1979

Toward a New Outline of the Soviet Central Asian Paleolithic

V. A. Ranov

Richard S. Davis
Bryn Mawr College, rdavis@brynmawr.edu

Citation

Ranov, Vadim A. and Richard S. Davis. "Toward a New Outline of the Soviet Central Asian Paleolithic." *Current Anthropology* 20, no. 2 (1979): 249-270.

CURRENT ANTHROPOLOGY Vol. 20, No. 2, June 1979

Toward a New Outline of the Soviet Central Asian Paleolithic[1]

by V. A. Ranov and R. S. Davis

SOVIET CENTRAL ASIA is a vast, extremely continental territory, some 2,400,000 km² in all, consisting of the arid Turan depression and a portion of the Central Asiatic highlands including the Pamir-Alai and Tien Shan ranges. It includes Turkmenistan, Uzbekistan, Tadzhikistan, Kirgiziya, and southern Kazahstan; the northern portions of Afghanistan also fall naturally into this area. The eastern, mountainous part has been studied much more thoroughly than the western deserts.

We wish to present here a brief summary of the major results of the last 25 years of Paleolithic research in Soviet Central Asia, with special attention to the most important problems archaeologists are facing there. This is by no means a comprehensive review of the literature or a lengthy analysis of data.[2] Rather, it is an attempt to communicate some of the most significant features of the Soviet Central Asian Paleolithic, something which has not been done since Movius's (1953*a*) pioneering effort some 25 years ago. Movius's work was of great significance for Old World prehistorians, particularly for the Middle Paleolithic. Good summaries have more recently been published in Russian by Okladnikov and Ranov (1963), Okladnikov (1966*a*), and Ranov (1968). In the last 10–15 years, there has been an intensification of Soviet Central Asian Paleolithic studies. Since 1970, three monographs and more than a hundred articles have appeared in print.

The prevailing notions in the West concerning the Soviet Central Asian Paleolithic seem to be that there are no real Lower Paleolithic sites (Klein 1966), that Middle Paleolithic sites reflect diffusionary movements from southwestern Asia (Chard 1974), as do Mesolithic sites, and that the Upper Paleolithic is barely represented (Movius 1953*a*). Indeed, similar views have been held by some scholars in the Soviet Union. In contrast, we wish to establish the following major points:

1. There are unmistakable remains of Lower Paleolithic cultures in Central Asia. Recent work at the sites of Karatau 1 and Lakhuti 1 by Ranov and his geological co-workers has revealed pebble-tool and flake industries in situ in Middle and Upper Pleistocene paleosols which have been reliably dated by various means between 130,000 and 200,000 years B.P.

2. Middle Paleolithic (Mousterian) sites are numerous in Soviet Central Asia, and they exhibit great variability in terms of geographical location, stone tool typology and technology, and preservation of features. Present are industries with and without Levallois technique, pebble choppers and chopping tools, and Upper Paleolithic blade elements. Although some industries share some features with the southwestern Asian Middle Paleolithic, it is not at all correct to conclude that they developed as the result of simple diffusion.

3. Upper Paleolithic sites are present, although in small numbers, and they are nowhere found in cave deposits. The Upper Paleolithic assemblages contain many Mousterian elements, and there is no reason to believe on the basis of stone tool technology and typology that there was a sharp or distinct break between the Middle and Upper Paleolithic.

4. During the early Holocene, the Pamir uplands, 4,000 m and more in elevation, were inhabited for the first time by hunter-gatherer populations. Also, it appears, there was an expansion of populations into the arid Turan depression. The Holocene industries may be roughly divided into two groups: nongeometric (Epi-Paleolithic) and geometric (Mesolithic). The latter has analogies with industries in southwestern Asia.

5. Central Asia should by no means be considered an isolated area of Paleolithic development. It combines elements

[1] This paper is the result of extended collaboration between the authors from May through November 1977 in Tadzhikistan. Davis's visit to the Soviet Union was part of a program of exchanges between the National Academy of Science, U.S.A., and the Academy of Sciences, U.S.S.R. We wish to thank both institutions for making our cooperative work possible.

[2] We are preparing a joint monograph which will include a considerable amount of new data, a critical review of the literature, and many illustrations.

V. A. RANOV is Head of the Section of Archaeology and Numismatics, Institute of History, Tadzhik Academy of Sciences, Academy of Sciences of the U.S.S.R. (33 Lenin Prospekt, Dushanbe 734025, U.S.S.R.). He is also Deputy Chief of the Southern Tadzhikistan Archaeological Expedition. Born in 1924, he received the degree of *Kandidat* of Historical Sciences from the Tadzhik Academy of Sciences in 1963 and has been active in the archaeology of Central Asia for 25 years. He is the author of four monographs and more than 150 articles; a recent work, with S. A. Nesmeyanov (in Russian), is *The Paleolithic and Stratigraphy of the Anthropogene of Central Asia* (Dushanbe: Donish, 1973).

R. S. DAVIS is Lecturer in the Department of Anthropology at Bryn Mawr College (Bryn Mawr, Pa. 19010, U.S.A.). Born in 1944, he was educated at Columbia University (B.A., 1966; Ph.D., 1974). He has taught at the State University of New York at Cortland (1971–72), Ohio University (1972–74), and Case Western Reserve University (1974–78). His research interests are the Old World Paleolithic, especially that of Southwestern and Central Asia, paleoecology, and stone tool technology. His publications include "The Paleolithic," in *The Archaeology of Afghanistan,* edited by N. Hammond and R. Allchin (London: Academic Press, 1978).

The present paper was submitted in final form 7 VII 78.

of the Asian chopper–chopping-tool tradition with Western flake and blade industries. This is true for all periods from the Lower Paleolithic through the Mesolithic. In general, this situation can be explained by its geographical location, which is indeed central to two if not three geographic regions of Asia.

For the most part, research on the Paleolithic in Soviet Central Asia may be characterized as culture-historical reconstruction, the main goals being to locate and excavate sites from the full range of Paleolithic time, to order the sites chronologically, and to compare lithic industries in an attempt to discover traces of cultural contact and patterns of change of form through time. In part, this approach has been strongly influenced by the nature of the available data. More than 90% of the Paleolithic sites are surface finds or found in redeposited context. With one or two possible exceptions, there are no known living floors in the open-air sites. Paleoclimatic reconstruction is still in its infancy, and even the basic Quaternary stratigraphy in many areas is not well known. Systematic survey for sites by random sampling techniques is unknown, and no projects that could be described as multistage problem-oriented research have been carried out. Interdisciplinary studies, particularly involving geologists, palynologists, and archaeologists, are increasingly frequent, and their continued development will be essential for further advances in Soviet Central Asian Paleolithic research.

QUATERNARY RESEARCH AND CHRONOLOGY

Geological work in Soviet Central Asia has developed alongside archaeological research. Soviet Central Asia is well known for its current tectonic activity, and a large-scale international effort has made great progress toward understanding orogenic processes here. In addition, a number of Quarternary geologists have intensively worked on a reconstruction of Pleistocene events.

Until recently, Soviet geologists in Central Asia have almost universally used a fourfold division of the Quaternary (Q_1, Q_2, Q_3, and Q_4) originated and developed by Y. A. Skvortsov, N. P. Kostenko, O. K. Chediya, and others during the late 1950s and early 1960s (Skvortsov 1953, Kostenko 1958, Chediya and Vasil'ev 1960). These divisions are based for the most part on alluvial activity and river-terrace formation. Central to this scheme is the comparison of river-terrace levels remaining along the sides of ancient river valleys in an attempt to subdivide periods of Quaternary deposition and erosion. The ages of a given river terrace and its eolian or colluvial cover are generally supposed to be nearly the same. The terraces are not proposed to have been caused by worldwide climatic changes. This scheme has had obvious significance for archaeologists, because the majority of Middle, Upper, and Epi-Paleolithic/Mesolithic sites are located on or in river terraces in alluvial, colluvial, or eolian contexts.

Recently, more detailed attention has been paid to the complex problem of river-terrace development, a multifaceted phenomenon which often combines tectonic, alluvial, colluvial, eolian, and climatic processes. It has become clear that a terrace may contain several different depositional records and therefore may be the composite result of deposition over a long period of time. For this reason the Q_1–Q_4 scheme is now seen as severely weakened as an instrument for establishing relative chronology for archaeological sites in Soviet Central Asia.

The possibility of correlating climatic oscillations of Soviet Central Asia with other parts of the world has recently been realized through the study of several thick loess deposits. A very thick mantle of loess blankets a large portion of the Afghan-Tadzhik depression. Some of these deposits range up to 200 m in depth and are considered by several Soviet geologists to extend back in time to the late Pliocene (Dodonov and Pen'kov 1977, Dodonov, Melamed, and Nikiforova 1977). Buried in these loess deposits is a series of paleosols. At the Chashmanigar locality in southern Tadzhikistan, 37 ancient soil horizons have been identified. Above the Matuyama-Brunhes boundary, 9–10 paleosols have been counted at five loess sections. Some geologists judge that soil formation took place in comparatively warm, dry periods while loess was deposited under relatively cool conditions (Grichuk and Lazarenko 1970).[3] This record of climatic oscillation, combined with thermoluminescence and paleomagnetic dating, has provided for the first time a real basis in Soviet Central Asia for correlation with sequences in the rest of the world. As a result, some geologists have begun to use Alpine terminology (Würm, Riss, etc.), but for the most part this system of nomenclature has not gained general acceptance. It is, however, difficult to overemphasize the significance of the recent work in the loess, and it seems certain that it will radically change the picture of the Soviet Central Asian Pleistocene as more analysis is completed.

An important task for the future will be to correlate the loess paleosols with the river-terrace system so as to enable geologists to tie in the Q_1–Q_4 system with the worldwide climatic sequence. Much effort is currently being expended in an attempt to understand the origins of the loess that covers a vast area of southern Soviet Central Asia. In the West, loess is usually defined as an eolian deposit, but Soviet geologists are currently debating the merits of eolian, alluvial, and colluvial theories, with no consensus yet in sight.[4]

The absolute dating of Soviet Central Asian Quaternary deposits is poorly developed. For the most part dating has been relative, largely based on terrace correlation. Only one C^{14} determination of Pleistocene age has been made, and it is not accepted by most analysts. Most recently, thermoluminescence and paleomagnetic dating have been applied to the loess sections with much success. The determinations have been consistent in terms of the internal stratigraphy, and on geological grounds they seem to be reliable. The thermoluminescence method allows the determination of the absolute age of deposits on the basis of the intensity of thermoluminescence in their constituent quartz grains, intensity increasing with age. Loess deposits in Soviet Central Asia have been dated between 22,000 and 900,000 years B.P. by this method (Shelkoplyas 1974, Lazarenko and Shelkoplyas 1973). Paleomagnetic dating has been especially important for correlation of the paleosols in the loess. The Matuyama-Brunhes boundary (dated elsewhere at 690,000 years) has been identified in the loess below the ninth or tenth paleosol at five sections. The Blake episode occurs above the fifth paleosol and the Laschamp between the first and second. These events have been measured in nine loess sections in southern Tadzhikistan (Dodonov and Pen'kov 1977). Future work should provide the basis for a more detailed measurement of Pleistocene geomagnetic events in the loess.

Up to the present time, paleontological studies have not been of great assistance for the dating of archaeological sites during the Pleistocene in Soviet Central Asia. A brief characterization of some paleontological features of the Soviet Central Asian Quaternary follows (see table 1): In contrast to the rich fauna of the Upper Pliocene (the Kuruksay complex,

[3] One authority, the palynologist M. M. Pakhomov, has advanced the following interpretation in discussion: The formation of the soils in southern Soviet Central Asia should be correlated with stadial periods, because the interstadials, with their very dry climates and sharp reduction in arboreal vegetation, provided the basis for the formation of "warm" loesses. Pakhomov's hypothesis is based on comparison with glacial-pluvial arid zones.

[4] In the Soviet Union, loess is defined not genetically, but on the basis of the sediment itself. Hence there can be, for example, eolian loess, colluvial loess, and alluvial loess in the Soviet terminology.

which is in part closely comparable to that of the Siwaliks in India), the Lower Pleistocene (Eopleistocene) fauna is much more poorly represented. In Tadzhikistan, near the village of Lakhuti, a section below the loess revealed caballine horse, big-horned deer, *Megaloceros,* remains of a large feline, hyena, and rodents. The section is just below the Matuyama-Brunhes boundary (Nikonov 1972). More ancient paleontological finds, assigned to the Koshkurgan complex (analogous to the Tiraspol complex of Eastern Europe), are known from several localities of Central Asia, but none have large collections. Included are the southern elephant, Etruscan rhinoceros, caballine horse, and *Paracamelus* (Nesmeyanov 1971). For the Middle Pleistocene there are some isolated finds, many not in good stratigraphical context. The best, the Dzhergalan complex, is from the eastern end of Lake Issyk-Kul and is dated to the very end of the Middle Pleistocene (Aleshinskaya et al. 1971). Big-horned deer, woolly rhinoceros, caballine horse, kulan, mammoth, and others are represented. For the Upper Pleistocene, there are good faunal collections from the Mousterian cave sites of Aman Kutan (Lev 1956, Bibikova 1958), Obi-Rakhmat (Suleymanov 1972), Ogzi-Kichik (Ranov, Sharapov, and Nikonov 1973), and Teshik Tash (Gromova 1949). They include both contemporary forms—sheep, goat, bear, porcupine, and others—and extinct ones such as woolly rhinoceros, caballine horse, and cave lion. The Upper Paleolithic fauna, from Shugnou and Samarkand (Ranov, Nikonov, and Pakhomov 1976, Lev 1964), includes horse, aurochs, sheep, goat, deer, camel, and marmot. In general, the fauna of the Pleistocene of Central Asia bears many resemblances to faunal collections of similar ages in Europe.

Pollen analysis of several sections (from the loess and from cave deposits) has shed much light on the changing nature of Pleistocene vegetation and climate. In general terms, pollen profiles have clearly demonstrated a progressive desiccation in

TABLE 1

DISTRIBUTION OF FAUNA IN SOVIET CENTRAL ASIAN PLIOCENE-QUATERNARY COMPLEXES

ABSOLUTE AGE (IN MILLIONS OF YEARS)	STANDARD CENTRAL ASIAN STRATIGRAPHY	SOUTHERN TADZHIKISTAN STRATIGRAPHY (DODONOV AND PEN'KOV 1977)	CORRELATION WITH ALPINE STRATIGRAPHY (DODONOV AND PEN'KOV 1977)	FAUNAL COMPLEX	COMPARABLE EASTERN EUROPEAN FAUNAL COMPLEX
0.02[a]	Dushanbe complex (Q_3), Upper Pleistocene	Dushanbe complex (Q_3)	Würm	Upper Paleolithic sites: *Equus caballus, E. hemionis* Pall., *Cervus elaphus, C. bactrianus, Camelus* cf. *knoblochi* Nehring, *Bos* or *Bison, Capra, Ovis, Marmota* sp., *Testudio* (Ranov 1976) Mousterian sites: *Capra sibirica* Mayer, *Ovis orientalis* Gmel., *Cervus elaphus, Felis pardus, Equus caballus, E. hemionis, Coelodonta antiquitatis, Hystrix, Sus scrofa, Testudio horsfieldi, Ursus arctos* L. (Ranov 1976)	Mammoth or Upper Paleolithic
0.11,[a] 0.13[b]			Riss/Würm	Dzhergalan: *Equus caballus* L., *E. hemionis* Pall., *Cervus* sp., *Mammuthus* sp., *Coelodonta antiquitatis* (Blum), *Camelus* sp., *Bison priscus longicornis, Mammuthus trogontherii* (Pohl) (Aleshinskaya et al. 1971)	
0.2[b]	Tashkent, Ilyak complexes (Q_2), Middle Pleistocene	Ilyak complex (Q_2)	Riss		Hazar
		Vaksh complex (Q_1)	Mindel	Isolated finds, Tadzhik depression: *Palaeoloxodon* sp., *Marmota* sp., *Canis* (Thos.) *aureus fossilis* (?), *Bison* sp., *Equus* sp., Bovinae (Nikonov 1972)	Singil (?)
0.69[a]	Sokh (Nanay), Vaksh complexes (Q_1), Lower Pleistocene	Kayrubak suite, Eopleistocene	Günz	Lakhuti: *Equus caballus*, Bovinae, Cervidae (e.g. Megacerinae, e.g. Elaphinae), *Felis* sp., Hyaenidae, Canidae, *Microtus* sp., *Ellobius* sp. (Nikonov 1972)	
			Donau/Günz	Koshkurgan: *Palaeoloxodon antiquus, Paracamelus gigas, Equus sussenbornensis, E. caballus* cf. *mosbachensis, Dicerorhinus etruscus, D. kirchbergensis, Cervus elaphus* (Nesmeyanov 1971)	Tiraspol
1.79–1.95[a]	Pliocene	Kuruksay suite, Upper Pliocene		Kuruksay (Tadzhik depression): Primates (Cercopithecidae), Canidae, Ursidae, Hyaenidae (two species), *Megantereon* cf. *megantereon, Homotherium, Archidiscodon gromovi* or *Protelephas planifrons, Equus* e.g. *stenonis, Dicerorhinus* sp., *Paracamelus* cf. *gigas, Axis*, Bovinae, *Sivatherium, Gazella* (Procapra), *G. subgutturosa*, Aves, *Equus* cf. *hidrantinus, Bison* sp., *Ovis ammon fossilis, Cervus bactrianus fossilis, C.* cf. *elaphus*, Felidae (Nikonov 1972) Koktyurlyuk (Fergana Valley): *Anancus arvernensis, Archidiscodon meridionalis, Elasmotherium* sp. (*caucasicum*?), *Equus stenonis* (Nesmeyanov 1971)	

[a] Paleomagnetic.

