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# NEO-LITHICS 1/96

## A Newsletter of

# Southwest Asian Lithics Research

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## Editorial Note

In order to promote the aims of this newsletter on a wider scale, we decided to offer a new type of possible interaction as available with the new on-line facilities. We expect that over the time more and more colleagues will join these electronic services. As a first step, the mailing list *ForumNeo-Lithics* (details see the invitation in this newsletter) was created, an open forum of discussion for promoting cooperation in Neolithic research in the Eastern Mediterranean and the Middle East. This was established in cooperation with Klaus Schmidt, ArchaeNova e.V. Heidelberg. Important discussions or contributions in this forum may occur in print in this newsletter.

The discussion forum is part of a planned Website, provisionally named *Prehistoric Sites*, which will be maintained by the associations of *ArchaeNova, ex oriente*, and the *Friends of 'Ain Ghazal*. Aside of an information section, the site will contain a service section (bibliographies), a section for on-line publication (e.g. *Neo-Lithics* is thought to appear here, too), and a section for on-line cooperation (e.g. the handbook on chipped Neolithic industries under construction). This not means that our small newsletter will get obsolete, it well may gain in addition a sort of readers' digest function. Let us see how the new possibilities allow to develop our goals.

Gary O. Rollefson Hans Georg Gebel Stefan Karol Kozłowski

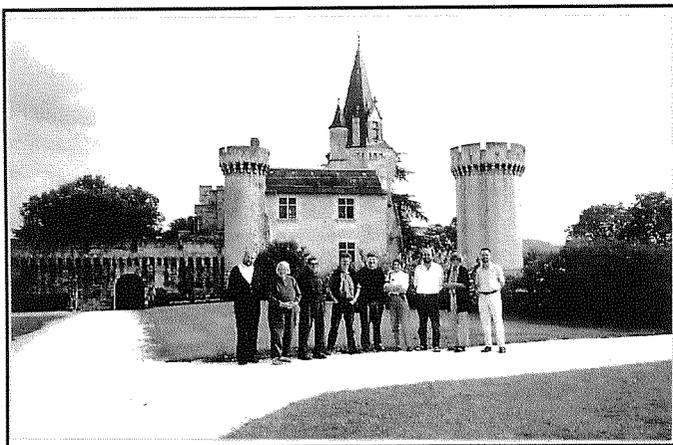
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## Courage et Persévérance

A note on cooperation by the enlarged NFT-Group  
Meeting at Marouatte (8th of June, 1996)

Based on earlier considerations in Berlin of the urgent need for scientific cooperation in the field of Neolithic chipped stone industries, the members of an enlarged NFT- group devoted one day of their Marouatte meeting (see also the *Notes and News* section in the newsletter) to discuss the situation and the problems of the working groups 3 years after the end of the initial meeting in Berlin in 1993. The issue had to be raised since the work of the NFT-Group started to suffer from the lacking work of other sub-groups necessary to rely on.

It is clear that several of the working groups have ceased to exist as functioning committees, and this development has affected not only the progress of those working groups, but of the NFT group as well. Therefore the participants at Marouatte discussed possibilities for the reorganization of the working groups in order to achieve the goals of the Berlin agreements.



The enlarged NFT-Group in front of Chateau de Marouatte, Dordogne (from left to right: H.G. Gebel, Lorraine Copeland, F. Valla, D. Baird, G.O. Rollefson, M. Beile, K. Schmidt, L. Quintero, and B. Müller-Neuhof).

Certainly one of the problems has been the global separation of participants. The expectation that people from one side of the world could meet frequently with colleagues from the other side of the earth to discuss the development of a "handbook" was not to realistic. This logistical problem can now be resolved to a great

extent by the availability of of-line Internet interaction, and an interactive Website section now under construction will be available to facilitate this kind of communication.

The proposal is that the website will consist of four sections (technology, microwear, formal tools and non-formal tools) for interactive discussion (and archiving) of the development of modules for the handbook. Each section will be coordinated by a "server" who will organize the comments and suggestions directed towards particular themes. The NFT module, compiled from the reports published in earlier *Neo-Lithics* and further inserts, may serve as an example/ prototype for the other committees; this module will be available on the Website by autumn 1996. More details and the address of the Website will appear in the *ForumNeo-Lithics* (see below) and the next issue of *Neo-Lithics*.

It is hoped that the reorganization will stimulate a renewed dedication to the aims of a mutually acceptable approach for the description, analysis and interpretation of Neolithic chipped stone industries in the Near East. Members of the former working groups will be contacted in the near future concerning new agendas.

We thank Lorraine Copeland for providing to us the headline of this Marouatte Memorandum: *Courage et Persévérance*.



Work of the NFT-Group at Chateau de Marouatte.

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**Invitation to Join the *ForumNeo-Lithics*,  
an Open Forum of Discussion for Promoting  
Cooperation in Neolithic Research  
in the Eastern Mediterranean and the Middle East,  
and Related Subjects**

maintained by

ArchaeNova e.V., Heidelberg  
ex oriente e.V., Berlin, and  
Friends of 'Ain Ghazal e.V., Wembach

A) You may subscribe to the mailing list of *ForumNeo-Lithics* by sending an e-mail to the address

macjordomo@macserver.zedat.fu-berlin.de

while writing in the text section "subscribe *ForumNeo-Lithics*". Behind these words, please add your name in the style as written in your e-mail address (the name in <...>), e.g. "subscribe *ForumNeo-Lithics* Hans Georg Gebel". Then send off the e-mail.

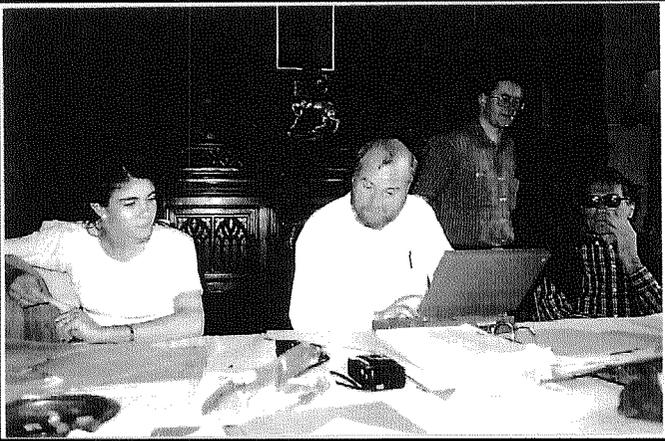
B) You should receive -after automatic registration and some time a response saying: "Your subscription to macjordomo@macserver.zedat.fu-berlin.de has been processed and you are now a subscriber to forumneo-lithics". With that you also should receive a list of instructions, which we recommend that you print it out.

