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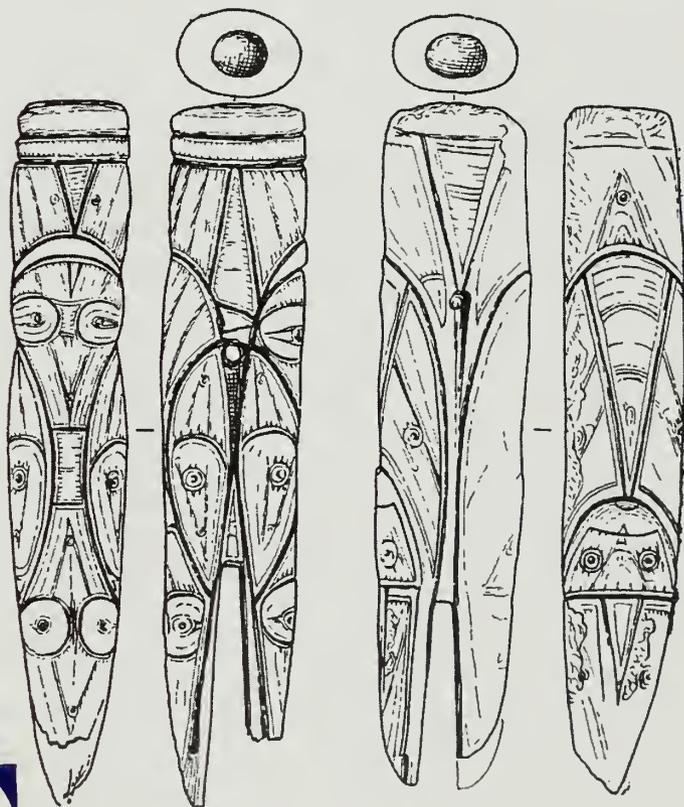
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# Archaeological Sites of Kamchatka, Chukotka, and the Upper Kolyma

By **Nikolai N. Dikov**



Translated by **Richard L. Bland**



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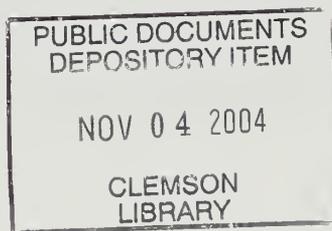
# Archaeological Sites of Kamchatka, Chukotka, and the Upper Kolyma

by

Nikolai N. Dikov

Translated by

Richard L. Bland



2005-0024-P 1

## SHARED BERINGIAN HERITAGE PROGRAM

Asia and North America were once joined by a massive “land bridge” in a region now popularly called “Beringia.” In order to promote the conservation of the unique natural history and cultural heritage of this region, the governments of the United States and Russia have proposed the establishment of an international park agreement between the two countries. The Shared Beringian Heritage Program of the National Park Service recognizes and celebrates the contemporary and historic exchange of biological resources and cultural heritage in this region. The program seeks local resident and international participation in the preservation and understanding of natural resources and protected lands and works to sustain the cultural vitality of Native peoples in the region. To these ends, the Beringia Program promotes the free communication and active cooperation between the people and governments of the United States and Russia concerning the Bering Straits region.



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# Translator's Introduction

This book was originally published as *Arkheologicheskie pamiatniki Kamchatki, Chukotki i Verkhnei Kolymy. Aziia na styke s Amerikoi v drevnosti* [Archaeological Sites of Kamchatka, Chukotka, and the Upper Kolyamay: Asia at the Crossroads with America in Antiquity] (Moscow: Nauka, 1977).

I have refrained from changing “archaic” words and phrases, for example, leaving the term “Soviet” since the Soviet Union ended so recently that there should be no mistake that the reference is to “Russia” or “Russian.” The citations have been changed to follow more recent practices, that is, footnotes, where citing an author, were placed in a reference section at the end of the book.

A note of caution: there are a few problems in the text. I have marked these with an asterisk [\*] where I found them.

I have followed the Russian custom of abbreviating long names. This applies particularly to the Reference section. For abbreviations, see the section immediately following the References.

I would like to thank several people who aided me with this translation. Katenna Wessels for all the help she has given me regarding the Beringian Shared Heritage Program, Anna Gokhman for the usual fine job of proofreading the translation, Andrea Merriam for a superb job of editing and layout, and Guy Tasa for aid on questions regarding bones. Of course, we must all thank Margarita (Kiryak) Dikova for permitting the National Park Service to publish N. N. Dikov's works. Finally, my greatest debt of gratitude is to Bob Gerhard and Peter Richter who have continued to support research in Beringian prehistory by making translations of Russian works available to American researchers.

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# Preface

In historical regard, extreme Northeast Asia—Kamchatka, Chukotka, and the Kolyma territory—is a united region with common archaeological terms of reference. From old it served as a natural bridge to America, along which its population passed from Asia. Settled chiefly by Northeast Paleo-Asiatics, it was for a long time a unique Stone Age “reserve,” where comparatively recently—in the past century—as in a time machine, it has become possible to observe the marvelous phenomena of social life, customs, and traditions of the distant past.

The unity of historical destinies, in a very general sense, of course, was combined here with a variety of natural and climatic conditions, which ultimately determined the specific orientation of economic and cultural activity of the early occupants of Chukotka, Kamchatka, and the Kolyma.

From east to west—from Cape Dezhneva to the mouth of the Kolyma—the Northeast extends one and a half thousand kilometers, and from north to south—from the Arctic Ocean to Cape Lopatka in Kamchatka—two and a half thousand kilometers.

At Cape Dezhneva, Chukotka is directed to the east toward Alaska. Here the waters of the Pacific and Arctic Oceans merge. Here the two largest mainlands—Asia and America—join. They are separated only by the narrow Bering Strait, on whose shores live one people—the polar Eskimos.

Cape Lopatka looks to the south, toward the Kurile and Japanese Islands. From here it is not very far to the warm lands of East Asia. Here legends about the Ainu, who possibly penetrated to southernmost Kamchatka only a few centuries ago, are still fresh.

The deepest and richest fish streams—the Kolyma, Chaun, Pegtymel', Amguema, Anadyr, Kanchalan, Velikaia, and Penzhina, as well as many other smaller ones—bring their waters from the mountains through the vast tundra-covered plains of Chukotka and northern Kamchatka to the East Siberian, Chukotka, Bering, and Okhotsk Seas. Long ago this region was distinguished by its abundance of animals and birds. Over its mossy lands wandered herds of many thousands of wild reindeer, in the forests and tundra lived valuable fur-bearing animals: foxes, Arctic foxes, ermines, wolverines, and wolves, and the brown bear in this region was the true master of all the wild kingdom. On the sea coast, where on steep cliffs the multitudinous voices from the bird rookeries resounded, the range of the polar bear began. At the foot of the cliffs, large herds of walruses, sea lions, seals, and bearded seals made their haulouts. In the open sea lived the giants of the animal world—whales.

Central and southern Kamchatka is a region of volcanos and inexhaustible fish resources. The chief river of this region, the Kamchatka, flows through a genuine taiga. Tundra and forest-tundra here are an exception. They are forced into the high mountain regions. Nowhere here wander reindeer. Everywhere it is necessary to force one's way through thick underbrush and fallen trees, and only on the high banks of the river does the gaze have in store broad valleys overgrown with forests, hills, and snow-covered cones of volcanos.

In the territory of Kamchatka, Chukotka, and the Kolyma many archaeological sites are presently known: early camps, cemeteries, and rock art. A substantial number of them were found and investigated by the author between 1955 and 1975.

In this book, you will read about the Stone Age sites of Kamchatka, Chukotka, and the Kolyma, how evidence was gradually collected about them beginning in the eighteenth century, and about the early cultures of this vast part of Northeast Asia. It summarizes all presently known archaeological data about this territory.

The first part of this book is a source study. The archaeological sites published in it will be examined by the author from the cultural-historical position in the second part of the monograph.<sup>1</sup>

In preparing this work the author used, in addition to publications, museum materials, in particular from the State Historical Museum and the Kamchatka District Regional Museum in Petropavlovsk-Kamchatski, the Primorye Regional Museum in Vladivostok and Khabarovsk, the State Museum of Ethnography of Peoples of the USSR in Leningrad, the Museum of Anthropology and Ethnography (Academy of Sciences, USSR), and the Hermitage in Leningrad, as well as the Museum of Anthropology at Moscow State University. The author offers his gratitude to the directors of these museums for their kind assistance in this work.

The author considers it his duty to express deep gratitude as well to the selfless participants of his field work: the associates, whose enthusiasm and conscientious work provided success in the archaeological surveys and excavations, at times under very difficult conditions; and the artists I. I. Gurin and L. N. Korshkova, who executed all of the graphic illustrations for this monograph. And, finally, the author is especially obliged to Academician N. A. Shilo, who constantly assisted the archaeological investigations in Kamchatka, Chukotka, and the Kolyma in every way.

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1 The "second part" of the monograph apparently refers to: *Drevnie kul'tury Severo-Vostochnoi Azii. Aziia na Styke s Amerikoi v drevnosti* [Early Cultures of Northeast Asia. Asia at the Juncture with America in Antiquity]. Moscow, 1979. See the Summary.—*Trans.*

# The Basic Stages and Problems of Archaeological Study of Extreme Northeast Asia

In the seventeenth century the first Russian pioneers and explorers, having penetrated into extreme northeastern Siberia, revealed that its inhabitants could be divided into three basic groups by their economic way of life. One of them led a more or less mobile form of life in the depths of the tundra and forest-tundra in the continental regions of Chukotka and northern Kamchatka. These were the reindeer herding Chukchi and Koryak and the unmounted reindeer hunting and fishing Yukagir. The second group consisted of the settled coastal inhabitants of Chukotka, Kamchatka, and the north coast of the Sea of Okhotsk—the Eskimos and “Settled” Chukchi, Koryak, and Kerek—who occupied themselves predominantly with marine hunting. The third group was made up of settled fishers of central and southern Kamchatka—the Itel’men, and with some Ainu probably mixed in (at the very southern end of the peninsula).

Especially striking to the first explorers of the Northeast was the fact that all of its enumerated peoples lived under the primitive conditions of a genuine Stone Age. Isai Ignat’ev, speaking about trade with the Chukchi of Chaun Bay, noted with astonishment in 1647: “they made ice picks, even axes from this bone,” that is, from walrus tusk. In the same spirit and with no less amazement, V. Atlasov testifies about the Aliutorskii Koryak at the end of the seventeenth century: “they have guns, bows and arrows out of bone and stone” (*Kolonial’naia politika* . . ., 1935:26; *Russkie morekhody* . . ., 1952:110). A number of similar testimonies could be provided.

Historically it turned out that Kamchatka was the first Russian province where primary ethnographic investigations were conducted. In the middle of the eighteenth century S. P. Krasheninnikov became the first to study the social order, material and spiritual culture, and customs of Kamchatka’s native peoples. He was a member of the Second Kamchatka Expedition sent out by the Academy of Sciences. Observing the “living” Stone Age first hand over the course of four years (from 1737 to 1741), Krasheninnikov provided a classic description of the native economy and tribal structure of the Itel’men, Koryak, and Ainu—the primary inhabitants of Kamchatka at that time. He drew a clear picture of many ethnographic events that have long since vanished and which therefore soon became the object of archaeological investigation (Krasheninnikov 1755).

Examining the peoples of Kamchatka with respect to a broad historical background, Krasheninnikov set himself the task of determining their historical role in the settlement of the neighboring continent—America. He was the first to offer the hypothesis that a land bridge once joined Chukotka and Alaska, across which, in the distant past, the inhabitants of Asia moved to America (Krasheninnikov 1949:175, 179).

A hundred years after Krasheninnikov's work, special surveys and excavations were required in order to reveal traces of the Stone Age in Kamchatka.

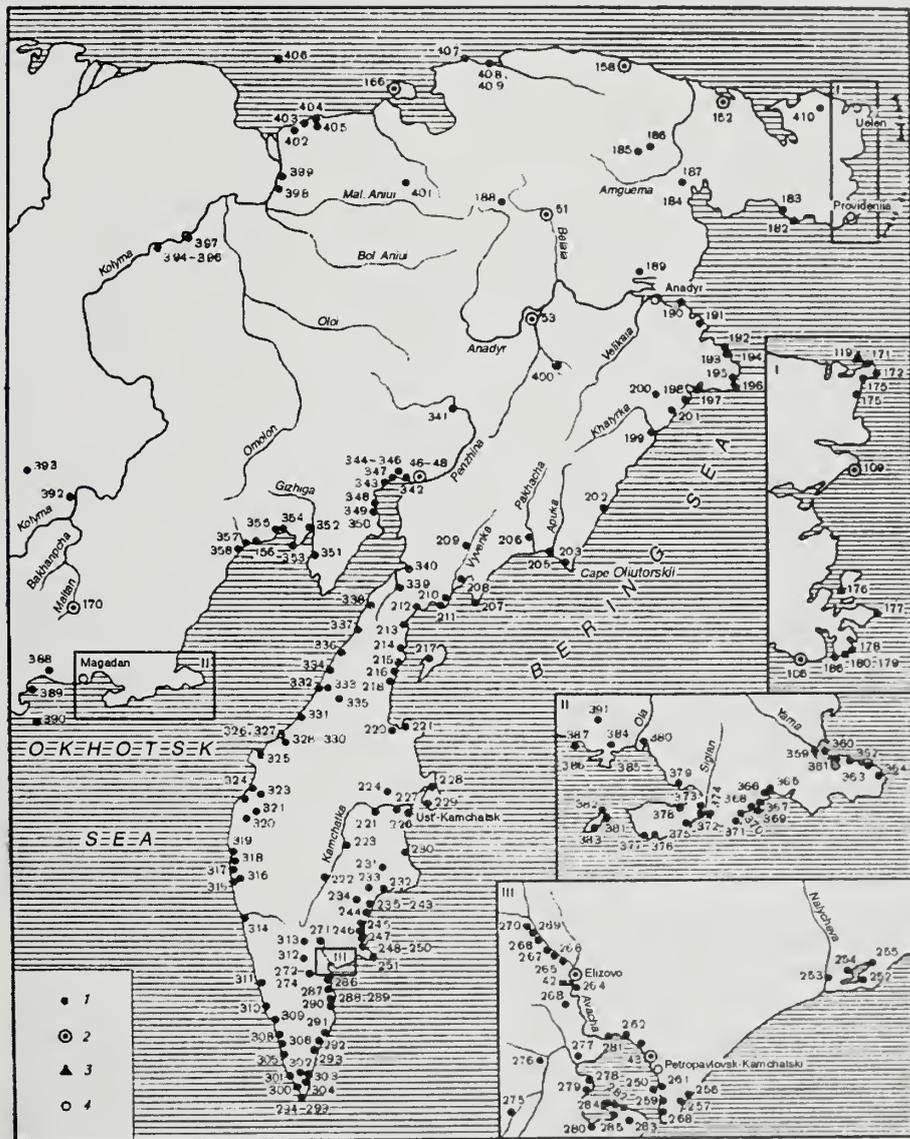
The numerous ruins of Itel'men dwellings were first mentioned as potential archaeological sites by V. Golovin, who noticed them on the western shore of Kamchatka between Bol'sheretsk and Kikhchiga (311)<sup>2</sup> (Golovin 1861).

K. Ditmar showed a huge number of similar ruins, so-called yurts, in the form of deep pits overgrown by grass located on the eastern shore of southern Kamchatka between the mouth of the Nalychevaia River and Cape Shipunksii (251-255). In Bichevinskaia Bay (255) and on Cape Shipunksii (251) he conducted the first excavations of these yurts, noted the presence of two entryways to them, and found the following artifacts in the comparatively shallow cultural layer: bone spear points, pieces of clay vessels of the "most primitive manufacture," stone arrow and spear points, axes, and adzes. Ditmar also noted many half destroyed pits of early semi-subterranean houses to the north, also along the eastern shore of the Kamchatka Peninsula, not far from the mouth of the Zhupanovskaia River (247), at the mouth of the Semiachik River (241), and in the vicinity of Kronotskoe Lake (231, 232). This investigator also became interested in the remains of the former Eshkun stockade at the mouth of the Krodakya River. He was the first to attract attention to the antiquity of Staryi stockade (Elizovo), whose residents had unearthed obsidian and jasper arrow points and scrapers from the yurts located near the village (Ditmar 1901:210-212).

In the course of the following 50 to 60 years, up to the beginning of the twentieth century, ever newer information was received from various persons on the Old Itel'men yurts, as well as at isolated finds of early artifacts in many places on the Kamchatka Peninsula and on the islands neighboring it. In 1889 M. Til'man found two stone hatchets on the Commander Islands (Primorye Regional Museum, Collection 462). In 1890, the Museum of Anthropology and Ethnography [MAE] (Academy of Sciences, USSR) obtained a collection of 25 stone artifacts from O. F. Gerts that were found at Staryi stockade (Elizovo): axes, scrapers, and several pieces of debitage with traces of working (MAE, Collection 566). To this same museum, the head of the Chukotka District, N. Gondatti, delivered early stone artifacts from three places in 1898—Seroglazka (262), near Petropavlovsk (four items) (MAE, Collection 442), Karaga village (216) (seven items: a stone scraper and various pieces of debitage), and Bol'sheretsk (310) (some fragments of tools) (MAE, Collection 445). At the end of the nineteenth century, K. I. Bogdanovich sent the Ethnographic

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2 Here and below the numbers in parentheses correspond to the enumeration of archaeological sites in Appendices I and II, as well as on the map.



**Figure 1.** Archaeological Sites of Northeast Asia Found by Other Investigators (see Appendix II). 1—sites; 2—sites excavated by the author later; 3—cemeteries; 4—modern population points.

Division of the Russian Museum [GME] a large, but unfortunately mixed, collection of eight stone axes, more than 20 arrow points, scrapers, knives, and other objects from Yavino (306) and Golygino (308) in the south of Kamchatka's western shore (GME, Collection 1775). To this same time belongs mention of the old yurts noted by N. V. Sliunin at Nalychevo (253) and Ust'-Kamchatsk (227), as well as on one of the islands in Kharchinskoe Lake (224) (Sliunin 1900:396), and by V. N. Tiushhev, not far from Icha village, where he saw the remains of an old settlement called "Staryi ostrog" [Old Stockade] (316) (Tiushhev 1906). Finally, it is interesting to note several artifacts that were received in the Vladivostok museum: in 1907, from Kerre, a member of the Eastern Institute, a stone axe from Ust'-Kamchatsk (227) (Primorye Regional Museum, Collection 2139); and in 1908, from Professor A. I. Derzhavin, a stepped stone adze and lamp from Kliuchevskoe village (225) on the Kamchatka River (Primorye Regional Museum, Collection 585). Finally, an extremely intriguing collection of six large flint knife-like blades, partially re-touched along the edges, was received in the ethnographic museum (Fig. 2) in 1867 from the Mineralogical Museum (where it had been lodged since the eighteenth century). The exact place where these very archaic appearing blades were found is unknown. It is possible they are from Kamchatka, or the Kurile or Aleutian Islands, but in any case this is perhaps the very first find of knife-like blades in Northeast Asia or in Russian America (MAE, Collection 70 [1-6]).

During the same time, chance fragmentary information was also received about antiquities in Chukotka. The honor of first mention and at the same time the first excavations of an archaeological site in Chukotka belongs to a member of the polar expedition of J. Billings-G. A. Sarychev, whose work A. P. Okladnikov first noticed. In 1787 Sarychev noted the ruins of early pit houses on Cape Baranov near the mouth of the Kolyma River (402) and excavated one of them, finding many stone and bone artifacts of early maritime hunters in it (Okladnikov 1947:179; Sarychev 1802). Nearly 100 years later, in 1878, another polar explorer, A. E. Nordenskjold, conducted excavations in similar pit houses on Cape Schmidta (158) (Nordenskjold 1936). At approximately this same time the chance archaeological finds of the Russian missionary A. Argentov and G. L. Maidel', the leader of a large Chukotka expedition, were published: the "omokskic," as Argentov called them, were a bone arrow point, a hammerstone or ice pick with lugs, and a nephrite hatchet, acquired by Maidel' from the Anadyr River (Popov 1878). The first significant collection of early artifacts from interior Chukotka was made between 1904 and 1907 along the Anadyr River near the village of Ust'-Belaia and above Markovo village by N. P. Sokol'nikov, head of the Chukotka District. Undeservcdly forgotten, the collection of this amateur collector consists of 21 fragments of clay vessels, two objects of walrus tusk, and various stone artifacts: four prismatic and conical cores, four axes and adzes, and 26 knives and arrow or spear points. It was preserved for many years in the State Museum of Ethnography in Leningrad and recently entered into the Hermitage (Coll. 3984). Sokol'nikov was not an archaeologist or ethnographer, therefore, the archaeological and ethnographic objects that he collected have no appropriate labeling and, unfortunately, no breakdown by local origin (Dikov 1961a).

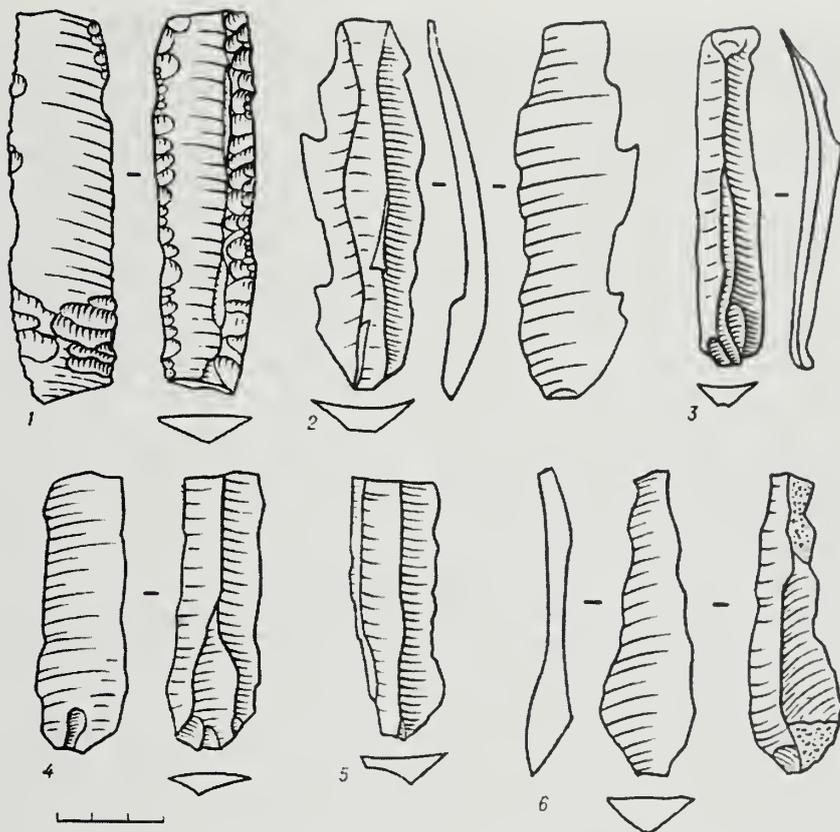


Figure 2. Flint knife-like blades found along the North Pacific Ocean in the eighteenth century.

In 1910 and 1911 a shift in the study of early culture of the extreme Northeast was noted. During the course of these two years, comparatively intensive goal-oriented excavations were conducted in Kamchatka at one stroke by three researchers: K. D. Loginovskii, G. A. Kramarenko, and W. I. Jochelson.

Loginovskii accomplished the business of the first special archaeological surveys in northeastern Siberia. On behalf of the Ethnographic Division of the Russian Museum, during one field season in 1910 he traveled through Kamchatka from one end to the other—from Korfa Bay to Avacha Bay—and visiting the interior of the peninsula on the Bystraia and Kamchatka Rivers as well. He found the ruins of early pit houses and early cultural layers in many places: on the shore of Korfa Bay in Tilichiki (208) and on Korfa Island

(210), at Karaga village (216), on Karaginskii Island (217), at Ust'-Kamchatsk (227), on the slope of Mishennaia Mountain at Petropavlovsk, at Khalaktyrka village (256), in Zavoikovo village (42), on one of the islands at the mouth of the Avacha River (281), on the shore of Tar'inskaia Bay (282), on the upper reaches of the Bystraia River near the villages of Malka (312) and Ganaly (313), and along the Kamchatka River at Kliuchi (225), Kharchino (224), and Kamaki (18). At all of these sites he collected early artifacts, which were at first given to the Ethnographic Division of the Russian Museum, and from there turned over to the Hermitage (Hermitage, Archaeological Division, Collection 2151). Loginovskii conducted the most significant excavations in three places: on Karaginskii Island (217) and near the villages of Malka (312) and Ganaly (313). On the west side of the island, below on the shore of Lozhnykh Vestei Bay at Kenlu (217), he excavated one late, probably seventeenth century (Rudenko 1948:154), house with purely Koryak bone sled runners, a piece of an iron axe, iron arrow points, and clay sherds. Also at Kenlu, but on a hill just above the seventeenth century house, Loginovskii opened three earlier houses containing only stone and bone artifacts: points of spears and arrows, adzes, awls, and scrapers, including obsidian arrow points brought, it is presumed (Rudenko 1948), from the mainland, since this material is lacking on the island.

At Ganaly village (313) Loginovskii excavated three more early houses, and at Malka village (312), seven. There he got stone arrow points and a lamp.

G. A. Kramarenko also dug in 1910 at Kamaki, where Loginovskii had previously visited. Judging by the collection of stone artifacts from these excavations (adzes, axes, a slate knife, and flakes), which are presently preserved in the MAE (Collection 1755), he struck upon a rather late cultural layer.

The most substantial results were obtained by W. I. Jochelson in his archaeological excavations in Kamchatka in 1910-1911. Exiled to the Kolyma in 1888 for participation in the People's Freedom Party movement, he began to study the history, language, and way of life of the local population, and therefore it was later possible for him to take part in three large ethnological expeditions organized by F. P. Riabushinskii and M. K. Jesup for investigation of cultural-historical connections between Northeast Asia and North America. Although a well-known expert on the ethnography of the Yukagir and Koryak at this time, who did not overlook archaeological sites, judging by his publications of early stone points and scrapers from Kamenskoe village on the Pcnzhina River (Jochelson 1908:608-610; Fig. 135, 136), Jochelson very energetically and skillfully undertook the study of the Alcutian Island antiquity (Jochelson 1925), and then, as the head of the archaeological group of Riabushinskii's Kamchatka Expedition, the archaeological investigation of Kamchatka.

Jochelson began exploratory excavations on the shore of Avacha Bay and nearby at Nalychevo, that is, in the most prospective region for testing, where Ditmar, Gondatti, and Loginovskii had already been. For a month and a half, beginning at the end of August 1910, he put in several test excavations along the south of Avacha Bay near Solcnoc Lake (281, 283) in the vicinity of Bogatyrevskaia (282, 284) and Tar'inskaia Bays, but these test probes provided very few finds. However, the excavations revealed a very interesting cultural layer

at the settlement of Seroglazka (262) (incidentally, a ring of porphyry was found there) and two pit houses at Zavoikovo village (42) (ceramics and a large, finely retouched laurel-leaf stone point were found). Then he moved to Nalychevo, where he excavated twelve more pit houses (four on the shore of Lake Nalychevo [254], two near it [253], and six on Cape Nalychevo [255]), finding a large number of stone artifacts and clay vessels having interior lugs (henceforth Jochelson called these ceramics of the "Nalychevo" type).

In 1911 Jochelson began field work in early summer on the opposite side of the Kamchatka Peninsula, at the mouths of the Kulka and Kavran Rivers. At Kulka (328) he opened two round pit houses bounded by berms and containing a large quantity of ceramics of a quite different type (without lugs) and various stone artifacts. At Kavran (323), where three such pit houses behind earthen berms were excavated, an even larger quantity of similar material remains were found. It is very interesting that among the remains, at a depth of 1.5 m, two cores for manufacturing knife-like blades were found: one prismatic, the other conical.

In August of the same year Jochelson examined a third region, to which, like the second, no archaeologist had dedicated himself until then. It was in the very south of the peninsula. At the mouth of the Ozernaia River (302) he excavated two rectangular pit houses, which contained a Japanese coin and Nalychevo ceramics, and then went, with great difficulty, up this river to Lake Kuril'skoe, where on the shore of Cape Sivuiskii (303) he, for five days, conducted excavations in 18 more rectangular pit houses, finding the same ceramics, three more copper Japanese coins, and a large quantity of different stone artifacts (points of arrows and spears, scrapers, adzes, hammerstones, and fishing sinkers).

In all, during three and a half months of field work in 1910 and 1911, Jochelson opened 35 early houses of various types in the region occupied by the Koryak, Itel'men, and probably the early Ainu. The numerous materials from his expeditions were not published until 17 years later (Jochelson 1928). They were preserved in the Museum of Anthropology in Moscow, and at the present time are located in the State Historical Museum (Collection 96) in, unfortunately, very disorderly condition—ceramics and stone artifacts from different locations are mixed in the same trays and in the majority of cases are not labeled. Some of the early artifacts have already been lost.

Thus, in the pre-Soviet period the very first, tentative steps were taken toward understanding the archaeology and early history of Kamchatka and Chukotka. Only very obvious, comparatively late sites, so-called yurts, in the form of deep pits representing the remains of remnant Late Neolithic pit houses, were found. Moreover, the excavations were, as a rule, amateurish and at times far from scientific. Perhaps the only exception was the research of Jochelson, who wrote down his field observations.

Only during Soviet times did the vigorous growth of production forces, and the thoroughly socialist and then Communistic structure properly provide possibilities in the north-eastern USSR for the study of its historic past.

V. I. Lenin and the Communist Party, from the first days of Soviet authority, attached great significance to the discovery, study, and preservation of cultural and historical sites, in

particular, archaeological sites. Everyone knows the proclamation to the people in 1918 of the Council of Deputies of the Workers and Soldiers: "preserve sites, buildings, old objects, documents—all this is your history, your pride" (*Okhrana pamiatnikov* . . . , 1973:14). And in 1919, at the height of the Civil War, Lenin signed a decree for the creation in Petrograd of the Russian Academy of the History of Material Culture (Dekret o Rossiiskoi . . . , 1926:1-2), which soon became the National Academy, and in 1937 changed to the Institute of the History of Material Culture, Academy of Sciences, USSR (from 1960 on it was called the Institute of Archaeology). To this special archaeological office, transferred later to Moscow but which preserved a division in Leningrad, was charged the preservation of all early sites in the territory of the young Socialist state.

But it was not enough just to preserve and to increase, it was necessary to study and above all reinterpret the scientific inheritance obtained from pre-Revolution archaeology on the basis of Marxist methodology. At the end of the 1920s and beginning of the 1930s a struggle developed in the National Academy of the History of Material Culture concerning the fate of Soviet archaeology, its tasks, methods, and theories. During the course of this bitter discussion old evolutionary theories foreign to dialectical materialism were dethroned. Their place, unfortunately, was occupied by sociological formulations detached from historical facts. This was possible as a consequence of hypertrophied criticism, to which old well-examined and solid methods of typological and cultural-historical analysis were subjected. Along with them, attempts at ethnic interpretation of archaeological cultures were unwarrantedly called into question and ideas about the migration and borrowing of these cultures were misused. Ideas of exaggerated autochthonism and simplified stages of cultural development resulting from teachings of Academician N. Ya. Marr began to take over. However, in the middle of the 1930s these errors were overcome and the return to concrete historical research was gradually realized.

This first pre-war stage of development of Soviet archaeology was exceptionally fruitful. This stage, noted by creative discussions and attempts at new courses in the young science of antiquities, led that science to overcome plane evolutionism and materialism (but fortunately not to the extent of rejection of typological and cultural-historical methods) and to the affirmation of historical materialism. This huge work of summarization and Marxist rethinking of archaeological facts found its expression in the draft of the first volume of *History of the USSR*, published in 1939. It goes without saying that along with this theoretical reconstruction also went the steady accumulation of the materials themselves.

During all of these years, beginning with the Civil War and the period of post-war devastation, hundreds of archaeological expeditions were sent off each year throughout the whole country. Finally, these expeditions arrived in northeastern Siberia, but not immediately.

In the Northcast, a rather poor scientific inheritance fell to Soviet archaeologists from their pre-Revolution predecessors. The antiquity of huge regions was almost uninvestigated. Isolated odd collections, procured from the land by amateur archaeologists, were buried anew in various metropolitan and provincial museums.

The Civil War had still not finished in the Northeast when Swedish, and then Japanese archaeologists, began conducting excavations in Kamchatka. Members of the Swedish Botanical Expedition—Bergman and Schnell—dug up Late Neolithic houses in the south of the peninsula, in the bays of Listvennichnaia (240) and Tar'ia (283) between 1920 and 1922 (Schnell 1932). The Japanese archaeologists Yamada Sigekura and E. Nakayama carried out excavations, also of late house ruins, in the vicinity of Ust'-Kamchatsk (227) and on the west coast of the Kamchatka Peninsula (305, 309, 315, 319) in 1924, 1928, and 1932-1933 (Nakayama 1933:544, 1934:564). The poorly documented collections were taken across the border, to Japan and Sweden.

Of very special significance during these years are the archaeological investigations of V. K. Arsen'ev, who made a trip to Kamchatka in 1918, and to the Commander Islands in 1923. In the cutbanks and gravel bars of the Kamchatka River between the villages of Shchapino, Kirganik, and Mashura he found a large number of bones of mammoth, *bos primigenius*, and rhinoceros. He also learned of a probable, in his opinion, find of a mammoth skeleton in the Commander Islands. He showed clear traces of human work on some bones that came to the Khabarovsk museum from the Anadyr Region, that is, from Chukotka. The bones, he noted, were split and burned, therefore, humans were in Chukotka as contemporaries of the mammoth. Consequently, the settlement of America proceeded along the Beringian land bridge joining Asia with America (Arsen'ev 1948:118-123). These conclusions of Arsen'ev have not lost their significance even at the present time. They point to the extremely good prospects for seeking the Paleolithic in Chukotka, which, of course, people could not avoid on their route to America. Arsen'ev also turned his attention to later remains of the Stone Age: at Kultushnoe village near Petropavlovsk-Kamchatski he found various Neolithic stone artifacts, which at the present time are unfortunately lost (*Poliarnaia zvezda*, 1923).

In Chukotka many of the artistic bone artifacts from destroyed early Eskimo pit houses are lost. Only some of these artifacts, thanks to G. U. Sverdrup in 1920 (from Aion Island, 166) and 1925 (from Shalaurov Island, 407) (Sverdrup 1930) and to Rasmussen in 1924 (from Naukan village, 172), were turned over to Soviet museums.

Only at the end of the 1920s, when Soviet cultural construction began in the Northeast, were the first rather scientific archaeological field reconnaissances carried out.

A special role in the cultural revolution among the northern ethnic peoples belongs to the active participant ethnographer-linguist E. P. Orlova, a close associate of K. Ya. Luks. In 1928 she made interesting finds in a two-component site on the slope of Mishchnaia Mountain (43) at Petropavlovsk-Kamchatski and in a cultural layer at the mouth of the Plakhen River (320) near the mouth of the Khairiuzovaia River (322), which were later partially published by her (Orlova 1947).

At this time the Regional Society for the Study of Kamchatka, formed in 1926 from a study group, began lively activity. Its organizer and soul was one of the first representatives of the local intelligentsia, the Itel'men Prokopii Trifonovich Novograblennykh. In June

1927 he made a trip to Tar'ia Bay "for examination of the earliest Itel'men camp" and there made a collection of Late Neolithic stone artifacts.

The multifaceted nature and broad interests of this society are excellently characterized by one of the preserved work plans of its historical-ethnographic division for 1930:

"1. Collection of Stone Age artifacts from around the district, especially in Kamchatka.

2. Creation of an archaeological map with the application of sites of former camps and settlements.

3. Creation of an ethnographic map of the Kamchatka Region.

4. Adopt measures for searching out and describing 'wild' caves at Tolbachik and Palana.

5. Collection of folklore material (legends about Kutkha and Kootynneku among the Koryak).

6. To elaborate available manuscripts with word lists: Loginova—in the Koryak language, Aivakova—in the Eskimo language, and to take steps toward publishing them" (Gosudarstvennyi arkhiv . . . , n.d.).

As is evident, the activity of the society was not limited just to Kamchatka. In 1927, branches were formed in Gizhiga and Anadyr. In 1932 the question was raised about the necessity of seeking a location for the Petropavlovsk Regional Museum, and soon the museum was created. The first regional museums were organized in Anadyr, Zyrianka, and Palana.

In 1931, on the basis of a regional display by the Nagaev Cultural Association, existence began for a regional group studying the Okhotsk-Kolyma Region, and in 1934, for the Okhotsk-Kolyma (now Magadan) Regional Museum, where various archaeological finds immediately began to arrive.

Between 1930 and 1932 members of the Nagaev Cultural Association, M. G. Levin and V. I. Levin, carried out significant archaeological surveys. On Zav'ialov Island, where Ozolin had discovered an early site (382) in the 1920s, they found not only relatively late sites (382, 383) of marine hunters (ancestors of the Koryak) but an earlier culture of the Developed Neolithic. Unfortunately these collections lay for a very long time in the vaults of the Museum of Anthropology at Moscow State University before they were published, after the death of their collectors (Vasil'evskii 1965a).

To the Koryak area belong artifacts collected in 1931 by N. N. Bilibin, an amateur from the Penzhina Cultural Association, at Paren' (350), and by A. G. Apollov (on the instructions of the Koryak Regional Center) from yurts near Kamenskoe village, as do surface finds collected on the shore of Korfa Bay (208) (Bilibin 1934:47, 49) by a teacher at the Tilichikin school, and finds (in 1934) by K. A. Novikova, K. I. Popova, and geologist V. A. Tsaregradskii on Zav'ialov Island and at Atargan (380). Finally, members of the Okhotsk-Kolyma Museum carried out small but special archaeological excavations of early Koryak pit houses at Atargan (in 1939) and the Evenk cemetery at Dukcha 10 km from Magadan (in 1941) (Simonenko 1939; Arkhiv MOKM: d. 27).

Archaeological finds were collected in early Kerek territory for the first time by Vernander on the shore of Omaian Bay (202) (in 1930) and by P. Vasil'ev (the drilling foreman of a Glavsevmorput' Mining Administration geological expedition) at a depth of 0.5 m, among walrus skulls and bones, at excavations of a Kerek camp (192) in 1937 in the vicinity of Ugol'naia Bay.

In 1930 the *Izvestiia Russkogo geograficheskogo obshchestva* [Russian Geographical Society Bulletin] reprinted in Russian the work published in USA in 1928 of the largest and most significant archaeological collection from the Kamchatka Peninsula made in 1910-1911 by Jochelson (1930). Prepared for publication in the USA at the time when it was preserved in the Moscow Archaeological Museum, this collection naturally could not receive full and comprehensive illumination and thus was not used in sufficient measure as a historical source. However, the significance of Jochelson's book was not diminished as it was the first respectable publication of archaeological sites in Kamchatka.

Jochelson left open the question of the dates of the pit houses and cultural levels he excavated. He stops at the assumption of an earlier age for the southern complex from Kuril'skoe Lake and of a later age for two other complexes—the northern, from the Kavran (323) and Kulka (328) Rivers, and the middle Kamchatkan, from Tar'ia Bay near Petropavlovsk (Jochelson 1928:61). The Japanese coins, dating, in his opinion, to the eleventh century, that were found in a pit house on Kuril'skoe Lake gave him the idea of a younger age for the Tar'ia, Kavran, and Kulka finds.

Jochelson displayed the Kamchatka materials against the general background of Siberian archaeology and tried to understand them with the help of ethnographic comparisons. He systematized the types of pit houses he had excavated and noted the similarity of the northern round ones with those of the Koryak, and the southern rectangular ones with those of the Itel'men. At the same time, he proposed his ceramic typology, having connected the northern with the early Itel'men and the southern, with interior lugs for suspension, with the Ainu. However, Jochelson's hypothesis about the origin of the Ainu—a mysterious, unusually hairy people, clearly different from the Mongoloids—turned out to be unsuccessful. He took them for a branch of dolichocephalic Aryans (the Dinlin) who came from the west. The total groundlessness of this "resolution" to the Ainu problem was evident within a year, when L. Ya. Shternberg's thorough investigation was published, which proved their southern, Austronesian origin (Shternberg 1929). Nor did Jochelson's other ethnographic hypotheses—the American origin of the northeastern Paleo-Asiatics and the so-called "Eskimo wedge"—withstand criticism (Jochelson 1926). According to the last hypothesis the Eskimos split the continuous Chukchi-Indian ethnic massif like a wedge, settling down between the Chukchi and the Indians, who were sharply different from Eskimos but allegedly similar to each other.

V. G. Bogoraz emerged in opposition to Jochelson's concept of an American ancestry for the northeastern Paleo-Asiatics. In all other respects, however, he was in agreement with Jochelson, but the Eskimo wedge he accepted only with the stipulation that the Eskimos arrived not from the northeast, from Arctic America, but from the west, from Asia.

Later developments of science have rejected outright both of these concepts, and Bogoraz's position in relation to the Eskimo wedge turned out to be incorrect. However, without doubt he deserves merit for the fact that he was the first to try to establish the most important landmarks in the social history of the early Eskimos and their culture (Bogoraz 1936). He succeeded in doing this due to his broad use and profound research of predominantly folkloric and ethnographic data, with only in a very small measure of archaeological data, which was already fairly substantial among American archaeologists. Bogoraz supposed the presence of two hunting stages among the Eskimos in the past. During the first stage they hunted seals, and because of the shortage of train oil for heating and light, several families lived in each large pit house. In the second stage, they began to hunt whales and walruses, so there was more train oil, and each family could build its own individual small house.

Bogoraz came to the convincing conclusion that, being found at present in the concluding stage of paternal clans, in the past the Eskimos had experienced a matriarchal stage of tribal society, remnants of which he saw in the original, later transformed features of Eskimo women goddesses, above all in the abominable mistress Sedna—half walrus, half woman.

On the whole, during the Soviet period of his works, Bogoraz usually strove to arrive through Marxism at the history of the peoples of the Northeast. Jochelson finished life abroad, in America, remaining to the end of his days an evolutionist, not able to rise to dialectic method and historical materialism.

Following Bogoraz, a young Leningrad archaeologist—P. I. Boriskovskii, presently a great Soviet scholar—strove to trace the vistas into the depths of time, as well as the changes of social life in the extreme Northeast. Skillfully using ethnographic material and data on cultural remnants, he provided clear characteristics of three successive stages of tribal relations—from maternal to a disintegrating paternal clan among the Yukagir hunters-fishers and the reindeer-herding Yukagir and Koryak (Boriskovskii 1935).

A. M. Zolotarev emerged with a distinctive temporal concept of economic, social, and ethnic development of the peoples in Northeast Asia. He subjected the theory of the Eskimo wedge to criticism from the ethnographic standpoint and, having widely used early Eskimo archaeological materials as a historical source, proposed the idea of an initial economic stage, common for all the peoples of the Northeast, characterized by a complex combination of fishing, sea mammal procurement, and reindeer hunting. He connected subsequent ethnic differentiation with the development of specialization within this initial complex economy (Zolotarev 1938).

In this year the small, but very substantial, purely archaeological publication that appeared, dedicated to the collection of stone artifacts from Tar'ia Bay (284) near Petropavlovsk-Kamchatski, did not pass unnoticed. The collection was made by the captain of the trawler *Krasnoarmeets*, N. A. Gur'ev, and published by D. N. Lev, a young Leningrad (but lately of Samarkand) archaeologist. He interpreted the series of stone adzes and

knives, points, and human-like figures from the remains of the Tar'in pit house, drawing ethnographic analogies from the lives of the Itel'men and California Indians.

First, having turned his attention to the similarity of Tar'in obsidian anthropomorphic figurines with similar artifacts from the end of the Neolithic in the USA, England, Switzerland, and France, as well as from the Late Neolithic Volosovskaia site near Murom, Lev made the first, and so far, very successful attempt to date the whole Tar'in complex. In his opinion, it "could be assigned to the end of the Neolithic in Kamchatka and, judging by the long deserted and chaotic pit of the pit house, which contained the remains of ceramics, it was undoubtedly at a time before the conquest of Kamchatka by the Russians" (Lev 1935).

Henceforth the Tar'in finds were fated to become a lure for archaeologists. The impression was created that here, in Tar'in, was the earliest Kamchatka culture. One should remember that in 1932, shortly before Lev's publication, Schnell finally published his south Kamchatkan collections and in them were a number from Tar'in (Schnell 1932).

Now it was necessary to make only one step in order to join all the new and old finds in a single historical picture. This was done by the young archaeologist A. P. Okladnikov, then already well known for his successful excavations of Paleolithic houses and Neolithic burials in Pribaikal'e and the discovery of Neanderthal in Central Asia.

Okladnikov summarized all the archaeological data on the northeastern USSR known at the end of the 1930s in a corresponding section of a draft "History of the USSR from Earliest Times to the Formation of the Russian State." In this lively and interestingly written outline a coherent Marxist elucidation of the historical process in Chukotka and Kamchatka is provided, its basic stages revealed, and the cultural-historical characteristics proposed. Okladnikov saw the Tar'in culture as the earliest, assigning it to the Developed Neolithic in the time range of the second and first millennia b.c. and connecting it with the ancestors of the Itel'men. He considered Jochelson's finds on Kuril'skoe Lake to be later, which he also interpreted as Proto-Itel'men. Still later, in his opinion, were the pit houses at Kavran and Kulka left (as Jochelson also thought) by the ancestors of the Koryak. Okladnikov supposed it possible to assign the coastal antiquity of Chukotka to at least three periods of development of early Proto-Eskimo culture: Old Bering Sea, Punuk, and Thule. In his outline he provides a deep penetration into the life of the early inhabitants of the north with the broad use of the ethnographic and folkloric materials of Krasheninnikov, Jochelson, Bogoraz, and many other Russian and foreign ethnographers and, of course, he uses to the fullest the supply of archaeological materials themselves (Okladnikov 1939).

Almost simultaneously, in 1941, another interesting though small work, by A. V. Machinskii, appeared, which introduced into the scholarly literature some of the early Eskimo artifacts from the collection of D. E. Bettak and N. P. Borisov, which is preserved in the State Museum of Ethnography in Leningrad (Machinskii 1941).

When evaluating the whole of the archaeological investigations in the Northeast during the pre-war period, it should be noted that before them, as before all of Soviet archaeology in the pre-war years, stood two basic tasks: reanalysis of old material from the position

of historical materialism, and the concentration (and, of course, summarization) of new material.

The ideological interpretation of archaeological materials conducted here was more successful than in many other areas of our archaeology. The errors and mistakes were fewer, less enthusiasm was manifested by sociological sketchiness, and typological and comparative-historical methods were not rejected. The predominance of the ethnographic problem and the supremacy of ethnographic and in essence always comparative-historical methods of research in the works of such classic Russian ethnographers as Bogoraz, Jochelson, and Shternberg contributed in many ways to a concrete historical approach in archaeological investigations.

The well known conference on the ethnogenesis of peoples of the north, which took place at the Institute of the History of Material Culture in May 1940, played a large role in overcoming sociological sketchiness. Zolotarev's abstract temporal concept, according to which in the past the peoples of Siberia, North America, and in part Europe went first through a stage of fishing in winter, and then hunting on foot, was especially subjected to criticism (Zolotarev 1938). Questions of ethnogenesis were posed on concrete historical grounds in close connection with the history of culture. Of especially important significance in this regard was Okladnikov's report, which summarized from these positions the colossal amount of material on the Neolithic of Siberia, revealing in it several local cultures: the Baikal, Amur, Ob, two Kamchatkan (southern Ainu and middle Kamchatka Itel'men), and Arctic. This summary, based on concrete archaeological and ethnographic facts, has not for the most part lost its significance even up to the present day. It applied the principle of true Marxist elaboration of ethnogenetic problems of Siberia, in particular, northeastern Siberia (Okladnikov 1941; Tolstov 1941).

A significant lag was noted in the accumulation of archaeological materials. In Kamchatka and Chukotka sites of only Remnant and very Late Neolithic were discovered, with all the earlier history remaining buried in the obscurity of the centuries. It is natural that such chronological limitation of accessible archaeological sources hampered the development of problems, which during the examined period amounted, as we saw, to basically only the Ainu and Eskimo problems.

World War II obliterated five years of archaeological study in USSR and, in particular, in the extreme Northeast. But hardly had the war ended than archaeological expeditions were resumed with still more magnitude. Okladnikov, having successfully carried out vast and very fruitful archaeological investigations in Yakutia, along the whole extent of the Lena River (Okladnikov 1945a, 1946, 1950a, 1955), argued for the necessity of expanding work in the north, rightly showing that without the history of northern peoples a universal history would be incomplete. In 1945 he wrote about the sad fact that archaeological study of the Arctic lagged behind its geological study by 150 to 200 years (Okladnikov 1945b).

During the first post-war year the All-Union Congress of Archaeologists was convened in Moscow. It was marked by adopting a grandiose program of resumption and advancement of archaeological investigations throughout the whole country. It was resolved

that an All-Union session at the Institute of Archaeology be annually organized, at which reports on the field work of the archaeologists throughout the whole country would be heard. The number of archaeological expeditions began to grow quickly. During the first post-war years there were tens of them, and at present, more than 300.

In 1945, an expedition was sent from the Institute of the Arctic in Leningrad to Bering Strait, and was led by a senior researcher from the Institute of the History of Material Culture, Professor S. I. Rudenko. Its results were significant. It investigated several early Eskimo camps (106, 107, 171-173, 176-181). The wealth of surface material collected at these camps in shoreline blowouts and cut banks provided the possibility of reconstructing more completely the course of cultural development of the ancestors of the Asiatic Eskimos. In a book published after the expedition, which also includes materials on I. P. Lavrov's surveys in 1945 (182, 183), Rudenko distinguished not only Old Bering Sea and Punuk chronological groups of early Asiatic Eskimo artifacts, but also the earlier, in his opinion, Uelen-Okvik group. All these periods of cultural development, as before, were borrowed from the American archaeologist Henry Collins's schema of development of the St. Lawrence Island Eskimos (Rudenko 1947).

The archaeological expedition sent the next year (from Leningrad), and led by Okladnikov, visited those places on the Okhotsk coast where between 1930 and 1932 M. G. Levin had found traces of Proto-Koryak cultures (380, 382), and found other such late sites there (376, 377), which provided occasion to propose the hypothesis of a special cradle of formation of a sea mammal hunting culture on the Okhotsk coast (Okladnikov 1947).

Okladnikov's expedition went to the mouth of the Kolyma during this same season, having established on the lower reaches of the river the presence of a Late Neolithic of lower Lena appearance (394-399), and investigated in detail early Eskimo houses of the new, Birmirk stage (using the same American schema for comparison) that had been found and partially excavated in 1787 by G. Sarychev (402-405). The Eskimo culture had at this time been found along a huge stretch of Chukotka's north coast (Okladnikov 1947; Okladnikov and Beregovaia 1971).

At this point Soviet archaeologists could elaborate the Eskimo problem more fully than before, using Russian materials. If formerly the theory of an American homeland prevailed (especially in America) regarding the question of Eskimo origin, now the hypothesis of their Asiatic origin became even more recognized.

Okladnikov, not without basis, seeing southern roots for the Eskimos, quickly added to this hypothesis a Far Eastern orientation, having connected such elements of early Eskimo culture as slate harpoon points and toggling harpoons with similar finds in the shell middens of Soviet Primorye. He proposed the idea of an initial origin among marine hunters, gatherers, and agriculturists of the southern part of the Soviet coast of the Sea of Japan, as well as the idea of dispersal from there to the distant north of Northeast Asia and America, where the culture acquired a fully Eskimo appearance (Okladnikov 1959).

This new hypothesis was enlarged by Okladnikov's hypothesis about a special Okhotsk cradle for the origin and development of a sea mammal hunting culture. The more

the materials accumulated on the Eskimo problem, the more complex, confused, and contradictory it became.

In Kamchatka during these years no new archaeological field investigations were being conducted, but there was further summarization of collections accumulated earlier. First, Rudenko (1948), then V. V. Antropova (1949) appeared in articles, summarizing the archaeological data belonging to this peninsula. Professor Rudenko, in concise exposition, proposed a very detailed typology of basic categories of stone and bone tools, as well as ceramics. He recognized Okladnikov's chronological schema and, despite Jochelson, came to the conclusion that the Tar'in cultural layer was earlier than the Southern Kamchatka complex from Kuril'skoe Lake. His general view was rather pessimistic as he was forced to recognize that so far only comparatively late sites were known in Kamchatka. The three groups of sites that he distinguished he connected with the Koryak (northern), the Itel'men (central), and the Ainu (southern).

The post-war period came to an end in 1953 with two articles by Okladnikov on the discovery by geologists N. N. Levoshin and N. A. Grave of the Neolithic culture in the interior of the Chukchi Peninsula (Okladnikov 1950b, 1953a) and with the publication of the volume *Notes on the History of the USSR*, one of the chapters of which was dedicated to the early history of the peoples of northeastern Siberia (Okladnikov 1953b), as well as the publication of large summary works by G. F. Debets.

In the two named articles Okladnikov interpreted a few pieces of ceramics and a small number of stone arrow points and knife-like blades found by Levoshin (1950) in 1947 on the Yakitikivcem River (186) and Grave, on Lake Chirovov (51), as material evidence of a special, previously unknown interior culture of nomadic hunters—ancestors of the Yukagir. Thus, in the archaeology of the extreme Northeast the Yukagir problem—the problem of the origin of this once very numerous Paleo-Asiatic people who inhabited the Kolyma and Anadyr River basins in the Northeast by the time of the arrival of the Russians in the seventeenth century—emerged for the first time.

In Okladnikov's (1953b) chapter in *Notes on the History of the USSR* he repeated and summarized his views on the early history of Kamchatka, Chukotka, and the Okhotsk coast, and we once again saw the boundary at which archaeology in the Northeast had arrived and could penetrate no deeper. This boundary was the Neolithic (and at that, comparatively late). Even so, many interesting problems had been posed, predominantly of ethnogenetic character. The interpretation of some groups of sites as Eskimo, Koryak, Itel'men, Ainu, and Yukagir stimulated not only further archaeological research, but corresponding physical anthropological investigations as well.

In 1951, detailed summary works by the leading Soviet physical anthropologist G. F. Debets appeared. One of them was a monographic summary of anthropological materials of the Northeast Expedition to the Kamchatka Region (into which, until the formation in 1953 of the Magadan Region, the Chukotka National District also fell), which was organized by the Institute of Ethnography in 1945 (Debets 1951b).

The author established the genetic relationships of the Eskimo, Chukchi, Koryak, and Itel'men physical types both within those groups and among them and types of other peoples of Asia and America. With the large amount of craniological material he corroborated the conclusion of Zolotarev and Levin (Levin 1947, 1949) that, from the physical anthropological point of view, the Eskimos did not separate the Chukchi and Indians—did not form a “wedge” between them—but rather occupied an intermediate position. Further, Debets proposed the very fruitful idea of the differentiation between the Eskimo (to which belong the Coastal Chukchi) and reindeer herding (interior Chukchi and Koryak) types on the basis of division of the early population of northeastern Siberia into coastal sea mammal hunters and reindeer hunters. This idea was well in accord with the hypothesis promoted shortly before this by I. S. Vdovin that the Chukchi lived by hunting wild reindeer in the initial stages of their history, at the time when their language was formed (Vdovin 1950).

On the basis of anthropological data Debets also came to the conclusion of deep antiquity for the Bering Sea anthropological type and of the greater probability of a Pacific Ocean, and not a Siberian proper, route for the settlement of Northeast Asia, and then of Arctic America, by peoples of this anthropological type. Of great interest, from the point of view of the problem of initial settlement of Northeast Asia and America, was Debets's conclusion about the lack in the Neolithic population of Pribaikalye of Europoid mixture and about the fact that the seemingly apparent mixture of Europoidness was nothing more than softened Mongoloidness, which was peculiar to Mongoloids at the beginning of their development, as well as to Americans—the native population of America—under conditions of isolation, which preserved this feature up to the present time.

In special research, Debets (1951a) examined in archaeological, ethnographic, and anthropological material the problem of the initial settlement of America and was the first in Russian literature to convincingly substantiate the hypothesis of settlement of this continent from northeastern Siberia across the Bering Land Bridge at the end of the Quaternary period.

Along with the above-named Soviet works, attempts to summarize the archaeological material of the vast region were made abroad. In 1944 the Norwegian archaeologist Gjessing carried out such an attempt at a historical-archaeological synthesis of the whole Arctic coast of the Old and New Worlds, having distinguished for all this huge territory a single, in his opinion, so-called Circumpolar culture of Stone Age sea mammal hunters (Gjessing 1944). Two years later the French scholar Leroi-Gourhan summarized the archaeology of the whole North Pacific basin from the point of view of Circum-Pacific cultural connections (Leroi-Gourhan 1946).

The weakness of these two works was in their methodology. They suffered from evolutionism and the materialist approach, which by this time was already completely outdated among Soviet scholars. However, they both, especially the book by Leroi-Gourhan, played a large role in the development of a broad view of the historical process in the peripheral regions of the Old and New Worlds, and demonstrated how deep the contacts were

between the cultures of these regions in antiquity. These works draw on archaeological material of both the Soviet North and Northeast and the American Arctic.

Never before was it so obvious that the historical processes of the distant past in northeastern Siberia had more than local significance. Investigation of these processes inevitably forced researchers to draw on archaeological data from different regions of Asia, as well as from America. Concerning the latter, the resolution of the problem of its initial settlement and its ethnogenesis of northern native peoples was in turn inconceivable when separated from the archaeology of the Soviet Northeast.

However, the combined and mutually connected study of this whole problem was made substantially difficult and delayed by the lag in the development of archaeological investigations in the Northeast behind that of archaeological research in the American Northwest.

Archaeological investigations in the western sector of the American Arctic before the war and in the post-war period went at a substantially more rapid pace than they did in the extreme Northeast of the USSR. Before the 1930s, during the Second World War, and in the first post-war years, Americans conducted archaeological investigation of the Yukon, Tanana, Mackenzie, and Kobuck, as well as along the route of the Alaska Highway, and in many places traces were found of interior cultures with knife-like blades. Near the Yellowknife River—north of Great Slave Lake—MacNeish found signs of the presence of a substantially earlier culture with Plainview type points (MacNeish 1953; Rainey 1939; Solecki 1951).

Early Eskimo culture on the Arctic coast of America was already rather well known due to the investigations of Mathiassen, Rainey, Collins, Larsen, De Laguna, and other American and Danish archaeologists (Collins 1937; Larsen 1934; Mathiassen 1930; Rainey 1941).

In 1939, the most impressive site of a coastal culture in Alaska was discovered at Ipiutak on Cape Hope. Here was a whole “city” of 800 house pits, a substantial number of which were opened. Five hundred burials belonging to it were excavated as well (Larsen and Rainey 1948).

By the beginning of the 1950s research in Alaska led to the opening of stratified sites of Early Neolithic and Mesolithic age. At Cape Denbigh, Giddings investigated the first multi-component site, which immediately took on key significance for periodizing early cultures of the East Asian-American sector of the Arctic. The earliest Mesolithic finds from this site received wide recognition as the “Denbigh Flint Complex” (Giddings 1951, 1964). Soon Giddings discovered and investigated successive chronological series of sites on beach ridges at Cape Krusenstern, where, along with earlier and later complexes, the same Denbigh Flint Complex could be traced (Giddings 1961). Surprisingly, pre-Eskimo sites similar to the Denbigh complex began to appear over the whole vast expanse of the American Arctic, as far as Greenland. Larsen found one of them at Trail Creek Cave on the Seward Peninsula (Notes and News . . . , 1951:285; Rainey 1953:45); Meldgaard found one on the west coast of Greenland, and in Disko Bay he revealed a whole series of them, 26 in number,

were assigned the name Sarkak culture (Larsen and Meldgaard 1958; Meldgaard 1952); and another analogous culture, named Independence, was found in Greenland by a Danish archaeological expedition led by Eigil Knuth (1952). But perhaps the most interesting was the discovery in 1938 of the even earlier culture on Anangula Island in the Aleutian Island chain by the American W. S. Laughlin, a member of A. Hrdlička's expedition. In 1952 Laughlin began a systematic multi-year investigation of this interesting site, which shed light on one of the early stages of settlement of America and connected with the history of the earliest Aleuts (Laughlin 1951, 1963; Laughlin and Aigner 1966; Laughlin and Marsh 1954).

A large role in illuminating in Russian literature the foreign archaeological investigations in the Arctic regions of America was played by the American anthropologist Hrdlička (Anonymous 1940), the Soviet Americanists Z. V. Zibert (1937) and B. Sharevskaja (1947), and especially the Soviet archaeologist N. A. Beregovaia.

In addition to her articles on the archaeological materials of Chukotka, from 1950 on, Beregovaia published many articles and reports in which the problems and materials of North American archaeology were reflected and the hypotheses of the author connected with them (Beregovaia 1950, 1957, 1958).

The very fruitful activity of Beregovaia contributed to activating the interest of Soviet archaeologists in Arctic archaeology and rapprochement and coordination of investigations on both sides of Bering Strait.

In their turn, foreign archaeologists, sensing a sharp need to know as much as possible about the archaeological finds made in the Soviet Northeast, had by 1940 begun to steadfastly follow all publications of these materials in the USSR and to publish their own reports, reviews, and special investigations dedicated to the materials, at first sporadically and then ever more systematically (Davis 1940; Oswalt 1953; Quimby 1947; Tolstoy 1958).

The American archaeologist Chester Chard began such useful coordinating activities at the end of the period being examined and successfully continues it up to the present time. To his pen belong the largest number of reports and amount of original research on the archaeology of the Northeast USSR and on the problems of early cultural and ethnic connections of this part of Asia as well as of Japan with America (Chard 1955, 1958, 1960a, 1960b, 1960c, 1961, 1963).

In laying out the results of the whole post-war stage (1945 to 1953) in the development of archaeology in the Northeast it must be noted that over these years further expansion of the problems occurred (for example, for the first time, the Yukagir problem was posed in the archaeological material) and the theoretical investigations deepened with broad attention paid to the anthropological and ethnographic data. At the same time, some lag was noted in the accumulation of useful archaeological materials, due to which the gap between Soviet Northeast studies and American Northwest studies began to increase. This lag was overcome during the third stage of archaeological study in the Northeast of our country.

It began with the formation in 1953 of the Magadan Region and continues through present day. The stormy development of production forces of the region, sharp rise of its culture, interest in the universal study of the district, and, chiefly, the increasing role of local

specialists, all contributed to the effectiveness and regularity of archaeological investigations.

The Chukotka, Magadan, and to some degree Koryak Regional Museums stepped forward as organizers of archaeological expeditions. Over several years they were able to substantially expand the circle of archaeological sources.

Members of the Magadan Regional Museum A. V. Beliaeva (with the participation of G. A. Pytliakov and V. E. Lipovskii) and R. S. Vasil'evskii conducted excavations of Late Neolithic and Old Koryak sites on the north shore of the Sea of Okhotsk between 1955 and 1964 (351, 354-387, 388) and on Nedorazumeniia Island (387) (Beliaeva 1967; Beliaeva and Pytliakov 1958; Pytliakov and Beliaeva 1957; Vasil'evskii 1959, 1960, 1961, 1965b, 1971). Then, in 1966 Beliaeva undertook archaeological surveys and excavations in the region of a settlement of early Kereks at the mouth of the Khatyrka River (199) on the south-eastern coast of Chukotka, where in 1950 N. Korav'e had noted early Kerek houses. Quite recently, several Kerek sites were found in this area by V. V. Leont'ev, E. V. Gunchenko, and A. A. Orekhov (190-198).

In 1953-1954, early pit houses, which belonged to a culture unknown until then, were excavated by the director of the Chukotka District Museum, V. V. Naryshkin, at the mouth of the Kanchalan River (189) (Dikova 1964; Okladnikov and Naryshkin 1955).

In 1959 and 1960 archaeological surveys along the northern part of the Okhotsk coast in the Kamchatka Region were conducted by the Palana Regional Museum of the Koryak National District. At the mouth of the Palana River (332), Neolithic stone points, scrapers, and other artifacts were collected that were unfortunately subsequently lost.<sup>3</sup> On the shore of Penzhina Bay, over a stretch of 300 km (from the former village of Khaimchik to Manily village), traces of several Old Koryak sites were found (48, 342, 344-349), from the cultural strata of which 300 stone and bone artifacts were successfully obtained (Semenov 1964).

Due to the increasing interest in regional studies, amateur archaeologists, participants of various non-archaeological expeditions, and simply local residents have also made an essential contribution to archaeological survey work: G. S. Abakumov (180), A. Afanas'ev (260), Ya. M. Anderson (45), O. Anzhikov (264), S. E. Aprel'kov (271), M. N. Baranov (307), A. V. Beliaeva (199), S. G. Bialobzhesskii (201), R. L. Dunin-Barkovskii (304), Gaidukevich (220), V. I. Gerasimchuk (393), A. A. Gorbach (223), A. N. Gorchakov (267), O. N. Ivanov (174, 175, 400), I. Ivtegin (200), Yu. A. Kaliasnikov (201), A. A. Kalinin (402), A. E. Katenin (187), B. A. Klubov (410), V. Kraskov (408), Kruglov (280), Kukin

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3 In the archive of the Institute of History, Philology, and Philosophy, Northeastern Branch of the Academy of Sciences, USSR, in Novosibirsk, an article by A. V. Semenov about this very interesting Neolithic complex at the mouth of the Palana River was preserved. Excellent illustrations from this article were used by R. S. Vasil'evskii in his dissertation and published by him in the book *Drevnie kul'tury Tikhoookeanskogo severa* [Early Cultures of the North Pacific] (Novosibirsk, 1973. Fig. 17, Tables XXII-XXIV).

(286), Lebedev (163), V. B. Lebedev (184), P. D. Lutskevich (279), V. N. Maliukovich (207, 208, 211-215, 218, 219, 230, 285, 314, 321, 337-339), Nesmashnyi (285), Nikonov (228, 229), B. P. Panura (18), S. A. Pchelko (407), O. A. Petrov (151), V. P. Pokhialainen (343), V. Primakov (261), V. I. Semenov (234), A. Seroshkin (260), V. S. Sheimovich (289, 292, 293), Skvortsov and V. N. Smirnov (185), A. Solov'ev (262), Yu. M. Stefanov (221), V. Tkachenko (44), I. S. Vdovin (1971), G. M. Vlasov (288), V. A. Vorob'ev (409), V. I. Zaiarnov (340), M. Zelenskii (109), D. K. Zimin (222), Zmiev (325), and others. Their collections from the most varied early sites were received in museums and in the Northeast Interdisciplinary Scientific Research Institute, Far East Science Center, Academy of Sciences, USSR. Some of them have already been published (Beliaeva 1968; Beregovaia 1960; Bialobzhesskii *et al.* 1976; Dikov and Gerasimchuk 1971; Dikov and Katenin 1976; Dikov and Smirnov 1976; Dikova and Vorob'ev 1973; Ivanov 1967; Kalinin 1961; Kraskov and Dikova 1966; Maliukovich 1972; Slepov and Kharchenko 1965; Vdovin 1971).

The most interesting finds were made by A. K. Saiapin and I. A. Nekrasov, members of the Anadyr Permafrost Station. In the summer of 1955 they found a Neolithic site and a cache in the very center of Chukotka, on the shore of Lake El'gygytyn (188) (Okladnikov and Nekrasov 1957; Saiapin and Dikov 1958), and two years later Nekrasov had the good luck of finding a cultural layer on the Anadyr River near the Vakarevo fishery (53). It was richly saturated with the remains of a different, later culture of very unexpected appearance. According to Okladnikov's determination, this site of a fishing and hunting culture has some kind of connection with finds from the early site at the mouth of the Kanchalan River (182) (Okladnikov and Nekrasov 1960).

The Institute of Ethnography has, as before, been playing a leading role in physical anthropological investigations, bordering on archaeology, in the Northeast. After Debets' work in 1958, mentioned above, a large monograph was published by another well known anthropologist, Professor M. G. Levin, dedicated to problems of the ethnogenesis of the peoples of the Far East (Levin 1958a). This book summarized all the physical anthropological and archaeological data on the peoples that had been examined in this region. In it, thorough analysis was given to such central ethnographic problems as that of the Eskimos and of the Ainu. New problems of the origin of the Chukchi and Koryak, the Itel'men and Yukagir were elucidated from all sides. But it cannot be said from this that the author finally resolved them. For this, Levin lacked above all archaeological materials. Their insufficiency was also sharply felt by the authors of other historical-ethnographic works published in recent times: G. A. Menovshchikov (1959), L. A. Fainberg (1964), and I. S. Vdovin (1965, 1973). Archaeological materials were still comparatively few, and they all were, as before, no earlier than the Neolithic. In the first volume of *V'semirnaia istoriia* [World History], published in 1955, on the map of Neolithic cultures, the areas of Kamchatka and Chukotka still had blank spots. Thus, at that time the known Kamchatka-Chukotka Neolithic was not generally recognized.

The archaeological investigations carried out in Chukotka and Kamchatka by the author also belong to this period.

The author conducted the first series of archaeological expeditions in Chukotka between 1956 and 1959 as director of the Chukotka District Regional Museum in Anadyr. Surveys and excavations were carried out annually in the interior regions of Chukotka, as well as on its sea coast.

Complete archaeological survey of two large rivers—the Anadyr and the Amguema—as well as part of the Vankarem River and Krasnoe and Chirovoe Lakes was conducted in the Chukotka National District.

The most remarkable site turned out to be the Ust'-Bel'skaia cemetery (72), which had stone and bronze tools, located at a Neolithic camp on the middle course of the Anadyr River. In other places along this river Neolithic sites were found and excavated: at Vakarevo (53), Ust'-Maina (54), Omryn (73), Utesiki (61), Vilka (59-60), Uvesnovaniia (57), Anokatrany (62), Chikaevo (74), on Osinovaia Hill (66), and on the spits at the entrance into Krasnoe Lake (67-70). On the Amguema several more Neolithic sites were found. The most interesting of these were found at kilometer 102 on the highway (78-81). Rich Neolithic collections were made from the cultural layer of a site at Chirovoe Lake (51) and on Aion Island (160-163, 165). All of these were in large part sites of formerly unknown cultures, and on the whole they provided the first properly representative material, including not only all possible types of stone artifacts, but also a rich collection of varied ceramics. As a result of preliminary analysis it became clear that for all of these materials there was not just one, but several forgotten early diachronic cultures and that they made it possible to reconstruct the historical past of Chukotka much more completely and in new ways (Dikov 1960, 1961b, 1961c, 1961d, 1963, 1964a, 1974a).

Surveys of Old Bering Sea sites were undertaken by the author on the sea coast as early as 1956. Exploratory excavations were conducted in the Uelen cemetery (119) (accidentally found by A. T. Simbirskii, with one grave previously excavated by D. A. Sergeev, in 1955 [Sergeev 1959]) and in the virtually inaccessible fortified Senlun site (118). In 1957, the survey was continued and led to the discovery of early pit houses at Cape Schmidt (158, 159), on Dvukh Pilotov Spit (157), and at Vankarem (148-154). At Vankarem a cemetery was found (152). In 1958, work at the Uelen cemetery was resumed. Okvik, Old Bering Sea, and Birmirk burials were found (Dikov 1958a, 1967a).

Part of the field work at the Uelen cemetery was carried out in conjunction with the Institute of Ethnography, Academy of Sciences, USSR, which equipped the expedition led by anthropologist M. G. Levin from 1957 to 1961. The basic result of research by members of the Institute of Ethnography at the Uelen cemetery was the typology of toggling harpoon heads, on the basis of which changes were made in the periodization of early Eskimo cultures. In the opinion of the authors of this formal typology, the Okvik culture was in part later than Old Bering Sea (Arutiunov and Sergeev 1969; Levin 1958b, 1960; Levin and Sergeev 1960, 1964). They maintained this unconvincing—as we will show below, in the second part of this book—typology even in their recent work dedicated to the large Old Bering Sea cemetery at Ekven (Arutiunov and Sergeev 1975).



In 1959, cultural layers in the remains of camps of early marine hunters were found and investigated on Aion Island, on its western shore, near the Polar Station (166), and on the north side of the Anadyr Estuary (opposite the city of Anadyr), at Sed'moi Prichal (105). The latter site turned out to be especially interesting. Here a large number of burials of human skulls were encountered (Dikov 1961c, 1961d).

The first investigations in Chukotka already permitted the author to propose new hypotheses regarding the initial settlement of Chukotka in the Paleolithic; a northern autochthonous origin for Eskimo culture; Proto-Chukchi, and not Yukagir, ethnic association of inner-continental Neolithic culture, in particular with Ust'-Bel'skaia; and a semi-sedentary, and not a nomadic way of life for the Neolithic inhabitants of Chukotka. The author also formulated a new problem of the dynamic regularity of cultural connections between the herding-agricultural south and the hunting-fishing north—the question of dependence of these connections on the level of economic development in the south (Dikov 1958c, 1960).

In 1960, the organization in Magadan of the Northeast Interdisciplinary Science Research Institute, with an archaeological laboratory as part of its makeup, brought the investigation of archaeology in the Northeast of our country even nearer the object of study and strengthened the role of regional cadres in examining the problem of the historical past of northeastern Siberia. All of this permitted the substantial expansion of not only the scale but the subject matter of the investigations.

In 1963, the sea coast of northeastern Chukotka underwent complete archaeological examination (the route was traversed by whaleboat). As a result, not only early Eskimo camps, but many cemeteries of various stages were discovered and investigated in Yandogai (107), Nuniamo (109), Chini (110, 111), Enmyntyn (113-117), Inchoun (120-121), Uten (122-123), Chettun (124), Ekichuverveem (125), Chegitun (126-129), Seshan (131-132), Ikolivrunveem (133-134), Kenishkhun (135), Enurnino (136-138), on Ilitlen Island (139), at Neshkan (140), Dzhentretlen (141-143), on Beliaka Spit (144), at Anaian (145), on Koluchin Island (146-147), and again at Vankarem (148-153) (Dikov 1965, 1966a, 1968a). Of 14 early Eskimo cemeteries discovered, three—two at Enmyntyn (115, 116) and one at Chini (110)—were completely excavated by the author in 1965 (Dikov 1967b, 1974b), and the remaining were only partially excavated (Dikov 1966b). The picture of the spread and development of early Eskimo cultures became more clear, and in particular, the fact of the penetration from Alaska along the north coast of Chukotka beginning in the middle of the first millennium a.d. of the so-called Bimirk culture of early marine hunters was confirmed (Dikov 1968a).

Some of the investigations on the coast were carried out in cooperation with geologists. This enhanced the materials. V. Kraskov, O. N. Ivanov, and V. P. Pokhialainen found very interesting sites of early marine hunters (118, 174, 175, 343), and then investigated them jointly with archaeologists of the Northeast Institute (Ivanov 1967; Kraskov and Dikova 1966).

Perhaps the most significant archaeological discovery at this time was the petroglyphs (102, 103) of the north coast of Chukotka, first found by geologist N. M. Samorukov and then completely examined and recorded by the author. These first cliff illustrations represented to us in striking form the life of the early inhabitants of the Chukotka coast. It turned out that their form of life was based on a complex hunting economy. The chief objects of the hunt were sea mammals and reindeer (Dikov 1967c, 1968b, 1969a, 1969b, 1971a, 1972a; Dikov and Samorukov 1972).

Investigations of the Neolithic were continued on the Amguema and the Anadyr. There, in 1963, the author discovered two more Neolithic cemeteries—Omryn (73) and Ekiatap (95)—of the same type as Ust'-Bel'skaia, which was studied in 1958-1959 in the Anadyr River valley. Thus, in Chukotka, the area of Neolithic reindeer hunters was for the first time concretely outlined. These hunters quite unexpectedly turned out to be representatives of the Arctic race (Gokhman 1961), contrary to Levin's opinion (Levin 1958a) that they were of Yukagir ethnic association.

The later Anadyr-Maina (Vakareva) culture, probably the ancestors of the Yukagir, turned out to be territorially combined to a significant degree with the Ust'-Bel'skaia culture of Neolithic ancestors of the Arctic Proto-Eskimo population. One of the Anadyr-Maina (Vakareva)'s primary sites was that found at Ust'-Bel'skaia village (56), though not on the hill where the Neolithic cemetery was located, but below, on the first flood-plain terrace. This low Ust'-Bel'skaia site (56), examined by the author in 1966, provided a large collection of bone knives for butchering fish, spears, and arrow points. The early occupants of this property were fishers and hunters, as it should have been at this time for the ancestors of the Yukagir, if one can judge this by their ethnographic characteristics (Dikov 1968c).

Kamchatka, to which the Northeast Institute had sent an archaeological expedition under the author's leadership in 1961, was now also included in the systematic survey. The survey's specific task was to go from the known to the unknown, to examine first sites of the Remnant or very late Late Neolithic left by the ancestors of the Koryak and Itel'men, and then to find earlier Neolithic sites. The main route of the expedition was traversed in boats along the Kamchatka River—the primary vital artery of the peninsula, where, in all probability, the earliest culture was to be found.

On the Nikulka River a large fortified early site (16) of unusual double pit houses was found and almost completely excavated. Soon about 50 more early Itel'men sites (17-37), and even a cemetery near one of them at Kamaki (19), were found on the banks of the Kamchatka River.

With respect to Neolithic remains, it could be supposed that in the Kamchatka River valley knife-like blades would certainly be present. This could be foreseen through some indirect data: by isolated stone blades at the Tar'in site; by two flint cores (prismatic and conical) at the Kavran site (323), which was published by Jochelson (1930:358, 359, Fig. 7:25, 26); and by a prismatic core with no labeling that was preserved for a long time in the Petropavlovsk Museum. It was from such cores that fine knife-like blades were made

during the Neolithic in the circumpolar zone, and it would be quite strange and inexplicable if this technique, expansive in the highest degree, bypassed the Kamchatka River valley, as archaeologists who were occupied with this problem mistakenly proposed at that time (Larichev 1960:119, Fig. 23).

In fact, in the fall of 1961 our expedition found a whole series of Neolithic sites in the Kamchatka River valley with knife-like blades—on the shore of Lake Ushki (1), at Doiarki (10-11), and at Kliuchi (12, 13).

In 1962 the author examined Neolithic sites in other regions of Kamchatka as well: on the southern peninsula near Petropavlovsk-Kamchatski—in Rakovaia Bay (45), on Kirpichnaia Street (44), at the settlement of Elizovo (42), and on the northern peninsula in the Penzhina River valley at Capes Zelenyi (47) and Bol'shoi (48), at Manily (49), and near Kamenskoe village (50).

In 1963 the Commander Islands were subjected to a preliminary survey, but it turned out that they had been settled comparatively late and only traces of a culture of Neolithic marine hunters were preserved (38-41) (Dikov 1969c).

By 1962, on the shore of Ushki Lake in the Kamchatka River valley, the author had uncovered at two sites (Ushki I and Ushki II, in a large area beneath a Neolithic cultural layer) an Early Neolithic cultural layer and an even earlier layer, which at first was assigned to the earliest Mesolithic and which later could be interpreted as late Paleolithic with an absolute date of  $10,360 \pm 350$  (Mo-345) (Dikov 1964b; Shilo *et al.* 1967; Vinogradov *et al.* 1966). Its late Paleolithic assignment became even more evident after the discovery in 1964 at the Ushki I site of a deeper, undoubtedly Upper Paleolithic layer with substantially earlier traces of the Upper Paleolithic. There turned out to be in this site both campfires and a burial pit with very valuable burial remains in the form of a multitude of stone pendants and beads, as well as burin-like instruments for making such ornaments (Dikov 1967d, 1968d).

In 1965 and 1966 our expedition discovered and excavated several dwellings of different types with a large assortment of stone artifacts in the late Paleolithic layers at the Ushki I (1) and Ushki IV (3) sites (Dikov 1969d, 1970a).

After the first Paleolithic finds the problem of their connection with American antiquity arose and we approached the problem of initial settlement of the New World in earnest. This complex problem could now be handled not only from anthropological and ethnographic positions, but also from quite definite and reliable archaeological materials.

The discovery in 1961-1962 of Early Neolithic sites, and then between 1964 and 1966 of Upper Paleolithic dwellings and burials, permitted substantial penetration into the depths of the historical past of extreme northeastern Siberia.

The unswerving descent along the steps of the millennia to ever earlier cultures of Kamchatka was accompanied and corroborated by careful stratigraphic investigations with the use of the newest (paly nological, tephra-stratigraphic, and radiocarbon) methods. Combining these scientific methods with the comparative typological research methods of archaeology proper permitted the creation of a basis for periodization of the development of

culture, the elaboration of which is the most significant and urgent task of Soviet archaeology in Northeast Asia.

At the circumpolar conference in Copenhagen in 1958, Soviet archaeologists, ethnographers, and physical anthropologists formulated the basic problems of archaeological and anthropological study of the Soviet Arctic, and in particular its eastern sector (Okladnikov 1958-1960). In 1964 and 1968 at the seventh and eighth International Congresses of Anthropological and Ethnographic Sciences in Moscow and Tokyo, Soviet scholars displayed new materials that permitted the drawing of a concrete and conclusive picture of the ethnogenesis and progressive historical development of northern peoples, and the visible presentation of their lost history on the basis of the archaeological facts (Chernetsov 1964; Dolgikh 1964).

On the basis of the archaeological data from Chukotka and Kamchatka, the problem of ethnic differentiation of the population in the Northeast during the course of its historical development was posed for the first time (Dikov 1964c, 1967e). At this point in time the ethnogenesis of cultures in this part of our country has acquired a chronological perspective as far back as the late Paleolithic. This is completely comparable in age to the earliest reliable cultures discovered by this time in Canada and Alaska (Dikov 1970b).

In 1971 the author summarized in his work all of the basic conclusions he had made as a result of his fourteen years of research in the Northeast (Dikov 1974c:18-75, 395, 396). In this same year he started on a new cycle of field work in Chukotka, Kamchatka, and the Kolyma.

In 1972 on Aion Island the author found and tested new Neolithic sites (161, 162, 164) and carried out stratigraphic determination of mammoth horizons, and in 1975 on Wrangel Island he discovered the earliest Paleo-Eskimo culture in Asia (167). In this same year, near Beringovskii village south of the Anadyr spit, he found another Pre-Old Bering Sea culture (104) and the first detailed excavations of an Old Bering Sea dwelling were begun on Cape Shmidta.

Between 1971 and 1974, in the lower layers of the first Ushki site (1), systematic excavation was conducted on two of the earliest Paleolithic settlements in the Northeast—Paleo-Indian (in Stratum VII) and Proto-Eskimo-Alcut (in Strata VI and V). Dwellings were traced and excavated not only in Strata V and VI, but also in Stratum VII—the dwelling there turned out to be unusually large and very distinctive in its arrangement. In the dwellings of Stratum VI were found burials of a dog and a person and a multitude of different stone artifacts accompanied by late Pleistocene fauna (Dikov 1973, 1976). In 1974 excavations were begun (and in 1975 continued) in another multi-component site—Ushki V (4), which contained Paleolithic Strata VII, VI, and V (Dikov 1975).

Especially interesting and productive were investigations in the flood zone of the Kolyma hydroelectric dam. Here, on Maliy Siberdik (168) and Kongo (169) Creeks, sites of the relict Paleolithic were found in 1971. These were excavated between 1972 and 1975. At these sites were the first choppers—cobble tools trimmed along the edge on one side—found in extreme Northeast Asia. These were very similar to Lower and Middle

Paleolithic choppers of South and Southeast Asia (as well as to later choppers of Mongolia, Yakutia, and Priamurye), on the one hand, and to even later choppers of North America, on the other. These Kolyma choppers now permit the placement of a "bridge" between early cobble cultures of Asia and America (Dikov 1974d; Dikov and Dikova 1976).

At the present time, archaeological study of Northeast Asia is continuing with ever increasing intensity. The organization within the Northeast Interdisciplinary Scientific Research Institute (Far East Science Center, Academy of Sciences, USSR) of the Northeast Asian Interdisciplinary Archaeological Expedition (under the author's direction) especially contributes to this. Its detachments work in the most diverse regions of Chukotka, Kamchatka, and the Kolyma, including the Commander Islands and Wrangel Island. These detachments, led by T. M. Dikova, A. A. Orekhov, T. S. Tein, V. I. Ruban and A. K. Ponomarenko, and V. N. Maliukovich, have already obtained substantial results, and uncovered many new and different archaeological sites in southernmost Kamchatka (275, 258, 263-269, 272-278) and in particular on Cape Lopatka (294-299), on the southeastern and northern coasts of Chukotka (190-198), in eastern Kamchatka (234-240, 242, 243, 245, 246, 248-250) and western Kamchatka (317, 318, 324, 326, 327, 329, 330), and on the Okhotsk coast (384) (Dikova 1974a, 1974b; Orekhov 1976; Ponomarenko 1976).

These substantial achievements in the archaeology of the extreme Far East are reinforced by the accomplishments of Soviet archaeologists in Yakutia, on the Okhotsk coast, and in the southern Far East, where earlier significant results have been obtained by A. P. Okladnikov. In recent years his students have discovered new and interesting sites there and traced previously unknown cultures.

Yu. A. Mochanov succeeded in finding a series of stratified sites on the Aldan River in Yakutia. These sites made the periodization of Stone Age Yakutia substantially more precise. On the basis of new materials Mochanov distinguished three ceramically different Neolithic cultures: the Early Neolithic Syalakh (fourth millennium b.c.), Middle Neolithic Bel'kachi (third millennium b.c.), and Late Neolithic Ymyiakhtakh (second millennium b.c.), in addition to the late Paleolithic Diuktai, Ikhinen, and Sumnagin cultures (the last of which belongs to the early Holocene) (Mochanov 1969a, 1970). These new Paleolithic materials from the territory of Yakutia are very important both for region's own early history and for a correct understanding of the early cultures of extreme northeastern Siberia itself (Kamchatka, Chukotka, and the Kolyma region) (Mochanov 1969b, 1970). These new Paleolithic materials from Yakutia are very important for its early history, as well as for a correct understanding of the development of early cultures of extreme northeastern Siberia—Kamchatka, Chukotka, and the Kolyma area (Mochanov 1969b).

R. S. Vasil'evskii, who has carried out, as we noted above, archaeological studies of the Old Koryak culture on the north coast of the Sea of Okhotsk, recently published his second book (Vasil'evskii 1973), in which, following W. S. Laughlin (1967), he examines several questions on the origin of the Aleuts and in which he supports the hypothesis of J. Malaurie on the early spread of sea mammal hunting along the northern shores of the Pacific Ocean (Malaurie 1970). The author of this small but interesting book shares our opinion.

expressed earlier, about strong Asian influence on the Old Bering Sea culture by Asiatic cultures, in particular, the Ust'-Bel'skaia (Dikov 1971b:33; Vasil'evskii 1973:212), and about the fact that not all so-called early Eskimo cultures are Eskimo with regard to ethnicity (Dikov 1972b:107; Vasil'evskii 1973:210).

Finally, as an analog to our investigations in the Northeast in those aspects that concern early Aleut history, there is the very interesting work done by Soviet-American expeditions led by Academician A. P. Okladnikov and W. S. Laughlin in the Aleutian Islands at early multi-component sites on Anangula Island in 1974 (Laughlin 1975; Laughlin and Okladnikov 1975:5-18).

Thus, we see how the accumulation of archaeological materials has occurred from stage to stage and how the development of the problems connected with those materials have proceeded. The accumulation of new archaeological materials was stimulated by the realization of the importance of the early history of the Northeast, but at this time there emerged a lack of balance between the quantity of materials and the quality of their summarization. The exceptionally important and urgent problem of the development of early cultures in Northeast Asia, at the crossroads with America, can now possibly be significantly deepened. These new and rich archaeological data require theoretical summarization and understanding.

Following up on the results of the preceding archaeological investigations, and keeping in mind the mentioned lack of balance, we set about executing the basic tasks of our investigation. The first task—to which this book is dedicated—is a full description of the archaeological sites found and studied by the author, substantiation of the supporting stratigraphy, and separation of the supporting cultural complexes. The second part of this work, to be presented in a subsequent volume, will be dedicated entirely to the cultural-historical and ethnic interpretation of these sites and the early cultures that stand behind them.

# Archaeological Sites in the Kamchatka River Valley (1 to 37)

## Multi-Component Sites (Paleolithic-Neolithic, 1 to 4)

On the southern shore of Ushki Lake, which is joined by a tributary to the Kamchatka River and located approximately 18 km from the settlement of Kozyrevsk, we investigated four multi-component sites—Ushki I, II, IV, and V—beginning in 1961 (Figs. 4, 5). They have exceptionally distinct stratigraphy and are therefore keys to the periodization of North-east Asian sites. We will give a layer-by-layer description of these Ushki sites.

### *The First Ushki Site (Ushki I) (1)*

The site is located on Cape Kamennyi on the southern shore of Ushki Lake (Fig. 4). Cape Kamennyi has an elevation of 3.5 to 4 m above the normal water level of the lake. Here on a bedrock foundation lie dense conglomerates consisting of lightly rolled volcanic bombs. The conglomerates are covered by a layer of greenish-gray fine-grained sand about 0.3 m thick, and on this layer lie horizontal, stratified sandy-loamy deposits.

Below is one of the most complete profiles of the eastern wall of the excavation at Cape Kamennyi (from top to bottom, thickness in centimeters; see Figure 6). It was investigated by geologists N. A. Shilo and A. V. Lozhkin (Shilo *et al.* 1967).

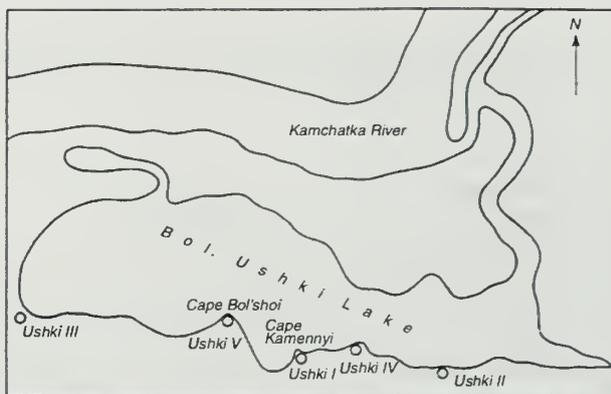
.....	cm
1. Sod layer . . . . .	8
2. Black sandy loam with occasional inclusions of charcoal (Cultural Layer Ia) . . . .	12
3. Volcanic ash (I) . . . . .	2-4
4. Black sandy loam becoming humified, in places carbonaceous (Cultural Layer Ib) . . . . .	2-3
5. Light-brown sandy loam . . . . .	4-5
6. Volcanic ash (II) . . . . .	1-2
7. Brown sandy loam, darker from the top, becoming humified, carbonaceous above (Cultural Layer Ic) . . . . .	5-6
8. Coarse dark-gray sand . . . . .	4-5
9. Volcanic ash (III) . . . . .	1-2
10. Volcanic sand . . . . .	1-2

11. Light-brown sandy loam . . . . .	5-6
12. Volcanic ash (IIIa) . . . . .	1-2
13. Light-brown sandy loam . . . . .	5-6
14. Volcanic ash (IV) . . . . .	6-8
15. Yellowish-gray sandy loam . . . . .	to 10
16. Volcanic ash (IVa) . . . . .	0-1
17. Yellowish-gray sandy loam (Cultural Layer II) . . . . .	to 50
18. Light yellow sandy loam (Cultural Layer III) . . . . .	10
19. Bright-yellow volcanic ash (V) . . . . .	2-5
20. Black humified sandy loam (Cultural Layer IV) . . . . .	10-15
21. Ocher-colored sandy loam . . . . .	5-10
22. Volcanic ash (VI) . . . . .	2-4
23. Brownish-yellow sandy loam with carbonaceous band in the middle of the stratum (Cultural Layer V) . . . . .	35-45
24. Ocherous-greenish-gray loam with carbonaceous band in the lower part of the stratum (Cultural Layer VI) . . . . .	20-25
25. Grayish-ocher-colored loam with bands of sand . . . . .	10-15
26. Pinkish-yellow loam . . . . .	6-10
27. Red ocher (Cultural Layer VII) . . . . .	1-2
28. Light-yellow sand . . . . .	0-1
29. Grayish-brown sandy loam with inclusions of charcoal . . . . .	5-6
30. Ocherous-greenish-gray sandy loam . . . . .	5
31. Humified bands of gray organic matter with inclusions of charcoal (Cultural Layer VIII) . . . . .	1-2
32. Ocherous-greenish-gray sandy loam . . . . .	5
33. Brownish-yellow loam . . . . .	5-7
34. Rusty-brown loam . . . . .	1-2
35. Greenish-yellowish-gray loam . . . . .	2
36. Greenish-yellowish-gray sandy loam . . . . .	5
37. Greenish-gray sand . . . . .	25-30
38. Weakly cemented conglomerate consisting of fragments of volcanic bombs . . . . .	over 50

Water level in the lake at the time of highest flooding (in the middle of July) reaches Stratum 14 (Ash Layer IV) and Cape Kamennyi then rises above the water only 0.5 m. From fall to March or April the water drops 3-3.5 m and during that time all of the cultural layers (not just the upper ones) are above water level. The height of the cape above water level reaches 3.5 to 3.8 m at that time.

In 1976, excavation at the first Ushki site reached 1,500 m<sup>2</sup> (Fig. 7). In 1962, 344 m<sup>2</sup> were opened to a depth including Stratum 23 (Fig. 9). Further deepening was hindered by ground water, as the excavations were conducted in summer, the time of high water level in the lake. As a

**Figure 4.** Location of the early sites on Bol'shoi Ushki Lake.



**Figure 5.** View of the Ushki sites.

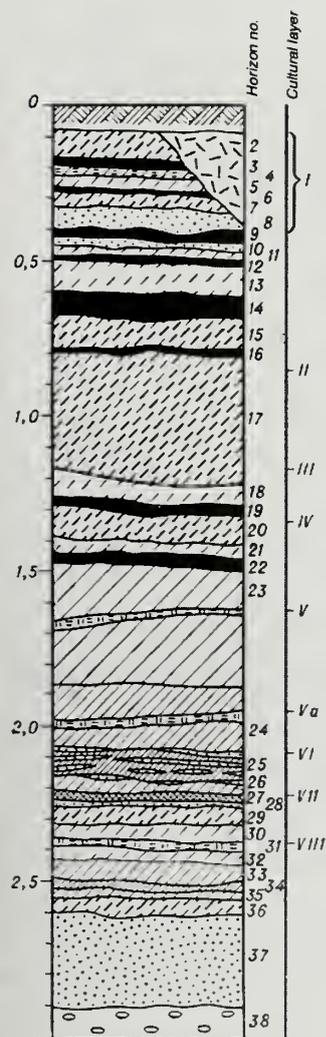


Figure 6. A generalized stratigraphy of the Ushki I site.

south and east of Cape Kamennyi, the upper layers, which did not contain any cultural remains, were cleanly removed by a bulldozer (down to Ash Layer V) (in Fig. 8 the boundary of the area opened by the bulldozer is designated by a thin dashed line).

result, only the upper, Neolithic Cultural Layers I to IV and, in part, late Paleolithic Layer V were investigated.

In 1964, excavations were continued at the site in the fall and deepened the former central part of the excavation to bedrock of the cape, with the area being expanded only insignificantly—toward the northeast, where in Stratum 27 an Upper Paleolithic burial was found (Cultural Layer VII).

In 1965 the excavation was substantially expanded and the total area reached 576 m<sup>2</sup>. Two areas were investigated. These were continuations of the former excavation, which was expanded out on two sides: to the northeast and to the southwest. In these two areas there were almost no finds from the upper layers (the layers simply pinched out). However, lower Layers VI and VII, belonging to two stages of the late Paleolithic, were filled with very interesting remains; not just artifacts, but hearths and even houses.

In 1971, after a long break, work was resumed at the site and its eastern part was excavated. This area contained only Paleolithic Layers VII and VI with a total area of 250 m<sup>2</sup>; the richest finds coming from the lowest, Layer VII.

In 1972-1973, work on the eastern and central parts of the site was continued, with areas of 180 m<sup>2</sup> opened in 1972 and 470 m<sup>2</sup> opened in 1973. As a result, the picture of the Paleolithic settlement in Cultural Layer VI, as well as of that in Layer V, was greatly expanded. The picture of the temporary Paleolithic camp in Layer VII was also broadened. The most valuable materials from this earliest cultural layer were obtained in 1974 from the southwestern part of the excavated area (220 m<sup>2</sup>), where the remains of a large house turned up.

During the course of the excavations it was found that all of the cultural layers except the lower ones—V, VI, and VII—had (by 1971) long since completely pinched out at the site (Fig. 9). Therefore, after placing

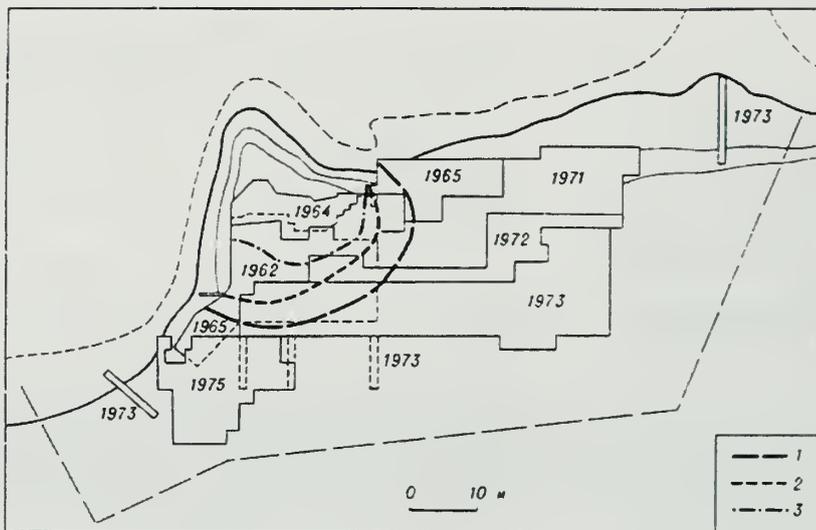


Figure 7. A plan of the excavations and boundaries of the cultural layers at the Ushki I site. 1—layer I; 2—layer II; 3—layer IV.