[b] Thermoluminescence.

Central Asia throughout the Pleistocene, a process perhaps induced by massive tectonic uplift, which has served to block moist-air circulation patterns from the south. For example, during the Lower and the first half of the Middle Pleistocene, most of the mountainous and piedmont portions of Soviet Central Asia appear to have been forested (Nikonov and Pakhomov 1976).

In table 2 a general scheme of Paleolithic and Quaternary events in Soviet Central Asia is presented. The table compares the standard Soviet Central Asian stratigraphic scheme (Q_1–Q_4), based primarily on gross river-terrace correlation, with a newer version that incorporates more detailed river-terrace analysis, the paleosols in the loess, and new age determinations.

PERIODIZATION

In the Soviet Union the traditional division of the Paleolithic is in two parts: Early (*Drevnii*) and Late (*Pozdnii*). The former includes the Lower and Middle Paleolithic of the standard European division and the latter refers to the Upper Paleolithic. (Some Soviet archaeologists use the three-stage European scheme, but it has not yet come into general usage.) The divisions are based primarily on changes in tool typology and technology, which in the past have been interpreted to signify fundamental changes in economic and social life. Currently, however, most Soviet archaeologists see no such "stair-step" leaps in cultural evolution during the Paleolithic. It has been traditional in Soviet Central Asia to use the term "Mesolithic" for the period following the Upper Paleolithic and preceding the Neolithic, a period regarded as coterminous with the Holocene. Some authors, however, use the term "Epi-Paleolithic," not as a substitute for Mesolithic, but in addition to it (Okladnikov 1966*b*, Rogachev 1966). In southwestern Asia and in North Africa, earlier investigators used Mesolithic, but currently most use Epi-Paleolithic (Tixier 1963, Bar-Yosef 1970, Marks 1975) to designate assemblages with a microblade component following the main Würm. In the Zagros the Zarzian is generally labeled late Upper Paleolithic (Hole and Flannery 1967) and the following epoch Proto-Neolithic or Pre-Pottery Neolithic (Solecki 1963). Some archaeologists, for example, Robert Braidwood, have tended not to use the traditional divisions of the Stone Age and have instead used labels descriptive of subsistence pattern. In Afghanistan, Davis (1978) has used Epi-Paleolithic to describe all assemblages with microblade technique following the main Würm and preceding the nonceramic, food-producing Neolithic, while Ranov (1963) has consistently used Mesolithic for post-Würm, pre-Neolithic assemblages. How are we to resolve this terminological conflict?

For Soviet Central Asia we propose the following definitions, which are based on technology and subsistence: The Epi-Paleolithic and Mesolithic, like the Upper Paleolithic, are based on hunting, gathering, collecting. and/or fishing and lack domesticated plants or animals with the possible exception of the dog. (It must be noted that in Soviet archaeology the beginning of the Neolithic does not always signify the beginning of food production. For example, Islamov [1975] assigns his cave site of Machay in southern Uzbekistan to the Mesolithic, although in the upper layer bones of domestic sheep outnumber all other faunal remains. Also, across the northern part of the Soviet Union, especially in Siberia, "Neolithic" cultures are based on fishing and hunting.) Epi-Paleolithic assemblages are post–main Würm with microblades (including retouched microblades, truncated microblades, and/or backed microblades) but without geometric microliths. Mesolithic assemblages are post–Würm, pre-Neolithic cultures with geometric microliths. These definitions do not exclude the possibility of post–main Würm Upper-Paleolithic-type industries, and they do not specify any strict succession of technological stages. In general, however, on the basis of the chronological data available it appears that Epi-Paleolithic assemblages for the most part preceded Mesolithic ones.

These definitions, of course, do not solve all terminological issues in Central Asia, and they will, no doubt, not be accepted by all. They are, however, clear and simple enough and for the most part can be applied unambiguously to the available data. Also, they maintain some continuity with past usage.

In bold outline, the scheme we use for the Soviet Central Asian Paleolithic is as follows: Epi-Paleolithic and Mesolithic, Holocene and Final Würm; Upper Paleolithic, second half of Würm; Middle Paleolithic, first half of Würm and (?)second half of Riss/Würm; Lower Paleolithic, first half of Riss/Würm and second half of Riss. This outline is in general agreement with the basic sequence in southwestern Asia and in Europe and should contain no surprises. In terms of absolute dates, the Lower Paleolithic and Mesolithic industries are relatively secure, but the chronology of the Middle and Upper Paleolithic industries is based on river-terrace correlations and artifact typology alone. Up to this time there are no sites in Soviet Central Asia in which the Lower Paleolithic is overlain by any later material or the Middle Paleolithic is overlain by Upper Paleolithic or Mesolithic (with the possible exception of Obi-Rakhmat Cave). There are some multicomponent sites, but these are only from the Upper Paleolithic and Mesolithic. The locations of the major sites are shown in figure 1.

LOWER PALEOLITHIC

In 1953, A. P. Okladnikov found a massive pebble tool with a single edge retouched in a section of alluvial gravel about 25 m below the surface (Okladnikov 1966*a*). The section was located on the On-Archa River in the Tien Shan Mountains near the town of Narin. This was the first pebble tool assigned to the Lower Paleolithic in Central Asia, and it was immediately interpreted by Okladnikov as being representative of the pebble-culture tradition of India and Southeast Asia. During the subsequent 20 years, nine other surface sites (yielding a total of 14 tools) were found in various regions of Central Asia and were interpreted to be Lower Paleolithic by several investigators. Since none of these finds were in situ, they cannot be regarded as bonafide.

Between the Vaksh and Kafirnigan Rivers in southern Tadzhikistan, in river gravels lying 150 m above the present level of the stream, some pebble flakes and two chopping tools were found. The site was called Kukhi-Piyëz after a nearby mountain. Geologists interpret the gravel deposit as belonging to the Mindel/Riss interglacial (Ranov 1969).

A real breakthrough was made in 1972, when A. A. Lazarenko discovered some stone tools in the sixth buried soil horizon in a massive loess deposit on the Yavanskii-Karatau mountain ridge between Dushanbe and Nurek. This was the first time that a collection of Lower Paleolithic tools had been found in situ in Central Asia in a reliable context. (Indeed, for all of Asia in situ Lower Paleolithic sites are rare.) During the last five years, seven Lower Paleolithic localities have been found in the loess, and two of them have been excavated (Karatau 1 and Lakhuti 1). At Karatau 1 the Lower Paleolithic finds came from the sixth paleosol from the surface, at a depth of 64 m (Lazarenko and Ranov 1977). (The total average thickness of the loess at Karatau 1 is 110 m.) Thermoluminescence dating of the loess immediately above and below the artifact-bearing soil horizon has produced dates of 194,000 ± 32,000 and 210,000 ± 36,000 years respectively. The paleosol varies between 1.2 and 2.7 m in thickness and lies with a slight dip to the south. A carbonate crust was found just above

TABLE 2

COMPARISON OF ARCHAEOLOGICAL CULTURE SEQUENCES ACCORDING TO THE STANDARD SOVIET CENTRAL ASIAN GEOMORPHOLOGICAL SCHEME AND THE ALPINE CORRELATION

STANDARD SOVIET CENTRAL ASIAN GEOMORPHOLOGICAL SCHEME					INTERNATIONAL (ALPINE) CLIMATOLOGICAL SCHEME				
AGE (IN THOUSANDS OF YEARS)	INDEX OF QUATERNARY COMPLEX	COMPLEXES IN THE MOUNTAINOUS PARTS OF SOVIET CENTRAL ASIA	GEOMORPHOLOGICAL POSITION, ELEVATION ABOVE VALLEY BOTTOM	ARCHAEOLOGICAL CULTURE	ABSOLUTE DATE	COMPLEX		FAUNA, FLORA, CLIMATE	ARCHAEOLOGICAL CULTURE
	Q_4	Syrdar'in (Uzbekistan), Amudar'in (Tadzhikistan), Tokmak (Kirgiziya)	First–second terrace with gravel cover, seldom covered with friable deposits; 10–15 m	Neolithic, Mesolithic	7,095, 8,020, 8,785, 9,530, 10,700[a]	Holocene	Holocene	Contemporary	Neolithic / Epi-paleolithic/ Mesolithic
10–150	Q_3	Golodnostep (Uzbekistan), Dushanbe (Tadzhikistan), Alamedin (Kirgiziya)	Complex of lower terraces (2–4), covered with loess-loam; 20–40 m	Upper Paleolithic	22,000[b]	Upper Pleistocene	Late Würm	Upper Paleolithic–site fauna, savanna and steppe, temperate, dry	Upper Paleolithic
							Würm I/II		
							Early Würm	Mousterian-site fauna, grasses 70%, juniper and pine, temperate, humid	Middle Paleolithic
					110,000, 130,000[b]		Riss/Würm	Dzhergalan fauna, shrub-grass vegetation (55–98%), dry, mild	Lower Paleolithic
150–400	Q_2	Tashkent (Uzbekistan), Ilyak (Tadzhikistan), Onarchin (Kirgiziya)	Complex of high terraces (4–7), main loess terrace of large valleys, lower piedmonts; 60–200 m	Mousterian, Pre-Mousterian pebble cultures	200,000[b]	Middle Pleistocene	Late Riss		
							Riss I/II		
							Early Riss		
							Mindel/Riss		
400–700+	Q_1	Nanay (Uzbekistan), Kulyab (Tadzhikistan), Cholponatin (Kirgiziya)	Water-eroded lower mountains, erosional ledges, high piedmonts; 300 m and higher		690,000[c]	Lower Pleistocene	Mindel		
							Günz/ Mindel		
							Günz		

[a] Radiocarbon [b] Thermoluminescence [c] Paleomagnetic

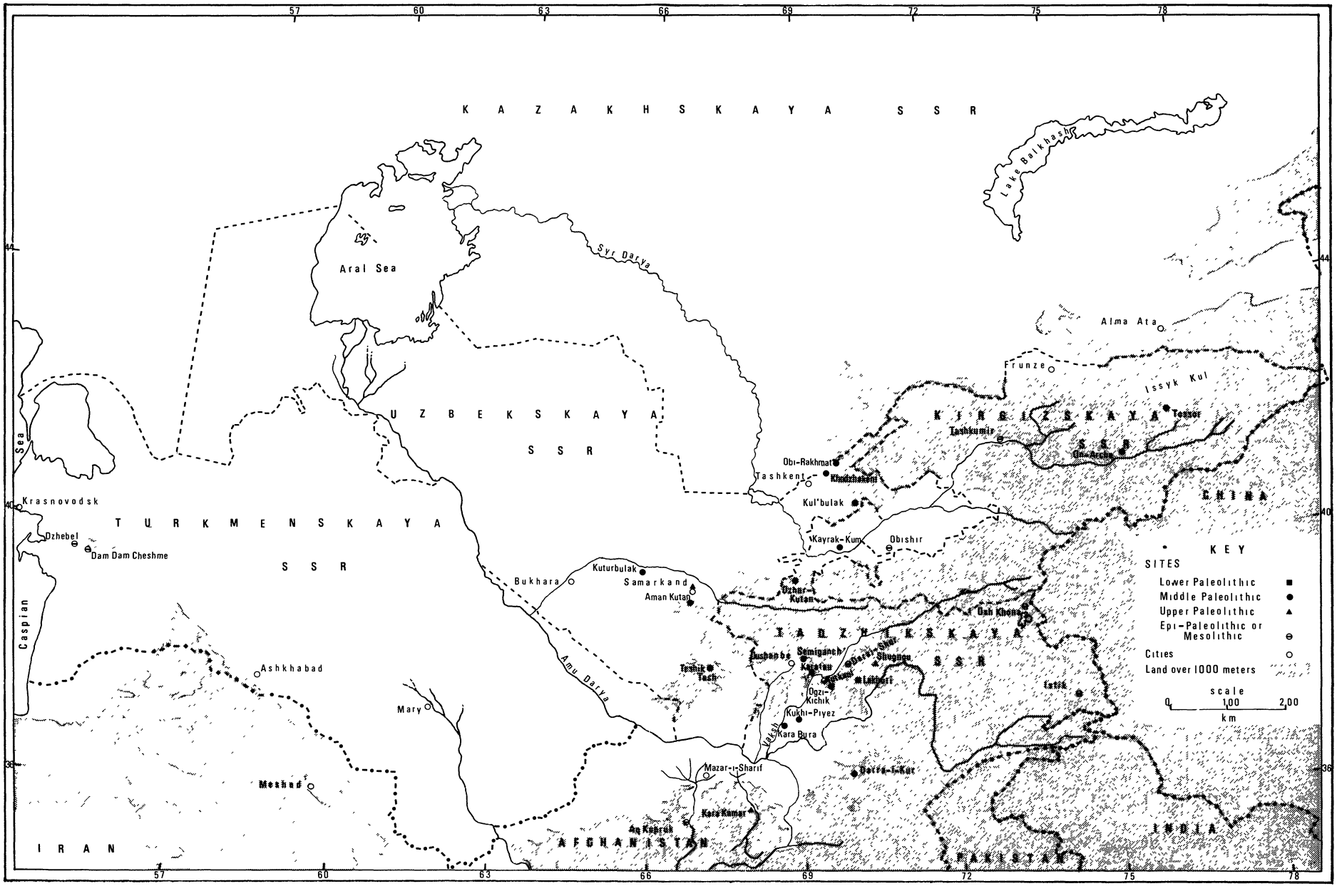

FIG. 1. Major Paleolithic sites in Soviet Central Asia.

the C horizon, and above it the soil is a heavy russet color (B horizon). The paleosol is 1,100 m above the present channel of the Vaksh and 1,700 m above sea level.

The archaeological material at Karatau 1 was found only in the lower half of the paleosol. In all, about 200 pieces of metamorphic river pebbles and cobbles were recovered in the excavation. There were no concentrations of tools, and the pieces were found in densities of no more than three per horizontal square meter. From a detailed examination of the vertical and horizontal orientations of all the artifacts, it was concluded that they were redeposited sometime during the process of soil formation by a slow downslope movement. No fauna was found associated with the artifacts, nor was any hearth material found.

Basically, the finds at Karatau 1 can be described as a pebble culture, although the vast majority of specimens are flakes. The main types of artifact are choppers and crude scrapers made on pebble flakes with a high percentage of cortex. Most of the pieces are broken, and relatively few show signs of secondary retouch. There does not appear to be any well-developed core-preparation technique for the production of flakes and blades. Pebbles were fractured by the *Zitron* or *quartier d'orange* technique, a procedure which does not require the preparation of a striking platform. Slightly over 70% of the flakes have pebble-cortex striking platforms. The products of this technique do indeed resemble orange sections and retain considerable cortex on their surfaces. No complete handaxes were found, but there are a few bifacially retouched fragments.[5] Also present in small quantities are bifacial-retouch flakes, the products of bifacial manufacture. Further characteristics which distinguish the Karatau 1 industry are that the majority of flakes show signs of rough trimming blows on their dorsal faces and that a weakly expressed Levallois (or proto-Levallois) technique is discernible on two or three flakes.

From a more recent paleosol, the fifth from the top, dated by thermoluminescence between 130,000 and 150,000 years, another pebble industry was found at the site of Lakhuti 1, nearly 250 km to the east. The site is located 12 km from the village of Khovaling on the right bank of the Obi-Mazar River. The artifact horizon lies 60–65 m above the present river channel and is covered by 63 m of loess. One full season of excavation at Lakhuti 1 in 1976 uncovered an area of 216 m^2. The artifacts here were in greater concentration than at Karatau 1. Of the 452 pieces discovered, approximately half had signs of intentional knapping. Because of this greater concentration and the presence of some small quantities of as yet unidentified animal bone, it seems possible that the original deposition of the cultural materials has not been much disturbed. It is important to point out, however, that the artifacts were not found in a single, thin horizontal layer, but rather were distributed throughout approximately a meter's depth of the lower half of the paleosol, as if in suspension.

Along with the predominant pebble technique at Lakhuti 1 there is a flake-core technique more developed than that at Karatau 1. Simple single- and multiplatform pebble cores for the production of flakes are present. There are also traces of Levallois technique for flakes and blades. Several well-formed choppers, some nosed, are present. A higher percentage of retouched tools was found at Lakhuti 1 than at Karatau 1, with a predominance of notched and denticulated tools. In general, the appearance of the Lakhuti 1 industry is more developed than that of Karatau 1.

To date, investigation of the loess sections of Tadzhikistan has produced finds only in the fifth and sixth paleosols (Dodonov and Ranov 1977). It is hoped that future work will reveal cultural materials deeper in the loess. Central Asia should by no means be ruled out as an inhabited area during the Lower Pleistocene. Recently, several geologists have concluded that there has been a dramatic uplift in Central Asia during the Pleistocene—approximately 4 km of vertical displacement (Gubin 1960, Chediya 1972). It is thought that the major portion of this uplift occurred during the Middle Pleistocene. If this conclusion is correct, the Lower Pleistocene landscape would have been vastly different from today's. It certainly would have been more closely connected with South Asia, and mountain barriers between Central and South Asia may not have been great enough to prevent movement of early hominids. Relatively few Lower Pleistocene deposits have been located and surveyed for cultural or fossil remains. The loess deposits probably present the best opportunity for discovery of Lower Pleistocene materials.