C) Communication: Whenever you want to contact a wider range of colleagues with questions, communications, or useful information on our subject, or have contributions to current discussions in the mail group, please send these -after subscription- as ordinary e-mails to the address

Neo-Lithics@macserver.zedat.fu-berlin.de

All subscribers of the address will automatically receive your message. In return, you will find in your e-mailbox messages of others whenever delivered to Neo-Lithics@macserver.zedat.fu-berlin.de

D) Our forum provides the possibility of open discussion and communication. Information delivered here is not protected and should be used by readers according to the accepted academic rules. We reserve the right to cancel individual subscription, and other necessary measures to protect subscribers' contributions. For personal messages please continue to use normal e-mail facilities. The forum supports aims of "Neo-Lithics. A Newsletter of Southwest Asian Lithics Research", which will continue to be issued biannually.



Work of the NFT-Group at Chateau de Marouatte.

E) The three associations mentioned above will provide further online facilities and services in the framework of the Web-ite (under construction): "Prehistoric Sites. Archaeological Research in the Eastern Mediterranean and Western Asia". Further information on that will be provided in autumn, 1996.

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## Aşıklı Höyük Excavations

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Istanbul University

Aşıklı Höyük is situated near the Melendiz River in the province of Aksaray, a volcanic region surrounded by basalt, andesite and tuff rocks. The Aşıklı Höyük settlement covers about 3.5 to 4.0 hectares, and some 0.4 ha have been excavated since 1989. Dated to 10,000 bp, it is the earliest known Holocene site in central Anatolia (ESIN 1994).

**Stratigraphy.** Three layers have been observed. The uppermost is much damaged and eroded due to agricultural activities, and only some floors were noticed. The middle layer is extensive and includes 10 building layers. The lowest layer has only been noticed in a vertical section cut by the river and has not yet been reached by excavations. On the south side of the mound, near the river, structures covered by an alluvial deposit have also been found.

**Architecture and settlement patterns.** The architecture at Aşıklı Höyük is mud brick, with stone observed only in the surrounding walls of the settlement. Houses are rectangular in plan and closely knitted together, forming "sectors" separated by narrow passages. A large open area, used primarily as a refuse dump, takes up important space in the settlement. The site is set off by curved stone walls to the east that appear to limit the settlement's extent in this direction: no cultural material was found to the east of these features, although potsherds are common, which suggest a more recent occupation in this part.

A stone-paved road is also noteworthy. It begins in the western part of the settlement and leads eastward, separating into two smaller "streets". The settlement plan is different to the north and south of this road. Next to the road to the north is a big

structure with chest-walls, but to the south is a large one-room structure with red plaster floors. Although it is difficult to determine relationships due to erosion in this part of the mound, the south also has many walls between smaller structures, perhaps suggesting some collective use for particular activities.

**Burials.** Burials are found under house floors. The dead, wrapped tightly in mats, were placed in a flexed position in simple pits, and burial goods consisted of strings of beads made of shell, agate, copper, bone or stone.

**Subsistence economy.** Hunting had a fundamental role in the subsistence economy, for there is no evidence of animal domestication. Sheep and goats were the most prominent prey, and other animals included *Bos* sp., boar, deer, horse and hare and other small game. There is also evidence for bird hunting and fishing (BUITENHUIS n.d.).

The floral remains include domesticated crops such as emmer, einkorn and durum wheat, barley, and to a more limited extent pulses, including bitter vetch, lentils and peas. Fruits and nuts are represented by huge amounts of hackberry (*Celtis* sp.) stones and lesser amounts of Pistacia and wild almond VAN ZEIST and DE ROLLER 1995).

**Lithic industry.** Obsidian is almost the only raw material used in the chipped stone industry. The raw material was brought to the site in the form of blocks or tablets, and all the knapping took place on the site; the entire chaîne opératoire is represented. It is primarily a blade industry. There are some irregular flake cores, but the majority are naviform blade cores. Retouch modified pieces are represented by microliths and geometrics, which are quite abundant in the lower building layers (as are microburins) and backed blades, backed pointed blades, truncated blades and scrapers, which are numerous in all layers, but especially so in the upper layers. Projectile points are poorly represented, but they include a single-shouldered point (Aşıklı point). Double-shouldered points are present but only in limited numbers in the upper layers. Pressure-flaked arrowheads were found only in disturbed surface contexts, so they probably belong to the latest eroded layers. Burins and piercing tools are rare (Balkan-Atlı, pers. comm.).

The ground stone industry is represented mainly by grinding slabs and grinding stones, mortars, pestles, polishing stones and stone balls (bolas).

**Varia.** It is interesting to note the presence of copper beads that were produced by pyrotechnology (ESIN 1995) and lightly fired small tokens. Figurines are absent, but there are some abstract objects of baked clay.

Concluding remarks. Aşıklı Höyük presents an architecturally and (probably) socially well developed village with a subsistence economy based primarily on wild game and fruits, with agriculture focused on cereals. The village is also made interesting by its obsidian technology and the use of copper. Other kinds of material, such as shells and stone beads, also demonstrate an exchange system with neighbors or more distant regions.

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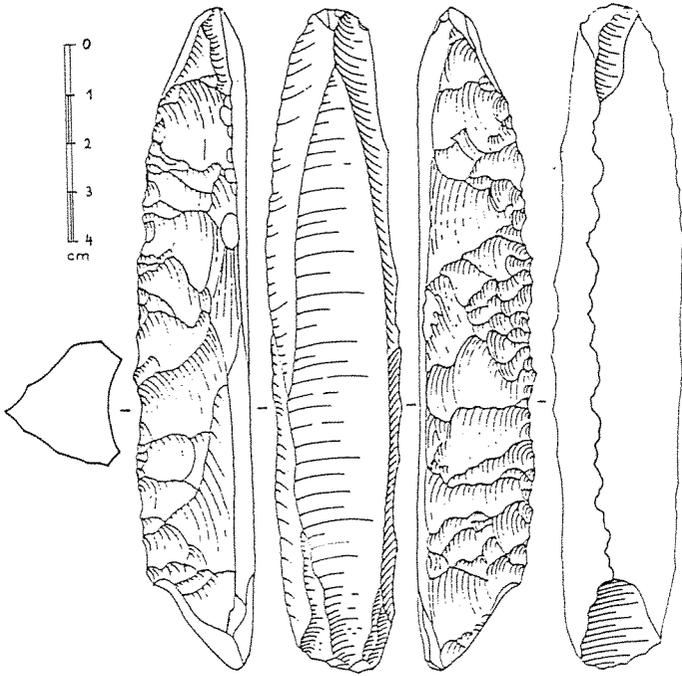
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## Kaletepe, an Obsidian Workshop in Central Anatolia

Nur Balkan-Atlı  
Istanbul University

The Central Anatolian Obsidian Research Project, whose aim is to do an exhaustive inventory of the obsidian resources, workshops and prehistoric sites, began field work in 1995 (CAUVIN and BALKAN-ATLI n.d.). For the first year we limited our survey area to the Niğde region. The obsidian sources already known were revisited to see the extensions, and several new

workshops were found in addition to those already mentioned (TODD 1980). The Nenezi Dağ, Kayırlı-Bitikeler and Kömürcü-Kaletepe workshops are outstanding in terms of their artifacts.