The first Ushki site, like the other sites on the shore of Ushki Lake, still conceals many very valuable materials and surprises, and excavations will be continued there.

Meanwhile we will provide here a few generalized, summary characteristics of the site's cultural layers (beginning with the earliest) and the finds revealed in them. In this section of the book, primary attention is devoted to the stratigraphy and general plan of the cultural complexes, while in the following, second part of this book—in the sections on Paleolithic cultures—there will be more detailed characteristics of the site's stone industry and some of its most significant objects.

*The seventh, Upper Paleolithic layer.*<sup>4</sup> This earliest Paleolithic layer at the first Ushki site is traced in the rosy-yellow loam (Stratum 26) at a depth of 2.1 to 2.2 m and is underlain by grayish-yellow sandy loam (Stratum 29) (see Fig. 8). The remains of a camp and a burial were preserved in the layer.

Among to the remains of the camp were traces of two dwelling complexes on opposite sides (western and eastern) of the excavation and a large amount of hearth stain in the broad expanse between them (Fig. 8).

4 Cultural Layer VIII (Stratum 31) is puzzling. It is given no discussion and Cultural Layer VII is identified as the earliest Paleolithic layer.—*Trans.*

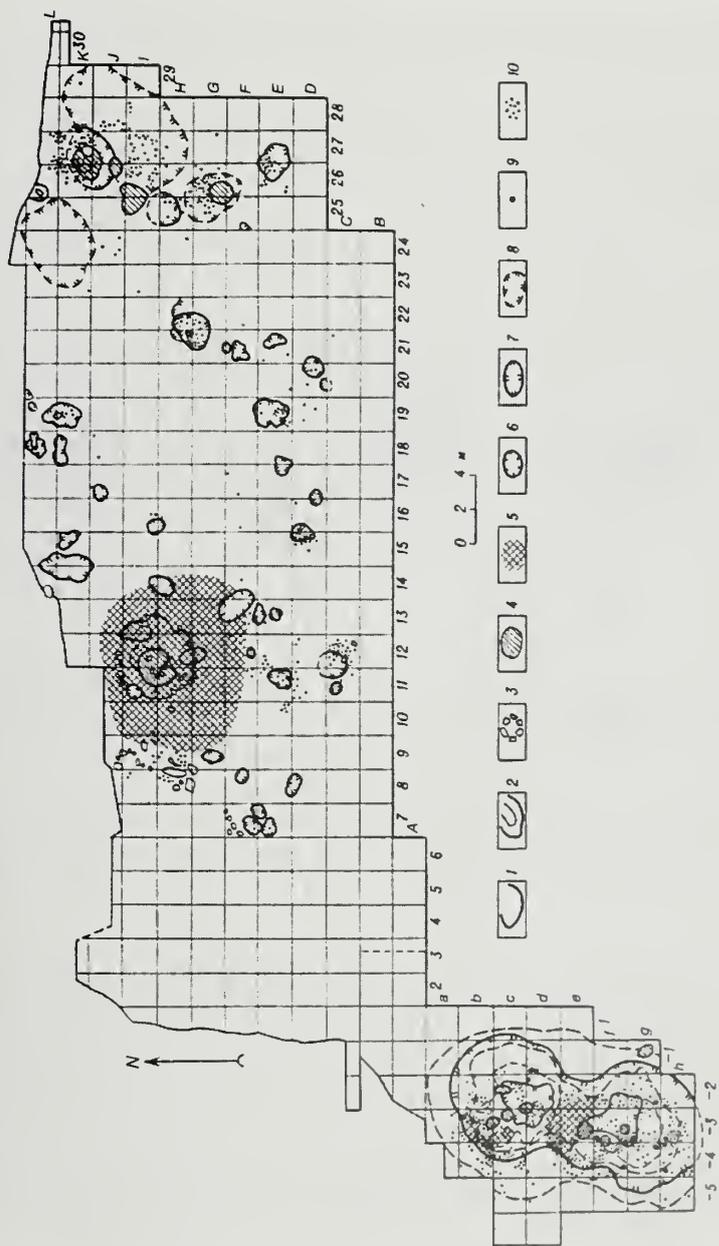
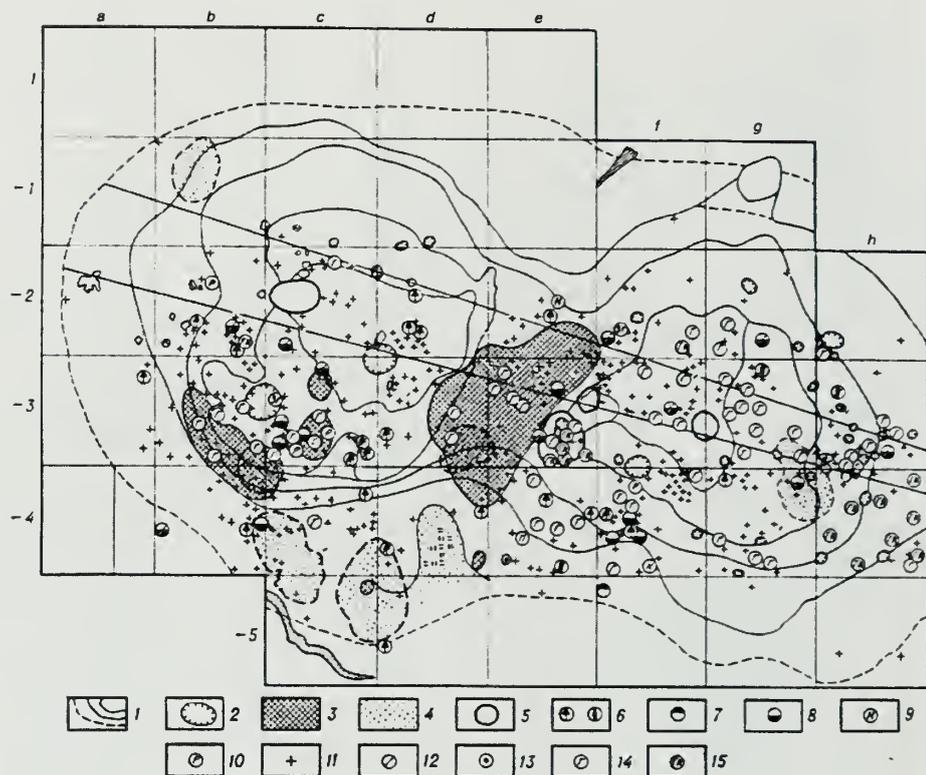


Figure 8. Plan of the seventh (Upper Paleolithic) layer of the Ushki I site. 1—burial pit; 2—concentric stains of ever increasing carbonization; 3—stones; 4—hearth stains; 5—red other stains; 6, 7, 8—contours of carbonaceous floor of houses and hearth stains; 9—pits (post holes?); 10—stone artifacts and flakes.



**Figure 9.** Plan of Paleolithic dwelling in layer VII of the Ushki I site. 1—contours of increasing carbonization; 2—pits and depressions; 3—red ocher stains; 4—sand lenses; 5—stones; 6—arrow points; 7—knife; 8—scraper; 9—core; 10—burin; 11—flakes; 12—split tools; 13—stone pendant; 14—hematite; 15—burned bone.

On the western side of the excavation were very definite traces of a large two-room surface dwelling with an area of over 100 m<sup>2</sup>. The preserved carbonaceous area of the house has a very distinctive outline. On the whole, the outer contour, which is weakly carbonized, is an irregular, slightly laterally depressed oval. The different zones are separated according to the increase in carbonization, and the narrowing of the stain becomes very noticeable in its middle part. The most intensive carbonization is formed by two large, completely isolated stains corresponding to the foundations of two large shelters annexed to each other. In each of these two areas, zones of ever higher concentration of charcoal that corresponded to the hearth fires could be observed (Fig. 9).

For determination of the dwelling's vertical profile, longitudinal and transverse cuts were examined. Judging by these cuts, the double dwelling was only slightly (approximately 20 to 30 cm) sunken into the ground. Each of the dwellings formed a basin, and within each basin isolated depressions and pits were noted.

Rather substantial lenses of pure sand (up to 2 m in diameter), evidently washed in after the destruction of the dwelling, as they cover all of the carbonaceous area, belong to the stratigraphic features of the remains of this earliest Paleolithic house in Kamchatka (Fig. 9). None of the ash layers above the dwelling were disturbed.

On the floor of the house abundant traces of red ocher were preserved. There was an especially large amount of it in the narrowest, middle part of the area; that is, between the shelters, as well as on the floor of the northern shelter. Also abundant were small pieces of a red dye mineral—hematite—which was very often encountered in the southern division of the double dwelling, where there was no ocher.

In addition to numerous flakes on the floor of the house, there were also 23 stemmed stone arrow points (a large number of them broken), 17 whole and broken andesite/basalt and flint knives, several scrapers, skreblos, burins, blanks of tools, sandstone grinding slabs, a core, and three very distinctive stone pendants. Traces of isolated animal bones were also encountered, and a relatively well preserved moose antler, chopped off at the base, was found in Square -2-a.<sup>5</sup>

Judging by the configuration of the charcoal stains and the location of the physical remains, the entrances into both rooms of the house were probably on the western side. Most of the stone artifacts were on this side, and even the hearths were located closer to this side.

On the whole, the two-roomed house investigated in Cultural Layer VII is reminiscent in its layout of the Paleolithic house at the Pushkari site, which was excavated and reconstructed by P. I. Boriskovskii (1953:89).

The remains of houses on the eastern side of the cultural layer had the form of large adjoining charcoal stains with rather blurred outlines. In the northern part of one of them (an area of about 60 m<sup>2</sup>), an internally more intensive stain with two lenses of burned bone fragments could be traced—clear signs that once very long ago the hearth of a surface dwelling burned here. Judging by the outlines of the external charcoal stain, if it had very irregular contours. In the extensive carbonaceous base of the house, many different stone artifacts were found, the largest number of which were concentrated near its hearth. There were stone beads, pendants and blanks for them, burin-like chalcedony points for making pendants, stemmed scrapers worked on both sides by pressure retouch, leaf-shaped knives and spear points, and many flakes and knife-like blades (Plate 1, Fig. 18a). Traces of ocher and bones were also preserved here.

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5 The reader who compares this translation with the original text should be aware that upper case letters along the side of the grid illustrated in Figure 9 (in the original) were reduced to lower case in the translation to conform with the lettering in Figure 8.—*Trans.*



**Figure 10.** Paleolithic burial in layer VII of the Ushki I site.

Over the whole area of this Paleolithic camp, among the campfires and in them, were traces of ocher, pieces of red hematite, stone flakes, knives, arrow points, scrapers, chalcedony burin-like points, whole pyrophyllite beads and their blanks, pieces of ground stone, gastroliths from ducks' stomachs, and traces of animal bones.

The central position in Cultural Layer VII is occupied by a burial, which has been characterized in sufficient detail in previous publications (Dikov 1967d, 1969d). We mention here that the burial was in a round pit 0.7 m deep and 1.8 m in diameter (Fig. 10), dug from a layer of fine sand (Stratum 28), and that the bones of the deceased were very poorly preserved—only in the form of traces. But the pyrophyllite beads and burin-like points of chalcedony (determined by Geologist M. L. Gel'man) found in the pit were very well preserved. The burial pit and the expanse surrounding it were richly strewn with red ocher. It was in this area around the burial pit and under the back dirt from it, which consisted of sandy loam and volcanic bombs from the layers beneath (38 and others), that we encountered the first stemmed projectile points, which later were given the name "Ushki" points (Plate I).

Judging by the stratigraphy, the burial belongs to a later level than Cultural Layer VII: the hearths of the camp were covered by back dirt from the burial pit. The early hunters and fishers probably lived here in tent- or wigwam-type houses and had open fires at different

times, occupying themselves with their everyday affairs. Then a burial was carried out in this Paleolithic camp and, possibly, the camp was temporarily abandoned.

Radiocarbon dates on charcoal from the fill of the burial pit are:  $13,600 \pm 250$  (GIN) and  $14,300 \pm 200$  (GIN-167).

*The sixth, Upper Paleolithic layer.* This stratum lies at the base of a grayish-yellowish loam (Stratum 24) and in the upper part of a grayish-greenish-yellowish dark loam with horizontal bands of sand (Stratum 25), at a depth of 1.8 to 1.9 m (Fig. 8).

In this cultural layer were preserved the remains of a large site, which is still not completely excavated. In an area of  $1,500 \text{ m}^2$  more than 13 different houses have already been revealed. They were distributed more or less evenly throughout the excavated part of the site, which can be easily seen by the distribution in our plan of the carbonaceous areas of their floors (Fig. 11).

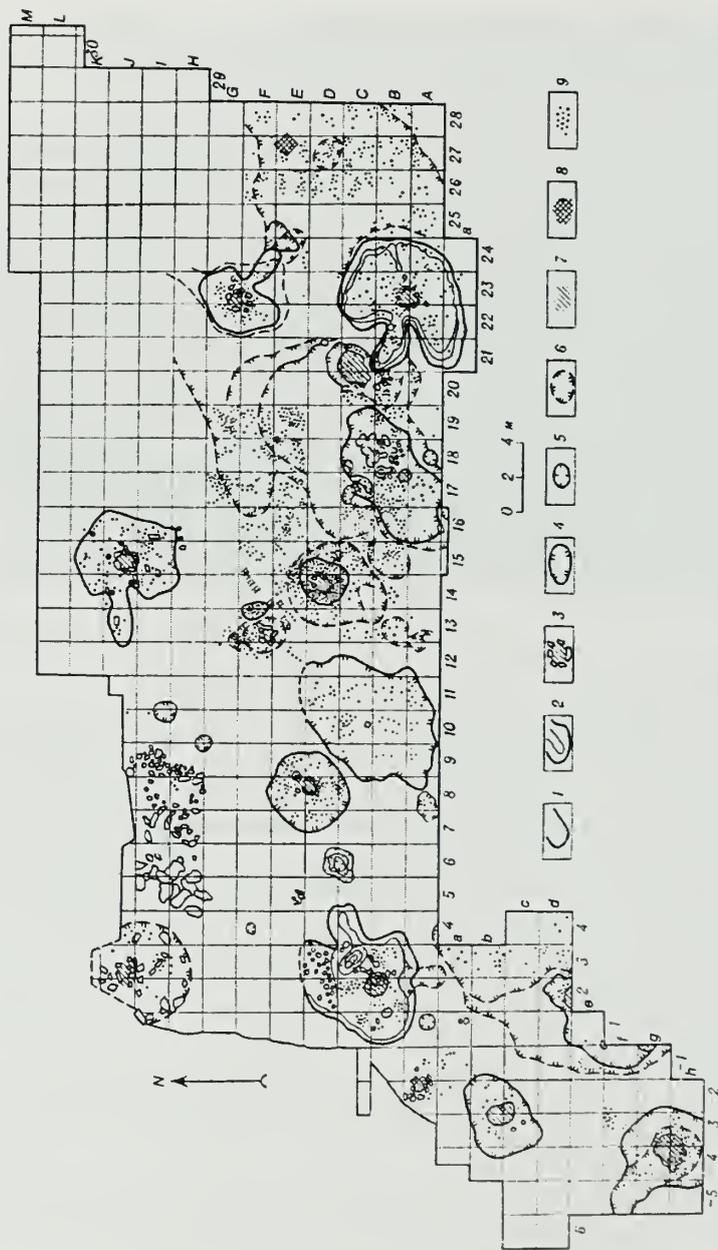
Due to the precise method of excavation, based on the Soviet experience of investigation of Paleolithic houses, the planar features of these remarkable Ushki dwelling structures were revealed with sufficient certainty to permit separating them into three basic groups:

- 1) slightly deepened houses of "mushroom-like" form in plan, with a circular hearth faced with stones, and with an entry corridor;
- 2) houses round in plan with a circular hearth framed by stones;
- 3) houses entirely on the surface, of irregularly oval outline, and a hearth not enclosed by stone.

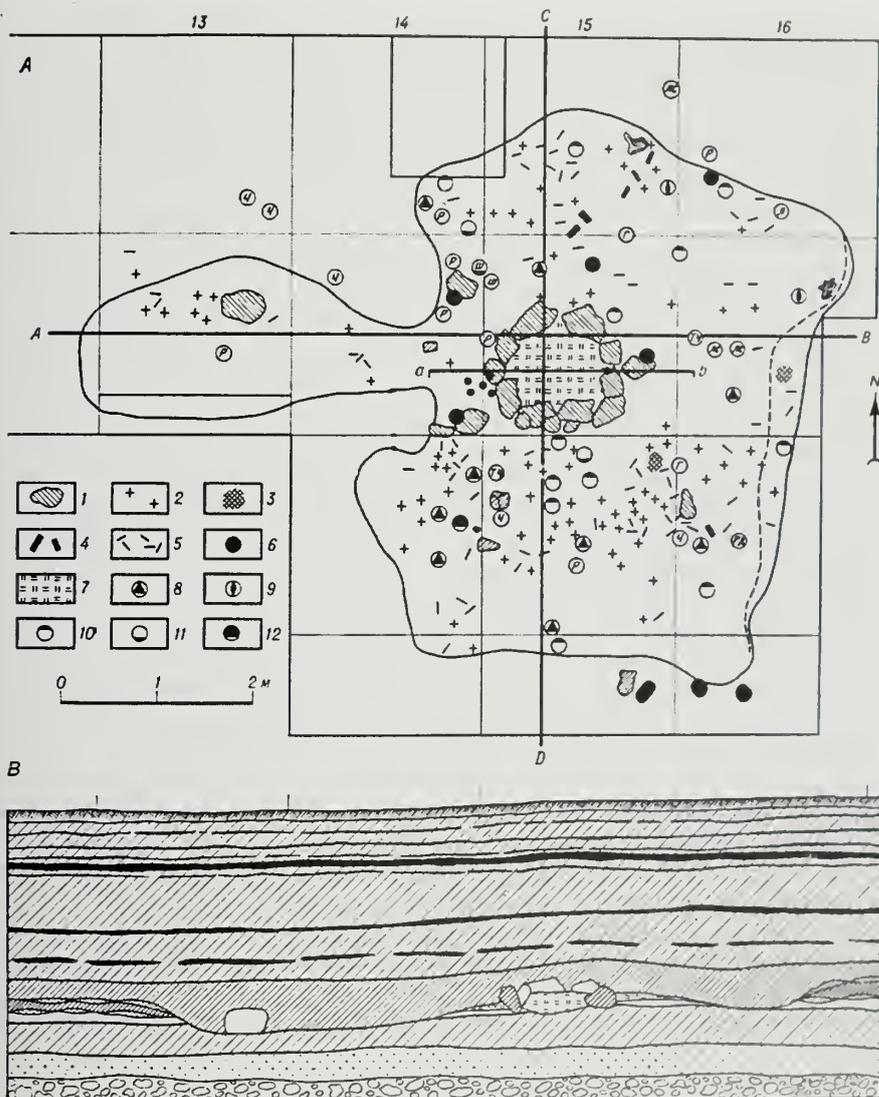
Four houses of the first type have been excavated at present: one in the northern part of the excavation, another in the western part, and two in the eastern part.

Here, as an example, are the methods of excavation and construction of the first house (by the way, this was the first house excavated in Layer VI, in 1965). Its contours, in plan (Fig. 12a), began to show through as Layer VI was being taken down and isolated artifacts were being discovered in it. The detection of the stain in the earth, which filled this very shallow pit house, became easier due to the fact that it was situated at the level of the very bottom of Stratum 24 and cut through the upper sandy band of Stratum 25, and thus stood out clearly on the background of gray sand surrounding it. Its slightly sloping, low edges were clearly apparent in the walls of two test pits placed in Squares 13-I and 14-K. They could be clearly traced in the cuts, in which the longitudinal and transverse profiles of the base of the house were clearly visible. The base of the house was filled with mixed grayish-yellow loam, and the depth of the floor did not exceed 30 to 40 cm from the level of the upper layer of sand (Stratum 25) (Fig. 12b).

During the process of excavating this house in order to reveal its edges, a combination of two generally accepted methods was used: 1) establishing the edges of the house in profiles, and 2) revealing them by excavating the floor from the center toward the edges. The latter was made easier by the fact that the whole floor of the house around its circular stone hearth was covered with a carbonaceous crust, which gradually faded to nothing at the edges of the house. Items found on the floor were not taken out until final appearance of the entire area of the house floor. As a result of the combination of the two named methods of excavation, the



**Figure 11.** Plan of sixth (Upper Paleolithic) layer of the Ushki I site. 1, 2—contours of houses slightly sunk in the ground; 3—stone hearth rings; 4—contours of carbonaceous areas of surface dwellings; 5—pits; 6—contours of carbonaceous stains; 7—hearth stains; 8—red other stains; 9—stone artifacts and flakes.



**Figure 12.** Plan and profile of the Paleolithic dwelling in layer VI of the Ushki I site 1—stones; 2—flakes; 3—red ocher; 4—bones; 5—knife-like blades; 6—pits; 7—charcoal; 8—wedge-shaped core; 9—arrow point; 10—scraper; 11—knife; 12—skreblo;  $\Gamma$ —hematite; P—burn; ПС—ski-shaped spall; III—ground knife; Y—striking tool; ПӨ—pyrite ore; ПЧ—whetstone.

very characteristic structural features of the first not very deep Paleolithic pit house discovered in Kamchatka were successfully distinguished with maximum accuracy. Its form in plan turned out to be very distinctive: in general, it was pentangular, with shallow rounded niches in the corners, a corridor-like entryway on the western side (along the lake shore), a round hearth of large stones placed tightly against each other, and posts supporting the whole structure, traces of which were revealed in the form of postholes in the middle (around the hearth) and along the walls.

The hearth was not situated strictly in the center of the house, but close to the entryway, so that two postholes (15 and 20 cm in diameter) on the western side of the hearth were located at the same time on both sides of the tunnel-like entryway into the dwelling. Each of these two posts had evidently been propped up by large stones, which now lay partially covering the postholes. Two other postholes (10 to 15 cm in diameter) were on the northeastern side of the hearth. It looked as if the frame of the smoke-hole entryway (a construction found among the Itel'men and Koryak, and at the same time among the Indians) had rested on these four posts. The remaining four posts (their holes 10 to 15 cm), which were located along the edges of the house, evidently served for securing the walls and supporting the rafters of the roof. The roof was most probably of animals skins and the rafters wooden, since there are no definite signs of any other kind of construction (such as large mammal bones, the usual covering for Paleolithic houses).

On the western and eastern sides of the hearth were found four or five pits of smaller diameter (about 5 cm), which evidently were used for setting up a trivet.

Study of the hearth's profile showed the complex structure of its bedding, which attests to long-term, but at the same time periodic, seasonal occupation of this house. Within the hearth, a thick layer of a charcoal/bone mass had accumulated, in which the three following fractions could be easily differentiated: on the top is a layer of ash and charcoal 10 to 15 cm thick, in the middle is a more compact layer of ash and charcoal about 5 cm thick, and at the very bottom is a mixture of ash, fine wood charcoal, and very fine burned remains of bones of various animals, among which can be distinguished small bones of birds and fish. The thickness of this very bottom fraction is about 5 cm. On the outside of the hearth, under a stone adjoining the hearth ring on the outside, seven thin carbonaceous bands separated by narrow sterile bands of gray-yellowish loam were clearly visible. The alternation of carbonaceous and sterile bands is indisputable evidence of periodicity in the occupation of this house.

It is entirely natural that such bands cannot be traced at a more substantial distance from the hearth: there the earthen floor was trampled down and the carbonaceous bands trampled and mixed with other things that lay on it. For this reason we observed in the central part around the hearth a rather substantial (to 2 or 3 cm thick) carbonaceous "crust" of the floor, which gradually goes away to nothing toward the back and side walls of the house, but is rather concentrated in the tunnel-like passageway. All of the artifacts were encountered in the carbonaceous layer around the hearth (in the hearth itself was only one knife-like blade).

Among the larger objects of domestic and economic use one should note the half-meter long stone anvil in the corridor-like entryway to the house and the two flaked stone blanks of smaller dimensions in the southern part of the house. Large stone tools lay in two groups near the last: close to the entryway had rolled a large basalt knife-like tool and a blank of a high-backed skreblo (Plate 6). The remaining stone inventory in the house was more or less equally scattered around from the hearth to the walls. These items were wedge-like cores, micro-blades, and ski-shaped spalls (Plate 3); oblong leaf-like arrow points (Plate 4:1, 2); biface knives (Plate 5:2); scrapers (Plate 4:4, 8; 5:9-13); small pieces of ground, abraded pumice (Plate 5:14, 16); lumps and stains of red ocher; a piece of a shovel made from the bone of a large animal, probably a mammoth (Plate 4:3); and traces of animal bones. In addition, the floor of the pit house was abundantly strewn with stone flakes and small knife-like blades, which were encountered even on the floor of the corridor-like entryway.

Approximately the same composition of finds occurred in the other three houses of the first type. However, in the northeastern pit house, which turned out to have three components, a burial of a domestic dog (determined by I. N. Vereshchagin) was found on the floor of its middle level, and to the west, a burial containing as yet unidentified bones. The largest mushroom-shaped house (Figs. 13a, 13b)—at the southeastern edge of the excavation—turned out to be poorest in finds. A common feature of all these houses, like the remaining Paleolithic Ushki houses, is the presence in their carbonaceous hearth mass of very fine burned bone fragments, including fish bones, which were probably salmon (as determined by E. A. Tsepkin).

At least four round areas with stone hearths belong to the second type of house. One of them was in the northwestern corner of the excavation, where there are rock outcrops (much used, by the way, in the construction of this house), and the remaining three were in the center of the excavation between the mushroom-shaped houses (their hearths were located in Squares 8-D, 13-F, and 14-D). The hearth with spread out stones in Square -2-a probably belongs to another house of such construction.

Finally, among the carbonaceous areas in the sixth cultural layer, the following five houses, which could be assigned to dwellings of the third type, were easy to distinguish: in the southwestern area of the excavation were two and between the western and southeastern mushroom-shaped houses on the southern side of the excavation were three more. The middle one of the five carbonaceous “tramlings” was the largest, with an area of about 48 m<sup>2</sup>. In its fireplace (in Square 10-C) a burned hearth stone was preserved.

It should be noted that sharp delimitation between the enumerated types of dwellings was not always possible and was to a substantial degree tentative. Houses of the second type could in some cases be badly preserved houses of the first type or are better spared variants of houses of the third type. But there are undoubtedly two extremely contrasting types present in this camp—the first and the third.

Judging by the remaining eroded carbonaceous areas in the southwestern and eastern sides of the excavation, there were also other dwellings in the camp that were entirely



**Figure 13.** Excavations of the Paleolithic dwelling in layer VI of the Ushki I site. a—view to the hearth from the side of the entrance to the dwelling; b—general view of the dwelling.

surface structures. They probably overlapped one another, but no clear traces of them were preserved.

In the eastern part of the excavation the cultural layer was comparatively weakly cut by a pronounced permafrost poly gonal cracking. The thawing gutters, which were narrow (to 15 or 20 cm) and shallow (about 10 to 15 cm), had wedge-shaped cross sections, and on their bottoms could be traced reddish ocherous sediments. In this part of the excavation we found a large carbonaceous area that ran beyond the eastern edge of the excavation, with a large hearth stain (about 2 m in diameter) in the middle of it (in Square 27-D), which also contained stone flakes, knife-like blades, a knife, and a wedge-shaped core within it, and two stains of red ocher nearby.

In order to complete the sketched picture of this most interesting Paleolithic site, it should be added that several campfire stains were also preserved in it (in Squares 10-H, 11-I, 8-A), as were several pits (in Squares 1-A, 18-A, 13-F, 4-F). In one such pit (in Square 4-F) was a cache of leaf-shaped stone points of excellent workmanship. Other stone artifacts were encountered outside the limits of the houses, as is evident by the plan of Layer VI (Fig. 12), but the majority of them were concentrated within the houses. In each of them, independent of the type, we found a wealth of artifacts and debitage from stone working, which amounted generally to wedge-shaped cores and the microblades and ski-shaped spalls removed from them, bifaces (knives and elongated leaf-shaped points), skreblos and scrapers, crudely flaked tools, and decorative pendants. In the layer were also found the remains of teeth of a bison and a lemming (as determined by N. K. Vereshchagin).

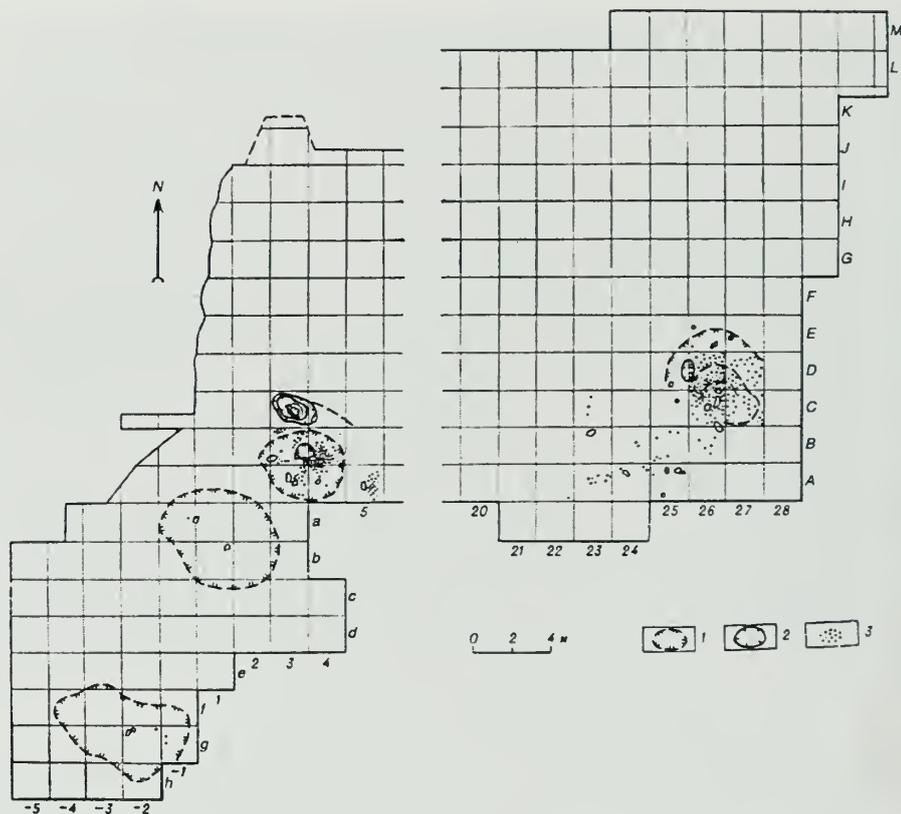
The radiocarbon age of charcoal from Layer VI:  $10,360 \pm 350$  (Mo-345) and  $10,760 \pm 110$  (MAG-219), as well as  $21,000 \pm 100$  (GIN-186). The last date was on a charcoal sample that lay in direct contact with volcanic ash, above the rise of the bedrock terrace (in Square 3-J).

*The fifth, final Paleolithic layer.* The fifth cultural layer could be traced in the lower part of the brownish-yellow sand (Stratum 23), at a depth of 1.3 to 1.5 m (Fig. 6). In this layer, which contains the remains of one of the latest Upper Paleolithic cultures in Northeast Asia, were traces of four surface houses, which were probably a kind of brush hut (Fig. 14).

Of the first house, which was found in the southwestern part of the excavation, the oval, completely flat area of its foundation was preserved, although it gradually pinched out at the periphery. Its was 7 m long and 4 m wide. There were no signs of "shoulders" or other features of a house pit. Of the hearth in the middle of the dwelling, only two burned stones (about 20 cm in diameter) were preserved. Not far from them were two knife-like blades and flakes.

Of the second house (in the northeastern part of the excavation), the carbonaceous area of the floor was also preserved, but it was rounded in plan, about 6 m in diameter. Nothing except two burned stones from the hearth and one flint flake was preserved in the house.

Of the third house, which was located beside the second one and to the northeast of it, the round and flat carbonaceous area of the base was preserved, gradually pinching out at the periphery. The diameter of this horizontal area was about 4 m. There were no signs of shoulders or other features of a house pit, although nearby in Square 3-C was an oval pit (2 x 1.5 m in plan) 0.6 m deep, dug from the level of Layer V. In this pit, which was filled with



**Figure 14.** Plan of the fifth (final Paleolithic) layer of the Ushki I site. 1—contours of carbonaceous stains in the foundations of surface dwellings; 2—pits; 3—stone artifacts and flakes.

mixed earth, were no artifacts, but traces of very decayed animal bones were noted. The primary artifacts found were concentrated in a carbonaceous area of the house, around the hearth, predominantly on its southern and eastern side. The hearth was evidently faced with stones, but was not preserved in its initial form. Only three stones were found near the rounded fireplace in the middle of the house, with the remaining four being strewn along the sides. All of these stones were burned. One of them—the largest (to 0.6 m in length)—had a flat surface and possibly served for frying fish (similar to the way in which this was practiced until recently among the local native population). We note that in the fireplace, in the burned bone mass, several burned fish bones, predominantly vertebrae and ribs, could be clearly traced. Artifacts were found around the hearth. These were three stone cores (one of

them wedge-shaped), knife-like blades, flakes, three stone scrapers, and one knife. It is interesting that to the south of the hearth were two clusters of obsidian micro-flakes, which is probably evidence of the retouching of stone artifacts here in the house. In four places traces of decayed bones were preserved. Around this house, finds were insignificant: a piece of a knife and a few flakes in Square 3-B and an ocher stain with a stone and several more flakes in Square 5-A.

Finds in the fourth house, on the eastern side of the site, were more numerous. Of it, a horizontal carbonaceous area of rounded outline without any signs of shoulders was preserved (Fig. 14). We show on the plan, by three concentric dotted lines, the extent of saturation of this area by charcoal. It was highest in the center where three large burned stones lay—hearthstones, of course—and lowest at the periphery. To the northwest of the hearth was a very shallow oval pit (slightly more than 1 m long and about 15 to 20 cm deep). Part of the stone hearth in this surface dwelling (in Squares 27-B, 27-D, 26-B) was probably shifted a rather substantial distance from its original place. Artifacts were distributed as shown in the plan (Fig. 14)—very thickly in and around the hearth. Finds were substantially fewer at the periphery of the house. The presence here of pieces of hematite attracted attention (in Squares 26-C and 26-D), as did splinters of burned bones, sandstone grinding stones, and small gastroliths from ducks' stomachs. Among the stone artifacts, flakes, knife-like blades, and wedge-shaped and ordinary cores predominated. Also, two arrow points (leaf-shaped), five scrapers, four knives, and a burin were encountered here (Plate 7). As in the first house, many micro-flakes of obsidian and flint from the retouching of stone tools were found near one of the stones (in Square 27-D).

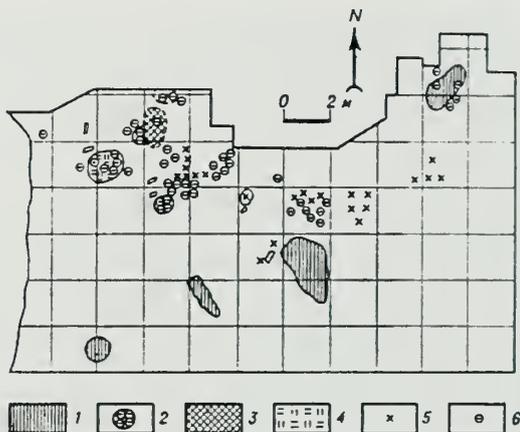
Concerning the area between the last two houses, finds there were few. They all gravitated toward the fourth house (Fig. 14). Here were three stone knives, two scrapers, two sandstone grinders, pieces of animal bones, flakes, and knife-like blades. In Square 25-B was found a lump of crumbling green glauconitic sandstone.

*Early Neolithic Layer IV.* This layer could be traced in the black buried soil (Stratum 20) directly under Ash Layer V (Fig. 8). In the western part of the excavation were two pits (Pits 1 and 2) with flat bottoms 0.3 and 0.4 m deep (the diameter of the first was about 0.5 m, of the second, 1 m), which contained pieces of charcoal (Fig. 15). In these pits were obsidian knife-like blades. A large oval ocher stain (0.7 x 1.3 m) is probably the remains of a burial, where also were found knife-like blades and traces of very damaged bones, probably human, though their preservation was so poor that it was not possible to confirm this. One of the knife-like blades was found *in situ* in a recess of a long bone rod. A large number of knife-like blades, three prismatic cores, and flakes were found in the northern part of the excavation (Plate 8).

*Middle Neolithic Layer III* was recorded ten centimeters above Ash Layer V, in light-yellow sandy loam (Stratum 18). In this cultural layer (in Square 1-G) were two stemmed, three-sided obsidian arrow points, and to the side, several knife-like blades (Plate 9).

*Late Neolithic Layer II* could be traced in the yellowish-gray layered sandy loam (Stratum 16) between Ash Layers IV and V. In three places the layer was damaged by pits

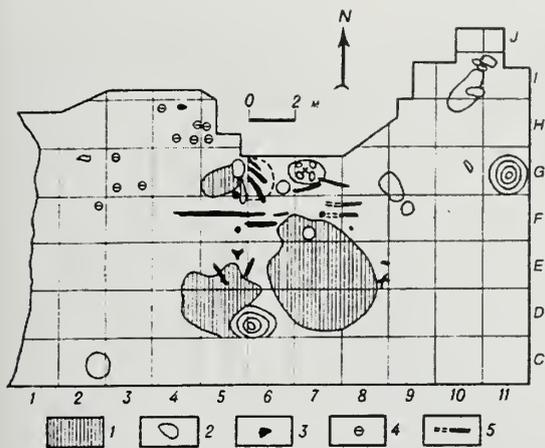
**Figure 15.** Plan of the fourth (Early Neolithic) layer of the Ushki I site. 1—pits of the upper cultural layer, 2—pits of this layer, 3—red ochre stain; 4—charcoal; 5—flakes; 6—knife-like blades.



cutting through it from above (from the pit house and the place of sacrifice). In the plan, these places are noted by vertical crosshatching (Fig. 16). In the central part of the excavation, 17 unburned wooden poles were successfully traced (15 to 20 cm in diameter), which were completely preserved, and four postholes of the same thickness were also traced. It is permissible to suppose that these are the remains of a destroyed house that was on posts. No signs of any other kinds of dwelling were found in the second layer. However, ten different pits are very definite indications that Cape Kamennyi was habitable during the period of the second cultural layer. Seven of them (1 through 7) are undoubtedly intended for economic use. They are different sizes and forms (Fig. 16), but within each were found fish bones and charcoal. It is difficult to determine what the other three pits (8, 9, and 10), which were rounded and bowl-shaped, served for. The feature that is presently unyielding to explanation is the fact that these pits are four-layered: within the largest (1.6 m in diameter) pit, which was lined with the remains of birch bark, three bowl-shaped depressions were constructed with successively smaller diameters (1.2 m, 0.8 m, and 0.4 m), located one within the other similar to a matryoshka doll, and also lined with birch bark. It can be assumed that these pits were receptacles for some kind of liquid. It is possible that liquid in such pits could be warmed up with heated stones.

In the western part of the excavation was found a large part of the stone artifacts: knife-like blades, two obsidian scrapers, and two fragments of ground yellow sandstone.

*Cultural Layer I (Remnant Neolithic).* To this layer were assigned all cultural remains found in the earth dug for the garden between the sod and Ash Layer IV (between Strata I and 12). The predominant part of the finds of this cultural layer belongs to the upper horizon, running directly under the sod (Fig. 8). The finds here are often very archaic in their appearance (for example, wedge-shaped cores and knife-like blades), which can be explained by mixing with lower Layers II, III, IV, V, and VI. The mixing of this layer is very evident.

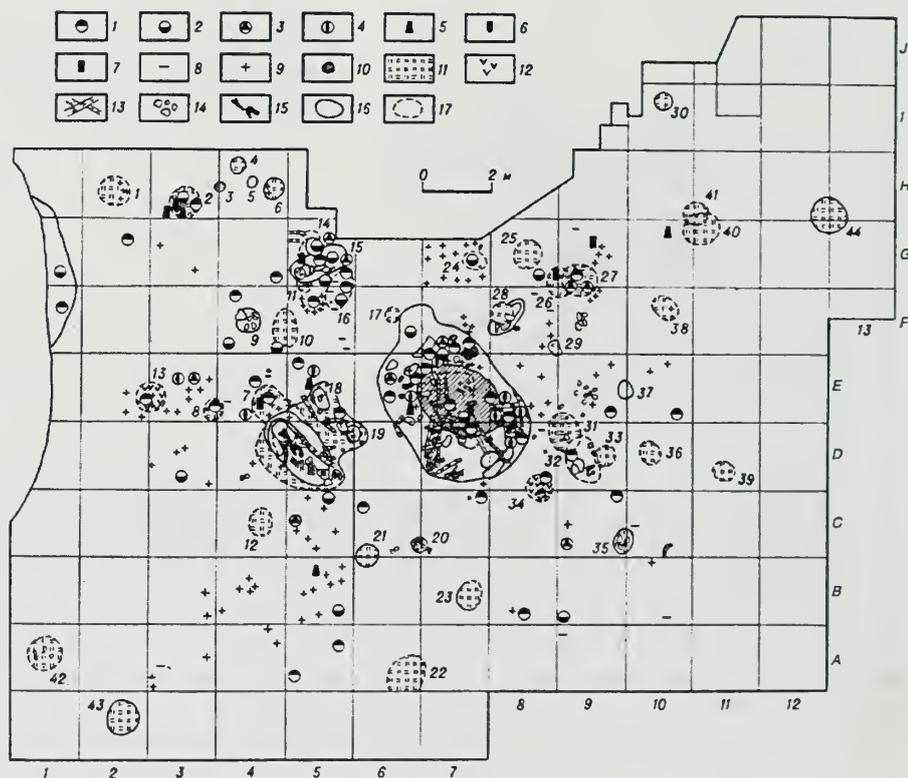


**Figure 16.** Plan of the second (Neolithic) layer of the Ushki I site. 1—pits of the upper cultural layer, 2—pits; 3—post remains; 4—knife-like blades; 5—burned poles.

This is confirmed by obvious disturbance of the underlying ash layers, which were cut through by a pit house and a pit, which will be discussed below. Only Cultural Layer VII is not penetrated by these pits. Because of this, the mixing of cultural remains from Layer VII is completely absent here.

The upper cultural layer contained the remains of a seasonal (winter) settlement of early fishermen (Fig. 17). In the center was a small pit house with an area of about 12 m<sup>2</sup>, beside which was a shrine structure, and around both of which was a multitude of fireplaces and food storage pits.

The camp of the upper layer on Cape Kamennyi perished in a fire and thus was fairly well preserved. The consequences of the fire appeared clearly before us when we excavated the pit house. Under the orange burned earth lay the completely charred poles of the house frame, and in places under them was birch bark, also charred. Between the poles and down to the floor was earth that was in places orange and in places bluish. The floor was covered with charcoal, which had on it, here and there, scraps of burned birch bark and thatching. Under the carbonaceous crust of the floor was the pinkish-yellow osseous mass of the hearth (Fig. 18). The arrangement of the fallen wooden rafters and poles of the earthen roof and the presence of postholes in the floor of the house around the central hearth permit the reconstruction of the kind of house with great certainty. It was a pit house of clearly Itel'men type: the rafters of the roof rested with the lower ends on the edge of the house pit and the upper ends on a rectangular frame that was supported by central posts. The roof was evidently covered by birch bark, and on top of the latter was sod and earth. The entryway was on the side toward the river and in the form of a short corridor. Above the fire was a smoke hole in the roof (among the Itel'men it served as a second entryway). The hearth itself was very large and occupied one-third of the floor area of the pit house. It was a rounded (to 2 m in diameter) accumulation of ash and burned bones—fish, bird, and other. The thickness of this



**Figure 17.** Plan of the first (upper) layer of the Ushki I site. 1—stone scraper, 2—knife; 3—wedge-shaped core; 4—arrow point; 5—axe; 6—burin; 7—prismatic core; 8—knife-like blade; 9—flake; 10—post holes; 11—charcoal; 12—pieces of bone; 13—charred poles; 14—stones; 15—charred model of a fish made of poles; 16—pits; 17—contours of fire places.

compact pinkish osseous mass reached one meter and consisted of four separate layers, evidently corresponding to the primary periods of occupation of the pit house (see the hearth profile of the pit house in Fig. 18). In the osseous hearth mass and around the hearth was a rather large quantity of flakes of argillaceous slate and quite a few tools, but, since the pit house had been cut into the lower strata, this was a mixed complex of the different cultural layers of the site. Here were eight knife-like blades, leaf-shaped bifacc knives of black siliceous slate, a triangular bifacc knife of green argillaceous slate, a trapezoidal adze of green siliceous slate, a miniature chisel of brown flint, two broken obsidian arrow points, three

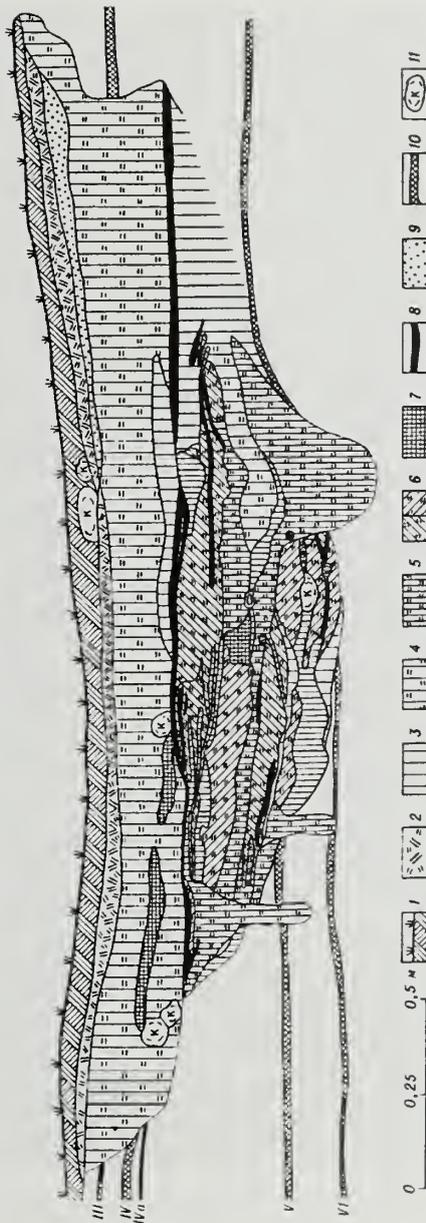


Figure 18. Profile through the dwelling in the upper layer of the Ushki I site. 1—sod, 2—bark; 3—loam; 4—light-brown loam with charcoal; 5—dark-brown loam; 6—pink mass of burned bone; 7—orange sub-hearth loam; 8—carbonaceous bands; 9—gray sand; 10—volcanic ash; 11—stone.



**Figure 18a.** Stone arrow points, burin-like points, pendants, and a chalcedony knife from Paleolithic layer VII of the Ushki I site in Kamchatka.

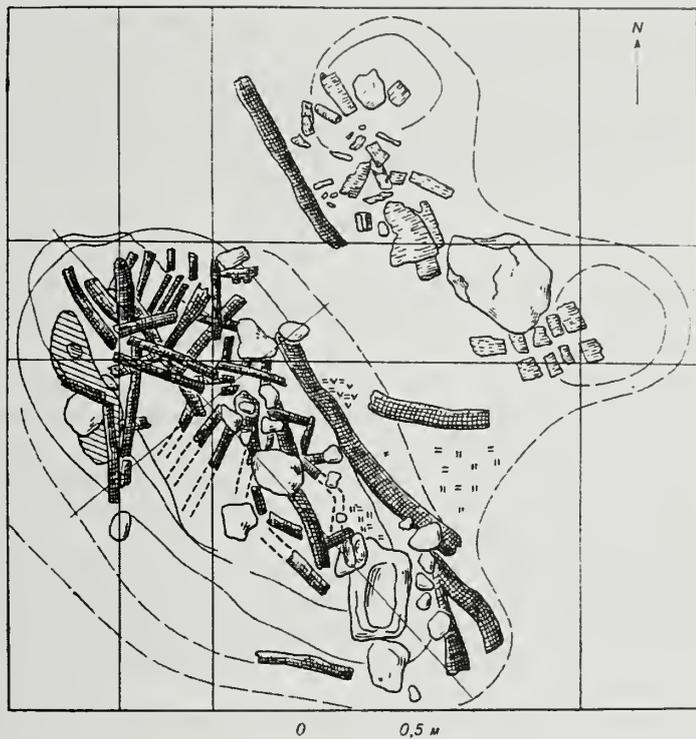


Figure 19. Plan of the sacrificial structure in the upper layer of the Ushki I site.

dihedral and two lateral burins of siliceous slate, five wedge-shaped cores of siliceous slate and one of green flint, several skreblos (some of them with a high back), ten varied scrapers including end scrapers, a piece of ground stone, a bone knife with a hole, two bone points, a two-barbed harpoon, a fragment of a bone needle case, and a bone fish-like figurine (Plate 10).

The storage pits had varied construction. In each of them were the remains of fish bones, charcoal, and stones.

The largest pit (in Square 5-D), which was substantially different from all the rest and covered with the remains of the burned roof, was very reminiscent of a sacrificial place (Fig. 19). It is notable that in its different levels traces of fires with abundant remains of burned fish bones were preserved (Fig. 20). But most interesting is that at a depth of 1.2 m between two hearth bands were the remains of burned poles, as if forming a schematic image of a fish

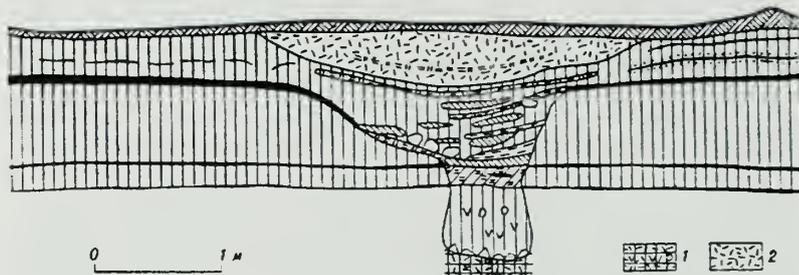


Figure 20. Profile through the sacrificial pit in the upper layer of the Ushki I site (see conventional symbols in Figure 18).

(Fig. 19). In the head part (destroyed) of this fish-like layout of poles were the head bones of fish, and on a piece of birch bark, which evidently represented the stomach, were fish bones from the remaining part of the skeleton. There were few stone artifacts in this pit, and they almost all were found along its edge: a pieces of an adze butt of black siliceous slate, a flint core, two scrapers, and two knife-like blades.

In addition to the 14 pits, in the upper layer of the site were found the remains of 30 separate fireplaces. Since all the rest of the physical remains of human activity were located in the upper cultural layer, this permits calculating its general plan (Fig. 17). The bone remains found among them, judging by V. I. Tsalkin's determination, belong to reindeer (3/1), fox (3/1), otter (1/1), and birds (23).

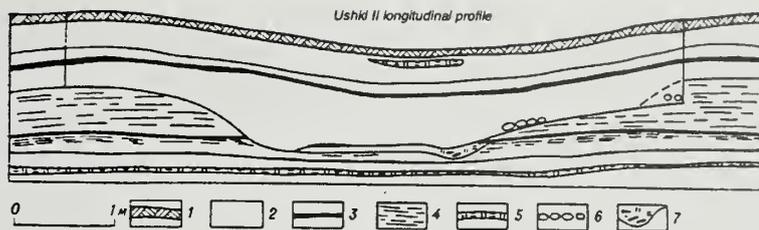
Radiocarbon dates on charcoal from Cultural Layer I are  $235 \pm 145$  (Mo) and  $675 \pm 80$  (LE-70).

### *The Second Ushki Site (Ushki II) (2)*

This site is located 500 m east of the first site (Fig. 5). It has five layers and in the upper part has precisely the same stratigraphy as the first site.

In 1962, an area of  $48 \text{ m}^2$  was excavated to a depth of 2 m at this site. At that time the stratigraphy of this site was studied, all its cultural layers were revealed down to the final Paleolithic, which corresponds to Layer V of the First Ushki site (Fig. 21). In the upper layer a hearth was found, in Layer II was a small pit house, and in the bottom, final Paleolithic was found a cluster of stone artifacts, which also attest to the presence of some kind of house, evidently of a surface type.

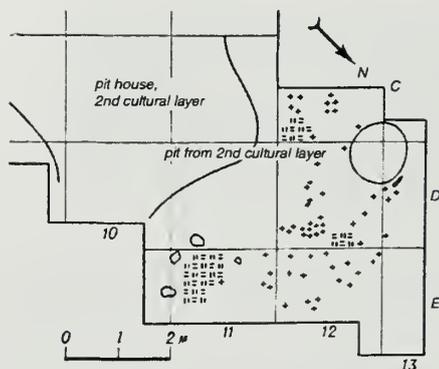
In 1964 rather substantial excavations were undertaken here, as a result of which the total area of excavation reached  $260 \text{ m}^2$ . Along both sides of the previous excavation  $212 \text{ m}^2$  were opened up, as a result of which the excavation took on the outline of a regular rectangle 26 m long and 10 m wide stretched along the shore (Fig. 22).



**Figure 21.** Profile of the Ushki II site. 1—sod; 2—loam; 3—volcanic ash; 4—laminated bands; 5—carbonaceous stains; 6—stone; 7—hearth with duck bones.

The stratigraphy of this whole area was by and large the same as at the First Ushki site. The following sequence of strata, though almost identical to all areas of the excavation, is peculiar to Second Ushki site (Fig. 21).

	cm
1. Sod layer . . . . .	8
2. Black humified sandy loam, in places carbonaceous (Cultural Layer Ia) . . . . .	3-10
3. Volcanic ash (I) . . . . .	2-4
4. Black humified sandy loam, including charcoal in places (Cultural Layer Ib) . . . . .	2-3
5. Light-brown sandy loam. . . . .	4-20
6. Volcanic ash (II) . . . . .	1-2
7. Brown sandy loam, in places with banding of coarse dark-gray sand in the middle of the layer. . . . .	5-25
8. Light-brown sandy loam, containing a band of volcanic ash (III) in the upper part, underlain by a band of volcanic sand, below which were the remains of material culture (Cultural Layer Ic) . . . . .	10-30
9. Volcanic ash (IV) . . . . .	6-10
10. Yellowish-gray sandy loam with a band of volcanic ash (IVa) and cultural remains (Cultural Layer II) in the upper part . . . . .	60-70
11. Light-yellow sandy loam with cultural remains in the upper part (Cultural Layer III) . . . . .	6-10
12. Volcanic ash (V) . . . . .	4-6
13. Black sandy loam, humified, with cultural remains (Cultural Layer IV) . . . . .	10-15
14. Ocher-colored sandy loam. . . . .	5-15
15. Volcanic ash (VI) . . . . .	2-4
16. Brownish-yellow loam. . . . .	15-30
17. Gray loam, dense, compact, with cultural remains (Cultural Layer V) . . . . .	25-30



**Figure 22.** Plan of the fifth (final Paleolithic) layer of the Ushki I site (see conventional symbols in Figure 17).

As the exploratory trench in Squares 7-D, 8-D, and 9-D showed, the sandy loam and loam bands without volcanic ash and without cultural remains went to a total thickness of 50 to 55 cm (Strata 18, 19, and 20). Still deeper was a layer of greenish-gray stream sand (Stratum 21) (25 to 30 cm), under which to a great, unmeasured depth lay also stream conglomerate, consisting of pieces of weakly rolled volcanic bombs (Stratum 22).

We will now examine the results of the excavation of each of the five cultural layers.

*Final Paleolithic Layer V.* This layer was covered by an unbreached ash band and therefore was unmixed. In it were four small pits (15 to 25 cm in diameter and 20 cm deep) and traces of a fireplace. A rather substantial number of stone artifacts and flakes was encountered here (Fig. 14).

The stone artifacts are represented by the following categories: wedge-shaped cores (Plate 11:1-6), pear-shaped end scrapers (Plate 11:12, 16, 17, 18),<sup>6</sup> unmodified short end scrapers (Plate 11:13, 15, 17), fragments of narrow leaf-shaped arrow points (Plate 12:10, 11), unworked subprismatic and subconical cores (Plate 12:2, 8), lamellar flakes (Plate 12:1, 3, 10),<sup>7</sup> and knife-like blades (Plate 11:18). In addition, a large skreblo, which was made from a flat cobble crudely flaked on one side along its longitudinal edge (Plate 12:9), was found, as were several tool blanks.

There are 41 flint spalls of different colors, 13 flakes of argillaceous slate, 3 pieces of pumice, and 8 small knife-like blades of siliceous slate.

*Early Neolithic Layer IV.* This layer could be traced directly under Ash Layer V in the black humified sandy loam (Stratum 14), in its uppermost part. The location of the finds

6 There appears to be some confusion with regard to assignment of Plate 11:18. See end of sentence.—*Trans.*

7 Reference to Plate 12:10 does not appear to be correct.—*Trans.*

(Fig. 23) in this level was entirely the reverse of that observed in the third cultural layer located above. In the northwestern half of the excavation, the finds were comparatively rare, with most of them being concentrated in the southeastern half. So many flakes, knife-like blades, and various stone artifacts were found in the southwestern half and were distributed so thickly there that there is hardly any doubt that this was the remains of a floor of some kind of surface dwelling such as a tent or brush hut. Judging by the dimensions of this cluster of finds, the area of the house was quite large—no less than 60 m<sup>2</sup>. In the middle of this area filled with the remains of human activity, were traces of a hearth in the form of a rounded carbonaceous stain 60 cm in diameter. Nearby were small, split calcined bones and a completely flat round pebble as if carved (in Square 7-C). Everywhere around was a multitude of very small stone flakes—a clear sign of intense production activity: the final working and retouch of stone artifacts was done here. Among the stone artifacts encountered in all this abundance of debitage and half-made tools—knife-like blades (at times quite large, to 16 cm) and prismatic, conical, and pencil-shaped cores (Plate 14)—were knife-like blades worked by retouch or by the removal of burin spalls (Plates 15:4, 5; 14:1-5), which were found in Squares 7-C, 8-C, and 6-D. Also found were completely retouched arrow points of rhomboid cross section with short triangular stem, in Squares 7-B, 7-C, 7-D, 8-D, and 8-E (Plate 16:2-6, 11); one large, crudely retouched arrow point with broad stem (Plate 16:1); and two fragments of partially retouched arrow or dart points, made from a large knife-like blades, with broad and long carelessly designed stems (Plate 16:7, 12). There is one bifacially retouched, leaf-shaped arrow point (Plate 16:4), as well as a large and massive leaf-shaped biface knife (Plate 15:9) and a piece of such a knife of smaller size (Plate 16:12). The scrapers found are predominantly end scrapers (Plates 16:13, 16; 15:1-3), in Squares 8-B, 7-D, and 8-A. Especially remarkable among all these finds is an adze-like/skreblo-like tool flaked on all sides and without any signs of grinding (Plate 16:11), in Square 8-D. Ground tools were not found in this layer, nor were ceramics.

It should especially be noted that this layer is unmixed, since there are no pits from this level that disturb the lower ash bands.

*Neolithic Layer III.* This layer was noted immediately above Ash Layer V in the light-brown sandy loam (Stratum 12), which reached a thickness of about 10 cm.

A large part of the finds was compactly concentrated in the northwestern part of the excavation where the remains of three fires, one pit, and a ditch were preserved (Fig. 24). One of these carbonaceous hearth stains was opened only partially, as a large part of it went beyond the boundaries of the excavation (in Square 18-E). Another was rounded, about 70 cm in diameter (to 5 cm thick), and was located in the center of an area strewn with flakes, micro-flakes, knife-like blades, various stone artifacts, and pieces of bones. In this place (in Square 15-D) the stain was the remains of the hearth of a surface dwelling that was once here, on the floor of which all these things had been left. This house had a rather substantial area—no less than 50 m<sup>2</sup>. It was bounded on the west by an artificially made ditch 5 m long and 50 to 70 cm wide and dug out above Ash Layer V to a depth of 15 cm so that the named ash layer was cut by it and thrown to the sides. A third hearth stain of the same form and size

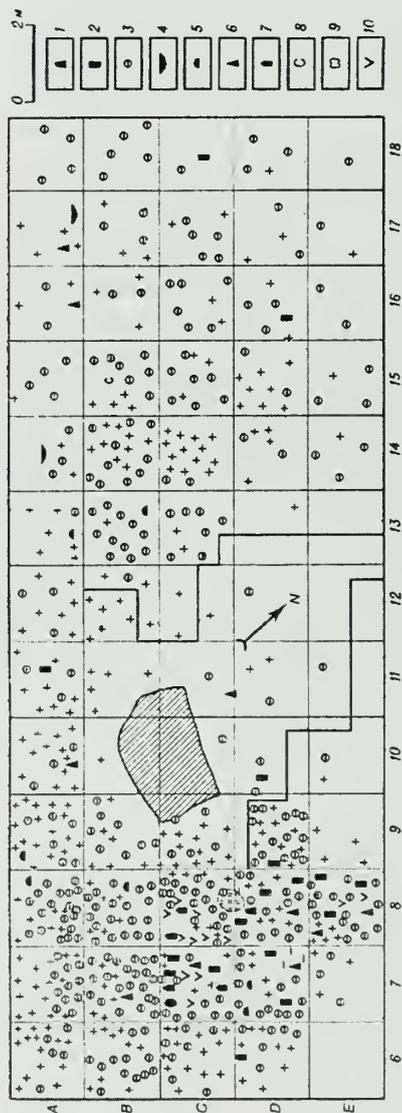


Figure 23. Plan of the fourth (Early Neolithic) layer of the Ushki II site. 1—axe-adze, 2—core; 3—knife-like blade; 4—knife; 5—scraper; 6—arrow point; 7—burn; 8—spall from a core; 9—weight; 10—pieces of bone.

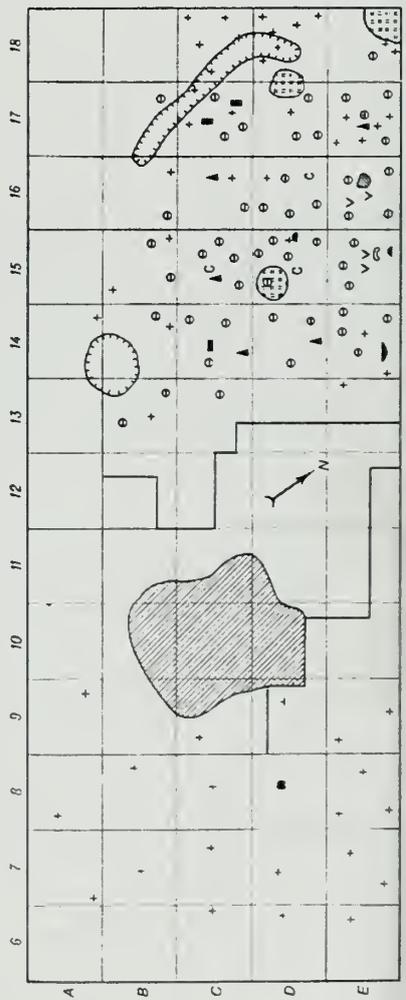


Figure 24. Plan of the third (Neolithic) layer of the Ushki II site (see conventional symbols in Figure 23).

as the second was found by the inside edge of this ditch (in Squares 17-D and 18-D). The large rounded bowl-like form of a pit 1.7 m in diameter and 0.4 m deep was found on the southern side of this cluster of finds, immediately beyond its boundaries.

Among the stone artifacts collected in the area of the presumed house were a prismatic obsidian core (in Square 14-C) and two pencil-like cores (in Square 17-C), which is completely natural, considering the abundance of knife-like blades here. Four three-sided obsidian arrow points (Plate 17:1-3) were also found here, in Squares 17-E, 16-C, 15-C, and 14-C. In Square 14-E was a large obsidian knife/scrapper made on a large blade, retouched along the edge of the dorsal surface (Plate 17:17); in Square 15-E was a large adze-like/skreblo-like tool (Plate 18:1); and in Squares 17-C and 15-D were fragments of bifacially worked, broad, leaf-shaped knives—one in each square (Plate 17:6, 18). It should be noted that many of the 163 knife-like blades found here are not simply blanks, but rather true tools: in those cases when they were retouched along the edge (in one case, with complete bifacial pressure retouch) or when there is no secondary working on them at all (Plate 17:8-15). On one knife-like blade there is a stem, thus it probably served as an arrow point (Plate 17:16).

The southeastern half of the excavation was very poor in finds, there being only a few flakes. However, among them was a sinker made from a flat cobble by means of pecking four grooves crosswise on it for attachment.

The finds from this layer comprise a pure complex—without mixture from the lower cultural layers—which is convincingly attested by the lack of pits in this stratum that might have cut into the lower layers.

*Late Neolithic Layer II.* This layer can be traced in two levels: between Ash Layers IV and IVa, and below, in a layer of burned earth with charcoal, under Ash Layer IVa (Fig. 21).

Immediately under Ash Layer IV in the central part of the excavation were the remains of a pit house with an area of 16 m<sup>2</sup> (see profile and plan, Fig. 25) and a pit with charcoal.

In the central part of the pit house was a hearth pit (20 cm deep and 40 cm in diameter) filled with ash and charcoal. It was located in a broader basin where only a bit of charcoal and many duck bones were encountered. In another basin, located beside the first and to the east of it, fish bones predominated. Farther east, in a shallow (about 10 cm) depression that cut into Ash Layer V, was a large accumulation of knife-like blades and flakes. In the western part of the pit house were three piles (Fig. 26) of river cobbles, one of which was remotely reminiscent of the image of a tortoise. In one pile was a small group of the tiniest obsidian flakes (a sign that stone artifacts were retouched here). In the center of the pit house, four postholes were found (10 to 15 cm in diameter). One hole (15 cm in diameter) was found in the northeastern corner of the house. In addition to the flakes and knife-like blades found in this layer, there were a rhomboid obsidian arrow point (Plate 19:2), a labret (Plate 19:14),<sup>8</sup> and a piece of an adze butt.

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8 This does not appear to be correct.—*Trans.*

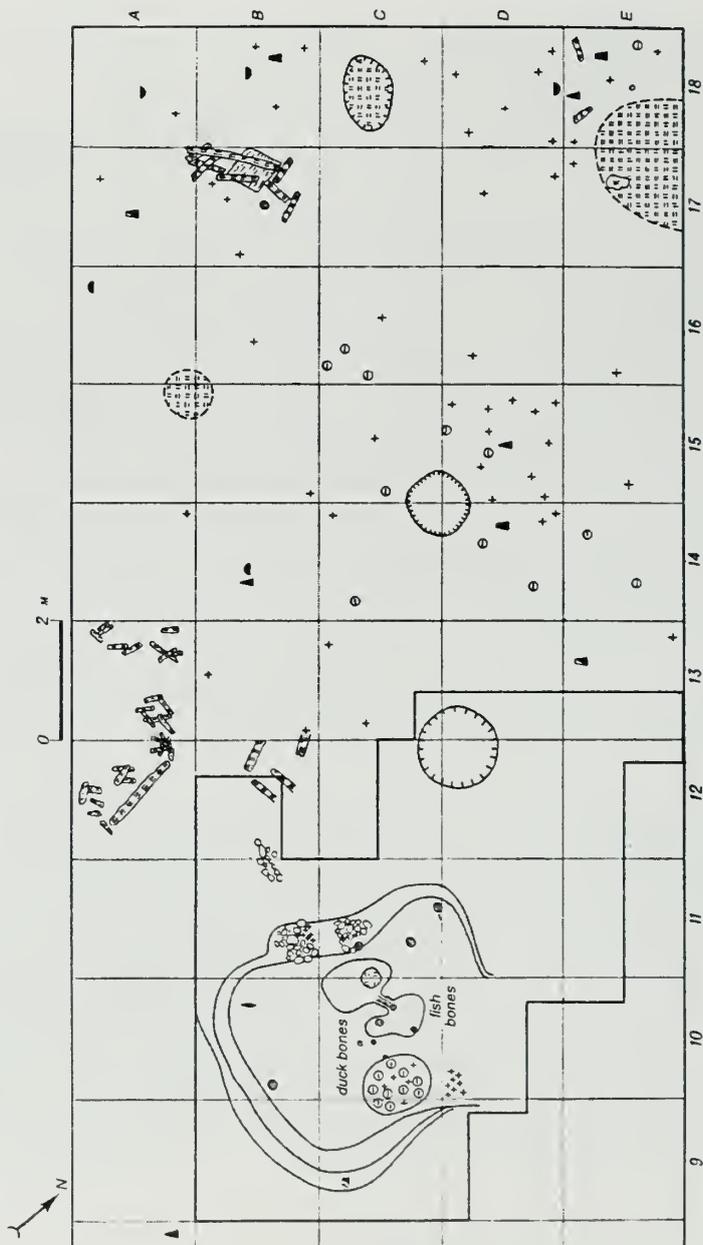


Figure 25. Plan of the second (Neolithic) layer of the Ushki II site (see conventional symbols in Figure 23).



Figure 26. View of the second cultural layer in the Ushki II site.

On the southwestern and northwestern sides of the excavation under Ash Layer IV lay burned poles and much charcoal (in Squares 16-E, 16-D, 16-B, 17-E, 17-D, and 17-B, and in Squares 12-A and 13-A)—clear traces that a surface dwelling burned here. A sample of charcoal for determining age was taken from Squares 17-D and 17-E between Ash Layers IV and IVa. Based on this sample, a date of  $1052 \pm 25$  (MAG-32) was obtained.

Physical artifacts from this upper horizon of the second cultural layer (between Ash Layers IV and IVa) were concentrated in two places. The first concentration was near the rounded hearth stain (of about 2 m in diameter) with bright-red baked earth in the center (in Squares 17-E and 18-E), which cut through Ash Layer IVa. Here lay a trapezoidal adze of argillaceous slate (Plate 19:13), a flat ochre-tinged cobble pallet for pulverizing ochre, an end scraper of brown flint (Plate 19:7), a piece of a bifacially retouched leaf-shaped obsidian point (Plate 19:1), flakes, and knife-like blades. The second concentration was around the empty conical pit, rounded in plan (1 m in diameter and 0.5 m deep), and covered, that is, completely lined around the edge and on the bottom, with ash from Ash Layer IV. Here there were many flakes, knife-like blades, and a leaf-shaped stone arrow point with a stem (Plate 19:3) in Square 7-15.<sup>9</sup>

In the lower level of the second cultural layer, under Ash Layer IVa, were the remains of another early camp. In Square 17-B, burned poles, large pieces of birch bark, and the base of a vertically dug-in post (15 cm in diameter) were taken out—these were probably from a surface structure like an Itel'men *balagan* [lit. "booth"]. Nearby (in Square 18-C) was an

<sup>9</sup> I am not sure what square is intended here.—*Trans.*

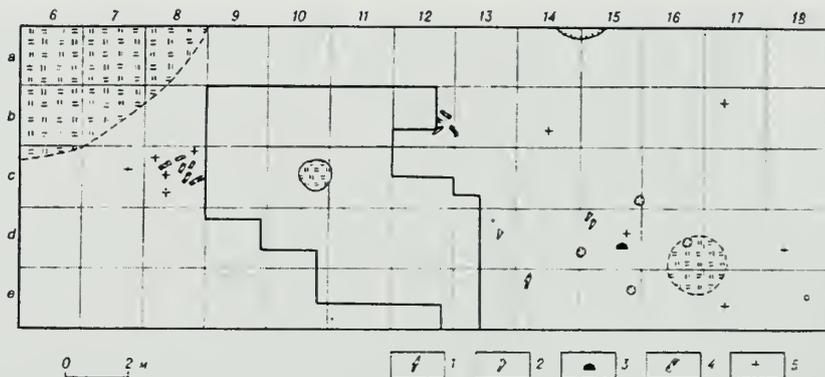


Figure 27. Plan of the upper layer of the Ushki II site. 1—bone leister, 2—remains of bone, 3—scraper, 4—burned wood and birch bark; 5—flake.

oval (1.2 x 0.8 m) and shallow (15 cm deep) charcoal pit, lined with a layer (15 cm) of burned earth. When excavating this, a small amount of burned birch bark was encountered inside. Close by were stone flakes and an adze with a pointed butt (Plate 19:12) in Square 18-C, a piece of a ground adze (Plate 19:14) in Square 17-A, a chalcedony end scraper (Plate 19:8) in Square 16-A, a leaf-shaped slate knife (in Square 18-A), and an obsidian end scraper (in Square 18-B).

This layer was mixed since the pit house was dug from this level, cutting into Cultural Layers III and IV.

*Cultural Layer I (Remnant Neolithic).* The upper sod layers on the northwestern half of the excavation were dug up under the garden, as a consequence of which the stratigraphy there was destroyed as far as Ash Layer III (Stratum 8). However, in the southeastern part, where the upper layers were not destroyed, in the black humified sandy loam (Stratum 4), a hearth with flakes around it was discovered in 1962. In 1964, a carbonaceous stain 18 m<sup>2</sup> in area, running to the south beyond the boundaries of the excavation, was found (Fig. 27). Evidently, these were the remains of a late surface dFigure 26. View of the second cultural layer in the Ushki II site. Well, beside this carbonaceous stain (in Square 8-C) were the remains of burned poles and a few flakes. Somewhat to the side (in Square 8-E), in the much disturbed garden layer, was a flat oval carring of slate and a two-barbed bone harpoon point (Plate 20:15). All these remains comprise the complex of cultural layer Ib.

The remains of Cultural Layer Ic, which is preserved in the northwestern part of the excavation in Stratum 8 (between Ash Layers III and IV), are represented by a carbonaceous hearth stain, on the edge of which is a pit 15 cm deep and 20 cm in diameter, lined with ash from Ash Layer III. Three more such pits were located close by, as if in the corners

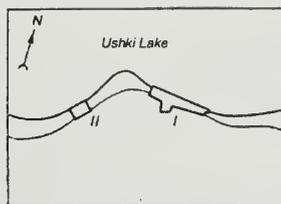


Figure 28. General plan of the Ushki IV site (west and east areas).

of a square, at a distance of 2.5 m from each other. In the same place were flakes, a knife-like blade, a stone scraper, and a bear's tooth. In Squares 12-B and 13-B lay burned poles, evidently the remains of a surface structure, and a piece of an obsidian spear point.

In Squares 13-A, 14-A, and 15-A was a large pit, which ran beyond the boundaries of the excavation and could be clearly seen in the profile of the longitudinal wall of the excavation. It was of modern origin. The residents of the fish processing plant preserved fish in it during the 1920s. Then the pit was covered, and with the tilling of the garden it became level with the ground surface.

It should be noted that, in distinction from the upper layer of Ushki I, this upper cultural layer is unmixed since no pits were dug from this level that would have gone into the lower layers (the underlying ash band was completely intact). Thus, the complex of finds from this cultural layer is absolutely pure, without mixing. It includes, if viewed as a whole, a simple bone harpoon point barbed on two sides (Plate 20:15), bifacially worked leaf-shaped knives (Plate 20:2), end scrapers (Plate 20:10-12), prismatic cores and knife-like blades (Plate 20:7, 17-21), and fishing sinkers of cobbles with grooves on four sides (Plate 20:14).

Among the faunal remains were the bones of dog (4/1), bear (2/1), and birds (2), determined by V. I. Tsalkin.

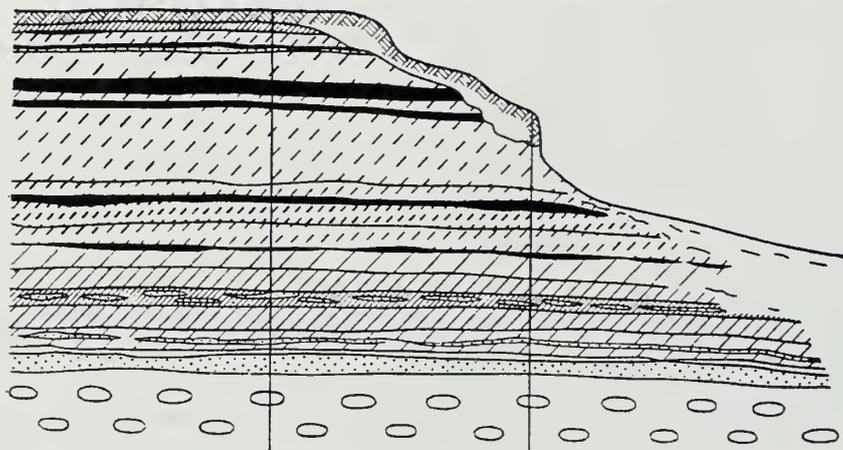
Radiocarbon dates:  $220 \pm 140$  (Mo-353) and  $675 \pm 80$  (LE-70).

### *The Fourth Ushki Site (Ushki IV) (3)*

This site is located on so-called First Cape on the southern shore of Ushki Lake between Cape Kamennyi (where the First Ushki site is located) and the Second Ushki site. Two small excavations were made here—the eastern and the western, located 25 m apart (Fig. 28).

#### The Eastern Part

*Upper Paleolithic Layer VI.* Excavations were made along the edge of the first flood-plain terrace in an area  $64 \text{ m}^2$  (20 m long by 2 to 6 m wide).



**Figure 29.** Profile of the southwest wall in the eastern part of the excavation of the Ushki IV site. Black designates ash bands.

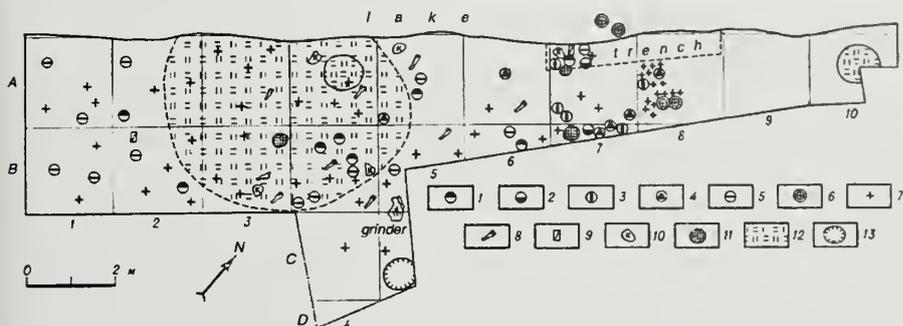
No traces of culture (except two fragments of knife-like blades) turned up in the upper horizons of our excavation. They were revealed only in the lowest level at a depth of 1.5 to 1.55 m in compact gray loam (Stratum 17), which here had a thickness of 20 to 30 cm. Throughout the whole thickness of this layer, impregnation by individual pieces of charcoal were noted. Extracting them was not successful as they were decomposing and only in the layer did they have form and color (upon attempt to take them out they instantly disintegrated).

The strata above is lithologically completely identical to the corresponding layers in the stratigraphic profile of the Second Ushki site. However, the average thickness of some layers here is somewhat less (see profile, Fig. 29), due to which the depth of Cultural Layer V is not 1.7 m here, but rather 1.55 m. The structure and color of the loam/sandy loam deposits and the seven ash bands that mark them are precisely the same as in the Second Ushki site. Deposits in the Second Ushki site and the lower strata (below Stratum 17), which we examined down to stream cobbles in a special test pit (in Squares 7-A and 8-A), are entirely analogous.

The stone and bone inventory was found predominantly in the base of the layer and 5 to 7 cm above.

No pits were found in the area of the excavation, except a pit about 0.5 m deep (in Square 5-C), in which nothing was found (Fig. 30).

A large rounded carbonaceous stain in the base of Stratum 17 (about 5 m in diameter and having an area of about 20 m<sup>2</sup>), found in the middle of the excavation, is, of course, the "floor" of a surface dwelling. The part of it close to the shore terrace, where the carbonaceous



**Figure 30.** Plan of the sixth (Upper Paleolithic) layer of the Ushki IV site (eastern area). 1—stone scraper; 2—knife; 3—arrow point; 4—wedge-shaped core; 5—knife-like blade; 6, 7—flakes; 8—bones; 9—blanks; 10—stones; 11—ocher stain; 12—fire place; 13—pit.

stain was more intense, had eroded into the lake. The layer of charcoal in this stain reached a thickness of 1 to 1.5 cm. With removal of the soil, the impression was created that this layer of charcoal was spread over the loose loam, after which many people had passed over it. As a consequence of this, wrinkles and pits had formed in the carbonaceous layer.

On the northern side of this trampled carbonaceous area, a rounded, 0.7 m in diameter, lenticular ashy hearth stain was revealed in the place, of course, of the hearth that was formerly here in the house.

Over almost the whole area of the carbonaceous stain were traces of bones. The bones were poorly preserved, which did not permit removing them. In Square 3-B was a piece of bone 8 cm long, which in contour was reminiscent of a long triangular arrow or dart point. In Square 5-A was a split in half piece of a long bone from a medium size animal (deer?). In Square 4-C was a scapula of possibly the same animal. Other small fragments of bone that were found could not be identified. The presence of bone was recognized by the color and structure of the stratum.

Near the center of the house was a large piece of ocher that was preserved in the form of a stain about 10 cm in diameter. Here were small stones about 10 to 15 cm in diameter—one by the hearth and two by the southeastern edge—and over the whole area of the stain lay flint flakes and several small and medium knife-like blades. In Square 5-A there was also a wedge-shaped flint core, and in Square 4-B, a piece of a core, a piece of a skreblo, and a piece of a blank of some kind of tool.

On the southwestern side of the house were two scrapers, a grinder of sandstone, flakes, and knife-like blades (Plate 21).

On the eastern and northeastern sides were traces of bone fragments, a stone similar to a grater, flakes, knife-like blades, and (in Square 5-A) a crude massive tool of elongate form

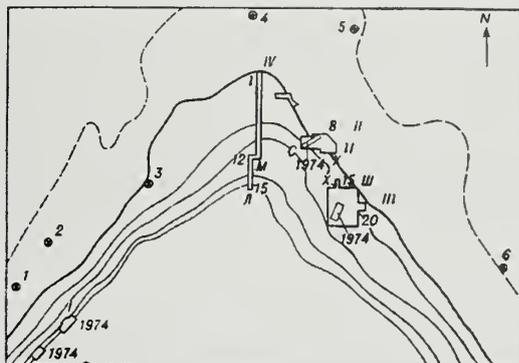
of sandy slate with coarse retouch along the edges on the dorsal side and skreblo-like appearance of the transverse edge (Plate 22:7).

Farther to the southeast, where the excavation narrowed to 2 to 2.5 m. at a distance of 2 m from the house, was a thick cluster of artifacts—the remains of a whole “workshop.” among which were many micro-flakes, which clearly attested to the preparation of tools on this spot. Here were five more wedge-shaped cores; a bifacially worked, leaf-shaped spear point; a broad, also bifacially finished, leaf-shaped knife; two elongated, leaf-shaped arrow or dart points worked on both sides; another, shorter point; an incompletely retouched, leaf-shaped knife on a broad flake; scrapers; flakes; small and thin knife-like blades; and two grinding stones with longitudinal grooves, of volcanic tuff (Plate 22). In the same place were found two pieces of fossilized ocher, as well as two ocher stains. The pieces of stone lying here (four pieces measuring 10 to 15 cm), in the same way as the micro-flakes, added an exceptionally productive character to this whole complex. Four meters farther to the southeast, separated from this place by a space without finds, was a carbonaceous stain, which also had no physical remains.

### The Western Part

*A Two-Component Upper Paleolithic House (Cultural Layer VI).* Here another Paleolithic house was found and excavated. At the beginning of the excavation (the end of August 1966) it was already uncovered to a significant degree—almost the whole two-meter thickness of the earth above it had eroded away and burned hearth stones of the house could be seen right by the water on the shore. However, a cut through the hearth perpendicular to the shore made it possible to trace the connection of the carbonaceous band surrounding the hearth with the upper edge of the familiar grayish-ochreous loam with bands of sand (Stratum 25), to which a large part of the Upper Paleolithic houses of the First Ushki site was assigned (Fig. 8). Above this layer, in a cut in the first flood-plain terrace, the now well-known set of sandy loam/loam layers (total thickness 2 m) could be clearly seen with the specific rhythm of ordered bands of volcanic ash, and below, less than a meter in depth, were the sandy loam/loam Strata 29 to 36 (Strata 26 to 28 were missing here), sand Stratum 37, and Stratum 38 of stream cobble alluvium (see profile in Fig. 29). The stratigraphic picture was easily recognizable. To it were added only the sod layer, which had eroded underneath and hung from the upper edge of this part of the second flood-plain terrace directly over the remains of the Paleolithic house, and a thin layer of lake sand recently washed over the sod.

The discovery of the external contours of the house occurred through a combination of two methods: observation in the cuts in the brows and stripping away the carbonaceous stain of the floor from the hearth to the edges of the house. The floor of the house was cleared in successive, two-meter wide strips from the shore to the uneroded part of the terrace. As a result, four transverse cuts and the house plans in its two levels—for it turned out to have two components—were obtained (Dikov 1970a).



**Figure 31.** General plan of the Ushki V site. Exploratory excavations and a trench of 1974 and 1975 are shown. 1-6—finds of stone artifacts on the sandbar. I-IV—excavations of 1975. The remaining figures show the squares of the excavations.

The northwestern part of its floor (on the side toward the lake) was not preserved, but, judging by the spared part, it was rounded in plan, with a circular stone hearth in the upper component and a hearth of only three stones in the lower (Dikov 1970a:Fig. 2). It was completely comparable to houses of the second type in the sixth layer of the Ushki I site. The material remains in it were the same as in the houses of the sixth layer at Ushki I: wedge-shaped cores, ski-shaped spalls, micro-blades, narrow leaf-shaped arrow points, fragments of biface knives, scrapers, crudely made “hammers,” spokeshave-like tools, and a slab for pulverizing ocher (Dikov 1970a:Figs. 3-5).

#### *The Fifth Ushki Site (Ushki V)<sup>10</sup> (4)*

In 1974, archaeological and stratigraphic investigations were begun at the multi-component Ushki V site. This site, like the sites of Ushki I, II, and IV, is located on the southern, higher shore of Ushki Lake, on Bol'shoi Cape, west of Cape Kamennyi on which the Ushki I site is located (Fig. 5).

The first collections of surface material on the sandbar at Bol'shoi Cape were made in 1964. In 1974 at Bol'shoi Cape the author put in exploratory trenches and the shoreline cut banks were profiled (Fig. 31). The stratigraphy was studied, cultural layers revealed, and the first archaeological material finds were obtained from them. Also, special geomorphological

10 For a recent examination of the Ushki V site, see Goebel, T. and M. Waters. “Hunting Pre-Clovis in Siberia: Year 2000 Excavations at Ushki, Kamchatka.” In *Mammoth Trumpet* 18(1):8-11.—*Trans.*

investigation of this locality was carried out by geologist E. E. Titov. Soil samples were taken for spore-pollen analysis, as well as charcoal samples for determining the C-14 age.

Here we will briefly state some of the basic results of this interdisciplinary investigation (Dikov *et al.* 1977).

The profile of the loose strata was most fully represented at Point 3 on the western side of Bol'shoi Cape where it has an evident thickness of 2.95 m and was not studied deeper because of the appearance of ground water at this mark. The strata were represented more or less by uniform dark loams and sandy loams (Fig. 32), which contain seven lightly colored layers of volcanic ash and several layers of humified dark-brown sandy loam (from top to bottom, thickness in centimeters).

The cultural remains found in the test pits and during the profiling of the cuts at the multi-component Ushki V site are at present still few in number but very characteristic. They attest to the presence at Bol'shoi Cape of almost all cultural layers investigated earlier at Ushki I, II, and IV.

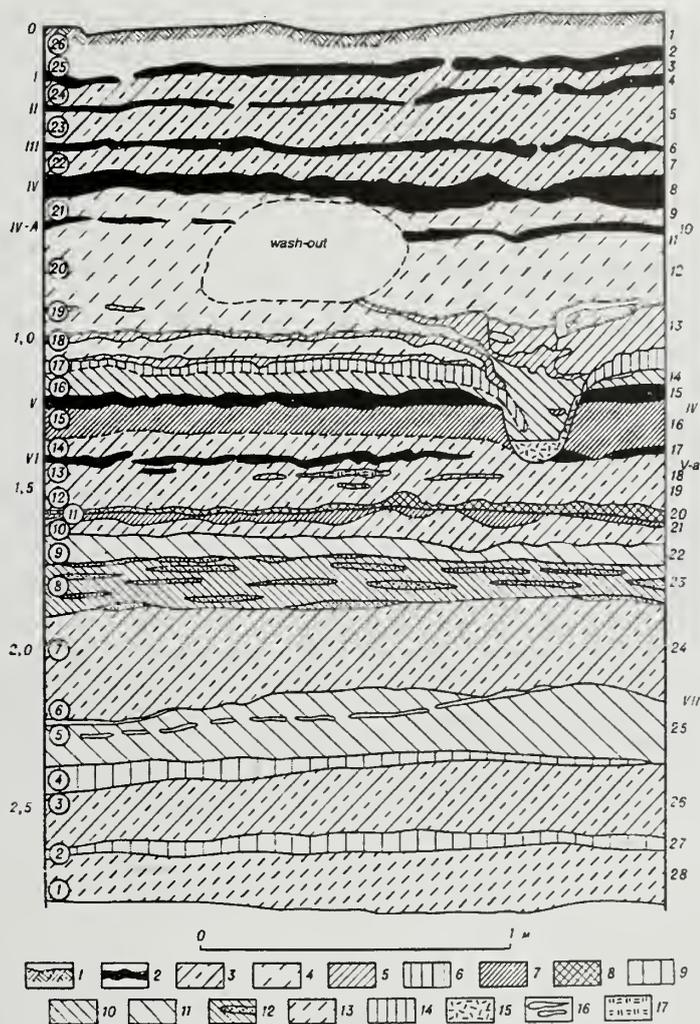
In the upper Cultural Layer I charcoal could be readily traced. Cultural Layers II and III have presently produced no finds, but it is possible that they will appear with expansion of the excavation. However, a relative abundance of material was obtained in Cultural Layer IV.

Cultural Layer IV was especially significant on the western side of the cape, in Test Pit 2. It was opened to a depth of 1.3 m into humified sandy loam (Stratum 16), over an area of 6 m<sup>2</sup>, and directly in it were two hearth stains with flint and obsidian flakes and knife-like blades scattered around. The latter have regular prismatic outlines, and on one, the end was formed like a burin. Here also were two broken arrow points, both of rhomboid cross section. One of them, the most completely preserved, has a triangular stem, and of the other, only the tip remained. Both are of gray siliceous slate and worked by fine oblique pressure retouch. In appearance they are precisely the same as those found earlier in Cultural Layer IV at the Ushki I and II sites.

In Test Pit 1 (area 8 m<sup>2</sup>) two of these Paleolithic layers were found—V and VII. Cultural Layer V is at a depth of 1.65 m, in humified black-brown sandy loam (Stratum 21). In it were only flint and obsidian flakes, while in Cultural Layer VII, at a depth of 2.40 m, in reddish-brown loam (Stratum 25) was charcoal.

We obtained additional information about Cultural Layer VII in Test Trench 4 (8 m long and 0.5 m wide). Cultural Layer VII turned out to be close to the surface since the upper layers here had eroded away. In yellow loam, typical for Cultural Layer VII in the Ushki sites, were two very characteristic items: a transverse spall from a prismatic obsidian core (Plate 23:2) and a stemmed chalcedony arrow point, characteristic for this layer, worked on both sides by pressure retouch (Plate 23:1). Peculiar to it is some asymmetry and the presence on the stem of shallow lateral notches. In this way it has an American appearance.

It is interesting that Cultural Layer VI did not provide any finds in any of the test pits. However, judging by the surface material, this Paleolithic cultural layer is nevertheless present at Bol'shoi Cape.



**Figure 32.** Stratigraphic profile of the Ushki V site (the cut is on the western side of the cape, in Excavation 1). 1—sod; 2—volcanic ash; 3—yellowish-gray sandy loam; 4—light-brown loam; 5—dark humus; 6—greenish-yellow ash (?); 7—black humus; 8—orange loam; 9—yellow clay; 10—yellowish-greenish-gray loam; 11—yellowish-gray sandy loam; 12—yellowish-greenish-gray loam; 13—gray sandy loam; 14—volcanic ash (?); 15—mixed soil; 16—fine white sand or ash; 17—carbonaceous bands. Arabic numerals on the right number all the layers; Roman numerals on the left mark the bands of volcanic ash; Roman numerals on the right designate the cultural layers; Arabic numerals in circles number palynological samples.

The multi-component site found on Ushki Lake is naturally quite significant.

The site's tie to a cape that is lower (only 2.5 m) than at earlier known localities permits, with consideration of new data on the genesis of its deposits, making the earlier interpretation of these deposits more precise. As geomorphological investigations showed, we have here the matter not of a flood-plain terrace, but rather only of the edge of a fluvio-glacial plain cut by the river at various elevations (from 2 to 4 m), and overlain by a pyroclastic cover with cultural remains (Dikov *et al.* 1977).

### Unmixed (Neolithic) Sites (5 to 14)

#### *A Single-Component Site at Kultuk (Ushki III) (5)*

In the very corner of Ushki Lake, west of the first site, the bank, overgrown by forest, rises 5 to 7 m. Here in 1962 we found three large—to 80 cm deep and more than 10 m in diameter—rounded depressions of early pit houses.

One of them was completely excavated by the most careful method. Its ruins were buried under Ash Layer IV (the stratigraphy here is precisely the same as at the First and Second Ushki sites). All the logs and poles of the roof of this pit house, which fell during a fire, were cleared away. They were almost all charred throughout, only the ends of the logs, covered by earth, were not charred, but nevertheless were well preserved (Figs. 33, 34). In this large pit house, around the central hearth in a ring, were arranged six small hearths (under them was sub-hearth earth burned orange). The construction of the roof was in principle the same as in the small pit house at the Ushki I site, except that the central rectangular frame, on which the upper ends of the rafters were leaned, rested not on four posts, but rather on twelve (three at each corner), with four of the posts (the middle one of the three at each corner) being slanted out to the corners of the pit house and serving as struts for the roof. This position of the posts is confirmed by sets of three holes, which were preserved in the floor. Each middle one was oriented with a definite slope toward the outside, which is marked in the plan by an arrow (Fig. 33). Among the stone items found in the pit house were six scrapers, two pieces of adzes, a knife, three large pick-like tools, a core, an arrow point, knife-like blades, and flakes (Plate 24). Also encountered were the bones of sable (7/1) (as determined by V. I. Tsalkin).

In the eastern corner of the house were the remains of a large trough-shaped wooden vessel, which was completely charred. Radiocarbon dates are  $2070 \pm 190$  (Mo-354),  $2160 \pm 290$  (MAG-5), and  $2440 \pm 80$  (RUL-607).

#### *A Single-Component Neolithic Site at Zastoichik (6)*

This is the name of a location on the right bank of the Kamchatka River 4 to 5 km upstream from Kozyrevsk. Here, in a brushy meadow were ten early pit house depressions overgrown by high grass (Fig. 35). The diameters of the pits were from 4 to 12 m, and the

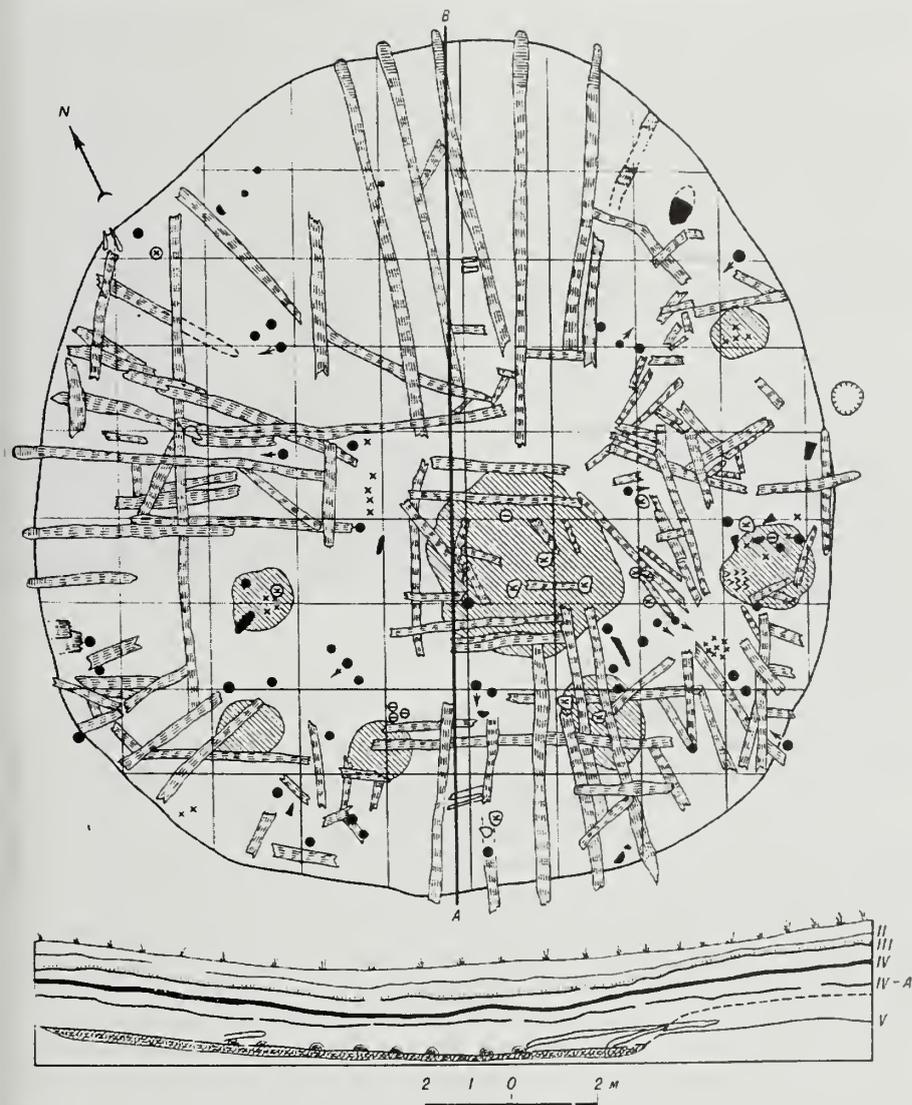


Figure 33. Plan of the pit house at Kultuk.

depth was 0.5 to 1.2 m. Entryways into them were noted on different sides, but in particular on the western side, toward the river, and on the southern side.