In culture-historical terms, it is evident that no clear traces of the Acheulean techno-complex have been found in the mountainous parts of Soviet Central Asia. Bifacial tools have been found in central Kazakhstan and on the Mangyshlak Peninsula, but these surface finds may be Middle Paleolithic or later (Medoyev 1970). It is certainly too early to conclude that the Lower Paleolithic pebble industries of Soviet Central Asia have any direct connection with the chopper–chopping-tool tradition of South and Southeast Asia, but in terms of gross typological and technological similarity the Soviet Central Asian Lower Paleolithic appears to be closer to East Asia than to the West. It is important to consider also that the general abundance of metamorphic river pebbles and cobbles and the comparative rarity of nodular and tabular flint in Soviet Central Asia may have played a significant role in the spread and development of the Soviet Central Asian pebble industries. In fact, pebble tools in the form of choppers and chopping tools persist down to the Gissar Neolithic.

It is not easy to visualize easy connecting routes from Soviet Central Asia to South Asia in the late Middle Pleistocene except perhaps via eastern Iran. It is worth mentioning that in northeastern and southeastern Iran evidence of pebble-tool industries dating from at least the Riss has recently been reported (Hume 1976, Ariai and Thibault n.d.). Unfortunately, both of these discoveries were made on the surface, which makes a precise determination of their age difficult. To date there is little evidence of bifacial technique of Acheulean tradition east of the Euphrates. The significance of these techno-complex distributions (chopper–chopping tool and core biface) is difficult to assess, and it has been the subject of a not very enlightening debate for the last 100 years. No simple ecological, biological, or cultural explanation seems appropriate. The presence or absence of bifacial techniques does not in any case strictly follow clear geographical boundaries, as a large number of recent publications have shown. More and more it appears that there is considerable internal regional variation in many areas of the Old World in the frequency of bifacial technique. That the presence or absence of bifacial handaxes does not necessarily signify major differences in tradition has been well demonstrated by Isaac (1972). In short, we will not be surprised to find concrete traces of bifacial industries in Soviet Central Asia in the future and believe that the Lower Paleolithic here will prove to have several technological variants.

The evidence of Levallois technique in the Soviet Central Asian Lower Paleolithic is another industrial feature which may elicit discussion about cultural origins and diffusion. It is possible that the pebble and discoidal flaking technique which also appears in the Soviet Central Asian Lower Paleolithic developed into the Levallois technique. Well-developed Levallois technique for the production of flakes, blades, and points is present at several Soviet Central Asian Middle Paleolithic

[5] These may be also interpreted as fragments of discoidal cores.

sites, and it is certainly possible to think of it as developing on a relatively local basis rather than as diffused from somewhere in the West.

MIDDLE PALEOLITHIC

The Mousterian is the best studied and the most widely known portion of the Paleolithic sequence of Soviet Central Asia. A. P. Okladnikov's discovery of five cultural layers with a child burial in Teshik Tash Cave in the late 1930s was widely publicized and analyzed in the West and is mentioned in practically every basic textbook on Old World prehistory (Movius 1953*b*, Bordes 1955). Since that discovery, many more sites have been located and excavated, and a complex and varied picture of the Mousterian has emerged. In a tally made as of 1966, 78 Mousterian sites were recorded. Of these, 13 were in Turkmenistan, 34 in Uzbekistan, 20 in Tadzhikistan, and 11 in Kirgiziya. In all, there were 5 cave sites and 13 large surface collections; the rest were small find spots with small collections (Ranov 1971). During the last ten years, the number of sites has increased, but not greatly.

Inasmuch as practically all of the known Mousterian sites are dated to the first half of the Würm, there seems to be a considerable hiatus—on the order of 60,000 years—between the Lower Paleolithic of Lakhuti 1 and the first Mousterian sites in Central Asia. In general, Ranov considers that the Mousterian should be characterized as "developed" or "late," an observation which applies to most of the Middle Paleolithic in southwestern Asia and elsewhere. The explanation for this apparent hiatus may lie in the relatively small amount of survey for Lower Paleolithic sites that has taken place. Also, a much earlier beginning of the Würm with a relatively short Riss/Würm interglacial may make the hiatus more apparent than real.

Ranov (1968) has divided the known Middle Paleolithic into four technological variants or facies on the basis of artifact typology and technology: Levallois (Khodzhakent, Dzhar-Kutan, Obi-Rakhmat), Levallois-Mousterian (Kayrak-Kum, Tossor, Fergana Valley sites), Typical (Mountain) Mousterian (Teshik Tash, Ogzi-Kichik), and Mousterian of Soan tradition (Kara Bura, Ak Dzhar). It should be emphasized that we do not consider these technological variants representative of separate cultural groups. As yet, there are too few sites and too little detailed examination by uniform methods to allow such a distinction to be drawn. In fact, there is reason to believe, as Binford (1972) has suggested, that cultural groups of the type known from the Upper Paleolithic did not exist during the Middle Paleolithic. This is also a lively topic of debate in Soviet archaeological circles. In the early 1950s Efimenko described the Neanderthal social order as consisting of the horde, without the family or the tribe (Efimenko 1953). As work continued in Europe and European Russia and many new Mousterian sites were discovered and excavated, it appeared that Mousterian technology and settlements were far more complex than had previously been suspected. Particularly influential on Soviet scholars in this regard was the work of F. Bordes in France. It was noted that most of the technological characteristics of the Upper Paleolithic were already present in the developed Mousterian (Lyubin 1965). Later Grigor'ev advanced the term "pre-tribe" to describe the social organization of Mousterian times. According to this concept, family organization existed as well as a larger, weakly expressed superfamilial organization. This superfamilial organization, however, was isomorphic with particular tool-making traditions (Grigor'ev 1968). Still later, some investigators began to identify true cultures for the late Mousterian (Suleymanov 1972, Lyubin 1977). Countering this trend is the position of Formozov (1977), who argues for a single, widespread Mousterian population without strong internal segmentation.

Briefly, the main distinguishing features of the Central Asian Mousterian variants are as follows (for a full treatment of this topic see Ranov 1968 and 1971):

In the Levallois variant, single- and multiple-striking-platform cores are widespread, well-formed blades with triangular and subrectangular form are common, and completely shaped formal tool types are very few; instead, simple edge-retouched pieces predominate.

The Levallois-Mousterian facies is similar in many respects to the Levallois, but platform and discoidal cores are found in approximately equal proportions. The blade index and index of faceting are approximately equal to those of the Levallois variant. Flake and blade blanks are predominantly Levalloisian, but the number of atypical types is also large. Blades with marginal retouch are the most common tool type.

The Typical (Mountain) Mousterian differs in the more widespread presence of completely formed formal tools of several distinct types, many of which resemble those found in the tool kits of the classical Mousterian sites of Western Europe. These include many forms of scrapers and, to a lesser extent, points and Mousterian points.

Finally, the Mousterian of Soan tradition is a pebble-tool industry with a high frequency of choppers and chopping tools. Levallois technique is infrequent; well-made Mousterian points and scrapers are present, as well as a number of simple edge-retouched tools.

Possibly Kul'bulak could be considered representative of a fifth variety which would be called denticulate Mousterian. It is, however, the only site of this kind known from Central Asia.

The faunal remains associated with Mousterian variants at cave sites (table 1) do not permit placing the sites in relative chronological order.

It is, of course, difficult to explain the origins of these variants. There is a significant degree of regional patterning (see fig. 2). The Mousterian of Soan tradition is isolated along the Vaksh River in southern Tadzhikistan, the Mountain Mousterian is located within the folds and faults of the Gissar range and its spurs, and the Levallois and Levallois-Mousterian are concentrated in the Fergana Valley and the plains and foothills of the Tien Shan range near Tashkent. No cave or open-air site has been discovered with two or more variants present. This makes it difficult to see any evolutionary changes through time or to discern if the variants are roughly contemporary. As has been pointed out, virtually all of the Mousterian of Central Asia is considered developed or late, and in general most investigators consider the variants essentially contemporary.

In addition to the clearly expressed Mousterian traits, many of the Middle Paleolithic sites also exhibit Upper Paleolithic types (blades, burins, end scrapers, and piercers). This is especially true of Ogzi-Kichik, Semiganch, and Obi-Rakhmat. At the latter site, Suleymanov (1972) has made a detailed quantitative analysis of the largest collection of Mousterian artifacts in Soviet Central Asia (more than 30,000 pieces) and has concluded that it is an ultra-final Mousterian, transitional to the Upper Paleolithic. This conclusion is generally accepted.

In this context, we would like to raise the possibility that the Mousterian of Soviet Central Asia may have persisted later than in southwestern Asia or in Europe. This idea has already been expressed by Grigor'ev and Ranov (1973), but it is difficult to verify. No Middle Paleolithic sites have been dated by C^{14} with the single exception of the upper layer at Ogzi-Kichik (LE-1050, 15,700 B.P., Libby half-life), and this determination was made on charcoal dust, which may have adversely affected the result. The general paucity of Upper Paleolithic sites and their generally developed appearance may be interpreted to mean that they are relatively late—younger

than 25,000 to 20,000 years. In any case, the transition to the Upper Paleolithic is not yet calibrated accurately and therefore remains an open question.

UPPER PALEOLITHIC

The Upper Paleolithic, a blade and end scraper industry that developed in the second half of the Würm, is represented by excavations at only two stratified sites: Shugnou, in the Yakhsu River valley of Tadzhikistan (Ranov, Nikonov, and Pakhomov 1976), and Samarkand, located within the city limits of Samarkand, Uzbekistan (Lev 1964). Both are open-air sites and have several distinct occupation horizons. There are approximately 30 other surface localities scattered over much of Soviet Central Asia at which small collections have been made and the tools rather conditionally assigned to the Upper Paleolithic. The only other Upper Paleolithic site in this general region is Kara Kamar in northern Afghanistan, discovered by Coon in 1954 (Coon 1957, Davis 1978); these finds have been C^{14}-dated to greater than 32,000 years.

In general, there was no great technological leap forward to the Upper Paleolithic. Many Mousterian elements remain: points, denticulates, side scrapers, and Levallois technique. It is only at the very end of the Upper Paleolithic that prismatic blade technique appears, at Kodzha-Gor and Shugnou Horizon 2. Also included at the Samarkand site are choppers and chopping tools.

Shugnou, at an elevation of 2,000 m, is one of the highest Upper Paleolithic sites in the Old World. Five cultural layers averaging 20–40 cm thick were clearly visible in the 12-m-thick loess-loam deposit of the 50-m terrace above the Yakhsu. The uppermost layer is considered Epi-Paleolithic and the lower four Upper Paleolithic. Each of the layers has a different variety of assemblage. Ranov excavated the site in 1968–70 and opened up 500 m^2 of deposits. The Epi-Paleolithic layer (Horizon 0) has microblade cores and microblades and also a large series of large cores and flakes similar to the Markansu culture of the Pamirs. Horizon 1 has a number of longitudinally curved microblades, tongue-shaped end scrapers, and a large number of carinated nucleoform scrapers of the type also found at Samarkand. A single radiocarbon determination (GIN-590, 10,700 ± 500 B.P.) has been made.

In Horizon 2 were found a large number of large prismatic blades struck from cores by the crested-blade technique. A high frequency of Mousterian types such as large scrapers and blades was also found. Also present are many points with blunted edge retouch and end scrapers on wide blades. Ranov estimates this horizon to be on the order of 25,000 years old, but Davis sees no basis for a greater antiquity than 15,000–20,000 years. The fauna included horse, aurochs, sheep, goat, and marmot (table 1). It is somewhat surprising to find horse at this altitude and in this mountainous landscape; usually it is assumed to be a steppe form. It appears, however, that horses grazed along the upland river valleys and plateaus during the

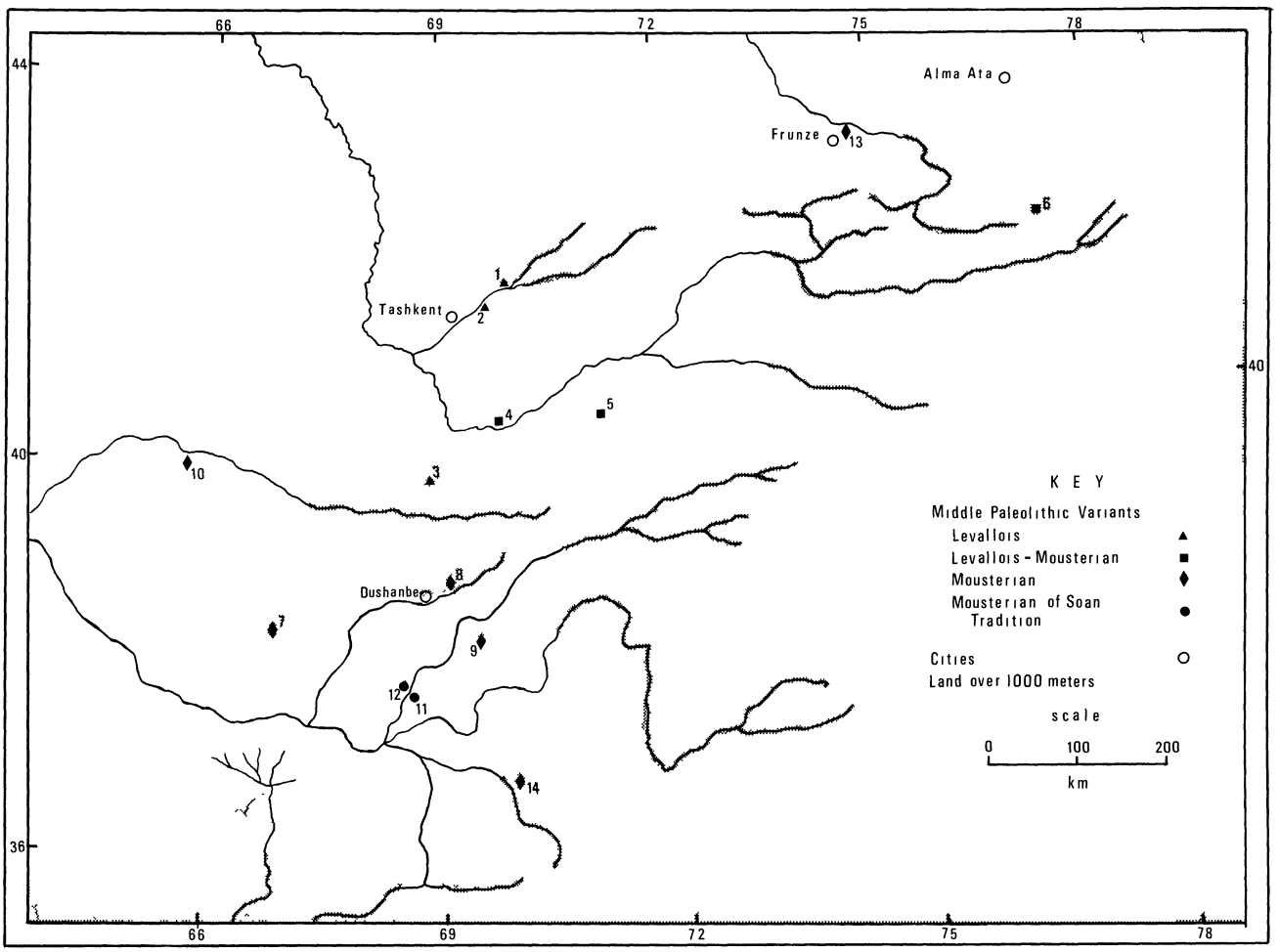

FIG. 2. Distribution of Middle Paleolithic variants in Soviet Central Asia. Levallois, *1*, Obi-Rakhmat, *2*, Khodzhakent, *3*, Dzhar-Kutan; Levallois-Mousterian, *4*, Kayrak-Kum, *5*, Fergana Valley sites, *6*, Tossor; Typical (Mountain) Mousterian, *7*, Teshik Tash, *8*, Semiganch, *9*, Ogzi-Kichik, *10*, Kuturbulak, *13*, Georgievskiy Bugor, *14*, Darra-i-Kur; Mousterian of Soan tradition, *11*, Kara Bura, *12*, Ak Dzhar.

summer and that hunters intercepted them along their migratory routes.

Horizons 3 and 4 were strongly disturbed by water erosion, and the small size of the collection of tools makes it difficult to characterize as a whole. Levallois points and blades give a more Mousterian character to these horizons, but, on the whole, Ranov considers that they do not fall outside the limits of Upper Paleolithic technology.

Shugnou is one of the few localities at which pollen analysis has been carried out. Prior to the occupation of the site, grasses predominated, but approximately 25% of the pollen was arboreal. Juniper was predominant, with small quantities of plantain, ash, and nut. Following this episode, loess was deposited on the 50-m terrace, and the pollen in the lower loess indicates an increase in arboreal vegetation; up to 50% of the pollen consists of birch, alder, poplar, and willow. The palynologist M. M. Pakhomov considers conditions to have been moister and cooler than today's, probably corresponding to a warm interval in the late Würm. The pollen from Horizon 0 indicates conditions similar to the contemporary hot, dry climate.

The Samarkand site is located in the center of Samarkand in the Komsomol Lake. Three occupation layers found in slope (colluvial) deposits have been correlated with Upper Pleistocene terraces of the Zeravshan River. In all, over 7,000 artifacts were recovered. All three layers are considered to be from the same period of time, and no significant differences between the artifact assemblages have been found. The stone tool industry combines a number of elements. Of Mousterian type are flakes and blades, points and notched tools, a high percentage of core tools, and a large number of choppers and chopping tools. Upper Paleolithic types include bladelets and microblades, end scrapers, a large series of carinated scrapers, *grattoirs à museau,* and notched tools.