Naviform core from Kaletepe. (Drawing by G. Desaphamian).

The Kaletepe workshop is located in the village of Kömürcü in the province of Niğde, known for its extensive obsidian sources. Kömürcü is a part of the Göllü Dağ volcanic system, a rhyolitic massif at the north of the Çiftlik Plain. The presence of chipped obsidian artifacts, including cores and debitage, were observed in scattered localities in and around the valleys near the obsidian sources.

In the summer of 1994, while visiting the area with geologist Dr. F. Şaroğlu, we discovered a workshop that, to our knowledge, had not been discovered before. Situated on a terrace dominating the modern village, the obsidian is scattered over a large area (ca. 150 x 150 m), and the artifacts include mostly naviform cores, large primary flakes and some crested blades. In 1995 we revisited the site as well as others in the region (CAUVIN and BALKAN-ATLI n.d.: in 1995 we also recovered single platform cores). The discussion below deals only with the collection made in 1994, since the 1995 samples are still under study.

The surprising aspect of the small collection is the high degree of standardization of the cores in terms of type and dimensions. They are long, with acute platforms, narrow and straight working faces, and triangular cross sections. The crest on the back is always centered, being formed by trimming both sides. At the present time, such regularity among naviform cores is unknown elsewhere in central Anatolia.

#### Core characteristics

Our small sample of 1994 includes 23 bidirectional cores. As stated above they are long and narrow with triangular sections and highly standardized. All the cores were in their final state of use, left either because of exhaustion or because of accidents.

*Average dimensions.* Length: 126.75 mm, width 25.77 mm, and thickness 27.77 mm.

*Platforms.* They are mostly flat (52.1%). No cortical platforms have been noted. Abrasion is rare (21.7%), whereas splintered platforms are common (73.6%).

*The back of the cores.* All cores had complete crests trimmed on both sides. The positions of the crests are central (73.9%) or slightly off-center (26%). The negative back-trimming scars are densely distributed and divergent, with 65% having deep negative bulbs.

*Core face.* The active part of the core is mostly straight (69.5%) and more rarely convex (13%) or irregular (17.4%). The ridges are parallel (62%), converging (21.7%) or irregular (13%).

The face of the cores shows mostly subsequent use (70%). Six of the cores bear hinge fractures.

*Core accidents.* Four of the seven incomplete cores were broken due to plunging (overshot) accidents. Similar core characteristics have also been noted for the Kayırlı-Bitikeler workshop (currently under study), although these are not as regular. More information will be available once the analysis of the 1995 sample is completed.

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#### Recent Excavations at Abu Ghosh

O. Marder, H. Khalaily,  
E. Barzilay, and M. Paterson-Solemani  
Israel Antiquities Authority

The Neolithic site of Abu Ghosh, located ca. 10 km. west of Jerusalem, is situated in the Judean hills some 700 m. above sea level. Located on a wide terrace on the bank of a small wadi traversing the village, it is only 50 m. northwest of Bir Nakush, a small well tapping a water table ca. 3 m. below the present surface.

The site was first recognized in the early 1920s by residents of a neighboring monastery who collected flint artifacts from the surface. Perrot (1950) excavated a few sondages on both sides of a road that bifurcates the site. In probes totaling ca. 500 m<sup>2</sup> in Area F, he unearthed PPNB archaeological remains. Lechevallier (1978) renewed excavations at Abu Ghosh, concentrating on Area F and additional test pits at the northern and western parts of the site.

Lechevallier uncovered a rectangular house with plastered floor and an architectural complex containing small square rooms, installations and associated burials. She concluded that the flint assemblage and architectural remains belong to a homogeneous occupation dating to the Pre-Pottery Neolithic B period. Her excavations and additional geophysical examinations indicated the physical parameters of the site.

The present excavations were initiated as a salvage project after unauthorized construction work caused severe damage to the northern part of the site. Two seasons were conducted by the authors on behalf of the Israel Antiquities Authority in February-April 1995 and October-November 1995. A total of 750 m<sup>2</sup> was excavated.

The excavation revealed 3 sedimentary units, 2 of which had archaeological remains. Most of the exposed architectural features belong to the PPNB period. These include walls, fragments of rooms, living spaces, installations, and burials.

**Unit I:** This uppermost unit (ca. 30-60 cm.) is cultivated, colluvial terra-rosa soil with small (2-5 cm.) angular stones. It blankets the higher part of the excavated area and it lies against a terrace wall running from north to south, the length of the terrace. The fill was found to contain mainly sherds with heavily worn surfaces dating to the Middle Ages and a small quantity of bones and flints. This stratigraphic unit does not exist at the lower part of the site, and no structures were associated with it.