The early site is located on a 100-meter-long area of the shore, the elevation of which on the 4<sup>th</sup> of August was 4 m and higher at the northeastern end, and up to 1 m at the southwestern end. The bank was steep, and the strata composing it were denuded. It has a stony base covered by a 0.5 to 3 m thick mass of gray-yellow loam separated by layers of ash and by cultural bands.

In 1961 we cleaned off the northwest part of the denuded cut bank at the place where there occurred two pit houses that were half eroded away by the river. The sequence of layers that accompanied the cultural strata were as follows (Fig. 36).

	cm
1. Sod . . . . .	20
2. Gray-yellow loam . . . . .	15
3. Volcanic ash (IV-?) . . . . .	8
4. Burned orange loam . . . . .	20
5. Carbonaceous band . . . . .	5
6. Burned orange loam . . . . .	10
7. Carbonaceous band . . . . .	8
8. Gray-yellow loam with charcoal. . . . .	15
9. Gray-yellow loam. . . . .	2
10. Rock	

Near the uneroded remains of the two pit houses found in this part of the cut, two exploratory excavations were placed: 1) 8 m long (along the bank) and 3 m wide; 2) 5 m long and 3 m wide. Excavations were carried out to a depth of 1 m, to sterile gray-yellow loam.

In the first excavation were the remains of the southeastern half of a large pit house about 9 m in diameter, which had been spared from the erosional activity of the river (Fig. 37). The carbonaceous band Stratum 5 (see profile described above) turned out to be its burned roof. Carbonaceous Stratum 7 at a depth of 80 cm corresponds to the floor of the pit house and the poles of the roof that fell on it during the fire. The poles were directed from the edges of the house toward the middle, and such an orientation attests to the tent-like structure of the wooden foundation of the pit house roof. In the eastern corner of the excavation was an arrangement of small stones 2 m long and 1.5 m wide that ran beyond the edge of the excavation. It was directly under the volcanic ash and was underlain by two carbonaceous bands, between which was a layer of burned orange earth (10 to 15 cm thick). Near this stone arrangement—with the stripping of the ash layer (Stratum 3) above the primary cultural layer to which the pit house belonged—was found a carbonaceous stain 1 m in diameter. At this level, above the primary cultural layer, at a depth of 20 cm were a large stone weight for a seine with a transverse groove and several volcanic bombs.



Figure 34. Charred rafters of the Kultuk house.

Finds connected with the pit house were few: a piece of a knife of gray siliceous slate, a shaped siliceous scraper, a tiny oval scraper, and a spall from a ground adze (Plate 25)—all found in the eastern corner of the excavation, but beyond the boundaries of the mentioned stone arrangement. On the western edge of the excavation, in the lower carbonaceous layer, among the burned logs of the pit house roof, were large pieces of birch bark (also burned).

The second excavation embraced only a part of a pit house (Fig. 38). Directly under Ash Layer IV (Stratum 3 in the profile) was a ground stone adze with pointed butt and five retouched chalcedony spalls (Plate 25). In carbonaceous Stratum 7, the burned rafters lay in the same way as in the first pit house—arranged from the edges to the center. The edge of the pit house could be traced very clearly along the vertically placed birch bark (facing for the walls) below the ash layer. Beyond the edge of the house, just as in the first excavation, was a group of stones, but significantly smaller. In the middle of the house was a pit

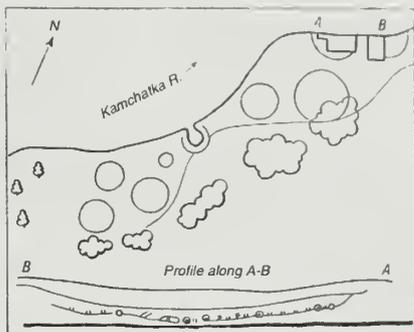


Figure 35. Neolithic site at Zastoichik.

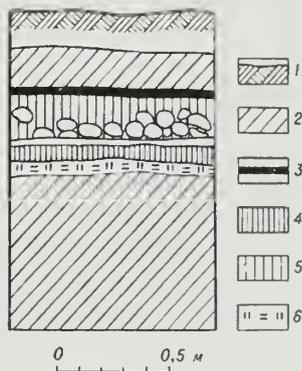


Figure 36. Profile of the excavation (eastern wall) at Zastoichik, through the house. 1—sod; 2—gray-yellow loam; 3—volcanic ash; 4—orange loam (sub-hearth); 5—orange loam; 6—carbonaceous bands.

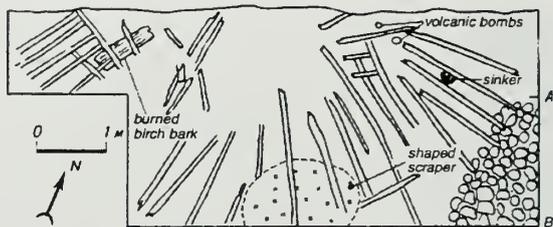


Figure 37. Plan of the Neolithic house at Zastoichik (Excavation 1).

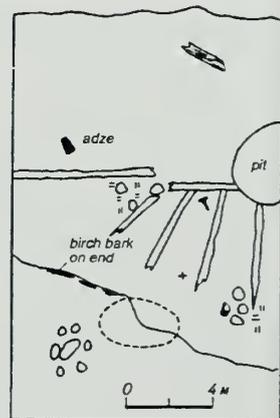


Figure 38. Part of the Neolithic house at Zastoichik (Excavation 2).

of more than one meter diameter, half a meter deep, and bowl-shaped, and found around it were volcanic bombs and pieces of several stone artifacts: a pin of gray siliceous slate, a chaledony arrow point, and a scraper of gray siliceous slate, as well as a whole small scraper of chaledony (Plate 25).

In 1973, in the cultural layer in the cut bank at this site we found an andesite/basalt, broad-bladed, curved knife (Plate 25).

#### *A Single-Component Neolithic Site on Domashnee Lake (7)*

Domashnee Lake is located at the northeastern extremity of Kozyrevsk village. The lake joins the Kamchatka River by a narrow tributary.

The site is represented by the remains of pit houses that appear on the surface in the form of depressions 3 to 4.5 m in diameter and 20 to 35 cm deep. They are located on the southeastern shore of the lake.<sup>11</sup> These depressions number more than 50 (Fig. 39). We found the site in 1961 but were not able to begin excavations until 1962. For elucidation of the stratigraphic layers of the site, the walls of the test excavation made in 1961 (in the center of a depression on the edge of a bluff about 3 m high above lake level) were smoothed down and cleaned. The excavation turned out to be 2 x 6 m (Fig. 40, Squares 2-A, 3-A, 4-A, 2-B, 3-B, and 4-B). As a result of the cleaning here, the following strata were revealed.

- |                                                                                                |        |
|------------------------------------------------------------------------------------------------|--------|
| 1. Sod layer . . . . .                                                                         | 4-5 cm |
| 2. Layer I of volcanic ash . . . . .                                                           | 1-2 cm |
| 3. Light-ocherous sandy loam. The thickness of this layer varied, fluctuating from 4 to 20 cm. |        |

11 The figure seems to indicate the southwestern shore, if up is north.—*Trans.*

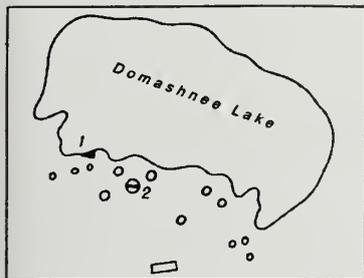
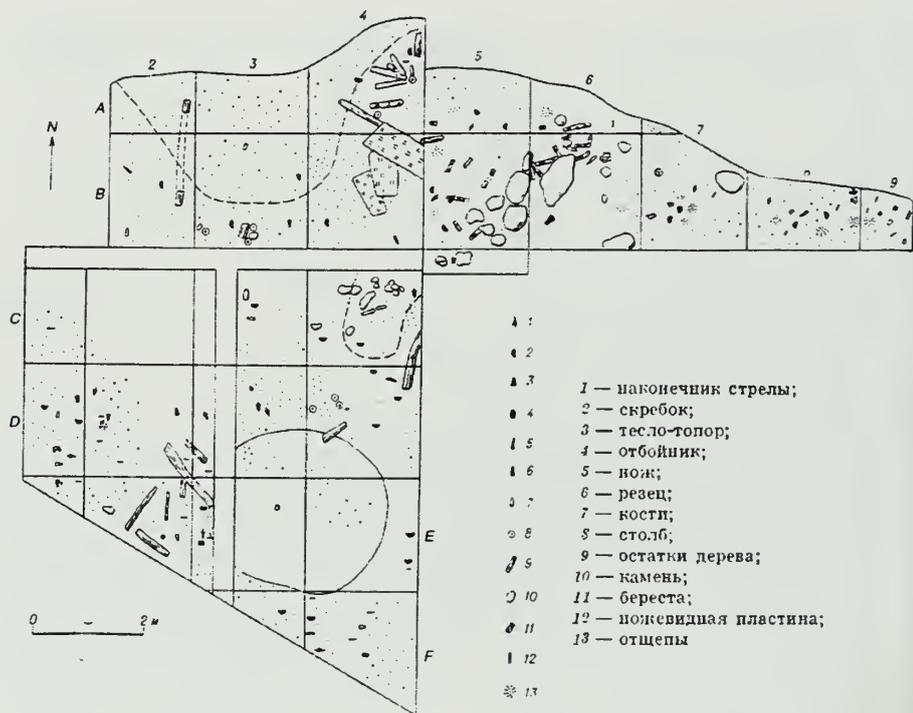


Figure 39. Location of early pit houses on the shore of Domashnee Lake.

4. A thin layer of Volcanic Ash II in Stratum 3.
  5. Layer of Volcanic Ash III.
  6. Layer of volcanic sand, underlying Volcanic Ash III layer.
  7. Sandy loam of bright-ocher color, layer 6 to 20 cm thick.
  8. Thick layer of Volcanic Ash IV from 4 to 20 cm.
  9. & 10. Layer of fine ocherous sandy loam 10 to 45 cm thick.
- In the profile of the thickest part of the layering three stones from 20 to 25 cm in diameter were seen. In the thinnest layer, the band of Volcanic Ash IVa was seen with underlying stains of burned earth having the finest sprinkling of charcoal.
11. Dark-brown loam. Its thickness is 40 to 70 cm. In the center passes a thin layer of decomposing bone, as if lining a small (40 cm in diameter and 20 cm deep) pit. In the bone layer was burned birch bark.
  12. Brown sandy loam 50 to 65 cm thick. Stratum 11 pinches into it and reaches to the lower horizons. Volcanic Ash IVa together with stains of burned earth pass at a level of 40 cm from the rocks.

Beginning in 1961 we excavated only that area of the shore where in Stratum 11 the remains of a pit house that had almost completely eroded into the lake were preserved. Obsidian arrow points, scrapers, flakes, and a knife-like blade were found there.

Then the excavation was expanded by 64 m<sup>2</sup>, so that the part of the pit house destroyed by shoreline erosion would be included in it, as would part of an adjacent pit house, along with the corridor joining them (Fig. 40). Excavations were carried out by layer, and governed by the appearance of the stratigraphy. The bulk of the cultural remains were found under Volcanic Ash IVa in mixed dark-brown loam—the fill of the pit houses. On the whole, these were pieces of stone artifacts (leaf-shaped arrow points, knives, scrapers, adzes, and others), with only comparatively rarely whole ones (Plates 26 and 27) being found. There were a mass of flakes and several knife-like blades, and no ceramics. Oblong, leaf-shaped, biface knives with lateral projecting ears at the base represented a specific form found in the complex (Plate 26:3).



**Figure 40.** Plan of the excavation of the Neolithic site on Domashnee Lake. 1—arrow point; 2—scraper; 3—adze/axe; 4—hammer; 5—knife; 6—burin; 7—bones; 8—post; 9—remains of wood; 10—stone; 11—birchbark; 12—knife-like blade; 13—flakes.

In the northeastern part of the excavation, in Square 4-C under Ash Layer IV, was a layer of birch bark that was well preserved on top, though burned below (its age by C-14:  $760 \pm 90$  [MAG-227]). The birch bark covered a pit. Under the birch bark was a band of black earth, then a layer of sand containing a rotted bone mass with a few small pieces of bone preserved. Some of them were burned and calcined. Farther down was a yellow-black layer of burned earth and fine charcoal. Evidently these were the remains of a distinctive pit of an earthen oven.

In the central part of the site another house was investigated. In the trench placed across it were numerous stone artifacts of the same types that were in the primary excavation: leaf-shaped arrow points, scrapers, pieces of biface knives, knife-like blades, a sinker in the form of a flat cobble with deep transverse girdling, and a lateral burin on a knife-like blade (Plate 28).

Finally, on a small beach of the lake, along a cut bank in the cultural layer, were many other stone items, as well as a labret pin (Plate 29:17), a curved knife (Plate 29:20), and a piece of a knife with projecting lateral ears (Plate 29:16).

#### *A Single-Component Site at Kozyrevsk (8)*

In this site, on the right bank of the Kamchatka River near the electric station, the cultural layer was cleaned off. The latter could be traced in the upper part of the cut bank, which here reached 5 m high. The cleaning was done over an extent of 9 m. In doing this, part of a pit house that was half eroded into the river was discovered. It was partially covered by the upper layer of volcanic ash and had been dug into orange loam. In the grayish-brown earth of the pit house fill (at a depth of 1.2 cm) was a piece of a stone adze, stained by ocher/blood-stone. Deeper (at a depth of 1.6 cm),<sup>12</sup> and from the central part of the house, charcoal was extracted from a burned wooden post for radiocarbon analysis. Also encountered were a skull fragment of a mountain sheep, pieces of skulls and long bones of dogs, and several bones of sable, fox, and bird (as determined by V. I. Tsalkin). Various stone artifacts were also collected on the beach slope (Plate 30).

#### *A Single-Component Neolithic Site at Kozyrevsk Sovkhoz (9)*

In the upper part of a steep bank 7.8 m high, near the Sovkhoz petrol station, was found the cultural layer of a pit house that had been dug through the upper ash layers. In its fill (at a depth of about 60 cm) were an amorphous, gray siliceous slate adze and an oblong spall from the same kind of adze. Deeper, at a depth of 70 cm, under unclear stratigraphic conditions (obviously below Ash Layer IV), an adze of greenish-gray siliceous slate with a pointed butt was found and taken from the denuded cultural layer. Surface material was also collected (Plate 31).

#### *A Two-Component Late Neolithic Site at Doiarki (10)*

This stratified site was on the right, lower bank of the Kamchatka River, at Doiarki. We collected surface material on the beach along both sides of the creek that falls into the Kamchatka River here (knife-like blades, flakes, scrapers, and arrow points).

The site itself was located on the right side of a creek, on a 2.5-meter flood-plain terrace (Fig. 41). On the surface of the terrace almost no signs of houses were noted, but along the whole cut bank broad depressions corresponding to houses, which were enveloped by layers of volcanic ash, could be clearly traced. In 1961, we were limited to exploratory excavations here, having cleared away a hearth above the white ash in the cut bank at the corner of the terrace. The hearth was an oval (1 m in diameter) cluster of stones, charcoal, and ash with fish bones at a depth of 1.5 m. Among the hearth stones were several obsidian flakes, a

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12 The pit house fill here and above seems extraordinarily shallow. Perhaps meters is meant.—*Trans.*



Figure 41. View of the early sites at Doiarki.

sinker, and a scraper of siliceous slate (Plate 33:7, 8). In 1962 we carried out larger scale excavations at Doiarki, and opened up cultural layers over an extent of 32 m along the bank of the Kamchatka River and 16 m along the bank of the creek entering it (Figs. 42, 43). Under the second (from the top) volcanic ash layer were three more hearths with a variety of stone artifacts clustered around them: pieces of adzes, knives, points, scrapers, flakes, several crude knife-like blades, and sinkers (Plates 32; 33:6, 9). Deeper, under Ash Layer IIa, were an adze and two arrow points (Plate 33:1, 3, 4), and at a depth of 1.7 m (30 cm above Ash Layer A), were a skreblo-like flake and an adze (Plate 33:2, 5).

#### *A Single-Component Neolithic Site at Doiarki (11)*

This site's cultural layer could be traced under Ash Layer IVa in the upper part of the loose deposits of the high terrace on the left side of the creek, opposite the first site. Here, only an insignificant quantity of stone artifacts was collected, predominantly from the collapsed part of the terrace. However, many partially split bones of dog (54/6), sable (15/9), and fox (17/5) turned up (as determined by V. I. Tsalkin). Charcoal from under Ash Layer IV gave a date of  $1052 \pm 70$  (MAG-36).<sup>13</sup>

13 This date actually reads "1052 - 70 (MAG-36)." Since this is an unlikely combination I have changed it and several that follow to have  $\pm$ , but mark them with an asterisk—*Trans.*

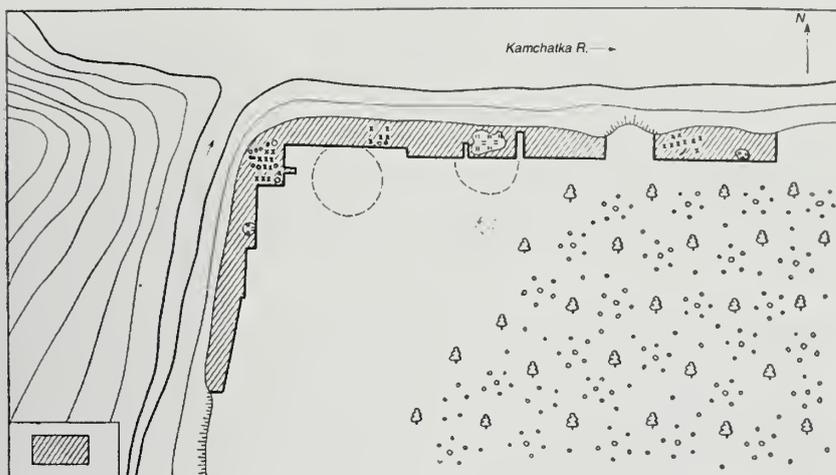


Figure 42. Plan of the Neolithic site in the Doiarki (on the lower cape). 1—the part of the site excavated in 1962.



Figure 43. Profile of the site at Doiarki on the lower cape.

*A Single-Component Neolithic Site at Kliuchi (12)*

In the four-meter-high left bank of the Kliuchi River, which empties from the right bank into the Kamchatka River below the outskirts of Kliuchi village, we found in 1961 a Neolithic cultural layer at two points between the upper volcanic ash layers (Fig. 44).

At Point 1a charcoal and a scraper (Plate 34:6) were found under Ash Layers III and IV (Fig. 45). At Point 1b, under the same untouched ash layers, there was only charcoal. At Point 2, between undisturbed Layers IV and V, were found both charcoal and a stone axe (Plate 34:5). A radiocarbon date of charcoal from the upper horizon was  $490 \pm 90$  (RUL) and from the lower,  $3875 \pm 350$  (MAG-4).

*A Two-Component Neolithic Site at Kliuchi, Point 3 (13)*

In 1963 a second Neolithic locality (Point 3) was found. It was near the mouth of the Kliuchi River, on the comparatively low, two-meter left bank (2.3 m above water level on the 15<sup>th</sup> of August) at a place where the river forms a tiny bay (Fig. 44).

Here we cleaned off the eroded cut bank and placed a trench (5 m long by 1 m wide) perpendicular to the terrace edge (Fig. 46). In the upper layer (80 to 90 cm thick) of loam (from the sod to volcanic Ash Layer III) were several truncated leaf-shaped arrow points; retouched knife-like blades; a piece of a large obsidian point; chalcedony, obsidian, and flint scrapers; and fragments of straight rims of two clay vessels: one with imprints of cord application, the other with finger impressions (Plate 52:3, 4). Numerous pieces of skulls and long bones of dog (15/6) were also found there, as well as bone fragments of reindeer (21/2), bear (1/1), and bird (1) (as determined by V. I. Tsalkin).

In this same brown loam, below the volcanic ash, under which was also a volcanic sand—to a depth of 0.8 m, that is, to Ash Layer IV—were the following remains of material cultural: a piece of an adze of argillaceous slate (with an oval cross section), a rectangular adze of marble-like stone, two arrow points, and two oblong scrapers (Plate 34:5: 35).

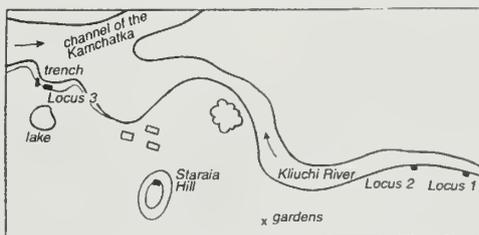
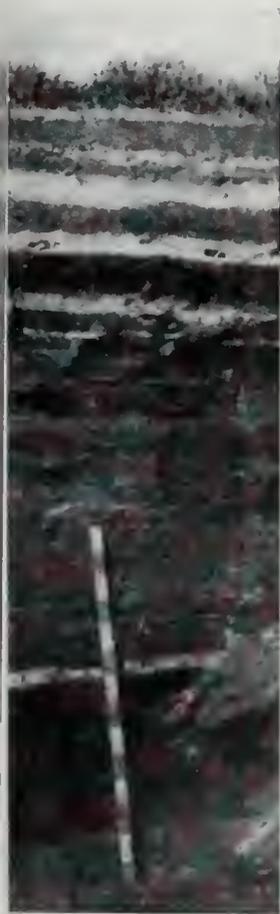
*The Cultural Layer on a Small Hill in the Center of Kliuchi Village (14)*

The site, originally found and investigated by B. Piip, is in loose deposits that cover a high rocky hill. The cultural layer was covered only by two ash horizons (I and II) (Fig. 47).

**Fortified Sites (Yurt Camps) and Burials of the Remnant Neolithic (15 to 37)***The Fortified Site on Staraiia (Shkol'naia) Hill near Kliuchi (15)*

This small hill (or, more precisely, knoll) is located not far from the mouth of the Kliuchi River on its left bank (see the map of the locality in Fig. 43).<sup>14</sup> It is about 13 m high

14 This is pretty certainly the wrong figure.—*Trans.*



**Figure 44.** Location of the early sites at the eastern end of Kliuchi village.

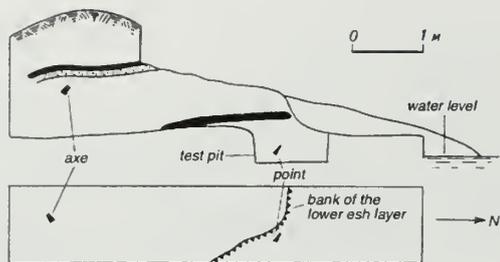
**Figure 45.** Stratigraphic profile of the first Neolithic site near Kliuchi village.

with a diameter at the base of about 70 m. The top is oval and flat with a small basin on the southern side. On the top were a total of six depressions of pit houses that were once here. Three of them were located on the southeastern side of the top, and three were on the northeastern side. The house pits were small, guttered, and of rounded outline, with a barely noticeable earthen berm. Their depths were comparatively uniform—approximately 90 cm—but their horizontal dimensions differed: from 7 to 10 m in diameter. They all had been disturbed by gardening, except one, which we selected for excavation. The diameter of its surface depression was 7.5 m and this whole area, having been cleared of high grass and brush, we, proceeding toward excavations, divided up into 1 x 1 m squares (Fig. 48). Excavations were conducted in two layers, recording the primary stratigraphic profiles. Of the strata, it was obvious that the thick layer of mixed sandy loam, which accumulated above the floor of the pit house (to

2 m thickness), cut through all the uppermost layers of deposited ash. As a consequence, these layers were at least earlier than the nineteenth century, since in the nineteenth century the Itel'men in the valley of the Kamchatka River had long ago changed from pit houses to Russian type houses.

In the upper sub-sod layer, on a flat stone, lay the skull of a dog, and at a depth of 40 cm, the remains of a human skull.

The hearth was 60 to 70 cm deeper. Composed of large burned stones, it had a horse-shoe-shaped form, and the stones were closely fitted to one another. To the side of it, by the southern wall of the house, was a large cluster of small round stones 3 to 5 cm in diameter. The stones (volcanic bombs) were burned and preserved good traces of heating. They were



**Figure 46.** Plan and profile of the trench in Neolithic site 3 near Kliuchi.

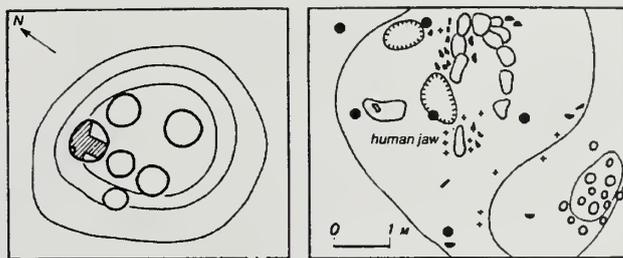


**Figure 47.** View of the island with an early cultural layer in Kliuchi village.

probably used for heating water in a wooden vessel. The cluster stretched 1.5 m in length and 40 cm in width. The height of the pile was 10 to 15 cm.

Judging by the location of six postholes in the floor of the house, its roof, as in the Nikul'skoc pit houses (see below), was resting longitudinally and transversely on the posts. A piece of burned beam from the roof was preserved beside the posthole and near the pile of volcanic bombs mentioned above (Fig. 47).<sup>15</sup>

15 This is pretty certainly the wrong figure.—*Trans.*



**Figure 48.** Plan of the excavation at Staraia Hill in Kliuchi village.

In the central part of the excavation, below the level of the hearth, could be traced a second layer (lower cultural layer), which corresponded to an earlier occupation in a more limited area (12 m<sup>2</sup>).

The thickness of this layer, represented by a mixed brown soil with charcoal, reached 1 m.

The stone artifacts found both in the upper and in the lower layer were typologically uniform. In addition to numerous flakes, also found here were stone arrow and spear points (Plate 37); knives (Plate 37); scrapers (Plate 38); axes and adzes (Plate 39); grinding stones; sinkers; and simply retouched flakes (Plate 40). Unifacially convex adzes predominated, and curved knives were encountered.

Besides the dog's skull and pieces of long bones, fragments of long bones and half a lower jaw of a reindeer were found (as determined by V. I. Tsalkin).

### *The Fortified Nikul'skoe Site (16)*

In order to obtain an exact idea of the structure of the house in this fortified site on the high (15 m) and steep cape in the bend of the Pervaia (Malaia) Nikulka River, it was subjected to the most detailed excavations.

The fortified Nikul'skoe site is located at the best fishing place on the river (where there has for a long time been a special TINRO<sup>16</sup> station for studying fish), not far from the supposed winter hut of Fedot Alekseev, and is, by its location, the uppermost fortified site of those known along the Kamchatka River. It is now so overgrown with forest that finding the house pits in the thick brush and high grass is not very easy (Fig. 49). Bounded on the southeastern side by a ditch, it has the form of a stretched isosceles triangle in plan. Of the fourteen rounded (4 to 9 m in diameter) house pits composing this site, ten were arranged in pairs, and one of them (also paired) was distinct because of its especially large size (7 x 9 m). It was in this house that excavations were begun at this fortified site, where we excavated a total of five houses over their entire area (Fig. 49).

16 TINRO is the Tikhookeanskii Institut rybnogo khoziaistva (Pacific Institute of Fisheries).—*Trans.*

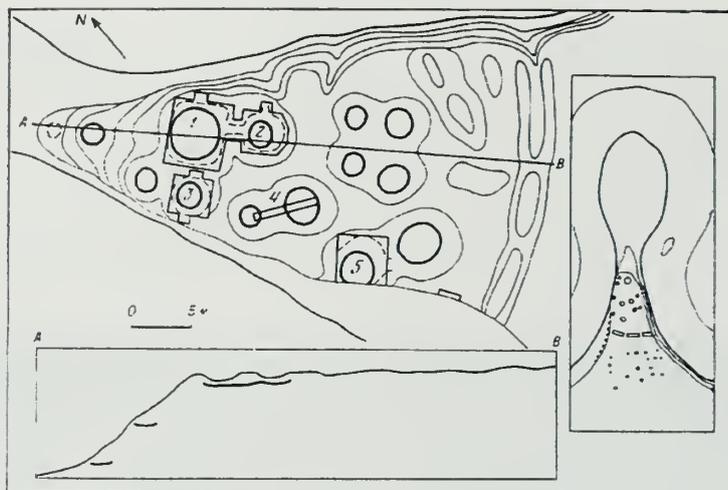
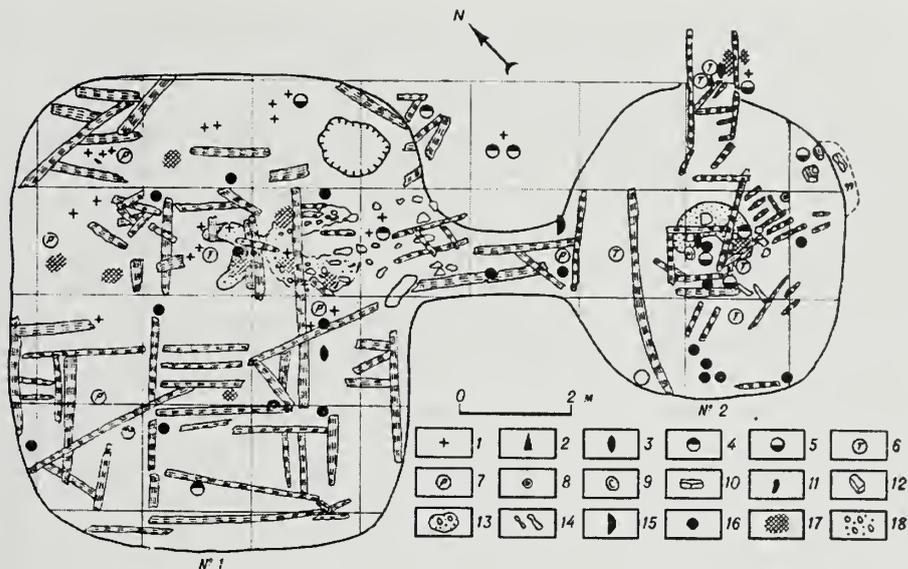


Figure 49. Plan of the Nikul'skoe site.

*House 1.* Before the excavations this was a rounded pit measuring 6 x 7 m and 1 m deep from the top of its surrounding berm. The southeastern side was slightly depressed in one place, forming a corridor-like passage to a neighboring house pit of smaller size—4 x 5 m (House 2). The whole interior expanse of the pit was overgrown by high thick grass, and brush and trees grew on the berms.

The excavations were begun by clearing the pit of grass and brush and laying it out in squares (2 x 2 m). As soon as the sod was removed, burned logs of the house roof began to show through. In order to get a complete picture of their arrangement, the layer of dirty-yellow sandy loam (30 cm thick) underlying the sod was taken off the whole area of the pit, while the burned logs were left in place. Then the excavation spread significantly, having expanded down under the berm to the walls of the house, which were faced with scorched grass and tree bark. As a result, a definite picture was obtained of the longitudinal and transverse arrangement of the logs forming, in the middle of the house, the framework of a log scaffold on six posts (the bases of which had emerged during the process of final cleaning of the floor), as was a picture of the lateral pitch of the roof from the inclined rafters, which rested with their upper ends on this framework and with their lower ends secured along the edges of the pit (Fig. 50). Cleaning out the subsequent, deeper layer of dirty-yellow sandy loam (10 to 20 cm thick) down to the house floor revealed a big cluster of large hearth stones almost in the middle of the house (close to its entryway on the southeastern side). These were surrounded by ash accumulations from the hearth and the clayey earth under it, which was intensely burned and thus had acquired a bright orange color. Four carbonaceous stains with burned,



**Figure 50.** Plan of the double dwelling (Pit Houses 1 and 2) at the Nikul'skoe site. 1—flake; 2—arrow point; 3—spear point; 4—scraper; 5—knife; 6—axe; 7—burin/gimlet; 8—spindle whorl; 9—lamp; 10—birchbark vessel; 11—bear's tooth; 12—anvil; 13—human skull; 14—bones; 15—cut-off post; 16—posts; 17—sub-hearth burned earth; 18—sub-hearth stones.

orange sub-hearth earth under them could also be traced for some distance away from the large central hearth, on the eastern side. Here was a large probable storage pit (1.2 m in diameter and 25 cm deep with uneven bottom). Very few things were found in this large pit house: a total of a few flakes around the hearth and near the northern corner of the house, a piece of a stone axe in the hearth, a chalcedony punch in the western corner of the house, and a ground knife/scraper of argillaceous slate at the entryway. The picture of the small adjacent house (no. 2), where finds were incomparably more numerous, was very different in this regard.

*House 2.* During the process of excavation of the first pit house, a narrow passage was traced to this house. It was an area 1.5 m wide bounded on two sides by undisturbed earth and filled with gray sandy loam mixed with volcanic ash, charcoal, and ash. In this place were the burned poles of the passage roof (Fig. 50).

Until the excavation, this house was represented by a small rounded pit 1 m deep and 4.5 m in diameter, with guttered edges, and barely noticeable earthen walls determining its edges on the southeastern side. On the side toward the river bank, the longitudinal and transverse burned poles of the roof of a second corridor-like entryway were found.

Excavations of the house began on the side with the entryway, toward the river, and simultaneously in the center of the house, the area of the excavation having been set up beforehand in 2 x 2 m squares. The soil was removed by layers.

At a depth of 15 cm (in Square 10-E) in peat were a cranial vault with the frontal part and a lower jaw with teeth. In this same level, in the same square, were the long bones of a human, and 10 cm from the skull was a flat ground knife of argillaceous slate. Judging by the location of the bones, a complete skeleton was in the pit house, since its remains lay in anatomical order. The radius lay 60 cm from the skull, the fibula was 140 cm from it, and the other radius was 14 cm to the right of the skull and 60 cm below it. The skull rested on a flat granite boulder, but at a depth of 20 cm in the gray-yellow mixed soil. At this same depth charcoal began to be encountered, as well as burned fish bones, bands of ash, and flakes. At a depth of 25 cm pieces of burned poles from the roof of the house and some stone items occurred. At a distance of 30 cm from the skull were a fragment of an axe of black argillaceous slate and a series of flakes. In Square 10-F was another piece of an axe of sandy slate.

In the very center of the house at a depth of 30 cm were the first details of the house construction, namely: the burned rectangular frame of the smoke hole made of short (to 1 m long) poles (the framing of the smoke hole at the entryway into the house).

With further excavations, burned poles from the roof appeared, each with one end invariably directed toward the frame and the other toward the pit walls. Only a few of them lay in disorder.

The floor of the pit house could be traced at a depth of 80 cm. It was faced with birch bark and scorched grass, and flakes were found. Near the walls of the pit house were several small "stumps" (the remains of poles) directed at an angle upward toward the center of the house. In the walls of the pit house were also small pieces of birch bark and scorched grass of which mats had been woven.

By further tracing of the house walls on southeastern side to a height of 20 cm from the floor, a rectangular niche (1.5 m long and 0.5 m high) was found, which was filled with mixed earth and covered on top by boards that rested on wooden stanchions. The boards were fitted closely together and covered with bark. They were so old that they crumbled upon contact. Within the niche were the remains of birch bark vessels, deformed and flattened under the weight of the earth, and a stone lamp, also very poorly preserved, which had cracked in the fire. It stood in a birch bark vessel. In the right corner of the niche at a depth of 1.7 m was the lower jaw (with teeth) of a dog. A chalcedony scraper was also there. The niche was evidently a storage space.

In the central and southwestern side of the house on the floor were the remains of six posts, which supported the frame of the house roofing. Judging by everything, the rectangular central frame of four logs, which served as framing for the smoke hole (and simultaneously the upper entryway into the pit house), rested on the four posts.

In this same place, in the center of the house, were the remains of the hearth. It is clearly outlined at a depth of 60 cm, and represented by a "horseshoe-shaped" cluster of

volcanic bombs (which served, when heated, for boiling water) and cobbles mixed with clay and charcoal.

Judging by the character of the finds, this small pit house served as a work space. Much debitage from production and unfinished tools was found in it. A large part of this was found around the central hearth (blanks of stone axes and adzes, and a hammer stone) and even in it (a spindle whorl of volcanic tuff, a piece of a spear of argillaceous slate, a nephrite axe, scrapers, and a piece of another axe).

Another cluster of things was found among the remains of the second small hearth near the side entryway to this pit house. Here, in the ash, with a mixture of charcoal and fish bones, were a chalcedony scraper, an axe of argillaceous slate, small pieces of glass-like porous slag, and a large leaf-shaped point of obsidian. The point was so burned that one of its ends was even fused, like a stretched droplet, and on its surface were dispersed bubbles that had hardened, as well as small swellings (Plate 41:7).

Some of the stone items (adze fragments, scrapers, and flakes) were also in other places in the house (Fig. 50, Plate 41). Before the entryway into the corridor leading to the neighboring large house (the first), a slab was discovered that was roughly hewn on the bottom by a stone axe. It was set vertically into the earthen floor of the house by its pointed end, the object being turned with the flat side toward the first house.

*House 3.* This pit was rounded in outline (6 x 6.5 m). Until the excavations it was 0.8 m deep. The earthen bottom of the floor was deepened farther by 1 m. A carbonaceous hearth stain also turned up in the middle (Fig. 51). Just as in the previous houses, there was also a longitudinal-transverse position for the roof poles, which had collapsed after the fire, and which had previously rested on four central posts. On the walls, birch bark and scorched grass were also preserved—the walls being covered by them (typical for Itel'men houses). A few artifacts were found: an obsidian knife, a round scraper, and three flakes (Plate 41:1-3, 5).

*House 4.* This house was only tested where a looter's pit had been left (the result of an "excavation" by pupils from the Shchapino village school). We were limited to ascertaining the stratigraphy, which was similar to that of the preceding pit houses. No artifacts were found in the test pit.

*House 5.* This house was interesting to us primarily because its remains were in a state of ruin as a result of being located on the very edge of the bank of the Nikulka River. The southwestern part of the structure was eroded away by the river and in the cut bank its transverse configuration could be easily traced, which substantially eased the process of investigation. The house was of subrectangular form, with rounded corners, measuring 5 x 7 m, with a hearth on the southwestern side where the entryway, destroyed by the river, must have been (Fig. 52). Even before the excavations, two pieces of a bone needle case decorated with grooves were found in the cut bank, in the mixed earth fill of the pit house, at a depth of 60 cm (Plate 44:7). But especially many items turned up in the central part of the pit house: eight stone axes and adzes placed together with beveled working edges oriented in the same direction (Plate 43), an obsidian scraper, and three arrow points—one of badly

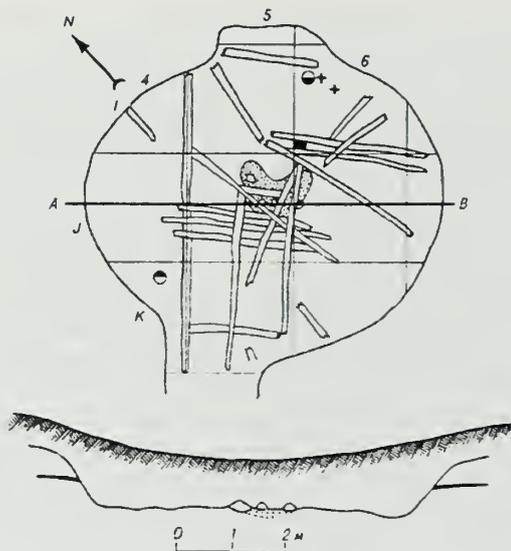


Figure 51. Plan and profile of Pit House 3 at the Nikul'skoe site (for conventional signs, see Figure 50).

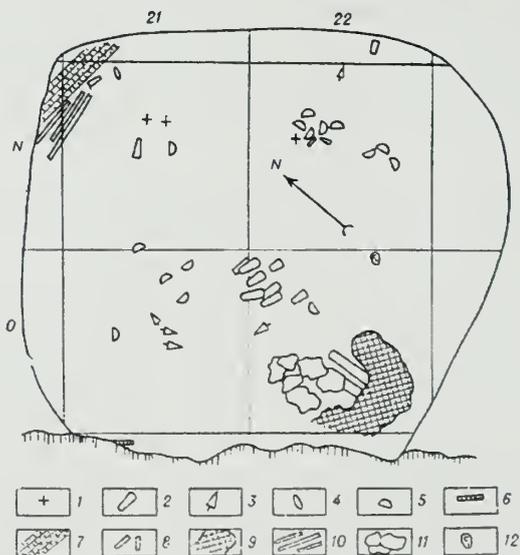


Figure 52. Plan of Pit House 5 at the Nikul'skoe site. 1—flake; 2—axe; 3—arrow point; 4—spear point; 5—scraper; 6—needle case; 7—mat; 8—chisel; 9—burned earth; 10—slabs; 11—hearth stones; 12—spoon.

burned bone and two of obsidian (Plate 44). Close to the bank, near the southern wall of the house, was a hearth of large porous volcanic bombs coated with clay. The hearth rose 40 to 50 cm above the floor. It was horseshoe-shaped, like all the hearths in Nikul'skoe pit houses, though under the hearth stones were burned slabs. Near the northern wall (30 cm from the hearth), at a depth of 70 cm, was a bone arrow point, and in a pile of burned bones and ash on the eastern side of the hearth were a piece of a clay spoon (which probably served as a casting ladle) and a bone "earring." In the center of the pit house, at a depth of 60 cm, were two scrapers of argillaceous slate (one of which was rounded and very burned) and one scraper of granular stone, and just to the left of these finds was an obsidian scraper (Plate 42).

Near the northern wall of the house were the remains of a sleeping platform in the form of a smoothly chopped slab, which had burned, lying by the wall. The total width of the sleeping platform was 60 cm. It was covered with a burned mat of nettle, which we carefully cleared and extracted for special study. Upon investigating the sleeping platform, a nephrite axe was found under it at a depth of 80 cm. At this same depth, but not under the mat, were nine stone scrapers and two small pieces of ground stone (Plate 42). The floor was substantially lower, reaching a depth of 1 m. It was uneven, with dug-out pits to 30 cm deep. They were filled with burned bone, ash, and charcoal. In one such pit were a piece of a stone tool, a spear point of obsidian, and a few flakes. An obsidian scraper and an axe of argillaceous slate were also found (Plate 44).

Excavations of the fortified Nikul'skoe settlement permitted the determination of many essential features of the arrangement of "yurt villages," which are very widespread and notable, but had not been properly investigated until our excavations.

A radiocarbon date on charcoal from House 5 (at a depth of 1.2 m) is  $750 \pm 110$  (RUL-473).

### *The Remains of Two Fortified Sites at Kamaki (17 and 18)*

These sites were found at two points: on a knoll on the right bank of Bukrich Creek several meters above its mouth, and on a knoll at the mouth of Bukrich Creek (which enters the Kamchatka River from the left bank).

At the first point very insignificant traces of human occupation were found: only a thin carbonaceous band deposited in a layer of mixed gray sandy loam at a depth of about 1 m under a layer of blue ash from the Bezymianni Volcano, gray sandy loam mixed with ash, and yellow sandy loam over a stratum of yellow sand. At this point we limited ourselves to only a small amount of earth work for the purpose of revealing the profile on the southwestern slope of the knoll.

More fruitful was the excavation on the knoll at the mouth of Bukrich Creek where, in the cut bank (6 m high) facing the Kamchatka River, a thick cultural layer was found that was represented by the remains of a deep pit house that had been almost completely eroded away by the river. The old-timers say that earlier, on top of the knoll, there were many pits—houses. Now they have been dug up by gardening and eroded away by the river, and only along the shore

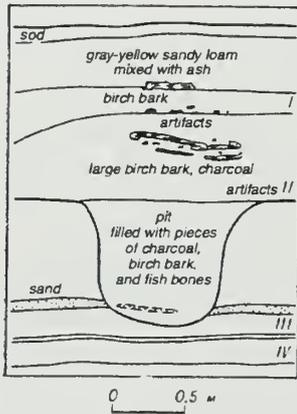


Figure 53. Profile through the cultural layer at Kamaki (at the mouth of the Bukrich River).

under the bank are various early stone objects found that have eroded from above: axes, points, scrapers, and the like. We put in an exploratory excavation measuring 1 x 2 m at the highest place on the knoll (6 m) and took it to a depth of 2.8 m. With the very first shovel-full, charcoal, ash, and birch bark began to be encountered, and at a depth of 20 cm artifacts also began to occur, as did many pieces of dog bone. All these finds were spread over three horizons, which corresponded to the most intensive carbonaceous bands (Fig. 53). In the first horizon under the gray-yellow sandy loam mixed with volcanic ash, at a depth of 20 cm in charcoal and ash, were the skull of a dog, very well preserved, and a bone arrow point, worn out and half disintegrated. In the second horizon of charcoal, hearth ash, and burned birch bark, at a depth of a full meter, was a pit 70 cm wide filled with pieces of charcoal, birch bark, other tree bark, and fish bones. On the bottom of this pit were three adzes of argillaceous slate, volcanic bombs, and a scraper of siliceous slate. In the charcoal and burned birch bark that covered this pit lay three knives of argillaceous slate, the skull of a dog, pieces of wooden poles, and small wood chips. The pit was framed on two sides with two small poles, and three other small poles lay across it so that a wooden lattice was formed that was supported by four posts found by the edges of the pit. The bottom of the pit (at a depth of 2.4 m from the ground surface) was covered by very heavy birch bark, and here was found another dog skull. Under the bottom of the pit was a sterile band of gray sand 10 cm thick. Under it again could be traced a cultural layer 20 cm thick (Horizon III), at the level of which was a large cluster of conspicuous heavy charcoal and whole pieces of burned trunks of stone birch. There was no bark or grass, just as on the floor of the Nikul'skoe pit houses.

Items found in the exploratory pit in all the horizons (Plate 46) belong typologically to a single comparatively late culture. For refinement in dating the profile, a charcoal sample was taken from each of the three levels.

### *Early Burials near Kamaki (19)*

The Itel'men custom of throwing the deceased on the roof of the pit house to be devoured by animals made difficult our search for burials synchronic with Old Itel'men fortified sites. In the best cases disassociated human bones came to us either over a collapsed house roof, or in redeposited form on a beach where they had arrived as a result of river or lake erosion from destroyed pit houses located in their banks. But persistent search nevertheless led to the discovery of distinctive burials in pits under decking, which neither Steller nor Krasheninnikov mention.

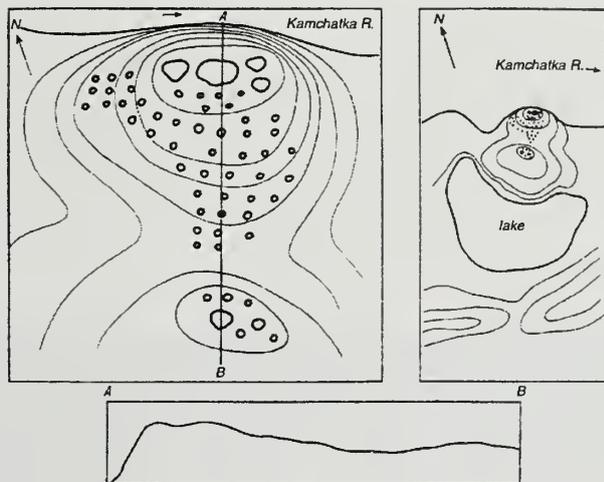


Figure 54. Plan of the settlement and cemetery at Kamaki.

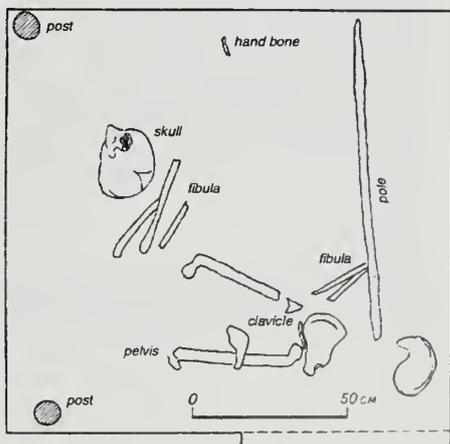


Figure 55. Burial 1 at Kamaki.

A cemetery of such type was found in 1961 on the right bank of the Kamchatka River on the southern slope of a knoll, at the very top of which was a fortified site of four subrectangular pit houses and several smaller pits. A burial (Burial 1) was found in one of the small pits (to 2 m in diameter) that "surrounded" the fortified site on two sides in abundance (Fig. 54). The bones of the deceased lay at a depth of 1.25 m on the bottom of a pit filled with mixed earth (Fig. 55). Of the decking that initially covered them, which later collapsed under the weight of the earth, there remained only the bases of two posts and several

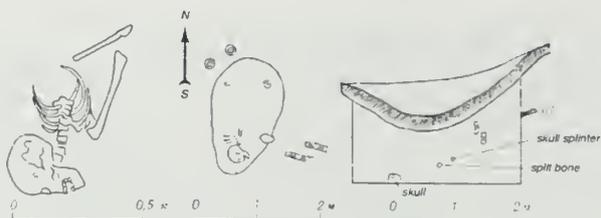


Figure 56. Burial 2 at Kamaki



Figure 57. Burial 2 at Kamaki (detail).

almost completely rotten poles. The position of the bones indicated that the burial was very distinctive: the deceased was seated in the pit and only subsequently were the bones scattered in the empty chamber under the decking.

No artifacts were found with the deceased. The bones belonged to a subadult girl. The comparatively recent antiquity of the deceased was indicated by the fact that the burial pit was covered with only one layer of ash from Bezymiannyi Volcano, and that all five horizons of Stiveluecha ash were cut through by the pit. However, the antiquity of the burial was substantially greater than the eighteenth century, when such burials were entirely unknown here.





Figure 60. View of the site at Sheheki.

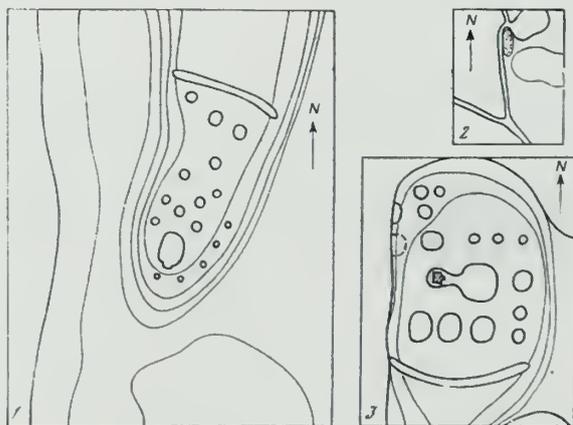
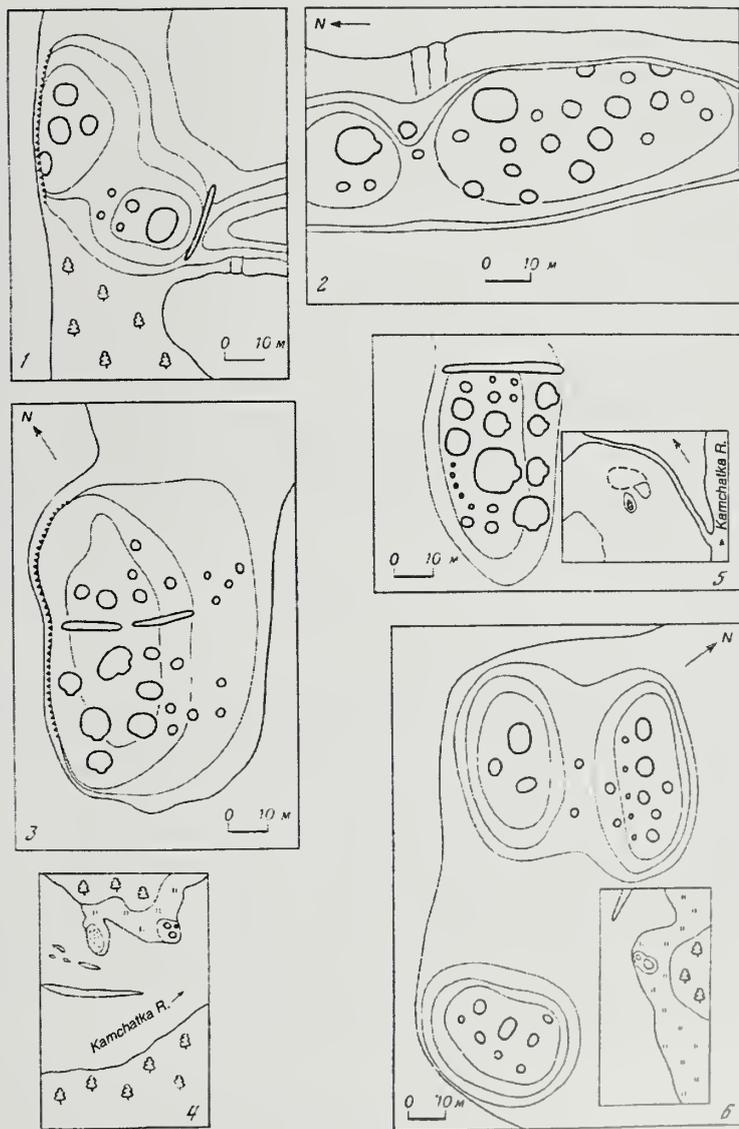


Figure 61. Sites in the valley of the Kamchatka River. 1 - Right Kavanoka; 2 & 3 - Left Kavanoka.



**Figure 62.** Sites in the valley of the Kamchatka River. 1—on Lake Kamenskoe and on Lake Grob; 2—on Lake Kurazhechnoe; 3 & 4—on Lake Kazach'e; 5—in the Tsiachnoe locality, 6—on the shore of the Kamchatka River.

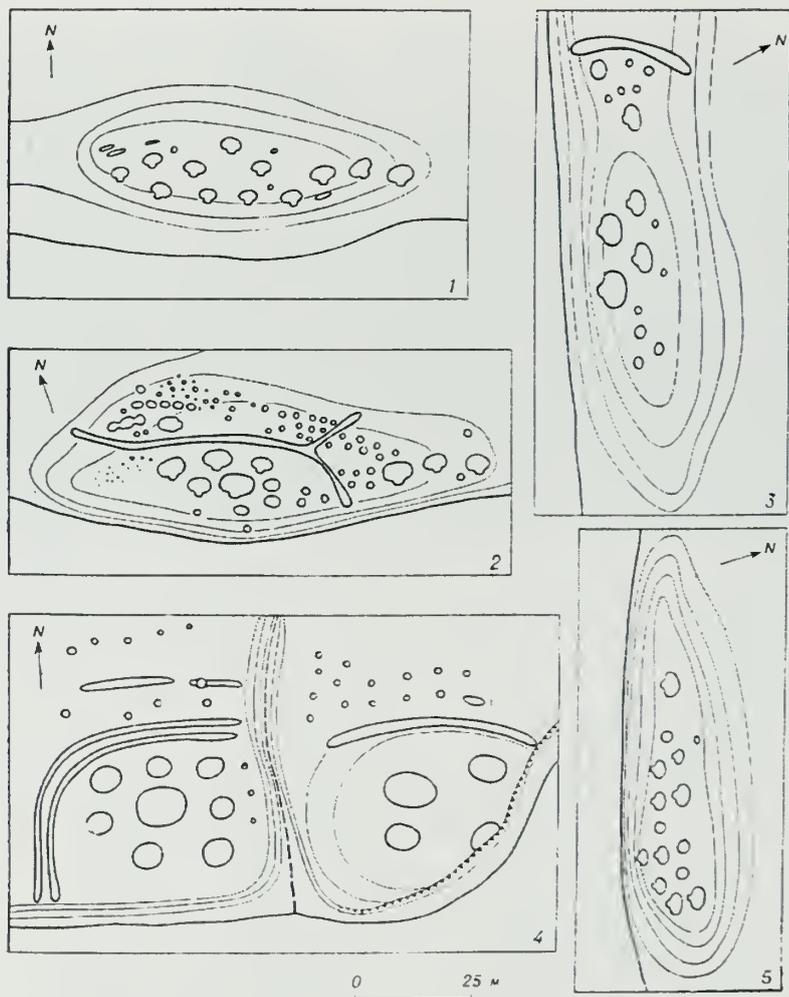


Figure 63. Sites at Shcheki in the valley of the Kamchatka River.

In 1963 two more burials were examined. Both were distinguished externally as pits—the first (Burial 2) was 1 m deep, the second (Burial 3), 1.5 m deep.

Burial 2 was at a depth of 1 m from the ground surface. The top part of a human skeleton was preserved with the skull oriented to the south (Figs. 56, 57). The burial passed through the upper layer of ash.

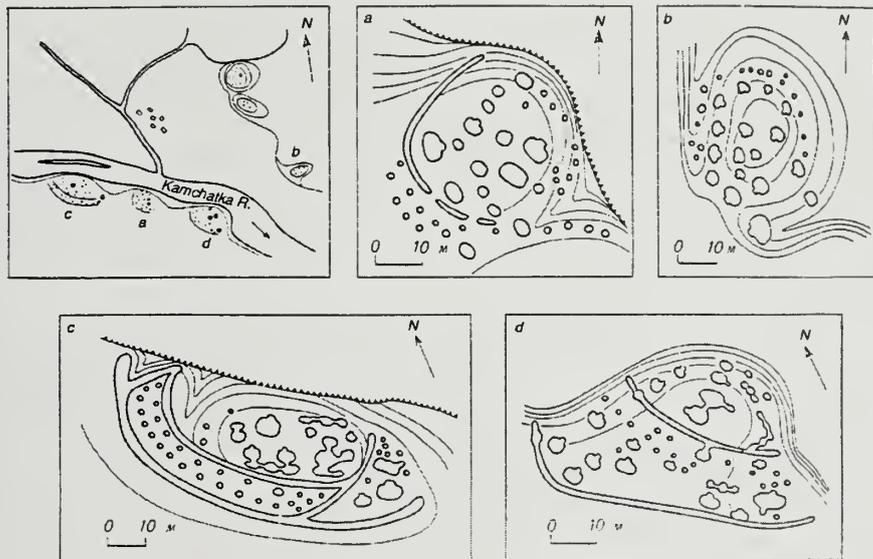


Figure 64. Sites near Nizhne Kamchatsk (plan, a-d).

Above the skull were found a splinter from it and a small split bone of an animal. Along the edges of the burial pit were the remains of three posts and two poles from the roof, which was probably supported by these posts.

In Burial 3 a rather well preserved skeleton was found in a subtriangular pit at a depth of 1 m from the ground surface and 2 m from the lower (southern) edge of the pit (Figs. 58, 59). It lay prone, with extended legs and arms slightly bent at the elbows. The remains of fur clothing were well preserved in places (from the shoulders to the knees). The head was oriented to the north. During the course of the excavation of this burial a hearth was found under the sod, and under it an animal bone, and still lower, at a depth of about 0.5 m, was a carbonaceous band. Along the edges of the pit were the remains of burned poles that covered the grave. The lower poles were preserved in unburned form. Radiocarbon dates were:  $475 \pm 50$  (MAG-232),  $680 \pm 50$  (MAG-231), and  $770 \pm 30$  (MAG-224).

#### *Other Fortified Sites and Unfortified Late Sites (20 to 37)*

The most numerous group of archaeological sites is made up of fortified sites. About 50 of them have been recorded on the section of river from Kliuchu to Ust'-Kamchatsk and on the lakes adjacent to the river. Of these, 18 have been carefully measured (Figs. 60-64). Fortified sites are always located on high capes in the immediate proximity of the river or on

islands, and the approaches to them were blocked, if not by the river or the lake itself, then by a swamp. On the side where the slope of the knoll or cape was gentle, there were always defensive berms and ditches, or a whole fortification system of defensive pits to 2 m in diameter. The number of houses—of which only more or less deep subrectangular pits overgrown with grass were preserved at this time—fluctuated from 4 to 25 within the boundaries of a fortified site. The dimensions of the pits corresponded with those of pit houses or smaller pits, which were from 4 to 10 m in diameter, and, as a rule, there was one larger house in each fortified site. Houses were often situated in pairs, and in some cases, as in one of the lower Kamchatka fortified sites, as many as five houses were joined by passageways.

Our study of fortified sites was not limited just to their measurement and drawing their plan. In each site a small test pit was placed in one of the houses in order to take a charcoal sample for radiocarbon determination of the date and for clarification of the stratigraphy. As a result, it was illustrated that they were all younger than the last five ash layers from Shiveluch Volcano, as established by B. I. Piip from the Kliuchi profile, and were covered only by a thin layer of blue ash from Bezymiannyi Volcano.

A larger test probe in the largest house pit (9 x 10 m) of the fortified site at the entrance into Kamenskoe Lake revealed a subsurface tunnel-like passage that provided a draft opposite the hearth on the southwestern side. (This corresponds to Krashennnikov's description of Itel'men houses). In the upper sub-sod layer in the center of the pit were fragments of a human skull and humerus, and on the floor of the house near the carbonaceous hearth stain [at a depth of 2 m] was a fragment of an obsidian spear point.

A second large test pit, in a pit house at a fortified site located on the left bank of the Malaia Kavanaka tributary, revealed to us the arrangement of the hearth, which was composed of stones in the middle of the house, and of the floor, which was covered with grass and slabs (two sinkers, flakes, and pieces of skulls and split bones of a dog were found there) (Fig. 61; Table 47:5, 6).

## **Early Sites in the Commander Islands (38 to 41), in the Region of Avacha Bay (42 to 46), and in the Penzhina River Valley (47 to 50)**

### **Sea Hunter Sites on Bering Island (38 to 41)**

An attempt to ascertain the course of possible movement from Asia to America was undertaken by us in 1964 on Bering Island—the largest of the Commander Islands.

We skirted Sarannoe Lake in a motorboat, examining every inch of its shore, and became entirely convinced that there are only Late Neolithic pit houses on the island. We found them on one small cape (Site 38). We also found them on the slope of a hill on the left bank near the mouth of the creek that flows from the lake (Site 39), where the cabins of a pioneer camp now stand.

In order to gain a more complete understanding of the early sites of the island we made two trips to its fur seal haulouts.

We arrived on the north side of the haulouts by automobile. There we found many comparable late house pits, Aleut of course, with abundant signs of sea hunting and bones of various sea mammals (Site 40).

We were able to reach the southwest cape only by an all terrain vehicle. There, on the slope of the hill overgrown with high grass, we found all the same traces of the sojourn of early sea hunters (Fig. 65). From a deep pit we unearthed a multitude of split bones of Arctic fox and bird (Site 41).

These surveys of the island permit us to conclude that it was inhabited comparatively late, but before the settlement here of the Aleuts during the time of the Russians.

At the same time, we were convinced that during the Paleolithic the island was not settled. It was separated from the Kamchatka Peninsula by a deep sea depression even during the Ice Age when a land bridge existed between Chukotka and Alaska. Only the relatively well developed means of seafaring of late sea hunters permitted the crossing of this barrier.



Figure 65. View toward an early site at a fur seal haulout near the northwestern cape on Bering Island.

## Neolithic Sites in the Region of Avacha Bay (42 to 46)

### *The Two-Component Elizovskaia Site (Old Prison) (42)*

Traces of a Neolithic site were preserved by the bridge on the right bank of the Avacha River on a cape-like hill about 8 m high (Fig. 66).<sup>17</sup> Its cultural layer can be rather clearly traced along the upper edge of the knoll by the road. Cleaning the cultural layer off at this place revealed the following sequence of layers of loam and sandy loam in different tones generally of brown (Fig. 67).

1. Sod layer (sod and sub-sod, thickness 15 to 80 cm).
2. First carbonaceous band, 5 to 20 cm thick. Can be traced by small clusters of charcoal or individual pieces of charcoal at times within the first layer, at times directly under it.
3. Yellowish loam (5 to 35 cm) in the western part of the cut.
4. Discontinuous bands of yellow volcanic sand (5 to 10 cm).
5. Dark-brown loam 5 to 60 cm thick, impregnated with charcoal, containing cultural remains (flakes of argillaceous slate and tool fragments).

17 The illustration is a bit confusing. The site appears to be on the left bank.—*Trans.*

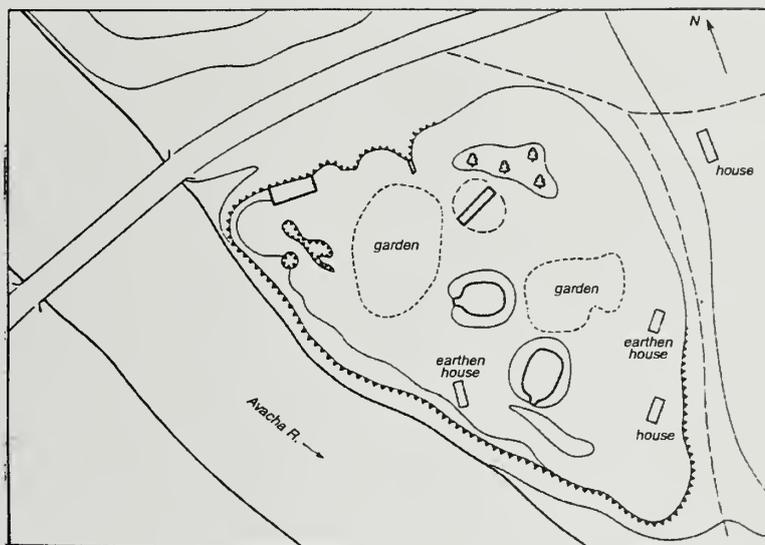
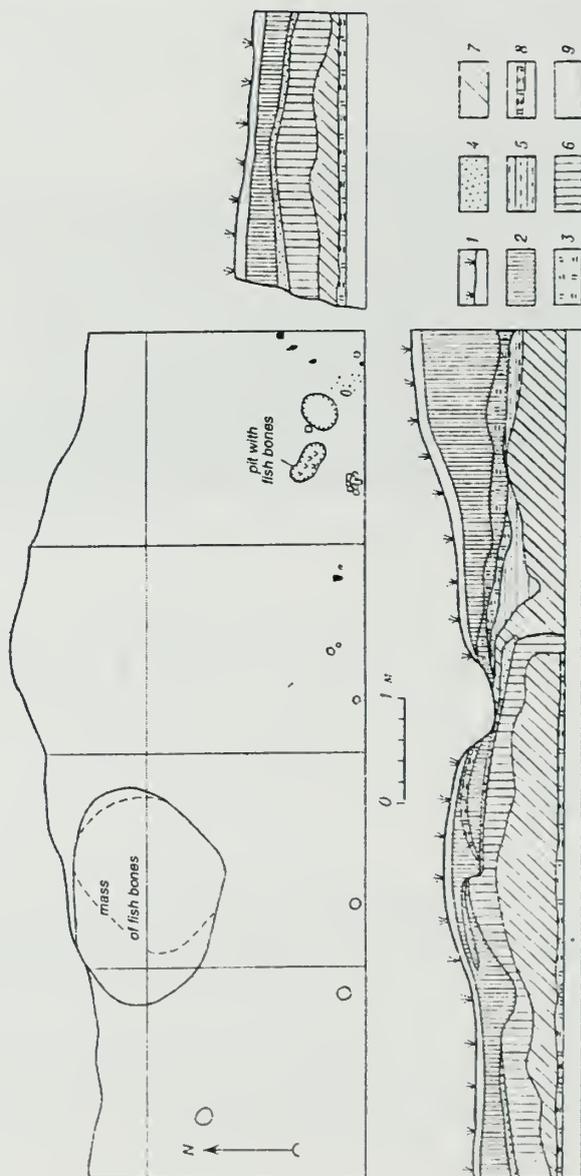


Figure 66. Plan of the Neolithic Elizovskaia site.

6. Light sandy loam in the eastern part of the cut, 20 to 55 cm thick. It also contains cultural remains.
7. Second carbonaceous band, about 5 cm thick. Can be clearly traced generally in the eastern part of the cut.
8. Grayish-yellow sandy loam (15 cm).
9. Gray sandy loam-sterile.

This cut passed through two temporally different occupation complexes. One of them can be traced in the eastern part of the excavation, the other in the western part.

The eastern complex is earlier. Here, at a depth of 80 cm, under a layer of volcanic sand in the lower carbonaceous band (Layer 7), two hearth stains were outlined. In one of them, the largest (1.4 m diameter), with scraps of birch bark burned on top, were two pits. One was oval (20 x 30 cm) and contained fish bones. The other was round (30 cm diameter), empty, and evidently contained a post and a neatly formed pile of eight oval cobbles. Near the hearth stain were stone artifacts of typically Neolithic appearance: a large, shaped, excellently retouched chalcedony knife; two large arrow points; a scraper; and a multitude of large and small stone flakes. Many of the latter were also found at a depth of 90 cm in the other hearth stain that is close by (in Square 3-B). Apparently this was the house floor. On its northern side, but somewhat above the floor, in dark-brown loam (Layer 3) in Square



**Figure 67.** Plan of the excavation and profile of the Neolithic Elizovskaia site. 1—sod; 2—soil layer, 3—traces of campfires; 4—volcanic sand; 5—yellowish-gray loam; 6—dark-brown loam, cultural layer; 7—light sandy loam; 8—carbonaceous layer; 9—yellow sandy loam.

4-A, were found a stemmed obsidian arrow point, a scraper, and a piece of a tool like an axe of argillaceous slate, in addition to those previously enumerated (Plates 48, 49). Over the whole surface and at various depths, between the layer of sand and the carbonaceous house floor, many small flakes were found. Charcoal from the hearth had a radiocarbon age of  $3900 \pm 100$  (GIN-183). It is probably somewhat too great.

The western complex, in the form of a clearly depicted pit house, is later. It cut through the band of volcanic sand (Layer 4) in the western part (described above) of an earlier house (Figs. 66, 67). Chronologically corresponding to this pit house is the uppermost carbonaceous layer (Layer 2), from which level it was dug. In this upper carbonaceous band and in the lower part of the sod layer (Layer 1) were flakes of argillaceous slate and obsidian (more than 100 of them were found). There was no volcanic sand in this western part of the excavation.<sup>18</sup> Then, there is the layer of yellowish-gray loam (Layer 3), and directly under it a layer of mixed earth, also containing flakes (Layer 5)—the fill of the pit house which had collapsed. In Squares 1-A, 2-A, 1-B, and 2-B were a shallow (20 cm deep) but broad (about 2 m in diameter) pit dug into the layer of grayish-yellow sandy loam (Layer 3) to sterile soil and now filled with decayed fish and small animal bones. The cut through this pit revealed the very interesting structure of its fill. It was all covered by birch bark burned only on top, above which was a charcoal layer several centimeters thick. There was also charcoal under the birch bark, and in the bottom of the pit, which was paved with small gastroliths. Near this shallow pit with fish bones were a decorated stone lamp, a stone arrow point, scrapers, and flakes (Plate 49). On its east and southeast sides and around it, in the sterile gray sandy loam were three round pits, probably from the posts of the pit house (Fig. 67).

To the southeast (35 m) a later pit house of the upper layer was excavated. Pieces of smooth-walled clay vessels with internal lugs and with ribbed molding on the inside running parallel to the rim were found there (Plate 52). In addition, there were pieces of leaf-shaped, bifacially retouched points; knives; fragments of ground adzes triangular in cross section; and scrapers (Plates 50, 51).

### *The Two-Component Neolithic Site on the Southern Slope of Mishennaia Hill (43)*

The site, which is located within the city of Petropavlovsk-Kamchatski, was first surveyed by E. P. Orlova, who determined that it had two components. "At a depth of 30 to 40 cm were a lamp, round stones, and pieces of clay vessels, one of them having a handle. Under this layer, at a depth of 70 to 85 cm, was a second cultural layer, from which nine obsidian arrow points, three scrapers, and a spear fragment were extracted. Objects of the lower layer were more carefully worked" (Antropova 1949).

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18 The lack of agreement between this sentence and the first sentence in this paragraph cannot be explained.—*Trans.*

The clearly-depicted, two-component nature of the site was noted, as well as such details as a fragment of ceramics with a handle (an internal lug) in the first layer and more carefully worked tools in the second layer. All these characterize the features of the complexes in a definite way.

During the author's excavations in 1966, the two component nature of the site on Mishennaia Hill was confirmed. Unfortunately, the upper layer provided nothing other than indeterminate remains of bone. However, from the second, lower layer were extracted a partially ground axe, triangular in cross section, with a lightly flaked, worn working edge; five fragments of axes and adzes; and two narrow-bladed knives with stems. One of them was carefully worked, completely covered by retouch and the other was made on a blade flake, with the working edge retouched. There were three trapezoidal scrapers, one of them with a high back and the two others made on pieces of broad blades. Among the other, less significant stone artifacts of this site can be noted a flat fishing sinker of sandstone with two indentations (Plates 53, 54).

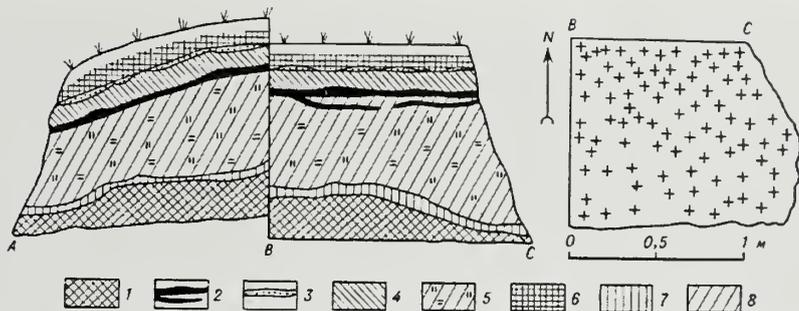
An age of the charcoal from the lower layer is  $2160 \pm 90$  (MAG-34).

#### *A Single-Component Neolithic Site in Petropavlovsk-Kamchatski on Kirpichnaia Street (44)*

In the southern outskirts of Petropavlovsk-Kamchatski, on Kirpichnaia Street, preliminary exploratory excavations of a Neolithic site discovered by V. Tkachenko were conducted. The site is located at the very end of the street, on the precipitous shore of Avacha Bay, 50 m above sea level. The whole area of the site was occupied by gardens. In an area free of them, on the upper part of the cut shore denuded of sod, a 1 x 1 m profile was cleaned off. As a result, the following layers were revealed (Fig. 68).

1. Sod layer 15 to 20 cm.
2. Volcanic gray sand 2 to 3 cm.
3. Brown sandy loam 20 to 35 cm.
4. Volcanic ash 8 to 10 cm.
5. Volcanic ash 4 to 6 cm runs in a discontinuous band in the layer of brown sandy loam with a mixture of isolated pieces of charcoal. Apparently it cuts through the cultural layer.
6. Brown sandy loam with a mixture of isolated pieces of charcoal, with a large quantity of stone flakes and artifacts of stone—the cultural layer.
7. Layer of red loam 15 to 20 cm. Loosened surface rocks.
8. Rocks.

Thus, at a depth of 40 to 45 cm under the volcanic ash we encountered the cultural layer, which was 70 to 75 cm thick. The layer, throughout its whole thickness, was saturated with isolated pieces of charcoal (their age by C-14 is  $2390 \pm 70$  [MAG-103]). Many stone



**Figure 68.** Profile and plan of the test pit at the Neolithic Kirpichnaia site. 1—red rock; 2—volcanic ash; 3—volcanic sand; 4—brown sandy loam; 5—cultural layer, 6—subsod layer, 7—red loam; 8—brown loam.

flakes and blanks of artifacts of stone were encountered. Predominantly milk-white chalcedony, obsidian, sandstone, and, rarely, green and variegated flint served as the materials for making the stone objects.

In the area that we opened in the site were many flakes of the above-mentioned material, as well as prepared artifacts. It should be noted that most of the prepared artifacts were broken.

A subtriangular knife of siliceous slate was found, as were a curved knife of chalcedony and a willow-leaf arrow point of obsidian.

Also found were an arrow point of obsidian with a notch on the side of the base; a flat arrow point of obsidian with a straight base; a stemmed point; a piece (the tip) of an arrow point of obsidian; five fragments (bases) of arrow points of chalcedony, obsidian, and variegated flint; and a scraper on a blade flake of obsidian with careful, fine, high retouch. The scrapers were predominantly on blade flakes, and the ground adzes had a pointed butt of lenticular or subtriangular cross section (Figs. 55, 56).

In the same place were found fragments of a flat-bottomed, smooth-walled clay vessel with internal lugs and fragments of a thin-walled, slightly out-turned rim (Plate 52:2). In addition, at the site, which had been dug up for a garden, an abundance of surface material was collected (Plates 57, 58).

#### *A Site on the Shore of Rakovaia Bay (45)*

At this site, located on a high (about 20 m) shore terrace within the city of Petropavlovsk-Kamchatski, only surface material was collected. Here, in 1961 we took several stone artifacts—arrow points, scrapers, and flakes—of Neolithic appearance from the surface layer of loam dug up for a garden.

*The Avacha Site (46)*

This site was found by the author in 1971 on a high precipice on the shore of Avacha Bay, on the left bank at the mouth of the Avacha River. Neolithic and later cultural layers were traced over the extent of several hundred meters in the sub-sod and deeper (to 1 m) sandy loam deposits of this high terrace. Its elevation here was not uniform and in the middle of the site attained its greatest height. The site was marked in this area by pit house depressions covered by later trenches. Among the numerous stones found—predominantly obsidian artifacts (arrow points, scrapers, and knives)—there were also a labret pin and an anthropomorphic figurine. The age of the charcoal from the middle layer was  $2990 \pm 100$  (KRIL-252).

**Early Sites on Capes Zelenyi and Bol'shoi, at Manily Village, and near Kamenskoe Village on the Lower Reaches of the Penzhina River (47 to 50)**

Only single-component, Late Neolithic sites were found here: on the top of rocky Cape Zelenyi, down the course of the Penzhina River from Manily village, on the right bank (Site 47); and on Cape Bol'shoi, also rocky, 5 km farther down the river, on the same side (Site 48).

Both sites are marked by house pits to 1 m deep and 5 to 6 m in diameter. The cultural layer is in brown loam. Among the finds predominate ceramics with applied ridges on the outside (Plate 60) and crude scrapers, knives, and points of basalt (Plate 61), as well as sea mammal bones. No excavations were conducted. Collecting was limited to surface material.

Similar surface material (Plate 62) was collected in gardens at Manily village on a terrace 4 to 5 m high (Site 49). In two places—5 km above and 6 km below Kamenskoe village—on hills with flat open tops, on a fine rubble surface, the insignificant remains (predominantly flakes) of early hunters' camps were collected (Sites 49 and 50).

# Neolithic and Later Sites in the Anadyr River Basin (51 to 74)

## Unmixed Single-Component Sites and Cemeteries (51 to 71)

### *A Neolithic Site on Chirovov Lake (51)*

Traces of this site were first discovered in 1952 by N. A. Grave in a test pit on a frost hill on the eastern side of Chirovov Lake (Fig. 69). The height of the hill is 15 m. Its length at the bottom is 115 m and at the top 62 m. The greatest width of the upper area, having the form of an irregular oval, is 40 m, at the narrowest, 31 m. Its flat top was divided lengthwise into two parts: the western, with a bare small-rubble surface, and the eastern, being somewhat depressed, richly overgrown by grass, with isolated spots (mounds of clay with cobbles), and four shallow pits (to 0.5 m deep). This depressed part of the hill represents an actual hollow, bounded on its eastern longitudinal edge by a berm (2 to 3 m wide) of the same kind of small rubble as the whole western half of the upper area. This whole large shallow depression, in the northern part of which Grave placed his test pit, was the area of occupation of people in the past. Everywhere in this modern soil, which was overgrown with grass, an early cultural layer could be traced, which was dated by A. P. Okladnikov, based on Grave's finds, to the Late Neolithic and early Bronze Age on the scale of northern Yakutia.

We undertook excavations of this cultural layer in 1959 by laying out two exploratory pits and two trenches (Fig. 70), which indicated scarcity of the finds in the southern part and relative wealth in the northern part. Here, not only was carbonaceous earth (in Test Pit 2 and in Trench 2) discovered, but also ceramic fragments and flakes (in Test Pit 1), as well as split bones of reindeer (as determined by V. I. Tsalkin), obsidian arrow points, and scrapers (in Trench 1). After this, in the most prospective place, between Trench 1 and Test Pit 1 in the northern part of the flat top of the hill, a large excavation with a total area (including the adjoining Trench 1) of 102 m<sup>2</sup> was carried out (Fig. 70). Excavations were conducted by opening the area in layers, using stretchers to carry the examined earth away. As a result of carefully recording the profiles, the following total stratigraphy was revealed, which in general corresponds with Grave's data. On top was the sod and black meadow soil (10 to 20 cm thick). Below extended a layer of brown loam with small pebbles (15 to 20 cm thick). Still lower, a stratum of light-brown sandy loam (approximately the same thickness), also with small pebbles, could be traced. All this was overlain by yellow clay of varied thickness, and still deeper was a greenish-brown clay deposited in those places where the yellow clay tapered out.



Figure 69. View of frost mound from the Neolithic site on Chirovoe Island.

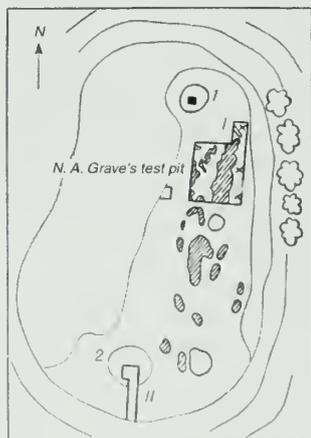


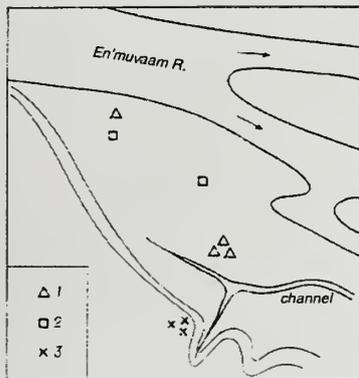
Figure 70. Excavation at the Chirovaia site.

In the process of excavation, sharply marked rises and falls of the yellow clay layer were observed (Fig. 70), which can be explained by the presence here of wide frost cracks.

The thickness of the sub-sod cultural layer in the hollows reaches 0.5 m on average, but in some pits it is substantially more—to 1 m from the ground surface. Such depression of the cultural layer is brought on by frost processes, in particular by the formation of frost cracks after the occupation here by people.

Within the boundaries of the excavation was a complex system of hearths and storage pits of various assignments, including those with split bones of reindeer (8/4) and dog (1/1) (as determined by V. I. Tsalkin), and with ceramic sherds. The most notable household structure among them was an oven made in the clay stratum. It had a flue, evidently for smoking fish (at least, a local old-timer, a Yukagir D. A. Alin, confirmed that such type of hearth was the most favorable for this purpose).

The flue of this hearth was sooty, and in its mouth was preserved carbonaceous earth. Also in it were ceramic sherds and split deer bones. A large number of clay sherds were nearby, in a neighboring pit. We have already published a detailed description of all these household complexes found in the excavation (Dikov 1961c:31-33).



**Figure 71.** Location of an early site at Mukhomornoe. 1—deer-herding camp; 2—storehouse; 3—early site.

A large number of varied remains of human life and activity, which undoubtedly lasted a long time at this place as it is exceptionally favorable for fishing and hunting deer, were found here. Within the boundaries of the excavation at the site were many stone flakes, scrapers, knives, arrow points, and fragments of ceramics with rounded, flattened bottoms and with waffle-stamp imprints.

In systematized view, the stone artifacts found here are represented in Plates 63-70. The ceramics are provided in Plate 71:1-15. Bone items (points, a knife handle, a punch of deer antler, and a decorated disk) can be seen in Plate 70.

The age of the charcoal from the cultural layer is  $2800 \pm 100$  (GIN-00).

### *The Mukhomornenskaia Neolithic Site (52)*

The site is on a cape-like projection of a high (10 to 12 m) terrace on the right bank of the En'muvaam River, near the mouth of a creek that empties into it, and not far from the present so-called Mukhomornenskaia weather station. In the upper cultural layer of brown loam, Neolithic material was collected: a pointed laurel-leaf knife or spear point, flaked on both sides, of gray flint; five obsidian flakes; eleven flakes of red flint, five of chalcedony, and sixteen of gray flint; and a splinter of long bone (Fig. 71<sup>19</sup>).

### *The Vakarevskaja Site (Remnant Neolithic) (53)*

As early as the end of the nineteenth century A. E. D'iachkov turned his attention to traces of an early site at Vakarevo, a fishing place on the lower reaches of the Maina. In 1957 an archaeological expedition from the Anadyr Regional Museum examined the location of this early site. The spring volume of water in the river did not permit carrying out a

19 This figure number is incorrect and the right one is not clearly marked in the original.

detailed investigation at that time. However, in 1958 excavations were conducted and a great amount of material was collected on a culture of inner continental Chukotka previously unknown to archaeologists (Okladnikov and Nekrasov 1960).<sup>20</sup> In principle this culture is different from the so-called continental hunters and fishermen of the Late Neolithic and early Bronze Age.

The site is located on the sandy left bank of the river, on a spit up to 6 m high. The nearest modern settlement—the fishing village of Vakarevo—is 8 km up this river.

The cultural layer could be traced in the cut bank of the long (about 200 m) sandy knoll along the river and on the point located 400 m east of it, near the mouth of the river. The cultural remains could be seen to a depth of 110 cm from the surface in grayish-yellow sand, which was covered on top by lighter sand and then dark humified sand.

An area of 15 m<sup>2</sup> was opened up by the excavations, after thick brush was rooted out.

Two horizons were determined: at a depth of 90 to 100 cm and at a depth of 100 to 110 cm.

In the first horizon, five hearth stains with significant content of wood charcoal, bird and fish bones, fragments of clay vessels, and flakes of gray siliceous slate could be traced. Fragments of vessels and flakes were also found between the hearths.

In the second horizon was an area of trampled earth (the remains of a house eroded away by the river) and four adjacent stains with sherds, charcoal, and split animal bones.

Among the bones, those of deer (44/13) prevailed. The bones of bear (1/1), fish, and ducks were also identified (by V. I Tsalkin). The sherds had predominantly cord imprints and rectangular comb stamp (Plate 72), and among the flakes, some of obsidian were encountered.

At this point the excavations were stopped as the cultural layer in this area pinched out completely.

In 1963 we conducted additional cleaning of the cut bank on the left side of the excavation (if one looks at the excavation from the river) and extracted from the lower hearth layer at a depth of 1 m charcoal for determining the age of the site by radiocarbon analysis. The date obtained was 500 ± 50 (LE-674).

### *The Ust'-Mainskaia Neolithic Site (54)*

This Neolithic site was found at a former summer crossing of deer on the right high bank of the Main River, at the very entrance of this river into the Anadyr, and 500 m above the ruins of the former village of Ust'-Main and an old Christian cemetery (Fig. 72).

The height of the terrace at this place, where the early site is located, reaches 11 m. The terrace is thickly overgrown on top by Siberian cedars. Its slope is rather steep, with exposures below of pebbles, and above of loam with pebbles.

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20 Simultaneously, excavations at this site were conducted by I. A. Nekrasov.

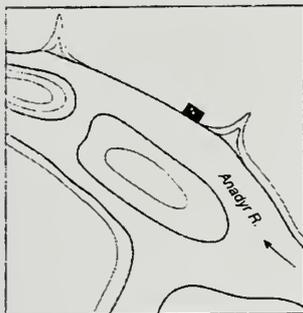


Figure 72. Location of Neolithic site at Ust'-Main.

The cultural layer (20 to 30 cm thick) was easily noted by the reddish band of sub-hearth soil and could be traced to a depth of about 50 cm from the top of the terrace in the yellow sandy loam above the laminated loams.

The first find was in the talus on the slope: two spalls from a black cobble and one clay sherd.

The cultural layer in the excavated area (measuring 5 x 5 m) contained flakes of the same black slate, split cobbles, sherds, split animal bones, and charcoal. Also taken out were a small scraper on a flake of black siliceous slate, a short almond-shaped knife made of light-gray siliceous slate, and several less significant items (Plate 82:1-3).

#### *A Neolithic Site at Snezhnoe (55)*

On a bare rubbly hill, 15 km northeast of the village of Snezhnoe, on the right side of a creek, one flake of red flint was found.

On a knoll among yarangas northwest of the village, in gardens on the edge of the 6- to 8-meter river terrace, and within the boundaries of the village itself, were encountered several obsidian flakes and knife-like blades. Among the yarangas of the southeast part of the village were a quartz scraper and an oval skreblo (Plate 82:21, 22).

Shovel tests were dug in three places along the edge of the bank (down to sterile). Several dozen more flakes and knife-like blades were found. The cultural layer was rather poor (Plate 82:17-20).

On the sloping beach, opposite the cultural layer that we excavated, a local resident (Stepanov, director of the radio station) found a large prismatic obsidian core (Plate 82:23)

#### *The Remnant Neolithic Ust'-Belaia Lower Site (56)*

This site was found in 1966 by the Chukchi collective farmer Val'vara and the head of the Ust'-Belaia village council A. A. Rybalkin in a projecting cut bank of the lower flood-plain terrace where collective farmers had begun to build a storeroom (Fig. 73) in

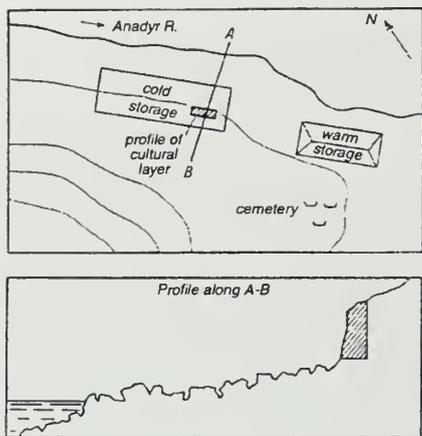


Figure 73. Plan and profile of the lower Ust'-Bel'skaia site.

this same year, the cultural layer of the site was carefully investigated by the author (Dikov 1968e). As a result of cleaning the cut bank, a large number of stone and bone artifacts was found at a depth of about 1 m, as were pieces of clay vessels. The so-called splitting adzes found here, which could evidently have served also as ice picks, are very significant and distinctive. They were made of dense andesite-basalt. Excellently ground knives of argillaceous slate were also found here (Plates 67:8-10; 68:2, 3).<sup>21</sup> The remaining stone tools are of obsidian: leaf-shaped, bifacially retouched projectile points (Plate 67:1, 2); end scrapers (Plate 67:3-6); a large oval biface knife (Plate 67:7); a blank of a prismatic core, triangular in cross section, retouched along the edges (Plate 68:4); and a completely geometrically regular prismatic knife-like blade (Plate 68:5). The tools of bone and deer antler were very abundant and diverse: mattocks and picks (Plates 69, 70), adzes (Plate 71), knives for cleaning fish, and broad blade-like bone needles intended for piercing freshly caught fish (Plate 72), as well as numerous arrow and dart points (Plate 73) (Dikov 1968e:Fig. 3). Regarding clay vessels: the sherds are richly decorated with horizontal rows of imprints of rectangular comb stamp, as well as with cord imprints (Plate 74).

#### *A Neolithic Site on Uvesnovaniia Hill (57)*

Three kilometers below Ust'-Belaia on the left bank of the Anadyr were preserved the remains of a depression and a high wooden cross with an inscription. In spring [*vesna*] deer cross the river at this place, from which the place obtained the name Uvesnovaniia.

On the opposite bank rises a hill, overgrown almost to the very top with brush (Fig. 74). Slightly below its naked crest, 10 m to the south, is a mound of stones deposited in two or three layers and covered with moss. The mound reaches 2 m in diameter and about 60 cm high. This is a rather mysterious pile of stones, to some degree similar to Ust'-Belaia kurgans [burial mounds], though smaller.

No finds were made around the mound. However, upon dismantling it there was found on the surface of the mound a large number of the smallest chalcedony and obsidian

21 It appears that the plates became six numbers out of order at publication, thus, to find Plate 67 see Plate 73, and so on. This is true for all the Ust'-Belaia Lower site.—*Trans.*

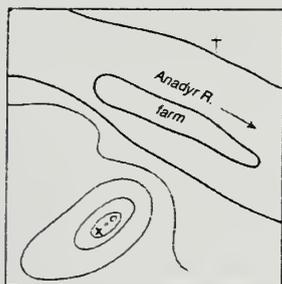


Figure 74. Neolithic camp at the Uvesnovaniia site.

flakes. In the southwestern part of the mound, in a thin surface layer of bright-brown burned sub-hearth earth with charcoal, was a whole series of chalcedony and obsidian tools: a multi-edged burin on a core; ten varied arrow points, among them stemmed ones (Plate 81); and small scrapers. There were also pieces of thin-walled clay vessels of two types: yellow, with parallel lines along the neck; and gray, with rows of vertical notches. Deeper under the mound nothing was found.

The abundance of tiny flakes of chalcedony and obsidian clearly make this site one of production, and permits assigning it to the category of so-called Stone Age workshops.

#### *The Neolithic Site at Kameshki (58)*

This site is on a large table-like hill that projects as a rocky cape toward the river. Rising 30 to 35 m above the river valley, it is not far from Ust'-Belaia, which is easily seen if one looks from the place of our excavations (Fig. 75).

On the entirely barren and flat, small-rubble top of this hill were spalls of siliceous slate, two obsidian flakes, and small pieces of thin-walled, cord-marked clay vessels, and 100 m south in a small saddle were three shallow depressions from former houses. Both the depressions and the mounds here were overgrown with moss under which a stratum of soft brown loam with rubble could be traced (Fig. 76).

The pit with the most definite outlines (2.5 x 5 m) was excavated. In its middle, at a depth of 0.5 m, were hearth stones, charcoal, a crude obsidian arrow point, flakes with a wavy form (one lamellar with a burin spall removed), and pieces of thin clay cord-marked vessels of a gray color (Plate 81:16, 17). No other finds were encountered in the pit (Fig. 77).

#### *Neolithic Sites of Vilka I and Vilka II (59 and 60)*

Vilka [Pitchfork] is the name of a hill as one approaches the right bank of the Anadyr here—its three capes look like a pitchfork. It is located on the river approximately 10 to 15 km below Kameshki (Fig. 78).

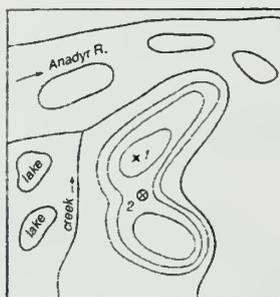


Figure 75. Neolithic site on Kameshki Hill.

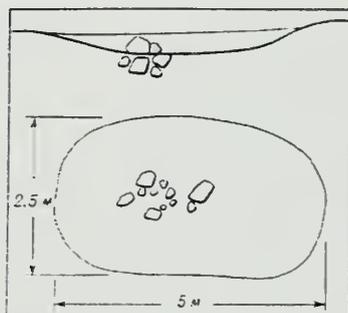


Figure 76. Neolithic pit house at the Kameshki site.

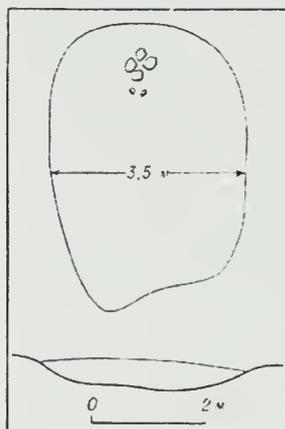


Figure 77. Neolithic pit house on Kameshki Hill.

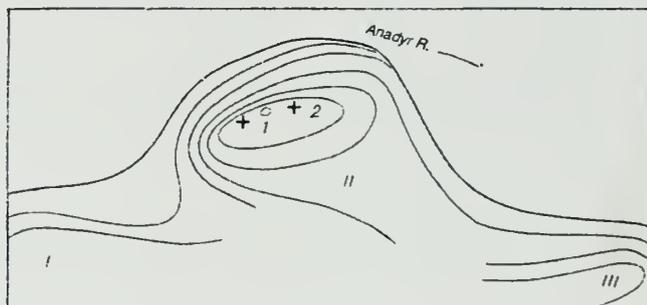


Figure 78. Early site in the Vilka locality.

On the right cape, on flat rubble, in a 100 m<sup>2</sup> area (at an elevation of about 30 m) were noted flakes, an obsidian knife-like blade, a fragment of a prismatic core, and a piece of a point (Plate 82:6).

On the second cape, at an elevation of about 40 m. in yellow loam with small rubble was a pile of deer antlers and around it obsidian blades, flakes, and a lateral burin on a blade (Plate 82:4, 6<sup>22</sup>, 7).

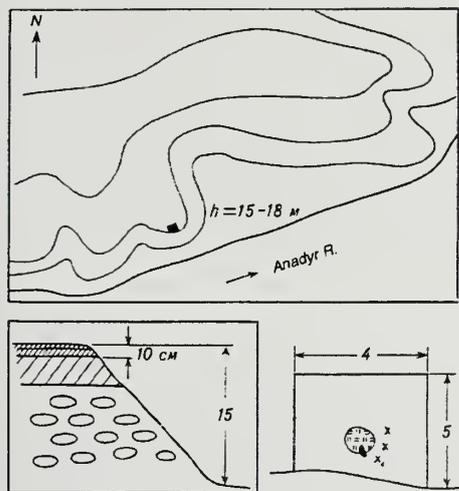


Figure 79. Early Utesiki site.

