds shell-tempered pottery. Most of the nine simple vessel shapes recovered (e.g. hole-mouth jars, bowls with straight sides, jars with slightly everted necks) appeared in the distributional study throughout the occupation of the site. However, the twenty kinds of appendages formed contrasting stratigraphic clusters, designating both the shape and orientation of appendages as significant chronological indicators. Both technological and morphological ceramic traits proved extremely useful, as well, in relating Erbaba to the important Neolithic sites of Çatal Hüyük (Mellaart 1967), 75 kilometers to the east of the Basin in the Konya plain and Hacilar (Mellaart 1970), 150 kilometers to the west in the Burdur region. During these first years of exploration and analyses at Erbaba, the correlation of Erbaba Layer III with Early Neolithic Çatal Hüyük levels VIII-O and Erbaba Layers II and I with Late Neolithic Hacilar levels IX-VI was established by extensive ceramic parallels. Furthermore, the absolute time span of the settlement from approximately 5800 to 5400 B.C. was confirmed on the basis of dates available from all three of these sites (radiocarbon dates, Libby half-life, uncalibrated). This cross-dating not only served to place Erbaba within a broader perspective but also clarified, for the first time, the cultural and chronological relationships of Çatal Hüyük and Hacilar.

Thus, by 1976, the fieldwork and analyses had established Erbaba as an early agricultural village yielding extensive subsistence data and a distinctive material culture highly relevant in comparative studies of the developing Neolithic in Turkey and Southwest Asia. Grant number 1780 awarded by the National Geographic Society to the Beyşehir-Suçla Basin Project in 1977 allowed the excavators to confront an important sampling discrepancy which existed at that time.

As of the completed 1974 field session, the total volume excavated at Erbabā since 1969 represented some 420 cubic meters or 6% of the estimated deposit. About 22% of the site's surface, approximately 1100 square meters, had been exposed to the depth where the Layer I architecture could be recognized and recorded, that is 30 to 40 centimeters below the topsoil. However, Layers II and III, revealed as yet only in the stratigraphic-control soundings, were represented by a disproportionately small 1 to 3% of their estimated volume. In order to rectify this sampling imbalance, the excavation activities of 1977 concentrated on Areas G and C, located respectively in the southwestern and southeastern quadrants of the site (see plan). These sections were selected for further investigation in this context since deep soundings there had produced outstandingly prolific and well-preserved architectural, artifactual, floral and faunal remains.

Area G had been initially exposed during the 1971 season and given an architectural definition by the ground plans of six units encountered in Layer I (G1-6). At that time, units G1 and G3 were cleaned to the latest preserved occupation floor, approximately 60 centimeters below the mound surface. In addition, 1 meter square stratigraphic-control soundings had been excavated some 4 meters down to sterile soil within G1 and G2; they subsequently served to guide the lower level investigations here in 1977.

Of the 25.8 cubic meters excavated in G2 during the 1977 season, 56% consisted of fallen architectural debris. The walls proper of this 4.45 by 5.45 meter unit were preserved to a height of 85 centimeters, but calculations based on the associated rubble have suggested that they originally reached approximately 1.80 meters. As all other walls at Erbabā, these were constructed of irregular limestone blocks laid in a mud mortar. The eastern and western walls of G2 were not bonded to the northern and southern walls, implying that the latter were built first and the delineated area then sub-divided into several enclosed sections of which G2 is one example. This unit, stratigraphically part of Layer I, was erected over and slightly into a 20 centimeter thick deposit of a clay-like fill which served as a living surface and sealed off, as well, an earlier 20 centimeter deep stratum comprised of numerous mud floors (G11). The living floor of G2 did not manifest any structural features or evidence of re-surfacing, suggesting that the unit's utilization was relatively short. The high density of sherds (370 per cubic meter) and animal bone fragments (1360 per cubic meter) encountered in the earth matrix of the rubble indicates that G2 ultimately served as a refuse pit during its disintegration.