**Unit II:** The next lowest unit is a gravelly layer, a mixture of angular stones and light to dark gray silt, rich in carbonates and organic material. The stones in this unit are of dolomite, chalk and limestone, some of which appear to be burnt and shattered. Geomorphologic observations show vertical and horizontal changes in the size and shape of gravel throughout this unit. This stratigraphic unit also varies in thickness. The depth of the gravel ranges in depth from 10-30 cm. in the upper part of the terrace, while in the middle and lower areas the deposit becomes thicker and ranges between 40-100 cm. This unit includes the uppermost portions of the Neolithic occupation, and three or more depositional phases can be distinguished:

**Phase I:** The uppermost phase is characterized by light gray soil appearing over most of the excavation areas except in the lowest parts. It contains small to medium gravels with a high density of flint artifacts and animal bones as well as a few Neolithic sherds, shells, grinding stones and fragments of

malachite. The Pottery Neolithic remains associated with this phase include five installations (Loci 104,114,126,145,154) and two fragmentary features (Loci 109, 122). All the installations and

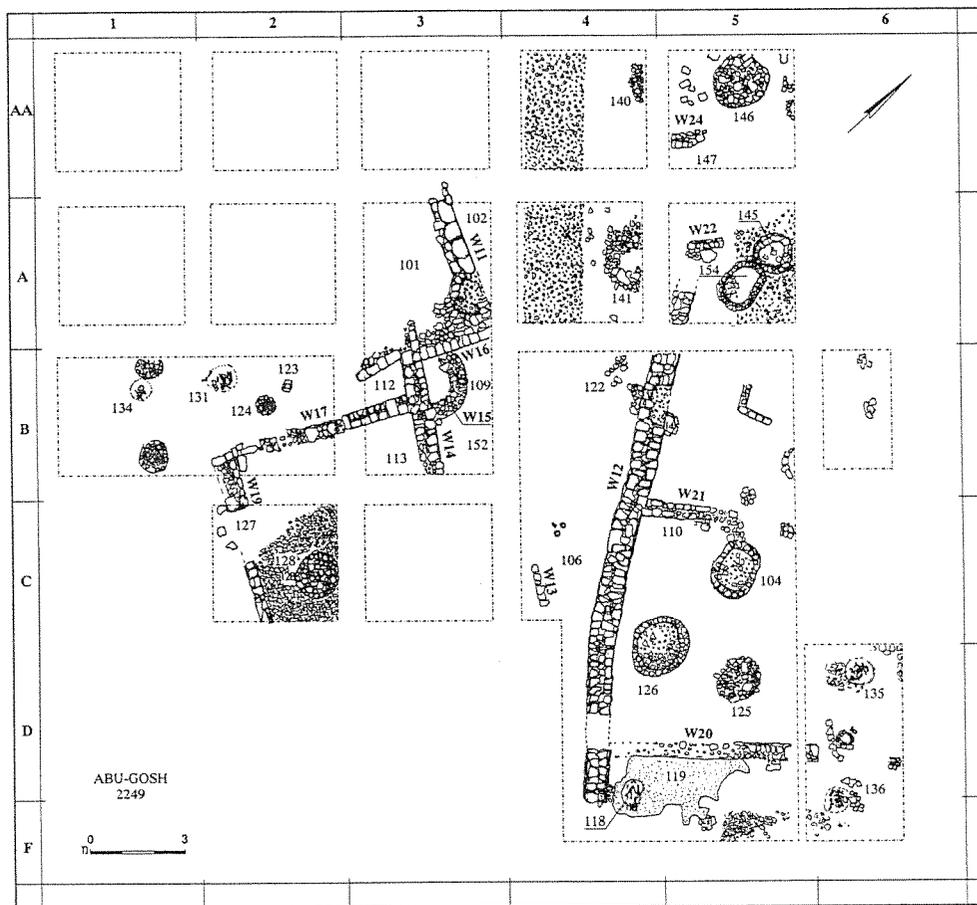
bits of charcoal. Walls and installations of the middle occupation phase were dug into this stratigraphic unit. The Cenomanian bedrock alternates between chalk and the dolomite of Soreq formation. No archaeological remains were found in this unit.

#### Preliminary Conclusions

Most of the remains relating to human activity at the site belong to the PPNB period when it was first settled. Two phases of structures are identified with this time span. There is evidence of continuity into the Pottery Neolithic period. Remains of this later occupation are found in pits containing burials and associated installations dug into earlier remains. Some of the buildings from the PPNB occupation continued in use during the later phase when walls were added. A study of the site, including some test pits south of the excavated area, revealed Neolithic remains about 500 m away. Thus, based on data available at present, it is assumed that the settlement covered a minimal area of ca. 8000 m<sup>2</sup>. A more complete report will appear in an upcoming issue of *Atiqot*.

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Plan of architectural remains unearthed at Abu Ghosh last season.

features, round to oval in plan and from 30 cm. to 100 cm. in diameter, were apparently built of stones in secondary usage. Evidence of robber trenches was noted in different precincts of the site. These installations contained faunal remains, flint artifacts, grinding stones, a stone figurine and pottery sherds.

**Phase 2:** The middle phase, similar to the preceding phase, is also rich in archeological finds, but it is notable for having more angular stones, medium in size and darker in color than those associated with Phase 1. To date no Neolithic pottery has been found. In this phase there is a long, curving wall (W 12, 17.9 m long and 0.80 m wide) that crosses the excavated area from southeast to northwest. Two walls (W 20 and 21) abutting it create three distinct spaces, one of which (Locus 119) has a plastered floor with an associated burial (L. 118) and a posthole. Remains of walls were also exposed at the western extremity of the excavated area, several of which created a rectangular building (L. 113 and 127) with a pebbled floor and an installation; one burial and a posthole are associated with its exterior courtyard. Two small structures (L. 128 and 146) are similar, being are round in plan and ca. 1 m in diameter. The abundance of flint artifacts and animal bones, especially of long bone shafts of animals, indicates that these installations functioned as roasting features.

**Phase 3:** The lowest phase differs from those above by its dark color due to the high content of organic material and a notably lesser quantity of gravel inclusions. This soil is also rich in lumps of red clay; this phase is transitional to an underlying terra rosa layer. In comparison to the Phase 1 of this unit, flints are fewer and faunal remains more abundant. The earliest phase was exposed only in two squares. Two wall fragments are associated with a concentration of burnt bones and several grinding stones. Flints appeared in this phase in low frequency.

**Unit III:** The lowermost unit (60 and 80 cm.) overlying bed rock varies in thickness from west to east according to natural slope. This unit is composed of compact, fine-grained red terra rosa soil with small chalky fragments. In its upper reaches there is a Bca horizon (5-10 cm.) of limestone concretion accompanied by

### A Preliminary Survey of the al-Jafr Basin, Southeast Jordan

Sumio Fujii  
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As Y. Nishiaki briefly noted in *NEO-LITHICS 2/95*, Japanese teams have undertaken prehistoric research in the Near East for about forty years. More than ten projects have carried out intensive surveys and excavated various sites in Iran, Iraq and Syria, and a new generation has just begun work in Turkey.

Jordan was the only exception to this trend, for no Japanese crews had challenged this informative land. This is quite strange, for most Japanese interest has concentrated on Neolithic studies, and Jordan no doubt played a critical role in the Neolithization of the Near East.