### *The Neolithic Utesiki Site (61)*

This Neolithic site was found on the cape-like projection of a high steep bank 1.5 km down the river from the entrance of the Utesiki River into the Anadyr, near a former wild deer crossing (Fig. 79).

The cultural layer with split burned deer bones could be traced at an elevation of 15 m above the river level, in a thin (about 30 cm) stratum of surficial yellow and brownish loam, under which lay the same kind of loam, but with small rubble, and below which was rock.

In the excavation (4 x 5 m area) at a depth of 5 to 10 cm was a hearth in the form of a spot of ashy earth 1.5 m in diameter, and near it were an especially large cluster of unburned split deer bones, two fragments of a flint meat knife of the El'gygytyn type, and obsidian flakes (Plate 83).

### *The Neolithic Anokatravy Site (62)*

Under the right, low (2 to 3 m) bank of the Anokatravy tributary, not far from its mouth, on a sloping beach were collected obsidian flakes, one lateral burin, a knife-like blade, scraper-like items, and a large oval skreblo of argillaceous slate (Plate 82:5, 8-16). No cultural layer was found nearby.

### *Neolithic Sites on Osinovaia Spit (63 and 64)*

On the spits above Osinovaia Hill (not far from the mouth of the river of the same name) were very abundant traces of human occupation in the form of obsidian flakes. Along with this, on the nearest spit up the river from Osinovaia Hill (Fig. 80), which we tentatively named "Osinovaia Spit," was a well marked cultural layer that was visible along the cut bank (Site 64). At this place there is presently a fish camp, and the whole sloping beach on the right bank of the Anadyr, from the spit with the fish camp to the following spit and farther, abounds in surface material (Fig. 80): obsidian flakes; knife-like blades (these are few); skreblos (broad and flat); and leaf-shaped knives, one of which of slate arrow point and three-sided blanks (Site 63) (Plates 84 to 89).

In 1959 we placed an excavation on the first flood-plain terrace above Osinovaia Spit (Site 64). The elevation of this terrace above river level was 3 to 4 m (high or low tide)

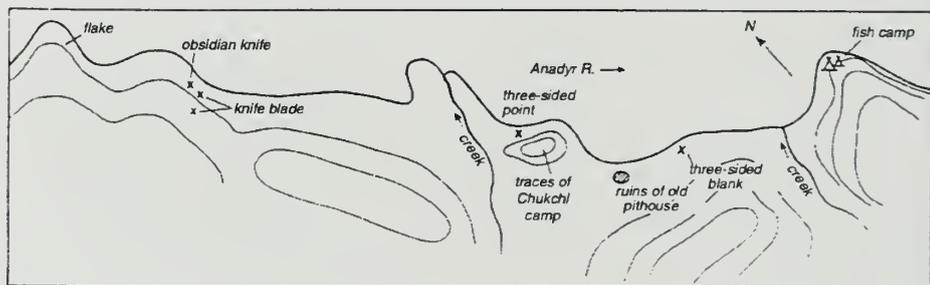


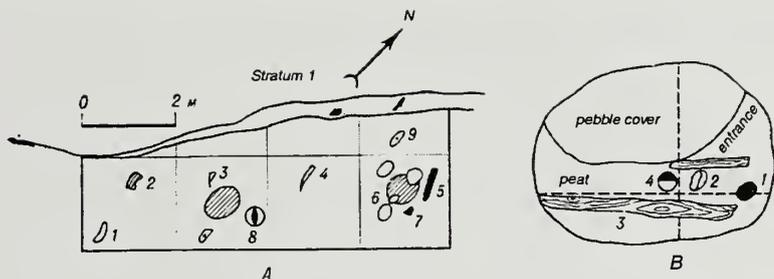
Figure 80. Early sites on Osinovaia Spit.

The pebbles with sandy loam composing it were more or less uniform from top to bottom, and traces of a site were encountered here in three horizons: buried soils at depths of 50 cm, 75 cm, and 1 m, and between the upper and middle horizons, which essentially composed a single upper cultural layer separated from the lower by pebbles that contained no artifacts. Excavations of the area richest in finds (about 22 m<sup>2</sup>), located on the edge of the cut bank, were conducted by means of strict layer-by-layer, sequential removal over the whole area. The excavation, from beginning to end, was divided into four-meter squares (2 x 2 m) (Fig. 81A). In the upper layer, the presence of two carbonaceous hearth stains located 4 m from each other, was established. In addition to split bones of deer (15/16), seal (1), bear (20/2), and bird (5) (as determined by V. I. Tsalkin), flakes of obsidian and gray flint, scrapers on flakes, a flint knife retouched along the edges, bone awls, a thin slate whetstone, two clay sherds, a bone icister barb, a bone pendant of a bear canine, a piece of a walrus tusk, a bear canine, and a foreshaft of a toggling harpoon were found (Plates 90, 91). In the lower layer were also two hearths with split bone (predominantly deer), flakes, and scrapers, somewhat to the side of which three smooth-walled clay sherds were found.

Four meters southeast of this excavation, in the sod, was a depression thickly overgrown with grass. As a result of excavation, it was revealed that this was a pit house 5 m long and 4 m wide with the entryway at the northern corner. Its roof of longitudinal logs had collapsed to the floor, on which were an overturned stone lamp and two stone scrapers. The whole floor was covered with a clay layer, while the pit house roof was covered with peat, except on the northwest side, which was covered with pebbles (Fig. 81B).

### *The Neolithic Site on the Spit near the Fish Cannery (65)*

On a spit on the left side of the river, among the structures of a fish cannery, were a large oval skreblo on a huge flake and several flakes of obsidian—indisputable signs of occupation of this high (about 3 m) spit in antiquity.



**Figure 81.** Excavation on Osinovaia Spit. A. 1—bear bone; 2—seal bones; 3—bear canine; 4—seal rib; 5—piece of walrus tusk; 6—charcoal and burned bones; 7—potsherd; 8—arrow point; 9—harpoon foreshaft. B. 1—lamp; 2—stone; 3—beam; 4—scraper.

### *The Neolithic Site (Workshop) on Osinovaia Hill (66)*

Several kilometers below, on the right bank of the Anadyr, at the mouth of the Osinovaia River, rises a small cape-like hill with three small peaks. In an area near the middle peak, in yellow loam with gravel, the remains of a Stone Age workshop were found (Figs. 82, 83).<sup>23</sup>

The elevation of the area with the cultural layer is 15 m above the river. In 1957 the first test pit was placed. The thickness of the cultural layer was 30 to 40 cm.

Beginning at the surface, a multitude of obsidian flakes was found, but tools were few (lateral and dihedral burins on thin flakes, a piece of a knife or spear point, and scrapers). There were no knife-like blades. But, in distinction from crude large flakes from sites on the spits, all the flakes here were thin.

In 1959 a large excavation of 74 m<sup>2</sup> in area was placed here. Preceding the excavations, a trench was laid out along the edge of the slope having the cultural layer. After that, the area marked for excavation was divided in four-meter squares (2 x 2 m), and the opening of the whole area of the site was begun on a broad front. The camp (or more correctly, the workshop) was single-component (traces of occupation and work were in the sod and in the sub-sod yellow loam, at a depth of 40 cm) and was excavated completely (Fig. 84).

A peculiarity of this early work area was the presence in it of two pits of a meter's diameter (Fig. 84) with charcoal and burned stones, where there were especially many flakes and near which all the remaining finds were grouped. A peculiarity of the stone industry of this site is the fact that most artifacts and the overwhelming bulk of flakes were made of obsidian and, to a lesser degree, chalcedony, as well as the fact that only five knife-like blades were found here, while there were several thousand flakes. The tools encountered here were

23 The plates intended seem to be Plates 92 and 93.—*Trans.*

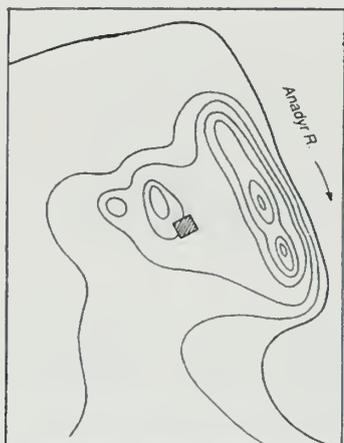


Figure 82. Neolithic site on Osinovaia Hill.



Figure 83. View of Osinovaia Hill with Neolithic site.

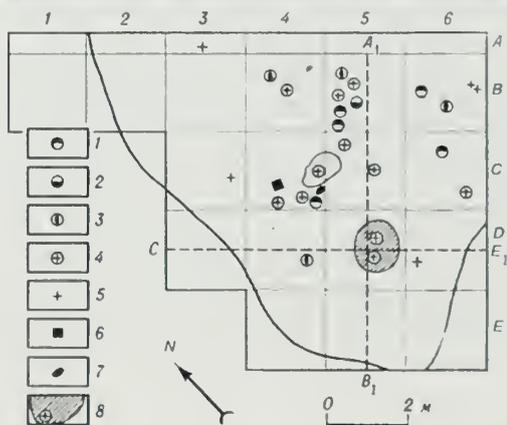
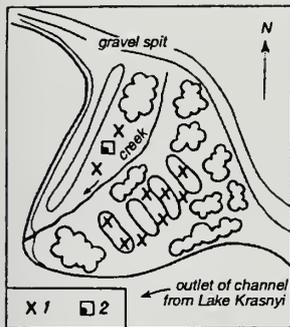


Figure 84. Excavation at the Osinovaia site. 1—stone scraper; 2—knife; 3—arrow point; 4, 5—flakes; 6—stone anvil; 7—hammer; 8—fire pit.



**Figure 85.** Early site on Krasnenskaia Spit. 1—stone artifacts and flakes; 2—small house in 1957.

scrapers, arrow points, knives, graters on thin flakes, stone anvils, a few egg-shaped hammer stones, and two “grinders” of gray porous stone (Plates 92, 93).

### *The Neolithic Site (Workshop) on Krasnenskaia Spit (67)*

On a cobble spit (3 to 4 m in elevation), which is located at the mouth of a tributary of Krasnoe Lake, rich traces of the manufacture of obsidian tools were investigated in 1957. A gigantic Stone Age workshop is located in a triangular area of the spit, over an area of no less than 100 x 150 m (Fig. 85). The bulk of the flakes—all in piles on mounds—speaks of the same coarse, it might be said, extravagant (owing to much raw material) technique of working as on Spits 1, 2, and 3 in Krasnoe Lake. Many skreblos were collected here, often on large convex flakes and cobble spalls, which preserved cobble cortex in places (Plate 94). Also found here were two bifacially worked elongated arrow points of convex-lenticular cross section, one of them having an asymmetrical, slightly concave base (Dikov 1958b:52, Fig. 25:2, 3). No knife-like blades or prismatic cores were found.

In 1959 we again visited Krasnenskaia Spit and supplemented the materials from it, as well as from the other three spits on Krasnoe Lake, with new collections. Therefore, in order to explain the stratigraphic dependence of all these finds on the spits, we profiled the cut bank with the cobble berm on Krasnenskaia Spit that was eroded by the river. The cleaning of the cut bank revealed the following sequence of deposition from top to bottom: thin layer of sod (5 cm), small pebbles with loam (to 0.5 m), large pebbles with sand (0.5 m), mixed pebbles (large and small) with sand (30 cm), small pebbles with sand (15 cm), large pebbles with sand (15 cm), and sand with obsidian flakes (cultural layer) with a visible thickness of more than 0.5 m. The total height of the cut was 215 cm. The height of the upper edge of the cut was 3.5 m above the river.

### *Three Neolithic Sites on Spits in Krasnoe Lake (68 to 70)*

The lake was examined all around by boat. The shore (4 to 6 m high) was rocky everywhere, and the top was overgrown. The sloping beach of very roughly rolled pebbles attested to the relatively young age of the lake. Beginning at Cape Belyi on the eastern side of the lake and going in a direction toward its outlet, the pebbles became smaller. A multitude of obsidian pebbles appeared among them. Chalcedony pebbles were also encountered. Here, at the outlet of the lake, were the first signs of people occupying the lake shore in antiquity.

On the right side of the tributary leading out of the lake—on Spits 1, 2, and 3—were traces of worked obsidian—but not chalcedony—tools, though there was much chalcedony raw material here.

*On Spit 1* (elevation 2 to 3 m), which is located on the right side of the tributary headwaters falling into the Osinovaia River, finds were few—only large and massive flakes, in distinction from the thin lamellar flakes at the above-mentioned sites (Site 68).

*On Spit 2* (elevation 4 to 5 m), which is located 3 km from the mouth of the tributary on three parallel pebble crests, each 150 m in length, was a multitude of the same crude obsidian flakes and skreblo-like tools (Site 69).

*Spit 3*, which has the same elevation but is very eroded and damaged, is located near Spit 2. Just downstream on the tributary were abundant finds of obsidian flakes and skreblo-like tools made by the coarse technique of flaking (Site 70).

On the high (to 4 m in elevation) pebble *Telegrafnaia Spit*, on the right bank of the river, were a few obsidian flakes. In addition to this spit, all the prominent spits were examined in 1959. On several of them were the same flakes of obsidian, as well as flakes of coarse gray stone, while on the last spit, in front of a high cape (with talus) on the right bank, was an abandoned Chukchi camp with traces of two yarangas, food storage pits, and a still completely whole wooden deer sled with three pairs of stanchions. In the same place were two skreblos of coarse gray stone of very archaic appearance. Such skreblos are characteristic of the whole period from the Neolithic to modern times.

The last spit (with traces of early pit houses) was on the right of the mouth of the Anadyr River (70a). Such early pit houses were also found at the entrance into Kanchalanskii Estuary on Capes Tolsty and Tonkii (70a and b).<sup>24</sup>

### *The Cemetery on Yukagirskaia Hill (Remnant Neolithic) (71)*

On the southern slope of this comparatively low hill with a flat top is a large cemetery, which was investigated before the Revolution by Doctor Grincvetskii and N. Gondatti. Gondatti turned over bone, wood, and iron items and human skulls from burials on Yukagirskaia Hill to the Leningrad Museum of Ethnography. They are now located in the

24 One of these site designations is in error.—*Trans.*

Museum of Anthropology and Ethnography without corresponding labels of provenience to the graves and with no description of the latter.

The graves were represented by deep (to 1 m) oval or subrectangular pits built among the stones covering the slope of the hill. Their length reached 2 to 3 m, and their width 1.5 to 2 m. They were oriented with the long axis north-south. The transverse sides [ends] were often formed by large slabs, which gave the grave plan the rectangular form so typical in Chukotka for early stone graves. The lateral walls were formed by stonework: blocks and pieces of slabs laid flat against each other.

The grave that we excavated in 1963 had dimensions of 2 x 2.5 m, with a pit 1 m deep. It was oriented north-south. On the north side stood a transverse slab of a meter's width. The remains of a skeleton were discovered after dismantling in the bottom of the pit a 30-centimeter layer of stones, which covered the grave. In the northern half of the pit were preserved the bones of the right leg of the skeleton, in the southern half were the remains of leather from clothing. Judging by these remains, the deceased was placed in the grave on its back with the legs extended to the south.<sup>25</sup> On the grave lay the decaying remains of wooden sled runners (Fig. 86).

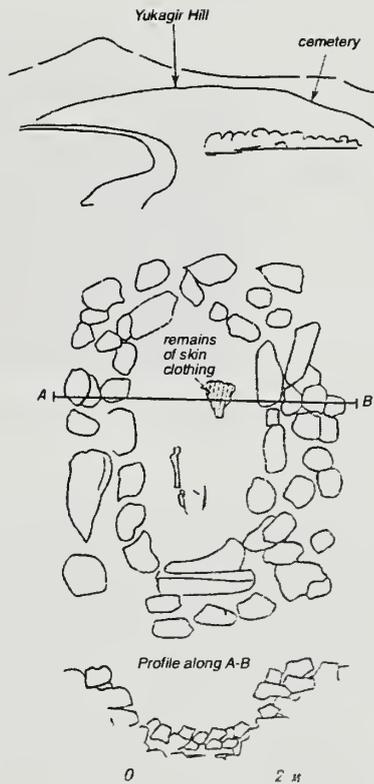


Figure 86. Cemetery on Yukagir Hill.

## Mixed Sites and a Cemetery (72 to 74)

### *The Ust'-Belaia Neolithic Sites and Cemetery (72)*

The main spring deer hunting has been near Ust'-Belaia village from of old, which is attested to by the crosses mentioned by D'iachkov, which are still preserved at the present time (D'iachkov 1898).

We first investigated traces of Early Neolithic sites on ridges to the southwest from Ust'-Belaia village (Fig. 87) in 1956 (Dikov 1958a:43).

25 It is difficult to imagine how the legs could be both extended to the south and found in the north.—*Trans.*

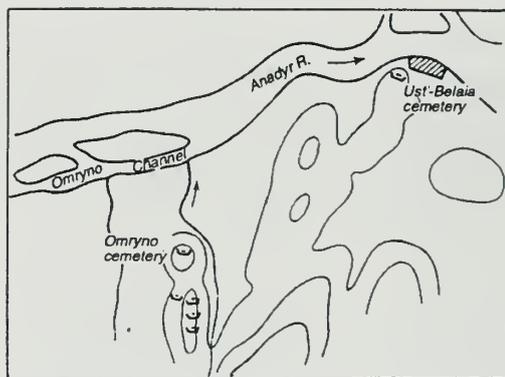


Figure 87. Location of the Ust'-Bel'skii and Omrynskii cemeteries.

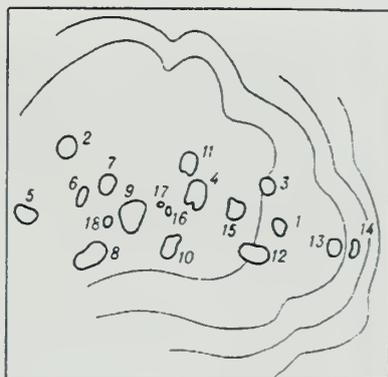


Figure 88. Plan of the Neolithic Ust'-Belaia cemetery.

In 1957 collections of surface material were continued, as were excavations of stone kurgans on the hill closest to the village. In addition, another Neolithic site was discovered on a rocky cape of the right bank of the river downstream from the village (Fig. 87). There, in clearings, in a thin surface layer of yellow-brown loam with small rubble, were a very few finds: obsidian knife-like blades, thin brown clay sherds with textile imprints, and something similar to a piece of a bone end-cover-plate for a bow.

In 1958, 1959, and 1963 all 15 stone outlines (kurgans) on Ust'-Belaia Hill were excavated completely (Fig. 88). Three pits (Nos. 16, 17, and 18) were also excavated near rocky outcrops with cultural remains and substantial surface material was collected from the surface of the hill between kurgans (Dikov 1958a:46-49; 1961b:10-14; 1961c:21-27).

In many kurgans and pits were signs of burials: human bones (sometimes burned), ochre, or charcoal. It also turned out that in several cases that the stones forming the kurgan embankment were grouped around the rocky outcrops (outlets of rock) and that consequently in such cases the kurgans were formed in part due to the natural disintegration of these rocky outcrops (Fig. 89). It is now possible to believe with confidence that the burials of the Ust'-Belaia cemetery were not necessarily connected with the kurgans: in some cases they are located near rocky outcrops that are not heaped up with stones (Nos. 16 and 18).

All the Ust'-Belaia kurgans were excavated layer by layer, in most cases, over a large part of their area. For control, transverse balks were left, and sterile soil was dug under them to a substantial depth (to 1 m) for a check.

Four more or less well preserved human skeletons with a wealth of burial goods were in Kurgan 8. They lay at various levels and were oriented in different directions (Dikov 1961b:Fig. 1).



Figure 89. Excavations of an Ust'-Bel'skii kurgan.

One should note that under the skull of the first skeleton were shell beads, among the bones of the skull of the second skeleton was a bronze four-sided awl, and under the lower jaw of the third skeleton was a bronze burin wrapped in birch bark. Among the stone artifacts, which were definitely not just with the third skeleton, arrow points, scrapers, knives, knife-like blades, and burins predominated (Dikov 1961b:Figs. 2-6).

In Kurgan 9 between a rocky outcrop and four large blocks of stone were also the remains of a burial (Fig. 90). The human skeleton placed between stone slabs (oriented with the head to the southwest) was almost completely deteriorated, but with it lay many stone artifacts—arrow points, scrapers, completely retouched inset blades, plain knife-like blades, and a small flat adze rectangular in cross section (Plates 95, 96). The most notable artifact was the head of a genuine toggling harpoon (Plate 95:13). It lay on the breast together with a large bronze burin (Plate 95:16), near which was spared a scrap of bear's fur and a long obsidian knife-like blade (Plate 96:2). Deeper, in a special pit, was discovered a whole trove of stone flakes, scrapers, arrow points, burins, and small axes (Plates 97, 98, 99). All of this was in red ocher. On the outer, southern side of the grave enclosure, in the upper part of the kurgan embankment, in the remains of a hearth with charcoal, lay the skull of a dog (which we initially erroneously determined as the skull of a wolverine) with its thin long bones (Dikov 1961b:24).

In Kurgan 15, which was large, the remains of human burials were also preserved at five points, detailed information about which has already been published (Dikov 1961b:25, 26). The ages of the charcoal samples from these burials are  $2860 \pm 95$  (RUL) and  $2920 \pm 95$  (Kril-244).

In some Ust'-Bel'skii kurgans (1, 2, 3, 4, and 7) no human bones were discovered. But the presence in the kurgan embankment of charcoal and ash permits proposing that these ritual kurgans, made of stones, were connected with the ceremony of cremation.

In the Ust'-Belaia kurgans and in the site, a large number of stone artifacts was found: scrapers, adzes, knives, burins, cores, and knife-like blades, but most of all the points of arrows, darts, and spears. They all have a Late Neolithic appearance. Various ornaments of bone and white nephrite were also encountered among them, as were fragments of ceramics (Platc 100). A complete picture of all Ust'-Belaia kurgans and burials that we excavated, and the things discovered in them, can be obtained from the publication mentioned above regarding this cemetery, as well as from a special monograph about it prepared for press.

#### *The Omryno Neolithic Site and Cemetery (73)*

In the middle of a broad depression reaching to a right tributary of the Omryn, above Ust'-Belaia, a ridge of low hills extends from north to south on the left along the stream. The largest number of kurgans of the Ust'-Belaia type was found on the top of the northernmost hill, but several such kurgans can be distinguished among the outcrops of rock along the rocky crest to the north along the ridge of these hills (Fig. 87).

We carefully excavated four stone grave features on the northern hill (Kurgans 1 to 4) and one (Kurgan 5) near a large rocky outcrop on the western slope of the next hill to the north (Fig. 91).

*Kurgan 1.* Its diameter is more than 3 m. It had a rectangular enclosure (2 x 2 m) in the middle of large blocks that projected from it. Under the sod, in the stone fill, were split deer bones but no other finds, though the excavations within the enclosure were conducted to a depth of 70 cm, to bedrock. The enclosure was oriented with its long sides from east to west (Fig. 92).

*Kurgan 2.* This smallest kurgan was oval in outline, and was oriented from northeast to southwest. Its length was 2 m and its width 1.3 m. In the middle, the chamber was 0.4 m deep and filled with sod. Nothing was found in it.

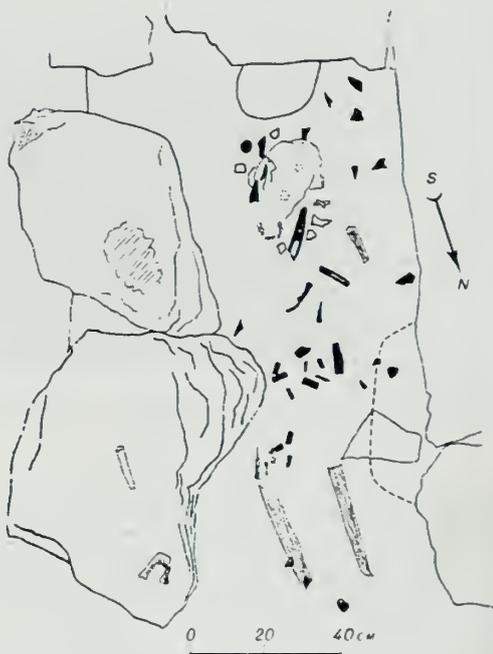


Figure 90. Burial in Kurgan 9.

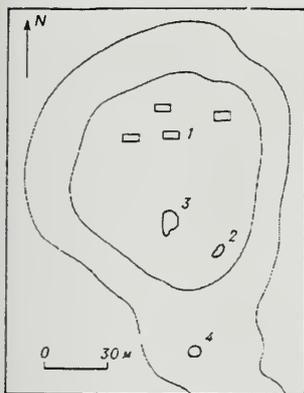


Figure 91. Plan of the Omrynskii cemetery.

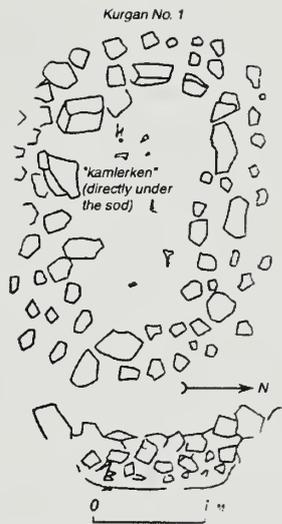


Figure 92. Kurgan 1 of the Omrynskii cemetery.

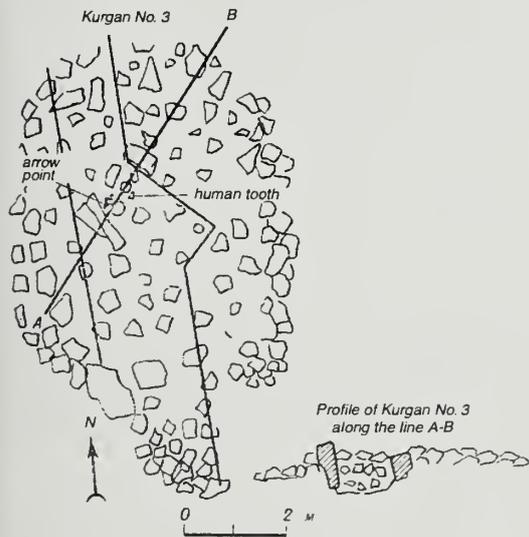


Figure 93. Kurgan 3 of the Omrynskii cemetery.

*Kurgan 3.* This largest kurgan was 8 m long by 5 m wide and rounded, with a projection on the south side. It is located in the middle of the group of kurgans. In the middle part and on the south edge of its flat stone embankment project three large blocks or rocky outcrops. Excavations were conducted between the two central outcrops—it being believed that traces of a burial would be found there—and in a broad strip from north to south along the whole kurgan, including the southernmost

rocky outcrop (Fig. 93). In fact, between the central outcrops that form a kind of enclosure, a human tooth, an arrow point (Plate 101:1), flakes, and split deer bones were found among rocks at a depth of 60 cm. A few flakes and flint spalls were also found in the embankment.

*Kurgan 4.* This kurgan was 3 m in diameter. Only a few flakes were found in it.

*Kurgan 5.* This kurgan (2 x 2 m) was annexed to a large two-meter rocky outcrop on the slope of the hill. On the east side of the outcrop, under the stones, was a chamber. On the south side near the outcrop, under the stones at a depth of 0.4 m, were a piece of flint and a core-like blank of gray argillaceous slate (Plate 101).

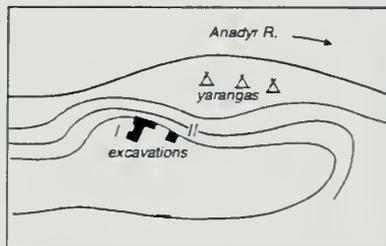


Figure 94. Location of an early site on Chikaevskaia cliff.

### *The Neolithic Chikaevskaia Site (74)*

The Chikaevskaia cliff, which is 8 to 12 m high, is located opposite the mouth of the Taniurer River, where formerly there was a summer deer crossing (Fig. 94). The top of the cliff (terrace bedrock) was composed of loose deposits of yellow loam covered by a layer of peat 30 to 40 cm thick.

The area of the early site here is large. It extends about 200 m (perhaps even 300 m along the upper precipice, if judging by the surface material on the slump). The location of the site was covered with mounds and was overgrown both with grass and bushes. Traces of a late site—pit houses with the remains of iron tools—were easily noted

In 1957 in an exploratory excavation 1.5 x 2.5 m in area, in a thin carbonaceous band, obsidian flakes, a polyhedral burin, an angle burin, scrapers, an arrow point with a slightly concave base, a prismatic core, a knife-like blade, and a scraper of green flint were discovered.

In 1958 excavations were conducted on the precipice. The area of the first excavation was 294 m<sup>2</sup> (Fig. 95), and the area of the second was 30 m<sup>2</sup>. The total area of excavations was 324 m<sup>2</sup> (Fig. 94).

Sixteen stratigraphic profiles revealed the following stratigraphy, which was general for all the sites: from the top was sod and peat from 10 to 40 cm thick, and below was brown loam, more or less mixed with an underlying yellow loam. The mixture of the layers reflects micro-relief (moundedness), or is the result of late earth work (people digging pits), in addition to the activity of rodents. Cultural remains were encountered in all three layers, almost from the very surface to a depth of 60 to 120 cm.

On the surface of the excavated area were three stone structures of late origin.

Near one of them, in Excavation 1 directly under the sod, were the skull bones of a bear (10/2), split reindeer bones (20/6), dog bones (3/1) (as determined by V. I. Tsalkin), ground stone adzes, ground knives of argillaceous slate, obsidian points, flakes, and fragments of clay vessels decorated by imprints of rectangular comb stamp. Under one of the stones in this structure were decayed pieces of bone arrow points. The earth under the stone was burned (eight stains of brownish shades with insignificant mixture of charcoal). The clearest stratigraphic picture was under this stone feature. In particular, it turned out that

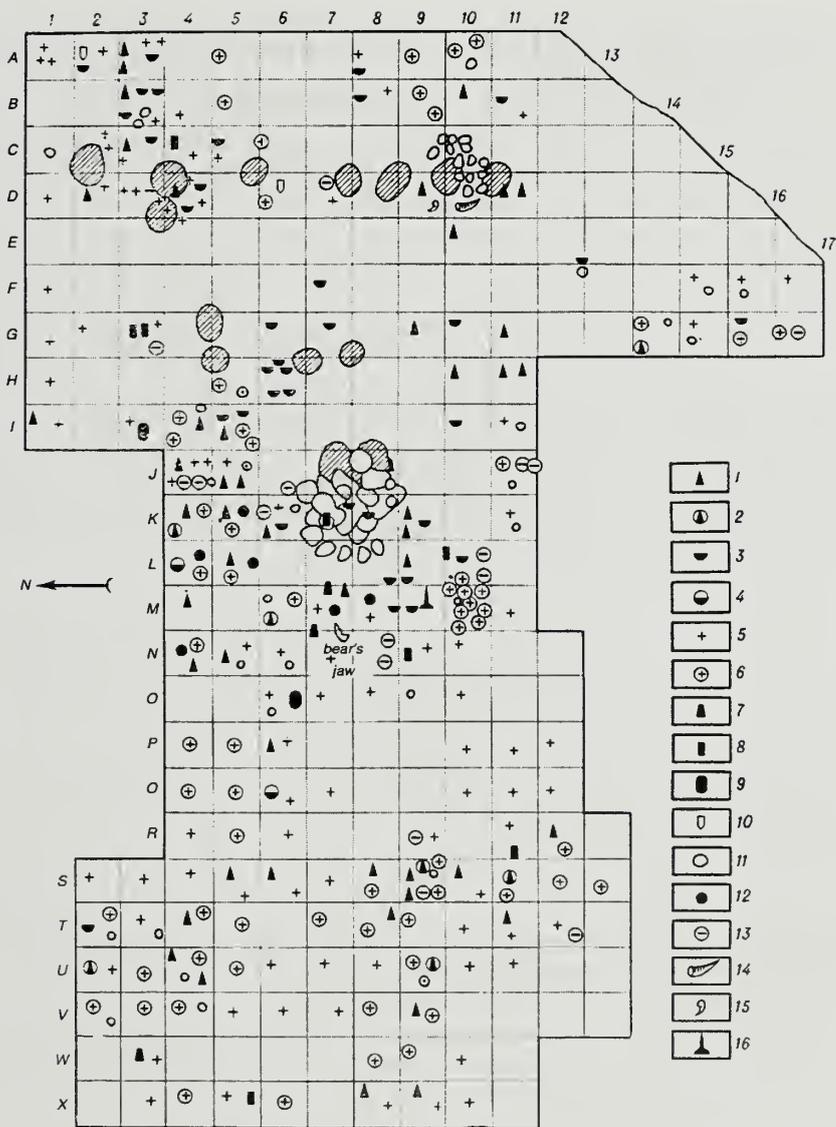


Figure 95. Plan of excavation at the Chikaevskaia site. 1—arrow point; 2—cluster of arrow points; 3—scraper; 4—cluster of scrapers; 5—flake; 6—cluster of flakes; 7—axe-adze; 8—prismatic core; 9—hammer; 10—burin; 11—ceramics; 12—cluster of ceramic fragments; 13—knife-like blade; 14—walrus tusk; 15—bear fang; 16—bone instrument.

crudely flaked obsidian cores (non-prismatic) were preserved only in the base of the layer, and not in its upper part, in which a predominance of ground tools is typical. It is possible that a mixture of earlier remains can be observed here.

In addition to the burned-earth hearth stains under the second stone feature, in Excavation I there was another whole series of similar traces of hearths (a total of 12). The determined age of the charcoal from them was 400 to 500 years (GIN-252).

Among the stones of the third feature (in Excavation 2) was a wooden cross of a Christian burial, artistically carved but damaged in its upper part. Around the feature and between the rocks predominated finds of a late character: split bones, including skulls of reindeer with antlers sawed off with a metal saw (61/11); bones of fox (1/1), wolverine (1/1), seal (1/1), and bearded seal (1/1) (determination by V. I. Tsalkin); a wooden instrument for making fire; two wooden figurines of small birds; an iron spear point; and a bone hook. Also found were earlier artifacts, which penetrated to the top from the lower layers as a result of mixing of the soil: stone burins, points, knife-like blades, and flakes.

Due to mixing of the soil layers, the cultural layer of this mixed site did not permit distinguishing the strata. Thus, the excavations were conducted (as at the Vakarevo site) by arbitrary levels: first, the sod was taken off a large area, almost always without finds, then the upper part of the dark layer, next its lower part, and finally, the underlying yellow layer, where there were only isolated finds which came from above.

The number of finds diminished according to the distance from the edge of the bank. An almost complete lack of animal bones among them is characteristic. Obsidian knife-like blades; prismatic cores (Plate 102:7, 8); flakes; and flint, chalcedony, and obsidian arrow points (laurel-leaf, stemmed, with concave or straight base)—all worked by pressure re-touch—often occurred in all levels (Plate 102:1-5). Different kinds of stone scraper were found, predominantly on flakes and massive pieces of coarse gray stone (Plates 103, 104).

Several multi-edged stone burins were found in various horizons (Plate 103:1-8). On the edge of the humified layer with yellow loam, at a depth of 40 cm, was a large and massive leaf-shaped obsidian biface knife.

For all the tentatively separated horizons of the site, a combination of the technique of percussion flaking and pressure flaking together with the technique of grinding stone artifacts (though the latter was used here in lesser degree than percussion and pressure flaking) is characteristic. The presence of ground splitting adzes (Plate 105) testifies to the presence in the site of a cultural complex similar to the Vakareva.

Among the finds in the sod, iron, wood, and bone artifacts predominate (Plate 106), especially in close proximity to the stone work. They are assigned to a late time, comprising an entirely isolated cultural complex.

Many of the fragments of clay vessels have cord-mark imprints or rectangular comb stamps on the outer surface. The bottoms of the vessels are rounded and flattened (Plates 107, 108).

# Early Sites in the Valleys of the Amguema (75 to 96), Vankarem (97), and Pegtymel' (98 to 103) Rivers

## Sites in the Amguema River Valley (75 to 96)

In 1957, along the valley of the Amguema two parallel survey routes were carried out: from 87 to 170 km were in a boat and from Egvekinot to Iul'tin in a motor vehicle (200 km). In 1963, we went from Vankarem on a tractor through the tundra to the Amguema and went up it to the entrance, on the right, of the Ekiatap River. Here, at the mouth of the Ekiatap River early graves were found and investigated. Then, in boats and a motor vehicle, we pushed on farther and in the valley of the Amguema conducted surveys for Neolithic sites.

### *The Site at KM 57 (75)*

On a knoll (8 to 10 m high) east of the road, on a rubble surface was found a not-very significant flake of light-gray siliceous slate.

### *The Site near KM 61 (76)*

A flake of light-gray siliceous slate was found on the rubble surface of the river terrace at an elevation of 6 m, west of the road.

### *The Site near KM 93 (77)*

In a quarry on the southwest side of a knoll to the right of the road (200 m from a bridge), on a sandy blowout, one obsidian flake was found.

In the vicinity of km 102 the Amguema is widely spread out in many channels. Its broad valley, confined between mountain ranges, abounds in rich autumn pasturage for deer. Everywhere sparkle small but very rich fish lakes in deep bowl-shaped depressions, and near them almost everywhere are knolls with especially characteristic flat tops, often with a small peak on one side. On these knolls, covered with grayish-yellow and brown loam alternating with small coarsely rolled pebbles, very rich and at times significant traces of occupation as early as the second millennium b.c. were found. Judging by everything, this from of old was a center of settlement for early tribes.

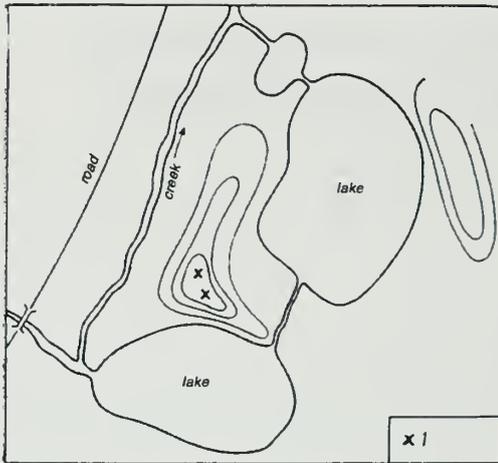


Figure 96. Plan of Site 1 at KM 102. 1—Neolithic finds.

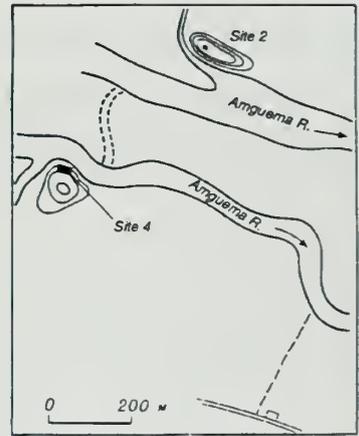


Figure 97. Location of Neolithic Sites 2 and 4 at KM 102.

### *The First Neolithic Site at KM 102 (78)*

On the top and slopes of a knoll near a lake east of the road (Fig. 96), in yellowish-gray loam with small rubble were obsidian knife-like blades and flakes; a large chalcodony knife-like blade retouched along the edge; two pieces of arrow points carefully retouched on both sides; a prismatic core; and a burin of brown flint (Plate 109:1-4).

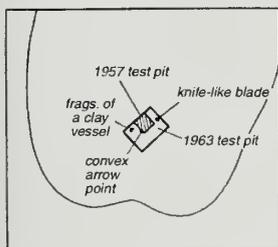
### *The Second Neolithic Site at KM 102 (79)*

On the gravel surface of a cape-like knoll (8 m high and 125 m long) on the left side of the Anguema at the entrance into it of a small stream (Figs. 97, 98) were many flakes of colorful flint and two of obsidian, as well as a spall from a retouched tool with a broad working edge.

In 1957 were carried out exploratory excavations on the southwest edge of this cape-like knoll, by an outcrop of rocks. In a test pit (3 x 4 m), during the course of layer-by-layer excavations, brown sherds from a thin clay vessel with waffle imprints, an obsidian arrow point of elongated form and unifacially convex cross section, scrapers, flakes, and pieces of small stone slabs with polished surfaces were found in dark-brown soil with large pieces of stone, at a depth of 40 cm (Plates 71:16-18; 109:1).<sup>26</sup>



**Figure 98.** View of rocky cape with Site 2 at KM 102.



**Figure 99.** Location of Site 2 at KM 102.

Below this the earth became lighter, almost ochereous in color, and contained a mixture of coarsely rolled gravel. The thickness of this layer, which did not contain the remains of material culture, was 30 cm. Still deeper was a mixture of coarsely rolled gravel.

On top of this cape, in its surface cultural layer there is an earthen mound similar to a small kurgan 4 m in diameter. Half of its base was excavated. Under the mound was permafrost. After thawing it insignificant traces of charcoal were discovered and under them, at a depth of 40 cm from the present surface, was a large flake of yellow flint. Excavations of the mound were suspended at this level until after the thawing of the permafrost, when they could be continued.

In 1963, excavation was expanded on the northern side by 1 m, on the eastern side by 1 m, and on the southern side by 2 m (Fig. 99). On the southern side another one-sidedly convex obsidian arrow point was discovered—similar to the one found in 1957, only shorter. On the eastern side were found two more arrow points (these were flat) and an adze of silicified slate. On the northern edge of the excavation were pieces of a long obsidian blade with retouch on one side. In addition, fragments of thin clay vessels covered with waffle imprints and flakes were taken from the whole area (Plates 109:2; 110:5-13).<sup>27</sup> Toward the edges of the new excavation finds decreased so much that it was evident that the cultural layer on this cape was essentially exhausted by our previous excavations.

27 Plate 109 does not appear to be right, and Plate 110 is certainly wrong.—*Trans.*

*The Third Neolithic Site at KM 102 (80)*

On the right bank of Maravaam Creek, which empties into the Amguema at km 102, and not far from its mouth, another knoll rises to an elevation of about 12 m. Abundant traces of human activity of Neolithic, approximately four-millennia antiquity were discovered on its flat top, which was 130 m long and 50 m wide (Dikov 1958b:53, Fig. 27). These include fragments of arrow points with concave base and flat lenticular cross section, long arrow points with rhomboid cross section, arrow points with a stem for hafting, pieces of knives of the El'gygytyn type, and scrapers. Nearly all these artifacts and a large number of flakes were made from light-gray siliceous slate of coarse structure or from brown flint. Only one arrow point with side notches near the base (the very end of which was broken) was made of rosy chalcedony, and a few knife-like blades were of obsidian (Plates 111, 112). The depth of the cultural layer (in brown loam with small coarsely rolled gravel) was insubstantial here, a total of 5 cm, as the test pit showed.

*Ritual Stonework.* On this same area of the mound, near the top of its northern edge, three oblong stone features were examined, two of which, 4.5 m and 2.5 m long, were located close to one another (Fig. 106),<sup>28</sup> while the third, 2 m long, was 4 m southeast of them. These flat stone pavements were oriented by their long axes from northeast to southwest. After excavation it was ascertained that under them were the antlers of deer that had been killed, arranged in a "herringbone" pattern. Under the two short stoneworks were six and four pairs in each, the tines of the antlers being oriented to the southwest, and among the stones of the long stonework only one piece of an antler was preserved in its southwest part, oriented in the same direction. In one of the short stoneworks (No. 3, which was set apart), under a stone and above a deer antler, was a split long bone of a deer. Split deer bones were also extracted in large number from the surface layer of earth between stoneworks. There were no other finds.

On a knoll between Maravaam Creek and a lake, near a sharp-topped hill, another isolated stone pavement 2.5 m long and 1 m wide was excavated. It was oriented with the long axis east-west. Under it was a series of five pairs of deer antlers arranged in "herringbone" pattern and oriented with the tines to the west. Among them were two massive flakes of black siliceous slate and a few pieces of charcoal. Under all of this was sterile soil with no signs of a burial pit.

It is interesting to note that on a wide knoll, beside the one mentioned above, there were traces of an old deer herder's camp: stone circles of yarangas once stood here, with enclosed hearths (each hearth ring had a stone inside) and high, conical mounds of sod surrounded by stone slabs. It is also notable that there was not a single flake here and in general no signs of early Neolithic culture.

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28 This does not seem to be the correct figure.—*Trans.*



**Figure 100.** View of Site 4 at KM 102.

### *The Fourth Neolithic Site at KM 102 (81)*

In 1963 we discovered, on the right bank of the Amguema, the cultural layer of this early site, which was covered with a sterile layer of sod 0.5 m thick. Directly under it was a cliff rising to 6 m above the level of the Amguema, into which a small stream entered at this place (Figs. 97, 100).

The position of the site was very favorable from the point of view of hunting deer and fishing. Near the cape on which it was located it is possible to ford the Amguema in fall (consequently, deer passed here in large herds each fall). Also, in the mouth of the creek were many fish.

On the northern edge of the cape we excavated 15 m<sup>2</sup> of cultural layer down to rock (Fig. 102). In dark loam, from a depth of 20 cm to a depth of 70 cm, were scattered rather many flakes and sherds of thin clay vessels, with false-textile (waffle) imprints, similar to those found in the second site (79). By the very edge of the cliff few finds were made. Away from the edge their number increased—where the remains of four hearths were preserved right beside each other. From them were extracted flakes, knife-like blades, prismatic cores, sherds, pieces of bone from the legs of a deer, and the following items of siliceous stone: three arrow points and three arrow point fragments, scrapers, and pieces of knives and a knife-like blank made from a cobble (Plates 113, 114). Charcoal was also taken from these hearths, but its C-14 age is probably much too great: 6665 ± 110 (GIN-182).

### *The Site at KM 115 (82)*

At the mouth of a small stream on the left bank of the Amguema, on a cape-like terrace 6 m high, flakes of green siliceous stone and broad flat thin slabs of blue argillaceous

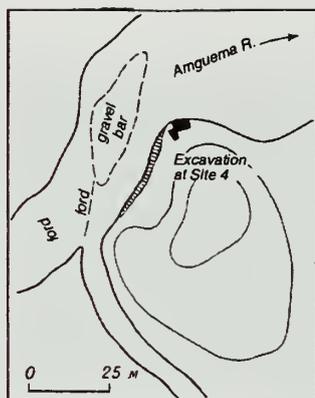


Figure 101. Plan of Site 4 at KM 102.

slate were found in a sandy blowout (Plate 115:2). On top of the cape was an earthen mound like the one at km 102.

#### *The Site near KM 120 (83)*

On the left bank of the Anguema, on a high saddle between two small lakes were flakes, and on one of the hills, three earthen mounds.

#### *The Neolithic Site at KM 123 (84)*

The site is in a thin surface layer of yellow sandy loam mixed with small gravel and rubble on a 20 m-high cape-like hummocky projection of a terrace on the left of the mouth of a creek that enters on the left bank of the Anguema. Here a piece of an obsidian arrow point, a scraper, a knife of the El'gygytyn type of brown flint, a piece of a broad point or knife of gray siliceous slate, and flakes were discovered (Plate 115:3, 6). All of these items were found on knolls cut by ditches.

#### *The Neolithic Site at KM 129 (85)*

On a cape-like knoll 25 m high on the right bank of the Anguema, a large crudely flaked knife of the El'gygytyn type, scrapers of light siliceous material as well as of red flint, a lateral burin, and a piece of a thin arrow point with straight base were collected on the surface (Plate 115:7-9).

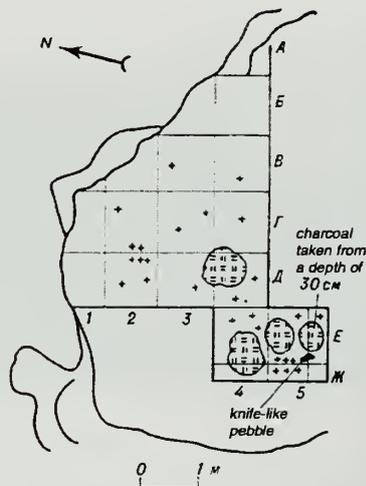


Figure 102. Excavation of Site 4 at KM 102.



**Figure 103.** Collection of surface material at the early site on the shore of the Amguema River, at KM 141.

#### *The Site near KM 134 (86)*

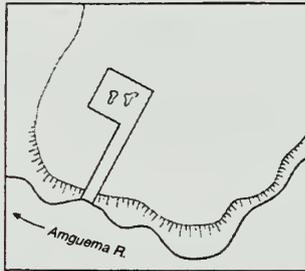
On a flat-topped hill 15 to 20 m high on the left bank of the Amguema near a lake were two Chukchi graves in the form of oval rings up to 2 m long laid out with stones. They were oriented north-south with piles of deer antlers 7 m north of each oval ring. In the same place were flakes, pieces of crude skreblos, and a leaf-shaped biface knife of yellow siliceous slate (Plates 115:10-12; 116:1, 2).

#### *The Site near KM 141 (87)*

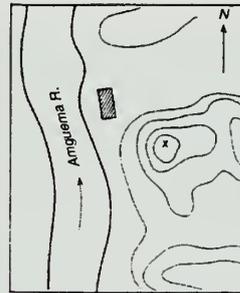
On a cape-like knoll approximately 8 m high (at the mouth of a creek) on the left bank of the Amguema (Fig. 103), several flakes of Neolithic type were found as a result of cursory examination.

#### *The Neolithic Site at KM 143 (88)*

In a 28 m<sup>2</sup> area excavated on top of a 15 m-high rocky cape called Chaikino Gnezdo, on the right bank of the Amguema (Fig. 104), split and partially burned animal bones including a tooth, a chalcedony knife-like blade, and flakes of red flint were found in the sod and in the sub-sod layer (Plate 116:3, 4). In the northern part of the excavation was a damaged rocky outcrop.



**Figure 104.** Location of the site at KM 143 (Chaikino Gnezdo).



**Figure 105.** Location of the site at KM 145.

### *The Neolithic Site near KM 145 (89)*

On the right bank of the Amguema, at an elevation of 15 m on top of a knoll with a quarry (Fig. 105), were a knife of green flint; a lateral burin on an obsidian blade; a piece of a point; skreblos of light coarse siliceous material (among them, one was core-like), as well as many amorphous flakes and a conical core of this material; and obsidian blades (Plate 116:5-12).

### *The Site at KM 148 (90)*

On the left bank of the Amguema, on a hummocky cape with a small-rubble surface, were light-gray flint flakes of little distinction. Slightly farther down the river, in a place where the road closely approaches the Amguema, a knife-like blade, a scraper of green flint, and flakes were found on the edge of a high hummocky terrace.

### *The Site near KM 153 (91)*

In a quarry on the right side of the road, at a bridge over a creek, were a crude knife with a trimmed back and massive flakes of yellow siliceous slate.

### *The Remains of a Camp at KM 160 (92)*

On the right of the road, on a knoll in a small river valley, were traces of yarangas in the form of stone circles. The hearths were enclosed. No Neolithic remains were found.

### *The Neolithic Site at the Mouth of the Yakitika (93)*

On the western end of a hill at the entrance of the Yakitika River into the Amguema (on the right of the mouth of this river), many flakes, obsidian knife-like blades, lateral burins on

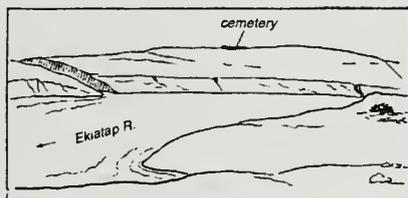


Figure 106. View of Ekiatop cemetery.

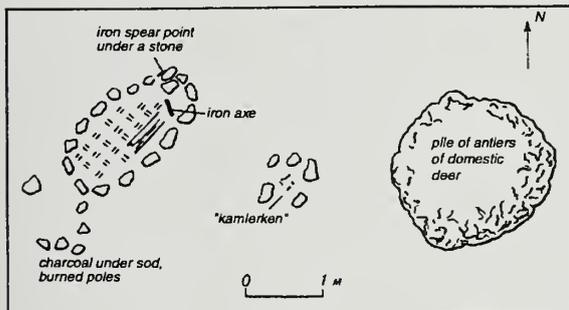


Figure 107. Kochevnicheskaja grave at the mouth of the Ekiatop River.

blades, scrapers, retouched blades, a core-like tool, a corner burin on a flake of brown flint, a skreblo-like artifact, and knife-like blades and flakes of a light yellow coarse siliceous material (the last material predominated here) were found on a rubble area (Plate 117).

### *The Grave at the Mouth of Ekiatop (94)*

At the mouth of the Ekiatop River, on the right high (about 25 m) bank, was an oval grave enclosure of stones set in the earth (Fig. 106). Its length was 2 m and its width, 1 m. It was oriented from northeast to southwest. Five meters east of it was a pile of antlers of (domestic?) deer 1.5 m high and 2 m in diameter. In the pile of antlers were stones and dog skulls. Beside it (at a distance of 3 m) was a flint flake. Between the pile of deer antlers and the oval stone enclosure was a ring of stones arranged in the earth (1 m in diameter). Within it, under the sod, were splinters of deer long bones—*kamlerken* (Fig. 107).

We excavated the oval enclosure of stones (in Chukchi, *poliakvyn*) down to sterile rubble. However, this was not at a great depth, and required only the removal of the sod. Under the sod, over the whole area within the enclosure, was charcoal from burned poles—the thickest poles (arranged lengthwise in the enclosure), reaching 5 cm, were preserved near the southwest edge of the enclosure. Among the chunks of charcoal were small splinters of burned bone, especially in the northeast part of the enclosure. Under a large stone at its northern edge was an iron spear point. The age of the charcoal was  $710 \pm 40$  B.P. (MAG-230). By another determination it was modern (LE-677).

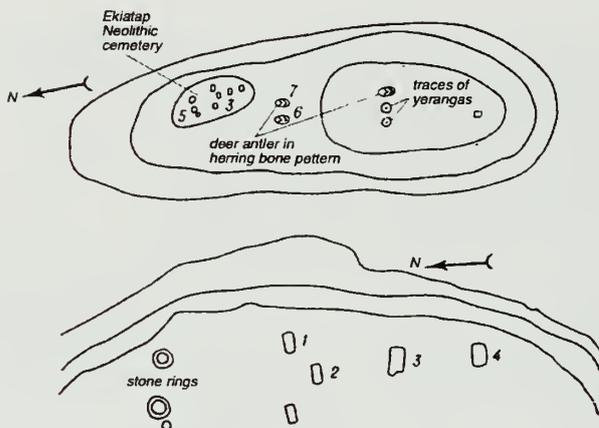
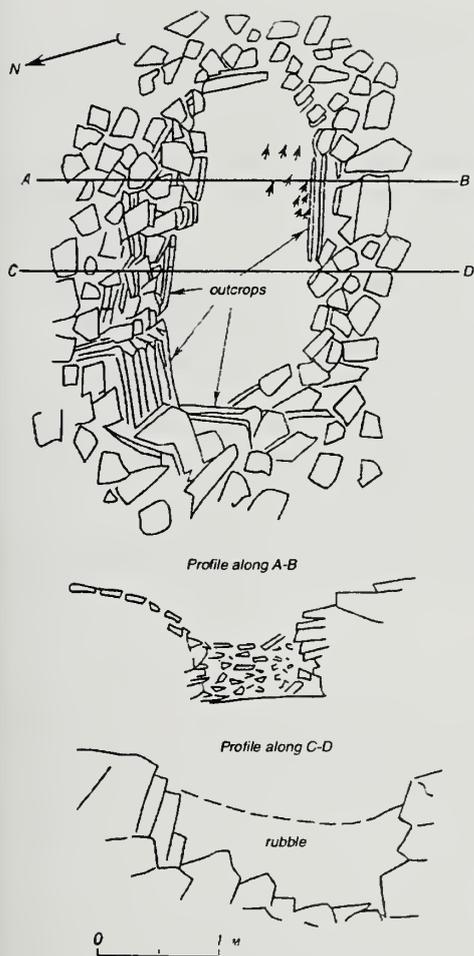


Figure 108. Plan of the Ekiatap cemetery.

### *The Ekiatap Neolithic Cemetery (95)*

On a gently sloping hill (about 80 to 100 m high) on the right side of the Ekiatap River, on a remnant rocky knoll that crowns the hill's peak not far from the river mouth, we found a cemetery, in many regards similar to the well-known Ust'-Belaia Neolithic burial ground of the middle Anadyr. The graves here were constructed among the numerous natural outcrops of argillaceous slate and annexed to the remnant rocky knolls, similar to the Ust'-Belaia kurgans. The difference between them is only the fact that the Ust'-Belaia burials were enclosed with flat stone kurgans. Here there were only grave pits, filled with large rubble and slate slabs, constructed in crevices beside the rocky knolls, with no kurgans above them. At least five such cavities, surrounded by rocky outcrops and slate slabs that are exfoliating from the outcrops, can be clearly distinguished here. They all have a rectangular or nearly rectangular outline in plan and are oriented by the long axis from east to west (Figs. 106, 108).

In the grave (No. 3) that we excavated, in the rectangular frame (2 x 3 m) of horizontally placed slabs annexed to the rocky outcrop, almost no human bones were preserved except a small remnant of a radius (Fig. 109). In the eastern part of the grave, after first removing large slabs (and then the deeper we excavated, the smaller the slabs became), at a depth of 0.5 m stemmed flint arrow points retouched in the Neolithic manner began to occur (Plate 118). There turned out to be a total of 18 points (including 3 broken ones), with especially many of them being found on the southeastern side of the grave, which had by its longitudinal wall argillaceous slate slabs piled horizontally on top of each other. This was evidently something like a hiding place. There were also two knife-like blades together with the arrow points.



**Figure 109.** Grave enclosure with remains of burial (arrow points) at the Ekiatap cemetery.

large rubble and in permafrost (at a depth of about 20 cm), lay the remains of fur clothing and arrow shafts (Fig. 110).

To the south of the cemetery were two stoneworks (one 1.5 m long, the other 3 m). Under them in the sod were five and six pairs of deer antlers, respectively, placed in “



**Figure 110.** Stone ring at the Ekiatap cemetery.

It is important to note that the grave fill contained no earth. It consisted only of stone slabs and large rubble (on top, the chamber was enclosed by several large slabs placed flat). Therefore, it is quite natural that no bones would be preserved in it, and only the stone burial inventory was spared. Such an assumption is all the more probable in that, judging by the preserved arrow points, the burial was rather early, approximately Late Neolithic.

To the north of the grave cavities, near the rocky outcrop, were two rings of slabs laid flat. Their inner diameter was about 3 m. On the west side of one of them was an “annex” in the form of a small (to 1 m) ring of slabs arranged in the same way. Within the latter, under

herringbone" pattern, with the ends to the southwest (Fig. 111). On the southwest side were found finely split deer bones (*kamlerken*).

Another such stonework with antlers is farther to the south on the flat top of this hill. Beside it (on the west) were two rings of stones from yarangas (Fig. 108).

On the left, also high (about 20 m) bank of the Ekiatap River, were noted and recorded traces of several isolated, very late Chukchi burials in the form of narrow ovals (about 2.5 m long) with stones laid along the edges and oriented by the long axis from north to south. On the south side there were always one or two poles (legs of a trivet), pressed down by stones. Within the ovals various objects of daily use were sometimes found: pipes, spoons, and so on. At some distance (about 5 m) northeast of the northern edge of these oval stoneworks were large (reaching 1 m high) piles of deer antlers. These graves gave the impression of being substantially later than the similar one (94) that we excavated on the right bank of the Ekiatap River, which was described at the beginning of this section.

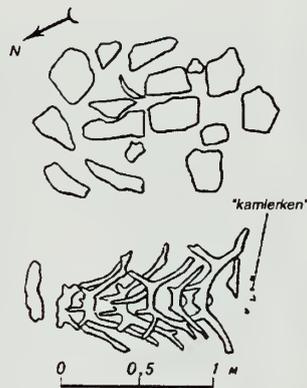


Figure 111. Formation of deer antlers at the Ekiatap cemetery.

### *The Site on Cape Erpak (96)*

This cape is located on the right bank of the Amguema. There was recently a fishing place on its north side. On the flat top of the cape's hill were traces of an early camp: spalls and flakes of siliceous slate. The camp, judging by its arrangement, can be assigned to the type of Neolithic sites that are found at locations where deer cross rivers.

### **Sites in the Valleys of the Vankarem (97) and Pegtymel' Rivers (98 to 103)**

All of the archaeological sites below, which we investigated in the valleys of the Vankarem and Pegtymel' Rivers, are concentrated on the lower reaches of the named rivers, 50 to 60 km from their entrance into the Arctic Ocean. On the Pegtymel' River they are associated with high (to 25 or 30 m) rocky cliffs on the right bank and include early illustrations (petroglyphs) on these cliffs, in addition to three sites and a cave connected with the petroglyphs (Dikov 1971a).

### *The Neolithic Site in the Tan'gino Locality (97)*

Fifty kilometers from the entrance of the Vankarem River into the Arctic Ocean, in the Tan'gino locality (where a Chukchi camp is located), on the southern gentle slope of a

small hill with a pointed top, were the Neolithic remains from a partially destroyed cultural layer. The remains of the Neolithic site here were located at an elevation of about 20 m above the river level, in an area measuring 30 to 40 m across, which was protected from the fierce north wind by the 20-meter summit of the hill.

Near the sod with a thin stratum of brown soil still preserved at the end of the area, a massive arrow or dart point of laurel-leaf form, made from brick-red stone (6 cm long and 2.5 cm wide), crudely flaked on both sides, and four spalls of yellow siliceous stone were found in ochreous-yellow sandy loam with small rubble.

### *Pegtymel' Cave (98)*

The cave is very noticeable if one looks toward Cliff IV of the Kaikuul' cliff from the river, or better, from the bank opposite it. It is located directly in the middle of the high part of the cliff, 15 m above river level. It is very narrow (2 m at the opening and 0.7 in the back) and shallow (about 2.5 m from the entrance to the back wall). Its height is about 2 m. Thus, it could simply be called a crack or crevice in the cliff. However, it had a rather substantial deposit of early cultural remains on its floor—split deer bones, numerous pieces of white quartz, several flint flakes, a flint arrow point, armor plates of deer antler, and several other bone artifacts (Dikov 1971a). On the walls of the cave were preserved petroglyphs of two types: in the form of graffiti, and in pecked silhouette representations of deer, dogs, and anthropomorphic figures.

The radiocarbon age of charcoal from a hearth in the cave was  $1460 \pm 70$  (MAG-16) and  $1397 \pm 80$  (MAG-16).

### *The First Pegtymel' Neolithic Site (99)*

The site is located on the edge of a cliff with petroglyphs, 800 m from the mouth of Kaikuul' Creek (on Stone II) (Dikov 1971:37, Fig. 50). In 1967 and 1968 we found there in the surface cultural layer, within the bounds of a small excavation, a large number of split and burned deer bones, flint flakes, and a leaf-shaped biface knife broken crosswise.

Ten meters north of the primary excavation a pile of old antlers of wild deer was also investigated. It was oval in plan (3.5 m long and 1.2 m wide). The antlers were already partially covered with earth. Their scapulae were very broad.

After removing all the antlers, the edge of a stone slab projecting from beneath the sod under them was found.

As a result of subsequent excavations it became clear that in this place, under the antlers and under the surface layer of earth, at a depth of between about 5 and 10 cm, an open enclosure had been constructed of stone slabs placed flat. The length of this stonework was 2.5 m. Its maximum width was 1.5 m. This stonework, crosswise to the pile of deer antlers, was built of very long (to 95 cm) and thin stone slabs. No artifacts such as those in the primary excavation were found here. However, under one slab, which was placed among the outermost ones on the northwest side of the stonework, we found a large cluster of white

quartz pieces of different sizes and weights—from a few tens of grams to several kilograms. It can be supposed that these pieces of quartz were the tools with which the petroglyphs were pecked into cliff (Dikov 1971:38).

### *The Second Pegtymel' Neolithic Site (100)*

This site is located on the third stone of the Kaikuul' cliff, which has petroglyphs and a rich outcrop of quartz.

In 1968, around a rather careless oval stonework (0.7 x 1.5 m) spread with large pieces of white quartz, directly on top of the cliff, we discovered rather many flint, obsidian, and chalcedony flakes, and among them, a piece of a bifacially worked pointed tool and two pieces of arrow points worked on two sides by flattening pressure retouch—a basal part of a point with a straight base, and an elongated triangular tip. All three pieces are of flint (Dikov 1971:Fig. 29:2, 3, 5).

In the excavation, which was placed around the stonework, flakes and a piece of a leaf-shaped knife of brown stone were also found (Dikov 1971:Fig. 29:1).

### *The Third Pegtymel' Neolithic Site (101)*

This site, on an isolated cliff with petroglyphs, was below the mouth of Kaikuul' Creek on the right side of the Pegtymel' River.

On the gently sloping, fine-rubble surface of the cliff, flint flakes, a piece of an obsidian prismatic knife-like blade, and an entirely whole, bilaterally worked, flint leaf-shaped knife were collected (Dikov 1971:Fig. 29:7, 9).

### *The Pegtymel' Petroglyphs on the Kaikuul' Cliff (102)*

In 1965 geologist N. M. Samorukov, and then in 1967-1968 the author, found 103 groups of petroglyphic illustrations of animal and anthropomorphic/mushroom-like figures on eleven cliffs (rocks), formed of dark-gray aleurite-psammitic slates, of the Kaikuul' bluff (800 m below the mouth of Kaikuul' Creek) (Dikov 1971).

### *Petroglyphs at the Third Neolithic Site on the Right Bank of the Pegtymel' River (103)*

The author found petroglyphs in 1968 on a sheer cliff 25 m high at Neolithic site 102, above. In the middle elevation of the cliff, on a wide rock panel, under a cornice, a large composition of silhouetted figures of deer, a man, a dog, and other signs had been pecked (Dikov 1971:30-72, Petr. 104 [p. 124]).

## Sites of the Remnant Neolithic on the Coast of Chukotka (104 to 159)

Excavations at the Uelen cemetery were conducted by the author in 1956, 1958, and 1963.

In 1957 surveys were undertaken on the shore of the Anadyr Estuary and on an area of the shore between Cape Schmidta and Vankarem. In 1963 surveys were conducted in a whaleboat from Yandoga to Vankarem. In 1965 an expedition was organized to go to the coast of Chukotka, in the region of Cape Chini and Mount Enmynynyn, to carry out thorough excavations of the cemeteries discovered there in 1963.

In 1975 the author undertook an expedition in the Beringovskii region, on Cape Schmidta (and from there to Wrangel Island).

A description of all the archaeological sites we investigated on the coast of Chukotka during the years mentioned is given in order of their geographical sequence—from Sireniki, which the author had the occasion to visit in the winter of 1955, to Cape Schmidta, where he twice conducted investigations (in 1957 and 1975).

### *An Early Site at Lakhtina Lagoon near Beringovskii Village (104)*

The first evidence of this early site was published by T. M. Dikova (1974c:35), who reported that the site was found in 1973 by E. V. Gunchenko, who participated in the ethnographic expedition of V. V. Leont'ev. The site is located 6 km south of Beringovskii village, not far from Lakhtina Lagoon. Dikova reports that "at a depth of 2-3 m a cultural layer was partially destroyed by a power shovel. It contained a multitude of bones of sea mammals and birds. There were scrapers, stone lamps, and a hearth of interesting construction, formed of flat slabs measuring 10 x 40 cm, set vertically" (Dikova 1974c).

Fearing for the preservation of this most interesting site, the author, along with a scientific consultant from the Magadan Division of the All-Russian Society for the Preservation of Sites, S. P. Efimov, carried out inspection and partial examination of it. A small exploratory excavation was placed in the site near the edge damaged by the power shovel. The remains of the site could still be noted on the surface of the dunes on the high sandy spit (Figs. 112, 113). It turned out that the cultural layer was at a depth of 0.5 m at the place of excavation and abundantly saturated with charcoal, substantial samples of which were taken for radiocarbon dating (a date of  $2330 \pm 225$  [MAG-127] was obtained). The stone artifacts that we collected in the excavated area of the site differ by their notably archaic

character: with the exception of one small adze (Plate 120:1), they were all made by percussion flaking of siliceous slate. These artifacts are skreblos and crude flakes, as well as two small obsidian scrapers (Plate 121). Most characteristic is a massive spokeshave-like tool (but at the same time like a chopping tool) with a broad wedge-shaped working edge (Plate 121). Also found were a hammer and two sinkers with lateral grooves, which were made from cobbles.

*Remains of an Early House with Burials of Human Skulls  
at Sed'moi Prichal on the Shore of the Anadyr Estuary (105)*

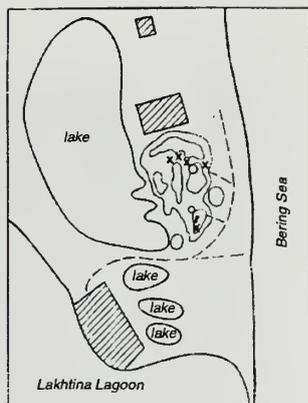
On the high rocky cape of the north shore of the Anadyr Estuary, near the so-called Sed'moi Prichal ["Seventh Moorage"], the author found in 1957 a most interesting and unique site of early maritime culture represented by the remains of a surface dwelling with ritual burials of human skulls, either whole or cut up. Here, in 1959, a 36 m<sup>2</sup> excavation was carried out between the trench overgrown with grass and the southern edge of the precipice. It was rectangular in plan, 9 m long from east to west and 4 m wide from north to south (Dikov 1961c:Fig. 13). In the western half of the excavation, in the surface layer of earth, to a depth of 30 to 40 cm, was lodged this very distinctive complex. Its central part was occupied by a large ashy spot (2 m long and 1.5 m wide). In it were pieces of human parietal and occipital bones (No. 2), three bone toggling harpoon heads (Plate 122), a grinder, a stone pestle, a hammer, an axe, a spoon, and other items. The logs, knocked down radially with regard to this accumulation of ash, lay on the southern and eastern sides of it. Judging by their position, they were the remains of the frame of a surface dwelling of the yaranga or *chum* type that once stood here, the remains of whose hearth is the ashy spot discovered here. Under the logs, in a broad arc around the hearth ash, were other human skulls or parts of them together with various stone and bone items of cooking, hunting, and everyday assignment. Among them were bone arrow points, daggers, sinkers, the remains of clay vessels, mat-tocks of walrus tusks, slate knives, and other things (Plates 123-126), as well as numerous split bones of reindeer (9/16), dog (3/2), seal (1/1), and even a whole skull of a brown bear, which lay together with the pieces of human skull, clay sherds, and bone points. As is evident from the plan of the arrangement of all these items in the excavation, they were grouped in individual clusters around the human skull bones, lending a ritual character to the whole site. Only part of a dwelling appeared in the excavations, the entryway to which was probably on the northern side in the area of a broad trench recently excavated.

*Early Pit Houses in Sireniki (106)*

In 1956 the author obtained from local residents chance finds discovered during the digging of a cellar in an area of large early Eskimo pit houses, which had been examined in 1945 by S. I. Rudenko. Among these finds were stone and bone items of Old Bering Sea and Punuk appearance (Plates 127, 128, 129).

### *A Two-Component Site at Yandogai (107)*

A cultural layer with objects from Punuk times was found here in 1945 by Rudenko (1947:33). We examined this whole locality again and made a topographic map of it. Here were three groups of the ruins of early Eskimo pit houses, which had been constructed of whale bones. The elevation of the mounds containing these ruins was about 6 m (from the sloping beach) and the thickness of the cultural layer in the cut bank, which had been eroded by the sea, was 1.5 to 2 m. The cultural layer was filled with bones of whales, walrus, seals, and bearded seals. In the upper part of it were items from Punuk times. In the part below this were substantially earlier finds, indisputably from the Old Bering Sea period (Plate 130). Among them were a harpoon socket piece decorated in Old Bering Sea design and a whole "winged object."



**Figure 112.** Location of site on Lakhtina Lagoon.

### *The Yandogai Early Cemetery (108)*

On the top of a hill, north of the early Yandogai site, we succeeded in searching out a cemetery with burials belonging to a comparatively late period. The graves were located on two smaller adjoining hills covered by slabs and blocky debris. In the cemetery, on the eastern small hill, were many (about 30 to 40) burials of primarily three types: 1) in vaults—sitting; 2) in shallow uncovered stone chests—isolated bones; and 3) in stone enclosures—laid with the legs bent. On the southern side of the burial mound, at the entrance into it from the side facing the early site, were three stone features of another type—evidently the earliest—in the form of low enclosures completely surrounded by stones. We did not excavate them.

The following belong to the seven graves we excavated on the northern small hill.

*Grave No. 1* (second type): This was a kind of slab enclosure (1 m long, 80 cm wide) surrounded by rocks. Under wood and small stones were a fragment of a bone sled runner, a bone rod, and the remains of decomposed, odd, human long bones.

*Grave No. 2* (third type). Under the sod and small stones, at a depth of 25 cm, in a slab enclosure (1 x 1.3 m) were a human femur, pelvis, and arm bones. The skull was not preserved. In the place where it should have been were bone goggles, and along the femur was the sled runner. The orientation was head to the south (Fig. 114).

*Grave No. 3:* This was in the form of an oblong stone chest (about 2 m long) partitioned crosswise by a slab and covered by two whale scapulas. No artifacts were found under them.

*Grave No. 4* (first type): This was represented by a collapsed vault. The rectangular enclosure (1.1 m long) was surrounded by stones and was filled up inside with large rocks.



**Figure 113.** View of excavation of site on Lakhtina Lagoon near Beringovskii.

Under the fill were two whale ribs, on which lay the former roof. This was the deepest chest of all those we excavated here. The deceased was definitely buried sitting. This is especially clearly seen by the position of the preserved leg bones: the femurs lay on top of the shin bones, as if the legs were bent at the knee and tucked under the squatting person (Fig. 115). The bones of the hand lay on top of the leg bones, and the skull, in the southern part of the grave, was smashed down by the collapsed roof of the vault (Fig. 115).

*Grave No. 5* (second type): The uncovered stone chest was almost square in form (about 1 m wide). In it above the sod and small stones were the remains of a dismembered human skeleton with no skull. Around the chest was a small barrow of stones.

*Grave No. 6* (second type): This was the same kind of open chest. In it, under a thin layer of sod, were a stone pestle and the remains of mixed human bones, also without a skull.

*Grave No. 7* (third type): This grave is similar in construction to the two preceding ones. In the open stone chest (0.5 m deep), under a thin layer of sod, the remains of a human skeleton were preserved in the position of lying on the left side with tucked up legs. Of the skull, only the lower jaw was preserved. The deceased was oriented with the head to the south (Fig. 116). In all probability, graves of the second and third types are basically one and

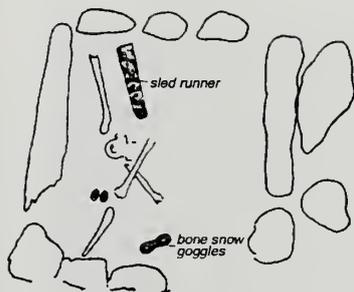


Figure 114. Yandogaiskoe burial No. 2.

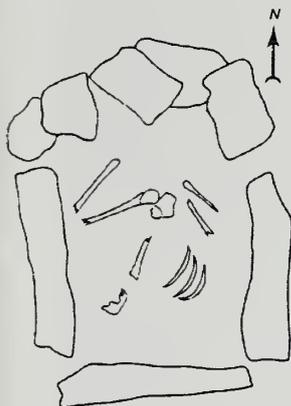


Figure 116. Yandogaiskoe burial No. 7.

1958 (Fig. 117, Plates 131-135).

*Exposure 2:* This was on a steep bank 12 m high. The thickness of the cultural layer was 1 m (Fig. 117). There was an old pit house here. Judging by the finds and a winged object (Plate 135), it was from the Old Bering Sea period. In the cultural layer were many sea mammal bones.

*Exposure 3:* This was on a projecting bank 8 m high. The thickness of the cultural layer of the pit house fill was 1.5 m. Near a whale skull, at a depth of 1.2 m were two Bering Sea toggling harpoon heads, a stone knife with a bone handle, and clay sherds (Plate 133).



Figure 115. Yandogaiskoe burial No. 4.

the same type, since the odd bones in the graves of the second type could initially have been in the same order as in graves of the third type.

### *Cultural Layers at Nuniamo (109)*

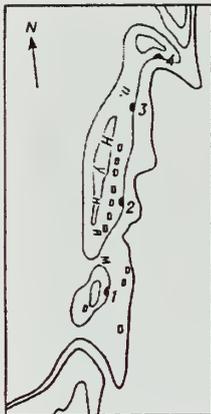
We conducted the first surveys at Nuniamo in 1958. We found there at that time a cultural layer on top of a knoll by a stream at the edge of the village. Forced to remain at the village for two days for a change in the whaleboat crew, we continued the investigations begun in 1958 and discovered three more exposures of the cultural layer north of the knoll, which we investigated in



Figure 116a. "Winged object" from an Enmyntyn Old Bering Sea burial.



**Figure 116b.** Polar bear fang with wooden handle and artifacts of walrus tusk from the Old Bering Sea (1-4) and Punuk (5, 6) settlements on Cape Schmidta (Ryrkaipiia).



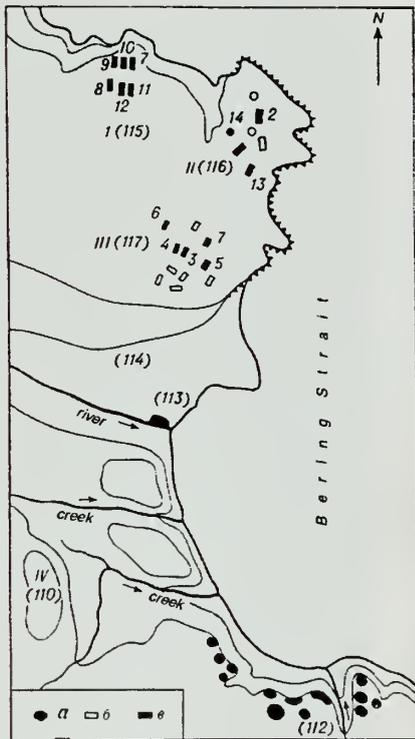
**Figure 117.** Location of early sites at Nuniamo (1-4).

*Exposure 4:* This was the thickest cultural stratum—2 m. The height of the bank is 10 to 11 m. In the lower part of the cultural layer were a bone leister, a fragment of a harpoon head, stone knives, arrow points, and many pieces of seal bone (Table 134).

Excavations were not conducted at the named places. Work was limited to partial dressing of the cultural layer. Permafrost did not permit going deeper here than 0.5 m and partial excavations might damage the site. In addition, it was necessary to hurry back to the main problem of the itinerary, which was a survey on the northern coast the Chukchi Peninsula, beyond Uelen.

### *The Chini Old Bering Sea Cemetery (110)*

The cemetery occupies the driest part of the gentle northern slope of the prominence of Cape Chini (Fig. 118). Along both of its sides flow streams, and the soil around it, and in some degree even on it, is damp as a result. Perhaps it is precisely this circumstance (the greater humidity of the soil of the burial field, compared to other cemeteries) that explains the very poor preservation of the bones in the burials and the bone burial goods.



**Figure 118.** Location of early cemeteries and burials at Cape Chini and Mount Enmynytyn. I, II, III—Enmynytyn cemeteries; IV—Chini cemetery; 1-14—graves; a—pit house; b—unexcavated graves; c—excavated graves.

Another peculiarity of the cemetery was the presence of visibly distinct, even before the excavations, signs of the location of each grave in the form of a patch of grass over each of them. These grassy ovals stood out clearly on the surface of the small gray rubble of the burial area and made identification of the burials quite easy and possible to find without test excavations and trenching. The plan of the area of the burial ground could be observed even before excavation.

In 1965 we opened up 101 burials here with items of Old Bering Sea appearance (Dikov 1974b). The radiocarbon age of one of them, determined on the remains of wood and fur from Burial 5, turned out to be  $1605 \pm 40$  (MAG-228).

### *An Early Pithouse at Cape Chini (111)*

Nearby, on the northeastern edge of the Chini cemetery, a single, somewhat deep (about 30 cm), rounded dwelling (6 x 7 m) with a four-cornered hearth of five stone slabs placed on edge was excavated (Dikov 1974b:10, Fig. 6). The slabs were noticeably inclined. The area enclosed by them was completely filled with a charcoal-ash hearth mass. Charcoal and ashes surrounded the hearth even on the outside. The dimensions of this charcoal "lens" were quite substantial (to 2 m in cross section and to 30 cm thick). In the hearth were two stones and a ground knife of siliceous slate. In the remaining area of the dwelling were flakes, splinters of bone, and a stone spear point. In the western part was a large cluster of sherds of thick-walled clay vessels surrounded by large slabs of stone (Plate 174:7). The radiocarbon age of the charcoal from the hearth is  $1330 \pm 26$  (MAG-33).

### *The First Old Bering Sea Settlement on Cape Chini (112)*

The site is located about one half kilometer west of the termination of Cape Chini, beside the Chini burial ground, and on a knoll top which rises 6 m above the level of a stream that flows by. There were about nine depressions of pit houses here (5 to 8 m in diameters). Having conducted excavations to permafrost along the slope below these pit houses, we laid bare a small part of the cultural layer in an area 2 x 4 m by 30 cm deep. Here, in the scree, we made a very small number of finds: fragments of arrow points and knives of siliceous slate, a decorated harpoon head of the Old Bering Sea type, a punch of walrus tusk, and a flake (Dikov 1974b: Fig. 3).

To the east of this place, along the entire prominence of the cape, were preserved the remains of later pit houses. The Eskimos had evidently abandoned them comparatively recently.

### *The Second Old Bering Sea Settlement near Enmyntyn Mountain (113)*

This site is located on the opposite, northwestern side of a small narrow valley, beyond the stream which flows to the west of Cape Chini, and on a terrace-like projection about 3 m high. Here, in an exposure on the bank, were a fragment of a knife of siliceous slate, a bone punch, and clay sherds. This site is evidently later than the previous.

### *A Single Burial near Enmynytn Mountain (114)*

It is located on the left side of Chiniveem Creek, on a terrace 4 to 5 m high. It looked before the excavations like an ordinary rectangular wall edged by stone slabs that projected slightly above the surface. Its length was about 1.8 m, width about 80 cm, and depth about 65 cm. At a depth of 30 cm, in its central part, was a stone spear point. To the very bottom, the burial was filled with a burned charcoal-ash mass, which attests to the fact that we had come across a complete cremation here.

### *The First Enmynytn Cemetery (115)*

To the north of Chiniveem Creek and the mentioned cultural layer, three burial areas were grouped in the immediate vicinity of each other on a gently rising slope of Enmynytn Mountain that leads to rocky cliffs. The most distant, first one, is located 600 m from the terrace-like projection with the second cultural layer, the second is at a distance of 300 m from the first, and the third is 120 m from the cultural layer (Figs. 116a, 116b).

The first cemetery is located in an area (20 x 20 m) covered with small stones on a rocky outcrop. To the west of the area the slope is covered with large blocks of stone and crevices. At a distance of 50 m from the burial ground a killer whale skull had been set up (Fig. 119). Nine bear canines were found under the rocks that lay around it. The burials of this cemetery showed almost no outward signs. The cemetery was revealed to us by a few stone slabs of one of the grave enclosures slightly projecting from the earth. We excavated this small graveyard completely. A total of six graves turned up here (1, 8, 9, 10, 11, 12), as well as the ritual burial of a walrus flipper. (Fig. 119)

*Grave 1:* This is the only grave in this cemetery with slab framework noticeable above the ground. It attracted our attention by the fact that it was located in a “visible” place, near a rocky projection. In a “sarcophagus” of odd stone slabs was a large number of stone and bone artifacts on a bed of thin slate slabs, along with the remains of the deceased, laid on its back with legs extended (Fig. 120). Most of the artifacts were near the deceased’s legs: an excellently decorated Old Bering Sea harpoon socket piece of walrus tusk; a toggling harpoon head; stemmed slate points of spears, arrows, and harpoons and those with straight bases; the same kind of points but of obsidian and siliceous slate; a figurine; an amulet or simply an obsidian scraper; and obsidian flakes (Plate 136).

The rib cage and arm bones of the skeleton were not preserved and the skull was badly damaged. In this part of the grave, at the place of the right shoulder of the deceased, lay a “winged object” and three small thin slate points with straight bases and with the points directed toward the skull. One broken, stemmed spear point lay by the left shoulder with the point in the opposite direction.

*Grave 8:* This was in an earthen pit without a slab framework, at a depth of about 0.5 m. Just as in preceding Grave 1, the deceased lay on its back with legs extended and oriented with the head to the north (Fig. 121). However, the preservation of its bones was incomparably better, with only the leg bones below the knees having decomposed. Almost all of the



Figure 119. View of First Enmyntyn cemetery.



Figure 120. Burial No. 1.

burial inventory was concentrated near the right shoulder. Here in a pile lay a shaped handle of walrus tusk with animal heads tastefully carved on the ends, beads, a pendant, a button, a scraper for removing fat, a spoon, and a knife of argillaceous slate (Dikov 1967b:Fig. 4). Near the left shoulder were only three bone arrow sockets, one of them with an arrow point (Plate 137). The items of walrus tusk in this grave were preserved better than those in neighboring graves.

*Grave 9:* This was also an earthen pit and not surrounded by stones. At a depth of about 0.5 m were a few bones of the deceased, which was lying on its back with legs extended and head to the north (Fig. 122). Its skull was damaged, the ribs and bones of the pelvis and arms were almost completely decomposed, and only the long bones of the legs were preserved, but without epiphyses. The primary part of the artifacts was located as usual on the right side, but this time not by the shoulder, but rather below the elbow. Here were found stone scrapers,



**Figure 121.** Burial No. 8.

chisels, arrow points, flakes, and cores. On both sides of the right leg and somewhat above it lay three long rods of walrus tusk (Plate 140:8-16). Near the upper rod were two bone ends of gaff hooks and heads of toggling harpoons (Plate 139:1-2). The remaining items, and there were many of them, lay between the legs of the skeleton. There were two lumps of red ocher, stone scrapers, arrow points, a quartz crystal, and four heads of Old Bering Sea toggling harpoons (Plates 138-140). Here we succeeded in also finding a slate knife set in a bone handle. After extracting the bones of the deceased, it was discovered that it was situated on a bed of longitudinal wooden poles.

*Grave 10:* This was also an earthen burial of the same depth as the preceding ones, with the only difference being that the head (northern end) of the grave was surrounded by stones. The deceased had been placed on its back with the legs extended, but its arms hugged the shoulders. The ribs, pelvic bones and epiphyses of the long bones were not preserved. The skull also was very poorly preserved (Fig. 123). Almost all of the artifacts (Plates 141, 142) were located in the area of the pelvis (they were a “winged object”; four slate spear points, two of siliceous slate; scrapers; and a large slate knife with five holes, broken in half). To the side of them, along the right lower leg, lay a rod of walrus tusk decorated in Old Bering Sea style and consisting of two parts held together by a bone dowel (Plate 143).

*Burial 11:* In a small area of fine rubble a shallow pit (measuring 130 x 200 cm) 18 cm deep was dug out in the rubble itself. Evidently the pit had been made for two deceased, but only one burial took place (Fig. 124). Small stones had been placed on top of the deceased

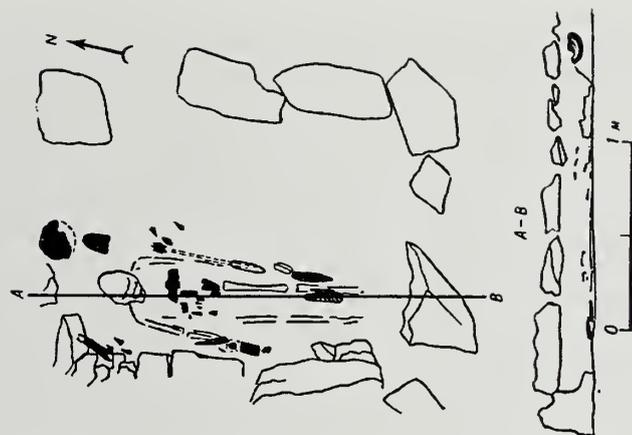


Figure 124. Burial No. 11.



Figure 123. Burial No. 10.



Figure 122. Burial No. 9.

and then rubble poured in up to the ground surface. In the fill, in the northwest corner, lay a decorated harpoon socket piece of walrus tusk with bifurcate slot (Plate 144). On the bottom of the grave, directly in the rubble, lay the remains of the deceased. Of the skeleton, the bones of the skull and the long bones of the arms and legs were preserved. The deceased had been laid in the grave in an extended position on its back with the head to the north, and on the western side of the grave. The eastern half of the grave remained unoccupied. At the head of the burial, on an elevated place in the rubble, stood a round-bottomed, thick-walled, poorly-fired clay vessel with a straight rim. It literally fell to pieces on the spot upon contact. Grog had been added to the paste of the clay vessel.

By the left temple of the deceased lay a massive slate knife with a hole in the middle. Along the left arm a trace of wood about 60 cm long was noted. Five elongated slate points with broad stems lay at its upper end.

A large group of objects, predominantly of stone, were found on the left side of the chest and small of the back. Here lay a distinctly decorated "winged object" of walrus bone. On the surface of the middle part was a rather realistically represented human face with a broad swelling nose and mouth with bared teeth (Fig. 18a).

Below it were lodged all the other tools of the group: a semi-lunar slate knife without a hole, four slate knives with retouched working edges, pieces of four small slate knives, a piece of a semi-lunar slate knife with a stem and heavily worn working edge, and an adze with ground working edge and pointed butt, made from a slate cobble (Plate 144).

By the right hand was a group of tools. They were: a slate point with straight base; a finely retouched point with a broad stem, of rosy porphyry; a slate burin with ground edges; a piece of a slate knife with a hole in the middle; a four-cornered cobble of hornfels; an adze of slate with ground surface and working edge, retouched crudely along the edges and butt; and three flakes (Plate 144).

In the northwestern corner of the grave, under the harpoon socket piece, lay two slate arrow points with straight base and a flint arrow point with an asymmetrical, slightly concave base. Near the left femur lay a well preserved decorated harpoon socket piece of walrus tusk with a bifurcate slot, and slightly higher, at the knee, was a second such harpoon socket piece, very poorly preserved (Plate 144).

*Burial 12:* The grave pit had been hollowed out of the rock to a depth of 15 to 18 cm. The orientation of the grave was north-south. Along the edges of the grave (on the western and eastern sides) two bone props had been set up, which supported the grave cover of whale ribs. With time and under the activity of the surrounding environment the cover collapsed, while the posts remained standing (Fig. 125).

On the stone bottom of the very narrow (70 x 150 cm) grave, the deceased was placed on its back in an extended position with the head to the north. Of the skeleton, fragments of the skull, traces of ribs and vertebrae, and long bones of the legs were preserved.

On the left and right sides, at the upper end of the grave, were seen spots of a burned organic mass. On the left, by the chin, lay a decorated "winged object" of walrus tusk (Plate 146). From its socket a trace of a wooden shaft could be followed for 45 cm. On the upper

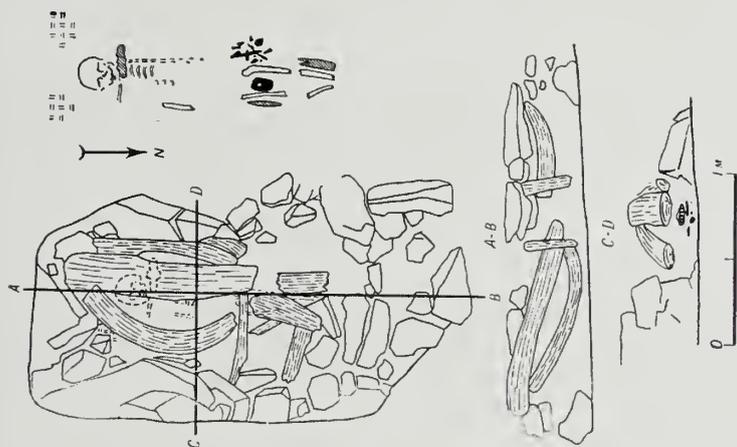


Figure 126. Burial No. 12.



Figure 125. Burial No. 12.

side of the right thigh lay a pointed bone tool, flat-oval in cross section, and above it a slate knife with a hole in the middle. By the left thigh was a group of objects of stone and bone. They were a punch of walrus tusk; a handle with a row of notches on front and back, evidently from winding, also of walrus tusk; and a nail head and a piece of a second, similar nail head (Plate 147).

Among the stone objects lay three slate burins with ground edges; a retouched point with broad stem, of siliceous slate; a scraper with a convex working edge; a subtriangular knife of argillaceous slate with ground surface and retouched working edge; an adze-like tool of argillaceous slate made to be set in a handle, with ground working edge; and a ground axe butt (Plate 147).

Below the knee of the left leg lay a decorated toggling harpoon socket piece with socketed butt, of walrus tusk (Plate 145).

*Burial of a Walrus Flipper:* This burial was 8 m from the top of Graves 9 and 10, which were excavated in 1963, and 4 m from the rocky edge of the cemetery. It was found among rocks and directly under the sod at a depth of about 10 cm. The rocks surrounding it formed a clearly and deliberately constructed wall. It is interesting that 10 cm south of the remains of the walrus flipper lay a stone pestle.

On the western side of these walrus bones, at a distance of about 1.5 m from it and among large blocks of stone, could be traced the remains of a campfire, a burned clay lamp, and a whale rib. On the opposite side, approximately at the same distance, was a ground knife of argillaceous slate.

### *The Second Enmynyntyn Cemetery (116)*

This cemetery, which is of smaller dimensions, having approximately seven burials, is located in large-fragment colluvium. The burials were noticeable as depressions among rocks.

In 1963 a grave (No. 2) was opened, which contained two Old Bering Sea burials (arranged in two layers) and a large number of artifacts.

In 1965 the remaining exemplary burials (Nos. 13, 14) were investigated and it should be noted that by their external appearance they betrayed association with some other, non-Old Bering Sea culture. Excavations confirmed this. In the collapse material under the kurgan-like piles of stones was a very poor burial inventory of early appearance.

*Burial 2:* This grave was surrounded by a rectangular enclosure (0.8 x 2 m) of slabs of rough stone set on edge in the ground. It contained two layers of burial. The upper deceased, of which only the half-decomposed diaphyses of the leg bones were preserved, had been placed at a depth of about 40 cm, head to the south, evidently on the back, and covered with earth and stones (Fig. 127). Near the left thigh was the middle part of a decayed "winged object" and a stone arrow point. Between the legs were a large stone axe, a slate point, and scrapers. In the chest region were traces of a decayed harpoon socket piece, a small axe, and a stemmed stone arrow point. At the location of the skull were two small stone insets from a toggling harpoon (Plate 149).

Twenty centimeters deeper lay the very poor remains of the lower skeleton (Fig. 128). Traces of the skull and long bones of the legs were preserved, by which it was possible to determine that the deceased had been buried with the head to the north, that is, in the opposite direction with regard to the upper burial. However, there was a wealth of stone burial goods concentrated on the right side of the corpse, which was on its back, as well as on its chest near the left shoulder. Here were four retouched stemmed spear points of siliceous slate, five slate points, scrapers (including a shaped one), three burins, pieces of ocher, charcoal, green pebbles, two sandstone whetstones, and stone insets for harpoons (Plate 148).

*Burial 13:* This burial was surrounded by a rectangular enclosure, the long axis oriented north-south. Under the fill of stone, at a depth of 30 to 40 cm, were discovered: in the northern part, the remains of a human skull; and in the southern part, a piece of a toggling harpoon head and three stone arrow points.

*Burial 14:* This was situated in a grave that had an appearance resembling a vault. Its cover was formed of transversely laid whale ribs (one of which was preserved *in situ* at the moment of excavation), on top of which were heaped stone slabs.

The bones of the deceased were found at a depth of 40 to 50 cm on a bed of stone. Their preservation was relatively good, especially the bones of the skull. The deceased had been placed in this rectangular stone vault on its back with legs extended and head to the southeast. No artifacts were found with it.

### *The Third Enmynytyn Cemetery (117)*

This, the largest of the Enmynytyn cemeteries, contained 11 to 15 grave depressions and enclosures that appeared rather distinct in the large-fragment colluvium (Fig. 123). Five burials were investigated here (Nos. 3, 4, 5, 6, 7).

*Grave 3:* This grave was in the center of a stone enclosure, rectangular in outline (1.5 x 2 m), and oriented north-south. Only the diaphyses of the long bones of the

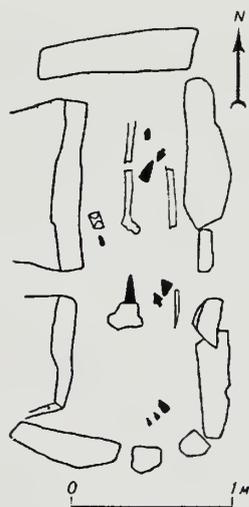
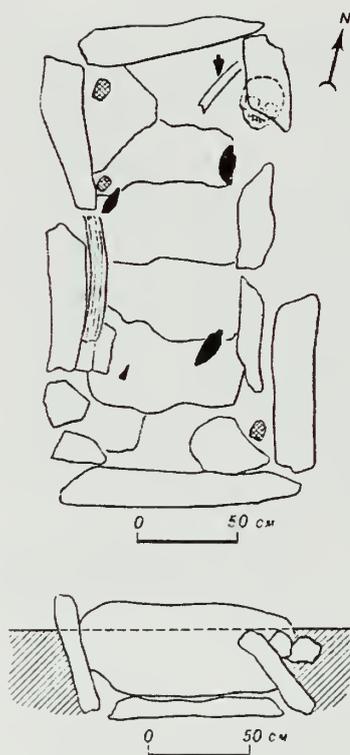


Figure 127. Upper burial in Grave No. 2 of the Second Enmynytyn cemetery.