The fauna includes, in addition to camel, aurochs, and deer (table 1), human skeletal fragments—portions of two jaws and two teeth—found in 1962 and 1966. These have been carefully examined by Soviet physical anthropologists and determined to be of completely modern type (Ginzburg and Gokhman 1974).

In culture-historical terms, the Samarkand site is unique for Soviet Central Asia, and several investigators have claimed that it has many similarities with sites much farther north and east, in Siberia and in Mongolia (Lev 1964). There has been much discussion about the age of the site. Lev originally assigned it to the very beginning of the Upper Paleolithic, but more recently several archaeologists and geologists have independently formed the opinion that it is much later, somewhere between 20,000 and 15,000 years (Ranov and Nesmeyanov 1973).

On the basis of the small amount of Upper Paleolithic material, it is premature to draw any firm culture-historical conclusions. Ranov has concluded that there is no evidence that the Upper Paleolithic sites reflect any significant diffusion from outside of Central Asia and can be understood as continuations of the Mousterian. There is some reason to believe that there are local variations and parallel traditions within the Central Asian Upper Paleolithic, but their duration and full dimensions are not well understood.

The scarcity of Upper Paleolithic sites relative to the Middle Paleolithic and the Mesolithic in Soviet Central Asia is difficult to explain. No sites have been found in caves, and the small number of stratified sites is puzzling considering the amount of archaeological work that has been done. Davis (1978) and others (Solecki 1963, Copeland 1975) have noted that in general during the main Würm there is a marked decline or total absence of Upper Paleolithic sites in many areas of southwestern and central Asia. The apparent depopulation may be perhaps explained simply in terms of climatic change, which resulted in a profound alteration of the distribution of faunal and floral communities. For the moment, however, hard supporting evidence for this hypothesis is not available. Ranov does not consider climatic change to have been a significant causal factor. Instead, he believes that many late Würm deposits have been either buried or eroded and that future work will demonstrate continuity of occupation throughout the Würm.

EPI-PALEOLITHIC AND MESOLITHIC

The environmental changes which followed the main Würm glaciation are poorly known in Soviet Central Asia. The extent, tempo, and degree of oscillation of climatic amelioration can only be approximated, and the chronology of events is not substantially based. The general picture at Shugnou seems to be a reduction of forest cover and desiccation during the early Holocene. In southern Turkmenistan, Lisitsyna (1970:56) reports, the osteological remains found "do not exceed the limits of animal life of the arid climate of the Caspian. This allows us to suppose that the climate of 10,000 to 7,000 B.C. in this area differed little from that of the present." At the Mesolithic site of Tutkaul, the palynologist Pakhomov has interpreted the pollen section to reflect a locally arid climate in the early Holocene which changed to a semiarid climate by the middle Holocene (Pakhomov, Ranov, and Nikonov 1974). Climatic oscillations of the type known from northern Europe at the close of the Pleistocene have not yet been recognized. A few have argued that tectonic uplift during the Holocene has been a significant influence on local climates. For example, Ranov and Sidorov (1974) have postulated that the eastern Pamirs have risen 500–600 m during the Holocene and caused the early Holocene tree cover to disappear over wide areas. This hypothesis, however, has been met by criticism (Agakhanyants 1965).

The Mesolithic and Epi-Paleolithic significantly differ from the preceding Paleolithic in the distribution of human populations. For the first time, it seems, both very high-altitude and lowland regions were occupied. Two sites, Osh Khona and Istik, have been excavated in the eastern Pamirs at elevations exceeding 4,000 m, and surveys conducted by Ranov have located close to 50 surface sites of Mesolithic typology. Because of the severity of winter in the Pamirs, it seems almost certain that this region was only seasonally occupied. In the western Turan depression near the eastern shore of the Caspian Sea, a number of well-known Mesolithic sites have been discovered (e.g., Dam Dam Cheshme 1 and 2 and Dzhebel). They are located on the Krasnovodsk Peninsula and in the Bol'shoy Balkhan Mountains adjacent to the ancient Uzboy River bed. At the latter location, freshwater fish remains, the first known archaeological fish bones in Central Asia, were discovered. This may indicate a new type of subsistence economy which has parallels in other parts of the Old World during the early Holocene.

Geographically, Mesolithic sites have been found in concentration in three regions: western Turkmenistan, the Fergana basin, and southern Tadzhikistan. This distribution is largely a function of the pattern of archaeological survey and excavation and probably does not reflect the actual distribution of Mesolithic and Epi-Paleolithic populations.

Typologically, the Mesolithic and Epi-Paleolithic of Central Asia can be divided into the following groups:

1. Mesolithic of western Turkmenistan. This group is characterized by a wide variety of geometric microliths, e.g., trapezes, lunates, rectangles, and backed points. Flint is the predominant material. The assemblages from Dzhebel Cave, Dam Dam Cheshme 1 and 2, and the open-air sites of western Turkmenistan bear a strong resemblance to the Caspian Mesolithic of northern Iran, specifically the caves of Belt and Hotu (Coon 1957). Many investigators have postulated a direct

migration from northern Iran (or an even earlier migration from the Zagros during Zarzian times) along the eastern shore of the Caspian all the way to the southern Urals (Matyushin 1976). The chronological scheme adopted for these sites corresponds directly to that known from northern Iran (Markov 1966, Korobkova 1976).

2. Mesolithic of southern Tadzhikistan. Here also there is a widespread appearance of geometric microliths which have counterparts in southwestern Asia, the closest being the recent finds of Vinogradov along the left bank of the Amu Darya in northern Afghanistan (A. V. Vinogradov, personal communication, 1977). Some of the southern Tadzhikistan Mesolithic sites, for example, Tutkaul Layer 2a and Darai-Shur, have a pebble-tool component in their assemblages. In general, backed blades or microblades are rare.

On the basis of the present evidence in southern Tadzhikistan along the Vaksh River, it is possible to postulate three chronological stages of the Mesolithic. The first is exemplified by Tutkaul Layer 3, where together with carinated scrapers and circular scrapers are found geometric rectangles of Natufian type. The second stage is known from Tutkaul Layer 2a, which has a large number of geometric lunates and various kinds of backed points on small bladelets with convex and straight backed edges. These geometric implements are found together with large blades, platform cores large flakes, and choppers, the latter in low percentage. The third stage is represented by A. Yusopov's recent excavation of the shelter of Darai-Shur, where geometric forms (triangles, lunates, and backed points) are combined with choppers, chopping tools, pebble cores, knives on primary flakes, and large scrapers. At Darai-Shur the pebble-and-flake component predominates over the geometric. Possibly this third stage is not confined to the Afghan-Tadzhik depression, as Istik in the eastern Pamirs and the cave site of Tashkumir in the Fergana Valley have similar assemblages.

3. Epi-Paleolithic of the mountainous part of Central Asia. Okladnikov (1966*b*) has referred to this as the Mountain Mesolithic. It is characterized by the complete absence of geometric microliths and the extreme rarity of backed elements. There is a wide range of typological and technological variation in the Epi-Paleolithic. In the Pamirs, in the Markansu culture, well known from Osh Khona and from several surface collections, pebble tools predominate over flint flake and blade tools, the latter having strong resemblances to Altai and southern Siberian cultures (Ranov 1972). The site of Obishir in the Fergana Valley is characterized by a technique for preparing thin blades along with end scrapers and pebble choppers (Islamov 1972).

Table 3 gives some indication of the presence or absence of various tool classes and technological features at a number of Central Asian Mesolithic and Epi-Paleolithic sites.

For the Mesolithic and Epi-Paleolithic there is a small series of C^{14} dates. For Osh Khona in the Pamirs, there are three determinations (7,095 ± 120, 7,380 ± 150, and 9,530 ± 130 B.P.), for Ak Tangi one (8,785 ± 130 B.P.), and for the cave of Machay one (7,550 ± 110 B.P.). The Neolithic Layer 2 of Tutkaul has a determination of 8,020 ± 170 B.P., and this layer directly overlies the Mesolithic Layer 2a. On the basis of the Layer 2 C^{14} determination and comparative typology, Ranov has dated Layer 2a to 7000–8000 B.C. Layer 3 at Tutkaul is found in alluvial sand at an elevation of 37 m above the present level of the Vaksh River, and geologists have dated this deposit to the early Holocene, possibly 10,000–11,000 B.C.

The culture-historical picture of the Central Asian Meso-

TABLE 3

EPI-PALEOLITHIC AND MESOLITHIC SITES IN SOVIET CENTRAL ASIA: MAJOR TOOL CLASSES

REGION AND SITE	PEBBLE TOOLS	MICRO-BLADE CORES	MICRO-BLADES	GEO-METRIC TOOLS	POINTS[a]	BACKED BLADES	END SCRAP-ERS	NOTCHED OR DEN-TICU-LATES	PIÈCES ES-QUILLÉES	CORE SCRAP-ERS	BURINS
Western Turkmenistan											
Dzhebel		X	X	X			X	X		X	
Dam Dam Cheshme 1		X	X	X			X	X			
Dam Dam Cheshme 2		X	X	X	X	X	X	X	X	X	(X)
Southern Tadzhikistan											
Tutkaul 2a	X		X	XX	X	(X)	X	X			
Tutkaul 3			X	X						X	
Obi Kiik			X	X	X	X			(X)		
Chil' Chor Chashma		X		X		(X)	X				
Bishkentskaya		XX	(X)								
Markoni-Mor		X	X				X	X	X		X
Shugnou 0	X	X	X				X	X			
Shugnou 1		(X)	(X)		X		X	X		X	
Shugnou 2		(X)	(X)		X	(X)	X			X	(X)
Sayëd 3	XX							X			
Darai-Shur	X		X	XX	X	X	X	(X)	X		
Fergana Valley–Tashkent											
Tashkumir			X		X		X				
Obishir 1	X	X	X			X	X	X		X	
Obishir 5	X	X	X			X	X	X		X	
Kushlish			X	X	X						
Ak Tangi			XX	X							
Eastern Pamirs											
Osh Khona	(X)	X	X		X		X				
Istik		X	X		X	X	X				
Northern Afghanistan											
Aq Kupruk 2		X	X				X	X		X	X
Darra-i-Kalon		X	X				X	X		X	X
Amu Darya sites		X	X	XX	X	X	X	X			X

NOTE: X, present; XX, abundant; (X), rare

[a] Including backed points

lithic and Epi-Paleolithic is as yet far from clear. For the moment, we offer the following general summation: The Epi-Paleolithic developed locally out of the preceding Upper Paleolithic, and several local variants were formed, including some with a predominance of pebble tools. This local development was complicated by the arrival of populations from the Iranian plateau with a geometric-microlith and backed-blade tradition. In the arid, previously uninhabited desert regions along the Amu Darya and Turan depression, where there is an abundance of flint, the geometric microlithic tradition fully predominated, but in the loessic foothills of the Gissar range there appeared a combination of geometric elements and locally persisting Epi-Paleolithic ones.

CONCLUSION

The purpose of this paper has been to acquaint readers in the West with the wealth of material from the Paleolithic of Soviet Central Asia. Many of the ideas and some of the materials presented here have not been previously published and are the result of the joint work of the authors. We hope that we have been able to communicate the significant features of the Soviet Central Asian Paleolithic and have created a framework which will be useful for other prehistorians working in Asia.

Soviet Central Asia, in comparison with many regions of southwestern Asia (e.g., Afghanistan, Iraq, Iran, northeastern China, northeastern India, and Turkey), has been relatively well worked in the fields of Paleolithic archaeology, geomorphology, geology, and paleoenvironmental studies, although it must be obvious to the reader that many basic problems lack clear resolution. Perhaps the most intensive work has been carried out in southern Tadzhikistan, where the longest and most varied Paleolithic-to-Neolithic sequence has been reconstructed in the context of extremely varied environments from the high Pamirs to the arid lowland river valleys leading to the Amu Darya.

The materials from Soviet Central Asia do not fit neatly into prehistoric outlines known from southwestern Asia, South Asia, Siberia, and Mongolia. The region shares many technological traditions with all these others but must be regarded as having its own character. Although we have used an essentially West Asian/European terminology to describe the Soviet Central Asian materials, we do not wish to leave the impression that the Paleolithic record here is just a distorted reflection of the West. In fact, on the basis of what is known at the present time, we consider Central Asia to be a relatively autonomous sphere in which pebble-tool, Levallois, and microblade traditions developed many characteristics of their own through time and perhaps affected technological traditions in surrounding areas. Okladnikov (1962) has already raised this idea in terms of the spread of the Levallois technique into the deserts of Mongolia.

Geologically, two new developments have had real significance for Paleolithic archaeology in Soviet Central Asia. First, the long-prevailing notion of the impossibility of correlating the basic events of the Quaternary here with those of Europe and the rest of the world has been successfully challenged. The traditional point of view has been that events in Europe have been essentially controlled by climatic oscillations and that in Soviet Central Asia they have been the result of tectonic activity; hence the difficulty of synchronization (Skvortsov 1953, Nesmeyanov 1971). The analysis of the deep loess sections in southern Tadzhikistan by a wide variety of methods has now provided a firm basis for worldwide correlation. Dodonov and Pen'kov (1977) provide an excellent summary of this work. The recent adoption of the European Alpine glacial terminology by some geologists here should therefore be interpreted not as a casual attempt to impose a foreign system, but as a well-based and informed advance in real knowledge. Second, the understanding of the dynamics of river-terrace formation in Central Asia has grown considerably. Nesmeyanov (1977) summarizes much information on the terraces in the mountainous region of Central Asia and offers a reliable relative chronology of archaeological sites located on and in the terraces. Particularly important has been the detailed examination of the variously aged structural components of river terraces (alluvial, colluvial, and eolian deposits).

The Aman Kutan Mousterian site was once considered the oldest indication of human activity in Central Asia. It is now dated to the first half of the Würm, and sites more than three times its age, extending back into the Riss, are known. This fact certainly widens the known range for Lower Paleolithic populations, and it may be expected that they penetrated even farther north.

Concerning the long-standing question of the existence in Asia of two major Lower Paleolithic tool-making traditions, chopper–chopping tool and core biface, the present evidence from Central Asia offers some new information. The pebble-tool industries from the loess localities of southern Tadzhikistan could be characterized as part of the chopper–chopping-tool tradition, but there are also some traces of bifacial workmanship. Superficial resemblances between this material and the Soan industries of Pakistan have been noted, but no detailed comparative work has been undertaken. The geographical isolation of Soviet Central Asia from South and Southeast Asia makes it difficult to trace a direct historical connection except perhaps via eastern Iran and Baluchistan. Reliable information from Afghanistan is lacking in this regard, and the work so far in eastern Iran is not sufficient to demonstrate any connection. For the moment, we can only suggest that the pebble-tool industries of Central Asia developed independently of those of South Asia, an example of parallel evolution. The handaxe industries of central Kazakhstan, if they are truly Lower Paleolithic, are an isolated example of bifacial technique far removed from sites in southwestern Asia and the Caucasus. It would seem, therefore, that a clear dividing line between ancient technological cultural traditions cannot be drawn through Central Asia, if indeed it can be drawn anywhere.

Pebble tool technology persists from the Lower Paleolithic through the Neolithic in Central Asia. Unfortunately, our outline of Central Asia prehistory can give no satisfactory explanation of the means of this persistence. We cannot determine whether a pebble-tool tradition existed side by side with the core, flake, and blade varieties of the Soviet Central Asian Middle Paleolithic or whether pebble tools were simply variants of the core, flake, and blade tradition. It is also puzzling that the geometric Mesolithic industry from Tutkaul Layer 2a is followed by a relatively archaic-looking pebble-tool industry in Layer 2, the Gissar Neolithic. Although there are several Mesolithic industries with pebble tools, it is difficult to trace a smooth technological transition into the Gissar Neolithic. In contrast, the lithics of the Dzheitun Neolithic in the northern foothills of the Kopet Dagh do exhibit a technological continuity from the Mesolithic of the Bol'shoy Balkhan Mountains of the eastern Caspian (Islamov 1975).