Last summer was the first, small step for us in Jordan. We carried out a short preliminary survey, focusing on Neolithic/Chalcolithic sites in the arid al-Jafr Basin in southeastern Jordan. The reasons we chose such a "sterile" area are the following: first, I have been interested for a long time in the Neolithization of the inland of the Levant (NISHIAKI and FUJII 1986; FUJII et al. 1987); second, the al-Jafr Basin, a region intermediate between the Palmyra, Damascus and Azraq basins to the north and the Wadi Hisma, Sinai and Negev regions to the south, should provide a sound comparative study of the distinctive inland adaptations of the prehistoric Levant; and third, the basin has been left relatively intact since the pioneering works carried out earlier this century by FIELD (1960), RHOTERT (1938) and HUCKRIEDE and WIESEMANN (1968).

We located several sites in this flat landscape, including some Paleolithic flint scatters and Paleo-Bedouin camp sites. Unfortunately, we found no Neolithic sites during the short period of time we were in the field; however, an interesting Chalcolithic site (JF9503) was discovered in the northwest part of the basin.

JF9503 (N 30°27'59", E 35°56'57", 991 masl.) is situated on a gentle hill beside a wide salt pan. No pottery sherds were collected, but the frequent occurrence of diagnostic tabular scrapers provided reliable evidence for the chronological assignment. Given that tabular scrapers (and especially the ones with silica sheen) are suggestive of the activity of sheep shearing (HENRY 1995: 332), JF9503 might represent a Chalcolithic station of ovicaprine pastoralists.

Two architectural complexes were observed. In the north one complex included a large round structure ca. 10 m in diameter (around and inside of which most of the tabular scrapers were collected), a multi-roomed rectangular house and some additional small features. Approximately 500 m to the south was a simpler complex that included a round structure. Unfortunately the latter has been heavily damaged by recent pothunting.

Nothing can be said of the interrelationship of these structures without further investigation. However, of some significance is a long line of stone 'cairns' that seems to connect the two complexes. This feature, together with the strategic positioning on a gentle hill beside a former marsh (?), reminded us of kite-sites, a hallmark of communal gazelle drives attested in the Black Desert and Azraq areas in the north (e.g., HELMS and BETTS 1987) and the Sinai/Negev regions in the south (e.g., ROTHENBERG 1970). However, JF9503 is critically different from typical kites: it was not equipped with guiding stone walls, but with a line of 'cairns' arranged at regular intervals (ca. 5-10 m). Interestingly, each 'cairn' consisted of only 3-5 stones, and they sometimes still retained small hollows in the center. This implies that they served as flag or branch supports, not as prey-guiding 'cairns' or as hides for hunters (BRINK and ROLLINS 1990).

There is reliable though sporadic evidence for communal drives that used flags. The famous fresco in the Umayyad Qusayr 'Amra that depicts an onager drive is one example, and the Portuguese traveler Pedro Teixeira came across similar kites near Taibe, east of Palmyra (LEGGE and ROWLEY-CONWY 1987: 81). As for the use of branches in animal drives, the wall paintings at Umm Dabaghiyah and the rock engravings on Hani's Cairn might be plausible candidates. Also, drives of Scandinavian and Siberian reindeer and North American bison provide additional evidence for flag or branch guides (cf. INGOLD 1980:57-58).

The tentative interpretation that JF9503 represents a flag/branch type of kite site is therefore worthy of testing. It might reveal a concrete picture of the mixed economic base of Chalcolithic ovicaprine pastoralists, who seem to have depended substantially on gazelle hunting (see HENRY 1995:368-369). Also, JF9503 is of special interest in that it might bridge the spatial hiatus of kite distribution in the northern and southern regions of the Levant.

**Acknowledgments:** I wish to express my gratitude to Dr. G. Bisheh, Director-General of the Department of Antiquities of Jordan, for his generous permission for the survey, and to Dr. F. Zayadine for his kind help.

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## The Evolution of the Tell Halula (Syria) Chipped Stone Industry During the 9-8th Millennium bp.

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### Introduction

Intensive studies of the Tell Halula chipped stone industry have begun on assemblages that cover an uninterrupted sequence from the Middle and Late PPNB layers (Sectors IV and II) to Pre-Halaf deposits (SS7) (MOLIST *et al.* 1994.; MOLIST and FERRER n.d.). This analysis makes it possible to see the main characteristics of each chronocultural period and significant changes that occurred in all aspects of lithics resources until the emergence of the first pottery communities.

### Raw Material

The siliceous materials used by Tell Halula inhabitants, mainly coarse-grained chert and fine-grained flint, were mostly collected from nearby Quaternary terraces and reduced entirely at the site. There is also some exotic dark chocolate-brown flint, not reduced at Tell Halula, that was present in small numbers, decreasing in importance from the LPPNB to the Pre-Halaf levels, in which a testimonial presence is paralleled by an increase in the local fine-grained high quality flint.

Obsidian was also used in varying proportions at Tell Halula, ranging from 6% in the MPPNB to 32% in the LPPNB and down to only 2% in Pre-Halaf deposits. (The LPPNB abundance is possibly a consequence of the special characteristics of Sector II). Preliminary analysis of a small sample indicates origins in the central and eastern volcanic areas of Anatolia.

### Technology

There are clear changes in the knapping methods used on siliceous stone at Tell Halula from the 9-8th millennia bp. Through-out the PPNB the main objectives were long, regular blades produced from naviform and other opposed platform cores. Although the laminar blanks were most often preferred for formal tools, cortical and preparation flakes were also used, but in a much smaller proportion. Flake cores are rare, and in many cases it is difficult to determine their original purpose due to their intensive exploitation.

At the end of the 9th millennium the situation changed completely. Naviform cores disappeared in the Pre-Halaf period, laminar production lost its importance, and there was a spectacular increase in morphologically variable flakes. Blades, normally retouched, were produced from single, sometimes opposed, platform cores, while flakes came from different core types (single platform, change-of-orientation, centripetal and globular). In all three periods there was a tendency to select the finest grain flint for blade manufacture, particularly the chocolate brown flint in the PPNB and fine-grained local flint in the Pre-Halaf period.

Obsidian was knapped in the same way through all the periods. Punctiform butts, parallel edges and ridges and typometric regularity suggest a pressure knapping method. That local knapping took place is attested by the presence of two small cores (one a bullet core) and tiny resharpening and maintenance flakes. The absence of virtually any cortex suggests that obsidian arrived in Halula as already prepared cores or even as finished tools.