Figure 128. Lower burial in Grave No. 2 of the Second Enmynytyn cemetery.



**Figure 129.** Burial No. 4 of the Third Enmyntyn cemetery.

a greater depth were two arrow points. In the southern half of the grave were a slate knife with a hole, a point, and a piece of ocher (Plate 151).

*Grave 6:* This grave had an unclosed enclosure (0.8 x 2.2 m), with no slabs on its northern side—rather a baculum lay there. Of the human remains preserved, there were a damaged skull and a femur (at a depth of 60 cm). Two large slate knives without holes lay near the skull. Two others lay separated in the middle of the grave (Fig. 130).

*Grave 7:* In the rectangular stone enclosure (1 x 2 m) were leg bones without epiphyses, judging by the position of which, the deceased was buried on its back with legs extended (Fig. 131). Near the left femur lay two stone inset blades from a toggling harpoon head (the bone part of the head had completely decomposed) and three triangular slate arrow points placed one on the other. Just above, near the hip joint, were a chalcedony projectile point, one flint point, and three slate points (also lying one on the other). Along the other

legs and part of the pelvis were preserved, on a pavement of stone slabs. In the corners of the grave were a piece of an arrow point of argillaceous slate, and part of a knife of the same material. The western wall of the enclosure was collapsed inward.

*Grave 4:* This grave had an enclosure (1 x 2.1 m) of the same construction and orientation as the preceding grave, except that the slabs of the eastern wall were collapsed inward. Its bottom was also covered with stone slabs. The northern part of the grave was covered with two pieces of whale rib. The human bones, except the skull (which was in the northern part of the grave), were not preserved (Fig. 129). In the northwestern and southeastern corners of the grave were pieces of a clay vessel. In the place where the chest of the deceased should have been lay a large slate knife without holes, and a flint spear point was located by the western wall of the enclosure. In the corner, past the deceased's head and somewhat higher, was another stone spear point. At the legs were a large slate spear point broken into three pieces, a piece of a slate knife, and flakes. Just to the west was a flint arrow point (Plate 150).

*Grave 5:* This grave, in a rectangular slab enclosure (0.8 x 2 m) and under stone fill, contained no human bones. Only stone artifacts were found. In the northern part of the grave, at a depth of 20 cm, were axes of siliceous slate and four slate knives. At

side of the deceased, by the wall of the grave, were two stemmed points of siliceous slate (Plate 152).

### *A Fortified Site on Senlun Cliff (118)*

An inaccessible cliff—Cape Senlun—with ruins of a fortified site is located between Naukan and Uelen. The height of the cliff is over 50 m. On the eastern side it is very steep—a natural wall—terminated by an odd “crest.” On the western side, a more significant summit rises over it. In the saddle between the latter and the “crest,” and joining the “crest” tightly, is a fortified site enclosed on the two sides that are not protected by the cliffs by a stone wall that has fallen. On the southeastern side of the cliff, toward the sea, these ruins can be reached by a very steep talus slope, but on the northwestern side they cannot be reached from the sea because submerged rocks do not permit landing at the cliff in a whaleboat or baidar.

The ruins of the site occupy a four-sided area measuring 55 to 60 paces by 105 to 110 paces, bounded on the eastern side by the crest of rocks, on the northern side by a ravine, and on the two other sides by an artificial stone enclosure. The dimensions of the enclosure wall are now 1.5 to 2 m wide and to 1 m high. It was built without additional materials—simply with large stacked pieces of rock available here in the saddle in abundance (talus deposits)—and, it must be supposed, it was never especially high, most probably no more than the height of a man. Within the bounds of the enclosure, seven mounds (7 to 20 m in diameter) can be easily seen. There are a few depressions in each of them. Whale ribs stick from the mounds, but more often do stones, which served for constructing these pit house dwellings. There are also several round enclosures of stones placed in the ground—traces of houses of another kind, most probably of the yaranga type, fortified all around with stone.

Within the largest such round house (6 to 7 m in diameter), located in the very northeastern corner of the site, we undertook exploratory excavations in 1956 (Dikov 1958a:41). In the middle of the house were several stones. Slabs of the enclosure were partially set on edge, partially

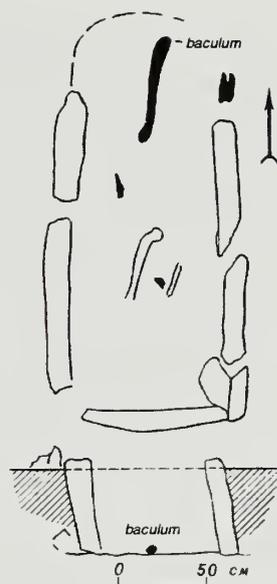


Figure 130. Burial No. 6 of the Third Enmynytyn cemetery.

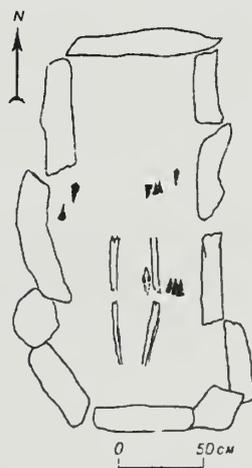


Figure 131. Burial No. 7 of the Third Enmynytyn cemetery.

lying flat. The sod was removed by square over the whole area. Sherds began to appear directly in the sod, some with external "ears." Their rims were straight, with slight dents from fingers and without any decoration. The thickness varied. The color was from black to light ochreous and gray. There were more sherds in the middle near the surface stones and in the western half. They were all small, and there were no more than 10 to 20 pieces. Bones of seal and walrus appeared, and the artifacts found were: a flint spear point, broken on the bottom, retouched on both sides; a piece of a ground slate knife; and the lower part of a small ground axe. Under the sod the earth was so hard, though not frozen, that it did not yield to the shovel.

Southwest of the site 100 to 150 m, on the narrow and oblong upper area of an isolated cliff (30 m high) was a chain of house pits tightly joined to each other, seemingly "stuck" one to the other, constructed of stone and whale bones. In 1956, we also excavated one of them completely by layer. It was 6 m<sup>2</sup> in area (2 x 3 m).

Before the excavation, the dwelling was represented by a subrectangular pit with rounded corners, framed along the edges by a stonework of slabs of uncut stone laid flat one on the other in several layers. The entryway, in the form of a narrow descent, was in the northern transverse side (near the northeastern corner, almost at the corner). On this same side, a niche was noted, and near the back (southern) wall a whale rib cover was preserved, crosswise to the long walls.

During the excavation of this house a number of large stones of slab-like character had to be extracted. The impression was created that these stones initially served as roofing. In fact, the whale ribs and jaws of the collapsed roof were found under the stones (Dikov 1958a:Fig. 17).

The house was not heated by a lamp, but rather by a hearth constructed of small stones in the niche to the right of the entryway. The stones of the hearth were quite burned, and crumbled upon contact. Among them were smooth, thick sherds of broken clay vessels. By the western wall, opposite the hearth, a bed had been constructed of two layers of small whale scapulas. There, near the wall, were a massive stone axe and a retouched stemmed spear point. In addition, in the house were scraps of baleen, mattocks, picks, and various other items (Dikov 1958a:42).

### *The Uelen Cemetery (119)*

In its significance, the Uelen early Eskimo cemetery is one of the most outstanding archaeological sites on the Chukchi Sea coast.

The location of this cemetery is quite good: on the edge of a rocky coastal point in piedmont hills, just above the place where the pebbly Uelen Spit begins. From here, a broad view of the spit, lagoon, and Arctic Ocean opens up. At the foot of the cliff murmurs a clear stream. Even now the people of Uelen use it and, of course, they used it in early times, when camps and villages of Punuk and later times were located here, which were discovered and investigated by S. I. Rudenko. One early camp (No. XVII) is located by the calm waters of the lagoon. It is on a slope of the same hill, but beyond the ravine, several meters from the

cemetery. Another camp, of Punuk times, was preserved as large mounds representing the former house pits. It is at the foot of a hill on the pebbly spit that separates the lagoon from the sea, that is, right where the Chukchi village of Uelen is now located.

The cemetery is on a barely noticeable mound with an area of about 300 m<sup>2</sup>, in the driest place on the hill, which is covered by a more than a meter thick layer of loose deposits of sandy loam alternating with rubble.

The Uelen cemetery was first noticed in 1954 by A. T. Simbirskii. In 1955 an excursion of school children, led by the teacher D. A. Sergeev, excavated two Old Bering Sea burials on the western side of the cemetery. In 1956 the author undertook rather extensive excavations there. The primary object of the latter was to determine the boundaries of the early cemetery, which object was carried out completely during the course of one field season. On the southwestern and northeastern sides of the burial ground we opened up eleven burials (in Graves 1-4), which provided a great number of valuable archaeological finds belonging to the Old Bering Sea and Okvik cultures (Dikov 1958a:32-41).

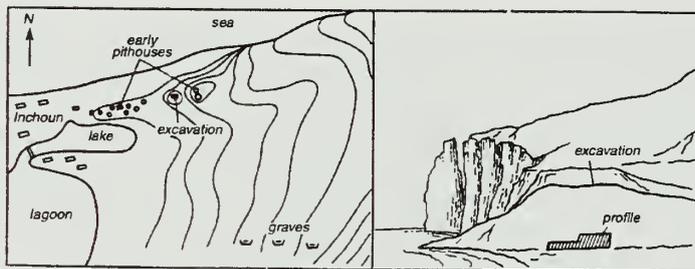
During the next field season, fall 1958, we investigated 23 more burials (Nos. 5-27) in the southwestern and northeastern parts, including, besides Old Bering Sea, two clearly distinguished Birnirk burials (Dikov 1967a).

In 1957, an expedition of the Institute of Ethnography AN SSSR, led by the well-known physical anthropologist Professor M. G. Levin (with participation by archaeologist R. V. Chubarova-Kozyreva and ethnographers S. A. Arutiunov and D. A. Sergeev), took part in excavations of the cemetery. During the course of four seasons (1957-1960) this expedition excavated 76 burials: first in the areas between the burials that we had excavated in 1956, and then on the western slope of the burial ground (Arutiunov and Sergeev 1969). In recent reports of this expedition it was noted that the Uelen cemetery was excavated completely and that work at it had stopped (Arutiunov and Sergeev 1962). However, in 1963 we traced a continuation of the cemetery to the southeast. There we placed two exploratory test pits in which three Old Bering Sea burials (Nos. 29a, 29b, 29c) and one Birnirk (No. 28) were found and examined (Dikov 1967a:67, 68, 76; Figs. 28, 29, 31, 32).

### *The Inchoun Old Bering Sea Village (120)*

On the shore of the Arctic Ocean beyond Dyriavaia Cliff (Ravykvyn), close to which there is a large walrus haulout, is the modern village of Inchoun and large early pit houses of ancestors of the Eskimos. The latter extended in a straight line from the eastern outskirts of the modern village in the direction of Inchoun Cliff. Some of them are located on the spit, and the remaining are on the hill leading to the cliff (Fig. 132).

We investigated one of the large early Eskimo houses located on the edge of the terrace-like point from which the Inchoun Spit begins. It was built at an elevation of about 9 m above sea level and, judging by four depressions in the ruins (reaching 40 m in diameter) around a large central depression, it correspondingly had four adjacent structures. Thus, it belongs to a complex type of Eskimo houses consisting of several rooms (Figs. 132, 133).



**Figure 132.** Location of the Inchoun Old Bering Sea site.

We were able to begin the excavation only of the central room, which was round in plan, and 10 m in diameter. The depth of the depression corresponding to it before the excavation was 1 m. At a depth of 40 to 50 cm permafrost began and therefore we had to content ourselves with removal of only the upper, unfrozen layer, having cleaned off the lower-lying layer for natural thawing, in order to return in the future and continue the excavations deeper.

The area projected for the excavation was broken up into four-meter squares (2 x 2 m) oriented north-south. All of the finds were made under a thick, extremely hard layer of sod, at a depth of 30 to 50 cm (Fig. 134). They were distributed generally in the corners and edges of the excavation, with especially many of them being on the northwestern side (Squares 1-A, 1-B, 2-A), which corresponds to the entrance of the dwelling. Here were sherds of thick-walled clay vessels, pieces of slate knives, points of arrows and spears, pieces of axes and blanks of adzes, and skreblos, as well as several odd pieces and blanks of walrus tusk, and, in particular, a piece of a skreblo made from walrus tusk for cleaning walrus intestines of fat (Plate 154). In the corner opposite the entrance (Squares 4-A, 4-B, 5-A), among scraps of whale ribs and isolated stones were pieces of the same thick-walled vessels, a large slate knife and several pieces of such knives, a piece of a stone axe, and stumps of walrus tusk. On the southern side (Squares 3-D, 4-D, 5-D) were the same thick-walled sherds, pieces of slate knives, and arrow points. In the southwestern corner, opposite the entrance, was a huge stone hearth. In its burned earth were many thick-walled sherds, a stone axe, and pieces of whale ribs (Squares 2-B, 2-C, 2-D). Near two large stones on the northern side of the hearth were several dozens of round pebbles—stones for a sling. A pick of walrus tusk was in the same place. Traces of a small hearth in the form of burned bones were in the central part, in Squares 3-B and 4-B. Thus, the southwestern and central parts of the room served for food preparation. The occupants of the pit house evidently had their beds along and around the sides, where a large quantity of different artifacts were encountered. It should be noted that opposite the entryway, two vertically-fastened whale ribs were preserved. Their ends projected from the pit even before excavations were begun. They were probably surviving support posts on which the rafters of the house—also of whale bone

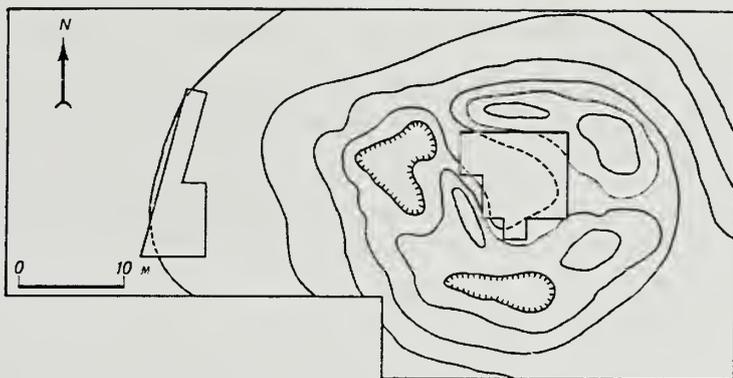


Figure 133. Large Old Bering Sea pit house at Inchoun.

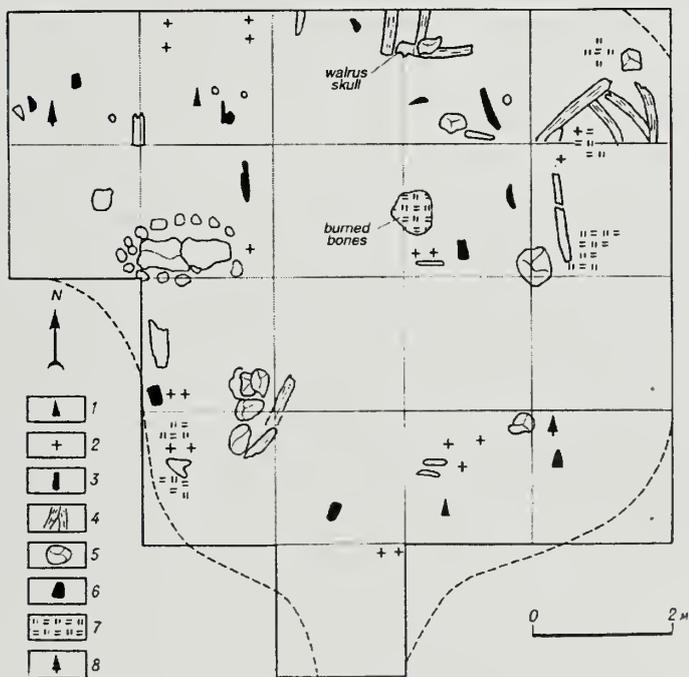


Figure 134. Plan of excavation of the Old Bering Sea house at Inchoun. 1—knives; 2—sherds; 3—bone mattocks; 4—whale bones; 5—stones; 6—axe; 7—charcoal; 8—arrow points and knives.

(pieces of them were encountered here and there, as indicated above, in the upper part of the cultural layer)—had rested.

For exploratory purposes we stripped the sod off a small area (3 x 12 m) of the slope at the base of the mound in which this house, which had been subjected to excavations, was located—26 m from its central room. Here the cultural layer was very saturated with finds. In the process of stripping it off of the permafrost (to a depth of 40 cm), several Old Bering Sea toggling harpoon heads (Plate 155), knives and points of argillaceous slate, and objects of walrus tusk, as well as a distinctive “winged object” with two stylized sculpted bird’s heads were found.

### *The Inchoun Cemetery (121)*

In the Inchoun cemetery, which was formed in crevices on a rocky talus slope of a hill southeast of the Inchoun Old Bering Sea site, we excavated only one grave. It was an oval depression (1 x 2 m) in the large rocky talus of the slope, and one of the natural crevices had been used for the grave. Around the depression, a stone enclosure (1.5 x 2.5 m) had been made, and covered lengthwise and crosswise by whale ribs. The grave was filled with stones, therefore, the bones in it were poorly preserved, though the burial here was not very old. At a depth of 0.5 m, five arrow points and a scraper of argillaceous slate were found (in the northern half of the grave).

### *The Uten Early Eskimo Site (122)*

Northwest of Inchoun, beyond a hill with an isolated, standing rock, is a broad valley through which flows a large stream. In the valley, on a knoll on the right bank of the stream, the ruins of comparatively late pit houses constructed of whale bones could be noted, even from afar. There are substantially earlier pit houses on the high terraces along both sides of the stream. On the right side they are on a 6 m terrace, and on the left on a 12 m terrace (Fig. 135). The thickness of the cultural layer of these two early sites can be clearly seen in the cut banks of these terraces. It reaches 2.5 m. Samples of wood were taken at a depth of 1.5 m for radiocarbon analysis from the cultural layer on the left terrace. The profile of the exposure at this place revealed an accumulation of red ocher covered by a stratum of earth at a depth of 1.3 m under a large, 1-meter, stone slab. Under this layer of ocher (20 cm thick) could be traced a lens of the hearth charcoal (same thickness), and under it burnt rocks. On the sides of the slab covering the ocher stood two wooden posts (20 to 25 cm across). Under one of the posts, in ocher and on a carbonaceous hearth lens, was a slate knife (Plate 156). There were no other finds here.

### *The Uten Early Eskimo Cemetery (123)*

At Uten, near a rocky outcrop on the top of a hill on the left side of a small valley, is an Old Bering Sea cemetery consisting of approximately 40 burials within rectangular stone

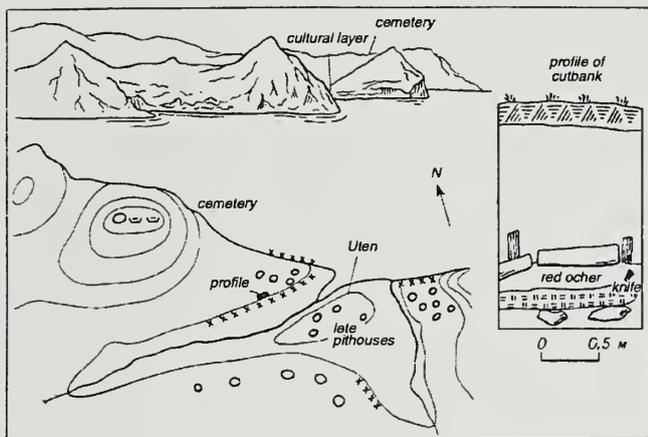


Figure 135. Cultural layer and cemetery at Uten.

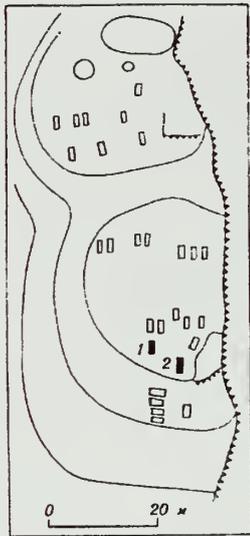
enclosures oriented north-south. We excavated only two graves, which were at the southern edge of the burial field (Fig. 136).

*Grave 1:* Under the sod in a stone enclosure (2.5 x 1.2 m) were the remains of two longitudinally placed whale ribs. At a depth of 60 cm under the stone and earth fill were traces of two long bones, between which was a schist knife (in the southern half of the grave). On the opposite side of the grave, at the same depth, a schist arrow point was found. Under the point was a wooden bed. Its age by radiocarbon was  $1750 \pm 100$  (MAG-354).

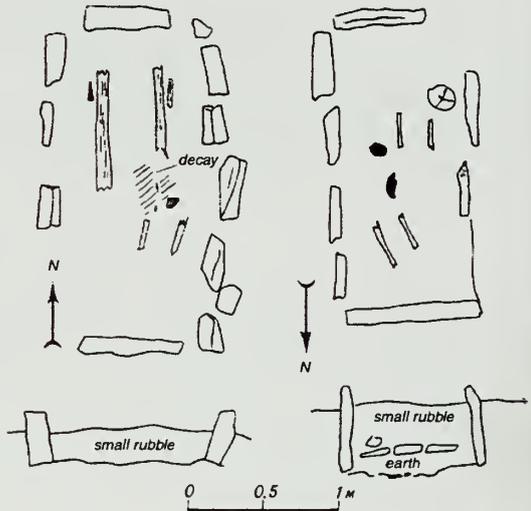
*Grave 2:* Within a rectangular enclosure of the same dimensions as above was a layer of rubble. A layer of horizontally placed slabs was at a depth of 0.5 m, and under them, in the earth fill, were the badly damaged remains of a human skeleton. The remains of the skull were on the southwest side of the grave, and farther along, in a northern direction, in anatomical sequence, were humeri without epiphyses, part of a pelvis, and femurs (also without epiphyses). Not far from the pelvic bones was a knife of siliceous slate. Judging by these remains, the deceased was buried on its back with legs extended and head to the south (Fig. 137).

### *Early Sites at Chettun (124)*

Before reaching Chegitun, in a small valley surrounded by steep slopes, coarsely flaked flint tools (scrapers and points), flakes, and fragments of thick-walled ceramics were found in the talus of a bluff on the left side of the stream (Plates 157, 158, 159). The cultural layer was at an elevation of 10 to 12 m. Its thickness averaged between 50 and 70 cm along the exposure of the bluff and was connected with the ruins of two small pit houses of whale bone (Fig. 138). In the profile of this cultural layer (in the exposure) were flakes and a



**Figure 136.** Plan of cemetery at Uten.



**Figure 137.** Grave No. 1 and No. 2 at Uten.

stemmed spear point or knife (Plate 157:5), as well as the bones of reindeer, seal, and walrus, and a whale skull.

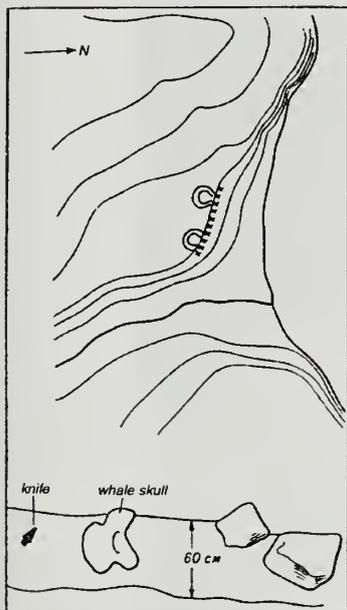
### *The Ekichuverveem Cultural Layer (125)*

A river by this name not far from Chegitun flows through a broad valley. On its right side, on an 8-meter-high cape-like terrace, there is a cultural layer to 1 m thick (Fig. 139). From it we took a toggling harpoon head of the Thule 2 type, fragments of thick-walled clay vessels, fragments of knives and blanks of tools of siliceous slate, picks, leisters, a scraper for cleaning walrus intestines, a double plug decorated with a perforating pattern, and other objects of walrus tusk (Plate 160).

### *The Chegitun Early Eskimo Site (126)*

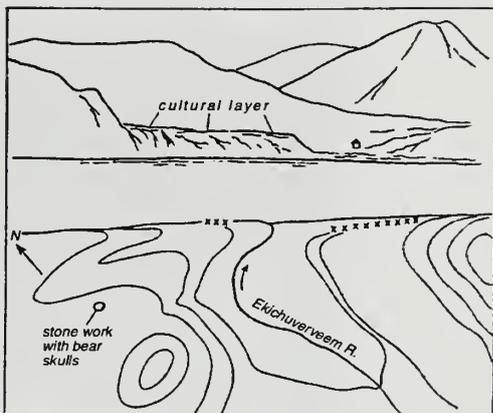
In 1963, at the mouth of the Chegitun River, in the vicinity of the Chukchi village by the same name, we discovered the cultural layer of an early site and three burial grounds (Fig. 140) (Dikov 1966b:Fig. 1).

The cultural layer of the early site is traced in the upper part of the 5-meter bluff face, on the left side of the mouth of the Chegitun River, where a few dozen years ago the old

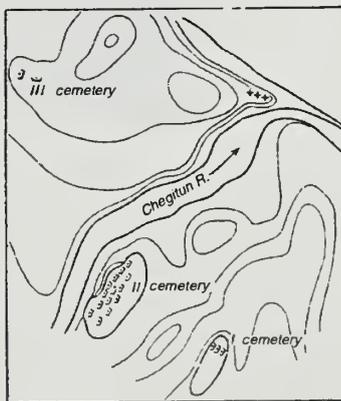


**Figure 138.** Location of early pit houses at Chettun.

village of Chegitun was located. Early pit house depressions were no longer visible, having been destroyed by more recent pits. We made a profile of the cultural layer in the steep slope below these pits, at an elevation of 4 to 6 m above sea level. We stripped the sod off of a strip 4 m long, 1 m wide, and 0.4 m deep (to permafrost). Two toggling harpoon heads of the Thule type (one with a broken end), fragments of slate knives, a fragment of a sled runner-to-bed support bar, and burin handles of deer antler were found, as were various articles of walrus tusk: a bit from a deer bridle, a fishhook, a punch, an arrow point blank, etc. (Plate 160).<sup>29</sup>



**Figure 139.** Early site at the mouth of Ekichuverveem Creek.



**Figure 140.** Early Eskimo site and cemeteries at the mouth of Chegitun Creek.



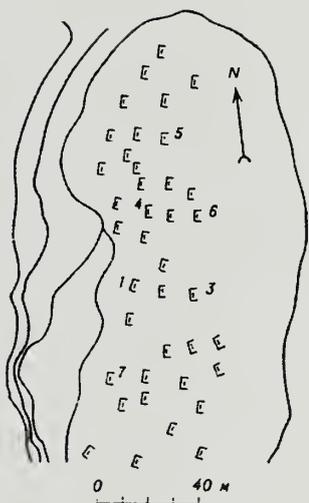
**Figure 141.** View of the second Chegitun cemetery.

### *The First Chegitun Early Eskimo Cemetery (127)*

This site is located on one of the hills southwest of the Chegitun site and 400 to 500 m from the river. Here there were three rather noticeable stone features in the form of rectangular enclosures located side by side and oriented northeast-southwest. There was nothing under two of them except “pure” sterile soil directly under the thin sod. Only in one (No. 1), at a depth of 20 cm, were odd human bones preserved (ribs, femurs, and humeri without epiphyses), as well as a long rod of walrus tusk. On a neighboring mound of this hill (near the village), traces of some excavations beside a rocky outcrop were noted, possibly conducted by M. G. Levin on similar, probably late, graves.

### *The Second Chegitun Early Eskimo Cemetery (128)*

This site is located on the high rocky right bank of the Chegitun River not far from its mouth. The cemetery occupies a substantial area (over 150 m in extent) and consists of more than 50 rectangular enclosures constructed on a small-rubble surface studded with stones (Figs. 141, 142).



**Figure 142.** Plan of the second Chegutun cemetery.



**Figure 143.** Burial No. 1 (Chegutun 2).

All the enclosures are oriented in approximately the same direction: the head part to the northeast, except Grave 3, where the human remains lay in the opposite direction. All the burials were filled with rocks, with only a slight amount of soil added, due to which preservation of the skeletons was unsatisfactory.

*Grave 1:* This grave, in a rectangular enclosure (1 x 2 m), contained the incomplete skeleton of the deceased, laid on its back with legs extended and arms resting on the waist (Fig. 143). The skull and right femur were not preserved. Near the pelvis, on the right side, lay a large harpoon head of Birmirk type and in the same place was a punch. Near the bones of the right foot were a bear canine and a tooth of a young walrus (Plate 162:2).

*Grave 2:* This grave is in the same type of enclosure, but no bones were found in it, but a bone leister point in the head part of the grave.

*Grave 3:* In a rectangular enclosure (1 x 2 m) lay the remains of a skeleton, the arrangement of which permitted one to suppose that the deceased (oriented as an exception with the head to the southwest) was here placed in the posture of lying on the right side with the legs bent: its femurs (without epiphyses) were directed toward the skull, of which only the lower jaw was preserved. Of the arms, only the humeri (also without epiphyses) were preserved. In the area of the pelvis were a piece of a Birmirk harpoon head and the head of a gaff hook, and in the area of the skull was a bone punch.

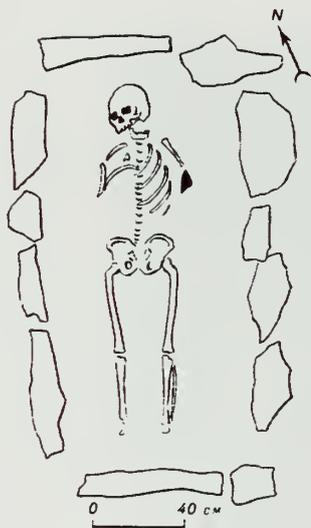


Figure 144. Burial No. 6 (Chegitun 2).

*Grave 4:* Near the eastern corner of the stone enclosure (2 x 1.5 x 1.2 m), on the ground surface, lay pieces of thick-walled clay vessels and a slate spear point. There were no human bones in this grave, but more artifacts than in the other enclosures of the cemetery. In the center, at a depth of about 30 cm, beside a large wooden slab, lay two knives of argillaceous slate and three toggling harpoon heads, as well as bone punches and a plate of armor decorated by Punuk engraving. In the southern corner of the grave was a small bone knife with a hole in the handle (Plate 163).

*Grave 5:* At a depth of 0.5 m within the enclosure, which was filled with stones, the almost complete skeleton of a human with a well preserved skull lay on its back with its legs extended. All the artifacts accompanying it were on the right side of the pelvis: two bone points (one of them covered with engraving in the form of transverse cuts), two leister points, two bone points of gaff hooks, a bead of walrus tusk, and two pieces of knives of argillaceous slate (Dikov 1966b:Fig. 3).

*Grave 6:* In the stone enclosure (1 x 2 m), at a depth of 20 cm, an almost completely preserved human skeleton lay on its back with its legs extended. Near its left elbow was a ground stone knife (Fig. 144).

*Grave 7:* In an enclosure of the same dimensions, at a depth of 20 cm, were pieces of a pelvis, two femurs with damaged epiphyses, and a cluster of burial goods near the right hip: a large, crudely flaked basalt spear point; a knife of argillaceous slate; a piece of such a knife; and five barbed bone leister points.

### *The Third Chegitun Early Eskimo Cemetery (129)*

This site is located on the left bank of the Chegitun River, on the south slope of a hill not far from the mouth of the river. On a small (about 20 m) flat area of the slope there were evidently a few subsurface graves, but their walls were not visible on the surface. Only one burial gave itself away by the slightly projecting edges of stone slabs. We excavated this one in 1963 and published it in 1966. It should be remembered that the grave had a rich burial inventory, and, in particular, three points of toggling harpoons of the Thule-Bimirk type (Dikov 1966b:Figs. 4, 5, 6).

### *An Early Eskimo Site on Vtoraia Creek (Beyond Chegitun) (130)*

In a valley through which the second creek beyond Chegitun flows (4 to 5 km from the latter), on a cape-like projection at the bottom of a hill on the left side of the mouth, the

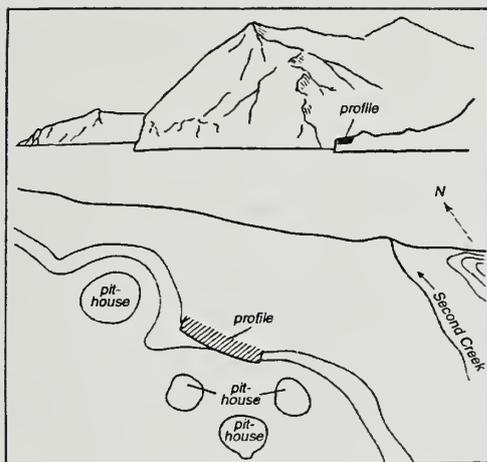


Figure 145. Early site at the mouth of second creek (from Chegiton).

cultural layer of a small early Eskimo site was found. Its four pit houses (which now appear as depressions with whale ribs protruding from them) are located on the edge of a surf-washed bluff 7 m high. The thickness of the cultural layer in the exposure on the side toward the sea is 1 to 1.4 m. In the lower part of the profile we found fragmented and whole stone and bone artifacts, in particular: a harpoon head, part of the handle of a pressure flaker, two bone stems of fishhooks, a knife handle, a barbed bone arrow point, a fragment of a ground knife, and a knife of siliceous slate made by the percussion technique (Fig. 145).

### *The Early Eskimo Site at Seshan (131)*

On the rocky cliffs at Cape Inkigir (Seshan), a large bird rookery clamors. At the foot of cliffs not far away, it was possible to hear the menacing cry of walrus not long ago. It is natural that these convenient places, abundant in food, were settled by people long ago. Their Seshan site was located behind the bend of the cape, on a high precipitous bank on the left side of a valley through which a small stream flows. Only the ruins of this site of the Chukchi—sea mammal hunters—remained. We were able to trace the earlier cultural layer along the upper edge of the 15-meter bluff, beneath the ruins of the Chukchi site. We profiled the upper part of the exposure of the bluff and it was clear that the Eskimo layer was as much as 2 m thick. We were able to trace it over a distance of 18 m along the edge of the bluff. In it were items of Old Bering Sea appearance: a fragment of a toggling harpoon head, percussion-flaked stone spear points (one stemmed and two leaf-shaped), slate knives, bone points of gaff hooks, scrapers for cleaning walrus intestines, punches, a blank of a toggling harpoon head, handles and mattocks of walrus

tusk covered with engraving, a buckle, and other articles of walrus tusk (Dikov 1966a:Fig. 2). Charcoal from this layer was dated by C-14 to  $2022 \pm 100$  years ago (MAG-104).

### *The Seshan Early Eskimo Burial Ground (132)*

On the top of rocky cliffs on the right side of the stream, ritual stone structures with bear and walrus skulls were found, as well as a cemetery with burials in stone crevices.

The walrus heads lay in two rows in the ritual structures. The tusks were directed toward the haulout, to the northeast. Large blocks of stones had been piled up in a broad oval around them. In the same place lay a bear's skull and a reindeer antler (Dikov 1966a:Figs. 4, 5). These sites of special ritual for walrus hunters, connected with killing walruses at the haulouts, are a picture typical not only for the Eskimos, but for the coastal Chukchi as well. Each year, after the killing, the Chukchi and Eskimos put here the head of the first walrus they killed that year at the walrus haulout. It is interesting that preliminarily each such walrus head was consulted about the course of all killings to be conducted during the year. This is connected not only with the early world view of these people in connection with the taking of animals—the source of life of hunters—but also with a distinctive method of ordering and regulating slaughter.

Not far from the stone feature with walrus heads there was also a cemetery of burials in rock crevices. In this relatively late burial ground—having probably more ethnographic than archaeological significance—several vertically set stone slabs rose up. On the western side of the cemetery, farther down the slope on the side toward old Seshan, the graves were built in small stone kurgans with now-collapsed middles. Here one of them, sharply different by its construction, strikes the eye. It was in a rectangular enclosure of the kind we were already acquainted with, so typical for early graves of this area. We excavated this one.

Its slab enclosure was 2.2 m long by 1 m wide and had a depth of 55 cm. It was oriented north-south. Horizontal slabs of stone had been placed under the sod within its area. At a depth of 35 cm in its southern part was a human skull, under one of the slabs, and on the northern side were the remains of several other bones of the skeleton: a decomposing pelvis and femurs without epiphyses. Judging by the arrangement of these bones, the deceased had been placed on its back with its legs extended. A child had been buried here—the proportions of the bones are clearly those of a child. At the head of the grave, pieces of a thick-walled pot were found. Here also lay a pick of walrus tusk, and on the chest was a knife of argillaceous slate (Dikov 1966a:Fig. 6).

The features of the burial ceremony noted here (specifically, the construction of the enclosure and position and orientation of the deceased) permit thinking that this child burial was Old Bering Sea. We had evidently excavated a contemporary of those people to whom the Old Bering Sea camp on the left side of the Seshan valley belonged.

### *The Ikolivrunveem Early Eskimo Site (133)*

Such is the name of a stream not far from Seshan. On the left of the stream mouth, on a 4 to 5 m high rocky bank, was a cultural layer 2 m thick (Fig. 146). Profiling the bank over an

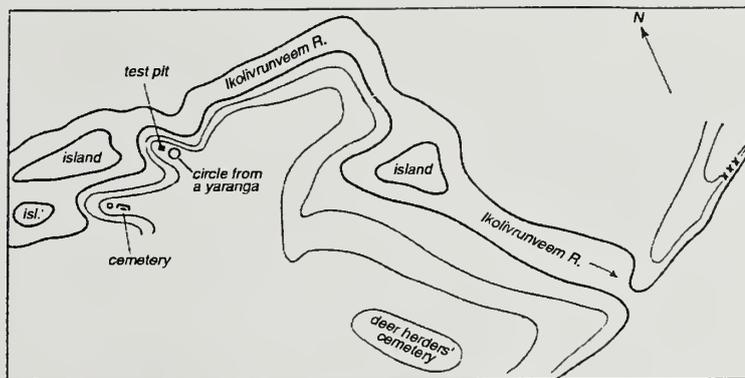


Figure 146. Cultural layer and cemetery at the mouth of Ikolivrunveem Creek.

extent of 15 m, two broken Punuk toggling harpoon heads, two foreshafts for them, a small labret of walrus tusk, an adze, an arrow point and pieces of knives of argillaceous slate, and three picks, three punches, and a bead blank of walrus tusk, were found (Plates 166, 167), as were a paddle (ceramic stamp) of the same material decorated with concentric circles (Plate 168).

#### *The Ikolivrunveem Early Eskimo Cemetery (134)*

The site is located on the right bank of the river, on a rocky point about 12 m high in a bend of the river 2 to 3 km from the mouth (Fig. 147). On the small-rubble surface (20 x 25 m) of this rocky point, 12 to 15 rectangular slab enclosures were noted projecting slightly above the ground surface. They were arranged in some disorder, but the bulk of them were oriented northwest-southeast (Fig. 147). We opened one of the graves (No. 1) on the west-ern edge of the cemetery, on the edge of the point.

*Grave 1:* This grave had a well defined rectangular slab enclosure (2 m long by about 1 m wide and 30 cm deep from the ground surface) oriented north-northwest to south-southeast. In its fill, along with earth, were many stones and pieces of stone slabs. Not all of the bones of the skeleton were preserved: for example, there was no skull or right femur and the epiphyses of the long bones were decomposed. The deceased had been buried on its back with the legs extended, and the head to the north-northwest. At the head of the grave lay two spear points of argillaceous slate flaked along the edges, a stone burin, and two flakes. Near the bones of the left arm were a ground slate knife and a seal scapula.

#### *Early Eskimo Pit Houses at Kenishkhun (135)*

The site is in front of Cape Serdtse Kamen' and on the left of the exit from Kenishkhun Lagoon, into which the Chernaiia River falls. It is situated on a bank (about 4 m

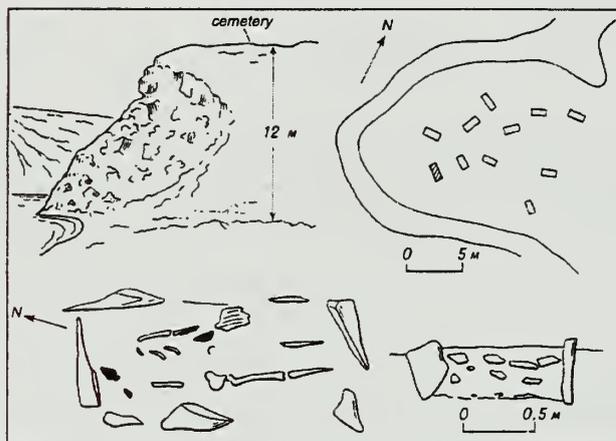


Figure 147. Cemetery and excavated burial at the mouth of Ikolivrunveem Creek.

high) undermined by the sea. Here the cultural strata of early pit houses were exposed (Fig. 148). However, the stripping of this cultural layer (to 1 m thick) did not provide sufficiently diagnostic artifacts for determining its age. Only a piece of an ice pick of walrus tusk and thick-walled sherds of clay vessels of evidently comparatively late times were discovered.

*The Early Eskimo Cultural Layer at Staroe Enurmino (136)*

On a comparatively low (about 4 to 5 m) undermined shore, at the location of a recent village, a small area (5 m in extent) of cultural layer 1.5 m thick was profiled (Fig. 149). Three toggling harpoon heads of Thule 1 and Birmirk types were found, as well as pieces of clay vessels and the following artifacts of walrus tusk: two picks, three ice picks, a piece of a ring, a punch, and other items (Plates 169, 170).

High on the slope of the hill to the east, among stacks of stones on a large-rubble surface, were signs of burials in the form of open-rectangular surface enclosures 2 m long.

Early pit house ruins, according to early residents, were also preserved on Cape Serdtse Kamen' in the region of Nynvyran and on Cape Netten.

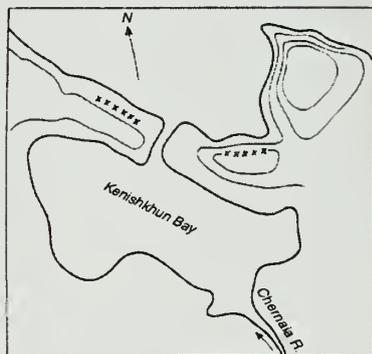
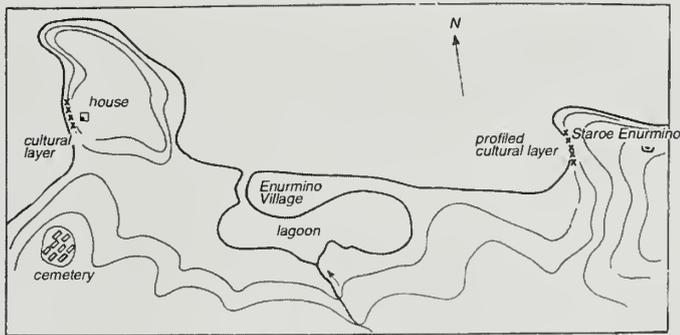


Figure 148. Early sites at the entrance to Kenishkhun Bay.



**Figure 149.** Early sea mammal hunter sites and cemetery in the vicinity of Enurmino.

### *An Early Eskimo Cultural Layer near Staroe Enurmino (137)*

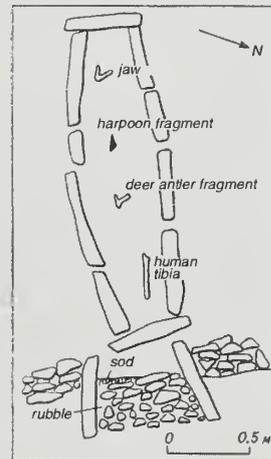
In the vicinity of the Enurmino Polar Station we discovered a cultural layer about 1 m thick (the height of the bank here is about 4 m) on the side of a coastal bluff, from which we extracted only a few pieces of artifacts of walrus tusk, bones of walrus and seal, and sherds of clay vessels.

### *The Cemetery near the Enurmino Polar Station (138)*

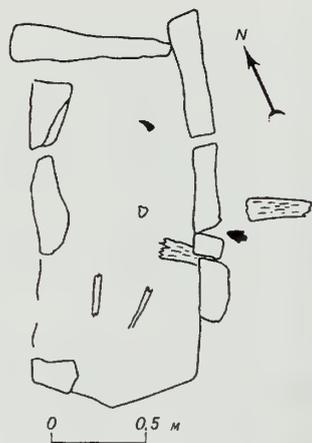
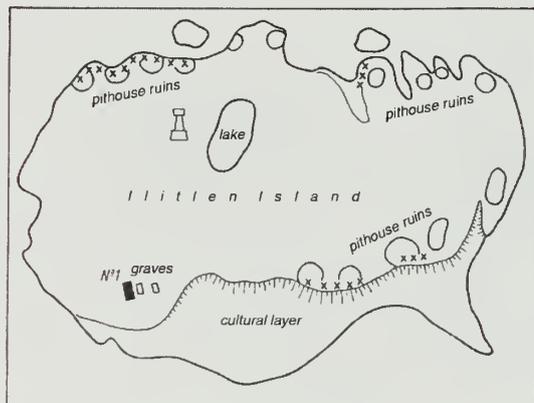
Southwest of the Enurmino Polar Station, on an area of large rubble (about 50 m across) near rocky outcrops, there is a large cemetery with several dozen burials in rectangular stone enclosures filled with rocks (Fig. 150). A third of the graves in this cemetery are very similar to those at Chegitun. Having opened one of them (2 m long, 0.7 m wide, and 0.4 m deep), which was oriented with the head part to the southwest, we found the lower part, including the femur, of the deceased on its back with its legs extended; scraps of deer antler; and a piece of a toggling harpoon of uncertain type (Plate 170).

### *An Early Eskimo Site on Iltlen Island (Idlidlia) (139)*

This small rocky islet is about 700 m long by 500 m wide. Its elevation is 10.6 m. It is located 9 km from the nearest shore. On its northern side a cliff rises from the sea, where



**Figure 150.** Burial on the hill near Enurmino Polar Station.



**Figure 151.** Early pit houses and graves on Ilitlen Island (Idlidlia). **Figure 152.** Grave on Ilitlen Island.

there is a bird rookery. On the southern side there was formerly a walrus haulout on a spit (Fig. 151).

Along the whole shore of the eastern half of the island early pit houses cling tightly to one another. Their ruins are represented by deep (to 1 m) round pits of various dimensions (from 4 to 8 m). A large number of these pit houses, which are constructed of whale bones and driftwood, are eroded by the surf on the side toward the sea. A thick cultural layer (to 2 m thick) could be traced along almost the whole edge bordering the top of the eastern half of the island. Outcrops from this cultural layer have eroded to the very bottom of the island in some places.

From the base of the cultural layer on the northern shore of the island, where the ruins of pit houses (6 m in diameter) are located on a small cape, were extracted pieces of thick-walled clay vessels, a piece of a Birmirk or Punuk toggling harpoon, a stemmed spear point of siliceous slate, and several items of slate and walrus tusk (Plate 171).

On the southwestern edge of the island is a small cemetery of two well-defined stone enclosures 2 m long in addition to isolated stone slabs sticking from the earth.

In one of these enclosures, oriented with the head part to the northeast, two ground slate stones and a piece of a spear point were found under the sod and blocks of stone. Of the human skeleton, only decomposing femurs were preserved (in the southwestern half of the grave) (Fig. 152).

### *The Early Eskimo Site near Neshkan (140)*

From the mouth of the Netteveem River to Neshkan and Cape Dzhenretlen, sandy spits are stretched in a long uniform zone along the shore of the sea. As we advanced to the

northwest in a whaleboat in 1963, we first rarely, then ever more often began to encounter on these spits sandy mounds with a collapsed middle and with sherds of clay vessels and various items of walrus tusk scattered near them. Near Neskan and farther, to Cape Dzhentretlen, chains of such mounds in the location of former pit houses of sea mammal hunters began to occur especially often. It was possible for us to investigate one such mound 1.5 to 2 km northwest of Neshkan in satisfactory detail. A modern cemetery is now located on this mound (Fig. 153:1).

The rounded mound that we investigated is 70 m long (from east to west), 50 m wide (from south to north), and 4.5 m high from the bottom and 6 m above sea level. Two meters from it weathered outcrops rose to 1 m, and in the eastern part there is a depression (Fig. 153:2). At a depth of 1 to 1.3 m almost everywhere in the exposures blown out by the wind a carbonaceous band could be traced, and 0.4 to 0.5 m farther down, a second such band was noted. On the western side of a mound heavily damaged by the wind, we found rather many different early objects in blowouts: a small Birnirk harpoon head (Plate 172:9) and a large whaling harpoon head (Plate 172:13), pieces of thick-walled clay vessels (Plate 174:1-4), fragments of ground slate knives and scrapers, pieces of a pick, a punch, and other items of walrus tusk (Plate 172).

We undertook excavations on the western side of the mound where the cultural layer was the most uncovered. Here a strip of the cultural layer 10 m long along the exposure and from 3 to 5 m wide (a total of 35 m<sup>2</sup>) was opened. In the northern part of the excavation, under a layer of pure sand, were the roof beams of the house. Beneath them was a layer of hard sand (0.4 to 0.5 m) under which a large cluster of beams of the collapsed roof and the remains of three vertical support posts of the house were preserved (Fig. 153:3). The two outermost beams were situated at a right angle to each other and together with the vertically set whale jaws form a definite structure, probably the remains of a bed platform. Permafrost did not permit excavating deeper (to the floor). However, it was already clear that here was a pit house constructed predominantly of beams (of driftwood) and only to an insignificant degree with whale bones. Its northern and western sides were completely destroyed by weathering. The character of the finds, primarily those discovered in the cultural layer in the center of the excavation (pieces of two Birnirk harpoon heads), permit dating this site to the middle period of early Eskimo culture (end of the first and beginning of the second millennia a.d.). In addition to the harpoon heads (Plate 172:1, 2, 8), in the same place were found bone leister points and a mattock of tusk. In the northern part of the excavation, in the house itself, were pieces of thick-walled vessels; a scrap of baleen; charred wooden rods; wooden floats; pieces of slate knives; flakes; pieces of spoons, punches, and other items of walrus tusk; scraps of deer antler; and a sandstone weight (Plate 173). In the southern part of the excavation, in a sandy blowout, were the remains of a wall of another pit house, specifically: a vertical post with three beams joining it from the outside, arranged one on top of the other.

Ten meters east of the northeastern corner of the excavation described above a profile was made of the cut bank, along which could be clearly seen a transverse cut of a pit house—more precisely, the hearth of burned stones, bones, and ceramics; burned

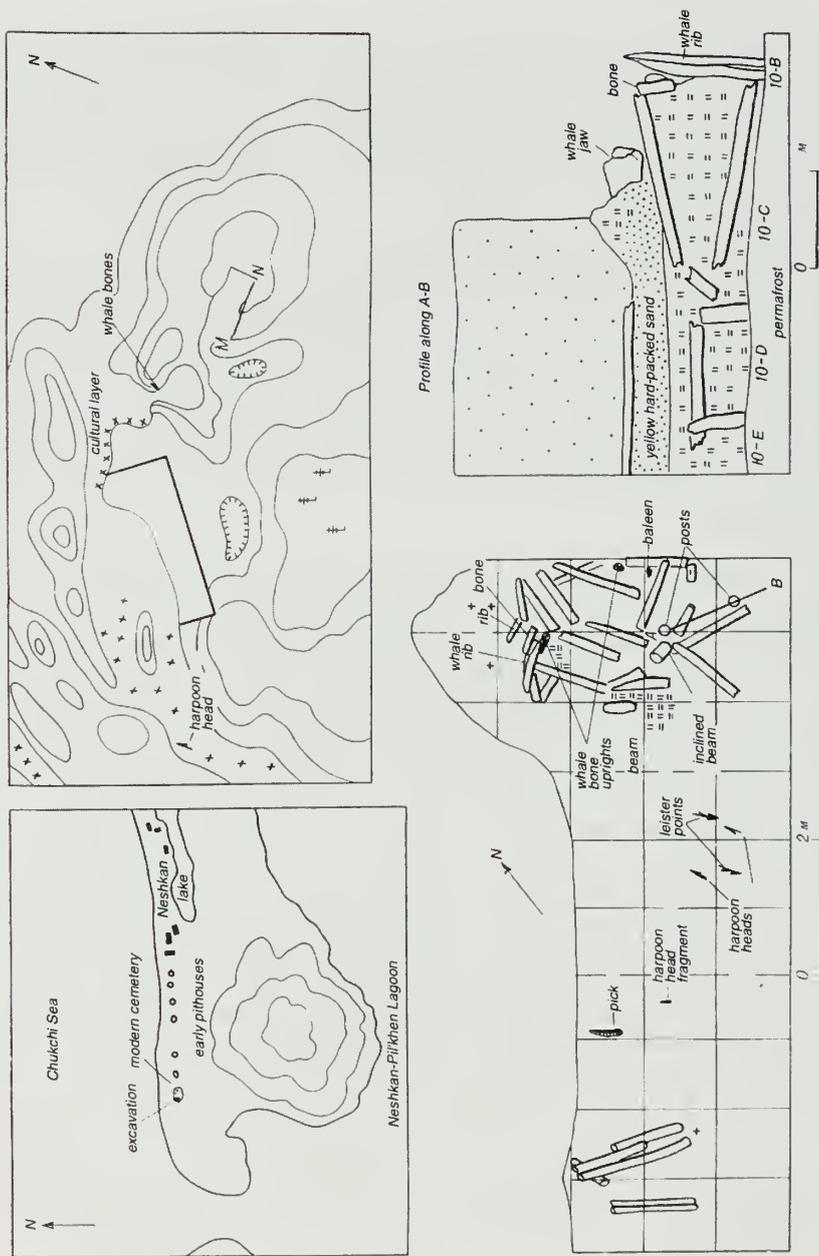


Figure 153. Location and excavations of an early site near Neshkan.

sub-hearth sand; and a vertical post on each side of the hearth standing 3.5 m from each other. On top, this was all covered by a layer of sand with fine charcoal (the fill of the destroyed pit house). Between the excavation and this profile was a pit (about 4 m in diameter) with a narrow entryway on the side toward the bluff. Along the sides of this narrow entryway two whale bones were set on edge in the ground. A test excavation in the pit was taken down to permafrost (0.6 m).

### *Two Early Eskimo Sites near Cape Dzhenretlen (141 and 142)*

Here two early sites were investigated: one on a spit 2.5 m west of the cape,<sup>30</sup> the other on a high precipitous bank rising above this spit, 2 km west of the cape (Fig. 154).

The first site, which was the latest, was preserved in the form of chains of mounds—pit houses, similar to those at Neshkansk. Here, in the sandy blowouts, were often encountered exposures of the cultural layer and all kinds of artifacts of walrus tusk, bone, and stone—all of the late type. We found toggling harpoon heads of the Punuk type here (Plate 175).

The second complex of pit houses, located on a knoll on the bank of an 8 to 10 m terrace, is significantly earlier than the first, and by the character of the finds leans toward Birnirk times. The total area of the knoll, which has five depressions representing former pit houses, is 20 x 30 m. We laid out and conducted to permafrost (at a depth of 0.7 m) an excavation of 40 m<sup>2</sup> on one of the depressions on the northern side of the knoll (Fig. 155). At the northeast edge of the excavation, on the side toward the bluff, traces of a hearth were found in the form of a large (to 2 m across) lens of sub-hearth orange clay, scorched stone, bone, and pieces of bal-reen. Beside them, at a depth of 0.7 m, were scraps of polar bear fur and a fragment of a harpoon of a late type. In Square 2-D, under the sod, were two arrow points of siliceous slate, and in Square 1-D were a hammer stone, stone flakes, and slate knives. In addition, blocks from a harness (probably for reindeer), a buckle of walrus tusk from a belt, and fragments of various other articles of walrus tusk were found here. It is interesting that, together with sea mammal bones, a lot of reindeer bones turned up in the cultural layer as well.

### *An Old Bering Sea Site at Cape Dzhenretlen (143)*

The remains of an early site located directly on Cape Dzhenretlen near the lighthouse are represented by more than six depressions 6 to 7 m across (Fig. 156). The remaining pit houses were destroyed, their cultural layer (to 1.5 m thick) being quite visible along the upper edge of the rocky bluff (10 m high). As a result of profiling this cultural layer, in addition to the bones of sea mammals (walrus, seal, whale) and various articles of stone, bone, and walrus tusk, the following artifacts were found: a harpoon head and bone arrow mounts of Old Bering Sea types, as well as a flint figurine of a fish (Plate 177). Charcoal from this layer is dated to 1990 ± 190 (MAG-233).

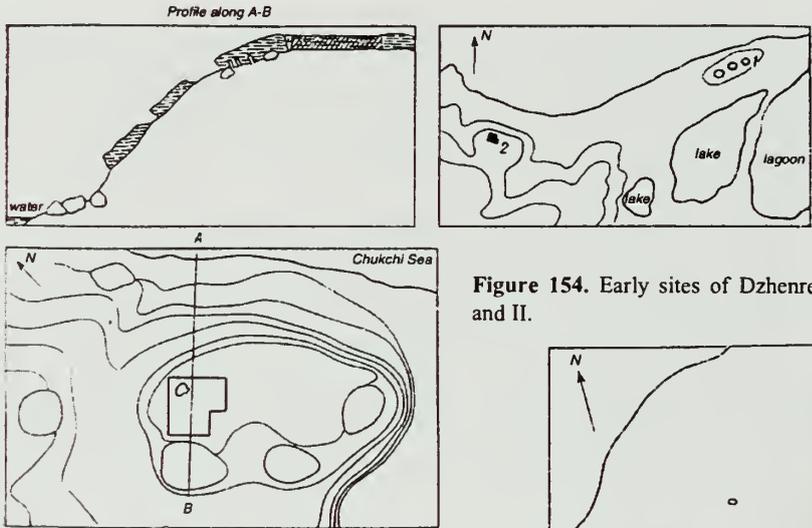


Figure 154. Early sites of Dzhennretlen I and II.

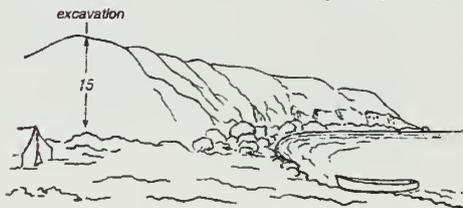
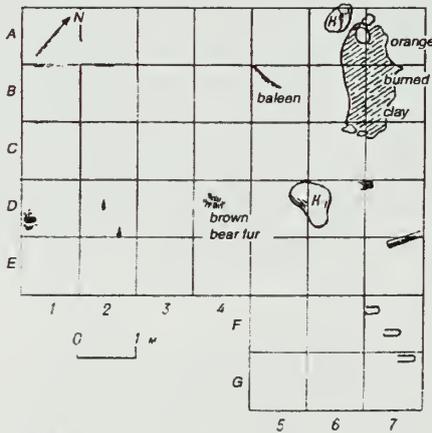


Figure 155. Excavation at the Dzhennretlen II site.

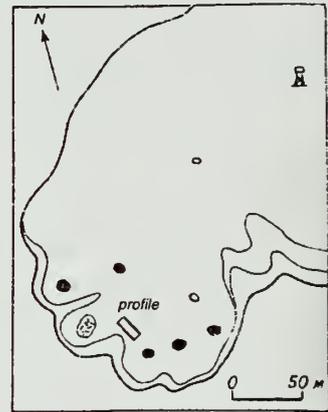


Figure 156. Old Bering Sea site of Dzhennretlen III.

On the right bank of the Toigunen River, not far from its mouth and south of the deserted Toigunen village, fragments of clay vessels and traces of late Chukchi burials were found in stone enclosures in blowouts (at an elevation of about 8 m). Near one of the enclosures lay a human skull (which we turned over to the Institute of Ethnography AN SSSR).

### *An Early Eskimo Site on Beliaka Spit (144)*

On Beliaka Spit, which is located on the right of the exit from Koliuchinsk Bay, are many deserted, more or less early pit houses. Their ruins extend to the southwest from the lighthouse along Koliuchinskii Strait. The dwellings were rectangular (5 to 6 m across) with corridor-like entrances on the eastern and southern sides. Their ruins have the appearance of depressions of 0.5 m depth encircled by a low wall. Wood, charcoal, and baleen were taken from a depth of 30 cm for age determination from one that was tested to permafrost.

Approximately 500 m east of the shore of the strait and the same distance south of the lighthouse is a second group of early pit house ruins (a total of five) in the form of high mounds (2 to 3 m high and 10 to 15 m across). In the middle of them are 2 to 4 depressions that probably correspond to individual pit houses closely joined together.

In the western depression of the largest kurgan (14 x 14 m by 3 m high), we excavated a test pit (3 x 4 m) to a depth of 0.6 m, to permafrost. At the bottom we found roof beams lying cross-wise, whale bones, fragments of clay vessels, stone scrapers, knives, and fragments of reindeer antler.

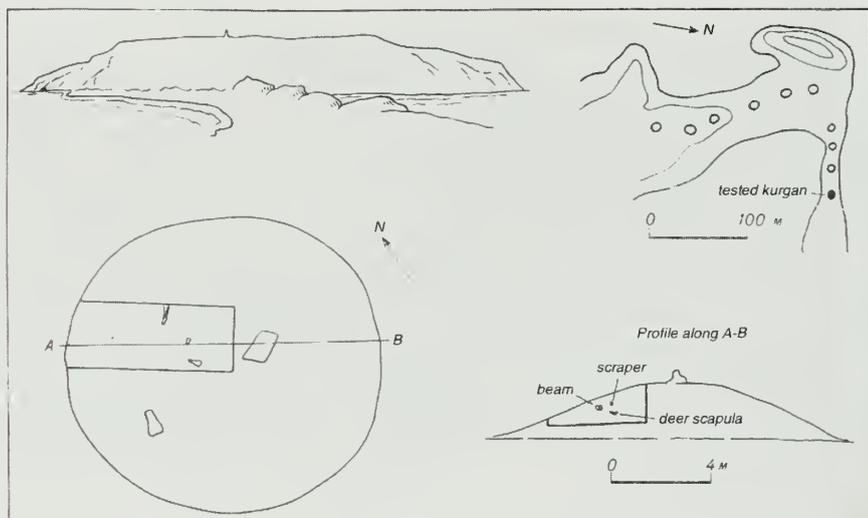
### *An Early Site at Anaian (145)*

On the spit at Anaian Mountain (where a reindeer herder's settlement was formerly located) in the back of Koliuchinsk Bay, there extends a chain of 10 sandy knolls representing old pit houses (Fig. 157). The height of the knolls is to 1 m, and their diameters are about 6 m. In testing one of them to permafrost (to a depth of 0.7 m), a stone scraper, a fragment of reindeer scapula, and a piece of a beam were found (at a depth of 0.4 m). A stone projected from the top of this kurgan, and another was dug in just below.

### *An Old Bering Sea Site at the Northern End of Koliuchin Island (146)*

Koliuchin Island (opposite the settlement of Nutepel'men) is hilly. The side directed toward Nutepel'men is not so steep as the opposite, which is precipitous (there is a walrus hauling ground there). Landing on the island is possible on the northern end or at the spit on the southern side of the island. The remains of early dwellings were found here in these two places (Fig. 158).

On the northern end of the island is a large number of ruins of early dwellings. In one of them, 50 m south of the polar station and 75 m from the western edge of the island, during construction work by members of the "Poliarka" [polar station], an atlatl of walrus tusk decorated by engraving in Old Bering Sea style and broken into three pieces was found at a depth of 50 to 60 cm in a trench. We also found a pick of walrus tusk and took samples of organics (wood and baleen) from which a radiocarbon date of  $1215 \pm 30$  years ago (MAG-22) was obtained. The form and dimension of these dwellings were visually indeterminate without excavation and time had sunk them into the surrounding surface so that the earlier settlement appeared here as one continuous cultural layer.



**Figure 157.** Early pit houses at Cape Anaian in Koliuchin Bay.

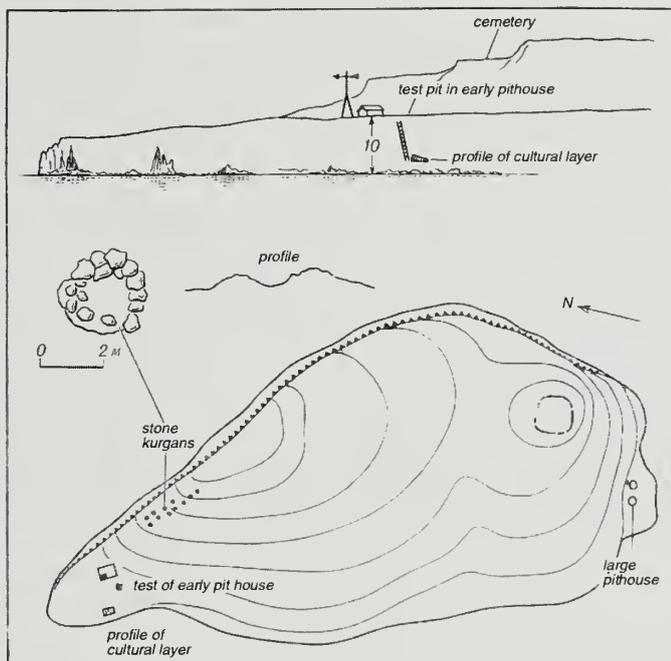
We made a profile of this cultural layer, or more precisely its eroded fill, somewhat lower on the western slope of the island, at an elevation of 5 to 6 m above sea level. Having stripped the section of slope (an area of 2 x 5 m) of sod to permafrost (a depth of 0.5 m) near the coal lift, we found a stone adze, fragments of schist knives, stone scrapers, plain blocks of walrus tusk, and fragments of thick-walled clay vessels (Plate 178). The charcoal from there has a date of  $1220 \pm 25$  years ago (MAG-223).

Southwest of the Poliarka (350 m) and well up on the slope of Liubvi Hill, we found a cemetery consisting of approximately ten stone kurgans 2 to 4 m across and about 0.5 m high, with a depression in the middle of each.

### *The Early Eskimo Site at the Southern End of Koliuchin Island (147)*

On the southern end of the island we investigated the ruins of two large pit houses located on the spit. A test pit in one house (25 m in diameter) permitted the discovery of fragments of thick-walled clay vessels. In the test pit of the second pit house (30 m in diameter), at a depth of 30 to 40 cm (at permafrost) were an arrow point, fragments of slate knives, a skreblo of siliceous slate, a stone hammer, an ice pick and rattle of walrus tusk, and a foreshaft for a toggling harpoon (Plate 179).

On the slope above these pit houses was a pile of bear skulls. Higher on the slope there is a not very early cemetery (a human skull was found in the rocks), and on the very crest (12 m above sea level) are the ruins of a defense wall of large, piled up blocks of stone.



**Figure 158.** Early pit houses and stone kurgans on Koliuchin Island.

### *Early Eskimo Pit Houses at Vankarem (148 to 151)*

On a spit adjoining the prominence of Cape Vankarem, where a Chukchi settlement of the same name is located, we found and investigated in 1957 and 1963 four groups of early pit houses of two types (large ones 30 m in diameter and small ones 20 m in diameter) and a cemetery. The materials from our Vankarem excavations have already been fully published (Dikov 1968a:60-71). We will present here only the basic outline.

The first group (148), consisting of seven pit houses (of the second type), is located on the western side of the spit, on the cape near the iron depot. A profile produced in 1957 of the exposure of one of the pit houses, which was half destroyed by the surf, revealed the original construction of walls of horizontally placed beams supported by wooden posts and stone slabs standing on edge. In addition to bones of sea mammals and a multitude of slate knives, scrapers, and spear points, many other objects of bone and walrus tusk were extracted during the course of profiling, including a plate wrist guard, employed in the shooting of arrows and decorated in Punuk geometric design; points of picks and arrows; the foreshaft of a whaling harpoon; and the head of a toggling harpoon of Birnirk type (Dikov 1968a:Fig. 3:1).

At the second group (149), consisting of nine pit houses 15 to 20 m in diameter (on the southwestern side of the prominence of the cape, above the spit), we conducted no excavations.

In the third group (150), consisting of four pit houses adjoining on the east, which are situated on the very edge of the bluff, we undertook and made to permafrost a profile excavation of the most damaged pit house. The profile revealed a house over the extent of 12 m, to a depth of about 1.5 m (Dikov 1968a:Fig. 4). This house was constructed using predominantly beams with some whale bones. It is interesting that bear skin had been put in the slots between the beams (part of a flooring of five beams, between which the remains of the skin were preserved, was found in the center of the profile at a depth of 1 m). The entryway into the house (in the form of a corridor) was on the north and could be traced along a frost crack. In the lower, western part of the profiled exposure was a large quantity of charcoal and burned beams. Their radiocarbon age turned out to be  $870 \pm 50$  BP (MAG-201). In the lower, central part were two toggling harpoon heads of Old Bering Sea or early Punuk type. In addition, many different artifacts were found in the fill of the pit house during the process of profiling, including a miniature cufflink-like labret, an image of a whale made from baleen, and an entirely whole clay vessel of spherical form (6 cm high and 7 cm in diameter).

It is also necessary to keep in mind that as early as 1961 the Vankarem teacher V. S. Mogila found (and then in 1963 gave to us), at the base of the eastern part of the profile, a sculpted image of a sitting human made of walrus tusk, a paddle-stamp decorated on two sides, and other items of walrus tusk (Dikov 1968a:Fig. 8, 20).

The fourth group (151), consisting of pit house ruins, is located on top of the cape and consists of two large (3 m high) mounds (to 30 m in diameter) with whale bones sticking from them. Here, in an area of more than 100 m<sup>2</sup>, exploratory excavations of the southwestern pit house were undertaken and various items of stone and walrus tusk found. It can be concluded that this pit house, to a greater degree than were pit houses of the first type on Cape Vankarem, was constructed of whale bones (ribs, lower jaws, and skulls). The presence in the fill of the pit house of a "winged object" of a degenerative type and harpoon heads of the Thule type compels one to think of this complex as mixed, surviving to very late times. The age on charcoal from here is  $220 \pm 50$  BP (MAG-202) (Dikov 1968a:Fig. 11-17).

### *The Vankarem Cemetery and Pagan Temples (152 and 153)*

Between the third and fourth groups of pit houses, on the driest part of the eminence of Cape Vankarem, were signs of an early cemetery (152). Here, in backdirt from trenches dug up by local inhabitants, human bones were encountered: a lower jaw and femur.

In 1957 and 1963 we excavated next to them two pits (153) containing the remains of skulls of a polar bear and a walrus, with a polar bear skin in one of them and a hearth in the other, and also with various items of stone and bone, including harpoon heads of the Thule 3 or Punuk type (Dikov 1968a:65; Fig. 18). Both pits were surrounded by stone enclosures and possibly are a kind of pagan temple connected with the polar bear and walrus cult.

### *The Remains of an Early Site on Vankarem Spit (154)*

Along the whole extent of the spit, traces of recent and early summer camps were noted, and in one place, in a blowout of the sandy surface of a mound, in the area of a collapsed pit house, was a carefully retouched red flint arrow point or harpoon end blade with slightly bent base and a thick-walled clay sherd.

### *Ritual Clusters of Seal Skulls and Deer Antlers on Kuemkai Creek (155)*

On the high right bank of Kuemkai Creek, among tundra hummocks was an earthen hummocky mound of the "kurgan" type already described above. Its dimensions were 6 m in diameter and about 0.5 m high. North of it 5 m were two small clusters of deer antlers now overgrown with sod. As a result of excavations we discovered under one of them, which was of small dimensions (about 1.5 m in diameter), a cluster of charcoal and ash, and in it eight seal skulls, the lower jaw of a bear, a clay sherd, and a flat barbed harpoon head of Thule 2 type with a round line hole (Dikov 1969c:Fig. 71:1).

An even more significant group of seal skulls and seal occipital bones and temporal bones (N=113), along with four polar bear skulls (the lower jaws of which lay to one side), was under the other pile of deer antlers. This group was much larger under the sod than could be seen on the surface before the excavation (a total of 45 deer antlers with the remains of skull bones). This whole cluster of antlers and bones occupied an area of 2 x 2.8 m. Beside the bear skulls was a large whaling harpoon head with a closed, conically bored socket, a large triangular line hole, a straight simple basal spur, and a slit for an end blade in the plane perpendicular to the line hole (Dikov 1969c:Fig. 71:2).

### *Early Pit Houses on a Spit in Nut Lagoon (156)*

The ruins of no fewer than 20 pit houses in the form of mounds with whale bones sticking from them stretched in a long row along the spit. The entryways into the pit houses had the form of a short corridor and were on the side toward the lagoon. At one of the pit houses, a crude clay sherd was found on the surface of the sod.

### *Early Pit Houses on Dvukh Pilotov Spit (157)*

Near structures of a temporary meteorological station were two early pit houses in the form of earthen mounds (to 10 m in diameter) with sea mammal bones sticking out here and there. Thick-wall sherds of clay vessels and a slate knife were encountered in an area denuded of sod.

### *An Early Site on Cape Schmidta (Ryrkaipiia) (158)*

The ruins of large early pit houses at the foot of the Kozhevnikov Cliff (Cape Ryrkaipiia or Schmidta) (Fig. 159) and early pit houses on the cliff itself were found as early as 1878 by Nordenskjöld (1936).



**Figure 159.** View at Kozhevnikov Cliff (Ryrkaipii, Cape Schmidta) (view from cliff).

In addition to these sites, in 1957 we found at the bottom of the cliff several pits lined with stones, evidently corresponding in time with the ruins. An old fortified place in the form of a low (to 1 m high) wall or berm was also found on the rocky top of the cape, which was studded with large pieces of stone. The area bounded by this wall of stones was 100 m<sup>2</sup> and had no signs of dwellings.

Houses of stone and whale bones, and pits lined with stones and whale bones, were located below, along the slightly sloping crest of the cliff, in three groups (one below the other), separated by large talus (Fig. 160).

Excavations were undertaken on the cliff in a small pit house with stone-lined walls. This pit house, which was rounded in plan (3 x 3 m), had a corridor-like entryway on the southeastern side. On top were many bones of sea mammals (seals, walruses) and split deer bones, as well as Arctic fox skulls. Also encountered were small items of walrus tusk. Further excavations in the pit house produced a stone adze ground on the working edge, ground knives of argillaceous slate, hammer or adze handles, two harpoon foreshafts (large and small), and many thick and thin sherds everywhere at various levels, including rims of vessels of fired clay. All of this was in the fill of stones and bones at a depth of 60 cm. Below this was permafrost and thus the lowest layer in this half of the pit house was not reached. At the entryway, in the corridor-like area between slabs, there were charcoal and ash.

At the foot of the cliff, one pit with stone-lined sides was also excavated in 1957. The area, bounded by stones, had a subrectangular form (1.6 m long and 80 cm wide). The



**Figure 160.** View from cliff toward early pit houses and pits, pagan temples on Kozhevnikov Cliff.

orientation of the long axis was northeast to southwest. In the pit, which was filled with damp earth, were plates of baleen and a thick-walled sherd among pieces of bones of seals and other sea mammals, as were decomposed bones on a wood and whale rib bed.

In 1975, we excavated three more stone-lined pits on the crest of Kozhevnikov Cliff. In two of them were skulls of polar bears and a Punuk type harpoon. In the third pit, the stone enclosure of which was very reminiscent of a grave, we encountered on a multi-layered bed of wood, baleen, whale bones, and stone slabs a wooden atlatl and figurines of a whale and a polar bear, both of the latter having been carved from walrus tusk and both of Punuk type (Fig. 116a, 116b). The impression is created that these pits had ritual significance connected with a polar bear cult.

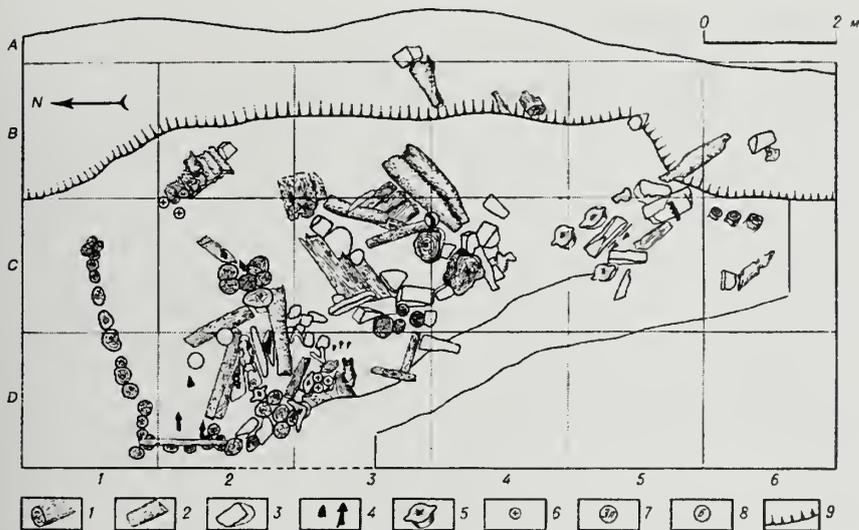
#### *An Old Bering Sea Cultural Layer near Kozhevnikov Cliff (Cape Schmidta) (159)*

We found the remains of an Old Bering Sea site in 1975 near Kozhevnikov Cliff, where the spit approaches and joins it to the mainland (Fig. 159). Here, at a elevation of about 10 m, the sod layer was removed by a bulldozer during construction. As a result of this, an Old Bering Sea cultural layer was laid bare and a rich scatter of cultural remains was formed.

In 1975 we collected all of the surface material from the scatter and opened up the unique dwelling in the form of pit house that had support posts within that had supported a heavy sod-covered roof. The lower parts of these supports, each made of several driftwood



Figure 161. Old Bering Sea house at approach to Kozhevnikov Cliff (Ryrkaipii).



**Figure 162.** Plan of remains of the Old Bering Sea house at the approach to Kozhevnikov Cliff. 1—beams; 2—whale bones; 3—stones; 4—artifacts of walrus tusk and stone; 5—whale vertebrae; 6—flakes; 7, 8—scrap of leather drum head; 9—edge of cliff.

beams set next to each other (in one bunch), were well preserved (Fig. 161). Judging by this sturdy support, the house was constructed with excess durability. In its construction the ribs and lower jaws of whales were also used in abundant quantity. Along the perimeter, the pit house was faced with beams set vertically and tightly against each other (Fig. 162). Numerous finds appeared in the fill: skulls of polar bears and bones of sea mammals, pieces of clay vessels, stone axes, knives and projectile points, toggling harpoons of Old Bering Sea type, and various artistic artifacts of walrus tusk (Plate 180 to 183). Especially interesting were a ritual filigree pendant of walrus tusk and an amulet in the form of a polar bear canine with a wooden handle (Fig. 116b). The excavations presently made to permafrost will be continued.

## Archaeological Sites on Aion and Wrangel Islands (160 to 167)

The large Aion Island, which is sandy and slightly hilly and deeply cut with creeks and streams, is located far beyond the Arctic Circle, by the northern shore of Chukotka.

Archaeological investigations on Aion Island were conducted twice.

The first trip to this island in 1959 was, unfortunately, not very long—a total of two incomplete days—and it was almost winter—the beginning of October. Nevertheless, we succeeded in taking advantage of a thaw and the fact that the snow was partially melted off. We examined the location of one of the early sites (163), which was discovered by chance in 1958 by Professor V. D. Lebedintsev (who was conducting a study of ichthyofauna on the island) and found three new ones (160, 165, 166).

Thus, it was ascertained that the island was settled in the deep Neolithic past when there was still no deer-herding, when large herds of wild deer, which the people here did not hunt, wandered here to escape the mosquitoes and regale themselves with the salt sea water.

From the beginning to the middle of July 1972 our archaeological crew carried out the second archaeological survey of some regions of Aion Island. The survey was conducted along the Ryveem River, which empties into the Arctic Ocean on the northern side of the island, and along the southern shore of the island.

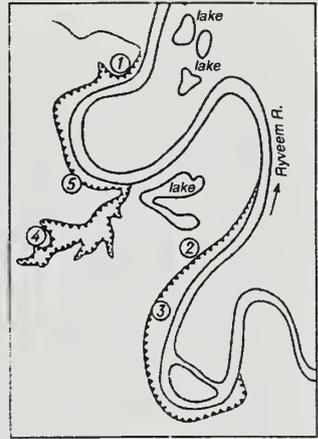
In a large bend in the Ryveem River, on the left high and precipitous bank not far from the mouth (Fig. 163), two more Neolithic sites were found and tested (161, 162). One Neolithic site was discovered on the southern shore of the island (164).

### *The First Ryveem Site (160)*

The site is located in the depths of Aion Island, on a high (about 25 m in elevation) sandy precipice of the left bank of the Ryveem River (below the mouth of its tributary, Pravyi Ryveem). About 6 to 8 m from the upper edge of the precipice a dark, peaty, sandy loam layer 60 to 70 cm thick with a brownish tinge that could be clearly seen in places. Opposite the sharp bend of the river is a place where the laminated sands over this dark layer were weathered away, having a broad area of it denuded. Here, in 1959, at the edge of the bank, we succeeded in finding fully defined evidence of human occupancy—a small piece of a heavily patinized knife-like blade of gray flint. Six meters below on the slope of the bank in talus were the whitened, broken long bones of a small mammoth, and farther below, its ribs and lower jaw, and at the very bottom of the bank, the skull (Fig. 163:5).

### *The Second Ryveem Site (161)*

This site was found in 1972 on the northern edge of a bank (elevation here of which is about 8 m), on the left of the mouth of a creek. The site was found as a result of several crudely-made gray sherds having fallen into a blowout on the front edge of the terrace. Here a narrow and long (12 m) exploratory profile and excavation were placed along the edge of the bank. It was ascertained that the basic cultural layer was poor and that it was located in clean sand at a depth of 0.9 m under sandy-loamy, horizontally banded deposits. The stratigraphy was as follows: under the sod (1), at a depth of 30 cm, a violet peaty layer (2) could be traced. Below that was a layer of powdery sandy loam (3, 5, 7, 9) with intermittent narrow bands of gray-brown fine sand with charcoal (4, 6, 8). In a narrow band of sand (10) were burned lumps and a caked carbonaceous mass. The excavation was made in a strip 1 m wide, 12 m long, and 1.5 m deep. No other finds were made.



**Figure 163.** Early sites on the banks of Ryveem Creek and Aion Island.

### *The Third Ryveem Site (162)*

The site is located up along the course of the Ryveem River from the second site (161), on a precipitous terrace of the left bank, which has an elevation here of 10 to 12 m above the river (Fig. 163:2). The cultural layer could be traced in layered sandy deposits of the upper part of the terrace, approximately 1 to 2 m above a thick (to 1.5 m) layer of peat lying at an elevation of 10 m above river level. As in the first site, the remains of human activity in the form of flakes and sherds of clay vessels were found directly on a blown out surface of the terrace. They were associated here with a denuded layer of dark compact humified sand with inclusions of charcoal, burned bone fragments, and other organic remains. Two exploratory excavations were placed here. One was on the western edge of the site (26 m<sup>2</sup> in area) in the partially blown out cultural layer, around a hearth of several stone slabs. Here were found several coarse sherds and flakes. The other excavation, on the eastern edge of the site, was placed in the aeolian sand thickly covering the cultural layer, and the following stratigraphy was ascertained from top to bottom: gray dusty sand (1), a violet peaty layer (2), a grayish-yellow laminated sand (3), light-gray sand (4), dark-gray fine and dense layered sand (5) with cultural remains, among which lumps of a caked carbonaceous mass predominated.

In addition to such carbonaceous lumps, in the area of the cultural layer that was opened by the excavation (14 m<sup>2</sup>), several crude gray sherds of clay vessels were also revealed. For determination of the age of the cultural layer (by the radiocarbon method), samples of the carbonaceous mass were taken. From here or somewhat to the south, surface material was also collected by A. A. Kalinin (1961) (Fig. 163:3).

*The First Neolithic Site on the Southern Shore of the Island  
(from the Eastern Side of the Site Containing Deer Antlers) (163)*

V. D. Lebedev gave the first, and in addition, very precise description of the location. "On the southern shore," he wrote, "is a large pile of deer antlers, with a photograph of it in 'Zapiski. . .'. If you go to the right of the antlers (with your back to the sea) and cross a small gully, you will see traces of old yarangas. From these yarangas go a little down toward the sea. In this area, on spots of sand between beds of partridge grass, occur flint tools and sherds of ceramics in rather large quantity" (Tarkhov 1958:61).

Led by these directions, in 1959 we found very significant artifacts here. Obsidian did not predominate here as in the other continental sites we studied in Chukotka, but rather flint of light tones, predominantly yellow and gray-yellow. Six arrow points were made from this material. A fragment of a seventh point was of bluish flint.

We encountered arrow points of similar light-yellow siliceous slate in Chukotka only on the banks of the Amguema River (Dikov 1958b:53, 54), and geologist N. N. Levoshin found them once on the Yakitikiveem River (Levoshin 1950:193-159, Figs. 71, 72).

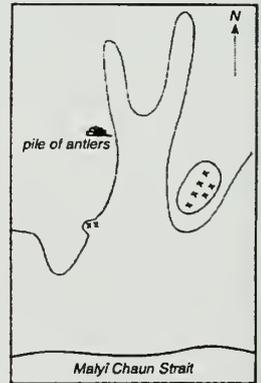
Attentive examination of the Aion points reveals this similarity even further—they are similar in form, and also very distinctive. All of the points, with the exception of two flat ones, are unusually massive. One has a long stem. A third (broken), with rounded base, is without a stem. The points are stretched in length and in all appearances are reminiscent of points from the Yakitikiveem and Amguema Rivers.

Three miniature chalcedony scrapers, a scraper of gray stone, a small chalcedony conical core/burin, and a small chalcedony blade were also found. All of these were collected in a comparatively small sloping area (60 x 80 cm), on the edge of a sloping point (8 to 10 m high) (Dikov 1961d:39).

In 1972 we made a collection of Neolithic surface material on a hill east of a large funeral pile of deer antlers on the shore of Malyi Chaun Strait where we had previously conducted investigations as early as 1958 (Fig. 164). Once again, in sandy blowouts many bifacially retouched, triangular arrow points, scrapers, flakes, and thin-walled ceramics were collected (Plate 184).

*The Second Neolithic Site on the  
Southern Shore of the Island (164)*

South of the funeral pile of deer antlers (250 m), traces were revealed in 1972 of another Neolithic site. Here, on a cut bank of a cape-like terrace, was a cluster of five stemmed arrow points made of yellow siliceous slate carefully retouched on the sides (Plate 185).



**Figure 164.** Neolithic site on the southern shore of Aion Island.



**Figure 165.** View to cape and Paleo-Eskimo site at Devils Gorge on Wrangel Island.

### *The Neolithic Asykvergyrgyn Site (165)*

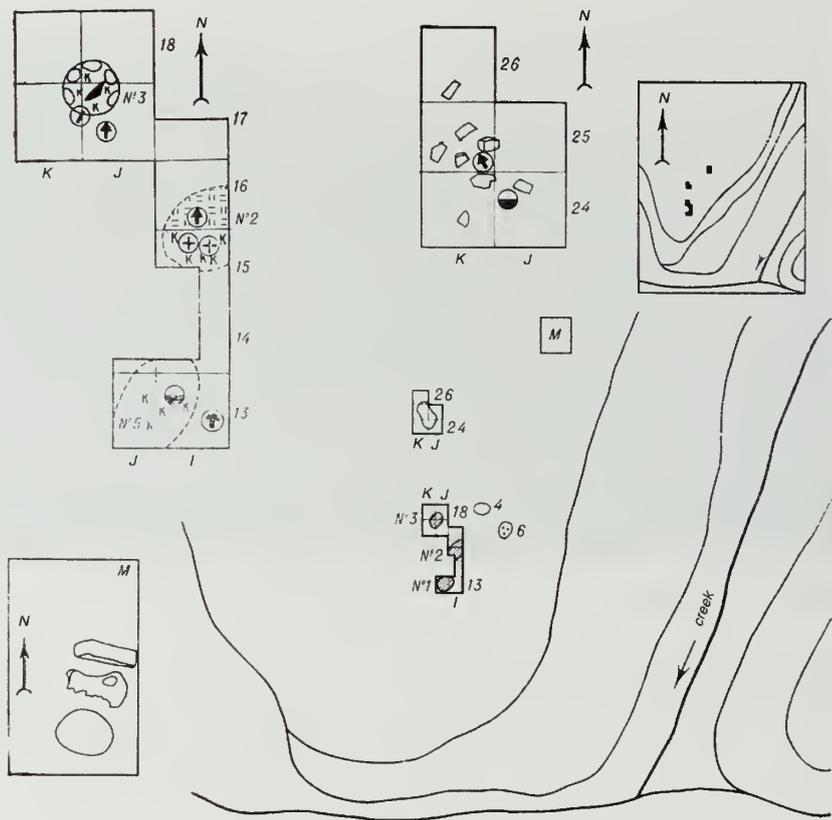
We were fortunate enough to find the remains of a Neolithic camp similar to the preceding one in another place on the southern shore of Aion Island—in sandy blowouts already partially overgrown with grass on a sloping cape-like terrace (about 20 m high) of the left side of Asykvergyrgyn Creek. The arrow points, scrapers, and flakes found there were of yellow flint and chalcedony, as well as of gray siliceous slate.

Only one piece of a massive point was found here. The remaining arrow points, also carefully worked by pressure retouch, were very flat. They had slightly concave bases, two of them had broken tips, and on a third—a whole one—the tip was rounded.

A thin gray sherd of a clay vessel also attests to the similarity with V. D. Lebedev's finds by the pile of deer antlers (Lebedev also found similar sherds in the site he discovered at the pile of antlers).

### *A Site of Sea Hunters on the Western Shore of Aion Island (166)*

As early as 1920 near Aion village the mariner Sverdrup found mounds of early collapsed pit houses, the occupants of which—marine hunters—had lived many hundreds of years ago (Sverdrup 1930:213). Subsequent observations by A. A. Kalinin (who in 1957 found two pieces of toggling harpoon heads in a pit house), and then our own surveys confirmed these data completely.



**Figure 166.** Location of excavation of Paleo-Eskimo site at Devils Gorge on Wrangel Island.

In one of the collapsed pit houses (the second in the direction away from the modern village), we found thick sherds of clay vessels and split bones of walrus, bearded seals, seals, and deer (Plate 174:9, 10).

#### *A Paleo-Eskimo Site at Chertov Ovrage on Wrangel Island (167)*

The first archaeological survey on Wrangel Island, which we conducted in fall 1975, led to the discovery of this undoubtedly very early Paleo-Eskimo site. It was found on the shore of Krasina Bay, 15 km west of the settlement of Zvezdnyi (Somnitel'naia Bay) on a rocky cape at Chertov Ovrage. The first finds of stone tools were collected directly on the rubbly surface of this low cape, from which opens out a broad view onto the sea and on old,

presently abandoned walrus haulouts (Fig. 165). An exploratory excavation of 52 m<sup>2</sup> in area was then laid out (Fig. 166). It was ascertained that the cultural layer here had a depth to 0.6 m in places. A carbonaceous hearth stain and pits filled with pieces of walrus, seal, bearded seal, and bird bones, as well as polar bear bones, could be traced in it. In addition, in the cultural layer were flaked tools of dark-gray flint and crudely flitted, almost black argillaceous-arenaceous slate: bifacially worked projectile points (Plate 186:1, 2) and knives (Plates 186:8, 9; 187:3, 4, 9, 11), distinctive graters from blade flakes worked by pressure retouch only on the dorsal side of the flake (Plate 186:3, 4, 5), scrapers (Plates 186:6, 7; 187:5, 6), and massive knife-like blades retouched along the edge and not having a definite geometric form (Plate 187:7, 9). No ground slate points or knives, which were so widespread in the early Eskimo cultures presently known in Chukotka, were found among them. Only one slightly ground tool was found—a small adze made from a flat cobble (Plate 187:10). The appearance of this stone industry has many common features in the Paleo-Eskimo cultures of Arctic America, in particular in Peary Land in northern Greenland (Knuth 1958:571) (Fig. 4:1-6).

At the same time, a most distinctive toggling harpoon head (13 cm long), made of walrus tusk, was discovered. Its form is very archaic: with one large line hole, a trough-shaped open socket below for the foreshaft, and almost the same lateral groove and slot on top for attaching a stemmed stone end blade with a thong (Plate 188). Such stemmed points, of black slate and flaked on both sides, are the predominating, typical artifacts of this site. It should be added that with all the variety, the toggling harpoon head found on Wrangel Island is generally similar in its construction to the earliest heads of the northern Greenland Paleo-Eskimo Independence culture (second and first millennia b.c.) (Knuth 1958:571:Fig. 4:19). This is not contradicted by the radiocarbon date from the Wrangel site—3360 ± 155 (MAG-198).

## Early Sites in the Kolyma River Basin (168 to 170)

Investigations in the Kolyma River basin, chiefly in the flood zone of water containment for the Kolymsk Hydroelectric Station, were conducted by the author in conjunction with T. M. Dikova from 1971 to 1975. As a result, in this huge, entirely uninvestigated (in archaeological regard) territory, interesting sites of broad chronological range were found—from relict Paleolithic to the Yakut culture of the eighteenth century, including Stone Age sites at the mouths of Malyi Siberdik (168) and Kongo (169) Creeks, in the flood zone on the upper reaches of the Kolyma, and on the Maltan River (170) which empties into the Bakhapcha, a right tributary of the Kolyma.

### *The Siberdik Multi-Component Site (168)*

The site is located on a cape-like projection of a 14-meter terrace, on the right side of Detrin Creek and on the right of the mouth of Malyi Siberdik Creek (Figs. 167, 168). The bedrock of the terrace was formed of gray slates and on top covered by more than 3 m of loose deposits, in the upper sandy part of which were three cultural layers (Fig. 169). They could be traced in the yellow sandy loam (Layer I), whitish loam (Layer II), and in pinkish-brown sandy loam (Layer III). Lower (at a depth of 0.9 to 1.2 m) lay layers of light-brown sandy loam and gray loam (to a depth of 1.2 to 1.6 m), gray sand (about half a meter), and coarsely rolled pebbles (more than a meter).

The large-scale excavations of the Siberdik site between 1971 and 1974 embraced more than 800 m<sup>2</sup> of the site area (Figs. 168, 170).

We will give a description of the excavations of the cultural remains by layers from the top down.

*The Upper Cultural Layer (I).* This layer was traced under the sod, but few finds were made in it. Only two carbonaceous hearth stains (about 80 cm across) were discovered in the western part of the excavation, and between them, a cluster of flakes. Another cluster of flakes was on the opposite, eastern side of the excavation, not far from two flat cobbles. It should be noted that in the western part were knife-like blades, a knife/skreblo on a massive flint blade flake, a scraper, several flakes, and a crude andesite-basalt skreblo found on the surface in the sod. Judging by the stratigraphy and the character of the finds, this cultural layer belongs to one of the late periods of the Neolithic.



Figure 167. View to the Siberdik site.

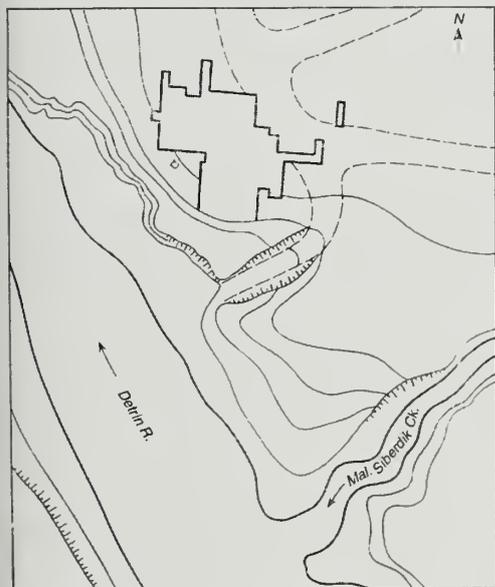


Figure 168. Plan of the Siberdik site.

*The Middle Early Neolithic Cultural Layer (II).* Associated with the whitish layer of loam, which was peaty in places, this cultural layer could be traced to a depth of about half a meter. It contained the remains of a camp with a large number of hearths (more than 30) and some kind of very distinctive dwelling structure with a long corridor, which was sunken like a pit house. In this layer were preserved stains of decomposing bones, stone tools, flakes, pieces of quartz, and a fragment of ceramics.

The stone industry of the layer was represented by a variety of artifacts: hammers in the form of narrow oblong cobbles, conical flint cores and wedge-shaped/prismatic core-like

artifacts (Plate 189:1, 2), knife-like blades, bifacially retouched leaf-shaped projectile points (Plate 190:1, 2), end scrapers on massive blade flakes, basalt scrapers, knives, triangular pointed flakes with their backs formed of cobble cortex, pieces of argillaceous-arenaceous hornfels-like slate, granite, and quartzite, as well as several uniface choppers.

The only fragment of ceramics, which was thin-walled but crudely modeled and lightly grooved, was found in the house fill, and if it actually belongs to the second layer, and not to the first, then it can serve as an indicator of an Early Neolithic age for this second cultural layer. For a more precise radiocarbon determination of the layer's age, we took samples of charcoal from the hearths. The date turned out to be  $6300 \pm 170$  BP (Kril-248).

*The Lower Relict Paleolithic Layer (III).* The bottom cultural layer of the Siberdik site is connected with a partially eroded peaty horizon with dispersed sandy deposits at a depth of about 1 m (Fig. 169). It contains a complex of artifacts of Paleolithic appearance: large cobbles trimmed along the edges on one side (typical uniface choppers) (Plate 191), skreblos, end scrapers on massive blades, bifacially retouched leaf-shaped projectile points (Plate 190:3, 4), pointed flakes, and knife-like blades. In this layer, ground tools and ceramics are entirely absent. The map permits one to evaluate the distribution of these finds (Fig. 171).