The past 25 years have demonstrated without a doubt that the Mousterian industries are much more varied than first appeared. Much more fieldwork and analysis is needed before their complete distribution and character will be known. Another incomplete portion of our outline is the Upper Paleolithic. From all appearances, the two known stratified sites are late rather than early Upper Paleolithic. This raises the question of where the early Upper Paleolithic is in Soviet Central Asia. There are at least three (nonexclusive) possible explanations: (1) that there are no early Upper Paleolithic sites

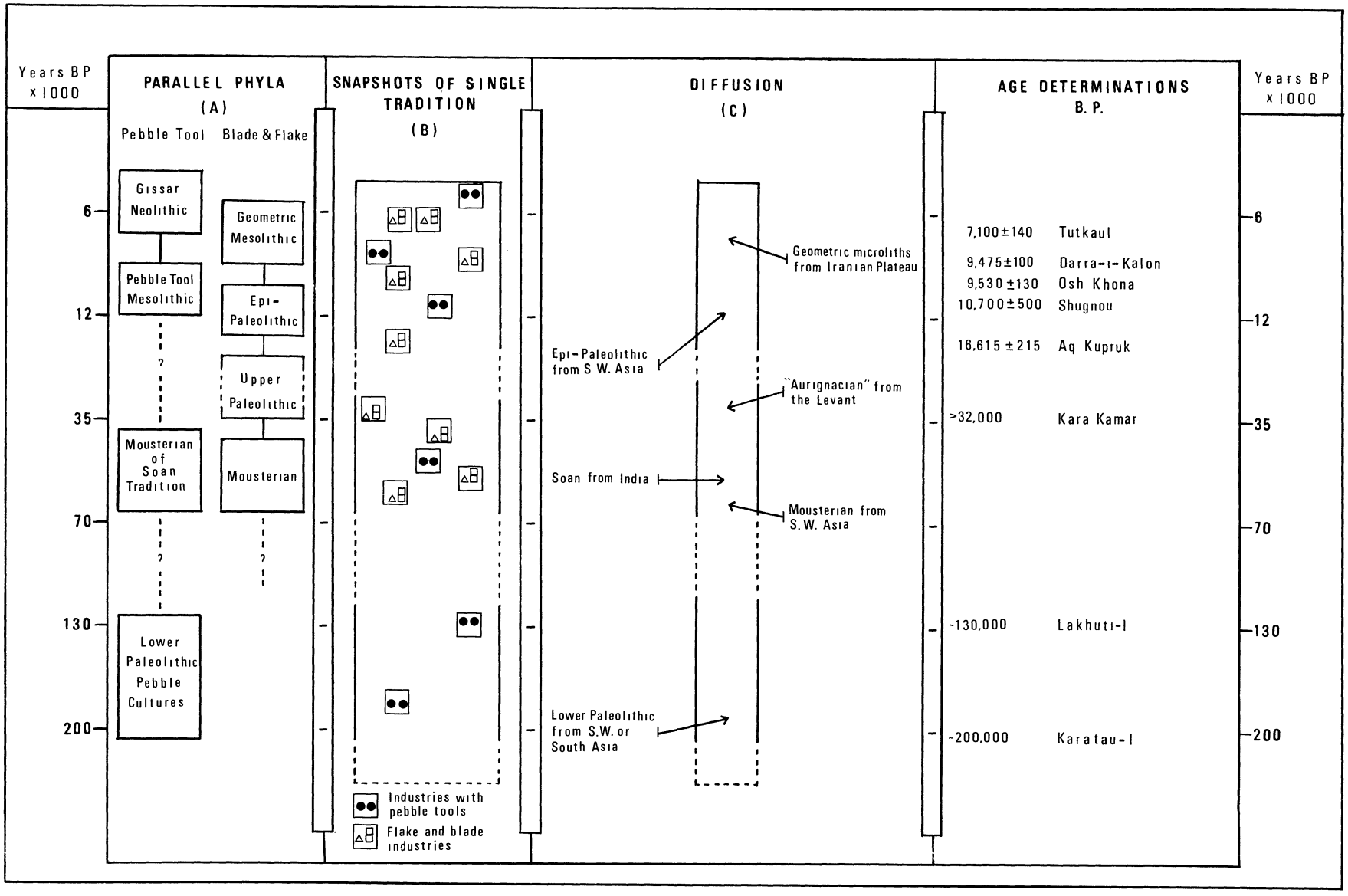

FIG. 3. Alternative culture-historical interpretations of the Soviet Central Asian Paleolithic. These represent extreme conceptualizations and should not be taken as mutually exclusive. "Parallel Phyla (*A*)" of a pebble tradition and a flake and blade tradition is probably the least supportable characterization. "Snapshots of a Single Tradition (*B*)" is meant to convey the notion that there was a continuous, variable tradition of which archaeologists' excavations have taken only a few "pictures." "Diffusion (*C*)" has been the most widely projected view of Soviet Central Asian cultural history, but convincing evidence for it is generally unavailable.

(at least between 25,000 and 15,000 B.C.) because of the climatic deterioration of the main Würm; (2) that the Mousterian persisted longer in Central Asia than in the West and that a cultural sequence analogous to that of the West simply does not exist there; and (3) that the early Upper Paleolithic material is present but has not yet been found. Davis favors the first explanation and Ranov the third. The third level at Kara Kamar in northern Afghanistan is the only known early Upper Paleolithic site (greater than 32,000 years) in close proximity to Soviet Central Asia, although isolated surface finds of some similar materials have been found in southern Tadzhikistan. The extent of the climatic deterioration of the main Würm and its effect on the distribution of faunal and floral communities is not well known, and it is, therefore, difficult to confirm the first explanation at the present time (Davis n.d.).

The Mesolithic and Epi-Paleolithic assemblages present several challenging problems. We consider that the microlithic Epi-Paleolithic industries in Central Asia are local in origin but that the geometric Mesolithic cultures have a genesis in southwestern Asia. Chronologically, on the basis of C^{14} dates from northern Afghanistan and Tadzhikistan, the Epi-Paleolithic is earlier than the Mesolithic, although it is not at all clear that we are dealing with evolutionary stages. Several attempts have been made to classify local variants of the Mesolithic and Epi-Paleolithic, but few detailed comparative studies have been published.

In conclusion, we would like to make the following points:

1. There is no cause to change the long-standing idea that Soviet Central Asia is located at the junction of three great Paleolithic regions: southwestern Asia, South Asia, and Siberia-Mongolia. Only in southwestern Asia does the Paleolithic and Epi-Paleolithic sequence correspond closely to that of Europe; the other two regions have their own unique sequences.

2. In Central Asia, there are several sites which may be described in terms of southwestern Asian–European terminology without exaggeration or misrepresentation. In general, these sites are not greatly different from sites known in the West. Another group of sites, however, does not fall into traditional Western descriptive categories, but represents a long development of the pebble-tool technique characteristic of the Paleolithic of eastern Asia.

3. It is possible to consider that the Soviet Central Asian pebble-tool tradition developed and changed in appearance because of the influence of Western traditions emanating periodically from southwestern Asia. Certainly many Middle, Upper, and Mesolithic sites combine pebble tool technology with flake and blade technique. Although it is naive to speak of "blending of traditions" and "influences," it is evident that throughout the Central Asian Paleolithic various combinations of these technologies were manifest. The mechanisms that created such circumstances remain to be explained (fig. 3).

4. In Central Asia the appearance of geometric microliths may be provisionally accounted for by diffusion. The diffusion of Levallois technique is less evident, and it may well have had an independent origin in Central Asia.

Comments

by JEAN S. AIGNER
Department of Anthropology, University of Alaska, Fairbanks, Alaska 99701, U.S.A. 30 XI 78

Ranov and Davis provide us with an extremely timely and useful summary of materials and several alternative interpretive frameworks for the Paleolithic of Soviet Central Asia. The remains from Karatau 1 and Lakhuti are among the most significant reported in the last decade. Ranov kindly allowed me to examine the collections and to visit key Paleolithic sites in Tadzhikistan during the fall of 1977. The stratigraphic situations are clear, and the potential for revealing additional datable collections and even undisturbed remains is high.

The method of dating loess by thermoluminescence is unknown to me. I should like to see a fuller description of the method and the means by which it was calibrated. The range of dates ascribed by the method is 22,000–900,000 years. What is the full potential range? What is the basis for ascribing to the soils the equivalent paleomagnetic "events"? The basis for generating the sequence is difficult to understand: are "soils" labeled as events on the basis of loess dates above and below, or have these soils been independently dated (and, if so, how), the loess dates being in perfect conformity? (I have been informed recently by my colleague R. Powers that P. P. Okladnikov reports Ulalinka in the Altai to have been dated by association with the Olduvai event circa 1,900,000 years ago. I presume that the basis for this and the Central Asian correlations are related somehow.)

Ranov and Davis make the key point that the local Central Asian Lower Paleolithic has a distinctive character. Furthermore, the probability that Levallois techniques are developed indigenously has important implications. This and the presence of several Middle Paleolithic manifestations referred to as Mousterian variants highlight the failure of our earlier diffusionary models to explain local Asian developments effectively. Recently, for example, the 35,000-year-old remains at Ezhantsy on the Aldan indicate a local evolution of the Levallois technique associated with people hunting the "mammoth fauna." They had developed an assemblage of generalized bifaces, without projectiles, wedge-shaped cores made on bifaces for microblade production, and "archaic" burins. The antiquity and contents of this Siberian Paleolithic manifestation are highly suggestive in terms of the antecedents for some early New World migrants. Again, our diffusionary models and tendency to extend European technological developmental sequences fail to portray accurately the events; a model of local continuity is more appropriate. The latter does not exclude diffusion or extraregional contacts.

A monograph on the Karatau 1, Lakhuti, and other early remains from Soviet Central Asia is eagerly awaited. The joint efforts of Ranov and Davis in this study and their planned joint fieldwork in Tadzhikistan will continue to keep us well informed about this important area.

by MIKLÓS GÁBORI
Hungarian Academy of Sciences, Budapest, Hungary. 10 XII 78

Ez a munka minden idők eddigi legkitünőbb összefoglalása Szovjet-Középázsia paleolitikumáról. Világos, rendkivül átgondolt, az uj eredményekkel teljes, komplex képet ad a kutatás helyzetéről, függő problémáiról és további irányairól. Ennél jobb szintézis a következő évtizedekben nem fog születni erről a hatalmas területről. Részletesebb, bővebb talán igen—összegezőbb azonban nem. Aki a terület nagyságát, tagoltságát, sajátos viszonyait vagy az itt folyó kutatás gyakorlati nehézségeit és a problémák bonyolultságát ismeri, az ötszáz szóban csak dicsérhetne a tanulmányt—de elsősorban azt az óriási munkát, amely egy ilyen rövid szintézis mögött áll.

A tanulmány egészével, alapjaiban egyetértek. Ha alábbiakban mégis megjegyzést füzök hozzá, csupán azért teszem, mert háromszor dolgoztam hosszabb ideig Szovjet-Középázsiában, és az itt közölt leleteken kivül—éppen Ranov szivességéből—a lelőhelyek nagy részét a helyszinen, ásatáson is láthattam. Megjegyzéseim távirati stilusban a következők:

Karatau I sztratigráfiai helyzete nem egészen egyértelmü. Kronológiailag nem volt biztos a legjobb lösz-geológusok számára sem, akik az 1977. évi szovjet INQUA-szipoziumon látták (I. K. Ivanova, J. Fink és mások). A lelőhelyen kétségte-

lenül áthalmozódás van. Az ipar alsó paleolitikus jellegü, de a biztosabb datálást még függőben tartanám.

Lakhuti I ennél biztosan fiatalabb. Fel kell figyelni azonban arra, hogy itt a fosszilis talajzónák helyenként összefutnak. A chopperek, chopping-toolok mellett határozott középső-paleolit tipusok, igy levallois hegyek vannak. Lehetséges ez egy Riss-nél régibb időszakban? (Ranov visszakérdezheti: és Vértesöllősön, ahol az alsó-paleolitikumban moustérien tipusok vannak? A kiadás alatt levő monográfia szerint ugyanis a középső-paleolit tipusok aránya lenyegesen magasabb, mint az alsó-paleolit tipuscsoporté, és az ipar technológiai parameterek tekintetében egészen közel áll Tatához, melyet a Közép-európai kronológia szerint a Würm I-re datálunk (Mrs. V. Dobosi eredménye).

A thermoluminiszcenciás és a paleomágneses vizsgálatok eredményei ma még nem elég biztosak. A thorium-uránium módszer sem: ugyanazon a lelőhelyen óriási időeltéréseket ad.

Az alsó- és középső-paleolitikum között—lényeges időbeli hiátus ellenére—nem érezheto törés. Még kevésbbé a középső- és felső-paleolitikum között. Jól mutatják ezt Obi Rakhmat felső szintjei, Kulbulak valóban speciális ipara—és a tanulmányban nem emlitett Kuturbulak ipara. Ezekben igen magas a völgyelt, sőt többszörösen völgyelt eszközök aránya, ami a felső-paleolitikum felé mutat. Nem itt keresendő az egyelőre hiányzó korai felső-paleolitikum?

A paleoklimatológiai-paleontológiai megfigyelések hiányosságának, helyesebben bizonytalanságának két okára gondolhatunk: (1) ez a terület távol esik a periglaciális övezettől, ezért a stadiálisok és interszakaszok alig mutatkoznak; (2) a térszinmagassági, ökológiai eltérések, egymás közvetlen közelébe eső helyek között is, rendkivül nagyok, ami a faunát mindig «kiegyenlitheti». Talán ezért nem ad a fauna még barlangokban sem biztos kronológiát? Nagyon egyszerüsitve: egy hidegjelző rágcsáló nem okvetlenül hidegjelző egy alacsony fekvésü helyen sem, mert a baglyok az egészen közeli, 3.000 m-es régióból is lehozhatták. Vagy forditva: Közép-Európában egy «*Hystrix*-horizontot» ismerünk, amely a R/W végének meleg periódusa, és ez a nálunk biztos korjelző faj ma is ott él Közép-Ázsiában. A fauna sokkal homogénebb, és «maibb» karakterü, mint Európában. (Egyébként, annak ellenére, hogy Ranov és Davis faciológiai tagolását elfogadjuk, a Közép-Ázsiai iparok is homogénebbek, mint Európában.)

A nevezéktanban feltünik, hogy a középső-paleolitikum ideje a R/W második fele—W első fele. Ezek szerint mégis ilyen sokáig élt tovább a középső-paleolitikum, mint ahogy arra gondoltunk? Szinte az összes lelőhelyet a W első felére lehet datálni—a francia beosztás szerint. Ez az «Altwürm»—korai würmi időszak Gross értelmében.

Az, hogy a középső-paleolitikumban még nem léteznek kulturcsoportok: szerintem teljesen tarthatatlan. Területileg, kronológiailag, faciológiailag határozottan elkülönithető csoportok vannak. Tarthatalan az is, hogy a neandervölgyiek (helyesen a Palaeoanthropusok, akiknek döntő többsége az embertanilag specializált formához tartozik és ma már határt sem vonnak köztük és a *Homo sapiens fossilis* között) hordákban éltek. Minden arra mutat, hogy az ember, aki az anthropológiailag kifinomodott fajtához tartozott, akinek a szerszámkészlete rendkivül kifinomodott, aki gyakran már erősen specializált vadászatot folytatett: legalábbis törzs előtti, ha nem még fejletebb formációkban élt. A kulturcsoportok pedig elég élesen körülhatárolhatók: tulajdonképpen különféle ethnikumokat fednek, már a középső-paleolitikumban. Csak ezzel magyarázható, hogy ugyanazon a lelőhelyen, gyors egymásutánban, lényegtelen korkülönbséggel és azonos miliőben különféle iparok-csoportok váltogatják egymást. A Közép-Ázsiai középső-paleolitikum szintén különbözo csoportokat tartalmaz, és területi megoszlás is van. A moustérien továbbélése több, mint valószinü. Az is továbbélés európai fogalmak szerint, ha «csak» 25–20.000 éves lelőhelyről van szó.

A középső-paleolit tipusok Közép-Azsiában valóban sokáig fennmaradnak, éppugy, mint pl Szibériában. Ezzel kapcsolatban kérdéses marad számomra Szamarkand ipara. Az ott található «chopperek» talán nem is továbbélések, hanem mintha valamilyen más, uj szerszámfajták volnának. Mintha egy későbbi kor szerszámainak az előfutárai lennének. Szerintem Ranov datálása közelitheti meg a valóságot, de talán egy különleges «epipaleolitikumra» is gondolhatunk. Ogzi-Kicsik lelőhely fejlett moustérienje pedig, az utóbbi évek egyik legnagyobb feltárása, még több szót érdemelt volna.

A felső-paleolitikum elnéptelenédésének oka valóban bizonytalan. Nem kell azonban okvetlenül kontinuitást produkálnunk ahhoz, hogy egy terület valóban központi jelentőségüve váljon. Európa sok részén, sokkal sürübb település mellett sincs teljes kulturális folyamatosság.

Az epipaleolitikum-mezolitikum számos érdekes kérdést vet fel. Különösen értékes a C-14 dátumok együttes közlése. (A «Gissar» kultura orosz kiejtése helyett, Angol szövegben, helyesebb lett volna a nemzetközileg használt elnevezést használni.)

Részletkérdések helyett néhány általános észrevétel:

A paleolitikum immár hagyományossá vált szovjet felosztása helyett helyesebb lenne áttérni az európai, három fokozatra. Azt hiszem, ezt sem elvi, elméleti, sem más okok nem akadályoznák, hanem csupán szóhasználat, megszokás. Ugyanugy hátráltatja az egymás közti megertest, mint a geológiai Q_1–Q_4 rendszer használata. A két szerző azonban láthatóan törekszik, tartalmilag használja is a hármas beosztást. Fenti szempontból is lényegesnek, szinte döntőnek vélem a tanulmány két felismerését: (1) Azt, hogy ezekre az iparokra az európai nevezéktan csak lazán, vagy egyáltalán nem alkalmazható (ezek szerint tehát mégis vannak regionális-lokális kulturacsoportok!). (2) A Közép-Ázsiai geokronológiai beosztás szinkronizálható, behelyettesithető a Közép-Európai, un alpi glaciológiai tagolással. Mindkét tény lényeges előrelépés a szovjet kutatásban –, bár az előzményei már tapa sztalhatók voltak.

A munka lényegét összegező öt pont és a konkluzió önmagában is mutatja, hogy a paleolitikum kutatásban milyen mértékü változások történtek Szovjet-Középázsiában. Szeretném emellett felhivini a figyelmet csupán arra, hogy hány lelőhelyet ismertünk 25 évvel ezelőtt, és hányat ismerünk ma! Ehhez az arányhoz nem kell kommentár. Ezt eredményezi az, ha egy területnek állandó, saját specialistája van, és nem csak alkalmi, kiküldött expedició, esetleg egyetlen kutató dolgozik ott. Külön kiemelendő, hogy ezen a nagy és nehéz földrajzi területen 25 évig a szó szoros értelmében kemény pionir-munka folyt. Ma is. Még szebb eredmény tehát, hogy a terepmunka mellett ezt a kutatást tudományosan is az itt látható, nemzetközi szintre hozták.