### Retouched Tools

PPNB tools were made mostly on blades and less frequently on flakes (which also have less clear typological characteristics). Pre-Halaf tools were normally made on irregular flakes, with only points and sickles made on laminar blanks. This reflects a decreasing typological standardization in the stratigraphic sequence, with a corresponding increase in opportunistic tools in the 8th millennium.

Points account for ca. 30% of the MPPNB and LPPNB retouched tools. The Byblos family dominates the entire aceramic sequence, although Amuq points appear in the LPPNB in low amounts and eventually gain dominance in the Pre-Halaf levels.

Points generally lose importance in the latest period, falling to only 10% of the tool kit. Despite the technological changes at the end of the 9th millennium, continuity is shown in the choice of the best quality flint for points and the use of flat laminar retouch to reduce the bulbar convexity to facilitate hafting (FERRER n.d.).

*Glossed elements*, defined by the presence of macroscopic traces of sheen regardless of blank type or the presence or retouch, are never a dominant tool type. In the PPNB they are mainly made on blades or bladelets, usually with continuous semi-abrupt retouch and occasionally with a slight denticulation. Gloss along the entire length of the edge and the location of bitumen traces indicate a longitudinal hafting. In the Pre-Halaf layers the blanks are more diverse and backed elements become more popular. The gloss is normally diagonal across only part of the edge, supporting a hafting method proposed for Tell Assouad.

*Retouched blades and flakes* are common throughout the Tell Halula sequence. In the PPNB sectors retouched blades range close to 20%, but flakes reach only around 5%; in the Pre-Halaf sector this relationship is reversed, with retouched flakes at ca. 40%, double the figure for retouched blades. The change in the blank ratio is gradual rather than abrupt throughout the three-period sequence. These opportunistic, non-formal tools represent about 30% of the M/LPPNB tools, while in the Pre-Halaf they reach 70%.

*Other tools* also show important changes over time at Tell Halula, in part associated with the change in technology but also, perhaps, related to developments in culture and economy. Simple or double endscrapers that accounted for up to 40% of the tools in the MPPNB levels became much more diversified in form (usually very thick and with inverse retouch) in the Pre-Halaf period, but they never exceeded 6%. Transverse, dihedral and angle burins are found throughout the succession (never more than 10%), but there is an inverse relation with scraper popularity. Notch-denticulate tools and borers are always less than 10%, although there is a tendency for the former to increase at the turn of the millennium at the expense of the latter; larger borer types (e.g., "mèches") disappear completely by the Pre-Halaf.

Obsidian tools are relatively rare and mostly are confined to fine unretouched bladelets (or bladelets with restricted marginal retouch). Corner-thinned blades are numerically important as early as the MPPNB; variable in size, retouch occurs consistently in the D1/D4-V1/V4 position (e.g., NISHIAKI 1990). There are also a few bladelets with isolated flat burin retouch on the end, a few truncations, one borer, a tanged piece, and two possible side-blow blade flakes. Three bladelets have traces of bitumen on one surface and were potentially hafted as sickle elements.

#### Concluding Remarks

Tell Halula has an uninterrupted sequence spanning more than 2,000 years, which included important archaeological changes, including aspects of lithic manufacture that involved resource acquisition, knapping methods, and the kinds of tools that were used. The historical meaning of these changes, beyond a strictly culturalist point of view, is the challenge to be confronted.

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## Blade:Flake and Blade:Blade Ratios as Phase Discriminators

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One of the principal differences observed at 'Ain Ghazal among the chipped stone artifact assemblages in the 7th and 6th millennia bc (uncal.) was a major shift in the blade:flake ratios of the debitage. This aspect of the Ghazalian industry, along with major changes in architecture, subsistence economy and ritual practices, was a strong argument to characterize the archaeological phenomena of the first half of the 6th millennium as the PPNC, a phase of development that contrasted with these cultural aspects of the MPPNB and LPPNB phases in the southern Levant (ROLLEFSON and SIMMONS 1986: 160-161; ROLLEFSON 1990: 122-123 ).

Acknowledging that sorting for the 'Ain Ghazal debitage analysis uses a technologic and not a metric definition of blades, the distinctions of blank production between the MPPNB and LPPNB versus the PPNC are important in regards to the behavioral choices flint workers used in the manufacture of their tools. In addition to the fact that flakes dominated over blades by 2:1 in the PPNC, there was a major change in terms of the *chaînes opératoires* for blade production, from one that had concentrated on naviform production in the earlier periods to one that increasingly relied on non-opposed platform blade cores in the PPNC. Cores from the different phase assemblages at 'Ain Ghazal demonstrate this change very clearly (QUINTERO, pers. comm.), but it is the case that the specific sub-assemblages ("loci", or cultural strata identified in the excavation) often have few or no cores at all among the artifacts.

While the production of blanks (blade:flake ratio) is demonstrably distinctive in the comparison of the general LPPNB and PPNC assemblages at 'Ain Ghazal, there are major problems in using this particular ratio to discriminate between LPPNB and PPNC artifact collections from specific loci. Obviously, the blade:flake ratio directly reflects particular activities undertaken at specific times in certain places. Chipping floors are relatively numerous in the MPPNB and LPPNB at 'Ain Ghazal, and in these loci the blade:flake ratio is very low. (Notably, chipping floors are absent in the PPNC and Yarmoukian; ROLLEFSON and KÖHLER-ROLLEFSON 1993: 35). Outside the areas of M/LPPNB core preparation, the blade:flake ratio rises very high, so that overall the 7th millennium blade:flake ratio is roughly 1:1.

The absence of obvious chipping floors at 'Ain Ghazal in the PPNC and Yarmoukian periods is important in itself, for it indicates that the role of specialization in tool manufacture in the PPNB (QUINTERO and WILKE 1995) had utterly dissolved early in the 6th millennium. Even so, if everyone who needed a stone tool in the 6th millennium had to make it him/herself, blades were still desired, even if at a different scale of standardization. And, perhaps reflective of the skills needed by someone in the "naviform guild" of the 8-7th millennia, most of the blades in the 6th millennium came from single-platform blade cores, and the blades typically had thick, broad platforms, massive bulbs of percussion, and were usually short and relatively thick. This is suggestive that tool production had changed from an earlier specialized industry to an ad hoc, "as needed" method of self-reliance for tool production.

Returning to the blade:flake ratio as a difference between the PPNB and PPNC, the general values have been disregarded by some researchers (e.g., GORING-MORRIS 1991: 96) due to particular locus situations, as has been discussed in the previous two paragraphs. But Goring-Morris is correct in issuing his cautionary note: distinguishing between LPPNB and PPNC loci or subassemblages cannot rely on the blade:flake ratio alone. And this problem of distinguishing LPPNB and PPNC loci/strata (based on the blade:flake ratio) has been a source of difficulty in the 1993-95 excavation seasons at 'Ain Ghazal.