The area of Cultural Layer III that we excavated is cut by epigenetic polygonal frost cracking, and therefore, part of the cultural remains were in frost cracks. Nevertheless, the hearths and the production complexes and other complexes connected with them were well preserved.

In the center of the excavation (in Squares 5, 6, 7-I, J, K), the teeth of a horse (based on a final determination by N. K. Vereshchagin) and other bones were found in 1973 around a large hearth, together with an abundance of remains of stone-working activity. The whole complex of artifacts collected here contributes to the idea that this area around the hearth was a ritual one (Fig. 172).

This area, as is all the rest of Cultural Layer III, is cut with epigenetic polygonal frost cracking, and part of its cultural remains was in a frost crack (Fig. 171). Nevertheless, in Squares 7-D, 7-J, 6-D, and 6-J, the hearth, with burned hearth stones, calcined bone splinters, and numerous spalls of white and pink quartz, was well preserved, and much of the cultural remains was spread farther around the hearth and over the whole layer. Uniface



**Figure 169.** Stratigraphic profile of the Siberdik site.

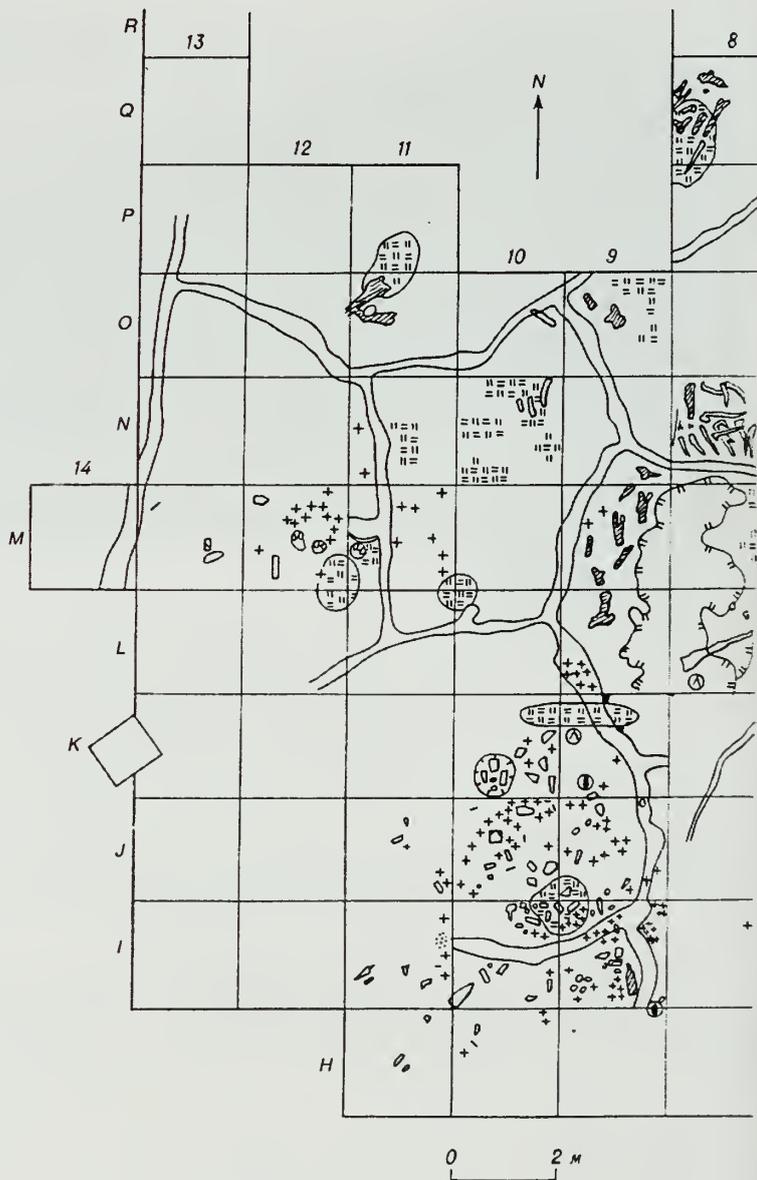


**Figure 170.** Excavation at the Siberdik site.

choppers, skreblos, and pointed tools were concentrated almost all around this hearth. In the same place was a rather large number of bone fragments (Fig. 172). This cluster of bones, in Squares 6-J and 6-I, was accompanied by spots of red ocher, and even the bones, though they were very poorly preserved, inspired by their arrangement the suspicion that here we probably had the remains of a human burial. It was not by chance that here we found a piece of a bifacially retouched stone projectile point (Plate 190:3). It is remarkable as well that this cluster of bones with ocher, which was partially breached by the frost crack, was thickly strewn with the tiniest flint flakes (debitage from retouching flint tools). Nearby were an end scraper and a flint knife-like blade, and somewhat to the side (in Square 6-I) were leaf-shaped biface knives of argillaceous slate, an end scraper, and two pointed flake tools. A third such pointed flake tool was substantially farther away (in Square 7-K).

All of the uniface choppers, except one very large one in Square 7-J, lay at a substantial distance from the vestiges of presumed human bones sprinkled with ocher and micro-flakes. One of the uniface choppers (also very massive) was found in Square 7-H, another two (massive and crudely made) were in Square 5-H, two more (very crude) were in Square 7-J, and finally, the last one (small and carefully worked) was in Square 3-K.

To the side of the bones with the ocher lay massive knives/skreblos made from large pieces of gray argillaceous slate. One of these tools was among the hearth stones in Square 7-J, two others were in Square 7-I, and the fourth was in Square 7-K.



**Figure 171.** Plan of the third (lower) cultural layer of the Siberdik site. 1—flake; 2—knife-like blade; 3—scraper; 4—knife; 5—arrow point; 6—triangular flake; 7—hammer; 8—uniface chopper;



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9—core; 10—burin; 11—bones; 12—pieces of burned bone; 13—pieces of quartzite; 14—charcoal; 15—contour of carbonaceous stains; 16—frost cracks; 17—stones.



**Figure 172.** View to ritual area in Layer III of the Siberdik site.

Of significant interest is the production complex investigated in the western part of the excavation in 1974 (Fig. 173). The remains of a true Stone Age workshop were preserved here. In a rather large work area, measuring 36 m<sup>2</sup>, around a large hearth in the form of a stain of carbonaceous earth 1.1 m across were no fewer than six “workplaces” for manufacturing stone artifacts. In each such workplace there was a whole or broken anvil and hammer stones, and around them, many flakes, predominantly very small scale-like ones.

Such a set of instruments in the southeastern part of Square 10-J, beside the hearth, is very significant. Here were an anvil, large hammer stones, and raw material blanks with flakes all around. No less significant was a tool set on the opposite side of the hearth (in the middle of Square 9-I), where beside a large and massive stone slab anvil lay a hammer stone in the form of an oblong cobblestone, blanks of andesite-basalt raw material, and a multitude of flakes and spalls together with the smallest flint flakes (Fig. 172) (nearby were also the scapula of an herbivore and a pit containing pieces of andesite-basalt raw material) or the tool set in Square 10-K, where a slab anvil broken into four pieces and a massive hammer stone lay in a shallow pit (Fig. 171). Nearby, close to the hearth (in Square 10-J), were two more anvils with small flakes scattered around. The corner was knocked from one of these anvils and was found close by. Also, in the hearth itself were many large andesite-basalt blanks and pieces (Fig. 171). Many such blanks and pieces were scattered even beyond the boundaries of the hearth, between the enumerated production clusters, especially to the southwest of the hearth (in Squares 10-I, 10-H, 11-I, and 11-H). Of special



**Figure 173.** Part of the workshop in the third layer of the Siberdik site.

interest among these blanks were three macroliths—large pick-like tools—two of which were in a frost crack and one (45 cm long) was to the side (in Square 11-I). Of the remaining stone artifacts found in this work area, a pointed tool and a piece of a leaf-shaped biface point (in Square 9-K) should be noted, as well as a tiny flint wedge-shaped core (in Square 9-I).

North of this “workshop” that we have described could be traced four more carbonaceous hearth stains. Near the largest were many traces of isolated animal bones, a stone burin in a bone handle in Square 9-M (Fig. 171), a pointed stone tool, and pieces of quartzite. Near two small hearth stains (in Squares 11-M and 12-M) were a cluster of flakes, two uniface choppers (basalt and quartzite), a piece of a knife, and two basalt skreblos. Still farther to the north were deer antlers near a small carbonaceous stain (Fig. 171). One more hearth with bones like deer antlers was noted not far away—in Squares 8-R and

8-P, and in Square 8-N—and in the plane of the cultural layer in the frozen ground was a cluster of twigs, possibly artifacts of very poor preservation (Fig. 171).

In the northeastern part of the excavation another working area, which was saturated with remains of stone industry, was examined. In its center was a pit (1 m across by 30 cm deep) filled with pieces of quartzite—in Squares 3-M and 3-N (Fig. 171). Around it was scattered a multitude of other pieces of quartzite and flakes—in Squares 4-N and 4-L they formed an isolated cluster. Among the debitage from production in this area were two scrapers, two knives, a piece of a bifacially worked leaf-shaped arrow point, and two uniface choppers. Just as in the southwestern work area, several whole cobbles with traces of blows on them (stone anvils) (in Squares 5-N, 3-P, 3-M, 3-L), andesite-basalt blanks, and piles of tiny flakes from the retouch of flint artifacts (in Squares 3-L and 2-M, circled; see Fig. 172) were discovered here. There were also sandstone grinding slabs, as well as isolated pieces of animal bones. Finally, on the periphery of this area, two more uniface choppers were discovered, in addition to fragments of basalt (in Squares 6-L and 3-J).

The character of the stone industry and the presence in the layer of subacrial mineral pseudomorphs—frost cracks from the thawing of ice veins—permits assigning it to a period preceding the beginning of early Holocene warming, probably to the end of the Sartan



**Figure 174.** View to the Kongo site.

glaciation or to the very beginning of the Holocene. Samples of charcoal were taken for radiocarbon dating of this site. One gave a date of  $8020 \pm 80$  BP (Kril-50), the other  $8480 \pm 200$  (Kril-249).

#### *The Stone Age Site on Kongo Creek (169)*

This Stone Age site is located on the right bank at the mouth of Kongo Creek (entering the Kolyma River on the right). It is on a 14-meter cape-like, bedrock terrace, and contains the remains of a recently abandoned camp of the geological survey (Fig. 174). As early as 1971, during the course of our survey in the Kolyma drainage, a very significant basalt flake was discovered at an elevation of 3 m above the river (Plate 193:6).

Then in 1973, the primary cultural layer was discovered at this site. It was on the uppermost terrace, almost 100 m from the redeposited flake mentioned. Preliminary partial excavations ( $75 \text{ m}^2$  in area) of this highly interesting cultural layer produced a very early (possibly late Paleolithic or early post-Paleolithic) complex of artifacts—uniface choppers in association with knife-like blades (Plate 192:6-19), and no ceramics or ground tools.

In 1974 and 1975 excavations were continued here, comprising more than  $200 \text{ m}^2$  of the site.

As appears from the stratigraphic profiles that we examined, loose sandy and sandy loam deposits of gray color covering the bedrock terrace form several alternating bands

with a total thickness of more than 1.5 m, and directly under the sod a bright-yellow band of compact powdery loam could be traced (Fig. 175). The cultural remains—uniface choppers, knife-like blades, and bifacially retouched leaf-shaped arrow points (Plate 192:1-3)—were mainly associated with a band of pinkish sand, although they were also encountered in the gray sand under the yellow loam. They all comprised a single cultural horizon (Layer I), with the exclusion of flint burins (Plate 193:6) and other finds in the bottom layer of brown humified loam, which contained the substantially earlier Cultural Layer II (discovered in 1974) at a depth of 1.0 to 1.2 m from the ground surface (Fig. 175). The radiocarbon age of Layer I is  $8655 \pm 220$  BP (MAG-196), and that of Layer II is  $9470 \pm 530$  (Kril-314).

Materials from the Kongo site, together with the Siberdik site, are being prepared for publication in a monograph. For the present it should be noted that a large part of the material finds was concentrated near carbonaceous hearth stains, forming several economic complexes of daily life in the cultural layers. In these complexes, in the upper layer, were large clusters of quartzite fragments (in one case they were in a special pit) similar to those we discovered in the third layer of the Siberdik site. There were also small pieces of burned bones.



Figure 175. Profile of the Kongo site.

### *The Early Site on Malтан Creek (170)*

In the Kolyma River basin in 1974-1975, a Stone Age site was also examined on Malтан Creek, which enters the Bakhapcha on the right, itself a right tributary of the Kolyma.

The site is located on an 8-meter terrace of the left bank of Malтан Creek, 30 km from its source, at a place where the terrace forms a cape-like point (Fig. 176). In 1974 an excavation  $100 \text{ m}^2$  in area was placed on southern side of the point. In 1975 it was expanded (Fig. 177).

The upper cultural layer, which had a large number of chalcedony flakes and isolated fragments of ceramics, could be traced in the sod. Its radiocarbon ages are  $3690 \pm 50$  BP (Kril-246) and  $4450 \pm 50$  BP (Kril-247).

The lower cultural layer was shallow and in yellow and gray-yellow sandy loam with small coarsely rolled gravel at a depth of 20 to 50 cm (Fig. 177).

In the lower cultural layer, in the excavation, three pits and eight carbonaceous hearth stains were discovered (Fig. 178). In them, as well as beyond them, were chalcedony flakes and chunks, as well as flakes and knife-like blades, cores, scrapers, and knives of silicified cinereous tuff, light-yellow in color (Plates 194, 195).



Figure 176. View to the Maltan site.

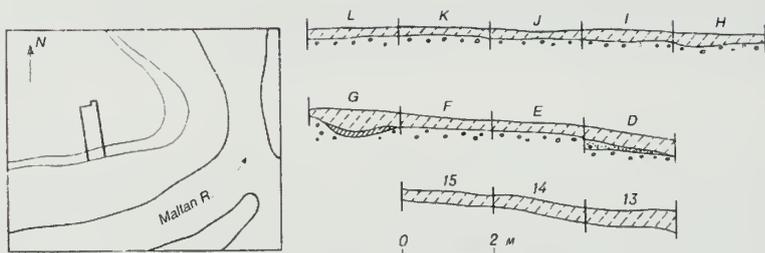


Figure 177. Plan and profiles of the Maltan site.

Most interesting was a pit in Square 14-I. It was oval in plan, had a bowl-like form (0.4 m deep), and was filled with a mixture of sandy loam with small coarsely rolled gravel and larger stones. In the pit, among the stones, were two large blades of gray-yellow flint and one microblade.

In another pit (Squares 15-H and 15-I), which had an irregular rounded outline and the same depth, were charcoal, flint flakes, two cores, and two scrapers.

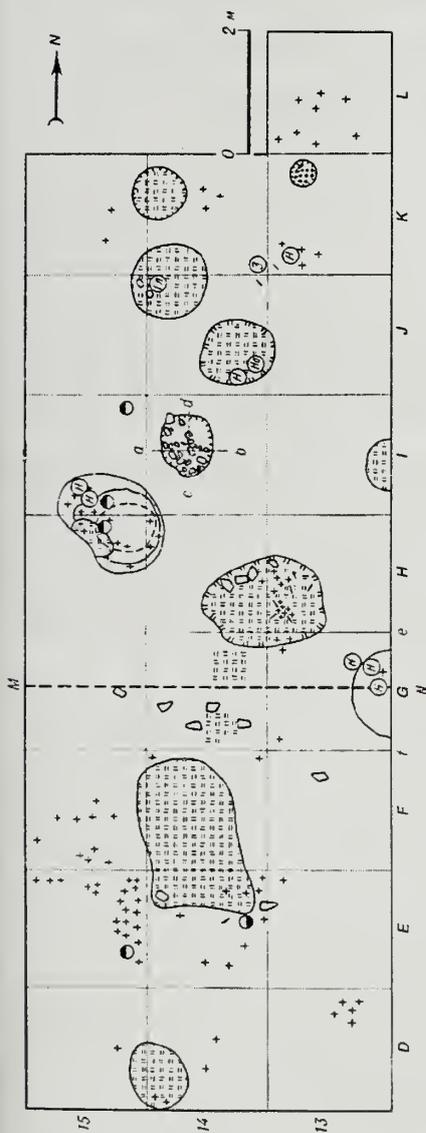


Figure 178. Plan of the lower layer at the Maltese site.

Only the western half of the third pit fell within the excavation area. The pit was rounded, broad, and shallow (about 1.5 m in diameter and 25 to 30 cm deep). It also had charcoal on its southern "shoulder." In it were three cores and a flake.

The hearth stain with the richest finds was in Squares 13-H and 14-H. It had an irregularly oval outline in plan, and in it, near four stones, were flint flakes and knife-like blades. In another carbonaceous stain (in Square 14-J) were two core-like tools, and in the hearth stains (in Squares 14-D and 14-E) were flakes. Between these two carbonaceous accumulations were very many flakes, as well as a stone knife and a scraper. A similar concentration of flakes, as well as a core, a tool blank, and knife-like blades, were also noted on the opposite, northern side of the excavation, there being here (in Square 13-K) a small pit (0.4 m across and 0.2 m deep) filled with small chalcedony spalls and flakes.

Judging by the stratigraphy and character of the finds (among which there were no ceramics or ground tools at all), the lower layer of the Maltese site probably belongs to Early Neolithic or pre-Neolithic times. The preliminary radiocarbon age of the layer is  $7490 \pm 70$  BP (MAG-183).

# General Classification and Stratigraphic Key of the Archaeological Sites of Kamchatka, Chukotka, and the Upper Kolyma

## Categories of Sites

From the point of view of the possibility of classification and dating, the archaeological sites of Kamchatka, Chukotka, and the Upper Kolyma, as with generally any other region, are by no means equivalent. Therefore, we present the expedient of first giving their general typology in this regard.

The entire variety of archaeological sites of the far Northeast fall into the following eight types.

*Stratified Multi-Component Sites.* Ushki I (1), Ushki II (2), Ushki IV (3), Ushki V (4), Doiarki (10), the third site at Kliuchi (13), the site on the southern slope of Mishennaia Hill (43), at Kavran (W. I. Jochelson's excavations), the Siberdik site (168), the Kongo site (169), and the Maltan site (170). Some areas of the first layer of Ushki I and the second layer of Ushki II are mixed, which is well established by the presence of pits.

*Single-Component Unmixed Sites.* Elizovo (42), Kirpichnaia (44), Kultuk (5), Zastoichik (6), on Domashnee Lake (7), at Kozyrevsk (8), at the Kozyrevsk Sovkhoz (9), at Doiarki (11), the first and second sites at Kliuchi (12), the fourth Kliuchi site (14), on Chirovoe Lake (51), Mukhomomenskaia (52), Vakarevskaia (53), Ust'-Main (54), Snezhnoe (55), Ust'-Belaia Lower site (56), Uvesnovaniia (57), Kameshki (58), Vilka I and Vilka II (59 and 60), Utesiki (61), Anokatrany (62), on Osinovaia Spit (63 and 64), on Osinovaia Hill (66), at Krasnoe (67), on the spits at Krasnoe Lake (68 to 70), the second and fourth sites at KM 102 (79 and 81), the Chaikino Gnezdo site at KM 145 (89), the Paleo-Eskimo site at Chertov Ovrage on Wrangel Island (167), and the early coastal sites of Chukotka (104, 105, 112, 113, 120, 122, 125, 126, 130, 131, 133, 135, 136, 137, 139-153, 158, 159, and 166).

*Single-Component Mixed Sites.* The Ust'-Belaia site (72), the Omryn site (73), the Chikaevskaia site (74), the first and third sites near KM 102 (78 and 80), other Amguema sites (82 and 93), sites on Aion Island (163 and 164), Pegtymel' sites (99, 100, and 101), and others.

*Cemeteries and Isolated Burials.* The Upper Paleolithic burial at the first Ushki site (1), early burials near Kamaki (19), the cemetery on Yukagir Hill (71), at Omryn (73), at the Ust'-Belaia Neolithic site (72), the burial at the mouth of the Ekiatap River (94), Ekiatap

cemetery (95), early Eskimo cemeteries at Yandogai (108), on Cape Chini (110), near Enmynytyn Mountain (114, 115, 116, and 117), near Uelen (119), at Inchoun (121), at Uten (123), near Chegitun (127, 128, and 129), at Seshan (132), at Ikolivrunveem (134), near Enurmino (138), at Vankarem (153), and on Cape Schmidta (159).

*Caves.* Omaianskaia (202), Pegtymel' (98), Palanskaia (333), and others.

*Caches.* El'gygytgyn (188).

*Chance Finds* (surface material). At Kirpichnaia Street (44), at Tar'ia (282 to 284), on the shore of Rakovaia Bay (45), on the shore of Ushki Lake (1-5), near Kliuchi (12 and 13), at Doiarki (10 and 11), at Manily on the Penzhina River (48), at Snezhnoe (55), on Osinovaia Spit (64), on Krasno Spit (67), on the spits at Krasnoe Lake (68 to 70), on Ust'-Belaia Hill (72), at the Amguema sites (78 to 80, 82 to 93), at the Yakitikiveem site (186), on Lake Ekityki (185), on Matachen Creek (187), and others.

*Rock Art.* The first (Kaikuul') location of petroglyphs on the Pegtymel' River (102), and the second location of petroglyphs on the Pegtymel' River, near the third Neolithic site (103).

The most prospective for periodizing are, of course, the stratified sites. They create the primary key for the distribution in time of all of the other sites. In addition to stratified sites, unmixed single-component sites, the remains of houses (1, 3-6, 58, 63, 105, 111, 118, 120, 140, 158, 159, and others), cemeteries, and caches can also usually be used as a key. In aggregate all five of these categories of sites can be subjected to satisfactory periodization, and with their aid it is fully possible to characterize the development of a culture through time.

Less favorable in this regard are mixed sites and chance finds of individual artifacts outside the cultural layer. The latter, in the best case, provide an idea only of the distribution of this or that culture in space. Of course, this is true only under the condition that one succeeds in distinguishing the corresponding cultural elements by means of comparison with this or that key archaeological site.

Petroglyphs comprise a special group. They can be subjected to classification on the basis of analysis of the forms comprising them, with subsequent correlations to the primary key archaeological sites.

## Stratigraphic Key in the Kamchatka River Valley

As a basis for periodization of the early cultures in the Kamchatka River valley, and then, as will be pointed out, in the even broader region, the multi-component sites of Ushki I (1), Ushki II (2), Ushki IV (3), and Ushki V (4) can be used. They include sequential series of single-type, unmixed cultural layers—from the latest Remnant Neolithic and undeveloped Iron Age to the Upper Paleolithic—and are distinguished by exceptionally clear stratigraphy.

One should remember that the named sites are located in the center of the Kamchatka Peninsula on the southern shore of Ushki Lake, which is joined by a small narrow channel to the Kamchatka River. They are associated with the 4-meter flood plain terrace of Sartan-Ostashkin age. The lower, fluvial facies of their loose deposits consists of gravel

(lightly rolled volcanic bombs) and fine-grained gray sand. The upper facies, with a general thickness reaching 2.6 m, was formed of loam/sandy loam pyroclastic deposits (Dikov et al. 1977), which include from 5 to 11 cultural horizons of broad chronological range—from the seventeenth century a.d. to the Upper Paleolithic (Figs. 7, 21, 29, 32).

The stratigraphy of all four multi-component sites on Ushki Lake—Ushki I (1), Ushki II (2), Ushki IV (3), and Ushki V (4)—is very similar and easily compared and identified in lithological regard. For clarity we will use one of the most complete profiles from the first Ushki site for comparison with the stratigraphic profile of the second, fourth, and fifth Ushki sites (the strata are given from the top downward).

From a comparison of the stratigraphic profiles it can be easily seen that they differ chiefly by the rich representation of the cultural layers. It can also be seen how impeccable all four multi-component sites were in stratigraphic regard: all of their cultural layers were clearly separated by sterile bands of volcanic ash, and the possibility of uncontrolled mixing of the cultural layers could be entirely excluded here (Table 1).

It is well known how much more significance unmixed, so-called pure culture layers have for archaeological periodization. Meanwhile, it is often possible for doubt to arise about the relative purity and unmixed nature of the cultural layers of multi-component sites even in those cases where they were not breached by pits, since mixing is possible due to natural shuffling of physical remains vertically and due to trampling by the early occupants of the sites. Therefore, in those cases when there is not a clear and convincing criterion for an unmixed state, establishing this fact is often practically impossible, as for example, at the multi-component Bel'kachi site, which was investigated on the Aldan by Yu. A. Mochanov.

The stratigraphy of the Ushki sites is ideally controlled by bands of volcanic ash. With the aid of this irrefragable criterion we conducted careful examination of the nature of mixing in all the Ushki cultural layers. (A detailed analysis of the stratigraphy at the Ushki sites is provided above, along with the description of the sites).

As a result it came to light that the multi-component Ushki sites, with regard to clarity of their stratigraphy, are not equal.

Only in site IV (within the excavation) are all the cultural layers without exception entirely unmixed, since they all were separated from top to bottom by complete, entirely unbreached ash bands (Fig. 29).

At the Ushki II site only Layer II was mixed, since a house pit that was dug into it broke through the underlying Ash Layer V and, consequently, Cultural Layers III and IV (see profile of the strata in Fig. 21).

At the Ushki I site the upper cultural layer was mixed since a pit house and a sacrificial pit had been dug from its level, penetrating through Ash Layers II, III, IV, IVa, V, and VI into Cultural Layers II-V and VI (Figs. 18, 20). It is natural that, along with the ejection of the earth during the excavation of these depressions, things from all of the underlying Cultural Layers II-VI could fall into upper Cultural Layer I. Also mixed in this site of Ushki I is Cultural Layer II, to which is attested by pits dug into it to Cultural Layers III and IV through Ash Layers IV, IVa, and V (Fig. 16).

Table 1

Ash layer Stratum		Lithological characteristics of layer	Thickness (cm)	Cultural horizon number			
no.	no.			Ushki I	Ushki II	Ushki IV	Ushki V
	1	Vegetation layer	8				
	2	Black sandy loam including charcoal in places		Ia	Ia	Ia	
I	3	Volcanic ash	2-3				
	4	Dark-brown humified sandy loam	2-3	Ib	Ib	Ib	
	5	Light-brown sandy loam	4-5				
II	6	Volcanic ash	1-2				
	7	Brown sandy loam, darker and humified on top	5-6	Ic			
	8	Large-grained dark-gray sand	4-5				
III	9	Volcanic ash	1-2				
	10	Volcanic sand	1-2				
IIIa*	11	Light-brown sandy loam	5-6			Ic	
	12	Volcanic ash	1-2				
IV	13	Light-brown sandy loam	5-6				
	14	Volcanic ash	6-8				
IVa	15	Yellowish-gray sandy loam	to 10				
	16	Volcanic ash	0-1				
	17	Yellowish-gray sandy loam	to 50	II	II	II	
V	18	Light-yellow sandy loam	10	III	III	III	
	19	Volcanic ash	2-5				
	20	Black humified sandy loam	10-15	IV	IV	IV	IV
VI	21	Ocher-colored sandy loam	5-10				
	22	Volcanic ash	2-4				
	23	Brownish-yellow loam with carbonaceous bands in the middle of the stratum	35-45	V	V		Va, Vb
	24	Ochreous-green-gray loam with carbonaceous bands in the middle of the stratum	20-25	VIa	VI	VI	VIa
	25	Grayish-ocher-colored loam with bands of sand and with cultural remains in the upper part	10-15	VIb			VIb
	26	Pinkish-yellow loam	6-10				

(continued on page 216)

Table 1 (continued)

Ash layer Stratum		Lithological characteristics of layer	Thickness (cm)	Cultural horizon number			
no.	no.			I	II	IV	V
	27	Red ochre	2-1	VII			VII
	28	Light-yellow sand	0-1				
	29	Grayish-brown sandy loam with inclusions of charcoal	5-6	VII			VII
	30	Ochreous-greenish-gray sandy loam	5				
	31	Humified bands of gray organic matter with inclusions of charcoal	1-2	VIII			
	32	Ochreous-greenish-gray sandy loam	5				
	33	Brownish-yellow loam	5-7				
	34	Rusty-brown loam	1-2				
	35	Greenish-yellowish-gray loam	2				
	36	Greenish-yellowish-gray sandy loam	5				
	37	Greenish-gray sand	25-30				
	38	Weakly cemented conglomerate composed of fragments of volcanic bombs					

\*The ash layers appear to be one stratum too high from here down.

Thus, the breaching of ash layers attests to the mixing of cultural layers in two of the four Ushki sites. In each of them the mixed nature can be localized to a certain extent.

The absolutely unmixed cultural layers are revealed by the same method. They predominate over the mixed ones and in their general aggregate provide pure key complexes of the cultural remains for each of the seven primary cultural layers of the Ushki sites—from the Upper Paleolithic to the Remnant Neolithic (Fig. 179).

Palynological data, that is, study of the remains of spores and pollen that were preserved in these strata, have definite significance for the establishment of the age of the loose deposits in the Ushki multi-component sites. During the process of excavation we took the necessary samples in order that corresponding palynological studies might be conducted.

An exhaustive palynological description of the stratigraphic profiles of the multi-component Ushki I and Ushki V sites has been provided in a special work written in coauthorship with geologists N. A. Shilo, A. V. Lozhkin, E. E. Titov, and palynologist T. D. Davidovich (Shilo et al. 1967; Dikov et al. 1977).<sup>31</sup>

31 Palynological determinations were also carried out by G. N. Lisitsyna (see Appendix VI).

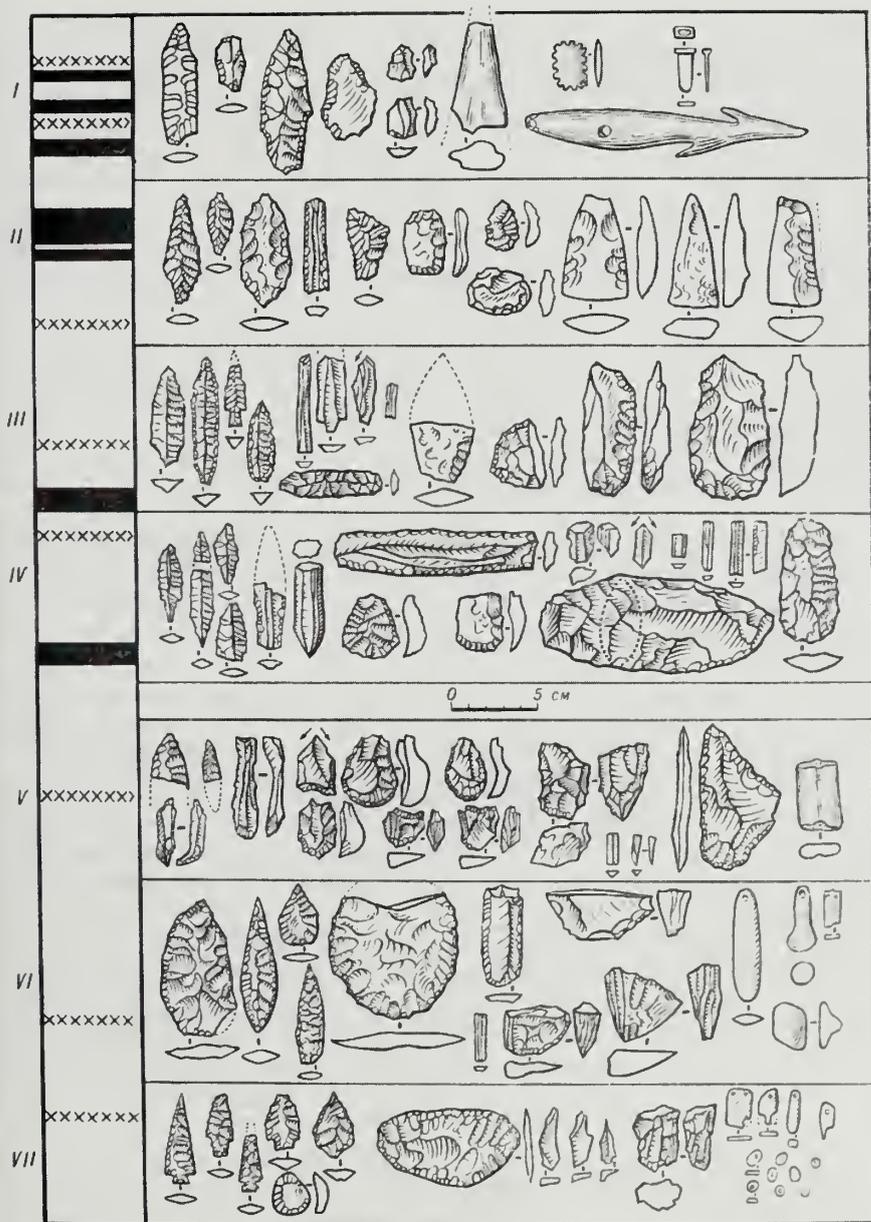


Figure 179. Key stratigraphic complexes of unmixed layers of the Ushki sites.

**Table 2**

<sup>14</sup> C age	Cultural layers in Ushki profile	Palynological characteristics	Geochronology
235 ± 145	Ia		
675 ± 80	Ic		
2440 ± 80	II	Birch-alder forest with participation of conifers	Upper Holocene
	III		
4200 ± 100	IV		Middle Holocene
8790 ± 150	Va	Meadows, shrub birch, and alder thickets	Lower Holocene
	Vc		
10,360 ± 350	VI	Bare slopes, meadows with occasional cedar brush carpeting, alder thickets, and birch	Sartan Glaciation Pleistocene
10,760 ± 110			
13,600 ± 250	VII		
14,300 ± 200			

*Palynological characteristics were provided by A. V. Lozhkin, T. D. Davidovich, and G. N. Lisitsyna.*

The palynological data from the Ushki profile cited in the named articles demonstrate rather pronounced dynamics in the development of the vegetation and climate: from relatively sparse flora of the upper Pleistocene to shrub-meadow vegetation of the lower Holocene, and then to birch-alder forests in association with conifers in the middle and late Holocene (see Table 2).

Assignment to definite palynological levels of the Ushki profile can provide the approximate age of its cultural layers (of course, with broad tolerance in the boundaries of each climatic period).

Thus, finds of clearly Remnant Neolithic character—adzes with triangular cross section and pointed butts, and asymmetrical bent knives—in Layer I and Layer II belong to the upper Holocene period, which had almost modern vegetation. Layer III, with arrow points of triangular cross section, was also in the upper Holocene level. Layer IV, characterized by an abundance of knife-like blades and arrow points with rhomboid cross section, probably belongs to the middle Holocene, judging by its intermediate position. Layer V corresponds to a colder period, which, considering the palynological characteristics, is lower Holocene.

The remaining cultural layers (VI and VII) lie even deeper and are connected with upper Pleistocene glacial paleo-climatic conditions, which, based on the date of various palynological determinations, are characterized by the sparsest vegetation. Thereby the undoubted Paleolithic age of these layers, which contain wedge-like cores (in Layer VI) and arrow points entirely different from those in the upper layers, is determined.

Investigation of the physical remains from all of these Holocene and Pleistocene layers in purely archaeological aspect generally corroborates, as we will see in more detail below, the geochronological dating for them and provides the opportunity to make it more

precise. Meanwhile, it is essential for us to note that it corresponds well with the radiocarbon determinations of the age of the charcoal from the cultural layers in the Ushki sites. Their date by C-14 does not contradict in particular an upper Pleistocene age for Layer VII ( $13,600 \pm 250$ ,  $14,300 \pm 200$ ) and Layer VI ( $10,675 \pm 360$ ), a lower Holocene age for Layer Va ( $8790 \pm 150$ ), a middle Holocene age for Layer IV ( $4200 \pm 100$ ), and an upper Holocene age for Layer II ( $2440 \pm 80$ ,  $2160 \pm 290$ ,  $2070 \pm 190$ ) and Layer I ( $235 \pm 145$ ,  $675 \pm 80$ ), and in corresponding manner approximating the intermediate cultural layers in time.<sup>32</sup>

Thus, the five multi-component Ushki sites (even if one takes into consideration all of the mixed strata discussed above) provide a sequential series of unmixed cultural complexes well established in time, which can be wholly used as keys for periodizing the remaining sites in Kamchatka (Fig. 179). With this, naturally, emerges the problem of synchronization of the Ushki cultural layers with the cultural layers of other sites.

The above-noted ash layers of the Ushki profile have special significance for such synchronization of archaeological sites in the Kamchatka River valley. Their exceptionally important role is clarified by the fact that they are peculiar not just to this profile, but have very broad distribution in the Kamchatka River basin and in one or another composition accompany all the remaining cultural deposits there.

Each volcanic eruption is usually accompanied by fallout of a huge quantity of volcanic ash over a substantial region around the volcano. The wind can carry the ash cloud very far and therefore its force and direction determine to a substantial degree the boundaries of the area of ash fall. In 1961, while excavating the Nikul'skoe fortified site (16) near Shchapino village, we discovered a band of ash from the distant Shiveluch volcano—the easternmost in the valley. From it to the Nikul'skoe fortified site is not less than a few hundred kilometers.

If the ash falls simultaneously over such a large area and thereby marks the surface of the land at the moment of ash fall, then all of the cultural layers beneath this ash horizon will be earlier than all lying above it—the later ones. If there are many such diachronic ash bands, it is possible with their help to separate all of the early cultural remains into the corresponding number of chronological layers, independently of the characteristics of the early culture at this or that archaeological site. The archaeologist will thus obtain a new, entirely objective method of relative dating for the finds, and then of absolute dating.

By comparing the ash of any cultural layer with the ash model from the Ushki profile, it is possible to determine its age exactly (at its identification) at any point in the Kamchatka River valley, and consequently also the age of the cultural remains connected with it. Of course, this is on the condition that the ash of this model from the Ushki profile is dated in a

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32 Some researchers (Arutiunov and Sergeev 1975:9) suppose that under the conditions of volcanism the radiocarbon dating of the lower strata of the Ushki sites possibly was made too high. However, they do not take into account that these strata lie below the level of volcanic activity, which is marked by bands of volcanic ash.

proper manner and that sufficiently objective methods of identifying the ash from the Ushki profile with the ash of other profiles is secured.

To carry out the work of determination, identification, and dating of the volcanic ash that marks the cultural deposits in the Kamchatka River valley, we used the data from L. V. Firsov's structural-granular, mineral, and chemical analyses (Firsov n.d.).<sup>33</sup>

We also took into account the tephra-chronological observations of B. I. Piip, which preceded ours. He was the first to undertake attempts to date the upper horizons of ash from the Shiveluch volcano.

Piip selected, as is known, denudations with loose deposits with ash from the Shiveluch volcano for dating ashes, as well as early cultural remains on the high islet in the center of Kliuchi (14) village. Relying on historical evidence about the eruptions of the Shiveluch volcano, he dates the upper layer of ash in this Kliuchi profile to 1854, the second layer to 1810, the third layer to 1780, the fourth layer (under the cultural layer, he believes) to the middle of the sixteenth century, and the fifth layer to the beginning of the fifteenth century (Piip 1948). With similar dating he followed very unreliable, erroneous principles of determination of time by the thickness of the loose deposits containing the ashes. In addition to this, he incorrectly determined the location of a cultural layer that had been clearly cut through by pits. The cultural layer here lies not under the third ash layer, as Piip believes, but above the first one. It is appropriate to say that we repeatedly noted in the Kamchatka River valley a similar arrangement of Stone Age remains above the uppermost Shiveluch ash: on the Nikulka River (16), on Domashnee Lake (7), and at Doiarki (10). Therefore, it is clearly evident that Piip was in error in dating the two upper ash layers to 1854 and 1810; the Shiveluch eruptions marked by the two layers occurred, of course, before the settlement of the Russians here. Also, the three lower layers of ash should be considered substantially earlier.

Later, we were all the more convinced of Piip's error in assigning the upper horizon of Shiveluch ash to 1854, the second to 1810, and the third to 1780. With the goal of making their chronology precise we cleaned off several cut banks in the vicinity of the Kliuchi site: at three loci on the left, 4 m high terrace of the Kliuchi River (11 and 12) and at so-called Staraia (Shkol'naia) Hill (15).

At Locus 1 on the Kliuchi River (12), charcoal and two stone scrapers were found under two layers of ash; at Locus 2 under the same, also undisturbed, layers of ash there was only charcoal; at Locus 3 under disturbed ash layers were both charcoal and a stone axe. On Staraia (Shkol'naia) Hill (15) we excavated a whole Stone Age house. It cut through the uppermost ash layer, but also in its inventory were no signs of the influence of Russian culture.

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33 For data on granular and mineralogical composition of volcanic ashes and the significance of this composition for identifying the ashes in the stratigraphic profile, see Firsov's manuscript prepared based on our materials.

**Table 3**

<i>Date (a.d.) of ash layers according to B. I. Piip</i>	<i>Ash layer in the Ushki profile</i>	<i>Charcoal age of cultural layers by <sup>14</sup>C</i>	<i>Cultural layer</i>	<i>Site</i>
		235 ± 145 (Mo)	Ia	Ushki I
		675 ± 80 (Le-70)		
1854	I			
1810	II			
1780	III			
Mid 14 <sup>th</sup> century	IV			
		1052 ± 25 (MAG-32)		Ushki II
Begin. 15 <sup>th</sup> cen.	IVa			
		2440 ± 80 (RUL-607)	II	Ushki III (Kultuk)
	V			
		4200 ± 100 (MAG-132)	IV	Ushki V
	VI			
		8790 ± 150 (MAG-215)	Va	Ushki V
		10,360 ± 350 (Mo-345)	VI	Ushki I
		10,760 ± 110 (MAG-219)		
		13,600 ± 250 (GIN)	VII	Ushki I
		14,300 ± 200 (GIN-167)		

Thus, we were convinced of an age substantially earlier than that proposed by Piip for the upper ash horizons at a series of sites in the Kamchatka River valley and, relying on their mineralogical and chemical analysis, were convinced that the Ushki ash deposits belong to Shiveluch volcano. Here, in the Ushki profile, were all of the same layers of ash from this volcano to which Piip had first turned his attention in his Kliuchi profile, as well as the deeper ones—a total of eight. Dating the cultural layers marked off by the ashes with the radiocarbon method provided us a reliable tephra-chronological base for the periodization of early cultures in the Kamchatka River valley. It can be shown in Table 3 (Dikov 1974e).

As a result of chemical study of the ash deposits in profiles at the Neolithic sites at Doiarki (10) and Kliuchi (13), it was clarified (as L. V. Firsov showed) that not all of these ash layers can be identified as the relatively more acid ash (that is, with a layer of SiO<sub>2</sub> content) of the Shiveluch volcano in the Ushki profiles. The volcanic ashes in the lower layers at Doiarki (10) were substantially more alkaline in their chemical composition than the Shiveluch ashes. This is clearly attested to by the content of SiO<sub>2</sub> in them (in Layer A—54.40%, in Layer B—55.00%, and in Layer C—55.92%, while in the Ushki profiles the SiO<sub>2</sub> content is never less than 58.92%). Even more alkaline is the ash from the profile of the Third Site at Kliuchi (13). The content of SiO<sub>2</sub> there is only 32.92% (analyses were conducted

in the chemical laboratory at Magadan Science Research Institute of Gold and Rare Metals by analysts E. M. Osadchenko and A. A. Aleksandrova—see Appendix III). Judging by the chemical composition of the named ash layers at Doiarki and Kliuchi, the origin of their ashes is not connected with the activity of the Shiveluch volcano but with volcanos in the Kliuchi group, which ejected ashes relatively more alkaline than those of the Shiveluch volcano (Firsov n.d.:26).

The indicated circumstance somewhat limits the possibility of the tephra-chronological method in the Kamchatka River basin. More precisely, it complicates it somewhat and, in any case, requires further determinations and analyses of all of the ash deposits in the region, not just the ashes connected with Shiveluch activity.

However, the tephra-chronological base that is reflected by this table is sufficient to successfully determine the relative chronological placement of some sites in the Kamchatka River valley.

The earliest of them is the Neolithic Kultuk site (5), which is noted in Table 2, and the others are the Neolithic sites at Zastoichik (6), on Domashnee Lake (7), and at the Kozhyrevskii Sovkhoz (9), the cultural remains from which were noted under Ash Layer IVa, which corresponds to the position of the second cultural layer at the Ushki I, Ushki II, and Ushki IV sites.

The latest noted sites in the Kamchatka River valley (above Ash Layer I) were, as should be expected, the numerous fortified sites and “yurt camps”: Nikul’skoe (16), Staraiia Hill at Kliuchi (15), Kamaki (17 and 18), and others (20 to 37), as well as early burials near Kamaki (19).

Relying on series of stratified complexes in the Kamchatka River valley, it is possible to determine to some degree the chronological placement of the southern Kamchatkan sites as well.

The typological similarity of the Tar’ia finds of Gur’ev and Shnell—as well as the cultural complexes of Elizovo I (42), Kirpichnaia (44), and the lower layer of Mishennaia Hill (43)—with the combined complex of artifacts from below Ash Layer IVa in the Kamchatka River valley is very evident. In both places the same curved (bent) stone knives, stemmed and leaf-shaped arrow points, scrapers, convex adzes of triangular cross section, and specific punches are encountered. The absence of ceramics (also, evidently not accidental) joins these southern Kamchatkan sites with the Neolithic layers in the Kamchatka River valley that are covered by Shiveluch Ash Layer IVa.

Based on the first finds from Tar’ia, sites of this type are called Tar’in by tradition—that is, those belonging to the Tar’in culture. However, the clearest stratigraphic position of the South Kamchatkan remains of this culture are not found at Tar’ia, but rather on the southwestern slope of Mishennaia Hill (43), where they are connected with the lower cultural layer, above which, separated from it by an ash band, occurs the upper, later cultural layer.

In this upper cultural layer, as in old Tar’in sites, there are very different stone artifacts, of cruder manufacture, and, most notably, a piece of a clay vessel with an internal lug.

This vessel of the so-called Nalychevo type (according to W. I. Jochelson), or "Neidzi" in modern archaeological terminology, indicates the approach of a new period in the history of southern Kamchatka that is connected with the distribution of this pottery there. Sites with these ceramics are known as the so-called fortified sites or yurt camps at Nalychevo, on the Ozernaia River, and on Cape Sivuiskii in Kuril'skoe Lake, and are assigned by us to the so-called Nalychevo or South Kamchatka culture.

Until recent times these fortified sites, on the basis of Jochelson's finds of three copper Japanese coins in one of them (at Cape Sivuiskii), were assigned to the eleventh century a.d. These, however, were substantially later than proposed by Jochelson, belonging to the seventeenth century (Dikov 1969c:230, Fig. 129). Such new dating of the South Kamchatka cultural complex using ceramics with internal lugs agrees well with the fact that in this complex, as archaeologists have noted for a long time, there are rather many (by this time) iron artifacts. Ten of them were found in the Sivuiskii site alone.

### Key Stratigraphy on the Kolyma

Among the presently known archaeological sites on the Kolyma, the clearest stratigraphy is distinguished at the multi-component sites of Siberdik (168) and Kongo (169).

The lowest layer (III), without ceramics, of the Siberdik site correlates well with the upper layer (I) of the Kongo site. They contain similar complexes of stone tools (uniface choppers in combination with small artifacts of the blade technique) and are characterized by a similar lithology. Their radiocarbon dates also provide close results: for Layer III of the Siberdik site,  $7865 \pm 310$  (MAG-184),  $8020 \pm 20$  (Kril-250), and  $8480 \pm 200$  (Kril-249); and for Layer I of the Kongo site,  $8655 \pm 220$  (MAG-196). Judging by these data, it can be supposed that Layer I of the Kongo site is somewhat earlier than Layer III of the Siberdik site.

Layer II of the Kongo site ( $9470 \pm 530$  [Kril-314]) is even earlier.

It must be added to what has been said that each of the named Kolyma multi-component sites possesses a rather well pronounced succession of entirely isolated, unmixed cultural layers with characteristic cultural complexes, and therefore each of them can serve as a reliable key to which to chronologically tie other cultural remains.

It is different for the Mal'tan site (170), the upper (Neolithic) layer of which in places is insufficiently clearly distinguished from the lower, substantially earlier layer, which has an age determined as  $7490 \pm 70$  (MAG-183).

### Key Cultural Complexes of Chukotka

If stratigraphy plays the deciding role in the synchronization of cultural complexes (which in large part do not have ceramics) in the Upper Kolyma and in Kamchatka particularly, and primarily, the stratigraphy of volcanic ashes, then in Chukotka we must chiefly use ceramics as the marking material. However, a substantial number of the sites and

cemeteries providing us with this traditional and reliable material for classification unfortunately belong to the category of mixed sites and, for this reason, unmixed cultural complexes should be separated from the sites of Chukotka first.

At present no multi-component, well stratified sites have been found in Chukotka. Therefore, only single-component unmixed sites, finds in house fill, and the isolated burials and a cache on El'gygytyn Lake (188) can serve as key sites for periodization in this region.

The last site consists, as is known, only of stone artifacts—chiefly bifacially worked stone knives. Also, in the site near it (118), which was found by I. A. Nekrasov and A. K. Saiapin, there were no signs of ceramics. Perhaps this circumstance—the absence of ceramics—permits one to suppose that the El'gygytyn cache, like the ceramic-less Third site opposite KM 102 (80) with the archaic-looking arrow points of rhombic cross section, is one of the earliest of those now known in Chukotka. The precisely documented absence of ceramics among such archaic artifact complexes in the region—in the Early Neolithic cultures of which, in distinction from those of the Kamchatka River valley, ceramic production was well developed—can be definitely regarded as a sign of a pre-ceramic period. That is, pre-ceramic in the sense of pre-Neolithic (Mesolithic) or Early Neolithic.

The Ust'-Belaia cemetery (72) is, unfortunately, mixed to a substantial degree. However, in this early burial ground 23 more or less preserved burials were found. The burial inventory in many of them can be viewed as complexes from a single time and thus may be fully used as keys for our classification.

These burial complexes consist of two groups, which are close in typological, and consequently, in chronological regard.

In the first group, the most definitely set apart, are four burials in Kurgan 8 and Burial 1 in Kurgan 9. They contain not only artifacts of the Late Neolithic—flat, rectangular, sometimes stepped adzes; bifacially retouched, lamellar inset blades; knives; scrapers; multi-faceted, core-like burins with retouched hafts; and predominantly triangular, bifacially retouched arrow points of excellent fine manufacture—but also bronze instruments: burins and a four-sided awl (Plate 95). Characteristic for this complex are round-bottomed clay vessels either with ribbed paddle impressions on the outer surface or smooth-walled (Plate 100).

It is firmly established that all five human burials in Kurgans 8 and 9 belong to a comparatively narrow interval of time—when bronze was in use. This is convincingly attested to not only by their entirely identical burial inventory, but also by the stratigraphic position of the skeletons in Kurgan 8. The lowest in it are Skeletons 1 and 2 with the bronze burin and awl. Burials 3 and 4, which cover them, are accompanied by a set of entirely identical stone artifacts and, though among them were no items of bronze, by their orientation and types of stone points, scrapers, and other artifacts, one of them, the uppermost (3), is analogous to the burial with a bronze burin in Kurgan 9.

Burials 1 and 2 in Kurgan 15, as well as Grave 16—also with flat rectangular adzes and analogous ceramics—probably also belong to this group. On the whole, this entire

group of burial complexes should be assigned to the undeveloped Bronze Age, which corresponds well with the radiocarbon dates on charcoal from the Ust'-Belaia Kurgan 15—2860  $\pm$  95 (RUL)<sup>34</sup> and 2900  $\pm$  95 (Kril-244).

To the second (earlier) group, but closely connected with the first, belong the burials in Kurgans 11 and 18 with elongate-triangular, bifacially retouched arrow points; arrow points from partially retouched blades; flat rectangular and massive, stepped adzes; and smooth-walled ceramics and thin-walled ceramics with ribbed paddle imprints—just as in the first group. The burial from Kurgan 4 also joins this group, having flat arrow points of narrow, elongate form, bifacially worked by thin, fine retouch, and with a groove at the base; and with long inset blades pointed on the two ends and finely retouched on both sides. Kurgan 14 probably also belongs here.

Few, though rather varied, ceramics were found in the Ust'-Belaia cemetery. Substantially more were found at some early sites in the basin of the Anadyr and Amguema Rivers. Therefore, in those cases when they are unmixed, they can serve as keys for our classification in Chukotka.

The cultural layers of three key sites—on the shore of Chirovov Lake (51) and at the second site (79) opposite KM 102 and the fourth site (81)—contain only false-textile ("waffle") and smooth-walled ceramics. Judging by the character of the stone artifacts found in them, they are chronologically very close to the burial complexes of the Ust'-Belaia cemetery (72) and possibly occupy an intermediate position between them (the early burial with bronze and the late burial with stepped adzes). It is possible that at one time the cultural complex of these sites (51, 79 and 81) coexisted with the two named chronological groups of burials at the Ust'-Belaia cemetery. Judging by surrounding analogies, this is a Late Neolithic cultural complex, corresponding in time to the Ymyakhtakh culture in Yakutia. On the whole, characteristic of it are the same technique of working stone and, what is also essential for dating, of course, some similar specific forms of tools such as triangular knives/scrapers and a similar technique of ceramic preparation (with false-textile imprints). Available radiocarbon determinations of the age of the Chirovov site (2800  $\pm$  100 [GIN]) and the fourth site at km 102 (6665  $\pm$  140 [GIN]), in spite of their seeming contradictoriness, are not counter to an understanding of the chronological place of this Late Neolithic complex. By considering to be too-high the value of the age by V. V. Cherdyn'tsev on charcoal from the late (judging by the complex of items) Ust'-Belaia Kurgan 15 (6900  $\pm$  500 [GIN])—which was dated in the radiocarbon laboratory of the Institute of Archaeology to the later, by almost double, age of 2860  $\pm$  95 (RUL)—we were able to solve the simple equation with one unknown and then obtain proportionally more precision, namely, an earlier date for the sites at KM 102 of close to 3,000 years ago. In this way we proceeded from the convincing supposition that the date 2860  $\pm$  95 (RUL) approaches more closely the late Ust'-Belaia complex with bronze artifacts than does 6900  $\pm$  500 (GIN).

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34 Several of the laboratory designations do not have numbers.—*Trans.*

Table 4. Chronological Sequence of Archaeological Sites and Cultures.

Time	Cultures in the Kamchatka River valley	Cultures in Southern Kamchatka	Cultures on N. shore of the Sea of Okhotsk
1700	<i>Middle Kamchatka</i> Ushki II, L. I (2): 235 ± 145 (Mo-353) 675 ± 80 (Le-70) Kliuchi 2 (10): 490 ± 90 (RUL-367) Kamaki (19), #3: 475 ± 50 (MAG-232) 680 ± 50 (MAG-231) 770 ± 30 (MAG-224) Nikulka (16): 730 ± 110 (RUL-473) Doiarki (11): 1052 ± 70 (MAG-36) Doiarki (10): 1145 ± 80 (Le-71) 1340 ± 50 (MAG-229)	<i>Southern Kamchatka</i> Mishennaia (43), upper layer Nalychevo (253-255) Cape Sivuiskii (303) Ozernaia (302) and others	<i>Old Koryak</i> Travianoi (359) Kip Kich (364), 366, 363, 361, 370, 371, 356, 351, 357, 323, 328 Atargan (380), 382, 369, 367, 368, 377, 376, 372, 355 Bogurchan (378), 375, 379 Orochan (374), 383
A.D. 0 B.C.	<i>Tar'inskaia</i> Ushki III, Kultuk (5): 2070 ± 190 (Mo) 2160 ± 290 (MAG-5) 2440 ± 80 (RUL-607) The remainder (5, 6, 8)	Mishennaia (43), lower layer: 2160 ± 92 (MAG-34) Kirpichnaia III (44): 2390 ± 70 (MAG-103) Avacha (46): 2990 ± 100 (Kril-252) The remainder 284, 285, 42	Upper site on Zav'ialova Island (381)
1000	<i>Late Ushki Neolithic</i> Ushki I, II, Layer III (1, 2)      Kliuchi 3 (13): 3875 ± 350 (MAG-4)		Site on Nedorazumeniia Island (377) Oira (388)
2000	<i>Early Ushki Neolithic</i> Ushki I, II (1, 2, 4), Layer IV Ushki V (4): 4200 ± 100 (MAG-132)	_____	_____
3000	_____	_____	_____

Table 4 (continued)

Cultures of the Kolyma River basin	Cultures of the Anadyr River basin	Cultures of northern Chukotka	Cultures of the Chukotka coast
<p>—————</p> <p>Malan (170), Layer I: 3690 ± 50 (Kril-246)</p> <p>Malan (170) 4450 ± 50 (Kril-247)</p> <p>Malan (170), Layer II: 7490 ± 70 (MAG-183)</p>	<p><i>Vakarevskaia</i></p> <p>Vakarevo (53): 500 ± 50 (Le-674)</p> <p>Chikaevo (74)</p> <p>Lower Ust'-Belaia (56)</p> <p>The Remainder (54, 71)</p> <p>—————</p> <p><i>Ust'-Belaia</i></p> <p>Ust'-Belaia (72), Kurgan 15: 2860 ± 95 (RUL)</p> <p>2920 ± 95 (Kril-244)</p> <p>The remainder K. 8, 9 (73, 59, 57, 60)</p> <p>Ust'-Belaia (72) K. 4, 11, 18</p> <p>The remainder (55, 58, 63, 64)</p> <p>—————</p> <p>Siberdik (168)</p> <p>Layer II: 6300 ± 170 (Kril-248)</p>	<p>Ekiatap (94): 710 ± 40 (MAG-230)</p> <p>Pegtymel' cave (98): 1397 ± 80 (MAG-18)</p> <p>1460 ± 70 (MAG-18)</p> <p>Aion Island (160-164)</p> <p>Petroglyphs (102, 103), canons II-V</p> <p>—————</p> <p>Petroglyphs (102), Canon I</p> <p>—————</p> <p><i>Northern Chukotsk</i></p> <p>Chirovaia (51): 2800 ± 100 (GIN)</p> <p>—————</p> <p>KM 102, Site 4 (81)</p> <p>The remainder (79)</p> <p>—————</p> <p>Amguema, KM 102, Site 3 (80)</p>	<p><i>Thule-Punuk</i></p> <p>Vankarem IV (151): 220 ± 50 (MAG-202)</p> <p>Vankarem III (150): 870 ± 50 (MAG-201)</p> <p><i>Old Bering Sea</i></p> <p>Koliuchin (146): 1215 ± 30 (MAG-221)</p> <p>1220 ± 25 (MAG-223)</p> <p>Chini, house (111): 1330 ± 26 (MAG-33)</p> <p>Chini, Grave 5 (110): 1605 ± 40 (MAG-228)</p> <p>Uten (123): 1750 ± 100 (MAG-354)</p> <p>Dzhenretlen (143): 1990 ± 190 (MAG-233)</p> <p>Seshan (131): 2022 ± 100 (MAG-104)</p> <p>—————</p> <p><i>Beringovskaia</i></p> <p>Lakhtina (104): 2330 ± 225 (MAG-197)</p> <p>—————</p> <p><i>Wrangel</i></p> <p>Chertov Ovrag (167): 3360 ± 155 (MAG-198)</p>

Table 4 (continued)

Time	Cultures in the Kamchatka River valley	Cultures in Southern Kamchatka	Cultures on N. shore of the Sea of Okhotsk
6000	<i>Final Ushki Upper Paleolithic</i> Ushki I, II, V; Layers V. Va, Vc (1, 2, 4) Ushki V, Layers Va (4): 8790 ± 150 (MAG-231)	—	—
8000	<i>Late Ushki Upper Paleolithic</i> Ushki I, II, IV, V; Layer VI (1, 2, 3, 4) Ushki I: 10,360 ± 350 (Mo-345) 10,760 ± 110 (MAG-219)	—	—
11,000	<i>Early Ushki Upper Paleolithic</i> Ushki I, V; Layer VII (1, 4) Ushki I: 13,600 ± 250 (GIN)	—	—
13,000	14,300 ± 200 (GIN-167)		

The unmixed sites of Vakernaia (53) and Lower Ust'-Belaia (56) are key sites of the Remnant Neolithic of inner-continental Chukotka. Characteristic for them are round-bottomed clay vessels, the surface of which is smooth or covered with complete cord imprints for technological purposes or decorated with patterns of rectangular imprints of comb stamp. Included in the most characteristic tools from these sites are so-called stone splitting adzes, bone mattocks, and knives with holes in the haft. In addition, in this complex are bifacially worked stone points and knives, scrapers and skreblos, ground stone knives, and various bone projectile points. The first scientific description of one of the named sites, the Vakareva site (53) to be exact, was given by A. P. Okladnikov, who recognized its primary significance as a source for illuminating an entirely new and very early culture, and posed for the first time the question of its date (Okladnikov and Nekrasov 1960). At present, after investigations of another unmixed cultural layer on the lower terrace at Ust'-Belaia village (56) and after radiocarbon determination of the age of charcoal from Vakernaia (500 ± 50 [Le-674]), the possibility of this cultural complex as a key is substantially increased.

Rather many key cultural complexes are now known on the sea coast and islands of Chukotka, the relative ages of which have been determined by toggling harpoon heads and the style of decoration of the bone artifacts.

This is especially true of the Paleo-Eskimo site at Chertov Ovrage (167) on Wrangel Island, which we discovered in 1975. Judging by the construction of the toggling harpoon

Table 4 (continued)

<i>Cultures of the Kolyma River basin</i>	<i>Cultures of the Anadyr River basin</i>	<i>Cultures of northern Chukotka</i>	<i>Cultures of the Chukotka coast</i>
_____ Siberdik (168), Layer III: 8020 ± 280 (Kril-250) 8480 ± 200 (Kril-249) Kongo (169), Layer I: 8655 ± 220 (MAG-196) Layer II: 9470 ± 530 (Kril-314)	_____          _____          _____	_____          _____          _____	_____          _____          _____

head (Plate 188), which is almost the same as that of harpoons from the northern Greenland Independence culture, in combination with percussion flaked stone artifacts—also similar to the Independence culture (Bandi 1972:161, Fig. 64)—this is the earliest Eskimo site in Northeast Asia, which is corroborated by the radiocarbon date from this site—3360 ± 155 (MAG-198).

Then there are the sites of Uelen (119), Ekven, Chini (110), and the Enmyntyn cemeteries (115 and 116) which belong, with the exception of multi-component Uelen (119), exclusively to the Old Bering Sea culture. Also belonging to OBS are the cultural layers and pit house ruins investigated by S. I. Rudenko at Enmylen (183), Nunligran (182), Sireniki (106), on Cape Chukotskii (179), at Kivak (178), Yandogai (107), and on Cape Dezhneva (173), as well as those discovered and partially excavated by us at Inchoun (120), Seshan (131), on Second Creek near Chegitun (130), Dzhenretlen (143), Vankarem (152), on Koliuchin Island (146), and on Cape Schmidta near Kozhevnikova Cliff (159).

To the later, Thule-Punuk phase of early Eskimo culture, can be assigned an even larger number of coastal sites: 1) those discovered by Rudenko at Nunkan (172), at Cape Chaplina (177), at Avan' (180), and in Plover Bay (181); 2) those examined by us at Chegitun (126), Vankarem (152), on Cape Schmidta (158), and at the places listed below, which were marked by influence from the well dated northern Alaskan Birnirk culture, especially Ikolivrunveem (125), on Ilitlen Lake (139), at old Enurmino (137), and at Neshkan.

This Birmirk influence is also found in the Chetigun Thule-Punuk cemeteries (128 and 129) and in the early Eskimo pit house on Cape Baranov excavated by A. P. Okladnikov (Beregovaia 1953). The Birmirk complex is represented in pure form in Burials 11 and 28, which we opened in the Uelen cemetery (119).

## Classification and Dating of the Pegtymel' Petroglyphs

The Pegtymel' petroglyphs have special significance among the sites of Chukotka. We dedicated a special book to their investigation (Dikov 1971a). We will here pass to the concluding table in that book, which shows the correlated dependence between the representational canons (vertical row) and style of images (upper horizontal row) revealed by us (Dikov 1971b:Fig. 27). The sequence of representational canons that we determined corresponds to several periods of development of petroglyphic art in the Pegtymel' River valley from the end of the second millennium b.c. to the first millennium a.d. This sequence can serve as a good key for periodization of presently known petroglyphs of Northeast Asia.

## Synthesis

After we substantiated the key stratigraphy and distinguished the primary key complexes among the different archaeological sites (including petroglyphs) the possibility emerged for further classification, dating, and periodization of the sites of Kamchatka, Chukotka, and the upper Kolyma and, ultimately, for the separation of archaeological cultures and their stages in the territories being examined.

The principles to which we adhered in this and will adhere in the future are as follows.

Above all, the basis of determination of the sequence of cultural complexes is the stratigraphic method. With the aid of tephra-chronological and palynological data we identified cultural layers of the primary, well stratified sites with synchronic layers of other sites.

Then, with the aid of the comparative method and relying on revealed similar forms of early artifacts, we tied other complexes of the same types to the cultural complexes of the key stratified sites.

The following synthesis of results obtained permits us to resolve the question of determination of cultural-historical stages on the basis of qualitative and quantitative (statistical) characteristics. In this we proceed from the fact that each stage must be characterized by the predominance of essentially new characteristics over old ones, which is traditional in the development in the material culture.

For dating the cultural complexes we are in many cases using not only the stratigraphic and typological data, but also the results of radiocarbon determination of the age of the organic remains belonging to these cultures.

It must be noted with this that not all the data available to us can be deemed reliable in equal degree. Considering that even the C-14 data require examination and evaluation, we

do not blindly take on faith all the radiocarbon determinations of the age of the charcoal from the excavations in Kamchatka, Chukotka, and on the Kolyma. It turned out that approximately 15% of them are clearly too high. This especially concerns the data from GIN. Fifty percent of them are more than two times too early (five dates out of ten). It is possible that two of these dubious determinations (Ushki I:  $21,100 \pm 900$  [GIN-186], and Kamaki:  $9800 \pm 340$  [RUL-605]), are not the fault of the radiocarbon laboratory but of the deposition of the sample of charcoal in direct contact with volcanic ash, which is observed here as an exception.

Nevertheless, when used critically in combination with the other methods, the C-14 dates were very useful and substantially helped create the schema of the chronological sequence of the cultural complexes and cultures in the different provinces of Kamchatka and Chukotka (see Table 4).

The reader will find a detailed examination of the questions of dating each of the cultures in this schema and their characteristics of development in the second book of this series.

## Summary

The data of this first part of the monograph—about the early sites and cultures of Northeast Asia (“Asia at the Crossroads with America in Antiquity”)—is dedicated to the topography, stratigraphy, characteristics, classification, and dating of the archaeological sites of a broad chronological range (from the Paleolithic to the Undeveloped Iron Age) that were found and investigated by the author from 1956 to 1975, and is published here for the first time.

The book summarizes information on the key stratigraphy of the Ushki multi-component Paleolithic and Neolithic sites in Kamchatka, and characterizes their cultural complexes. Detailed data are cited on Kolyma sites of the relict Paleolithic (Kongo and Siberdik) recently discovered and examined by the author. Key cultural complexes of inner-continental Chukotka are examined, and new sites of the coastal sea mammal hunting culture in Chukotka, in particular, on Wrangel Island, where in the Chertov Ovrage site traces of the earliest Paleo-Eskimo culture in Asia were found, are introduced to the scientific community.

The radiocarbon dates for many sites are published for the first time. They are given in a summary classification table, in which the reader will find a synthesis of all data on the stratigraphy and classification of archaeological sites of northeastern Siberia.

Primary stages and problems of archaeological study of Northeast Asia are examined in the introductory section, and in the appendices are detailed guides to maps of the archaeological sites found and examined in the Northeast both by the author and by other persons.

On the whole, the work is a source study base for the second, interpretative part of the research, in which the development of early cultures of Northeast Asia will be characterized.

# Appendix I: Archaeological Sites Investigated by the Author in Kamchatka and Chukotka (See Fig. 3)

## Sites in the Kamchatka River Valley (1-37)

### *Multi-Component Sites (Paleolithic and Neolithic (1-4))*

1. First Ushki site (Ushki I).  
First (upper) cultural layer (Remnant Neolithic).  
Second, Late Neolithic cultural layer.  
Third, Middle Neolithic cultural layer.  
Fourth, Early Neolithic cultural layer.  
Fifth, Upper Paleolithic cultural layer.  
Sixth, Upper Paleolithic cultural layer.  
Seventh, Upper Paleolithic cultural layer.
2. Second Ushki site (Ushki II).  
First cultural layer (Remnant Neolithic).  
Second, Late Neolithic cultural layer.  
Third, Middle Neolithic cultural layer.  
Fourth, Early Neolithic cultural layer.  
Fifth, Upper Paleolithic cultural layer.
3. Fourth Ushki site (Ushki IV).  
Eastern part. Upper Paleolithic Layer V.  
Western part. Two-layered Upper Paleolithic house (Layer V).
4. Fifth Ushki site (Ushki V).

### *Unmixed (Neolithic) Sites (5-14)*

5. Single-layer site at Kultuk (Ushki III).
6. Single-layer Neolithic site at Zastoichik.
7. Single-layer Neolithic site on Domashnee Lake.
8. Single-layer site at Kozyrevsk.
9. Single-layer Neolithic site at Kozyrevsk sovkhos.

10. Two-layer Late Neolithic site at Doiarki.
11. Single-layer Neolithic site at Doiarki.
12. Two single-layer Neolithic sites at Kliuchi.
13. Two-layer Neolithic site at Kliuchi (Locus 3).
14. Cultural layer on the islet in the center of Kliuchi village.

### *Fortified sites and burials of the Remnant Neolithic (15-37)*

15. Fortified site on Staraiia (Shkol'naia) Hill near Kliuchi.
16. Nikul'skoe fortified site.
- 17, 18. Remains of two fortified sites at Kamaki.
19. Early burials near Kamaki (Remnant Neolithic).
- 20-37. Other fortified sites and late unfortified settlements.

### *Sites in the Commander Islands (38-41), in Vicinity of Avachi Bay (42-45), and in the Penzhina River Valley (47-50)*

- 38-41. Sites of maritime hunters on Bering Island.
42. Elizovskaia two-layer site.
43. Two-layer Neolithic site on the southern slope of Mishennaia Hill.
44. Single-layer Neolithic site at Petropavlovsk-Kamchatski on Kirpichnaia Street.
45. Site on the shore of Rakovaia Bay.
46. Avachi Site.

47-50. Early sites on Zelenyi and Bol'shoi Capes, at Manily, and near Kamenskoe village on the lower reaches of the Penzhina River.

#### Sites in the Anadyr River Basin (51-74)

##### *Unmixed Single-Layer Sites and Cemeteries (51-71)*

51. Neolithic site on Chirovoe Lake.
52. Neolithic Mukhomomenskaia site.
53. Vakarevskaia site on Maina River (Remnant Neolithic).
54. Neolithic Ust'-Maina site.
55. Neolithic site at Snezhnoe.
56. Ust'-Belaia Lower site.
57. Neolithic site on Uvesnovaniia Hill.
58. Neolithic site at Kameshki.
- 59, 60. Neolithic sites of Vilka I and Vilka II.
61. Neolithic Utesiki site.
62. Neolithic Anokatrary site.
- 63, 64. Neolithic site on Osinovaia Spit.
65. Neolithic site on the spit near the fishing warehouse.
66. Neolithic site (workshop) on Osinovaia Hill.
67. Neolithic site (workshop) on Krasno Spit.
- 68-70. Three Neolithic sites on spits at Lake Krasnoe.
71. Cemetery on Yukagir Hill (Remnant Neolithic).

##### *Mixed Sites and Cemeteries (72-74)*

72. Neolithic Ust'-Belaia sites and cemetery.
73. Neolithic Omryn site and cemetery.
74. Neolithic Chikaevskaia site.

#### Early Sites in the Amguema River Valley (75-96)

75. Site at KM 57.
76. Site at KM 61.
77. Site at KM 93.

#### *Four Neolithic Sites at KM 102 (78-81)*

78. First Neolithic site at KM 102.
79. Second Neolithic site at KM 102.
80. Third Neolithic site at KM 102.
81. Fourth Neolithic site at KM 102 (on the right bank of the Amguema River).
82. Site at KM 115.
83. Site at KM 120.
84. Neolithic site at KM 123.
85. Neolithic site at KM 129.
86. Site at KM 134.
87. Site at KM 141.
88. Neolithic site at KM 145.
89. Neolithic site at KM 145.
90. Site at KM 148.
91. Site at KM 153.
92. Remains of a camp at KM 160.
93. Neolithic site at the mouth of the Yakitika River.
94. Grave at the mouth of the Ekiatap River.
95. Neolithic Ekiatap cemetery.
96. Site on Cape Erpak (on the right bank of the Amguema River).

#### Sites in the Vankarem (97) and Pegtymel' (98-103) River Valleys

97. Neolithic site in the Tan'gino Area.
98. Pegtymel' Cave.
99. First Pegtymel' Neolithic site.
100. Second Pegtymel' Neolithic site.
101. Third Pegtymel' Neolithic site.
102. Pegtymel' rock illustrations.
103. Second petroglyph locality.

#### Sites on the Chukotka Coast (104-159)

104. Beringovo site (Lakhtina Lagoon).
105. Remains of an early fortified site with burials of human skulls at the Seventh Moorage on the shore of Anadyr Estuary.
106. Early pit houses at Sireniki.
107. Two-layer site at Yandogai.
108. Yandogai early cemetery.

109. Cultural layers at Nuniamo.
  110. Chini Old Bering Sea cemetery.
  111. Early pit house on Cape Chini.
  112. Old Bering Sea site on Cape Chini.
  113. Early Eskimo site near Enmynyntyn Mountain.
  114. Single grave near Enmynyntyn Mountain.
  115. First Enmynyntyn cemetery.
  116. Second Enmynyntyn cemetery.
  117. Third Enmynyntyn cemetery.
  118. Fortified site on Senlun Cliff.
  119. Uelen cemetery.
  120. Inchoun Old Bering Sea site.
  121. Inchoun cemetery.
  122. Uten early Eskimo site.
  123. Uten early Eskimo cemetery.
  124. Early pit houses at Chettun.
  125. Ekichuverveem cultural layer.
  126. Chegitun early Eskimo site.
  127. First Chegitun early Eskimo cemetery.
  128. Second Chegitun early Eskimo cemetery.
  129. Third Chegitun early Eskimo cemetery.
  130. Early Eskimo site at Second Creek (beyond Chegitun).
  131. Early Eskimo site at Seshan.
  132. Seshan early Eskimo cemetery.
  133. Ikolivrunveem early Eskimo site.
  134. Ikolivrunveem early Eskimo cemetery.
  135. Early Eskimo pit houses at Kenishkhun.
  136. Early Eskimo cultural layer at Old Enurmino.
  137. Early Eskimo cultural layer near Old Enurmino.
  138. Cemetery near the Enurmino Polar Station.
  139. Early Eskimo site on Ilitlen (Idlidlia) Island.
  140. Early Eskimo site near Neshkan.
  - 141-142. Two early Eskimo sites near Cape Dzhenretlen.
  143. Old Bering Sea site on Cape Dzhenretlen.
  144. Early Eskimo site on Beliaka Spit.
  145. Early site at Anaian.
  146. Old Bering Sea site at the northern end of Koliuchin Island.
  147. Early Eskimo site at the southern end of Koliuchin Island.
  - 148-152. Early Eskimo pit houses at Vankarem.
  153. Vankarem cemetery.
  154. Remains of early site on Vankarem Spit.
  155. Ritual cluster of seal skulls and deer antlers on Kuemkai Creek.
  156. Early pit houses on spit at Nut Lagoon.
  157. Early pit houses on Dvukh Pilotov Spit.
  158. Early site on Cape Schmidta.
  159. Old Bering Sea cultural layer near Kozhevinoval Cliff (Cape Schmidta).
- Archaeological Sites on Aion (160-166) and Wrangel (167) Islands**
160. First Neolithic Ryveem site.
  161. Second Neolithic Ryveem site.
  162. Third Neolithic Ryveem site.
  163. First Neolithic site on the southern shore of Aion Island near deer antler site.
  164. Second Neolithic site on the southern shore of the island.
  165. Neolithic Asykvergyrgyn site.
  166. Early site of maritime hunters on the western shore of Aion Island.
  167. Early site at Chertov Ovrage on Wrangel Island.
- Early Sites in the Upper Kolyma Basin (168-170)**
168. Three-layer Siberdik site.
  169. Two-layer Kongo site.
  170. Two-layer Maltan site.

## Appendix II: Archaeological Sites of Northeast Asia Found by Other Investigators (See Fig. 1)

18. Fortified site at Kamaki (K. D. Loginovskii and G. A. Kramarenko 1910<sup>35</sup>; B. P. Panura 1954; N. N. Dikov 1961).
42. Elizovskaia site (Old Fort, Zavoiko) (*K. D. Ditmar* 1901; O. F. Gertz and K. D. Loginovskii 1910; *W. I. Jochelson* 1910, 1930; N. N. Dikov 1961).
43. Site on the southwestern slope of Mishennaia Hill (*E. P. Orlova* 1947; N. N. Dikov 1966).
47. Zelenyi Cape site (*A. V. Semenov* 1964; N. N. Dikov 1962).
49. Site at Manily village (*A. V. Semenov* 1964; N. N. Dikov 1962).
51. Neolithic site on Chirovov Lake (N. A. Grave 1952; *A. P. Okladnikov* 1953; N. N. Dikov 1959).
53. Vakarevskaiia site (I. A. Nekrasov 1957; *A. P. Okladnikov and I. A. Nekrasov* 1960; N. N. Dikov 1957, 1958).
102. Pegtymel' petroglyphs, first locality (I. M. Samorukov 1965; *N. N. Dikov* 1971).
106. Early sites at Sireniki (*S. I. Rudenko* 1947; N. N. Dikov 1955).
107. Two-component site at Yandogai (*S. I. Rudenko* 1947; N. N. Dikov 1963).
119. Uelen cemetery (A. T. Simbirskii 1955; D. A. Sergeev 1955; R. V. Chubarova-Kozyreva; M. G. Levin 1957; *N. N. Dikov* 1967; *S. A. Arutiunov and D. A. Sergeev* 1969).
151. Early sites on Cape Vankarem (*E. W. Nelson* 1899; *N. N. Dikov* 1968).
159. Cape Schmidta (Ryrkaipii) early site (N. A. E. Nordenskjold 1878 [1936]; N. N. Dikov 1957, 1975).
163. Site I on the southern shore of Aion Island (V. D. Lebedev 1958; *N. N. Dikov* 1961).
166. Early site on Aion Island (*G. U. Sverdrup and N. N. Dikov* 1960).
170. Neolithic Malan site (Yu. A. Kalganov 1971; N. N. Dikov 1974, 1975).
171. Early Uelen pit houses (*S. I. Rudenko* 1947; *S. A. Arutiunov and D. A. Sergeev* 1969).
172. Cultural layer at Naukan (*S. I. Rudenko* 1947).
173. Cultural layer at Dezhnevo (*S. I. Rudenko* 1947).
174. Eken cemetery (*O. N. Ivanov* 1967; *S. A. Arutiunov and D. A. Sergeev* 1975).
175. Ekven site (O. N. Ivanov 1967; *S. A. Arutiunov and D. A. Sergeev* 1975).
176. Early pit houses on Arakamchechen Island (*S. I. Rudenko* 1947).
177. Early site on Cape Chaplina (*S. I. Rudenko* 1947).

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35 Names not set off by Italics are authors who discovered the site; names set off by Italics are authors who published the site materials.

178. Cultural layer at Kivak (*S. I. Rudenko* 1947; *G. S. Abakumov* 1975).
179. Early site at Cape Chukotskii (*S. I. Rudenko* 1947).
180. Early site on Lake Istikhetskoe (Avan') (*S. I. Rudenko* 1947; *G. S. Abakumov* 1975).
181. Early pit houses in Plover Bay (*S. I. Rudenko* 1947).
182. Early Nunligran site (*I. P. Lavrov* 1945; *S. I. Rudenko* 1947).
183. Early Enmylen site (*G. U. Sverdrup* 1930; *I. P. Lavrov* 1945; *S. I. Rudenko* 1947).
184. Early site in Kresta Bay (*G. B. Lebedev* 1975).
185. Neolithic site on Ekityki Lake (*V. N. Smirnov* 1974).
186. Neolithic site on the Yakitikiveem River (*N. N. Levoshin* 1950).
187. Neolithic sites on Matachen Creek (*A. E. Katenin* 1900; *N. N. Dikov and A. E. Katenin* 1971).
188. Neolithic sites and cache on Lake El'gygytgyn (*I. A. Nekrasov and A. K. Saiapin* 1955; *A. P. Okladnikov and I. A. Nekrasov* 1957; *A. K. Saiapin and N. N. Dikov* 1958).
189. Kanchalanskaia site (*V. V. Naryshkin* 1953, 1954; *A. P. Okladnikov and V. V. Naryshkin* 1955).
190. Nigrinutetegyn (Geka Land). Early sites (*V. V. Leont'ev* 1972).
191. Tumanskaia. Sites of different time periods (*V. V. Leont'ev* 1973).
192. Ugol'naia Bay (*P. Vasil'ev* 1973).
193. Lakhtina (Gagatagyn) Bay. Early site. (*E. V. Gunchenko* 1973; excavated in 1975 by *N. N. Dikov*).
194. Otvessnyi (Pankinmyn). Early fort and site (*V. V. Leont'ev* and *E. V. Gunchenko* 1973).
195. Amaam. Early site (*V. V. Leont'ev* 1973).
196. Gavriila Bay. Kanyiu. Early site (*V. V. Leont'ev* and *E. V. Gunchenko* 1973).
197. Etchun. Early site (*V. V. Leont'ev* 1970).
198. Lake Vaamochka. Yankinan Hills. Early site (*V. V. Leont'ev* 1970).
199. Khatyrka. Early site on the right bank of the Khatyrka River below the village (*A. V. Beliaeva* 1968; *A. A. Orekhov* 1975).
200. Rytkyl'veem. Surface-collected core (1. Ivtegin 1973).
201. Three sites on the Koryak Plateau (*S. G. Bialobzheskii, Yu. A. Kaliasnikov, and V. V. Smirnov* 1972, 1975).
202. Omaia (Vernander 1930s).
203. Kavacha (*V. N. Maliukovich* 1972).
204. Achaivaia (*V. N. Maliukovich* 1972).
205. At the mouth of the Apuka River (*V. N. Maliukovich* 1972).
206. Oliutorskii Bay (*V. V. Antropova* 1948).
207. Cape Govena (*V. N. Maliukovich* 1972).
208. Tilichiki, Zelenyi Hill (*K. D. Loginovskii* 1910).
209. Vetvei River, sacrificial site (*I. S. Vdovin* 1971).
210. Korf Island, cultural layer (*K. F. Loginovskii* 1910).
211. Il'pinskii Peninsula (*V. N. Maliukovich* 1972).
212. Anapka (*V. N. Maliukovich* 1972).
213. Kichiga (*K. D. Loginovskii* 1910).
214. Tymlat (*V. N. Maliukovich* 1972).
215. Ossora (*V. N. Maliukovich* 1972).
216. Karaga (*K. D. Loginovskii* 1910; *N. Gondatti* 1898; *V. N. Maliukovich* 1972).
217. Karaginskii Island, cultural layer in Lozhnykh Vestei Bay (*K. D. Loginovskii* 1910).
218. Kaium. (*V. N. Maliukovich* 1972).
219. Ivashka (*V. N. Maliukovich* 1972).
220. Ukinskaia Bay, surface collection (*Gaidukovich* 1961).
221. Ozernoi Peninsula, cultural layer near Uki (*Yu. M. Stefanov* 1973).
222. Yurt camp in the Maksimo locality near Mil'kovo on the left bank of the Kamchatka River (*D. K. Zimin* 1960s).

223. Second fortified site on the Nikulka River (A. A. Gorbach 1969).
224. Yurt camp on Kharchinskoe Lake (*N. V. Sliunin* 1900; K. D. Loginovskii 1910).
225. Kliuchi (Derzhavin 1908; K. D. Loginovskii 1910).
226. Site on Azhabach'e Lake.
227. Yurt camp at Ust'-Kamchatsk (*N. V. Sliunin* 1900; Karre 1907; K. D. Loginovskii 1910; Nakaiama 1933, 1934).
- 228, 229. Five early sites east of Ust'-Kamchatsk (A. A. Nikonov 1969).
230. Left of the mouth of the Storozh River (*N. V. Maliukovich* 1900; Anzhinov 1968).
231. Yurt camp on Kronotskoe Lake (A. K. Ponomarenko 1975).
232. Yurt camp on the Kronotskaia River (K. Ditmar 1901; A. K. Ponomarenko 1975).
233. Yurt camp on Kronotskoe Lake (K. Ditmar 1901).
234. Site in Geizerov Valley (V. I. Semenov 1974).
235. Tikhaia I site (A. K. Ponomarenko 1975).
236. Tikhaia II site (A. K. Ponomarenko 1975).
237. Shumnaia I site (A. K. Ponomarenko 1976).
238. Shumnaia II site (A. K. Ponomarenko 1975).
239. Site on the right of the mouth of Third Creek (A. K. Ponomarenko 1975).
240. Site on the northern shore of Semiachinskii Estuary (A. K. Ponomarenko 1976).
241. Site on the right of the mouth of the Semiachik River (K. Ditmar 1901; A. K. Ponomarenko 1976).
242. Krasnyi Partizan I site (A. K. Ponomarenko 1975).
243. Krasnyi Partizan II site (A. K. Ponomarenko 1975).
244. Site on the cape at Zhupanovo village (K. Ditmar 1901; A. K. Ponomarenko 1976).
245. Site on the northern shore of the Berezovi Estuary (A. K. Ponomarenko 1975).
246. Bedniachka site, opposite the mouth of the Zhupanovaia River (A. K. Ponomarenko 1975).
247. Kopyto site, opposite the mouth of the Zhupanovaia River (K. Ditmar 1904; A. K. Ponomarenko 1975).
248. Bol'shaia Medvezhka I site (A. K. Ponomarenko 1975).
249. Bol'shaia Medvezhka II site (A. K. Ponomarenko 1975).
250. Bol'shaia Medvezhka III site (A. K. Ponomarenko 1975).
251. Yurt camp on Cape Shipunskii (K. Ditmar 1901).
252. Yurt camp in Bichevinskaia Bay (K. Ditmar 1901).
253. Yurt camp on the Nalycheva River (K. Ditmar 1901; *N. V. Sliunin* 1900).
- 254, 255. Yurt camp on Nalycheva Lake, on Cape Nalycheva (K. Ditmar 1901; *W. I. Jochelson* 1930).
256. Yurt camp at Khalaktyrka (K. D. Loginovskii 1910; *W. I. Jochelson* 1911; T. M. Dikova 1972).
257. Neolithic Diunnaia site on the right bank of the mouth of the Khalaktyrka River (T. M. Dikova 1972).
258. Site to the southwest of Bol'shaia Okeanskaia Baza (A. K. Ponomarenko 1976).
259. Ship repair dock—collection in the Kamchatka Regional Museum.
260. On Nikol'skaia Hill in Petropavlovsk-Kamchatski, surface collection (A. Afanas'ev and A. Seroshkin 1975).
261. Site on Kosmonavtov Street, House 34 (in the garden) in Petropavlovsk-Kamchatski (V. Primakov 1965).
262. Site at Seroglazka (N. Gondatti 1898; *W. I. Jochelson* 1928, 1930; A. Solov'ev 1959).
263. Yurt camp not far from Lysaia Mountain near the Avacha River (A. K. Ponomarenko 1976).

264. Yurt camp near Elizovo village on the left bank of the Avacha River (*A. K. Ponomarenko* 1976).
265. Yurt camp on the right bank of the Avacha River, at the bridge at KM 39 (*A. K. Ponomarenko* 1976).
266. Yurt camp at KM 40 on the right bank of the Avacha River (*A. K. Ponomarenko* 1976).
267. Yurt camp at KM 42 (*A. N. Gorchakov* 1955; *A. K. Ponomarenko* 1976).
268. Yurt camp at KM 44, Ketkino village (*A. K. Ponomarenko* 1976).
269. Yurt camp near the Tsentral'nyi Koriaki site (*A. K. Ponomarenko* 1976).
270. The Tsentral'nyi Koriaki site on the bank of the Koriak River (*N. I. Selivanov* 1971).
271. Kitkhoiskaia site (*S. E. Aprelkov* 1960s; *Yu. M. Slepov and Yu. I. Kharchenko* 1965).
272. Cultural layer on the left bank of the Plotnikovaia River, above the bridge (*A. K. Ponomarenko* 1976).
273. Two-component site on the right bank of the Plotnikovaia River, 3 to 4 km above the preceding one (*A. K. Ponomarenko* 1976).
274. Two cultural layers not far from Gorizont tourist camp (*A. K. Ponomarenko* 1976).
275. Cultural layer on the left bank of a tributary of Paratunka River, not far from Termal'noe village (*A. K. Ponomarenko* 1976).
276. Two-component site on the left bank of the Paratunka River, above its confluence with the Bystraia River (*A. K. Ponomarenko* 1976).
277. Multi-component site at Bol'shoi Kamen', left of the mouth of the Tikhaia River (*A. K. Ponomarenko* 1976).
278. Site in the vicinity of Turpanovka Bay (*A. K. Ponomarenko* 1976).
279. At Sovetskii village, surface collection (*P. D. Lutskevich* 1960s).
280. Yurt camp in Sel'devaia Bay (collection of the Kamchatka Regional Museum, *Kruglov* 1957).
281. Site on one of the islands at the mouth of the Avacha River (*K. D. Loginovskii* 1910).
282. Tar'ia, Bogatyrevskaia Bay site on Solenoe Lake (*K. D. Loginovskii* 1910; *W. I. Jochelson* 1928, 1930; *Shmidt* 1900).
283. Tar'ia, site near Solenoe Lake (*W. I. Jochelson* 1928, 1930; *I. Shnell* 1932).
284. Tar'ia, site on the mountain slope, on the northeastern side of Bogatyrevskaia Bay (*W. I. Jochelson* 1910, 1928, 1930; *N. A. Gur'ev* 1930s).
285. Site on Krashennnikov Peninsula (*Fel'dman*; *V. Nesmashnyi* 1969; *V. N. Maliukovich* 1972).
286. Site in Russkaia Bay, at Khantei (*Kukin* 1962).
287. Site in Viliuchinskaia Bay (*G. M. Vlasov* 1960s).
288. Site on the right bank of the Zhurovaia River, near the mouth (*G. M. Vlasov* 1960s).
289. In Zhurovaia Bay, surface collection (*V. S. Sheimovich* 1960s).
290. Site in Listvennichnaia Bay (*Shnel'* 1932).
291. On Cape Krestovyi (collection of the Kamchatka Regional Museum).
292. In Khodutka Bay, surface collection (*V. S. Sheimovich*).
293. On Cape Zheltyi, shell midden (*V. S. Sheimovich* 1963).
- 294-299. Site of different time periods on Cape Lopatka I-V (*T. M. Dikova* 1972, 1976).
300. Two-component Semcnovka site and two localities of yurts on Riabukhina Creek, Cape Lopatka (*T. M. Dikova* 1972, 1973, 1975).
301. Yurt camp at the mouth of Kambal'naia River.
302. Yurt camp not far from the source of the Ozernaia River at Kuril'skoc Lake (*W. I. Jochelson* 1928, 1930).

303. Yurt camp on Cape Sivuiskii in Kuril'skoe Lake (W. I. Jochelson 1928, 1930; T. M. Dikova 1972, 1976).
304. Cultural layer in geysirites on the Pauzhetka River (R. L. Dunin-Barkovskii 1973).
305. Early pit houses at Ozernovskii (Yamada Sigekura 1924).
306. Finds at Yavino (K. I. Bogdanovich, end of the 19<sup>th</sup> century).
307. Site on the left of the mouth of the Koshegochek River (M. I. Barabanov 1970s).
308. Finds at Golygino (K. N. Bogdanovich, end of the 19<sup>th</sup> century).
309. Pit house at Opal (Yamada Sigekura 1924).
310. Finds at Bol'sheretsk (N. Gondatti 1898).
311. Yurt camp between Bol'sheretsk and Kikhchik (V. Golovin 1861).
312. Malka (K. D. Loginovskii 1910).
313. Ganaly (K. D. Loginovskii 1910).
314. Left of the mouth of the Oblukovinaia River (*V. N. Maliukovich* 1971).
315. At the mouth of the Icha River (*Nakaiama* 1933).
316. Near Icha village—Old Fort (*V. N. Tiushov* 1906).
317. Saichik I, II, III, IV (V. I. Ruban 1975).
318. Kisun (V. I. Ruban 1975).
319. Pit houses at Sopochnyi (Yamada Sigekura 1920s).
320. At the mouth of the Plakhen River, tributary of the Khairiuzovaia River (E. P. Orlova 1928).
321. Belogolovoe (*V. I. Maliukovich* 1971).
322. Pit houses near Khairiuzovo village (E. P. Orlova 1928; *V. N. Maliukovich* 1972).
323. Kavran (W. I. Jochelson 1911; V. I. Ruban 1975).
324. Ust'-Kavran (V. I. Ruban 1975).
325. Utkholok (Zmiev 1960s).
- 326, 327. Cape Andreevskii I, II, left of the mouth of the Tigil' River (V. I. Ruban 1975).
- 328-330. Kulka I (W. I. Jochelson 1911; V. I. Ruban 1975), Kulka II, III (V. I. Ruban 1975).
331. Ust'-Vaiampolka (*V. N. Maliukovich* 1971).
332. Mouth of the Palana River, canning factory. Items given to W. I. Jochelson (*A. V. Semenov* 1964; V. I. Ruban 1975).
333. Palana (Fel'dman). Finds in a cave (Ekkerman; *W. I. Jochelson* 1930).
334. At the mouth of Anadyrka Creek (*P. I. Smirnov* 1900).
335. At the mouth of the Krestovaia River (*A. V. Semenov* 1964).
336. Cape Tvaian (*A. V. Semenov* 1964).
337. Shamanka (*V. N. Maliukovich* 1971).
338. Podkagernaia Bay (*V. N. Maliukovich* 1971).
339. On the right bank of the Pustaia River (*V. N. Maliukovich* 1972).
340. Cultural layer at Rekiniki (V. I. Zaiarnov 1972).
341. Aianka (M. Yu. Khotinov 1968).
342. Kamenka (*A. V. Semenov* 1964).
343. Pervorechensk (V. P. Pokhialainen 1964).
344. Lyvat (*A. V. Semenov* 1964).
345. Ornochiki (*A. V. Semenov* 1964).
346. Ol'khovka (*A. V. Semenov* 1964).
347. Mikino (*A. V. Semenov* 1964).
348. Kuiuul (*A. V. Semenov* 1964).
349. Khaimchik (*A. V. Semenov* 1964).
350. Paren' (*N. N. Bilibin* 1934; *V. N. Maliukovich* 1971).
351. Impoveem, Old Koryak site (*R. S. Vasil'evskii* 1971).
352. Gizhiga, Maiachnaia (*R. S. Vasil'evskii* 1971).
353. Cape Varkhalskii (*R. S. Vasil'evskii* 1971).
354. Naiakhan, Old Koryak site (W. I. Jochelson, end of the 19<sup>th</sup> century; M. G. Levin 1931; *R. S. Vasil'evskii* 1971).
355. Naiakhan, upper terrace (*R. S. Vasil'evskii* 1971).