[This work seems the best and most comprehensive summary ever written on the Soviet Central Asian Palaeolithic. This clear, well-considered study gives a complex view of the state, current problems, and further directions of research, including the latest results. No better synthesis on this vast territory can be expected in the coming decades; we may see more detailed ones, but none more comprehensive. Those who are aware of the extent and the natural circumstances of this territory and the difficulties of field research here can only praise, not criticize, in 500 words—praise the enormous effort behind such a short synthesis.

On the whole, I can agree with the main ideas of this study. If I feel obliged to make some comments, it is because I have had considerable personal experience with the topic. I have spent three relatively long periods doing fieldwork in Soviet Central Asia. Besides the finds published here, I have seen most of the sites, many of them during their excavation through the courtesy of Ranov. My telegraphese comments are the following:

The stratigraphic position and chronology of Karatau 1 are

not quite unambiguous for me or for the loess-geologists who visited the site in the course of the 1977 INQUA Symposium in the U.S.S.R. (e.g., I. K. Ivanova, J. Fink, and others). The layers are disturbed by redeposition. The character of the finds is Lower Palaeolithic, but I would leave more exact dating open.

Lakhuti 1 is definitely younger. In any case, we must here take into account the occasional convergence of paleosols. Besides choppers-chopping tools, there are Middle Paleolithic types, e.g., Levallois points. Their presence is at least surprising. (On the other hand, Ranov can ask about the Mousterian types in the Lower Palaeolithic of Vértesőllős; V. Dobosi reports Middle Palaeolithic types more frequent than Lower and the technological parameters close to those of Tata, dated Würm I.)

The results of thermoluminescence and palaeomagnetic dating are still not absolutely reliable. Using thorium-uranium dating, we have had to recognize that samples from the same site show huge differences in age.

In spite of the important time gap between the Lower and the Middle Palaeolithic, no actual break can be perceived either here or between the Middle and the Upper Palaeolithic, as is evident in the upper layers of Obi Rakhmat and the really special finds of Kul'bulak and Kuturbulak (the latter not included in the text). Here the proportion of tools with concave scraping edges (often repeated on the same blade) is very high, pointing towards the Upper Palaeolithic. Perhaps the missing early Upper Palaeolithic should be sought here.

Concerning the scanty, or, better, uncertain palaeoclimatic and palaeontologic observations, I can think of two reasons: (1) the distance of the area from the periglacial zone, causing stadials and interstadials to be little felt, and (2) great differences of altitude and ecology, even between sites close to each other. Perhaps this latter is the reason fauna offers no firm chronology, even in caves. To oversimplify, a cold-indicator rodent does not necessarily mean chilly weather at a low-altitude site, because an owl could have brought it there from the neighbouring mountain, at an altitude of 3,000 m. On the other hand, in the Central European chronology we have a definite "*Hystrix* horizon," signifying a warm period of the Late Riss/Würm, characterized by the presence of this animal, which in recent times is found in Central Asia. The fauna in general is much more homogeneous and "modern" than in Europe. (Incidentally, while the faciological dissection by Ranov and Davis is correct, this is true of the find complexes, too.)

It is notable that the Middle Palaeolithic covers the second half of the Riss/Würm and the first half of the Würm. In Central European terms, this means a relatively long survival. Almost all the sites are dated to the first half of the Würm in the French system, Gross's "Altwürm."

The assumption that cultural groups did not exist in the Middle Palaeolithic is untenable. Definite groups can be separated geographically, chronologically, and faciologically. Also untenable is the view that the Neanderthals (or, rather, Palaeoanthropes, most of whom belong to anthropologically specialized races and who are no longer barred from the genus *Homo sapiens fossilis*) lived in "hordes." These refined men, with their refined tool kit, may have lived by specialized hunting and had a social pattern at least on the threshold of a tribal system, if not more developed. Cultural groups can be clearly defined: by the Middle Palaeolithic they may already represent ethnic groups. This is the only explanation for the presence of different groups, "industries," at the same site, under the same natural circumstances, one after another. The Central Asian Middle Palaeolithic also involves different cultural groups with a definite regional distribution. The survival of the Mousterian is highly probable. A Mousterian site 25,000–20,000 years old already means survival in Central European terms.

Middle Palaeolithic tool types were in fact in use for a long time here, as in Siberia. In connection with this, the assemblage of Samarkand seems problematic. The "choppers" found there may represent not a survival, but a new tool type heralding a later era. The dating given by Ranov may approach reality, but here we may also think of a special "Epi-Palaeolithic." The developed Mousterian of Ogzi-Kichik could have been given even more space, this site being one of the most extensive excavations of recent years.

The cause of the depopulation in the Upper Palaeolithic is really uncertain, but we need not demonstrate continuity to verify the central role of a territory. In many parts of Europe, more densely populated, complete continuity is lacking.

Several interesting problems emerge with regard to the Epi-Palaeolithic and Mesolithic. The C^{14} dates published here are especially valuable. (By the way, in an English text it would be more appropriate to adopt the spelling "Hissar" for this well-known culture instead of the Russian spelling.)

Beyond these matters of detail, I would add some general comments:

Instead of the traditional Russian division, it would be convenient to use the three-stage European system for the Palaeolithic. I believe this would have no theoretical or other difficulties, being a question of terminology and convention. The traditional scheme hinders common understanding as does the Q_1–Q_4 system in geology. The authors seem to have the same aim. From this point of view, I would emphasize two statements of this study: (1) European terminology can hardly be applied to Central Asian find complexes (underlining the existence of separate cultural groups!). (2) Central Asian geochronology can be correlated with the Central European (=Alpine) system. Both of these statements indicate real progress in Russian research, though signs of such progress were apparent earlier.

The five-point summary of the essence of the study and the conclusions in themselves show the dimensions of the changes in research on the Soviet Central Asian Palaeolithic. Besides these, I would like to call attention only to the number of known sites 25 years ago and now. The difference needs no further comment. This progress is the achievement of sustained expert fieldwork in contrast to casual expeditions. It should be emphasized that in this vast and difficult territory what has been going on for the past 25 years is real "pioneering." Under these circumstances, it is even more laudable to have reached this high level of scientific research.]

by ALEXANDER GALLUS
2 Patterson St., Nunawading, Victoria 3131, Australia.
14 XII 78

This annotated bibliography on Soviet Central Asia is welcome from the point of view of international communication. In the following I restrict myself to a few comments about the prehistory of the area, which I see differently from the authors.

1. I am uneasy about the introduction into prehistoric analysis of present-day political boundaries. With conceptions like "Soviet Central Asia" we arrive at an anachronistic and artificial truncation of the real past historical landscape. This restricted concept has influenced the authors in that they do not take fully into consideration the *Eurasian extent* of the historical landscape in question. The archaeological material could have been more satisfactorily treated as organically part of a uniformly structured geographical unit, one whose ecological and geopolitical characteristics are easy to trace. The Lower Danube cannot be separated from "Central Asia," and the Great Hungarian Plain is the westernmost extension of the steppe-belt. The Carpathian Basin was always distinguished by incursions from "Central Asia," the last kingdom of clearly Central Asian origin here being that of the Hungarians (Magyars).

2. Pebble-tool traditions are many. The technology behind

choppers and chopping tools is so simple that it could have arisen independently in several regions. It is dangerous to dismember integrated industries into abstract "elements" which "combine." It is unnecessary to invoke here an "Asian chopper–chopping-tool tradition" and a "more Western flake and blade tradition" in order to put them together again for a pseudo-understanding of what has been dissected.

Instead of "Soan," I would look towards Vértesszőllős and Buda (Kretzoi and Vértes 1965).

3. The prehistory of "Central Asia" cannot fully be understood without considering the human situation in the Carpathian Basin and vice versa. Apparently Vértes could not publish his account of an evolution of "*Zitron*" (*quartier d'orange*) or "Epichopper" cultures in the Carpathian Basin (Gábori-Csánk et al. 1968:267 n. 82). We do have, however, Gábori-Csánk's excellent "horizontal" analysis of European Middle Paleolithic pebble technology, including the "*Moustérien sur galets*," "*Moustérien sur quartzite*," "Pontinian," features of the Charentian, the key Carpathian Basin sites of Érd, Tata, and the Szelim Cave, and finally sites like Mixnitz, Krapina, and others in the southwestern Alps and in Croatia (Gábori-Csánk et al. 1968:115–96, 245–77). These approaches bring us closer to an understanding of the presence and survival of the pebble technology in the greater area under discussion than the concept of a "Mousterian of Soan tradition."

4. It is apposite to my approach that the "Central Asian" Middle Paleolithic is amenable in its three other types or facies to a description in Bordesian (Western European) terms. The closeness of the typologies at both ends of the greater area and the clear territorial separation of the types in "Central Asia" solidify Bordes's (Bordes and de Sonneville-Bordes 1970) opinion that we are dealing here with different cultures and traditions of toolmaking which influenced each other very little.

5. Teshik Tash has been classified by Bordes (1955) as a particular facies of the Quina type. Hançar (1953:50, 76) conceptualizes an extended "East-European–Caucasian–Asian" landscape as I do, and his paper should not have been omitted. Quoting D. N. Lev, Hançar (pp. 70–71) sees in the site of Aman Kutan similarities with the lower levels of Kiik-Koba (the Crimea) and defines it as "Prämoustérien." He also mentions Middle Paleolithic sites on the eastern shores of the Caspian, where the authors indicate only Upper Paleolithic ones.

6. The overall pattern of settlements from the Middle and Upper Paleolithic in our extended Eurasian space strongly contradicts suggestions of a transformation (physical and cultural) of *Homo (sapiens) neanderthalensis* into *H. sapiens sapiens*. Middle Paleolithic man seems to be autochthonous for a long time (preserving pebble technology in particular areas), whereas the Aurignacian is clearly an intruder from along an axis between the Mediterranean and Australia (Gallus 1969).

by ANTHONY E. MARKS
Department of Anthropology, Southern Methodist University, Dallas, Tex. 75275, U.S.A. 18 XII 78

It is always a pleasure to see the results of Soviet Paleolithic studies printed in English and particularly so when they result from joint Russian and American efforts. Although there are a number of references to and comparisons with the Paleolithic of the Near East which might be questioned, I will limit my comments to two periods, the Middle and Upper Paleolithic. These comments are meant not to denigrate Ranov and Davis's useful contribution, but to point out areas where additional thoughts may be useful.

It is particularly pleasing to see raw-material type used as a possible explanation for the tendency toward pebble-tool forms. Too rarely have such relationships been considered. However, raw-material shape should be taken only as a possible encouraging factor for the spread of pebble industries, not as a causal factor for the paucity of bifaces. Simply, while it is difficult to make pebble tools if there are no pebbles, the availability of pebbles does not mean that pebble tools must be produced.

Given the descriptions of the Mousterian industries in Soviet Central Asia, I can find no compelling reason to believe that they are all "developed or late" as suggested. Certainly, contrary to the impression given, this is not true in southwestern Asia. The problem would seem to lie in what is considered "developed." In the Levant, the Early Mousterian is uranium-series-dated to the early Last Glacial, on the order of 80,000 B.P. ± 10,000 (H. Schwarcz, personal communication). It is, in fact, this Levantine Early Mousterian which exhibits the highest proportional occurrence of elongated blanks and of "Upper Paleolithic" tools of all the known Levantine Mousterian assemblage types (Marks and Crew 1973, Jelinek 1975, Crew 1976). Therefore, the presence of "Upper Paleolithic" tools in Mousterian context might be used to date Mousterian assemblages relatively only when there is an established stratigraphic sequence. Since such is lacking in Soviet Central Asia, developmental judgments based on traditional ideas of tool "evolution" seem premature.

In the Levant, the Late Acheulean contains all these typological and technological characteristics of the Early Levantine Mousterian, and it would be quite illogical to think of the Mousterian as developng out of a radically un-Mousterian base. The suggestion that the "hiatus" between the Lower and Middle Paleolithic may be more apparent than real because of a possible brief Riss/Würm interglacial misses the point. The Mousterian techno-complex is not a temporal or climatic unit, but an archaeological unit, defined by technological and typological criteria.

The rarity of Upper Paleolithic sites in Soviet Central Asia and their extreme paucity in caves do parallel the traditional view for much of southwestern Asia. This situation in the Levant, however, is mainly the result of biased sampling, resulting from the traditional primacy of cave excavations. In those regions where systematic survey has been undertaken, such as the Central Negev (Marks 1976, 1977) and the Sinai (Bar-Yosef and Phillips 1977), Upper Paleolithic sites are at least as common as Middle Paleolithic ones. For the Levant, the paucity of Upper Paleolithic as compared to Mousterian deposits in caves may relate to a shift toward increasing mobility (Marks and Freidel 1977), resulting in a preponderance of ephemeral open-air sites, which are not easily found and which are more subject to erosion than cave occupations or the more permanently occupied open sites which characterize the Levantine Mousterian (e.g., Na'ame, Rosh Ein Mor, Nahal Divshon). Thus, I must agree with Ranov that future work should result in the discovery of more Upper Paleolithic sites. In short, the present evidence from the southern Levant suggests a significant shift in settlement pattern and resulting site locations and types from the Mousterian to the Upper Paleolithic and not a change in total population.

by G. C. MOHAPATRA
Department of Ancient Indian History, Culture and Archaeology, Panjab University, Chandigarh 160014, India. 10 XII 78

This review article on Soviet Central Asia is especially welcome in view of the dearth of information published in English.

Most of the Soviet Central Asian lithic sites are located in the area which is part of the great Asiatic mountain belt comprised of the Pamir, the Hindu Kush, the Karakorum, and the Himalaya. There is plenty of stratigraphic and structural evidence that geotectonic changes occurring in one part of this

belt had repercussions on other parts. As regards palaeoenvironment, a uniform pattern is observed all over this belt during the Pleistocene glaciations, the spread of loess, and the postglacial desiccation. Even today, the subsistence pattern of man in this mountainous region is astonishingly uniform despite racial diversity.

In the light of this, the less emphasis is placed on conclusions such as that the area "combines elements of Asian chopper–chopping tool tradition with Western flake and blade industries" the better. Nevertheless, chopper-chopping tools and flake and blade industries are no longer considered exclusive to Southeast Asia and Western Europe respectively, nor is there any reason to assume their diffusion from there only. Instead, emphasis has now shifted to intensive area studies based upon both past and present geo-environmental homogeneity.

To my mind there is a close resemblance between Soviet Central Asian and northwestern Sub-Himalayan lithic developments. Both show a dominance of pebble artifacts throughout the Palaeolithic and later cultures terminating with the Late Holocene Neolithic. Although the tools from Karatau 1 are few, typologically and technically most of them are virtually indistinguishable, but for the raw material, from those of the Early Soan. The other Lower Palaeolithic industry in the Sub-Himalaya, the Acheulian, however, so far has no parallel in Soviet Central Asia. Recently I had occasion to conduct V. A. Ranov to some Acheulian sites I discovered in the Siwalik Frontal Range between the rivers Beas and Ghaggar. Combining my observations with those of De Terra and Paterson (1939) and Graziosi (1964), it appears that the Acheulian in the Soan culture area (i.e., the northwestern Sub-Himalaya) had a very restricted distribution. Its sites are fewer and are mostly located in hilly and thickly vegetated tracts, unlike those of the Soanian, which are situated on terraces of open valleys (Mohapatra 1978*a*). Possibly the two cultures remained independent of each other, being the work of two separate species of hominids (Mohapatra 1975). If the hope of the authors of finding Acheulian industries in Soviet Central Asia should materialise, it will very probably present a picture not much different from what is now emerging in the northwestern Sub-Himalayan region.

The Levallois flakes and notched, denticulated, and bifacial tools from Lakhuti 1 appear to resemble the Late Soan industry. Some idea of the dimensions of these tools would have been useful for such comparisons.

Broadly speaking, the Middle Palaeolithic Mousterian in Soviet Central Asia seems to be the first vigourous Pleistocene lithic industry. It is interesting to note that as in the Late and Final Soan, completely shaped formal tool types are very few in this industry. I think it is only the authors' enthusiasm to place this area in a transcontinental lithic context that has led them to trace an Upper Palaeolithic culture in this region. After all, the mere presence of blades and blade-tools is not the sole criterion for the Upper Palaeolithic if the term is used in the sense it has in Western Europe. In this context, the industry found at the Komsomol Park in Samarkand is very interesting, and I am inclined to agree with Ranov "that there is no evidence that the Upper Palaeolithic sites reflect any significant diffusion from outside of Central Asia and can be understood as continuations of the Mousterian." Because of this, the second of the authors' three possible explanations for the absence of the Early Upper Palaeolithic assumes significance. An analogous situation may be suspected in the Sub-Himalayan lithic complex, where the Final Soan, which has close similarities with the Mousterian of the Soan tradition of Soviet Central Asia, probably telescoped far into the Holocene (Mopahatra 1978*b*).