The difficulty of distinguishing between LPPNB and PPNC loci at 'Ain Ghazal relate to the transitional nature of the occupation at the settlement. The long-held cultural practices, including tool production, of the LPPNB were not suddenly replaced by PPNC counterparts. 'Ain Ghazal underwent a continuous process of accommodation to the social and environmental circumstances, and a continuum, of sorts, should be expected in the material

expression of this development. Not only was there a change of who was making blades (specialists mostly in the PPNB) and where they were doing it (the PPNB chipping floors), but the PPNC blade makers were producing their blades in a different way (abandonment of the naviform technique). The difference in how blades were made, then, becomes the deciding criterion, not the simple ratio of flakes to blades.

In the 1995 excavation season, limited lithics samples were selected to see if a more reliable indicator of an industrial characterization for different kinds of excavation loci could be developed in place of the disappointing blade:flake ratio. Noting the different methods of blade production, a new ratio was tested to compare the proportion of naviform blades to "normal" (or non-naviform) blades. This "blade:blade" ratio was much more consistent throughout the array of locus types, with generally high naviform/normal values for the LPPNB layers and much lower values for the PPNC loci. Samples from MPPNB and Yarmoukian periods have not been examined yet, but that is a priority in the upcoming 1996 excavation season, as well as continued testing of LPPNB and PPNC lithics samples.

If the promises of the blade:blade ratio prove to be of value for distinguishing between the 7th and 6th millennia industries (and we think this is likely), this ratio could be invaluable in characterizing surface sample collections in intensive surveys, which would be an invaluable aid in identifying PPNC settlements of the early 6th millennium. It is hoped that a further report on tests of this ratio can be published in the next issue of *Neolithics*.

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### Iranian Neolithic Research

compiled by H.G. Gebel from information provided by

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Since 1979 no extended field research has been carried out in the Iranian Neolithic. However, Iranian research on the Neolithic has continued on the basis of material analysis, documented in a number of articles, and a PhD dissertation (RAFIFAR 1988) were presented since then. Research continues at a restricted level, as it is true for all the prehistoric investigations. Nevertheless, since the reorganization of the functions the earlier Archaeological Service of Iran under the auspices of the *Iranian Cultural Heritage Organisation*, together with considerable financial support from governmental sources for rescue work and restoration, is gradually taking shape and a revival of prehistoric research must be expected in future.

After the excavations of Late Neolithic Tepe Zaghe were completed in fall 1979 by Sadegh "Shahpur" Malek Shahmirzadi (Tehran University, Faculty of Letters and Humanities, Dept. of Anthropology), a number of articles appeared by him on this important site (Neolithic type site for the Iranian Plateau) in the *Iranian Journal of Archaeology and History*. Later he carried out a short survey in Semnan area at the fringes of the Dasht-e Kavir (1984), locating a few prehistoric sites to be examined in the future. In spring 1995 he conducted a test excavation at Tepe Puinak in the Varamin Plain south of Tehran, where at a depth of 4.50m below the present agricultural surface Late Neolithic strata were found. A small-scale survey by Shahmirzadi in the Masile Basin of the Great Kavir south of Tehran in 1993 revealed no Neolithic evidence, but a Mousterian site was found

(SHAHMIRZADI in Paléorient 1994). He has submitted a proposal for a survey and the excavation of a cave site in the Khoramabad area, Loristan, to the *Iranian National Heritage Organization*, which is now under review.

The first work carried out in the Neolithic by Jalal Rafifar (Tehran University, Faculty of Social Sciences, Dept. of Anthropology) was on the chipped stone industries of the Zagros and the Central Iranian Plateau, presented in his doctoral dissertation (RAFIFAR 1988). Following this research he concentrated on the study of Neolithic obsidian circulation and distribution patterns in the Middle East with special reference to the Iranian territories. Ignoring ill-investigated obsidian resources in Iran (such as those in Takestan, Gezu/ Tabas and Kashan), research on Iranian obsidian until then had concentrated in its possible origins outside Iran (Anatolia and eastern Turkey). Parallel to this re-search, Rafifar reconsidered the chipped stone sequence of Deh Luran (RAFIFAR 1994a) and restudied the obsidian industry of Koh-e Bonan (Kuhbanan) near Kerman (RAFIFAR 1994b). His recent field research has concerned ethnoarchaeological work in the village of Hofel/ Bakhtiari mountains (to appear in: *Letter of Sociology* 3 (NS): 34-58. Tehran University, Faculty of Social Sciences).

Abbas Alizadeh, Oriental Institute of Chicago and currently on sabbatical in Iran, accepted responsibility for the final publications of Choga Mish, Choga Banut and Boneh Fazili after the passing away of Helen Kantor in 1992. He completed the final reports on Choga Mish recently and they are expected to appear imminently; his work now concentrates on the preparation of the final publication of Choga Banut. This includes an intended small field investigation at Choga Banut in order to retrieve missing palaeobiological evidence for the earliest layers of this interesting site (one of the aims of his current stay in Iran), which so far is the earliest in the Susiana lowlands. Such samples would help considerably to understand the so far unknown character of the subsistence in the earliest Neolithic in the vast alluvial plains of the Susiana and southern Mesopotamia respectively.

Wares	Phases	Sites on the Central Iranian Plateau
wheel-made pottery	upper Sialk	Tepe Gharbestan II-IV, Sialk III <sub>4-7,7a</sub> , Tepe Hissar I
	lower Sialk	Sialk I <sub>1-3</sub> , Cheshme Ali B, Mortaza Gird Tepe Ghabrestan, Sagazabad I.11-19, Mahmoudiye-West
hand-made pottery	Cheshme Ali	Zaghe I-VIII Ganj Tepe Sialk North (II <sub>1,3</sub> <sup>1,2,5</sup> ) Mesre Cheshme Ali A Khuriyan Muhammadabad Cheshme Bo-Bol Qumis Qomrud Qarre Tepe Shariyar Turang Tepe Qal-e Dukhtar Ismailabad Yarim Tepe Pu'inak Mahmoudiyeh East Ghar-e Kamarband Tepe Shoghuli Barlakin Ghar-e Hotu Sheikh Tepe Golestan Palace, Tehran ? Shir Ashian Suhanak ? Sang-e Chakmak
	Zaghe	Zaghe IX-XII Sialk North I <sub>1</sub> Cheshme Bol-Bol Uzbeki Mehranabad ? Cheshme Ali ?
soft ware*	Formative Phase	Ghar-e Kamarband (from Layer 6 upwards), Mehranabad
	Aceramic Neolithic	Ghar-e Kamarband, Ghar-e Hotu