356. Kushka, Old Koryak site (M. G. Levin 1931; R. S. Vasil'evskii 1971).
357. Tavatum, Koryak site (R. S. Vasil'evskii 1971).
358. Appapel', near the mouth of the Tavatum River—Old Koryak sacrificial site (R. S. Vasil'evskii 1971).
359. Cape Travianoï, houses of the 17<sup>th</sup>–18<sup>th</sup> centuries (R. S. Vasil'evskii 1971).
360. Buian Island, Old Koryak sacrificial site (N. V. Sliumin 1900; R. S. Vasil'evskii 1971).
361. Varganchik, Old Koryak site (R. S. Vasil'evskii 1971).
362. Keitevan, temporary Koryak site (R. S. Vasil'evskii 1971).
363. Itkilan, temporary Koryak site (R. S. Vasil'evskii 1971).
364. Kip Kich (Kapkichu), Old Koryak site (R. S. Vasil'evskii 1971).
365. Credniaia Bay, Old Koryak site, 13<sup>th</sup>–16<sup>th</sup> centuries (M. G. Levin 1931; V. E. Lipovskii 1954; G. A. Pytliakov 1955; R. S. Vasil'evskii 1971).
366. Nantadzha, Old Koryak site (R. S. Vasil'evskii 1971).
367. Cape in Astronomicheskaiia Bay; two seasonal Old Koryak sites (R. S. Vasil'evskii 1971).
368. Astronomicheskaiia Bay, Old Koryak site (V. E. Lipovskii 1954; G. A. Pytliakov 1955; R. S. Vasil'evskii 1971).
369. Cape Trekh Brat'ev, Old Koryak site, cave, and burials (K. A. Novikova 1946; V. A. Lipovskii 1954; R. S. Vasil'evskii 1971).
370. Nerivdan, Old Koryak site (R. S. Vasil'evskii 1971).
371. Bokidzhakchan, remains of two Old Koryak houses (R. S. Vasil'evskii 1971).
372. Sivuch, Koryak site, 16<sup>th</sup>–17<sup>th</sup> centuries (V. N. Lipovskii 1954; G. A. Pytliakov 1955; R. S. Vasil'evskii 1971).
373. Siglan, Koryak site, 17<sup>th</sup>–18<sup>th</sup> centuries (R. S. Vasil'evskii 1971).
374. Orochan, Old Koryak site (V. I. Levin 1931; R. S. Vasil'evskii 1971).
375. Nargab'en, Old Koryak site (V. I. Levin 1931; R. S. Vasil'evskii 1971).
376. Avara River, Old Koryak site (A. P. Okladnikov 1946; R. S. Vasil'evskii 1971).
377. Cape Alevina, Old Koryak site (A. P. Okladnikov 1946; R. S. Vasil'evskii 1971).
378. Bogurchan, Old Koryak site, 10<sup>th</sup>–13<sup>th</sup> centuries (G. A. Pytliakov 1955–1956; R. S. Vasil'evskii 1971).
379. Naidenova Bay, Old Koryak site, 10<sup>th</sup>–13<sup>th</sup> centuries (G. A. Pytliakov 1955; R. S. Vasil'evskii 1971).
380. Atargan, Old Koryak site, 10<sup>th</sup>–13<sup>th</sup> centuries (V. A. Tsaregradskii, beginning of the 1930s; I. L. Simonenko 1939; A. P. Okladnikov 1946; R. S. Vasil'evskii 1971).
381. Zav'ialova Island, upper terrace, Neolithic site (Ozolin 1920s; M. G. Levin and V. I. Levin 1930–1931; V. A. Tsaregradskii 1931; A. P. Okladnikov 1946; R. S. Vasil'evskii 1971).
382. Rassvet Bay, Old Koryak site, 10<sup>th</sup>–13<sup>th</sup> centuries (Ozolin 1920s; M. G. Levin and V. I. Levin 1930–1931; V. A. Tsaregradskii 1931; A. P. Okladnikov 1946; R. S. Vasil'evskii 1971).
383. Nakhodka, bay on Zav'ialova Island, Old Koryak site (R. S. Vasil'evskii 1971).
384. On Rechnaia Street—bone statuette (D. I. Raizman 1960s).
385. Cape Chirikova, early site (R. S. Vasil'evskii 1971).
386. Marchekan, early site (R. S. Vasil'evskii 1971).
387. Nedorazumeniia Island, Neolithic site (R. S. Vasil'evskii 1971).
388. Oira River, Neolithic site (R. S. Vasil'evskii 1971).
389. Cape Onatevicha, Old Koryak site (R. S. Vasil'evskii 1971).
390. Spafar'eva Island, Old Koryak site (R. S. Vasil'evskii 1971).

391. Tungusskii cemetery on the territory of the Dukcha Sovkhoz (*I. F. Simonenko* 1939).
392. Maiorych, late Paleolithic site (*Yu. A. Mochanov* 1972).
393. Paleolithic (?) site on Shilo Creek (*N. N. Dikov and V. I. Gerasimchuk* 1971).
- 394-396. Three Neolithic sites in the Labuia region (*A. P. Okladnikov* 1946).
397. Neolithic site at Pomazkino (*A. P. Okladnikov* 1946).
398. Neolithic site at Kresty (*A. P. Okladnikov* 1947).
399. Neolithic site at Petushky (*A. P. Okladnikov* 1947).
400. Early site on the right bank of the first Berezovaia River (*O. N. Ivanov* 1976).
401. Obsidian point from Chapaevskii Pass (Bilibinskii Museum).
- 402-405. Four early Eskimo sites near Cape Baranov (*G. A. Sarychev* 1789; *A. P. Okladnikov and N. A. Beregoaia* 1971).
406. Chetyrekhstolbovoi Island (*G. Sverdrup* 1930; *A. M. Syrchin* 1947; *N. A. Beregoaia* 1954).
407. Shalurova Island, early Eskimo site (*G. Sverdrup* 1930; *S. A. Pchelko* 1953; *N. A. Beregoaia* 1960).
408. Aachim Peninsula, Site I (*V. Kraskov and T. M. Dikova* 1966).
409. Aachim Peninsula, Site II (*T. M. Dikova and V. A. Vorob'ev* 1973).
410. On the left bank of the Chegitun—bone points (*B. A. Klubov* 1973).

**Appendix III:** Chemical Composition of the Volcanic Ash in the Stratigraphy of the Early Sites in the Kamchatka River Valley (By Percent).\*

Components	Ushki Lake									
	Layer I	Layer II	Layer III	Layer IV		Layer IVa	Layer V	Layer V	Layer V	Layer V
	Ushki III Kultuk (5)	Ushki I (1)	Ushki I (1)	Ushki I (1)	Ushki III (5) Kultuk (5)	Ushki I (1)	Ushki I (1)	Ushki I (1)	Ushki I (1)	Ushki III (5) Kultuk (5)
	Probe 7	Probe 6	Probe 5	Probe 1	Probe 8	Probe 1	Probe 3	Probe 3	Probe 2	Probe 9
SiO <sub>2</sub>	63.32	61.02	60.02	62.80	61.20	62.80	58.92	58.92	61.70	64.58
TiO <sub>2</sub>	0.48	0.51	0.56	0.56	0.54	0.56	0.63	0.63	0.30	0.36
Al <sub>2</sub> O <sub>3</sub>	15.37	15.17	15.83	14.52	14.83	14.52	14.99	14.99	16.16	14.94
Fe <sub>2</sub> O <sub>3</sub>	1.81	0.81	0.82	1.88	1.06	1.88	1.06	1.06	1.56	2.13
FeO	1.60	3.08	3.22	2.42	2.92	2.42	2.92	2.92	1.16	1.24
MnO	0.05	0.10	0.12	0.08	0.14	0.08	0.13	0.13	0.06	0.06
MgO	1.38	2.46	3.50	1.30	0.93	1.30	3.25	3.25	1.54	2.80
CaO	3.42	4.42	5.40	3.66	2.80	3.66	5.48	5.48	2.52	3.94
K <sub>2</sub> O	3.97	1.93	1.60	1.21	3.57	1.21	1.60	1.60	4.77	2.00
Na <sub>2</sub> O	4.86	4.76	4.76	4.94	6.02	4.94	4.57	4.57	3.88	3.98
+H <sub>2</sub> O	2.13	3.05	2.96	4.35	4.18	4.35	4.24	4.24	3.73	2.06
-H <sub>2</sub> O	0.87	0.92	0.66	1.49	1.36	1.49	1.64	1.64	2.26	1.74
P <sub>2</sub> O <sub>5</sub>	0.41	0.40	0.23	0.20	0.20	0.20	0.34	0.34	0.20	0.13
CO <sub>2</sub>	0.09	1.30	0.15	0.23	0.19	0.23	0.00	0.00	0.08	0.06
SO <sub>3</sub>	0.020	0.05	0.04	0.035	0.05	0.035	0.04	0.04	0.00	0.00
Cl	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
F	0.03	0.02	0.02	0.05	0.03	0.05	0.02	0.02	0.04	0.03
Correction for F	0.01	0.01	0.01	0.02	0.01	0.02	0.01	0.01	0.02	0.01
Total	99.80	99.99	99.88	99.72	100.01	99.72	99.82	99.82	99.94	100.06

Appendix III: (continued)

Components	Dotarki										Nikulka (16)	Kliuchi III (13)
	Layer II	Layer IIa	Layer III	Layer A	Layer B	Layer C					Layer I	Layer I
	Probe 10	Probe 11	Probe 12	Probe 13	Probe 14	Probe 15					Probe 17	Probe 36
SiO <sub>2</sub>	65.20	59.58	59.22	54.40	55.00	55.92					60.96	34.92
TiO <sub>2</sub>	0.34	0.56	0.63	0.38	0.78	0.78					0.56	0.50
Al <sub>2</sub> O <sub>3</sub>	14.29	14.66	16.91	19.87	16.10	16.49					15.02	13.37
Fe <sub>2</sub> O <sub>3</sub>	1.38	2.39	1.23	1.22	4.68	3.66					0.41	2.05
FeO	1.46	2.48	3.29	2.42	3.29	2.56					3.07	2.48
MnO	0.05	0.05	0.12	0.08	0.15	0.20					0.13	0.05
MgO	2.42	3.64	3.69	4.04	3.44	3.22					2.58	1.84
CaO	4.00	5.24	5.91	5.92	5.34	4.74					4.71	12.60
K <sub>2</sub> O	3.60	2.95	1.37	2.47	1.40	1.60					1.82	2.21
Na <sub>2</sub> O	5.01	4.05	4.76	3.40	3.74	3.40					4.50	1.63
+H <sub>2</sub> O	1.08	2.71	1.76	3.31	3.27	3.89					4.45	6.31
-H <sub>2</sub> O	0.78	1.16	0.52	1.96	2.00	2.23					0.97	8.00
P <sub>2</sub> O <sub>5</sub>	0.41	0.32	0.32	0.41	0.52	0.85					0.36	13.09
CO <sub>2</sub>	0.00	0.22	0.00	0.07	0.15	0.23					0.23	0.55
SO <sub>3</sub>	0.03	0.05	0.03	0.02	0.06	0.07					0.05	0.06
Cl	0.00	0.00	0.00	0.08	0.00	0.00					0.00	0.05
F	0.04	0.02	0.03	0.02	0.02	0.02					0.01	0.20
Correction for F	0.02	0.01	0.01	0.02	0.01	0.01					0.00	0.09
Total	100.07	100.07	99.78	100.05	99.93	99.86					99.83	99.82

\*Analysis was conducted by E. M. Aleksandrova and A. A. Osadchenko.

# Appendix IV: Some Data on the Odontology of the Early Population of Chukotka and Kamchatka

by A. A. Zubov

The material being examined was collected and delivered to Moscow by the archaeologist N. N. Dikov and belongs to several different cemeteries from the region of Chukotka. In general the collection consists of isolated teeth and individual fragments of jaws with teeth. The small number, the fragmentary nature of the material, and, in several cases, the poor preservation do not permit us to conduct any full odontological analysis. However, we considered it expedient to use the material, even with minimal possibilities, in order to extend our idea about the odontological type of the population in Chukotka, taking into account the rarity and value of any material that applies to this interesting region and the more so to its early population. Obtaining new anthropological data from any territory contributes to a more complete recreation of the picture of historical events connected with its settlement and the formation of the peoples living there now and who lived there in the past. Though the material, as we have already said, is in this case inadequate and difficult to study, we nevertheless believe that even those general and approximate judgements that it permits making can be of some interest to archaeologists and historians, as, in general, for persons interested in the origin of the peoples of northeastern Siberia.

The description of the collection can be accomplished more easily by evaluating separately each of the cemeteries from which the material originates.

*Ust'-Belaia cemetery:* One lower jaw of an older individual, five fragments of lower jaws with teeth, isolated teeth from upper and lower jaws of different individuals.

The lower jaw is massive and the torus mandibularis almost absent (value of 1). On both sides all the molars were preserved, and on the right side are two premolars. Both premolars reveal a high level of differentiation (R and R have Type 5, that is, a three-mounded form).

The first right molar (Type Y5) is large, with pronounced distal crest of the trigonid, and a strongly pronounced enamel pocket (value of 6). The second right lower molar is Type +5. The enamel increment is also strongly pronounced (value of 6). The distal crest is absent. The third lower right molar is Type +6<sup>a</sup> with expansion of the hypoconulid becoming marked. The pocket of enamel has a value of 6. All of the molars are rather heavily worn, so that some features (for example, the angular fold of the metaconid) cannot be seen. The first and second left molars basically repeat the morphological type of their right antimeres. Asymmetry is expressed only by the wisdom teeth: the left one reveals a larger degree of expansion of the hypoconid (Type Y5A).

In the five mentioned fragments of lower jaws there are in most cases molars. Two premolars of very large dimensions in one of the fragments differ by a rather low level of differentiation. In this same fragment there are two first molars, one of which is damaged, and the second differs by the following indices: very large dimensions, Y6 pattern, thick distal crest of the trigonid, angular fold of the metaconid, inter-root pocket of the enamel (value of 6), and developed protostylid (value of 4). On all of the fragments, the torus mandibularis is weakly pronounced. Likewise everywhere crowding is absent.

The isolated third lower right molar has a pattern type of +4<sup>a</sup>. The distal crest of the trigonid and the angular fold of the metaconid protostylid are absent. The inter-root pocket has a value of 4.

Two first upper isolated molars (evidently from the same individual) are heavily worn, signs of the crown are undetermined, and the inter-root pocket is absent.

Two second upper molars (from different individuals) have Types of crown 4- and 3+, reduction of metacones 2 and 3, enamel pockets 6 and 6, and Carabelli's tubercle absent.

Two third upper molars (from one individual), have patterns of the crowns 4- and 4-, reduction of the metacones 3 and 3, the foldedness moderate, and Carabelli's tubercle absent.

Three canines are from different individuals. The small upper right canine has a little differentiated lingual cusp and bent root. The right lower canine has rather strongly developed edge crests on the lingual surface (a tendency toward a "shovel-shaped" form). The thick upper left canine has a massive crown and long root, and also some tendency toward being shovel-shaped.

*Sed' moi Prichal cemetery:* These teeth probably belonged to an elderly man: upper canine, second upper premolar, first and second upper molars, peg-shaped third upper molar. All of the teeth are heavily worn. On the molars it is possible to determine only the relative dimensions of the cusps (on M<sup>1</sup> the metacone is larger than the hypocone) and the degree of reduction of the metacone (on M<sup>1</sup>—M<sup>2</sup> values 1 and 1). The canine and premolar have small dimensions.

These teeth evidently belonged to a young woman: lower canine, upper and lower premolars, lower molars. The lower canine is too small, and is weakly differentiated. The upper premolars are small, the roots are fused, and vestibular cusps of the crown strongly surpass in dimensions the lingual (an occurrence typical for series from the Ekven and Uelen cemeteries). The lower premolars are small, but P<sub>2</sub> differs, however, by a high level of differentiation (Type 5). The lower molars are of small dimensions, M<sub>1</sub> is Type Y5, stripped of distal crest, angular fold of the metaconid and protostylid and the pocket of enamel is value of 5(6). M<sub>3</sub> is Type +4<sup>a</sup>, stripped of distal crest, angular fold of the metaconid, and additional cusps. The foldedness is moderate.

On a fragment of the lower jaw of an individual of middle age the row of teeth is even, crowding is absent, no hypodonty is present, and extensive retro-molar space is noted.

The teeth are rather heavily worn, and the majority of traits are not visible. The pattern types of the molar roots are Y5 and +5<sup>a</sup>, protostylid is absent, and the pockets of enamel are values 4 and 6.

In a fragment of an upper jaw of a young individual (approximately 12 years) the premolars (in sockets) have Type I by correlation with the cusps of the crown (type characteristic for Ekven and Uelen cemeteries). M<sup>1</sup> is of medium dimensions, metacone larger than the hypocone, reduction of the metacone, and value 2. The pocket of the enamel is 4.

A fragment of upper jaw had two premolars and two molars preserved. The teeth were heavily worn. The type of crown M<sup>2</sup> is 3+, and the pockets' enamel are 3 and 7 ("grain" of the enamel).

The lower jaw of a child (7 years) had all deciduous molars preserved. The teeth are not large and are weakly differentiated. On the second deciduous molars the distal crest of the trigonid is noted. Crowding in the jaw is absent.

A fragment of a lower jaw of a young individual (14 to 16 years) and has the right  $M_1$  and  $M_2$ , as well as a rudiment of  $M_3$ .  $M_1$  is Type Y5, and has sharply pronounced distal crest of the trigonid. Protostylid and other additional cusps are absent, and  $M_2$  is Type +4<sup>a</sup> (+5<sup>a</sup>). The distal crest of the trigonid, protostylid, and additional cusps are absent. The foldedness is not great. The pocket of the enamel is 5.

A fragment of a lower jaw of an elderly individual has only the left  $M_2$ , which is heavily worn, preserved. The pocket of the enamel is 4. Additional root is on the level of the hypoconid.

A fragment of an upper jaw of an old individual has teeth that are very heavily worn. Only the Type 3 crown of  $M^3$  and a strongly developed pocket of the enamel on  $M^1$  (value is 6) can be noted.

A fragment of a lower jaw of an elderly individual has  $M_1$  and  $M_2$  of Types Y5 and +5.  $M_2$  is larger than  $M_1$ . The teeth are large. The protostylid and other additional cusps are absent. The remaining traits on the teeth are difficult to see. The torus mandibularis is absent.

Some isolated teeth were found.

A left lower  $M_1$ , Type V5, with additional cusps absent, sharply pronounced distal crest of the trigonid (the pocket of the enamel is 4), an additional root from the entoconid, and the general dimensions large. Left upper second milk molar is Type 4, Carabelli's tubercle is absent, and the pocket of the enamel is 4. Crowns of the right and left molars ( $M_1$ ) of a child (5 years) have large dimensions, the type of crown of both teeth is V5, the distal crest is absent, and on right tooth the angular fold of the metaconid is exceptionally sharply pronounced (on the left it is more weakly emphasized). The pocket of the enamel is 3, and foldedness moderate.

A first upper right molar of a young individual is Type 4, has a metacone larger than the hypocone, the reduction of the metacone is 1, and the pocket of the enamel is 5.

The teeth of an elderly individual (two heavily worn lower molars) have pockets of the enamel of 4 and 6.

A second lower right molar is Type +5, with the distal crest of the trigonid absent, an angular fold, and additional cusps. The pocket of the enamel is 5.

A third lower left molar is Type +5, and the distal crest of the trigonid and the angular fold are absent. There is a strongly developed protostylid (value of 4), equipped with its own, not fully separated root. The pocket of the enamel is 5.

A third upper left molar is Type 3, its metacone is reduced (3), the pocket of the enamel is a value of 5, and the dimensions are small.

A second upper right premolar is a small, weakly differentiated tooth with broken roots. By the type of crown (1) it is similar to teeth characteristic of the series from Ekven and Uelen cemeteries.

*Chini cemetery:* On a left half of a lower jaw with three molars.  $M_1$  is heavily worn, and the pattern is difficult to examine.  $M_2$  is Type V4, and the pocket of enamel is 5.  $M_3$  is Type +5, and the pockets of enamel are 4. This is the largest tooth in dimension of the three. The torus mandibularis is absent.

A fragment of a lower jaw with right premolars and a first molar has  $P_2$  of Type 5 (high level of differentiation).  $M_1$  is Type +5, the distal crest of the trigonid is absent, and there is an angular fold of the metaconid. The pocket of the enamel is 5, and additional cusps are absent.

On a fragment of a lower jaw with two premolars and two molars.  $P_1$  and  $P_2$  are Types 2 and 5.  $M_1$  is Type +5, the pocket of enamel is 4, and there are no additional cusps.  $M_2$  is Type +4<sup>a</sup>, the distal crest of the trigonid is absent, and there is an angular fold of the metaconid. The torus mandibularis on the jaw is absent.

*Kamaki cemetery*: A fragment of a skull of a young individual (age approximately 15 years) has small teeth, arranged in an even row, without crowding and diastema. The "shovel-shaped" form of the upper incisors is distinctly pronounced (values are 3 and 3). The lingual surface of the upper canine is also altered toward shovel-shaped. The upper first premolars have Type I (similar to premolars from the Ekven and Uelen cemeteries). The types of the upper molars are 4.3+ and 4.3, respectively, for the first and second molars of the right and left sides. Carabelli's tubercle on  $M^1$  has a value of 1 (scarcely noticeable roughness). The metacone on  $M^1$  is larger than the hypocone, and reduction of the metacones on  $M^1$  and  $M^2$  is estimated at a value of 1 (weak). The lower first premolar has small dimensions and a low level of differentiation (value is 2). The first lower molar (Type Y5) has a thick distal crest of the trigonid, an angular fold of the metaconid, and small protostylid (value is 2). On  $M_2$  (Type +5) the angular fold of the metaconid is sharply pronounced. The pockets of enamel are 5 and 5. The torus mandibularis is weakly pronounced (value of 1).

*Chegitun cemetery*: A fragment of an upper jaw with two molars ( $M^1$ , Type 4-;  $M^2$ , Type 3+) has reduction of the metacones on  $M^1$  and  $M^2$ , and a value of 1. The pockets of enamel are 6 and 6. Crowding is absent, and diastemas  $1^1-1^2$ . The torus mandibularis is moderately developed (2).

On an isolated  $M^3$  of Type 3, the metacone is moderately reduced (value of 2), the roots are completely joined, and the pocket of enamel is 5.

*Kliuchi cemetery*: A fragment of a jaw with two lower premolars (types of crowns are 5 and 5), has a high level of differentiation with crowding in the region of  $P_1$ . The torus mandibularis absent.

A fragment of a lower jaw has a second premolar (Type 4) and first molar (Type Y5), on which can be clearly seen the angular fold of the metaconid.

Two isolated lower molars from one individual have  $M_2$  right, of Type +5. The pocket of enamel is 6, and the root joined.

An isolated lower canine is lightly shovel-shaped.

Two isolated third lower molars are from one individual.

The  $M_3$  right is Type +5, with no additional cusps, and no distal crest of the trigonid or angular fold of the metaconid. The pocket of enamel is 3. The strongest foldedness is of the chewing surface.  $M_3$  left differs from the right antimeres only by being Type +5B and is similar to it by all other basic indices.

1. The whole series of teeth, examined according to basic odontological traits, indicates a Mongoloid racial type of population, represented by the cemeteries examined.

2. Due to an insufficiency of material it is difficult to speak of any specific Arctic complex of dental system of the group studied. However, it seems to us that it is possible to suppose that this complex was not completely defined.

3. If one compares the material obtained with the available data on Arctic groups, then the Ust'-Belaia cemetery might be close to the series from the Ekven cemetery, keeping in mind the high concentration of Mongoloid features, the tendency toward macrodontism, and the patina of archaism. However, the Ust'-Belaia cemetery is deprived of some features of the Arctic complex and in this regard is similar to some "continental" Mongoloids, for example, the Yukagir, the odontological type of which, according to the small amount of data available to us, is generally close to the "Ekven" type. Perhaps in the depth of antiquity an initial "proto-Yukagir" type existed, which was also simultaneously the "proto-Arctic" type to some degree. We possibly also see the remains of this undifferentiated type in the example of the Ust'-Belaia cemetery. Of the Arctic groups that were formed, the series from the Ekven cemetery preserved the clearest features of this type.

4. The Sed'moi Prichal cemetery, which somewhat differs from the preceding with regard to the concentration of Mongoloid features and archaism, at the same time reveals several Arctic traits. One wants to see in it special similarity with the Uelen cemetery.

5. Material from the Chegitun and Chini cemeteries is too small for any conclusions. The weakness of the concentration of the archaic traits and mixed character in the distribution of varied differentiating features are also probably close to those from the Uelen cemetery.

6. In the Kliuchi and Kamaki cemeteries it is possible to find some increased concentration of Mongoloid features that is more likely bearing the character of a "continental" than an Arctic complex.

7. The insufficiency of material, as well as the incomplete differentiation of the Arctic features noted above, does not permit the drawing of any definite parallels between the studied series and modern groups of the Arctic and northeastern Siberia.

# Appendix V: Results of Preliminary Determination of the Bone Remains of Fish from the Excavations of Archaeological Sites in Kamchatka

by E. A. Tsepkin

1. Ushki I (1), Layer I, in a pit under the sacrificial area (on the bottom), 1962. Sixty-eight fragments of various bones belonging to representatives of a species of Far Eastern salmonid *Oncorhynchus*, probably dog salmon, coho salmon, and sockeye (red) salmon: dentale (3), articulare (5), parasphenoideum (1), hyomandibulare (4), ceratohyale (2), operculum (6), vertebrae (1), small pieces of bones of the skull (46).

2. Ushki I (1), from a pit in the upper layer of Square 5-G, 1962. *Oncorhynchus* sp. (probably dog and sockeye salmon): fragments of dentale (3), articulare (1), operculum (2), ceratohyale (1): a total of 7 specimens.

3. Kultuk (5), Excavation 1, in a pit house. Ushki Layer II, 1962. *Oncorhynchus* sp. (dog or coho salmon): vertebrae—15 specimens.

4. Ushki I (1), Layer I, in a pit under the sacrificial area (on the bottom), 1962. *Oncorhynchus* sp. (probably dog, coho, and sockeye salmon): operculum (10), dentale (12), articulare (5), hyomandibulare (2), praepoperculum (2), parasphenoideum (3), vertebrae (14), pieces of bones of the skull (12): a total of 57 fragments.

5. Ushki I (1), Layer I, Square 6-C, 1962. *Oncorhynchus* sp. (dog, coho, and sockeye salmon): vertebrae—25 specimens.

6. Kozyreva (8), right bank of the Kamchatka River, surface material, 1962. *Oncorhynchus* sp. (evidently dog salmon): vertebrae—15 specimens.

7. Ushki I (1), Layer I (on top), in a pit house, 1962. *Oncorhynchus* sp. (dog salmon?): a piece of a dentale.

8. Ushki I (1), Layer I, in the pit, under large stones in the southeastern part of a pit house, 1962. *Oncorhynchus* sp. (probably dog, coho, and sockeye salmon): operculum (6), praepoperculum (3), articulare (3), parasphenoideum (2), dentale (7), cleithrum (1), vertebrae (130), pelvic bone (1), pieces of different bones of the skull (20): a total of 173 specimens.

9. Ushki I (1), Layer I, Square 5-G, fish pit, 1962. *Oncorhynchus* sp. (probably dog, coho, and sockeye salmon): operculum (9), praepoperculum (1), articulare (1), dentale (2), hyomandibulare (2), cleithrum (1), vertebrae (70), pieces of different bones of the skull (15): a total of 101 specimens.

10. Ushki I (1), in a pit in the upper layer, on the edge of Squares 3-E and 2-E, 1962. *Oncorhynchus* sp. (probably dog, coho, and sockeye salmon): operculum (36), praeoperculum (17), dentale (27), parasphenoideum (14), quadratum (1), hyomandibulare (12), epihyale (4), ceratohyale (5), articulare (17), praemaxillare (2), vertebrae (40): a total of 173 fragments.

11. Ushki I (1), Layer VI, gray-yellow loam. Upper Paleolithic, 1964. Indeterminate remains of *Pisces* sp. Very small pieces ("crumbs") of fish bones, probably salmonids.

12. Ushki IV (3), Layer VI, 1964. Dog salmon—*Oncorhynchus keta*. One specimen of a maxillare was found.

### Appendix VI: Results of Spore-Pollen Analysis, Ushki V.\*

Comp. of excavated pollens & spores	Depth in meters									
	0.04-0.1	0.18-0.23	0.25-0.3	0.35-0.42	0.51-0.57	0.6-0.67	0.7-0.75	1.07-1.11	1.23-1.26	
Pollen of woody species	246-88%	43-78%	121-65%	262-68%	233-52%	120-67.5%	270-83%	65-65%	84-52%	
Grass & shrub pollen	11-4%	4-7.5%	5-3%	12-3%	12-3%	8-4.5%	10-3%	6-6%	4-3%	
Spores	21-8%	1-14.5%	56-32%	111-29%	200-45%	50-28%	43-10%	29-29%	75-45%	
<i>Picea</i>	16-12%	4-9.4%	1-0.9%	73-32.5%	34-16.6%	19-16%	5-2%	2-3%	—	
<i>Pinus</i>	41-27.5%	31-71%	24-19%	129-42.5%	17-7.2%	12-10%	24-10%	3-5%	11-13%	
<i>Betula</i>	73-48%	7-17%	55-46%	34-15%	131-54%	51-43%	103-36%	42-64%	49-59%	
<i>Alnus</i>	13-10%	—	—	26-10%	51-22%	34-28%	138-52%	18-28%	24-28%	
<i>Ulmus</i>	3-2.5%	—	41-34.1%	—	—	—	—	—	—	
<i>Tilia</i>	—	—	—	—	—	—	—	—	—	
<i>Salix</i>	—	—	—	—	—	—	—	—	—	
<i>Corylus</i>	—	—	—	—	—	4-3%	—	—	—	
Gramineae	—	—	—	—	—	—	—	—	—	
Cyperaceae	—	—	1-20%	—	2-7%	1-12.5%	—	1-16.5%	1-25%	
Onagraceae	7-6%	3-75%	—	3-25%	—	—	—	4-66.8%	—	
<i>Artemisia</i>	4-31%	—	4-80%	9-75%	7-27%	6-75%	7-70%	1-16.6%	3-75%	
Compositae	—	—	—	—	13-52%	—	—	—	—	
Chenopodiaceae	—	1-25%	—	—	4-14%	1-12%	3-30%	—	—	
Bryales	—	—	3-5.2%	2-0.9%	2-1%	3-6%	—	—	—	
Sphagnum	—	1-12.5%	—	—	5-2.5%	1-2%	—	—	—	
Polypodiaceae	21-100%	7-86.5%	53-94.8%	109-91.9%	193-96.5%	46-92%	43-100%	29-100%	75-100%	
Total	278	55	182	385	445	178	323	100	163	

## Appendix VI: (continued)

Comp. of exca- vated pollens & spores	Depth in meters											
	1.43-1.48	1.57-1.63	1.63-1.7	1.81-1.85	1.92	2.05	2.19-2.2	2.32	2.38	2.54	2.66	2.8
Pollen of woody spp.	125-63%	256-7.82%	248-82%	276-93%	248-66%	346-77%	3-20%	—	—	1	—	—
Grass & shrub pollen	18-10%	24-7.5%	14-5%	11-4%	6-2%	25-6%	1-7%	—	—	—	—	—
Spores	53-27	48-14.3%	40-13%	9-3%	118-32%	73-17%	11-73%	3	—	1	2	—
<i>Picea</i>	—	—	—	—	—	—	—	—	—	—	—	—
<i>Pinus</i>	10-8%	2-0.8%	—	—	—	—	—	—	—	—	—	—
<i>Betula</i>	73-58.4%	161-63%	215-87%	112-40.5%	54-22%	77-22%	2-66.5%	—	—	1	—	—
<i>Alnus</i>	42-33.6%	93-36.2%	33-13%	140-51%	182-73%	221-65%	1-33.5%	—	—	—	—	—
<i>Ulmus</i>	—	—	—	—	—	—	—	—	—	—	—	—
<i>Tilia</i>	—	—	—	—	—	—	—	—	—	—	—	—
<i>Salix</i>	—	—	—	24-8.5%	12-5%	48-13%	—	—	—	—	—	—
<i>Corilus</i>	—	—	—	—	—	—	—	—	—	—	—	—
Gramineae	4-11%	7-29.5%	1-7%	1-0.9%	5-83%	19-76%	—	—	—	—	—	—
Cyperaceae	12-88%	16-66%	4-28%	24-59.1%	—	3-12%	—	—	—	—	—	—
Onagraceae	1-5.5%	—	—	—	—	—	—	—	—	—	—	—
<i>Artemisia</i>	1-5.5%	—	—	—	—	1-4%	—	—	—	—	—	—
Compositae	—	—	9-65%	16-40%	—	2-8%	1	—	—	—	—	—
Chenopodiaceae	—	1-4.5%	—	—	1-17%	—	—	—	—	—	—	—
Bryales	52-98.1%	43-91.5%	12-30%	1-1.2%	22-19%	43-59%	—	2	—	1	—	—
Sphagnum	—	—	—	—	2-2%	—	—	—	—	—	—	—
Polyodiaceae	1-1.9%	4-8.5%	28-70%	8-98.8%	94-78%	30-41%	11-100%	1	—	—	2	—
Total	196	328	302	296	372	444	15	6	0	4	4	0

\*Determinations were conducted and table composed by G. N. Lisitsyna.



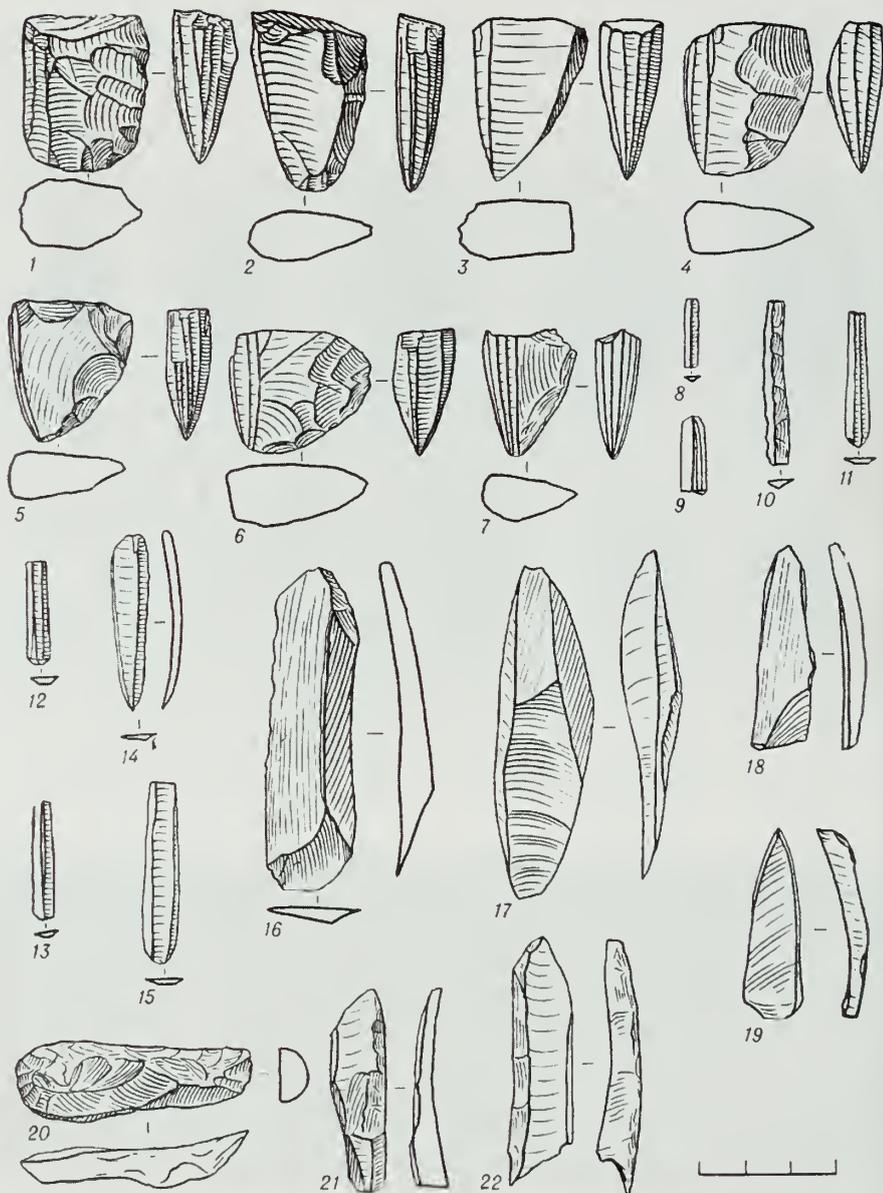
# Plates



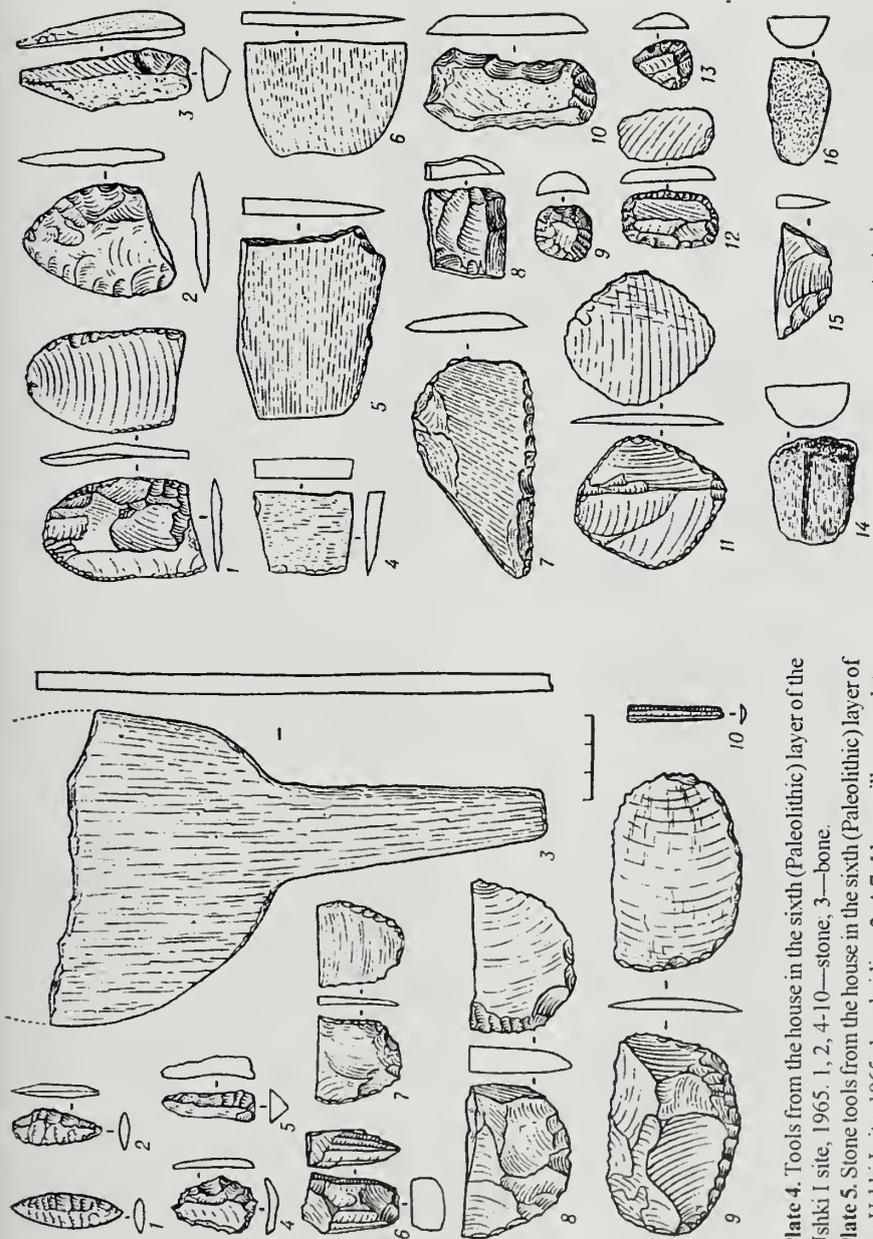
Plate 1. Stone artifacts from the seventh (Upper Paleolithic) layer of the Ushki I site (7/8 actual size). 1-5—arrow points; 6-9—pendants; 10—beads. 1, 3, 5—flint; 2, 4—basalt; 6-10—pyrophyllite.



Plate 2. Artifacts from the seventh (Upper Paleolithic) layer of the Ushki I site (3/4 actual size). 1—knife; 2-5—burin-like points. 1-4—chalcedony; 5—flint.



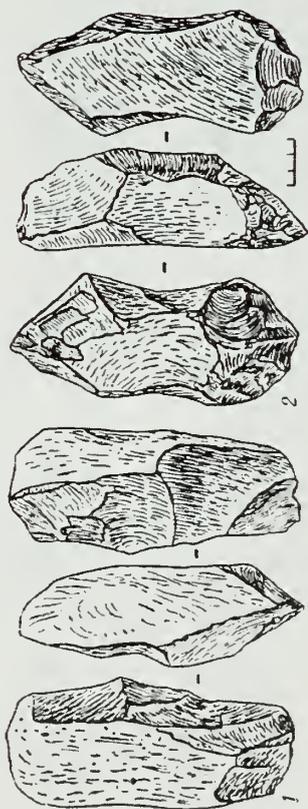
**Plate 3.** Stone inventory from the Paleolithic house in the sixth layer of the Ushki 1 site, 1995 (1-22). 2—obsidian; 15—chalcedony; 20—flint, 1, 3-14, 16-19, 21, 22—siliceous slate.



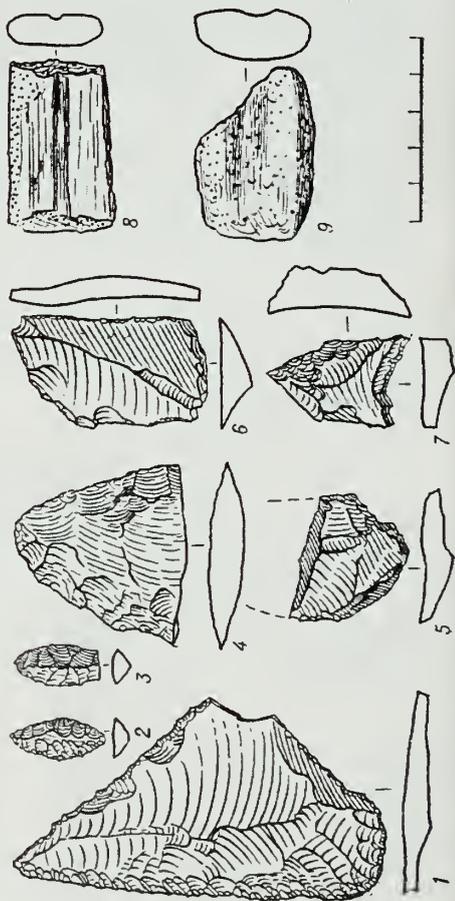
**Plate 4.** Tools from the house in the sixth (Paleolithic) layer of the Ushki I site, 1965. 1, 2, 4-10—stone, 3—bone.

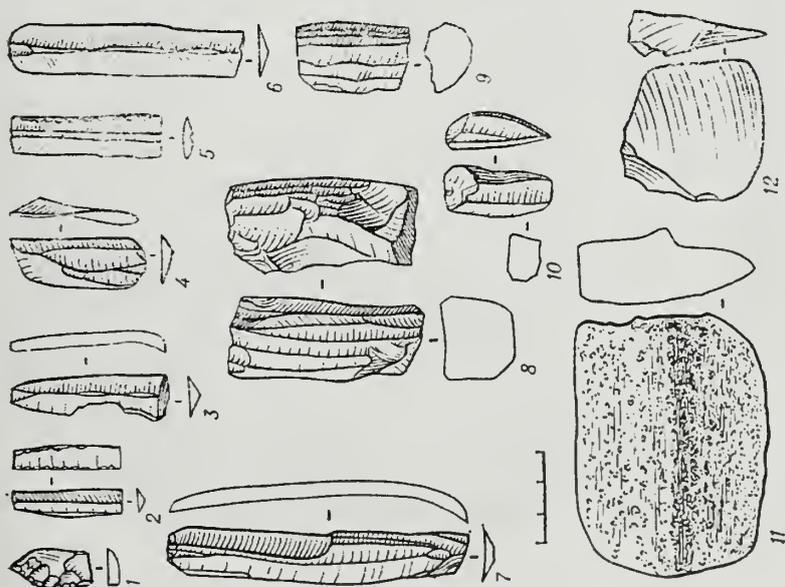
**Plate 5.** Stone tools from the house in the sixth (Paleolithic) layer of the Ushki I site, 1965. 1—obsidian; 2, 4-7, 11—argillaceous slate; 3, 8, 9, 12, 13—flint; 10, 15—siliceous slate, 14, 16—pumice.

**Plate 6.** Crude basalt striking tools, from the house in the sixth (Paleolithic) layer of the Ushki I site, 1965 (1-2).

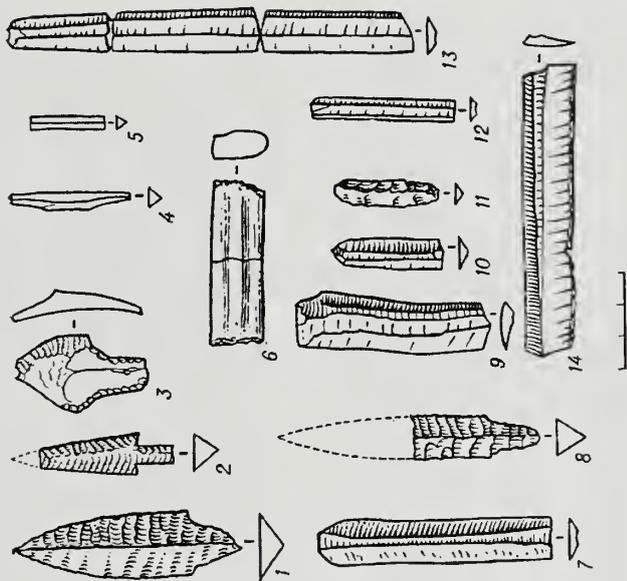


**Plate 7.** Stone tools from the fifth (final Paleolithic) layer of the Ushki I site, 1973 (1-9).





**Plate 8.** Stone artifacts from the fourth (Early Neolithic) layer of the Ushki I site, 1962. 10—obsidian; 11—sandstone.



**Plate 9.** Stone artifacts from the third (Paleolithic) layer of the Ushki I site, 1962. 1-3, 8—arrow points; 4, 5, 7, 9-14—knife-like blades. 1, 2, 7-14—obsidian; 3-5—siliceous slate; 6—sandstone.

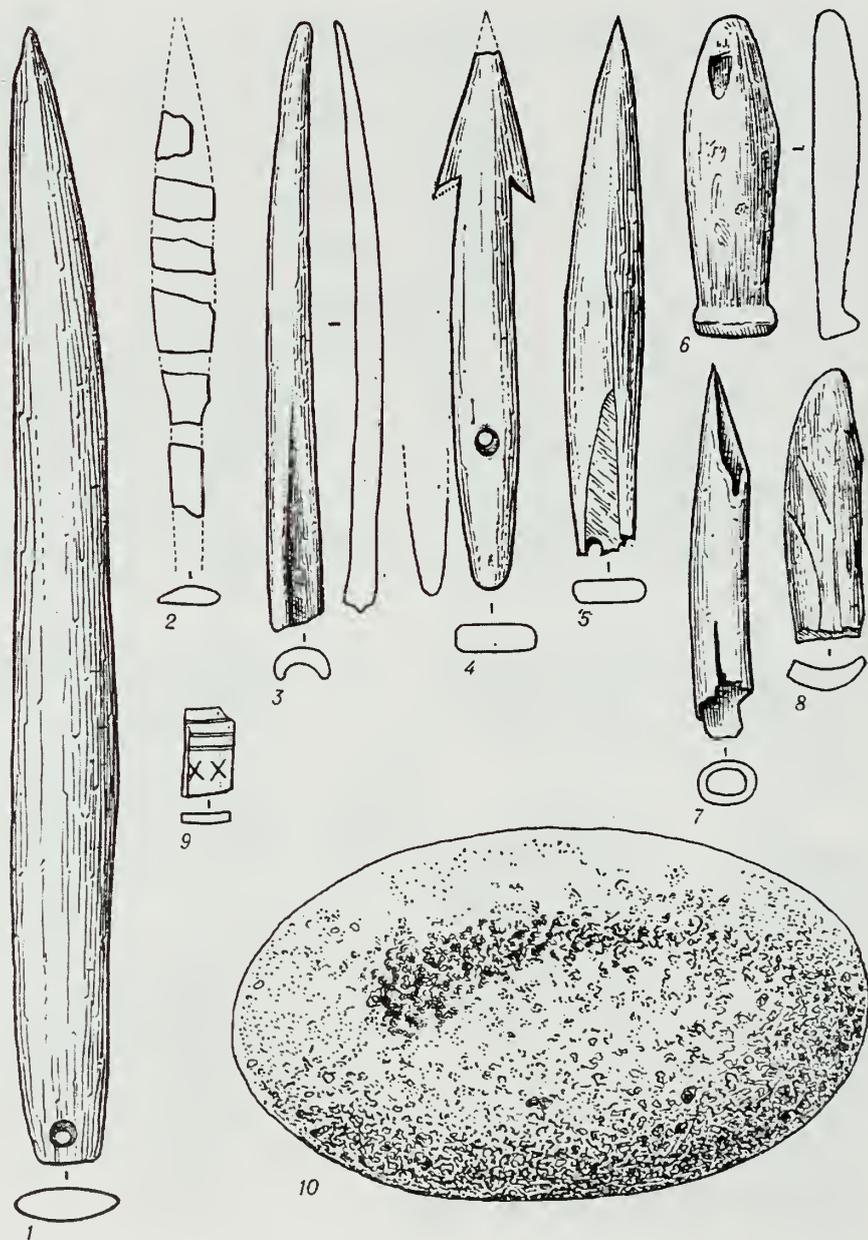


Plate 10. Artifacts from the pit house in the upper layer of the Ushki I site, 1962 (1-8). 1-9—bone; 10—stone.

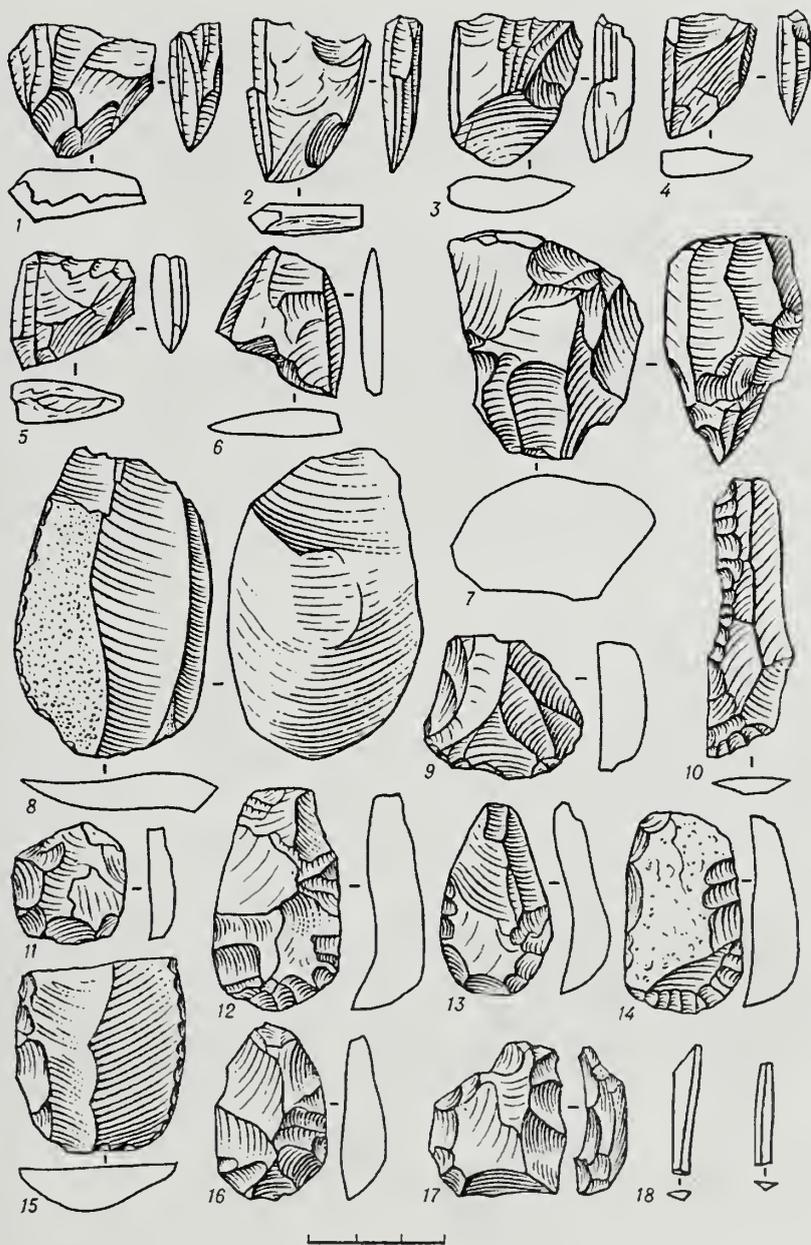


Plate 11. Stone artifacts from the fifth (final Paleolithic) layer of the Ushki II site, 1962. 1, 3-8, 2-14—flint; 2, 9-11, 15-18—siliceous slate.

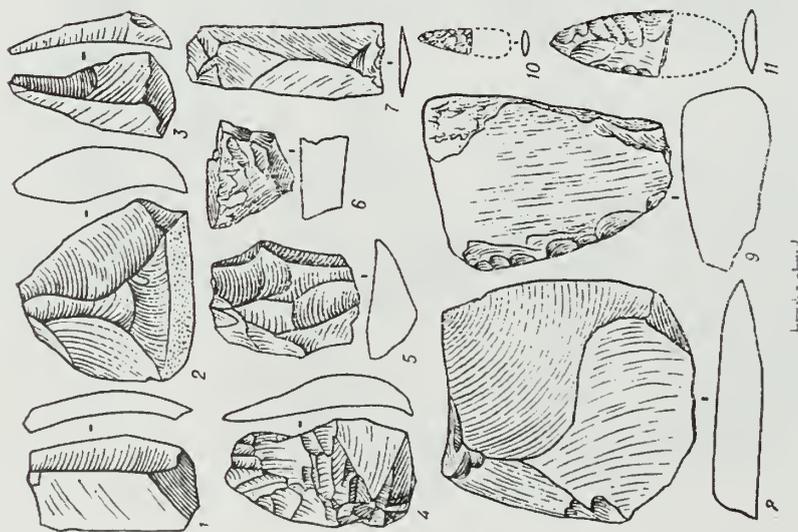


Plate 12. Stone tools from the fifth layer of the Ushki II site, 1962. 1, 4-7, 10—flint; 3—siliceous slate; 2, 8, 9—argillaceous slate.

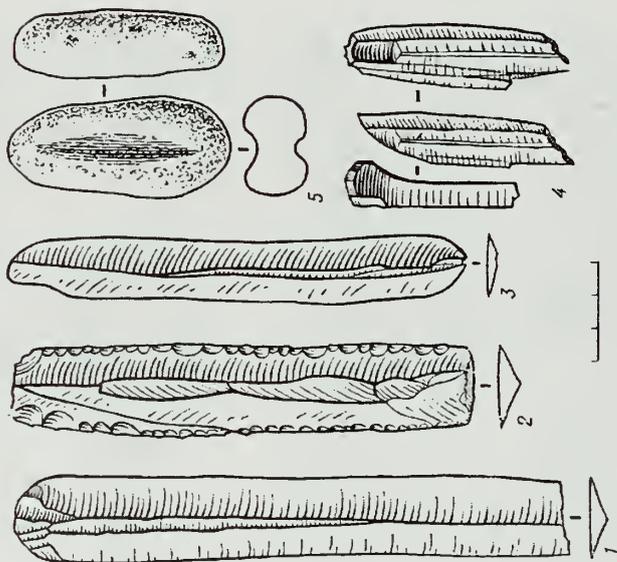


Plate 13. Stone artifacts from the fourth cultural layer of the Ushki II site, 1964. 1-4—obsidian; 5—volcanic tuff.

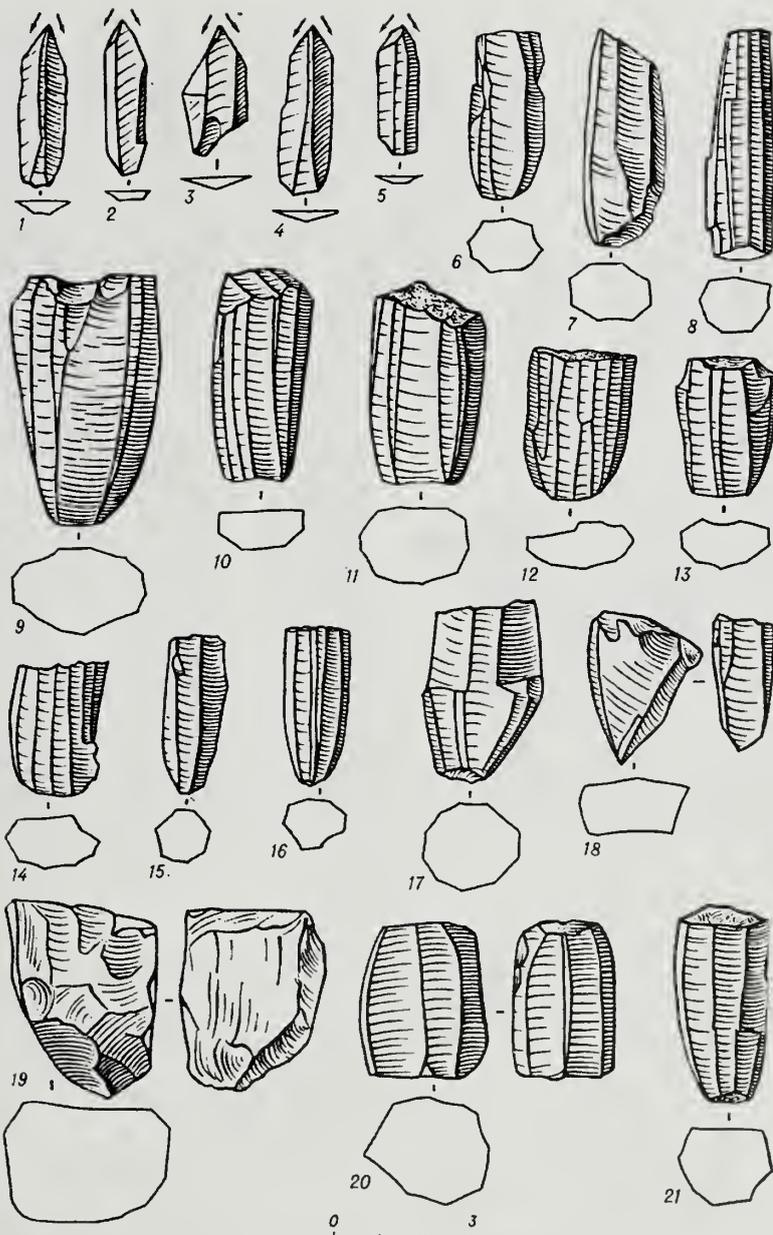
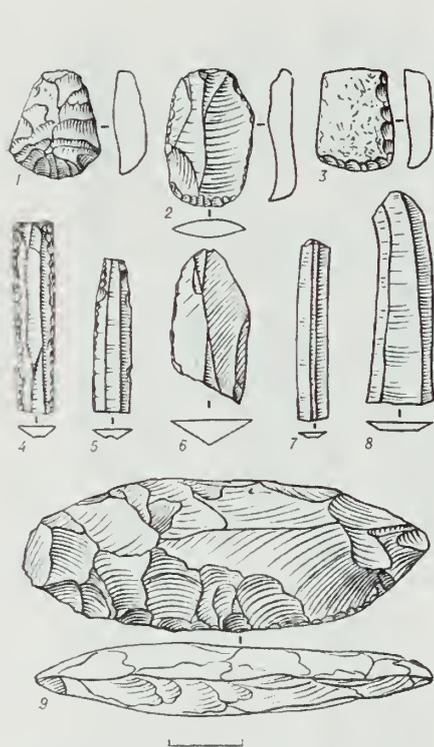
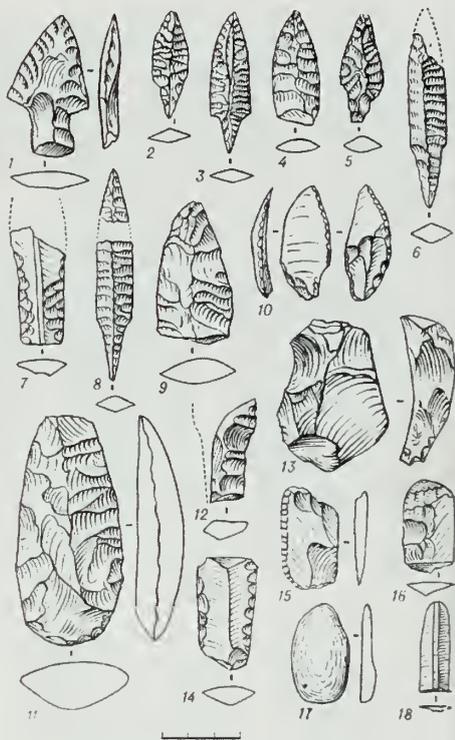


Plate 14. Stone burins and cores from the fourth layer of the Ushki II site, 1964 (1-21).



**Plate 15.** Artifacts from the fourth layer of the Ushki II site, 1964 (1-9). 1-3—stone scrapers; 4-8—knife-like blades; 9—knife.



**Plate 16.** Stone artifacts from the fourth layer of the Ushki II site, 1964. 1-8—arrow points; 9—adze/skreblo; 10—piece of a dart point; 11-16—scrapers; 17—a blank; 18—knife-like blade.

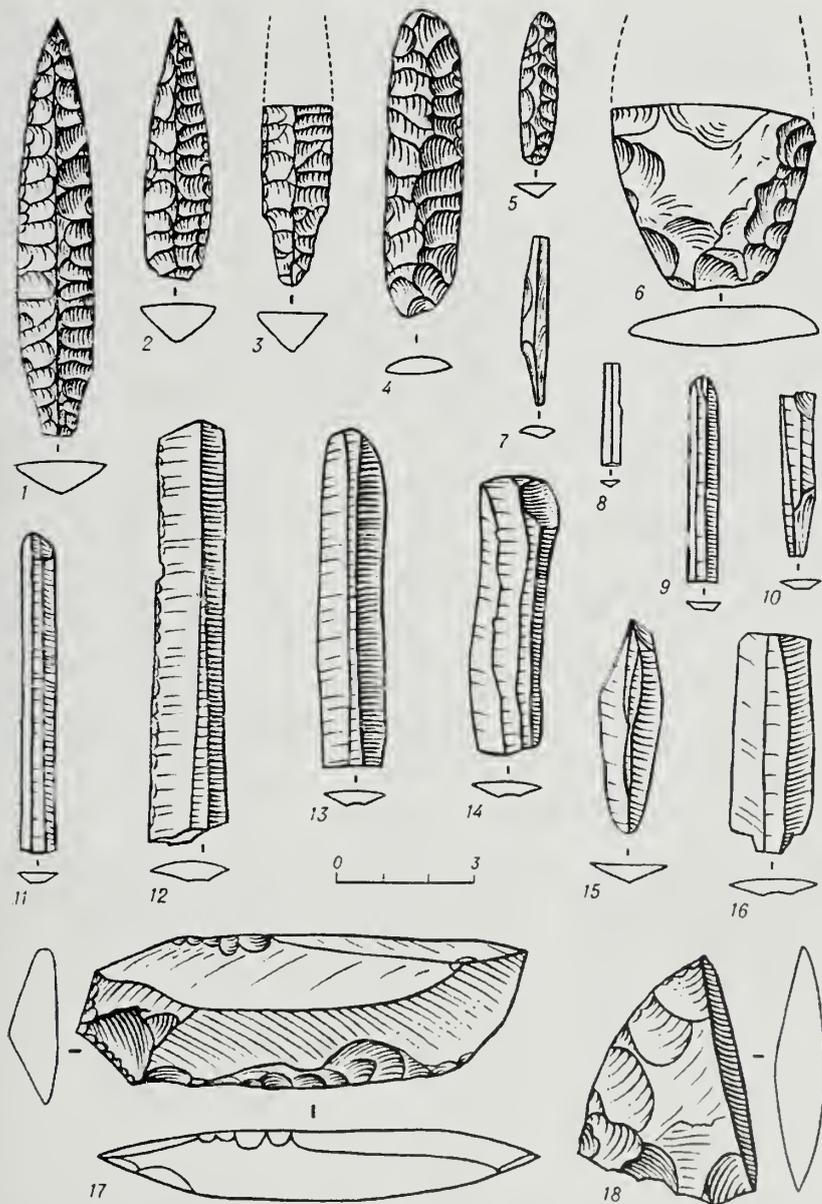
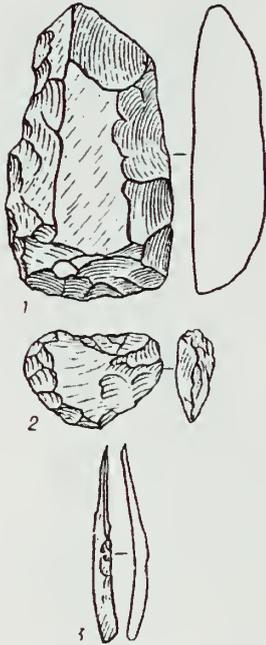
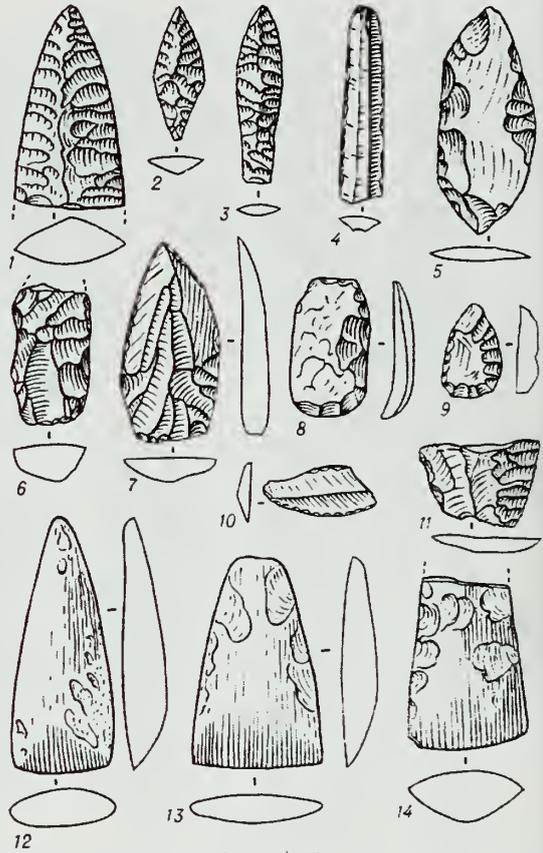


Plate 17. Stone artifacts from the third cultural layer of the Ushki II site, 1964. 1-3—arrow points; 4, 5—inset blades; 6, 17, 18—knives; 7-16—knife-like blades.



**Plate 18.** Stone artifacts from the fourth layer of the Ushki II site, 1964. 1—skreblo-like adze; 2—scraper, 3—burin-like point.



**Plate 19.** Stone tools from the second cultural layer of the Ushki II site, 1964. 1—piece of a spear point; 2, 3—arrow points; 4—knife-like blade; 5—knife; 6-11—scrapers; 12-14—adzes.

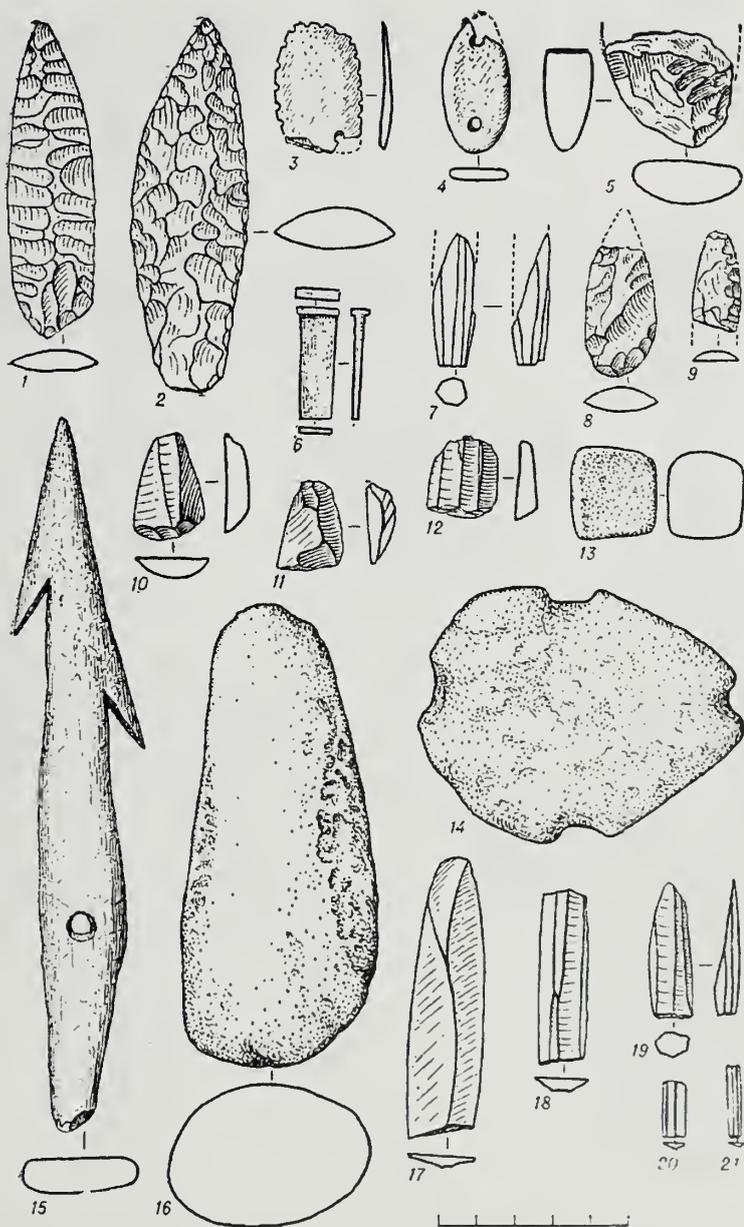


Plate 20. Artifacts from the upper layer of the Ushki II site, 1964. 1-5, 7-14, 16-21—stone; 6—copper; 15—bone.

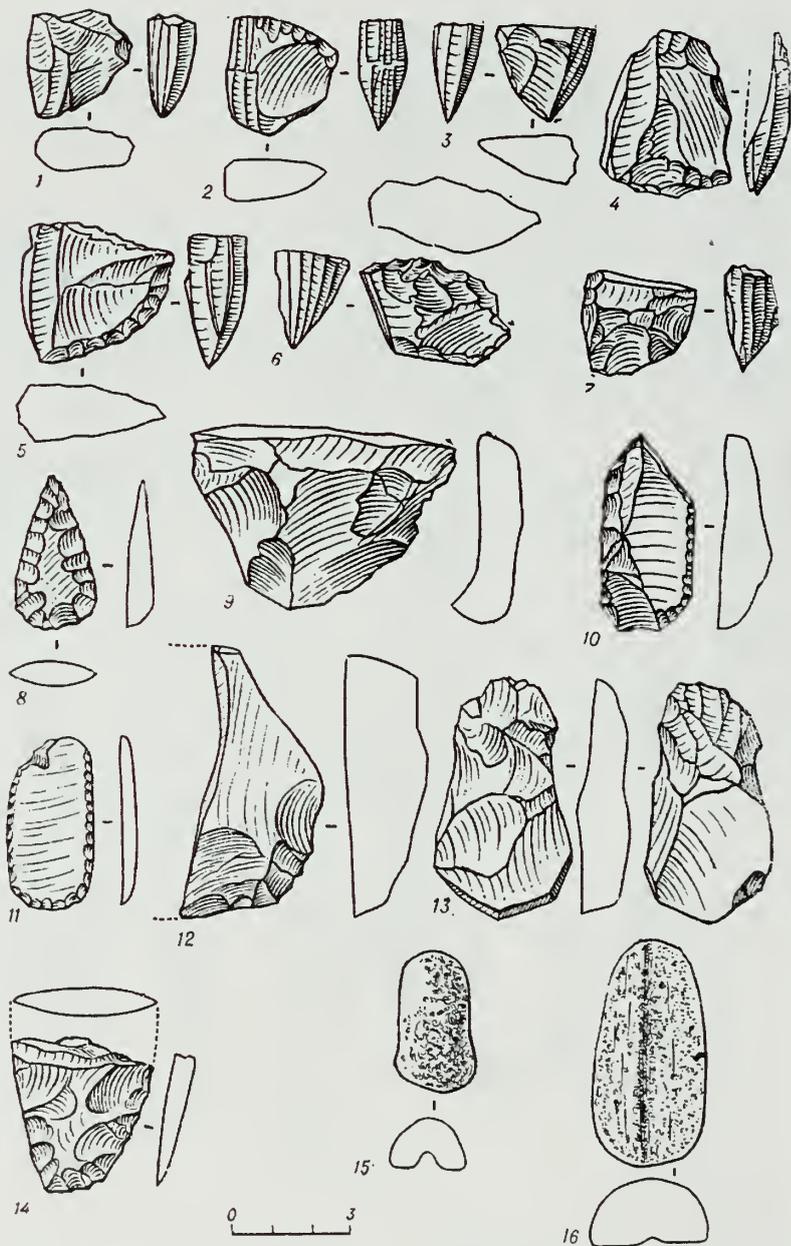
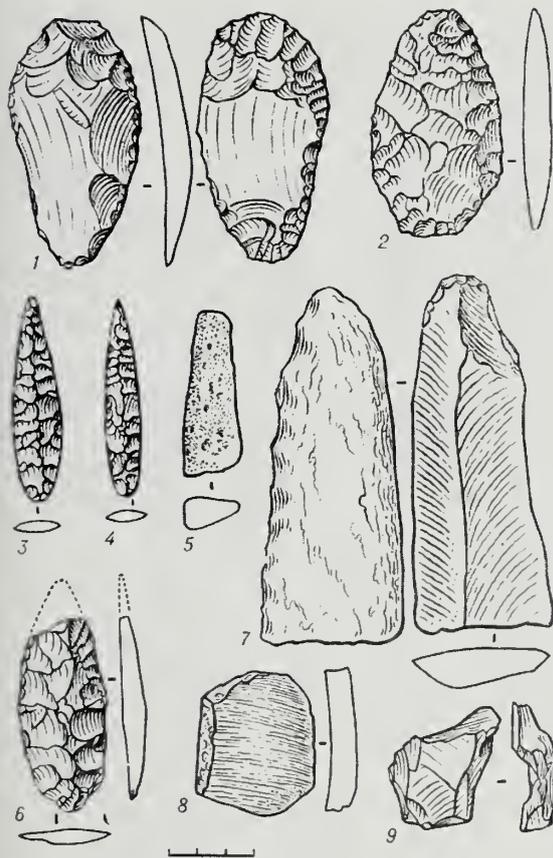
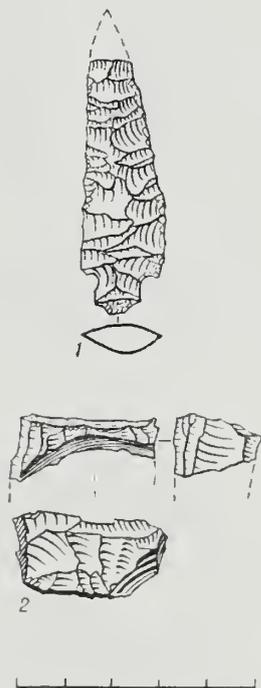


Plate 21. Stone artifacts from the sixth layer of the Ushki IV site, 1962. 1-3, 5-7—wedge-shaped cores; 4-12—scrapers; 13—knife; 15, 16—grinding stones.



**Plate 22.** Stone artifacts from the sixth (Upper Paleolithic) layer of the Ushki IV site, 1962. 1, 2—knives; 3, 4—projectile points; 5—grinding stone, 7-9—scrapers.



**Plate 23.** Stone artifacts from the seventh (Upper Paleolithic) layer of the Ushki V site, 1974. 1—chalcedony arrow point; 2—piece of an obsidian prismatic core.



Plate 24. Stone artifacts from the Neolithic house pit at Kultuk, Ushki III (5). 1-3, 13, 16, 18-20—scrapers; 4-12, 14, 17, 21—knives; 15, 22, 23—adzes; 19—grinding stone.

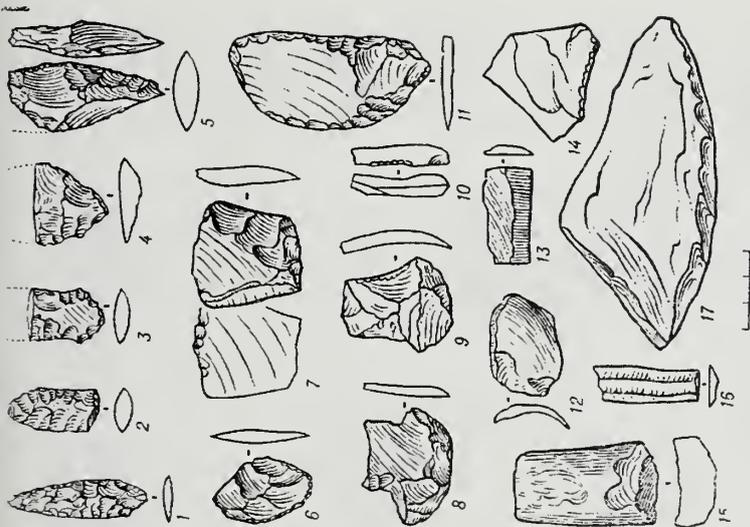


Plate 26. Stone artifacts from Pit House No. 1 on Domashnee Lake (7) 1, 4, 5—arrow points; 2, 3, 11, 17—knives; 6-9, 14—scrapers; 10, 16—knife-like blades; 12, 13—flakes; 15—spall from an adze. 1, 3, 4, 8-10, 14, 16—obsidian; 2, 7, 11, 17—siliceous slate; 6—flint; 5, 15—argillaceous slate.

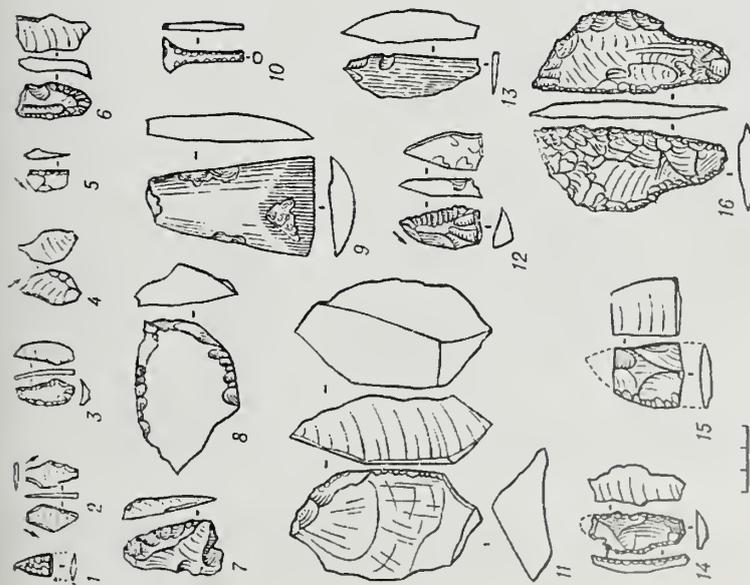
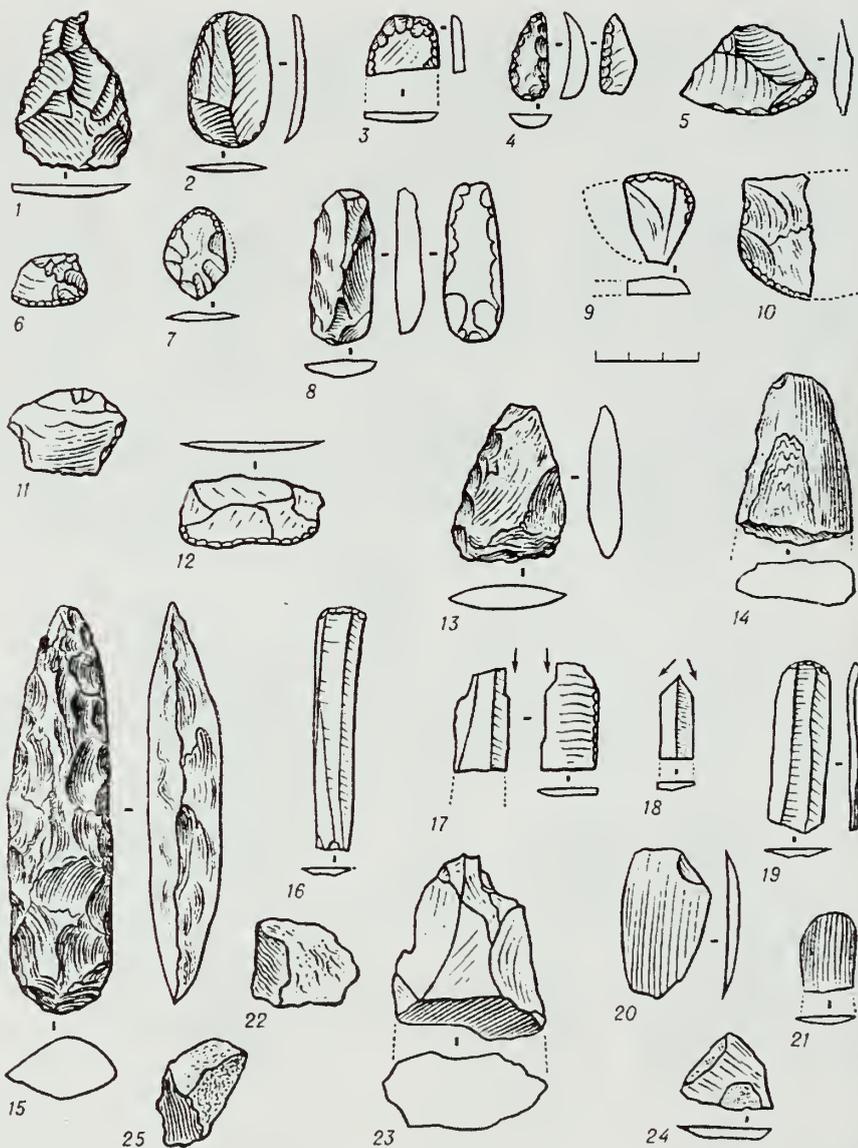
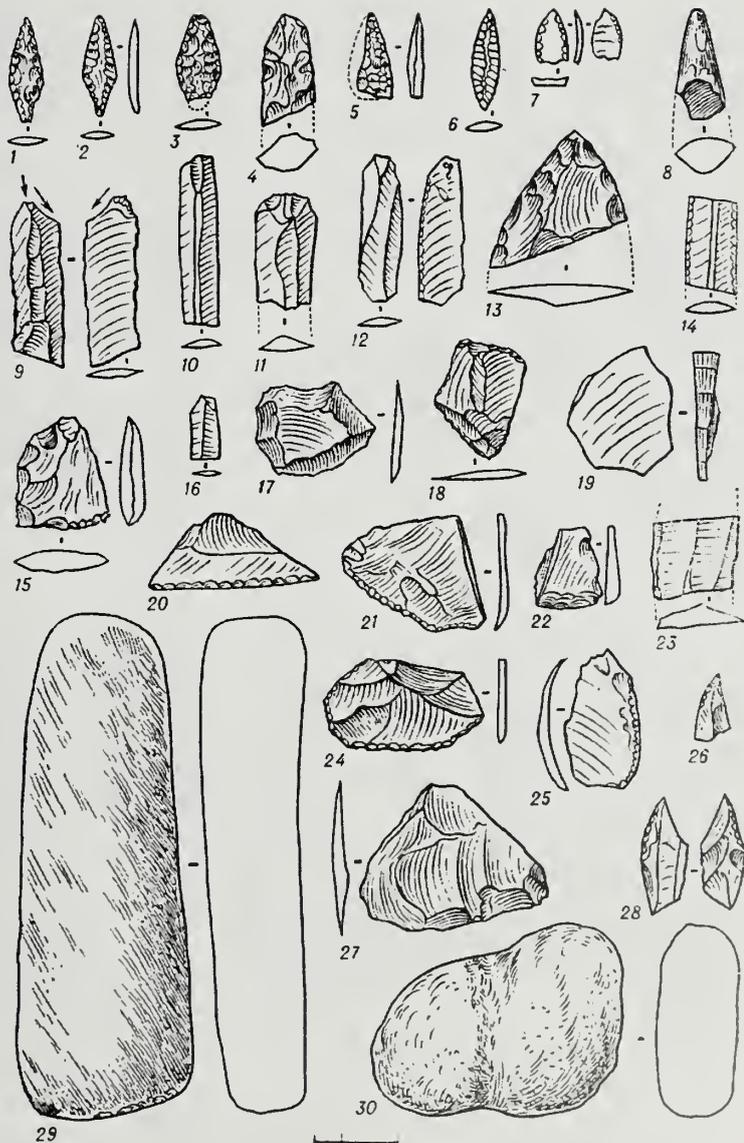


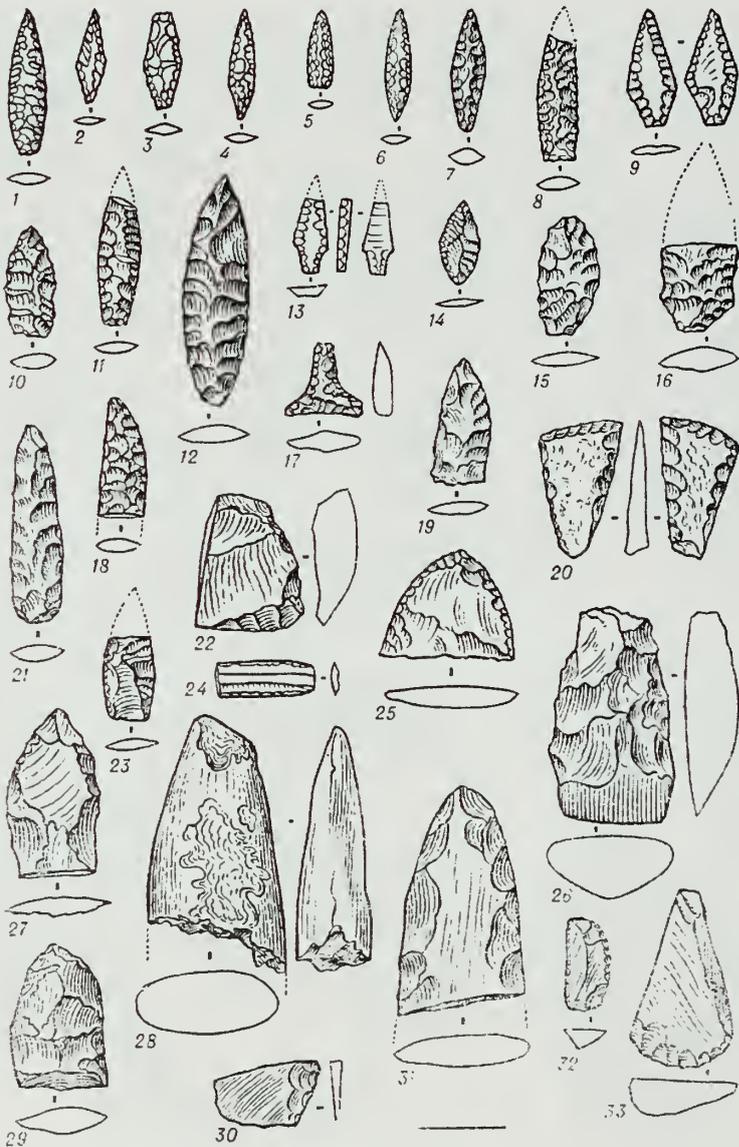
Plate 25. Stone artifacts from the Zastoichik site (6). 1—piece of a point; 2, 5, 12—burins; 9—adze; 10—labret pin; 3, 4, 6-8, 11, 13-15—scrapers; 16—knife. 1—obsidian; 2, 5, 10, 14, 16—flint; 3, 4, 6—chalcedony; 7, 8, 11—basalt; 9—argillaceous slate.



**Plate 27.** Stone artifacts from Pit House No. 2 on Domashnee Lake (7). 1, 4—combination tools; 2, 3, 5-12—scrapers; 13-15, 20-25—adzes and spalls from them; 16, 19—knife-like blades; 17, 18—burins. 1-3, 5, 6, 9-11, 16, 18, 19—obsidian, 4—flint, 7, 8, 12—siliceous slate, 13-15, 20-25—argillaceous slate.



**Plate 28.** Stone artifacts from Pit House No. 3 on Domashnee Lake (7). 1-7—arrow points; 8—adze butt, 9—burin; 10-12, 14, 16, 23—knife-like blades; 15—adze; 17, 18, 27—flakes; 19—spall from a prismatic core; 20-22, 24, 25—scrapers; 13—piece of a knife; 26, 28—punches; 29—flaker; 30—weight. 4, 13, 15, 21, 27—siliceous slate; 7—chalcedony; 8, 14—argillaceous slate; the remainder—obsidian.



**Plate 29.** Stone artifacts from the surface of the site on Domashnee Lake (7). 1-16, 19, 21, 23—points; 17—labret pin; 18, 20, 22, 27, 29—knives; 24—retouched knife-like blade; 25, 30, 32, 33—scrapers; 26, 28, 31—adze and pieces of adzes. 1-6, 9, 13-17, 23, 24, 30—obsidian; 10—flint; 20, 29, 32—chalcedony; 7, 8, 11, 12, 19, 25, 33—siliceous slate, 18, 21, 22, 27, 28, 31—argillaceous slate; 26—nephrite.

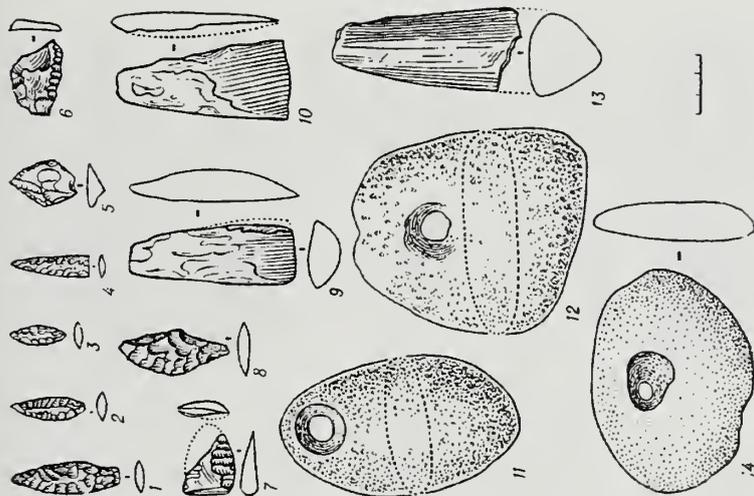


Plate 31. Stone artifacts (surface collection) from the site near the Kozyrevsk sovkhhoz (9). 1-4, 8—projectile points; 5-7—scrapers; 9, 10, 13—adzes; 11, 12, 14—weights.

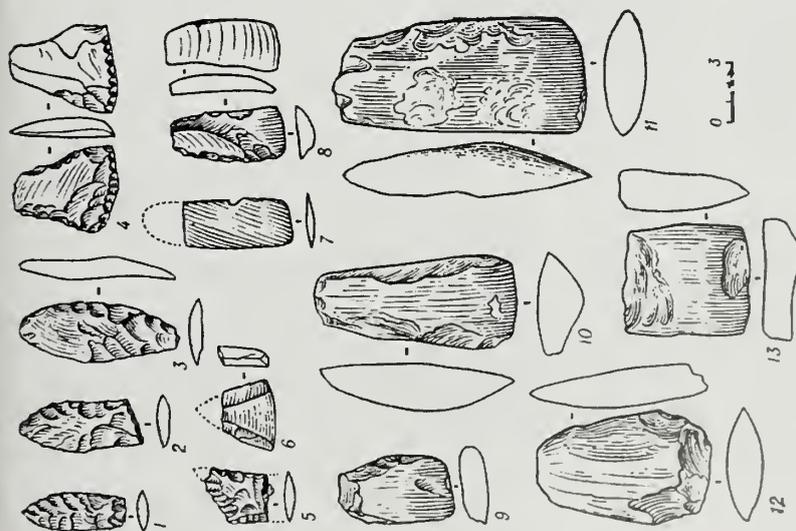


Plate 30. Stone artifacts from the right bank of the Kamchatka River at Kozyrevsk village (8). 1, 2—projectile points; 3, 5, 7—knives; 4, 6—scrapers; 8-13—adzes.

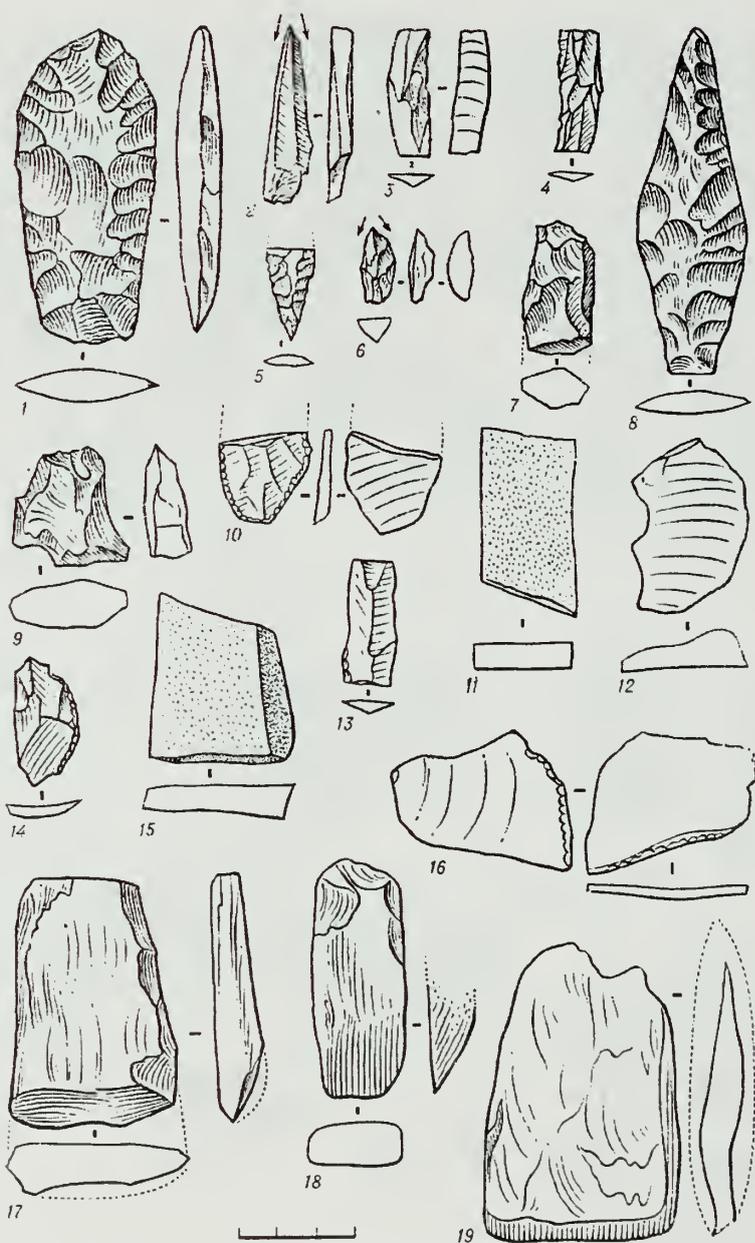
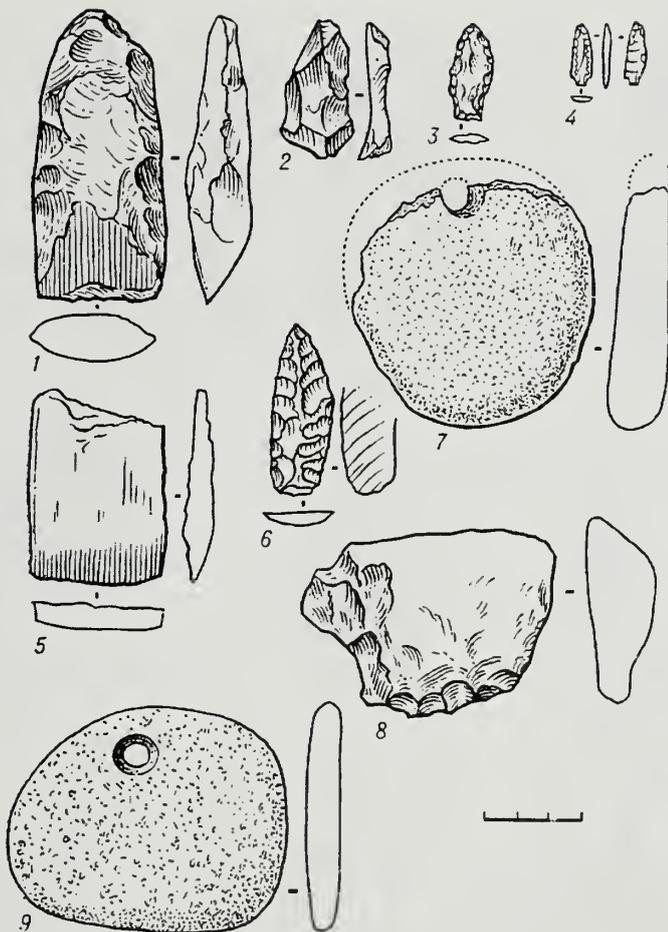
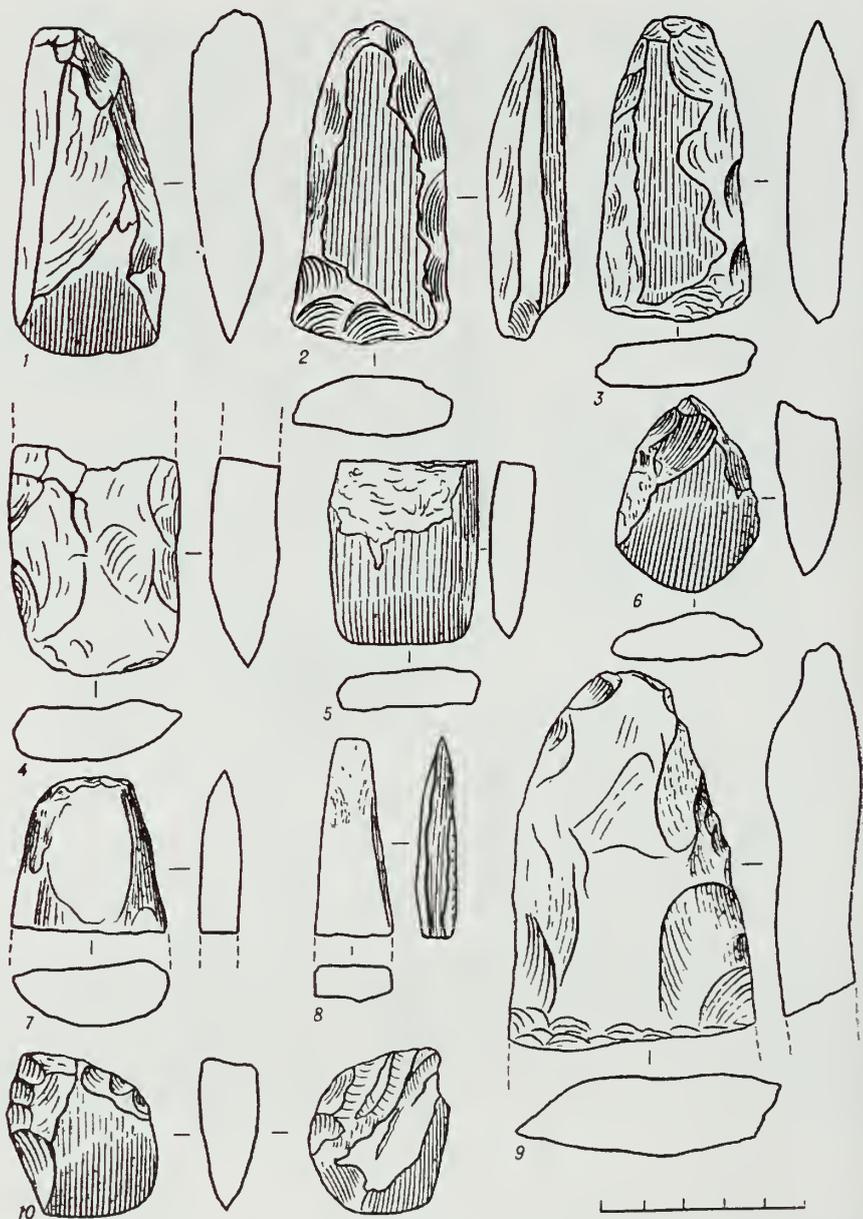


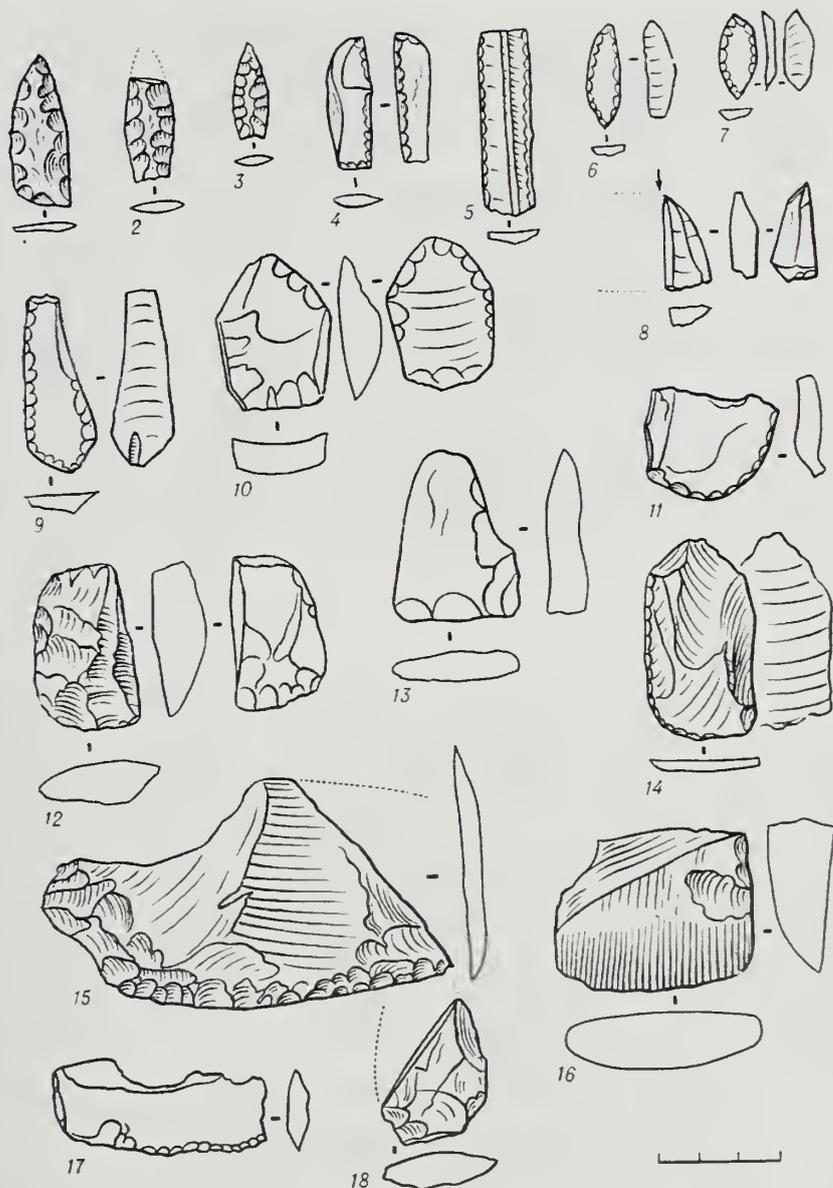
Plate 32. Stone artifacts at Doiarki (10) from under the second ash layer (11-19). 1, 5, 8—projectile points; 2, 3—burins; 17-19—adzes.