Representative of the intermediate Layer II, the superimposed mud floors isolated in G11 under G2 were followed westward during the 1977 field session into the area initially defined by G1. This unit had been cleared in 1971 down to the level of these floors (G8) at a depth of 1.50 meters below topsoil. In 1977, this section was excavated up to the sterile soil limit at 3.90 meters beneath the mound surface.

Of the 10.8 cubic meters of deposit investigated in this operation, stone wall rubble comprised 21%.

The activities conducted within the confines of G1 during the 1977 season exposed, for the first time at Erbaba, extensive remains of the earliest settlement (Layer III). Unit G10, built immediately on sterile soil, consisted of a partially destroyed east-west wall with an adjoining earth platform and floor. Over this robbed section lay the southwestern corner of the succeeding unit G9 whose stone walls were still standing intact to 1.57 meters. A sunken oven was encountered within G9, constructed against the southern wall. This feature consisted of a semi-oval mud coated floor (1.15 meters by 62 centimeters) enclosed by two slightly convergent mud coated stone sides preserved to a height of 23 centimeters. Charcoal and the highly fired interior surfaces attested to the extensive use of this oven; its efficiency was improved by the regularly spaced small stones and limestone slabs incorporated into the earth matrix of its floor for heat retention. The oven and the associated living surfaces were eventually sealed off with a fill and two north-south partitions erected successively to subdivide the interior space. At this stage in the stratigraphic history of G9, shell-tempered pottery appears in the deposits, marking the beginning of Layer II. The remaining Layer II investigations here yielded further evidence of filling and building operations. Of special note was the appearance of a semi-circular flanged plaster measuring 1.07 meters in length and 31 centimeters in diameter. Although no longer *in situ*, this decorative element with its clay core, white earth surface, and faint bands of red paint nevertheless represents the first such architectural embellishment discovered at Erbaba.

In addition to these explorations within G1 and G2, conservation measures were undertaken to protect the previously exposed Layer I architecture in G4. Furthermore, supplementary excavations were conducted in G3 in order to relate this unit stratigraphically to the Layer I and II data exposed in the neighboring areas.

The purpose of the 1977 investigation of Area C was to increase further the already rich botanical and artifactual samples collected there in Layer III contexts during the 1969 and 1974 seasons. Before reaching sterile soil in 1977 at a depth of 4.10 meters below the mound surface, a total of 8.9 cubic meters had been excavated in C, 20% of which were stone rubble. The evidence encountered in Layer III at this time included sections of walls, floors, and roofing material, all of which were heavily disturbed by subsequent construction activities. Nevertheless, the anticipated artifactual and, especially, floral yield was extremely prolific.

The large quantities of carbonized seeds and spikelets retrieved primarily from Area C but also from the operations in Area G established Erbaba as one of the richest sources of grains and pulses in the Neolithic record of Southwest Asia. The 1977 field season benefited greatly from the presence of Yvonne Koster. In addition

to conducting the flotation, she was able to confirm, in the vastly enlarged sample, the presence of the grains and pulses recognized previously by W. van Zeist and identify, as well, other edible plants then unprecedented at Erbaba such as *Aegilops*, *Polygonaceae*, bromegrass, goosegrass, chickpea and horsebean.

The fieldwork carried out at Erbaba in 1977 significantly increased our comprehension of the site. The first coherent horizontal exposures of Layer III remains were accomplished and their stratigraphic relationships to the expanded Layer I and II samples determined. Previously undocumented internal architectural features were exposed and, in the course of these operations the artifactual, floral and faunal collections were augmented.