Taking into consideration the C^{14} dates, the Epi-Palaeolithic and the Mesolithic are difficult to separate from each other, but there is no doubt that Soviet Central Asia had another vigourous lithic phase during the Early Holocene. In view of the many idiosyncrasies and departures, Soviet archaeologists might as well consider first designating their local cultures in terms of phases of the Quaternary (i.e., Q_1, Q_2, Q_3, Q_4), especially when thermoluminescence and palaeomagnetic dates are available, leaving aside detailed comparison with the areas to the east or west until sufficient data are accumulated.

by HALLAM L. MOVIUS, JR.
Peabody Museum, Harvard University, Cambridge, Mass. 02138, U.S.A. 18 XII 78

Ranov and Davis's paper is the most important and substantive contribution to our knowledge of this important area that has appeared in recent years. It is only to be regretted that more illustrations do not accompany the text. This is about all one can say in commenting on this straightforward and very well-organized summary of what is currently known concerning Palaeolithic materials and sites in Soviet Central Asia.

by IAN S. ZEILER
Laboratoire du Quaternaire, Université de Bordeaux I, 33405 Talence, France. 11 XII 78

A comprehensive survey of the Central Asian Palaeolithic has certainly been long overdue. Ranov and Davis have rendered a service to prehistorians concerned with Asia by updating by 25 years our knowledge of a crucial part of the Asian Palaeolithic. I find it difficult to comment critically on their interpretations of the findings, as neither detailed descriptions nor illustrations of the various industries are provided. They state in a footnote that they intend to publish a more complete version of this article in the future. I feel it necessary to state, however that if articles like this one are to be of genuine value to the archaeological community and not simply to serve as bibliographical notes to inaccessible references, they must include more data in forms directly usable by readers. Commenting on (or reading in a journal) an article such as this is tantamount to accepting the written word as the absolute truth, not to be questioned. This should in no way be construed as an attack on the analytical competence of Ranov and Davis. Rather, it is intended as a more general criticism of limitations on the size of articles (particularly archaeological ones) which severely limit their utility. I shall leave critical comment to those with firsthand knowledge of the materials discussed and address myself to some terminological breaches of the peace.

I often wonder if the designation "Mousterian" has some intense subconscious meaning to many prehistorians—if perhaps they feel it renders an industry respectable. One encounters, not infrequently, references to "Mousterian" industries or to the "Mousteroid" nature of this or that industry, ranging from Siberia down to southern Africa and back up again to the western United States. Davis (1978), in a recent publication concerning Afghanistan, has himself recommended that the term "Mousterian" be avoided and the designation "Middle Palaeolithic" be used unless "some direct relation to the type site in southern France" can be demonstrated. Since I assume he extends this idea to Central Asia, I believe the following is addressed to Ranov.

I find it strange that, whereas the authors express the wish to avoid giving the impression that the Palaeolithic of Central Asia is "just a distorted reflection of the West," and in fact consider Central Asia a "relatively autonomous sphere," they should insist upon using terminology which is specifically related to the industries of Europe, at the limit including the Middle East, and in fact using it awkwardly in some cases. I wonder, for example, if it is possible (terminologically speaking) to distinguish between two of Ranov's "Mousterian" variants, the "Levallois" and the "Levallois-Mousterian." For his Typical (Mountain) "Mousterian," are we to read "Typical Mous-

terian" in the sense that François Bordes would use it to describe (among others) Levels 28–31 at Combe Grenal, or are we to understand Ranov to mean that these sites are "typically Mousterian" when he says of their tools that they are "completely formed formal tools . . . many of which resemble those found in the tool kits of the classical Mousterian sites of Western Europe"? Bordes (1977) has recently dealt with the problems involved in using, even in Europe, the term "Mousterian." He further points out that even the escape of using the term "Mousteroid" has its drawbacks, since it does not always have its original time sense, having been used among other things to describe some recent Tasmanian implements. I wonder why, in this age of regional pride and separatism, the authors couldn't have come up with some Tadzhik- or Uzbek-sounding Middle Palaeolithic variants.

Some other terminological points: (1) What precisely is meant by "bifacial technique of Acheulean tradition"? Although one might be able to picture what the authors are trying to say, would they consider including Solutrean laurel leaves in this "tradition"? (2) Is there a difference between "bladelets" and "microblades"? (3) Instead of "*grattoir à museau*," why not use the perfectly acceptable term "nosed end-scraper"? (4) It is impossible for blades to be "struck from cores by the crested-blade technique": cresting is a method of core preparation, not of blade removal.

The above comments are not meant to taint an otherwise laudable effort by Ranov and Davis in presenting the first comprehensive synthesis of the Central Asian Palaeolithic for 25 years, and I look forward to the extended version of their paper.

Reply

by R. S. Davis
Bryn Mawr, Pa., U.S.A. 26 I 79

I would like to thank all of the people who responded to our article and who shared our interest in improving and refining the interpretations of Palaeolithic archaeology in Soviet Central Asia. It is clear to me that this area of study will not advance without increased exchange of information, constructive criticism, and fresh formulations by a wide spectrum of participants.

Gallus questions our use of "Soviet Central Asia" as a meaningful region for Paleolithic analysis and suggests that we increase our Eurasian scope with reference to the Carpathian Basin in particular. We have used the term following Movius's (1953*b*) original article. Geographically the region is often called "Middle Asia" (*Srednyaya Aziya*). While we like to think in Eurasian terms, it seems more pressing at this time to establish local sequences of adaptation and change rather than to look for continentwide culture history. It is also important that almost all of Soviet Central Asia is a middle-latitude desert and steppe, well south of the belt of Eurasian grasslands Gallus refers to.

I get the definite feeling from reading the comments of Aigner, Gábori, Mohapatra, and Zeiler that they would consider some kind of localized regional approach, avoiding Europeocentric terminology and concepts, the soundest research strategy for Soviet Central Asia. I couldn't agree more. Marks's comments about the Levantine Early Mousterian are particularly compelling and well taken in this regard. Obviously, it is a bad strategy to overanticipate the character of the archaeological record covering an extremely wide area by using some simple unilineal-progress-oriented scheme of evolution. It seems to me that progress in the field of Asian Paleolithic studies depends on our avoiding a broad-brush approach, particularly one colored by Western renditions of culture history, and looking as closely as possible at what is going on locally.

In doing Asian Paleolithic archaeology, one is faced with a dilemma: how to avoid particularism without being swept away in the current of traditional Western cultural historical models and methods. For example, even the Lower, Middle, and Upper Paleolithic trinity is arguably out of place in many parts of Asia. On the other hand, however, Bordes's typology for Lower and Middle Paleolithic stone tools is widely used in Western Asian Middle Paleolithic contexts. Clearly, the results of area studies ultimately have to be compared and integrated. What needs to be developed, of course, is a data language all can understand and use. Even more important is the development of some unanimity in goals and in theory.

Both Gallus and Mohapatra make the important point that it is overly simplistic and leads to no good end to dissect or to attempt to isolate Asian chopper–chopping-tool tradition elements from Western blade-and-flake ones. It was certainly far from my intention to create the impression that the Lower Paleolithic of Central Asia was some kind of whimsical blend of East and West. It's utterly fantastic, I think, to conceive of two homogeneous cultural historical spheres which somehow maintained their boundaries over hundreds of millennia and also produced by diffusion some hybrid cultures at their points of intersection. Mohapatra's notion that the Soan and Acheulean in the northwestern Sub-Himalaya may have been the products of two different species of hominids and Gallus's interpretation that species differences underlay cultural differences between Middle and Upper Paleolithic, however, seem to me to be going too far in the direction of biological determinism. The idea of species-specific cultural behavior within the genus *Homo* is a dubious proposition.

The problem of the apparent reduction in number of Upper Paleolithic sites is touched on by Gábori, Marks, and Mohapatra. Marks is certainly correct to point out that systematic surveying might alter our perceptions of the extent of Upper Paleolithic populations and that a shift in settlement-subsistence system could make Upper Paleolithic visibility low. It still impresses me, however, that after more than 25 years of survey and excavation Kara Kamar remains the only bona fide early Upper Paleolithic site in this whole area of the world. The Uzbek finds at Kuturbulak and Kul'bulak mentioned by Gábori have been described as Upper Paleolithic by their excavators, Tashkenbaev (1975) and Kasimov (1972) respectively, but more detailed and complete stratigraphical, chronometric, and typological assessment is required. They are, however, potentially very important sites. The persistent-Mousterian theory also has its merits, as noted by Gábori and Mohapatra, but until the chronological picture is clearer we can't make much more of it. I don't quite agree with Gábori concerning the minimal effect of stadials and interstadials on the environment in Central Asia. Certainly, the palynological record in the Zagros, an area also far from the periglacial zone, shows major vegetational changes during the last glacial period. I have also maintained that there was a significant climatic deterioration during the main Würm in the southern Afghan-Tadzhik depression which may have contributed to a redistribution of Upper Paleolithic populations (Davis n.d.). It is clear from the loess sections that climatic change was strong enough to regulate pedogenetic processes.

Aigner's and Gábori's observations and questions about the Lower Paleolithic chronology raise several important issues. The Tadzhik Lower Paleolithic chronology is based on paleomagnetism, stratigraphy, and thermoluminescence dating. The most important paleomagnetic datum is the Matuyama-Brunhes boundary, which is well established at five localities,

where it is found under the ninth or tenth buried soil complex. The Blake and Laschamp events have been tentatively identified on the basis of their stratigraphic position in the loess section and by thermoluminescence dating of loess samples. Thermoluminescence dating has been developed in the Soviet Union by V. N. Shelkoplyas among others. He has estimated the potential range of his method between 10,000 and 1,500,000 years. It is important to point out that the thermoluminescence method of dating loess sediments is still in its experimental stages and these initial determinations may be revised in the future. Gábori's cautious appraisal of the thermoluminescence dates, therefore, is warranted, but I would add that those produced so far are internally consistent and do not contradict the paleomagnetic and stratigraphic evidence. My overall impression is that if there is going to be further revision of the Lower Paleolithic chronology, it will be toward even greater antiquity.

Zeiler's terminological questions and observations are much appreciated. My intention in using the phrase "bifacial technique of Acheulian tradition" was merely to distinguish the Lower Paleolithic bifacial techniques common in pebble industries from those associated with handaxes in the Acheulean techno-complex. I have used "microblade" in the sense of Tixier's (1963:38–39) *lamelle*. "Bladelet," mentioned in connection with Tutkaul, Layer 2a, refers simply to a small blade which was subsequently backed.

It is important to keep in mind that we have seen only the minutest portion of the total spatial and temporal variability of the Stone Age of Central Asia or, for that matter, of Asia as a whole. We must not condense such an enormous panorama of human development and experience down to the alleged sharing or nonsharing of a few mental templates about how stone tools should be chipped. An important message coming from the loess of Central Asia is that many unexpected aspects of the hominid experience in Asia are still waiting to be found. Our expectations about this past must not cut us off from it.

[The response of V. A. Ranov had not arrived by press time and will appear in the September Issue.—EDITOR.]

References Cited

AGAKHANYANTS, O. E. 1965. *Osnovnye problemy fizicheskov geografii Pamira* (Basic problems of the physical geography of the Pamirs). Pt. 1. Dushanbe: Academy of Sciences, Tadzhik SSR.

ALESHINSKAYA, Z. V., et al. 1971. *Razrez noveyshikh otlozheniy Issyk-Kul'skoy vpadiny* (The section of the latest sediments of the Issik-Kul basin). Moscow: Moscow State University.

ARIAI, A., and CL. THIBAULT. n.d. Nouvelles précisions à propos de l'outillage paléolithique ancien sur galets du Khorassan (Iran). MS.

BAR-YOSEF, O. 1970. The Epi-Paleolithic cultures of Palestine. Unpublished Ph.D. dissertation, Hebrew University, Jerusalem, Israel.

BAR-YOSEF, O., and J. PHILLIPS. 1977. *Prehistoric investigations in Gebel Maghara, northern Sinai*. Jerusalem: Institute of Archaeology, Hebrew University. [AEM]

BIBIKOVA, V. I. 1958. Nekotorye zamechaniya po faune iz must'erskoy peshchery Aman Kutan I (Some observations on the fauna from the Mousterian cave Aman Kutan I). *Sovetskaya Arkheologiya*, no. 3, pp. 230–32.

BINFORD, L. R. 1972. "Contemporary model building: Paradigms and the current state of Paleolithic research," in *Models in archaeology*. Edited by D. Clarke, pp. 109–66. London: Methuen.

BORDES, F. 1955. L'industrie moustérienne de Teshik-Tash: Affinités et âge probable. *L'Anthropologie* 59:354–56.

———. 1977. "Time and space limits of the Mousterian," in *Stone tools as cultural markers: Change, evolution and complexity*. Edited by R. V. S. Wright, pp. 37–39. Canberra: Australian Institute of Aboriginal Studies. [ISZ]

BORDES, F., and D. DE SONNEVILLE-BORDES. 1970. The significance of variability in Palaeolithic assemblages. *World Archaeology* 2: 61–73. [AG]

CHARD, C. 1974. *Northeast Asia in prehistory*. Madison: University of Wisconsin Press.

CHEDIYA, O. K. 1972. *Yug Sredney Azii v noveyshuyu epokhu gorobrazovaniya* (The south of Central Asia in the recent epoch of mountain formation). Frunze: Ilim.

CHEDIYA, O. K., and B. A. VASIL'EV. 1960. O kharaktere i vozracte drevnego oledeneniya severnogo sklona khrebta Petra I (About the character and age of the ancient glaciation of the northern slope of Peter I). *Trudy Tadzhikskogo Gos. Universiteta* 5 (28): 101–17.

COON, C. S. 1957. *The seven caves*. New York: Knopf.

COPELAND, L. 1975. "The Middle and Upper Paleolithic industries of the Lebanon and Syria in the light of recent research," in *Problems in prehistory: North Africa and the Levant*. Edited by F. Wendorf and A. Marks, pp. 317–50. Dallas: Southern Methodist University Press.

CREW, H. 1976. "The Mousterian site of Rosh Ein Mor," in *Prehistory and paleoenvironments in the central Negev, Israel. Vol. 1. The Avdat/Aqev area, pt. 1*. Edited by A. Marks, pp. 75–117. Dallas: Southern Methodist University Press. [AEM]

DAVIS, R. S. 1978. "The Paleolithic of Afghanistan," in *The archaeology of Afghanistan*. Edited by N. Hammond and R. Allchin, pp. 37–70. London: Academic Press.

———. n.d. Pleistocene archeology in the southern Afghan-Tadzhik depression (in Russian). *Proceedings of the International Union of Geological Sciences/UNESCO Symposium on the Neogene/Quaternary boundary, Dushanbe, Tadzhikistan, 1977*. In press.

DE TERRA, H., and T. T. PATERSON. 1939. *Studies on the Ice Age in India and associated human cultures*. Washington: Carnegie Institution. [GCM]

DODONOV, A. E., Y. R. MELAMED, and K. V. NIKIFOROVA. Editors. 1977. *Guidebook, International Symposium on the Neogene-Quaternary Boundary*. Moscow: Nauka.

DODONOV, A. E., and A. V. PEN'KOV. 1977. Nekotorye dannye po stratigrafii vodopazdel'nykh lessov Tadzhikskoy depressii (Some data about the stratigraphy of the watershed loesses of the Tadzhik depression). *Byulleten' Kommissii po Izucheniyu Chetvertichnogo Perioda* 47:67–76.

DODONOV, A. E., and V. A. RANOV. 1977. "I primi insediamenti umani," in *Enciclopedia della scienza e della technica Mondadori*. Edited by Arnoldo Mondadori, pp. 232–40. Milano: EST.

EFIMENKO, P. P. 1953. *Pervobytnoye obshchestvo* (Primitive society). Kiev: Academy of Sciences, Ukrainian SSR.

FORMOZOV, A. A. 1977. *Problemy etnokul'turnoy istorii kamennogo veka na territorii evropeyskoy chasti SSSR* (Problems of ethnocultural history of the Stone Age of the European part of the U.S.S.R.) Moscow: Nauka.

GÁBORI-CSÁNK, V., I. DIENES, M. KRETZOI, P. KRIVÁN, E. KROIOPP, and J. STIEBER. 1968. *La station du Paléolithic moyen d'Érd—Hongrie*. Budapest: Akadémiai Kiadó. [AG]

GALLUS, A. 1969. Comment on: Neanderthal man and *Homo sapiens* in Central and Eastern Europe, by Jan Jelínek. CURRENT ANTHROPOLOGY 10:492–93. [AG]

GINZBURG, V. A., and I. I. GOKHMAN. 1974. "Kostnye ostatki cheloveka iz Samarkandskoy paleoliticheskoy stoyanki" (Human skeletal remains from the Samarkand Paleolithic site), in *Problemy etnicheskoy antropologii i morfologii cheloveka* (Problems of ethnic anthropology and human morphology). Leningrad: Nauka.

GRAZIOSI, P. 1964. *Prehistoric research in northwestern Punjab*. Scientific Reports of the Italian Expeditions to the Karakorum (K^2) and the Hindu Kush. Leiden. [GCM]

GRICHUK, M. P., and A. A. LAZARENKO. 1970. "O perspektivakh ispol'zovaniya dannykh sporovo-pyl'tsevogo analiza dlya vyyasneniya stratigrafii i genezisa lessov Pri-Tashkentskogo rayona" (On the prospects of using spore-pollen data analysis for the elucidation of the stratigraphy and the genesis of the loesses of the Pri-Tashkent rayon). *Trudy Mezhdunarodnogo Simpoziuma po Litologii i Genezisy Lessovykh Porod* (Works of the International Symposium on the Lithology and Genesis of Loess Types), vol. 1. Tashkent: Fan.

GRIGOR'EV, G. P. 1968. *Nachalo verkhnego paleolita i proiskhozdeniye Homo sapiens* (The beginning of the Upper Paleolithic and the origin of *Homo sapiens*). Leningrad: Nauka.

GRIGOR'EV, G. P., and V. A. RANOV. 1973. "O kharaktere paleolita Sredney Azii" (On the character of the Paleolithic of Central Asia). *Tezisy dokladov sessii posvyashchennoy «Itogam Polevykh Arkheologicheskikh Issledovaniy 1972 goda v SSSR»* (Abstracts of papers from the symposium "The Latest Results of Field Archaeological Investigations in the U.S.S.R., 1972"). Tashkent.