\* heavily chaff-tempered, low-fired, hand-made, not decorated

Succession of Neolithic Phases on the Central Iranian Plateau  
(from: Shahmirzadi 1995, translated by Christoph Werner)

In April 1994, the First National Archaeological Symposium of the Islamic Republic of Iran was held in Susa, attended by 38 contributing scholars. Five of the contributions dealt with prehistory (B. Boustan on cave exploration in Iran; M.S. Salehi on accounting in Tappeh Zagheh; H. Fazeli on social organization in prehistory; M. Kaboli on his Qomrud survey; S. Malek

Shahmirzadi on the Neolithic -Protohistoric chronology of Khuzestan). The second symposium followed this year in Bam.

Kamyar Abdi, Oriental Institute of Chicago, recently started to offer in the ANE mailing list the *Archaeological News from Iran* (1-4 already issued, contact: kabdi@midway.uchicago.edu).

Under the joint editorship of Alizadeh, Shahmirzadeh, and Yousef Majidzadeh, the "Studies in Honor of Ezat O. Negahban" are currently being prepared for publication (deadline was 31st of May, 1996); it will contain some contributions on the Iranian Neolithic.

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### Current Research on the Neolithic of Anatolia by the Prehistory Section, University of Istanbul

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The **Aşıklı Höyük Project**, begun in 1989, has been investigating several areas of a large, well-preserved aceramic Neolithic settlement in the province of Aksaray in central Anatolia. The specialists involved in the research include:

**Director:** Ufuk Esin (Istanbul University [IU])

**Deputy Director:** Savaş Harmankaya (IU)

**Architecture:** M. Özbaşaran (IU) and E. Bıçakçı (IU)

**Fauna:** H. Buitenhuis (Groningen [UG])

**Flora:** W. van Zeist (UG), H. Woldring (UG), G.J. de Roller (UG), and A. Rosen: phytoliths (Tel Aviv U.)

**Lithics:** N. Balkan-Atlı (IU), D. Binder: technology (CNRS-Valbonne), F. Abbès: technology (CNRS-Jalès), and P. Anderson: microtrace analysis (CNRS-Jalès)

**Ground stone:** M. Davis (New York)

**Geomorphology:** C. Kuzucuoğlu (CNRS-Meudon) and Oğuz Erol (IU)

**Human osteology:** T. Majo: field anthropology (Barcelona U.

[BU]), M. Özbek: physical anthropology (Hacettepe U.-Ankara), J. Anfruns: DNA analysis (BU) and A. Perez: DNA analysis (BU).

**Bone industry:** G. Egeli (IU)

**Ethnobotany:** F. Ertuğ (Washington)

The **Aksaray Project**, directed by U. Esin, includes an intensive all-period survey conducted by S. Gülçür in the Aksaray district since 1993. As a result of this effort, two new sites will be excavated in 1996:

1) *Musular*, an aceramic Neolithic site across the Melendiz River from Aşıklı Höyük. The excavation will be undertaken by the Aksaray Museum (M. Özbaran, scientific consultant).

2) *Güvercin Kayası* a prehistoric pottery-bearing site found in 1994. The site will also be excavated by the Aksaray Museum (S. Gülçür, scientific consultant).

The **Obsidian Research Project** is a program run parallel to the Aksaray Project. Co-directed by N. Balkan-Atlı (IU) and M.-C. Cauvin (CNRS-Jalès), the research includes a survey to locate obsidian sources, workshops and prehistoric sites in the Aksaray, Niğde and Nevşehir districts of Cappadocia.

The **Kastamonu District Survey**, an all-period survey project led by A. Özdoğan (IU) and A. Tibet and C. Marro (French Research Institute, Istanbul) was begun in 1995.

In Thrace the **Kırklareli Höyük Excavations**, led by M. Özdoğan (IU) and H. Parzinger (Berlin), concentrate on two sections: the Middle Chalcolithic Aşağı Pınar area and the Late Chalcolithic-Early Bronze Kanlı Geçit sector.

The Edirne Museum is undertaking the **Lalapaşa Dolmen Excavation** project, with M. Akman the field director and M. Özdoğan the scientific consultant.

The **Menekşe Çatağı Excavations** are under way by the Tekirdağ Museum on the Marmara coast in Tekirdağ (M. Özdoğan, scientific consultant and A. Özdoğan, field director).

The all-period **Tekirdağ Survey** in the Işıklar (Ganos) region was begun in 1993 under the directorship of S. Harmankaya.

**TAY** (Türkiye Arkeolojik Yerleşmeleri) is a "database on paper" for archaeological settlements in Anatolia and eastern Thrace run S. Harmankaya and O. Tanindi. The first volume (Paleolithic and Epipaleolithic) has already appeared (see New Books, below), and additional volumes on the Neolithic to Iron Age periods will follow shortly.

### How the Rabbit killed Flint

(found in: J.B. Davis, Some Cherokee Stories.  
*Annals of Archaeology and Anthropology* 3, 1910, 35-36)

Long ago the animals were very much afraid of Flint, who lived up in the mountain, because he killed so many of them. They wanted to destroy him, but did not know how, for it was very dangerous for any of them to venture near him.

Several of them had tried to kill him, but they were very unsuccessful; in fact, most of them were killed in the attempt. After several of them had tried, the Rabbit, who was a bold leader, undertook the task. He fasted and made medicine for four days, and then he went up to the mountain where Flint lived. Near the summit he saw a queer-looking animal standing before a cave. It was larger than a deer and seemed to be made of bone or horn.

The Rabbit shouted 'Hello,' and he answered 'Hello.' The Rabbit had expected him to invite him in, but he did not, and he was afraid to go in alone anyway; so he said, 'Is your name Flint?' Flint said, 'Yes, that is my name.' Then the Rabbit said, 'How are your people?' Flint said, 'I have none.'

This was just what the Rabbit wanted to know, for he was afraid that Flint had a family that would revenge his death if he should kill him. All this time the Rabbit was trying to think of some way by which he could take Flint off his guard and kill him, but he could not think of any, so he said, 'My name is Red Liver, and I thought I would come by and ask you to come and see me some day.'

He would not tell his real name, for he was afraid that, if Flint knew that, he would try to kill him by sorcery, and he knew that