Grant number 1890 awarded by the National Geographic Society to the Beyşehir-Suçla Basin Project in 1978 supported the processing of the artifactual material excavated at Erbaba during the previous season. The floral and faunal data had already been submitted to the relevant specialists, W. van Zeist and D. Perkins, Jr., for final detailed studies which continue to date. During this 1978 summer session, the total 1977 artifactual assemblage from Erbaba was entirely processed according to the classificatory system established for the site, and representative or unique objects were selected for individualized description. This research which involved the examination of more than 700 chipped stone pieces and 500 diagnostic pottery sherds not only brought up to date the basic analyses but also focused on several specific problems and projects. For example, in preparation for a projected functional study, some 40 representative specialized chipped stone implements and 400 obsidian blade fragments without systematic retouch were inspected for edge wear patterns under 80x magnification. The investigation of the worked bone industry was completed at that time by Ülge Göker who has participated in the Project since 1974; her dissertation which concentrates on the Neolithic of Turkey incorporates data from both Suberde and Erbaba is scheduled for submission to Istanbul University in the Fall of 1979. Theresa Hersh prepared a sample of 100 specimens of ground stone querns, handstones, pestles, mortars and hammerstones from Erbaba as a pilot study for a dissertation at Columbia University on food processing and associated implements in the Neolithic of Turkey and the Aegean; her research is currently being sponsored by Whiting and National Science Foundation fellowships.

Past accomplishments and on-going investigations promise to confirm Erbaba as one of the primary sites contributing to the present understanding of the fundamental cultural and ecological adaptations characteristic of the first major change in human lifeways - the "Neolithic Revolution" in Southwest Asia.

## REFERENCES

Bordaz, Jacques

- 1965 Suberde Excavations, 1964. *Anatolian Studies*, vol. XV, pp. 30-32.
- 1966 Suberde, 1965. *Anatolian Studies*, vol. XVI, pp. 32-33.
- 1969 The Suberde Excavations, Southwestern Turkey: An Interim Report. *Türk Arkeoloji Dergisi*, vol. XVII, pp. 43-71.
- 1970 Erbaba (Beyşehir). *Anatolian Studies*, vol. XX, pp. 7-8.
- 1971 A Preliminary Report of the 1969 Excavations at Erbaba near Beyşehir, Turkey. *Türk Arkeoloji Dergisi*, vol. XVIII, pp. 59-68.
- 1973 Current Research in the Neolithic of South Central Turkey: Suberde, Erbaba and their Chronological Implications. *American Journal of Archaeology*, vol. 77, pp. 282-288.

Bordaz, Jacques and Louise Alpers-Bordaz

- 1976 Erbaba Excavations: Activities through the 1974 Field Season. *Türk Arkeoloji Dergisi*, vol. XXIII, pp. 39-43.
- 1977a *Beyşehir-Suçla Basin Project*. *American Journal of Archaeology*, vol. 81, p. 291.
- 1977b Erbaba Excavations, 1976. *Anatolian Studies*, vol. XXVII, pp. 32-33.
- 1978a Erbaba, 1977. *Anatolian Studies*, vol. XXVIII, pp. 20-21.
- 1978b Beyşehir-Erbaba. *American Journal of Archaeology*, vol. 82, p. 316.

Daly, Patricia, Dexter Perkins, Jr., and Isabella M. Drew

- 1973 The Effects of Domestication on the Structure of Animal Bone. In "Domestikationsforschung und Geschichte der Haustiere", pp. 157-161. Akadémiai Kiadó, Budapest.

Drew, Isabella H., Dexter Perkins, Jr., and Patricia Daly

- 1971 Prehistoric Domestication of Animals: Effects on Bone Structure. *Science*, vol. 171, pp. 280-282.

Mellart, James

- 1967 *Çatal Hüyük: a Neolithic Town in Anatolia*, 232 pp., illus. Thames and Hudson, London.
- 1970 *Excavations at Hacilar*, part 1, 249 pp., part 2, 525 pp., illus. Thames and Hudson, London.

Perkins, Dexter, Jr.

- 1973 The Beginnings of Animal Domestication in the Near East. *American Journal of Archaeology*, vol. 77, pp. 278-282.