GROMOVA, V. I. 1949. "Pleystotsenovaya fauna mlekopitayushchikh iz grota Teshik-Tash, Yuzhnyy Uzbekistan" (Pleistocene mammalian fauna from the cave of Teshik-Tash, southern Uzbekistan), in *Teshik-Tash*. Moscow: Moscow State University.

GUBIN, I. E. 1960. *Zakonomernosti seysmicheskikh proyavleniy na territorii Tadzhikistana* (The regularities of seismic manifestations in the territory of Tadzhikistan). Moscow: Nauka.

HANÇAR, F. 1953. Stand der Paläolithforschung im Schwarzmeerraum und in Mittelasien. *Mitteilungen der Anthropologischen Gesellschaft in Wien* 72:50–82. [AG]

HOLE, F., and K. FLANNERY. 1967. The prehistory of southwestern Iran: A preliminary report. *Proceedings of the Prehistoric Society* 33:147–206.

HUME, G. W. 1976. *The Ladizian: An industry of the Asian chopper–chopping tool complex in Iranian Baluchistan.* Philadelphia: Dorrance.

ISAAC, G. LL. 1972. "Early phases in human behavior: Models in Lower Paleolithic archaeology," in *Models in archaeology.* Edited by D. Clarke, pp. 167–99. London: Methuen.

ISLAMOV, U. I. 1972. Mezoliticheskiye pamyatniki Ferganskoy doliny (Mesolithic sites of the Fergana Valley). *Istoriya Material'noy Kul'tury Uzbekistana* 9:21–29.

———. 1975. *Peshchera Machay* (Machay Cave). Tashkent: Fan.

JELINEK, A. J. 1975. "A preliminary report on some Lower and Middle Paleolithic industries from the Tabun Cave, Mount Carmel (Israel)," in *Problems in prehistory: North Africa and the Levant.* Edited by F. Wendorf and A. Marks, pp. 297–316. Dallas: Southern Methodist University Press. [AEM]

KASIMOV, M. R. 1972. Mnogosloynaya paleoliticheskaya stoyanka Kul'bulak v Uzbekistane (Predvaritel'nye itogi issledovaniy). (Kul'bulak, a many-layered Paleolithic site in Uzbekistan [Preliminary results of the investigation].) *Materialy i Issledovaniya po Arkheologii USSR* 185:111–19.

KLEIN, RICHARD G. 1966. "Chellean and Acheulean on the territory of the Soviet Union: A critical review of the evidence as presented in the literature," in *Recent studies in paleoanthropology.* Edited by J. D. Clark and F. C. Howell, pp. 1–45. American Anthropologist 68 (2), pt. 2.

KOROBKOVA, G. F. 1976. *Turkmeniya v epokhu mezolita* (Turkmeniya in the Mesolithic epoch). Ashkhabad: Ilim.

KOSTENKO, N. P. 1958. Geomorfologicheskiy analiz rechnykh dolin gornykh stran (Geomorphological analysis of river valleys of mountainous countries). *Byulleten' Kommissii po Izucheniyu Chetvertichnogo Perioda* 22.

KRETZOI, M., and L. VÉRTES. 1965. Upper Biharian (Intermindel) pebble-industry occupation site in western Hungary. CURRENT ANTHROPOLOGY 6:74–87.

LAZARENKO, A. A., and V. N. SHELKOPLYAS. 1973. "Pervye opredeleniya vozrasta sredneaziatskikh lessov termolyuminitsentnym metodom" (The first determination of the age of the Central Asian loesses by the thermoluminescence method), in *Stratigrafiya, paleogeografiya i litogenez antropogena Evrazii* (Stratigraphy, paleogeography, and lithogenesis of the Eurasian Anthropogene). Moscow.

LAZARENKO, A. A., and V. A. RANOV. 1977. Karatau I – Drevneyshiy paleoliticheskiy pamyatnikh v lessakh Sredney Azii (Karatau 1: The oldest Paleolithic site in the loesses of Central Asia). *Byulleten' Kommissii po Izucheniyu Chetvertichnogo Perioda* 47:45–57.

LEV, D. N. 1956. Drevnyy paleolit v Aman-Kutane (Issledovaniya 1953–1954 g.) (The Early Paleolithic in Aman-Kutan [Investigations 1953–1954]). *Trudy Samarkandskogo Gos. Universiteta,* no. 61, pp. 19–27.

———. 1964. Poseleniye drevnekamennogo veka v Samarkande (Issledovaniya 1958–1960 g.) (The settlement of the Early Stone Age in Samarkand [Investigations 1958–1960]). *Trudy Samarkandskogo Gos. Universiteta,* no. 135, pp. 5–109.

LISITSYNA, G. N. 1970. "Kul'turnye rasteniya blizhnego Vostoka i Yuga Sredney Azii v VII–V tysyachletiyakh do N.E." (Domesticated plants of the Near East and Central Asia in the 7th–5th millennia B.C.). *Sovetskaya Arkheologiya,* no. 3, p. 56.

LYUBIN, V. P. 1965. K voprosy o metodike izucheniya nizhnepaleoliticheskikh kamennykh orudiy (Toward the question of methods of study of Lower Paleolithic stone tools). *Paleolit i neolit SSSR* 5. (M.I.A. SSSR, no. 139.) Leningrad: Nauka.

———. 1977. *Must'erskiye kul'tury kavkaza* (Mousterian cultures of the Caucasus). Leningrad: Nauka.

MARKOV, G. E. 1966. Grot Dam-Dam-Cheshme 2 v vostochnom Prikaspii (The cave of Dam-Dam-Cheshme 2 in the eastern Caspian). *Sovetskaya Arkheologiya,* no. 2, pp. 104–23.

MARKS, A. E. 1975. "An outline of prehistoric occurrences and chronology in the Central Negev," in *Problems in prehistory: North Africa and the Levant.* Edited by F. Wendorf and A. Marks. Dallas: Southern Methodist University Press.

———. Editor. 1976. *Prehistory and paleoenvironments in the central Negev. Israel. Vol. 1. The Avdat/Aqev area, pt. 1.* Dallas: Southern Methodist University Press. [AEM]

———. Editor. 1977. *Prehistory and paleoenvironments in the central Negev, Israel. Vol. 2. The Avdat/Aqev area, pt. 2, and the Har Harif.* Dallas: Department of Anthropology, Southern Methodist University. [AEM]

MARKS, A. E., and H. CREW. 1972. Rosh Ein Mor, an open-air Mousterian site in the central Negev. CURRENT ANTHROPOLOGY 13:591–93. [AEM]

MARKS, A. E., and D. FREIDEL. 1977. "Prehistoric settlement patterns in the Avdat/Aqev area," in *Prehistory and paleoenvironments in the central Negev, Israel. Vol. 2. The Avdat/Aqev area, pt. 2, and the Har Harif.* Dallas: Department of Anthropology, Southern Methodist University. [AEM]

MATYUSHIN, G. N. 1976. *Mezolit yuzhnogo Urala* (The Mesolithic of the southern Urals). Moscow: Nauka.

MEDOYEV, A. G. 1970. *Arealy paleoliticheskikh kul'tur Kazakhstana* (Areas of Paleolithic cultures of Kazakhstan). Alma-Ata: Nauka Kazakhskoy SSR.

MOHAPATRA, G. C. 1975. Acheulian element in Soan culture-area. *Kokogaku Zasshi* 60:4–18. [GCM]

———. 1978*a*. Acheulian from the Siwalik Frontal Range of the Punjab Sub-Himalaya. Paper presented at the Xth International Congress of Anthropological and Ethnological Sciences, New Delhi, December 10–16. [GCM]

———. 1978*b*. Sub-Himalayan lithic industries of Final Pleistocene. Paper presented at the Xth International Congress of Anthropological and Ethnological Sciences, New Delhi, December 10–16. [GCM]

MOVIUS, H. L., JR. 1953*a*. Paleolithic and Mesolithic sites in Soviet Central Asia. *Proceedings of the American Philosophical Society* 97:383–421.

———. 1953*b*. The Mousterian cave of Teshik-Tash, southeastern Uzbekistan, Central Asia. *Bulletin of the American School of Prehistoric Research* 17:11–71.

NESMEYANOV, S. A. 1971. *Kolichstvennaya otsenka noveyshikh dvisheniy i neotektonicheskoye rayonirovaniye gornoy oblasti* (Quantitative estimation of recent movement and neo-tectonic land division of mountain areas). Moscow: Nedra.

———. 1977. *Korrelyatsiya kontinental'nykh tolshch* (Correlation of continental sediments). Moscow: Nedra.

NIKONOV, A. A. 1972. K obosnovaniyu stratigrafii verkhne-pliotsenovykh i chetvertichnykh otlozheniy Afgano-Tadzhikskoy depressii (Toward the substantiation of the stratigraphy of the Upper Pliocene and Quaternary deposits of the Afghan-Tadzhik depression). *Byulleten' Kommissii po Izucheniyu Chetvertichnogo Perioda* 39:31–49.

NIKONOV, A. A., and M. M. PAKHOMOV. 1976. Stratigrafiya i paleogeografiya Antropogena gornogo Badakhshana (Tadzhikskaya SSR, Afghanistan) (Stratigraphy and paleogeography of the Anthropogene of mountain Badakhshan [Tadzhik SSR and Afghanistan]). *Byulleten' Kommissii po Izucheniyu Chetvertichnogo Perioda* 46:73–89.

OKLADNIKOV, A. P. 1962. Novoye y izuchenii drevneyshikh kul'tur Mongolii (po rabotam 1960 g.)" (News of the study of the oldest cultures of Mongolia [from the work of 1960]). *Sovetskaya Etnografiya,* no. 1, pp. 86–87.

———. 1966*a*. "Paleolit i mezolit Sredney Aziy (Paleolithic and Mesolithic of Central Asia), in *Srednyaya Aziya v epokhu Kamnya i Bronzi* (Central Asia in the epochs of Stone and Bronze). Edited by V. M. Masson, pp. 11–75. Moscow: Nauka.

———. 1966*b*. "K voprosu o mezolite i epipaleolite aziatskoy chasti SSSR (Sibir i Srednyaya Aziya)" (Toward the question of the Mesolithic and Epi-Paleolithic of the Asian part of the U.S.S.R. [Siberia and Central Asia]), in *U istokov drevnikh kul'tur (Epokha mezolita)* (On the sources of ancient culture [The Mesolithic epoch]), p. 215. Materialy i Issledovaniya po Arkheologii SSR 126.

OKLADNIKOV, A. P., and V. A. RANOV. 1963. "Kamennyy vek" (The Stone Age), in *Istoriya tadzhikskogo naroda* (History of the Tadzhik people), vol. 1. Moscow: Nauka, Vostochnoy Literatury.

PAKHOMOV, M. M., V. A. RANOV, and A. A. NIKONOV. 1974. Nekotorye dannye po paleogeograficheskoy obstanovke neoliticheskoy stoyanke Tutkaul (Some data on the paleogeographic situation of the Neolithic site of Tutkaul). *Sovetskaya Arkheologiya,* no. 4, pp. 245–49.

RANOV, V. A. 1963. Kamennyy vek Tadzhikistana (The Stone Age of Tadzhikistan). Abstract of dissertation for the degree of *Kandidat* of Historical Sciences, Academy of Sciences, Tadzhik SSR Dushanbe, Tadzhikistan.

———. 1968. Izucheniye kamennogo veka Sredney Azii za dvadtsat' let (1945–1965) (Twenty years of study of the Stone Age of Central Asia [1945–1965]). *Material'naya Kul'tura Tadzhikistana* 1: 5–32.

———. 1969. Kukhi-Piyëz – Novyy punkt nakhodok nizhnepaleoliticheskikh galechnykh orudiy v Sredney Azii (K voprosu o pervonachal'nom Zaselenii Sibiri) (Kukhi-Piyëz: A new Lower Paleolithic pebble tool site in Central Asia [Toward the question of the initial population of Siberia]). Paper presented at the conference "Etnogenez Narodov Severnoy Azii" (Ethnogenesis of the peoples of northern Asia), Novosibirsk.

———. 1971. K izucheniyu must'erskoy kul'tury v Sredney Asii (Toward the study of the Mousterian culture in Central Asia). *Materialy i Issledovaniya po Arkheologii SSR* 173:209–32.

———. 1972. Le peuplement préhistorique de la Haute-Asie (d'après l'example de l'Asie Centrale sovietique). *L'Anthropologie* 76:5–20.

———. 1976. "The Paleolithic industries of Central Asia: A revision." *Le Paleolithique inferieur et moyen en Inde, en Asie Centrale,*

en Chine et dans le Sud-est Asiatique. Colloque VII, IX Congress UISPP, Nice. Edited by A. K. Ghosh, pp. 91–129.
RANOV, V. A., and S. A. NESMEYANOV. 1973. *Paleolit i stratigrafiya antropogena Sredney Azii* (Paleolithic and stratigraphy of the Anthropogene of Central Asia). Dushanbe: Donish.
RANOV, V. A., A. A. NIKONOV, and M. M. PAKHOMOV. 1976. Lyudi kamennogo veka na podstupakh k Pamiru (Stone Age peoples on the approaches to the Pamir). *Acta Archaeologica Carpathica* 16:5–20.
RANOV, V. A., S. SHARONOV, and A. A. NIKONOV. 1973. Fauna mlekopitayushchikh, arkheologiya i geologiya stoyanki Ogzi-Kichik (yushnyy Tadzhikistan) (Mammalian fauna, archaeology, and geology of the Ogzi-Kichik site [Southern Tadzhikistan]). *Doklady AN Tadzhikskaya SSR* 16 (7):60–63.
RANOV, V. A., and L. F. SIDOROV. 1974. "The Pamirs as man's habitat," in *The countries and peoples of the East.* Edited by V. Maretin and B. A. Valskaya, pp. 148–77. Moscow: Nauka.
ROGACHEV, A. N. 1966. Nekotorye voprosy izucheniya Epipaleolita Vostochnoy Evropy (Some questions about the investigation of the Epi-Paleolithic of Eastern Europe). *Materialy i Issledovaniya po Arkeologii SSSR* 126:10–13.
SHELKOPLYAS, V. N. 1974. "Opredeleniye vozrasta lessovykh porod" (Determination of the age of loess types), in *Geokhranologiya SSSR*, vol. 3. Leningrad.
SKVORTSOV, Y. A. 1953. "Yunye tektonicheskiye dvizheniya Tyan'-Shanya i geneziye lessa Pri-Tashkentskogo rayona" (Young tectonic movements of the Tian Shan and the genesis of the loess of the Pri-Tashkent rayon). *Trudy Vsesoyuznogo Rabochego Soveshchaniya po Itogam Izucheniya Chetvertichnogo Perioda 1948* (Works of the All-Union Conference on the Results of the Investigation of the Quaternary Period, 1948). Tashkent: AN Uzbekskaya SSR.
SOLECKI, R. 1963. Prehistory in the Shanidar Valley, northern Iraq. *Science* 139:179–93.
SULEYMANOV, R. X. 1972. *Statisticheskoye izucheniye kul'tury grota Obi-Rakhmat* (Statistical study of the culture of the cave of Obi-Rakhmat). Tashkent: Fan.
TASHKENBAEV, N. K. 1975. Ob issledovanii paleoliticheskoy stoyanki Kuturbulak (About the investigations of the Paleolithic site of Kuturbulak). *Istoriya Material'noy Kul'tury Uzbekistana* 12:5–15.
TIXIER, J. 1963. *Typologie de l'Epipaléolithique du Maghreb.* (Mémoires du Centre de Recherches Anthropologiques, Préhistoriques et Ethnographiques.) Paris: Arts et Métiers Graphiques.

Prizes

■ The Royal Anthropological Institute of Great Britain and Ireland announces a biennial prize of £250 for an outstanding film on any branch of anthropology or on archaeology. The first such prize will be awarded in 1980 for a film first shown on or after March 1, 1976. Both specialist academic films and films intended for the general public are eligible. The judges, to be appointed by the Institute, will give greater weight to content than to technical expertise. The prize will be awarded to the individual film maker, not to the organization he or she works for (if any). The competition is international, but either the commentary or subtitles must be in English or full transcripts in English must be made available. Films must be submitted in the form of 16mm combined optical prints. They must in principle be available for noncommercial educational use. No award need be made if the judges do not consider the quality of the films submitted sufficiently high.

The closing date for entries is March 1, 1980. Submission forms with full rules and conditions are available free from the RAI, 56 Queen Anne St., London W1M 9LA, England. Forms should be read carefully. On no account shall films be submitted unless accompanied by properly completed forms. To save themselves possible trouble and loss, entrants from overseas should follow exactly the procedures outlined in the forms for submission and postage.

Serials

■ The maiden issue of the *Association of Third World Anthropologists Research Bulletin*, a biannual publication dedicated to research on Asia, Africa, and Latin America, contains news items, announcements, research reports, recent publications, a draft of the Constitution and By-Laws of the Association of Third World Anthropologists, and a partial list of founding members of the organization. The editorial board of the bulletin is composed of Mario D. Zamora (College of William and Mary), Editor; Enya Flores-Meiser (Ball State University), Associate Editor for Asia; Louis Noisin (College of William and Mary), Associate Editor for Africa; and Emilio Moran (Indiana University), Associate Editor for Latin America. The 1978–79 Executive Committee of the Association includes Mario D. Zamora, Enya Flores-Meiser, Stefan Goodwin (Morgan State University), Betty Keat (Morgan State University), and Crispina MacDonald (Howard University). For further information, write Mario D. Zamora, Department of Anthropology, College of William and Mary, Williamsburg, Va. 23185, U.S.A.