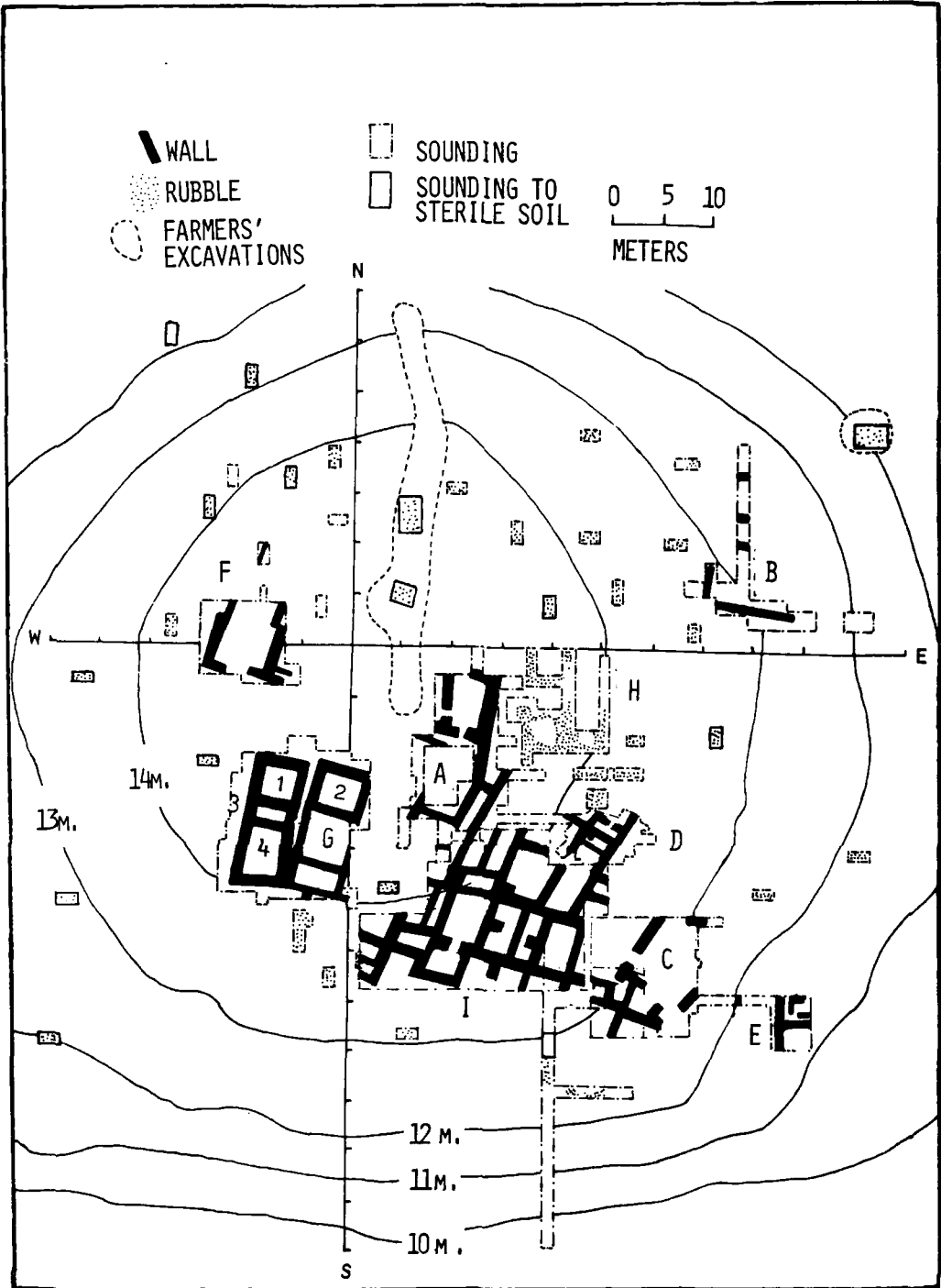
Perkins, Dexter, Jr. and Patricia Daly

- 1968 A Hunter's Village in Neolithic Turkey. *Scientific American*, vol. 219, pp. 96-106.

Solecki, Ralph S.

- 1965 An Archaeological Reconnaissance in the Beyşehir-Suçla Area of Southwestern Turkey. *Türk Arkeoloji Dergisi*, vol. XIII, pp. 129-148.





Plan of the Neolithic site of Erbaba, 1977, Beysehir, Turkey