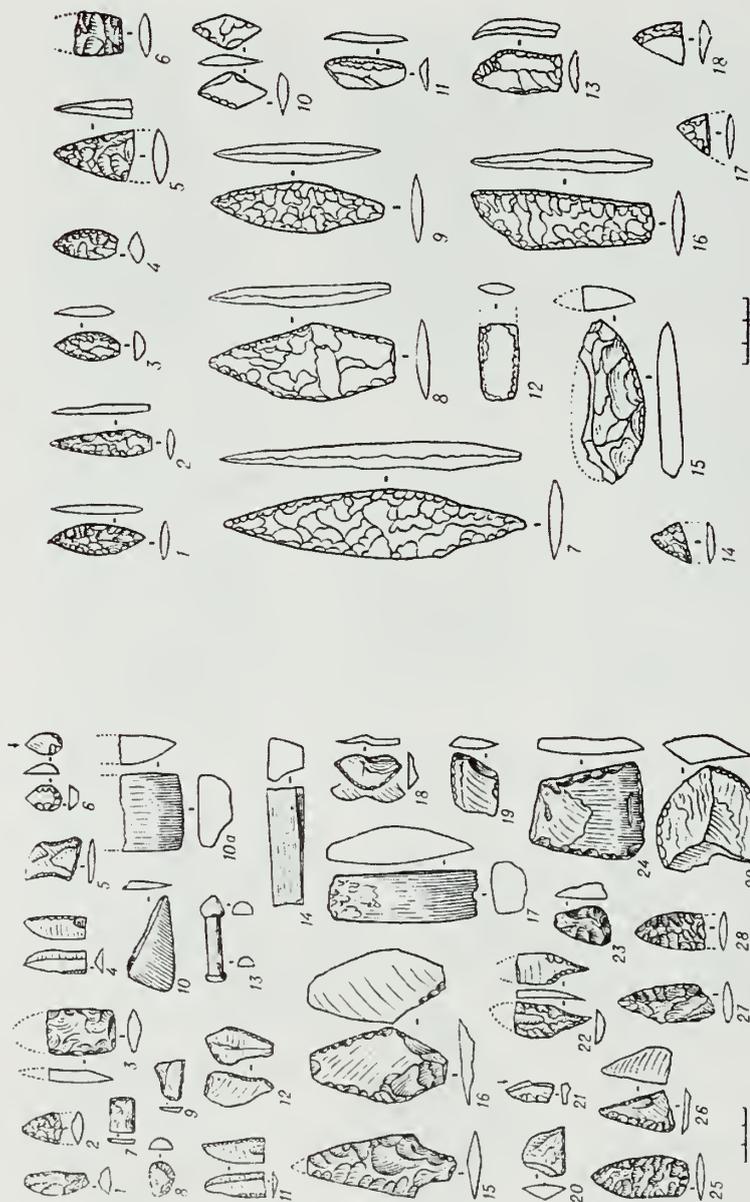
**Plate 33.** Stone artifacts from the lower Doiarki site (10). 1, 5—adze and adze spall; 2—scraper, 8—skreblo blank; 4—combination tool; 3, 6—arrow points; 7, 9—weights. 1, 5, 6—argillaceous slate; 2—flint; 3—obsidian; 4—chalcedony; 5—basalt. 1, 3, 4—found under volcanic Ash Layer IIa at a depth of 1.8 m (on the pit house floor); 6, 9—found under volcanic Ash Layer II at a depth of 1 m; 2, 5—found 30 cm above volcanic Ash Layer A at a depth of 1.7 m; 7, 8—found in the hearth above the white ash.



**Plate 34.** Stone artifacts from the site at Kliuchi village (12). 1—Staraiia Hill (surface collection); 5—Kliuchi II (between Ash Layers 3 and 4); 6—Kliuchi I, above Ash Layer I; the remainder—mouth of Kliuchi Creek (surface collection).



**Plate 35.** Stone artifacts from the site at the mouth of Kliuchi Creek (13). 1-3, 18—points and a point fragment; 4, 5—retouched blades; 6, 7, 9, 11, 12—scrapers; 14, 15, 17—knives; 8—burin; 13, 16—pieces of adzes; 10—adze. 2, 6, 11—flint; 1, 3, 4, 9, 18—siliceous slate; 5, 8, 14, 15—obsidian; 7—chalcedony; 10, 12, 13, 16, 17—argillaceous slate.



**Plate 36.** Artifacts from the sites on Kliuchi Creek (12, 13). 1-3, 15, 16, 22, 25, 28—points; 4, 10, 11, 26, 27—knives; 10a, 17, 24—adzes; 5, 7-9, 12, 19, 20, 23, 29—scrapers; 6—graver; 21—burin; 14—grinder; 18—flake; 13—fastener; 3, 4, 11, 16, 18, 28—siliceous slate; 10, 10a, 17, 19, 24, 27, 29—argillaceous slate; 14—sandstone; 15—basalt; 6, 8, 20, 23—chalcocopy; 1, 12, 13.

**Plate 37.** Stone points and knives from the site on Staraja Hill at Kliuchi (15). 4, 11—obsidian; 6, 9—siliceous slate; 14, 17, 18—chalcocopy; the remainder—argillaceous slate.

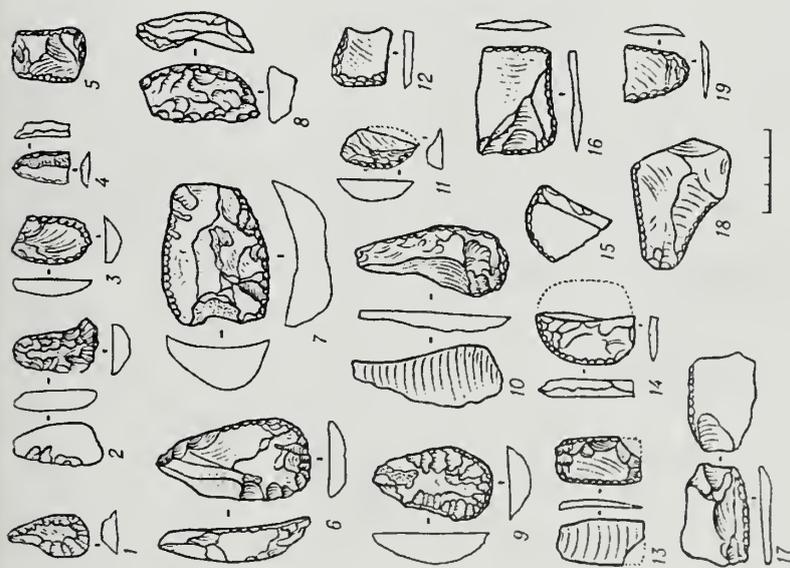


Plate 38. Stone artifacts from the site on Starara Hill at Kinuchi (15). 1, 2—scrapers/burins; 3-19—scrapers.

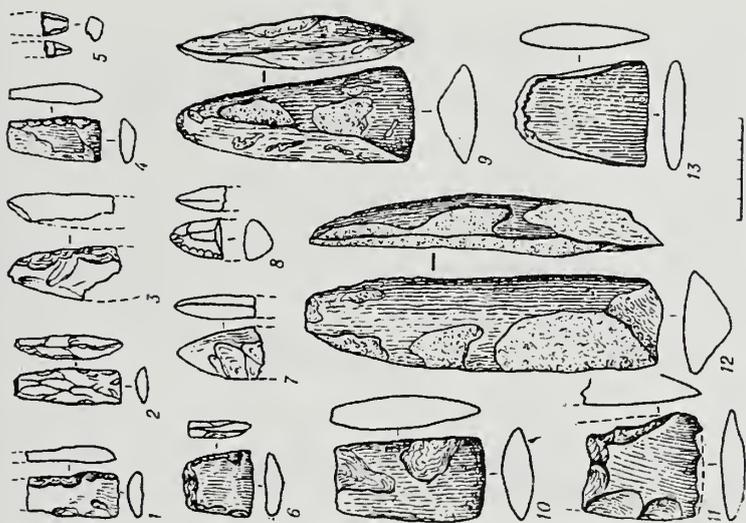
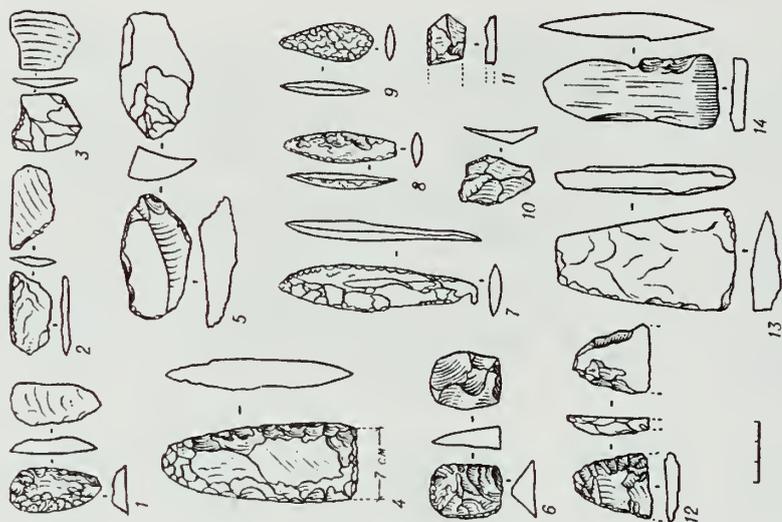
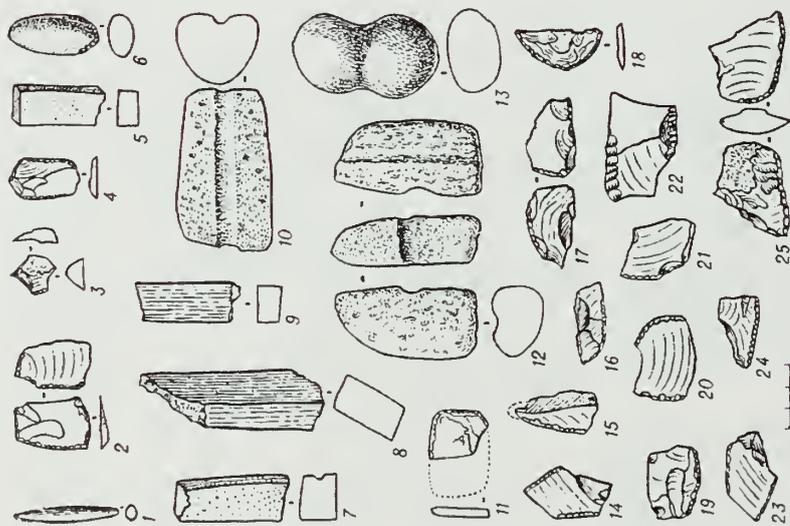


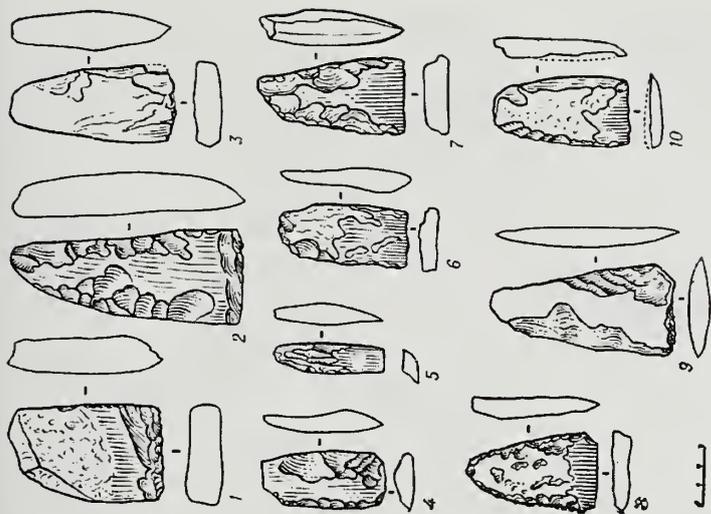
Plate 39. Stone axes, adzes, and pieces of them from the site on Starara Hill at Kinuchi (15).



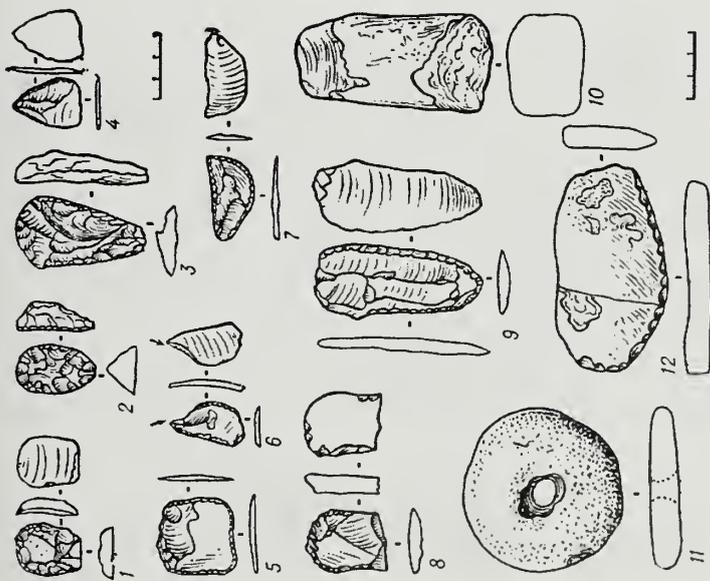
**Plate 41.** Stone artifacts from Pit Houses No. 2 and 3, Nikulka (16). 1, 6, 11—scrapers; 7-9—points; 4, 13, 14—axes; 12—knife fragment; 2, 3, 5, 10—retouched flakes. 1, 4, 13, 14—argillaceous slate; 6—flint; 11—chalcedony; the remainder—obsidian.



**Plate 40.** Stone items from the site on Starais Hill at Kluchi (15). 1—point; 2, 4, 11, 14-25—scrapers; 5, 7-10, 12—grinding stones; 6—pebble; 13—weight.



**Plate 43.** Axes and adzes of argillaceous slate, collected in Pit House No. 5, Nikulka (16).



**Plate 42.** Stone artifacts from Pit House No. 5, Nikulka (16). 1-5, 7, 8, 12—scrapers, 6—scraper/burin; 9—knife; 10—axe butt; 11—weight. 1, 2, 4, 6, 7—obsidian; 8, 11—sandstone; 5, 9, 10—argillaceous slate; 3—silticeous slate.

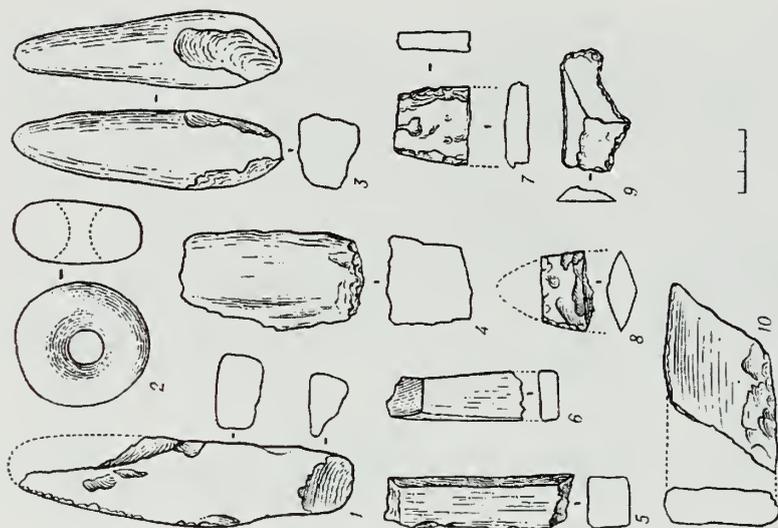


Plate 45. Stone artifacts from Pit House No. 5, Nikulka (16). 1, 10—skreblo-like tool; 2—spindle whorl; 3, 4—hammers; 5, 6—pieces of ground stone; 7—piece of an adze; 8—piece of a point; 9—retouched flake. 2—volcanic tuff; 5, 6—sandstone; 8—siliceous slate; the remainder—argillaceous slate.

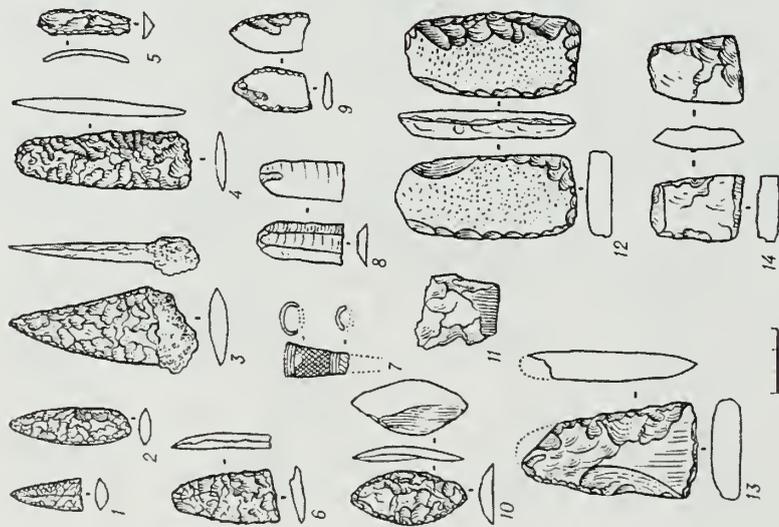
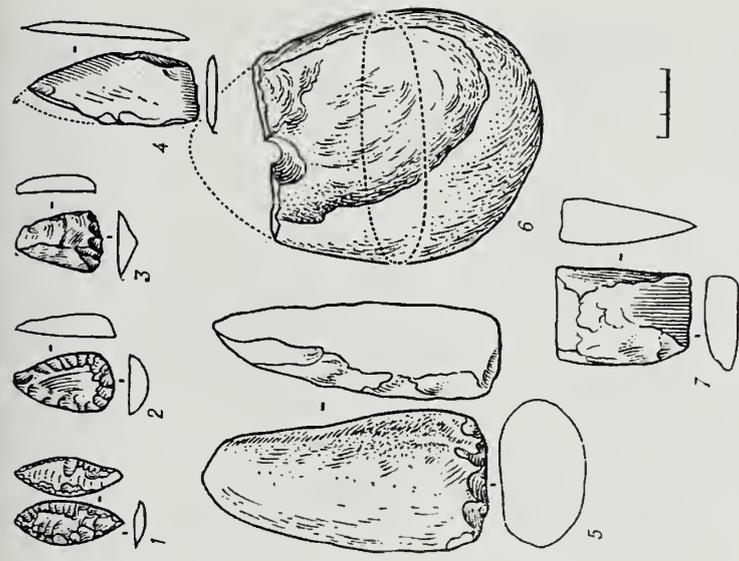
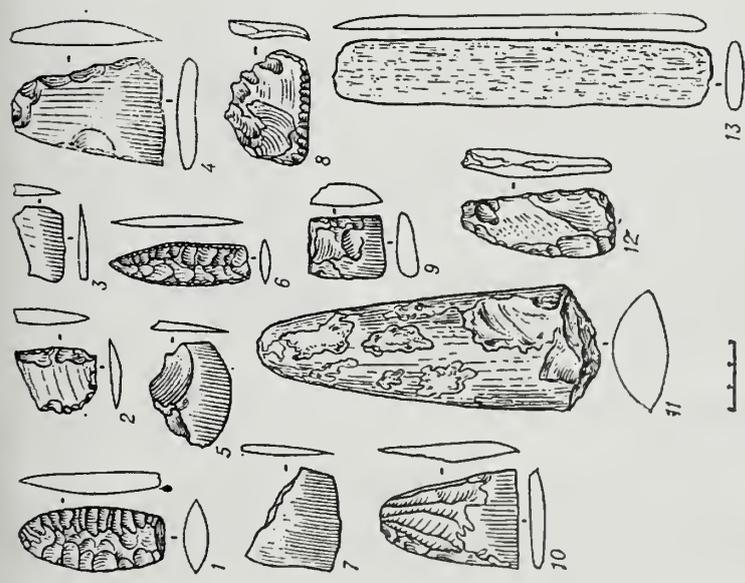


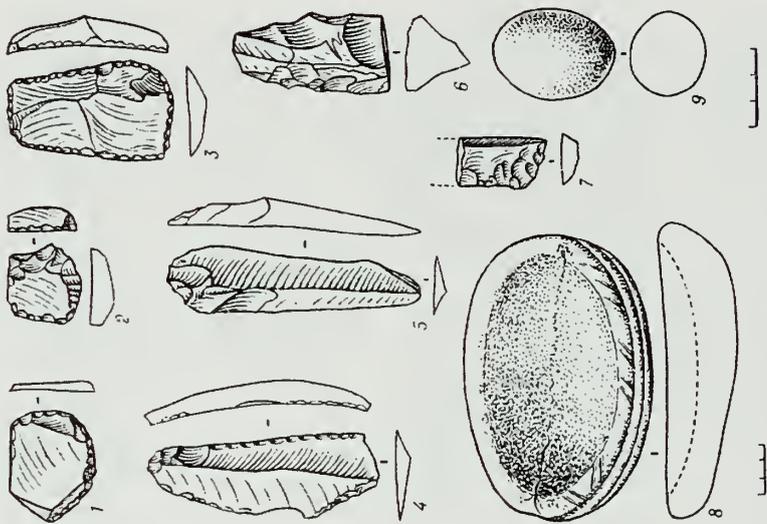
Plate 44. Artifacts from Pit House No. 5, Nikulka (16). 1, 2, 10—points; 3-6, 9—knives; 7—needle case (fragment); 8—piece of a knife-like blade; 11—axe fragment; 12, 13—axes; 14—adze. 1, 9, 11-13—argillaceous slate; 2-5, 7—volcanic tuff; 6—sandstone; 8—siliceous slate.



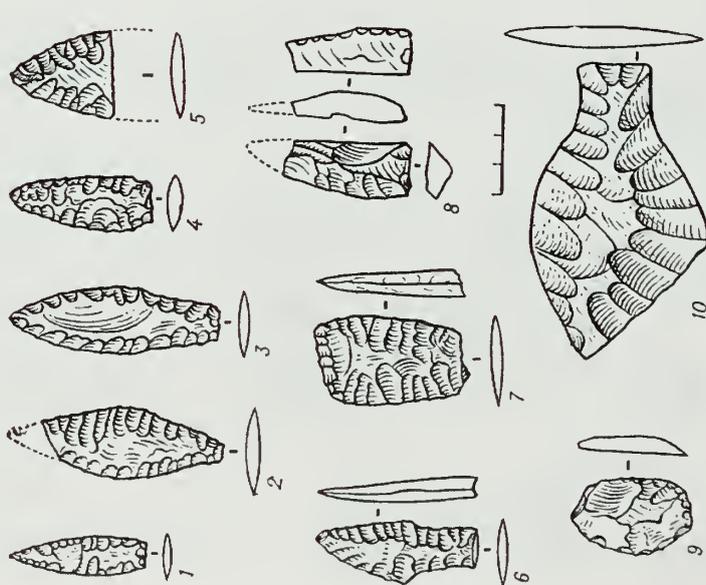
**Plate 47.** Stone artifacts from the sites on Kazach'e Lake, Kavanoki Borough, Nizhne Kamchatsk village. 1—Nizhne Kamchatsk; 2-4, 7—Kazach'e Lake; 5, 6—Kavanoki. 1—point, 2, 3—scrapers; 4—knife; 5—hammer, 6—weight; 7—adze. 2—siliceous slate; 3—basalt; 4, 5, 7—argillaceous slate.



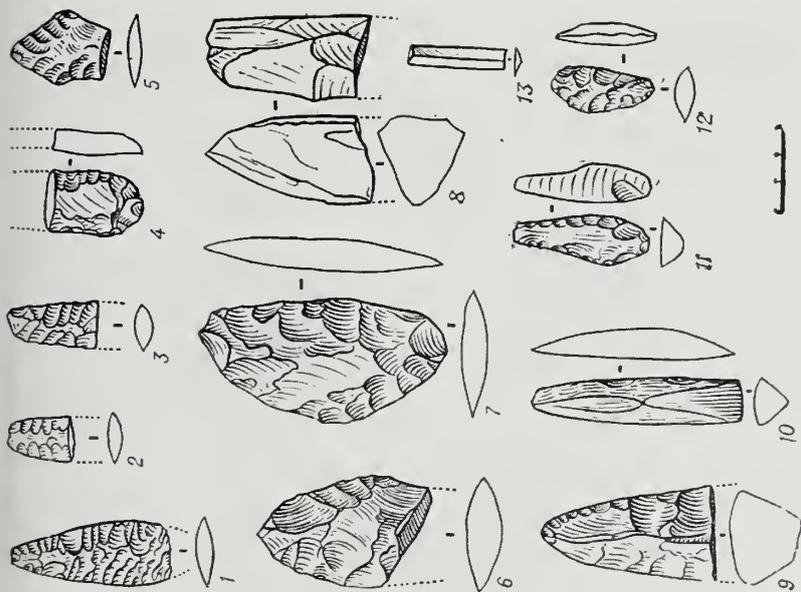
**Plate 46.** Artifacts collected on Bukrich Creek at Kamaki (17, 18). Surface material. 1, 6—points; 3—ground spall; 4, 9-12—adzes; 5, 7—knives; 2, 8—scrapers; 13—axe. 1—obsidian; 2—basalt; 6, 8—siliceous slate; 13—bone; the remainder—argillaceous slate.



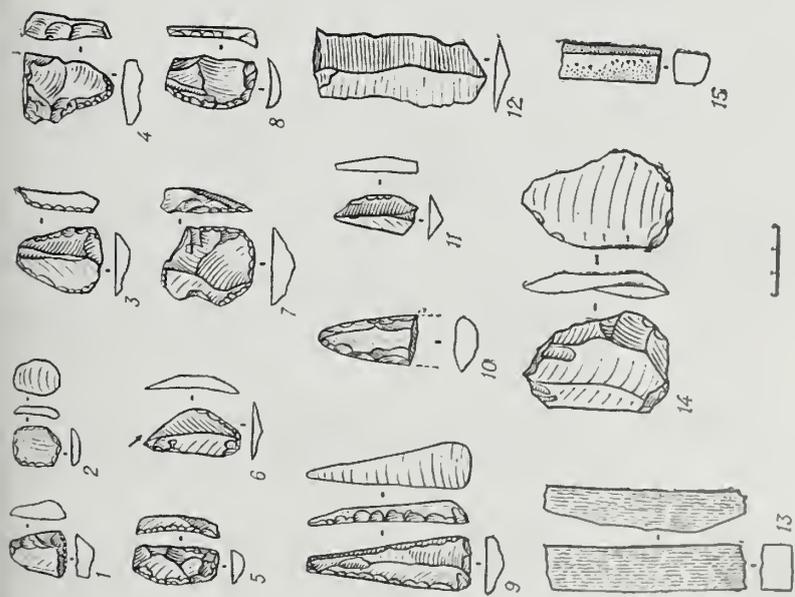
**Plate 49.** Stone artifacts from the Elizovo I site (42).  
 1-3—scrapers; 4, 7—knives; 5—blade; 6—piece of a core;  
 8—lamp; 9—pebble. 1, 2, 5, 6—argillaceous slate; 3, 4—obsidian; 7—siliceous slate.



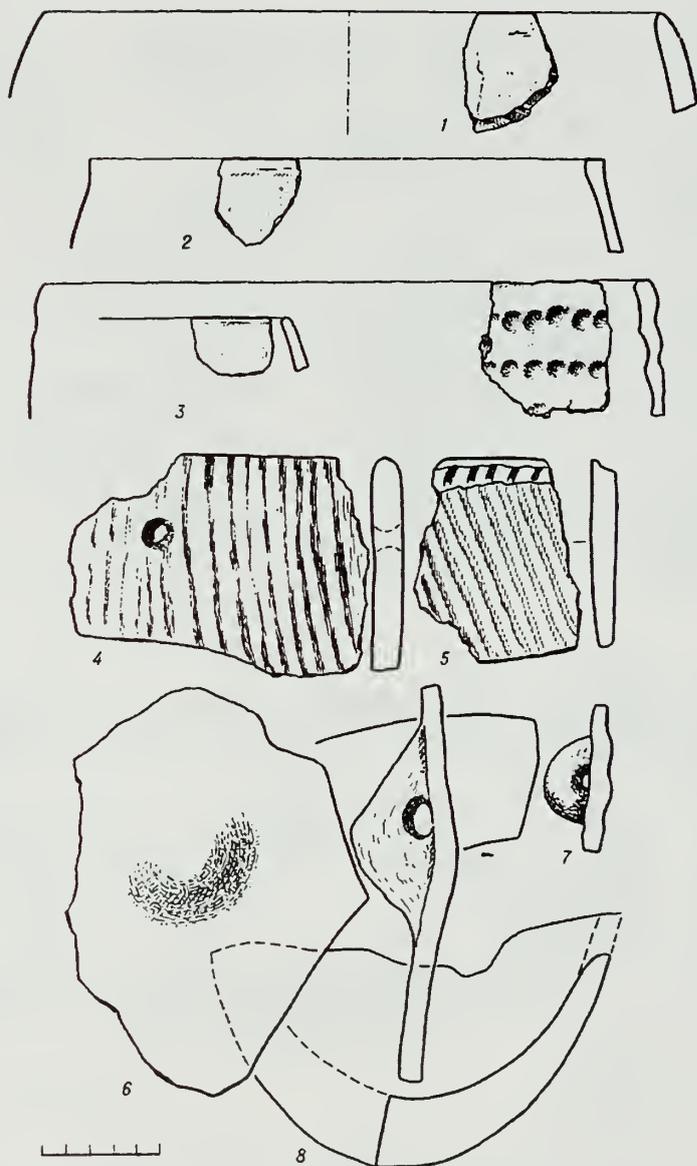
**Plate 48.** Stone artifacts from the Elizovo site (42), Excavation I.  
 1-6—points; 7, 10—knives; 8—punch; 9—scraper. 1, 2, 4—siliceous slate; 5, 6—obsidian; 3, 8—argillaceous slate; 7, 10—flint.



**Plate 51.** Stone artifacts from the Elizovo II site (42). 1-3, 6—points; 4, 5, 7—knives; 8—core-like tool; 9, 10, 12—adzes; 11—punch; 12—inset blade; 13—knife-like blade. 1, 5, 9, 10—argillaceous slate; 2, 4, 8—siliceous slate; 2, 7—chalcodony; 6, 11—obsidian; 13—flint.



**Plate 50.** Stone artifacts from the Elizovo II site (42). 1-5, 7-9—scrapers; 6—scraper/burin; 10—piece of an adze; 11—punch; 12—blade; 13, 15—ground stone; 14—flakes. 2—chalcodony; 9, 10—argillaceous slate; 13, 15—sandstone; 12, 14—flint; the remainder—obsidian.



**Plate 52.** Ceramics from southern Kamchatkan sites. 1—Elizovo II (42); 2—Kirpichnaia (44); 3—Kliuchi, Locus 3 (13), upper layer; 4-8—Nalychevo (255), repository of GIM, from the excavations of W. I. Jochelson.

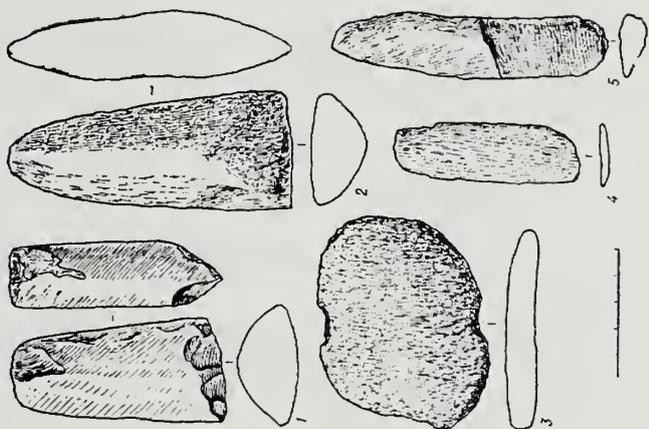


Plate 54. Stone items from the Neolithic site on the southwestern slope of Mishennaia Hill (43). 1, 2—adzes; 3—weight; 4-5—blanks.

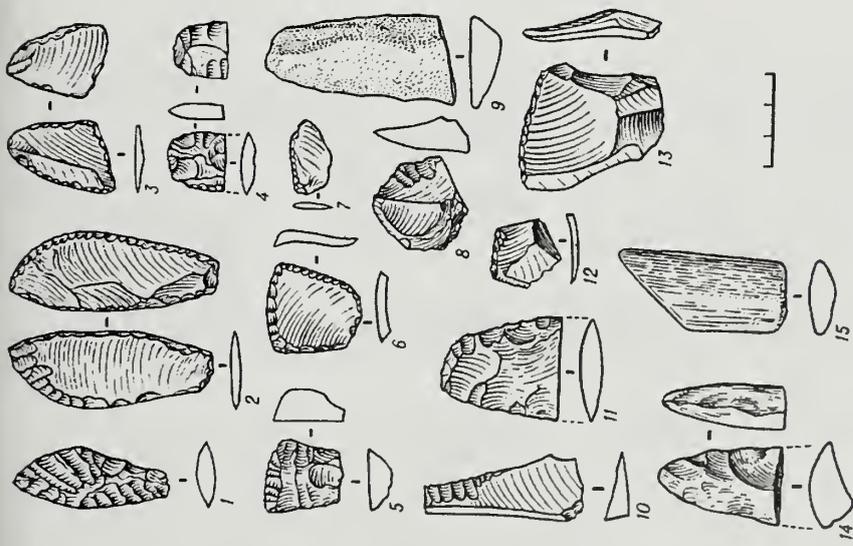


Plate 53. Stone artifacts from the site on the southern slope of Mishennaia Hill (43). 1-4, 11, 12—knives; 5-9, 13, 14—scrapers; 10, 15—pieces of adzes.

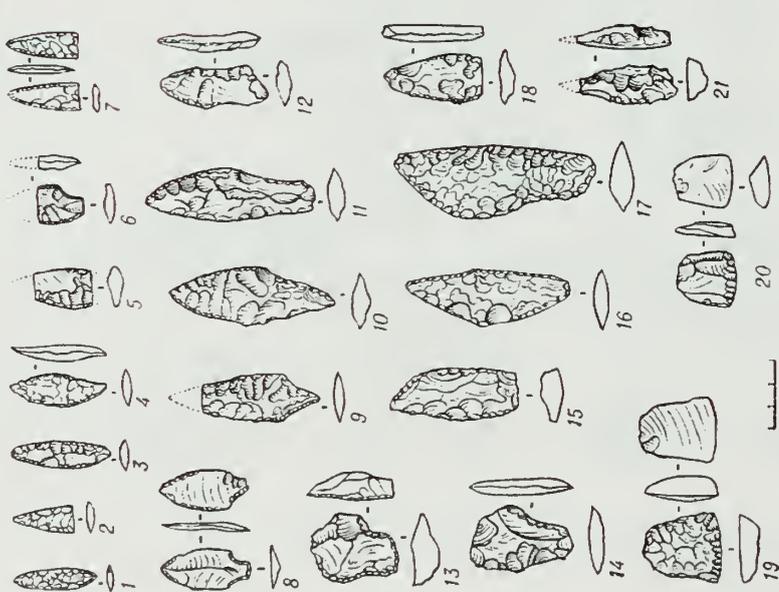


Plate 55. Stone artifacts from the Kirpichnoe site (44). 1-6, 8-10, 18—obsidian arrow points; 7—siliceous slate arrow point; 11-15—flint knives; 12—chalcedony knife; 14—obsidian knife; 16, 17—siliceous slate knives; 13, 19, 20—obsidian scrapers; 18, 21—siliceous slate knives.

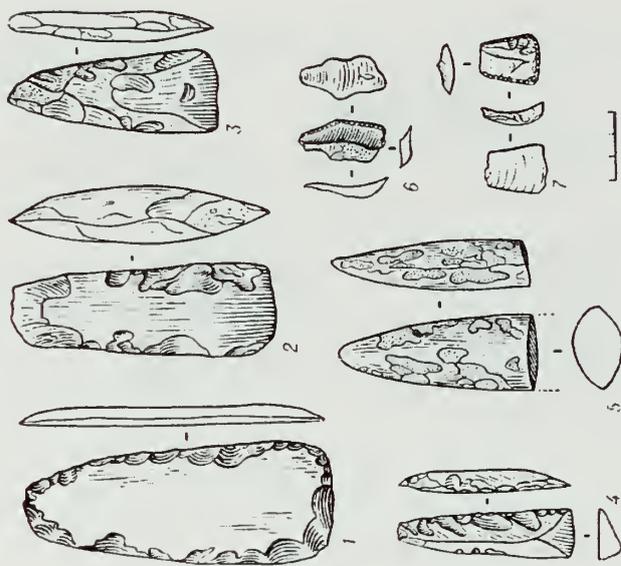


Plate 56. Stone artifacts from the Kirpichnoe site (44). 1-5—adzes and adze fragment of argillaceous slate; 6-7—obsidian scrapers.

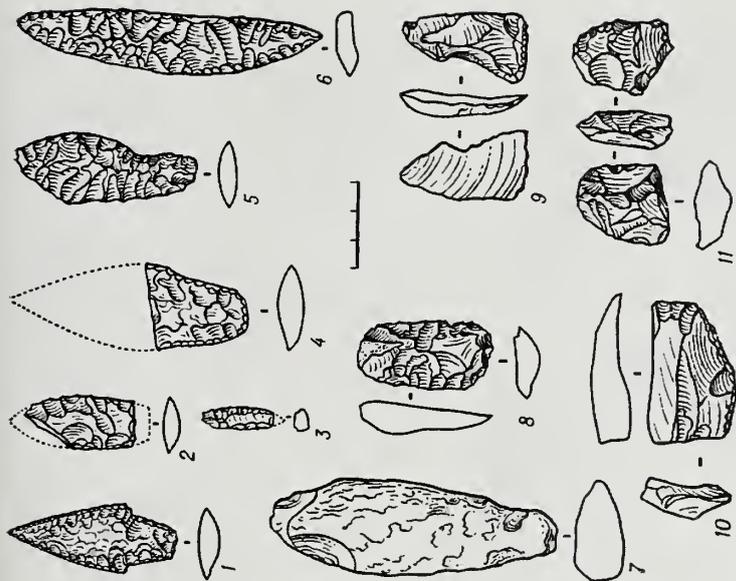


Plate 58. Kirpichnoe (44), surface material. 1-4—points; 5-7—knives; 8-11—scrappers.

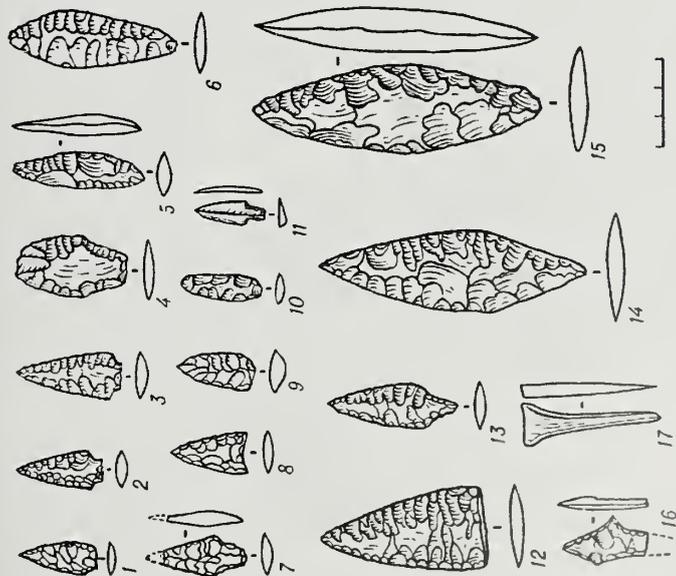


Plate 57. Stone artifacts from the Kirpichnoe site (44). 1-15—points; 16—shaped item; 17—punch.

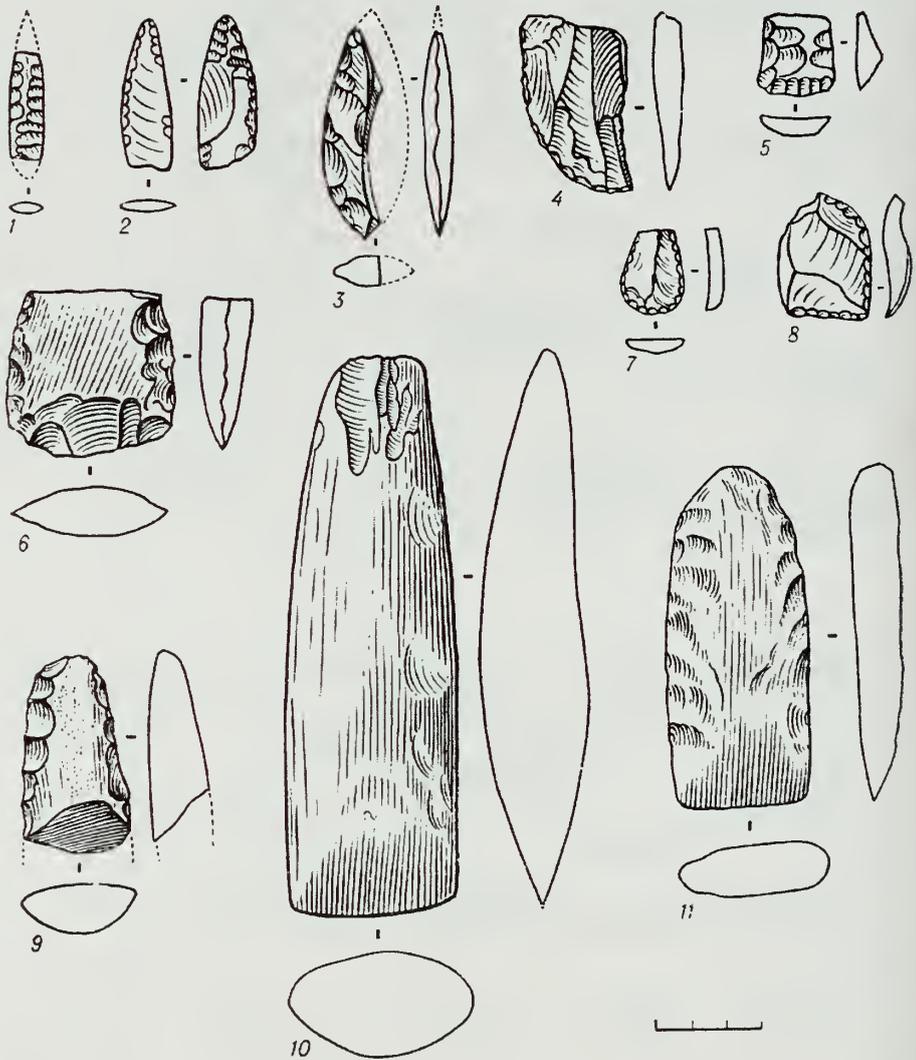
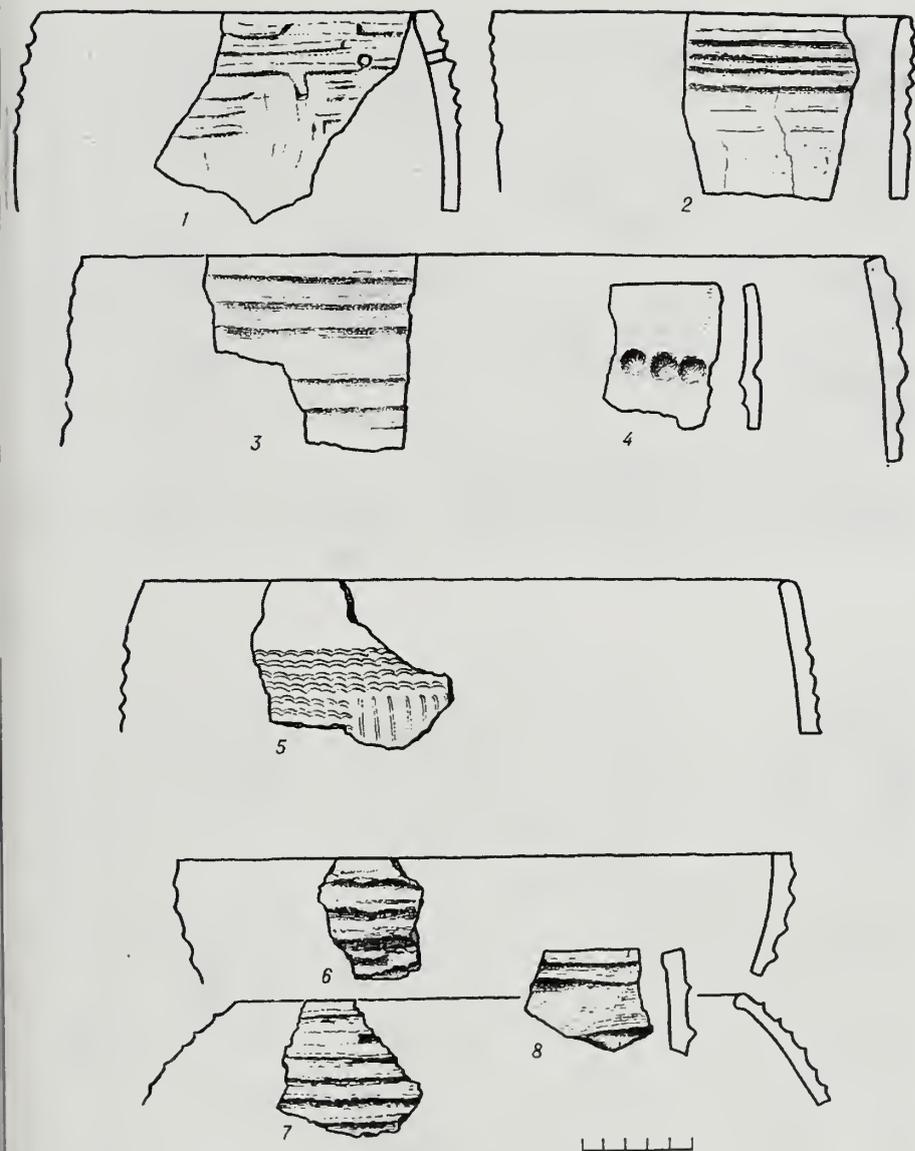


Plate 59. Stone artifacts from the site in Rakovaia Bay (45). 1-3—points; 4-8—scrapers, 9-11—adzes.



**Plate 60.** Fragments of northern Kamchatkan ceramics. 1-4—Kulka (328) and Kavran (323); 5—Palana, cave (333); 6-8—Cape Zelenyi (47); 1-5—repository of GIM, from W. I. Jochelson's excavations.



Plate 61. Artifacts from the Stone Age site on Cape Zelenyi on the lower reaches of the Penzhina River. 2, 5—stone points; the

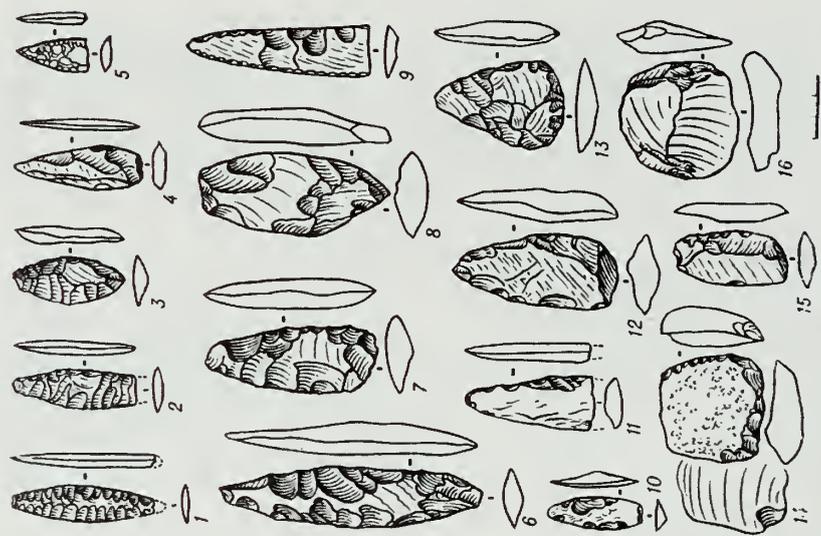


Plate 62. Stone artifacts from the Stone Age site at Manily village on the lower reaches of the Penzhina River. 1-6—projectile points; 7-9, 11, 12—knives; 10—blank;

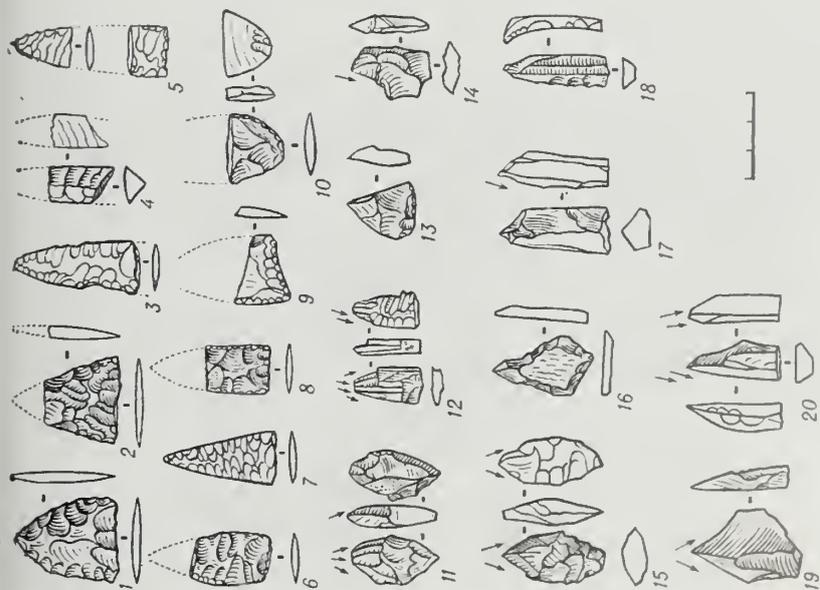


Plate 63. Artifacts from the site on the shore of Lake Chirovoe (51) 1-10—stone points and fragments of them; 11-20—burrins. 1, 2, 6, 10, 13-15, 20—flint; 4, 7, 12, 18—obsidian; 3, 5, 8, 9, 11, 19—siliceous slate; 16, 17—chalcodony.

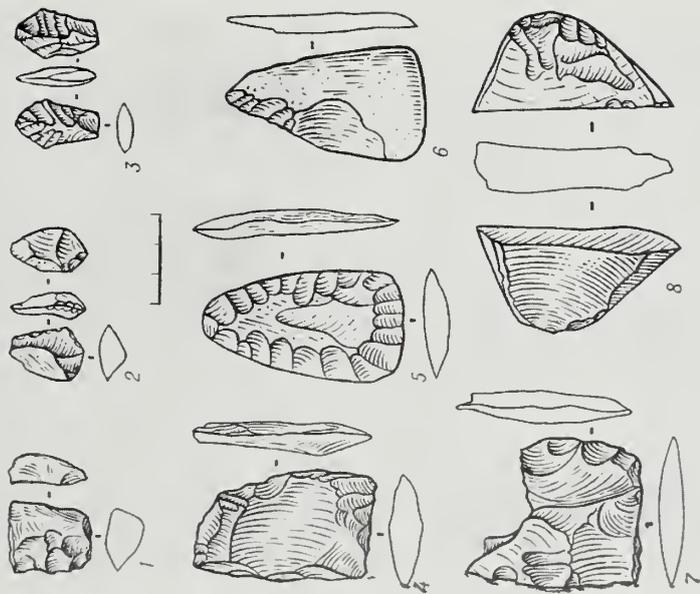


Plate 64. Stone artifacts from the Chirovaia site (51). 1, 2—chisels of chalcodony; 3—chisel of flint; 4-7—adzes of siliceous slate; 8—blank of a keeled obsidian core.

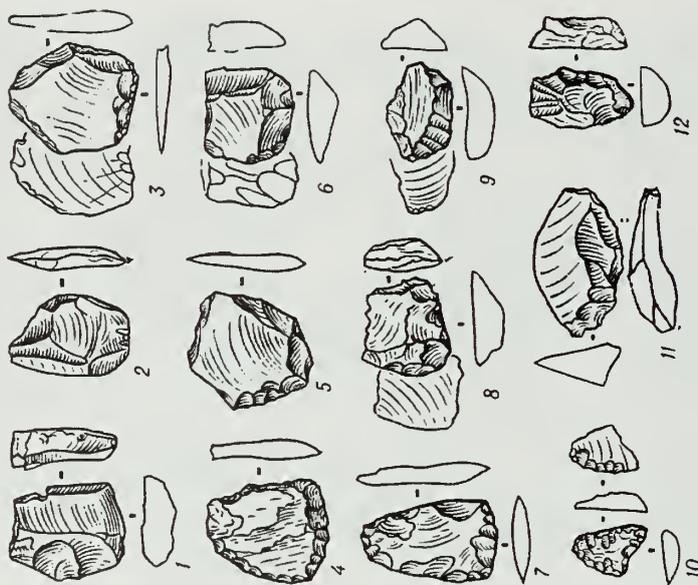


Plate 66. Stone scrapers from the Chirovaia site (51). 1, 3, 5, 6, 8, 9, 11—flint, 2, 10, 12—chalcodony, 4, 7—siliceous slate.

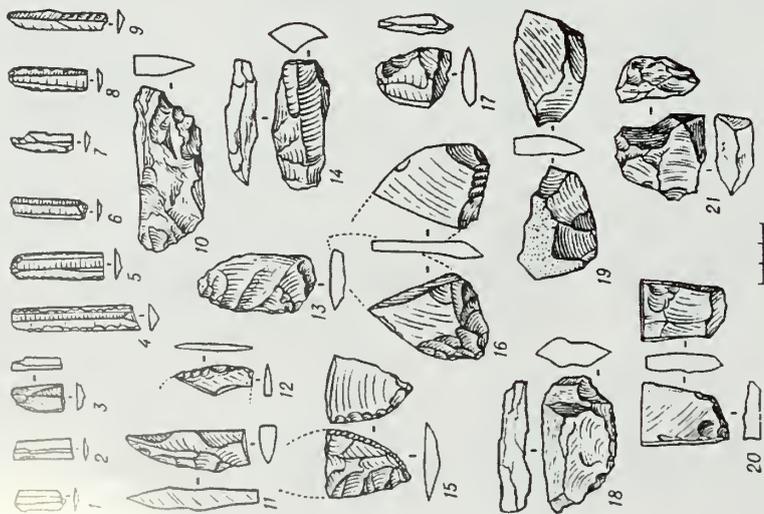


Plate 65. Stone knives and knife-like blades from the Chirovaia site (51). 1, 2, 4-9, 13—obsidian; 3, 14, 15, 18, 21—flint, 10-12, 16, 17, 19, 20—siliceous slate.

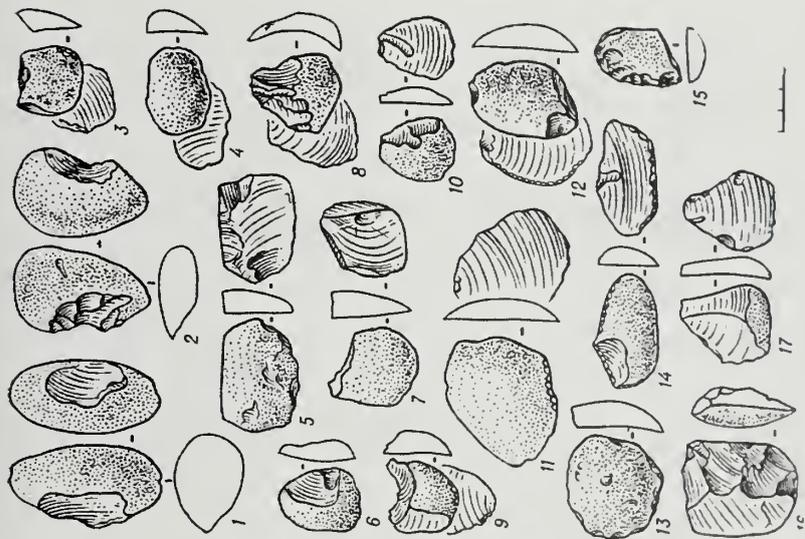


Plate 68. Scrapers on flakes with cobble cortex from the Chirovaia site (51) (1-17). 16—basalt; the remainder—obsidian.



Plate 67. Scrapers on flakes from the Chirovaia site (51). 1-4—basalt; 15—argillaceous slate, the remainder—obsidian.

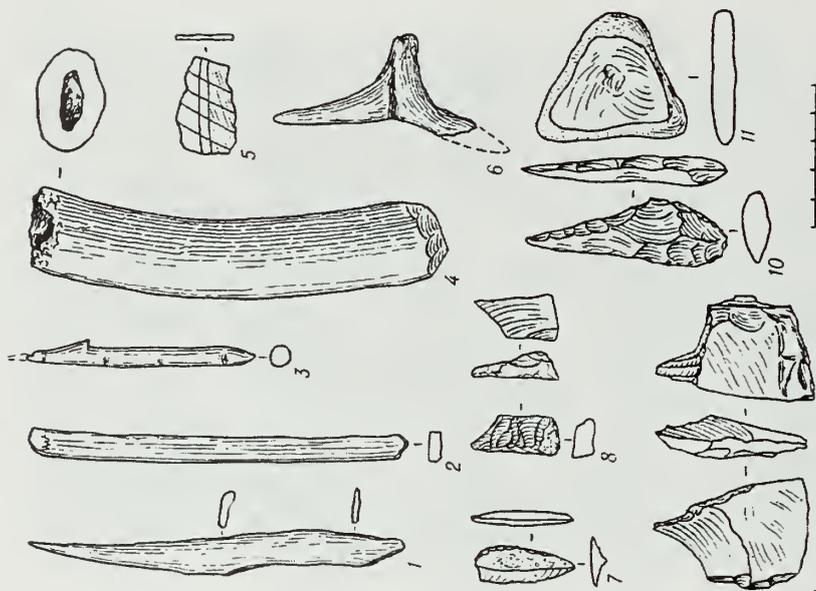


Plate 70. Artifacts from the Chirovaia site (51) 1-6—bone artifacts; 7—obsidian scraper, 8—obsidian punch; 9, 10—siliceous slate punch, 11—flint punch; 12—cobble spall.

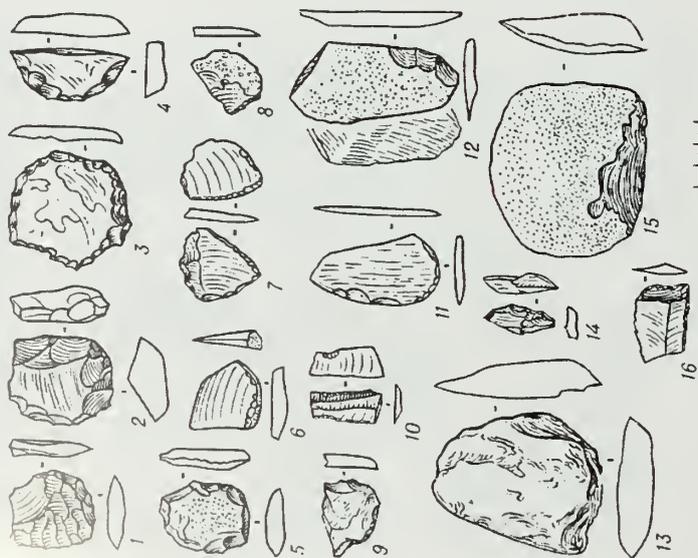


Plate 69. Stone scrapers from the site on the shore of Chirovoe Lake (51). 1, 2—flint; 4—basalt; 3, 5—quartzite; 6-8, 10, 16—obsidian; 9, 14—chalcodony; 12, 15—granite; 11—siliceous slate, 13—argillaceous slate.

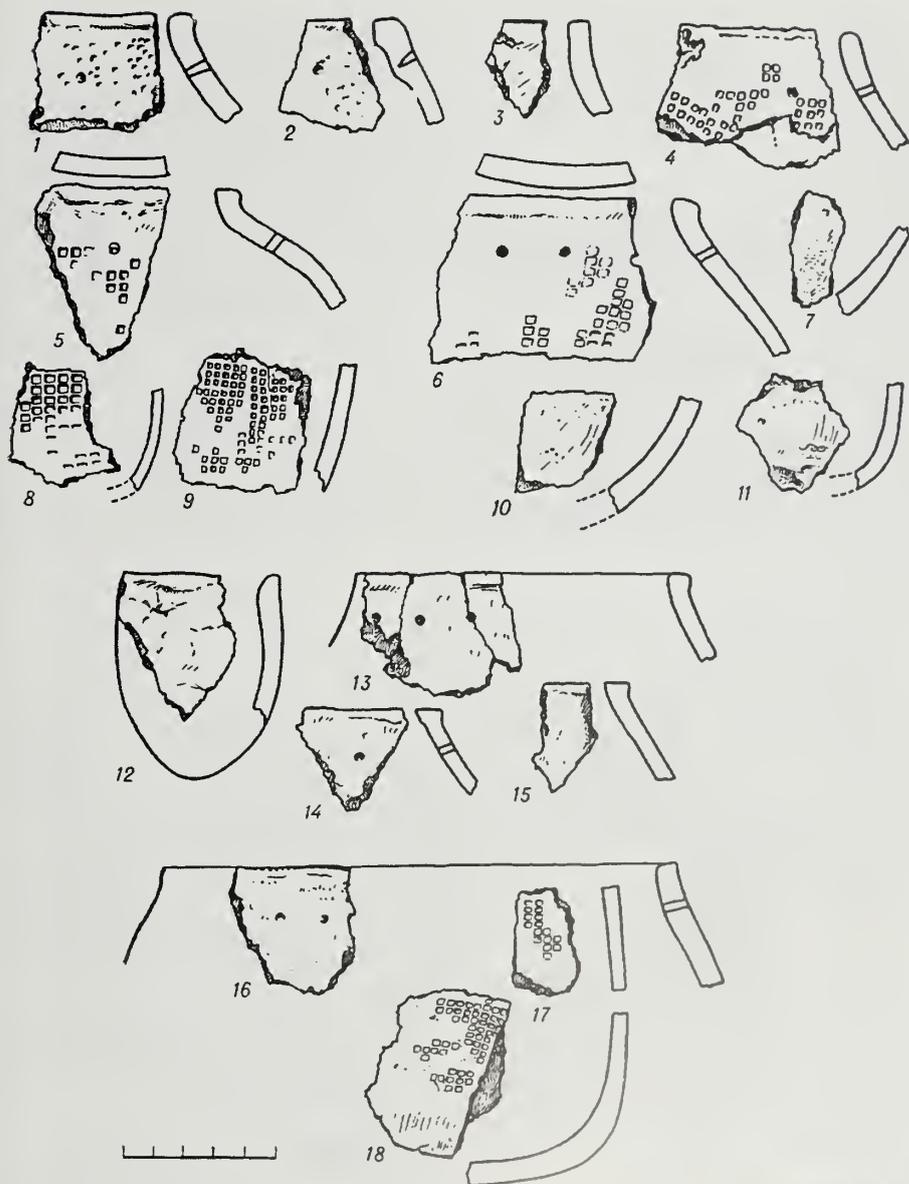


Plate 71. Fragments of clay vessels from Neolithic sites on the shore of Chirovoe Lake (51): 1-15—from the Chirovaia site (51); 16-18—from the second site at KM 102 (79).

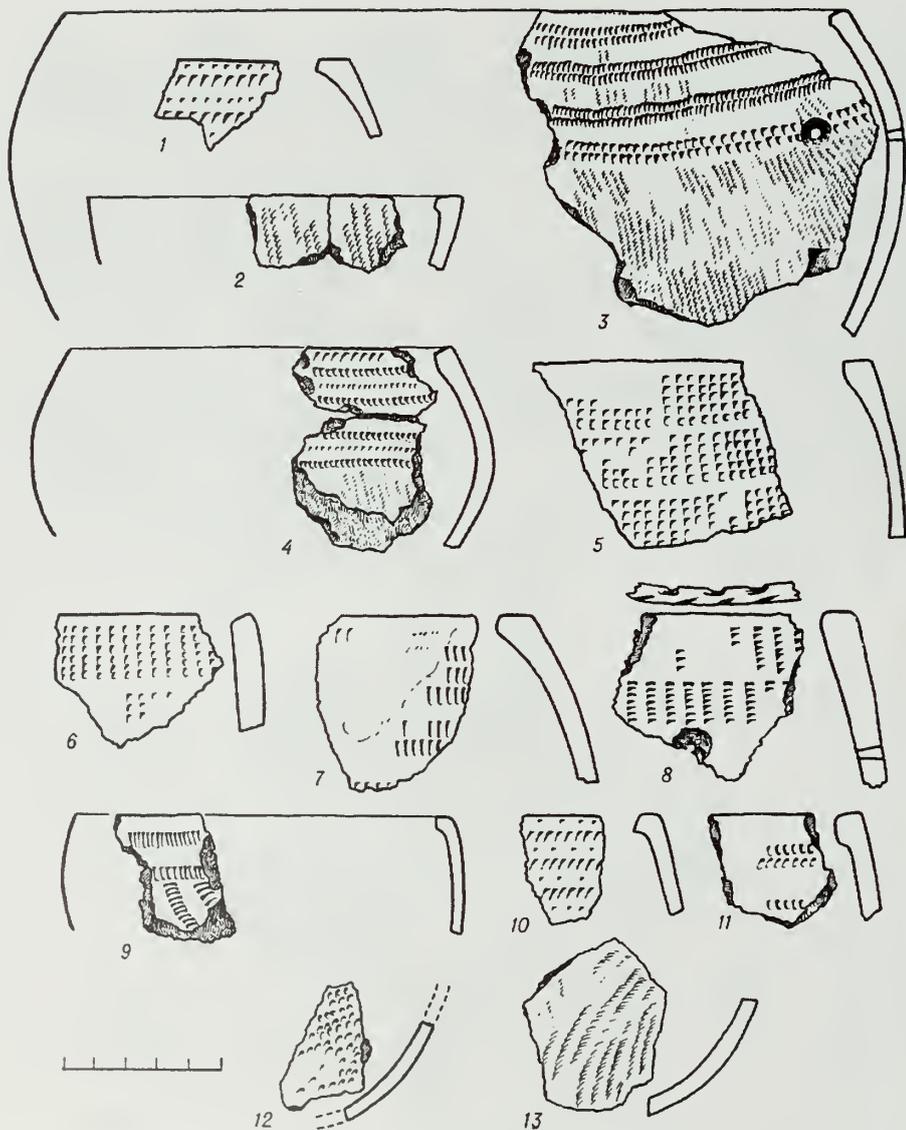


Plate 72. Ceramics from the Vakarevskaja site (53) (1-13).

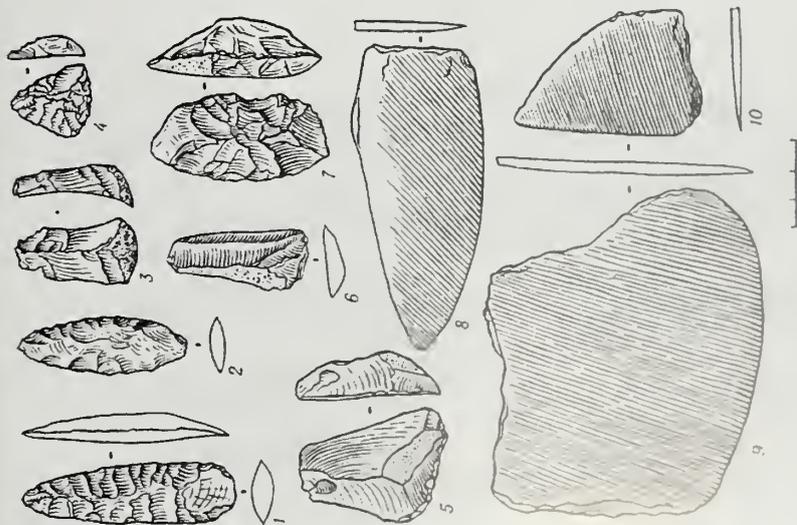


Plate 73. Stone tools from the lower site at Ust'-Belaita (56). 1-3—scrapers, 4-5—knives, 6-10—obsidian; 2—argillaceous slate, 1—Chalcedony, 8-10—argillaceous slate.

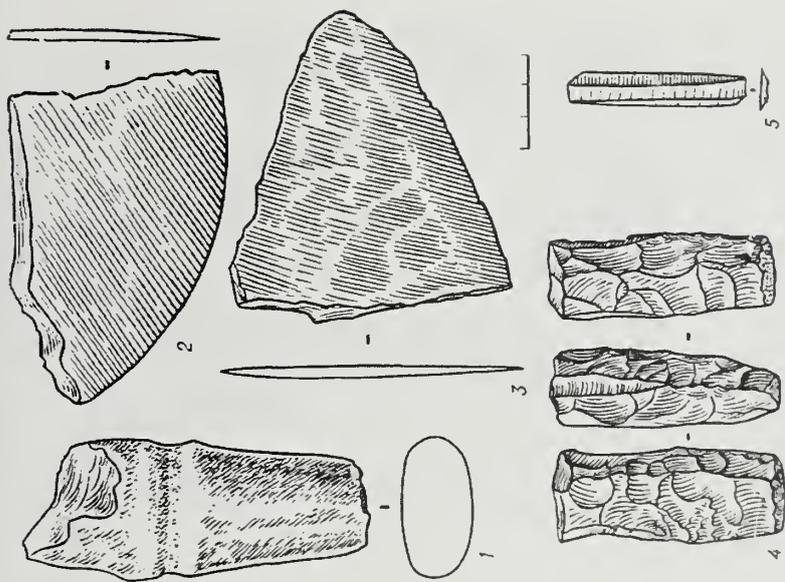


Plate 74. Stone tools from the lower site at Ust'-Belaita (56). 1—hammer fragment, 2, 3—knives, 4—core blank; 5—knife-like blade. 1-3—argillaceous slate, 4, 5—obsidian.

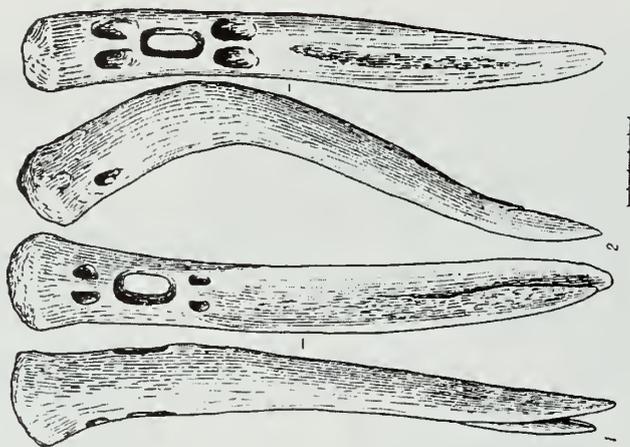


Plate 76. Mattocks of wild deer antler from the lower site at Ust'-Belaiia (56) (1-2).

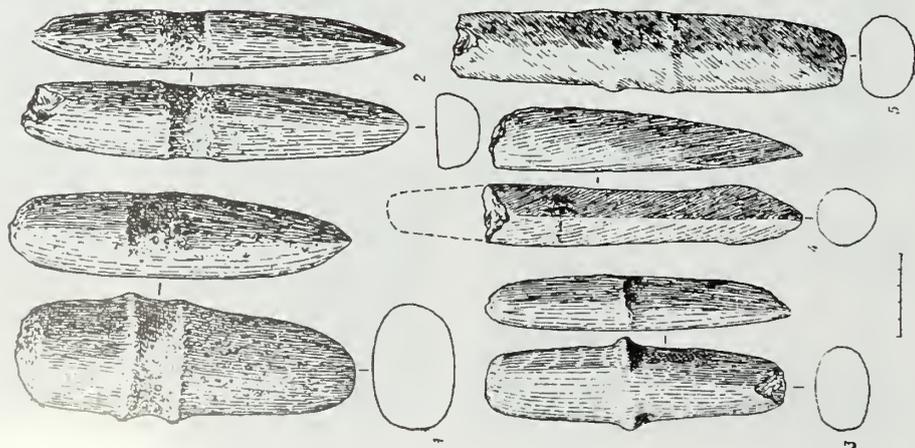


Plate 75. Splitting adzes of argillaceous slate from the lower Ust'-Belaiia site (56) (1-5).

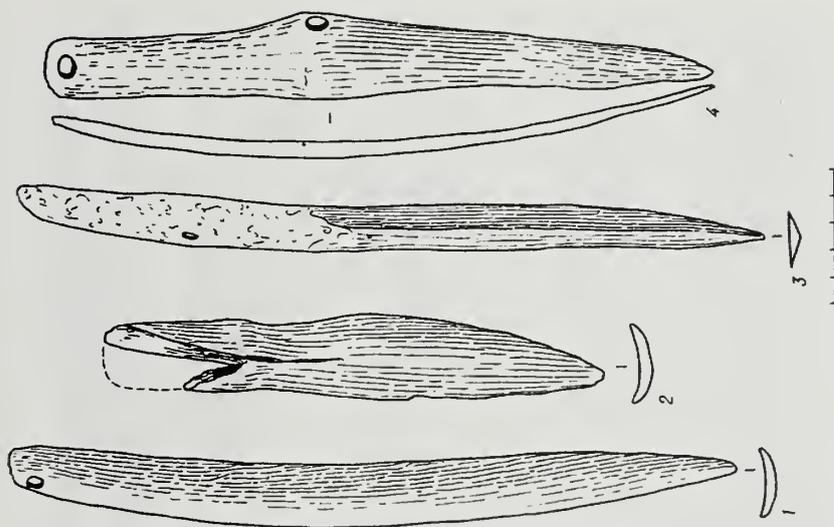


Plate 78. Bone knives and arrow points from the lower site at Ust'-Belaita (56) (1-4).

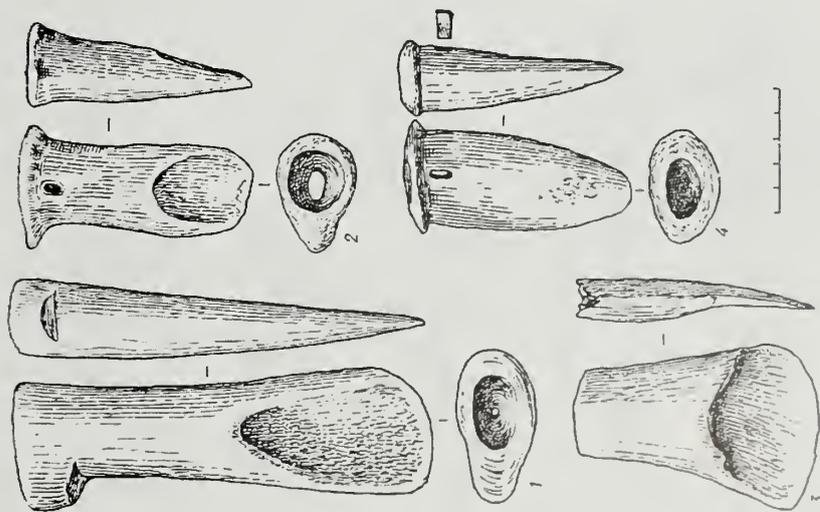


Plate 77. Tools of deer antler from the lower site at Ust'-Belaita (56) (1-4).

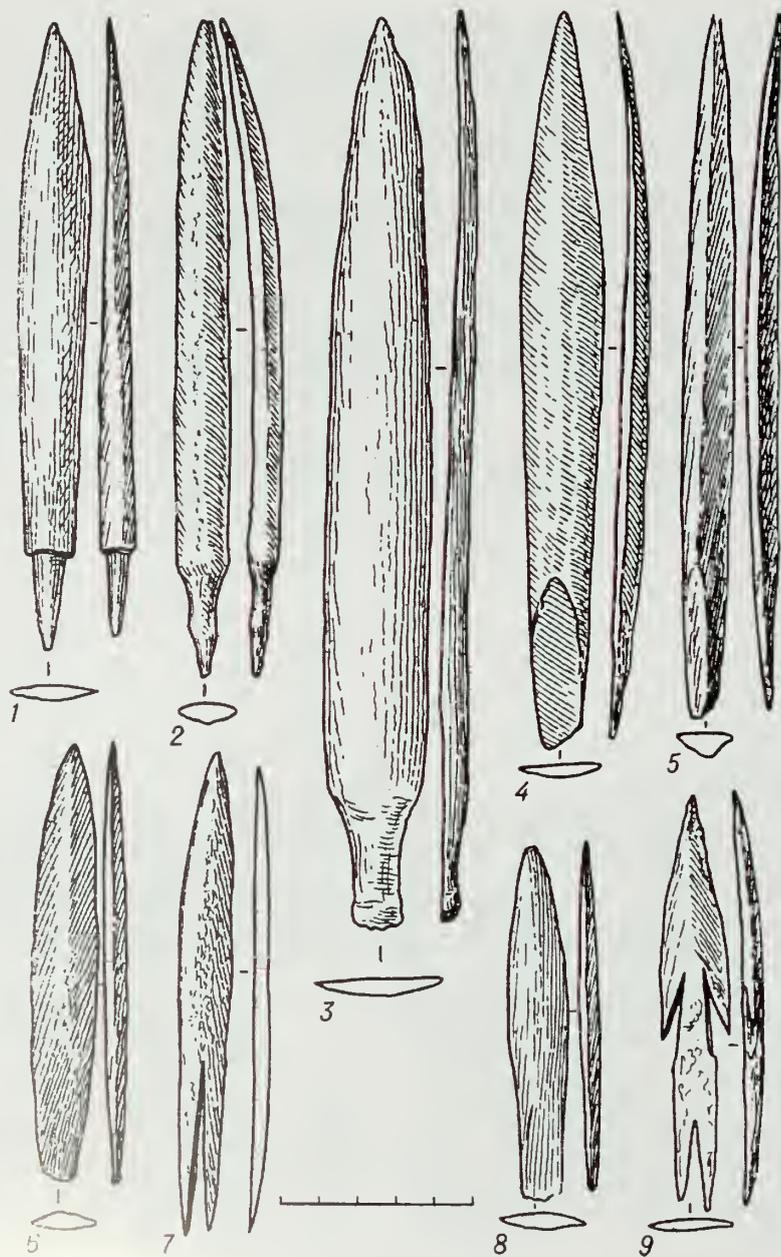


Plate 79. Bone points from the lower Ust'-Belaia site (56) (1-9).

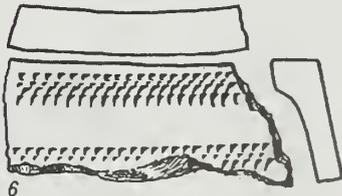
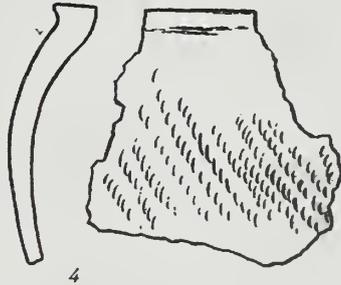
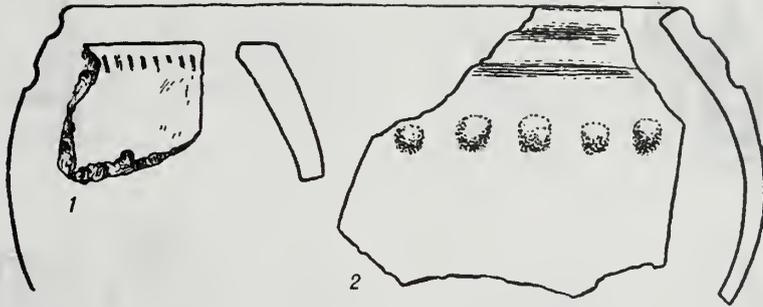


Plate 80. Fragments of clay vessels from the lower site at Ust'-Belaia (56) (1-8).

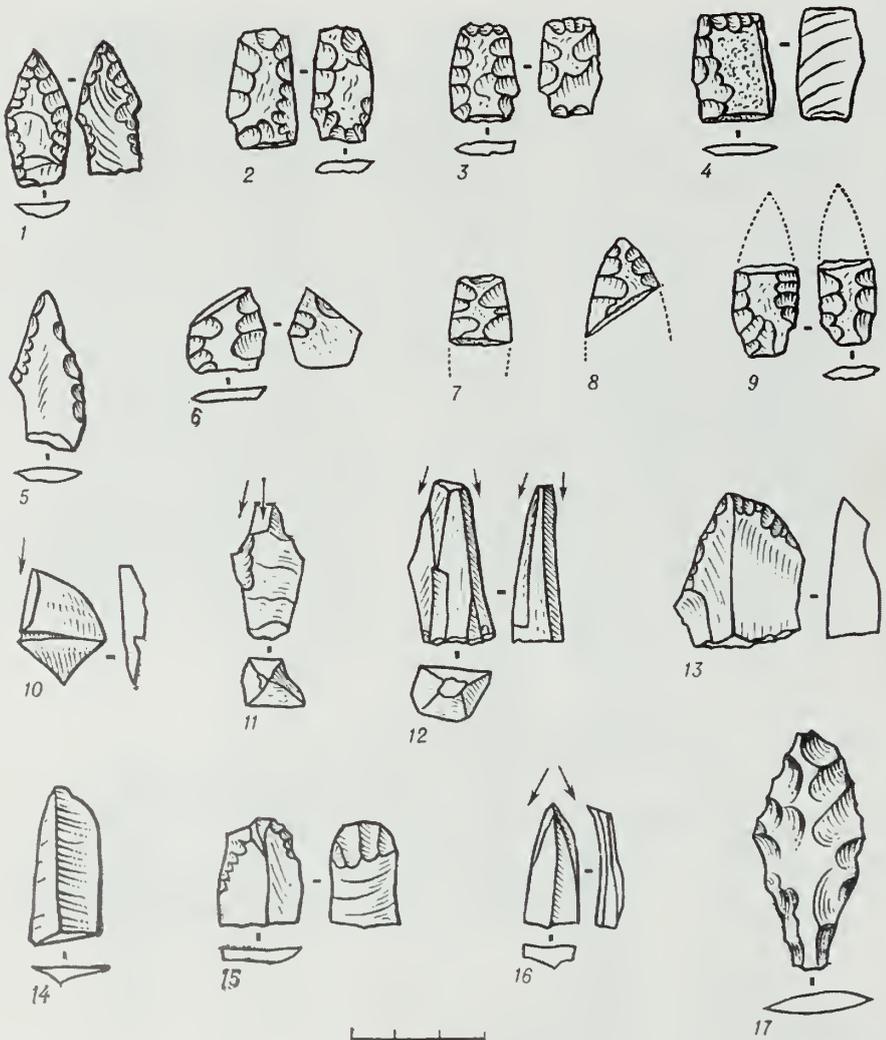
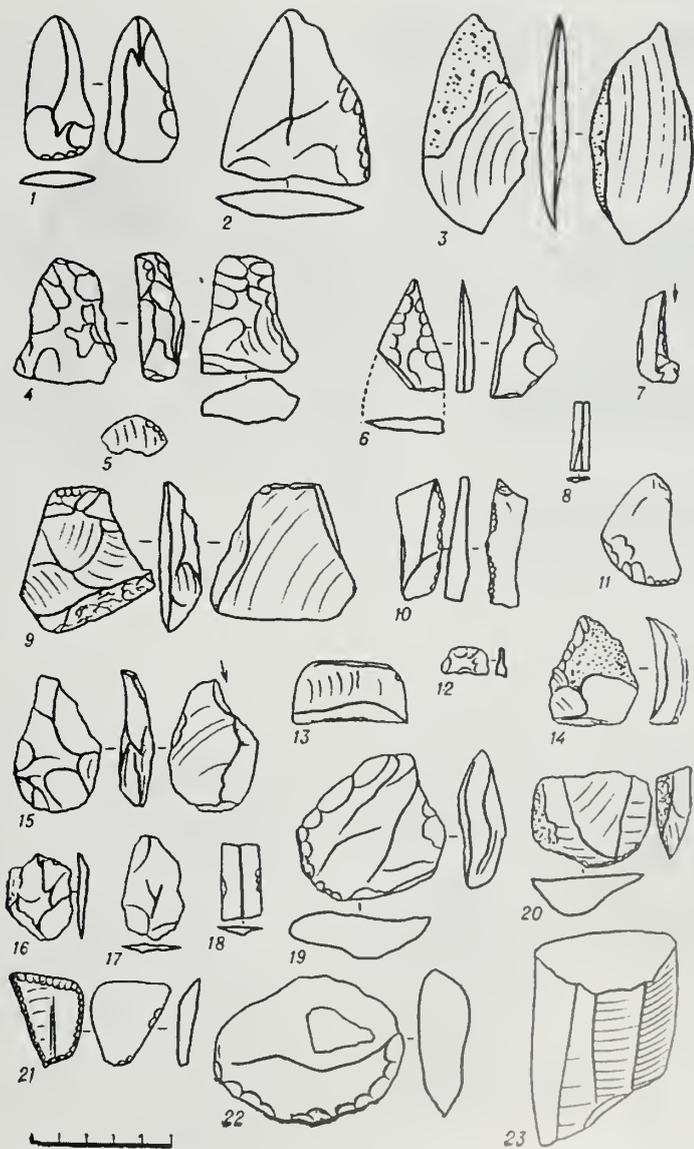
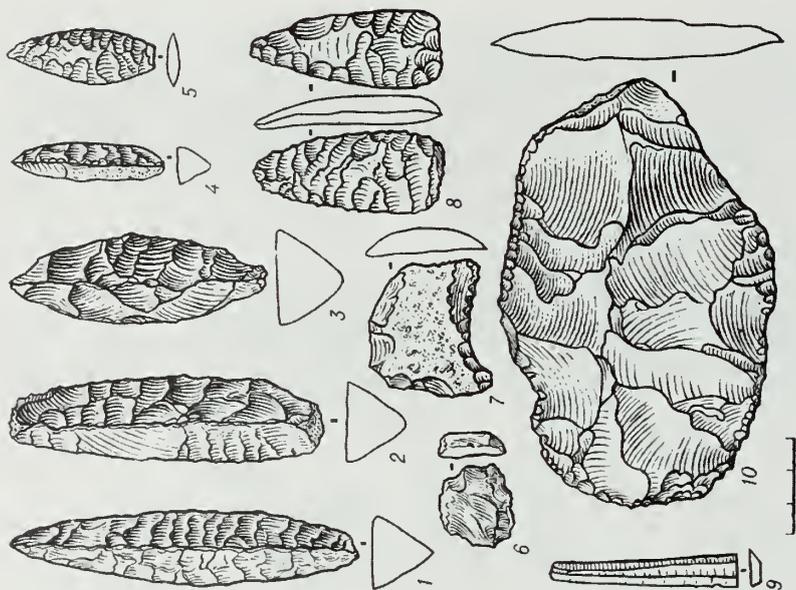


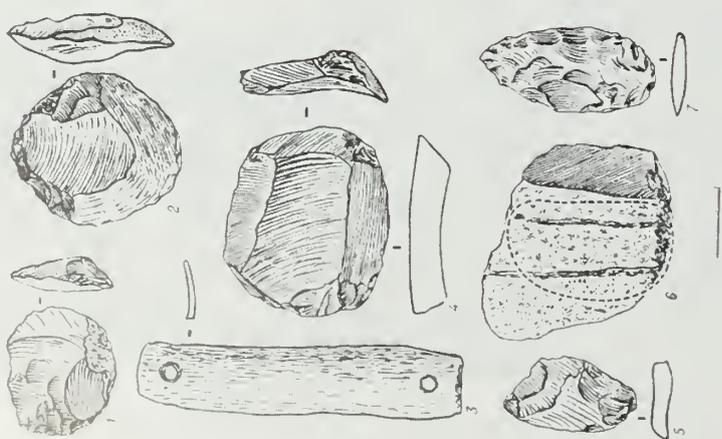
Plate 81. Stone artifacts from the Uvesnovaniia (57) and Kameshki (58) sites. 1-15—Uvesnovaniia; 16, 17—Kameshki. 1-9, 17—points and point fragments; 10-12, 16—burins; 13, 15—scrapers; 14—knife-like blade. 5—slate, 12—chalcedony; 11, 13—flint; the remainder—obsidian.



**Plate 82.** Stone artifacts from the Anadyr sites. 1-3—Ust'-Mam (54); 6—Vilka I (59); 4-7—Vilka II (60); 5, 8-16—Anokatrary (62); 17-23—Snezhnoe (55).



**Plate 84.** Stone tools collected on Osinovala Spit (63, 64), surface material. 1-5—points; 6, 7—scrapers; 8, 10—knives; 9—knife-like blade; 11—siliceous slate, the remainder—obsidian.



**Plate 83.** Items from the Stone Age site at Utesiki (61). 1, 2, 4, 5—scrapers; 6—blank; 7—point; 3—bone plate.

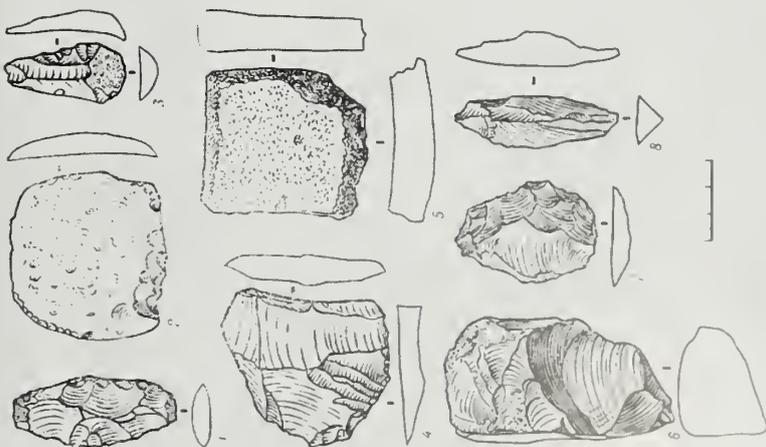


Plate 85. Artifacts of obsidian and ceramics from the Osmovaia Spit site (63, 64), surface material. 1—knife fragment, 2—skreblo. 3—scraper, 4—knife fragment, 6—axe. 7, 8—scrapers. 5—fragment of a clay vessel

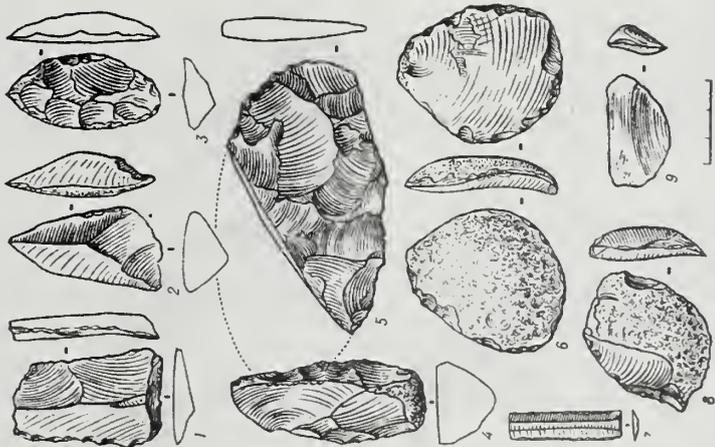


Plate 86. Stone tools collected near Osmovaia Spit (63, 64), surface material. 1, 5—knife fragments; 2—point blank; 7—knife-like blade; 4, 6, 8, 9—scrapers. 10—argillaceous slate, 9—siliceous slate, the remainder—obsidian.

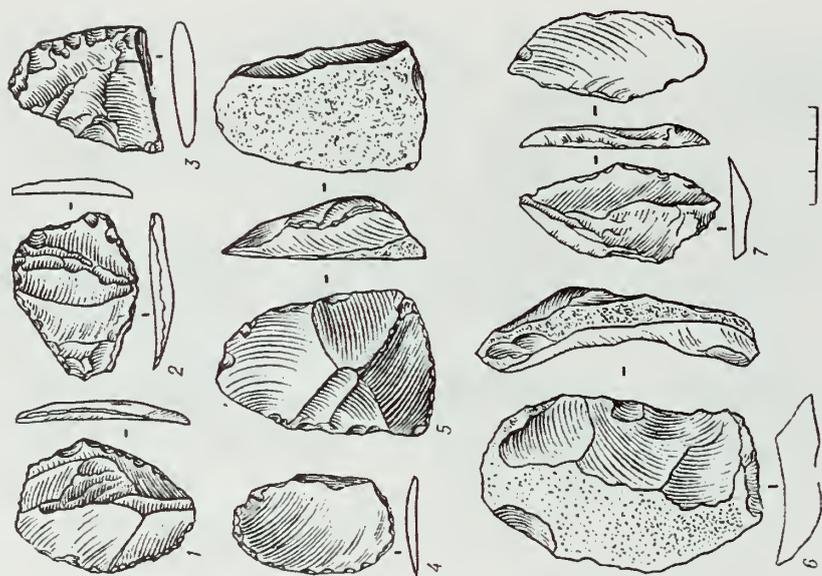


Plate 88. Obsidian skreblors, knives, and blanks from the Osinovaia Spit site (63, 64) (1-7).

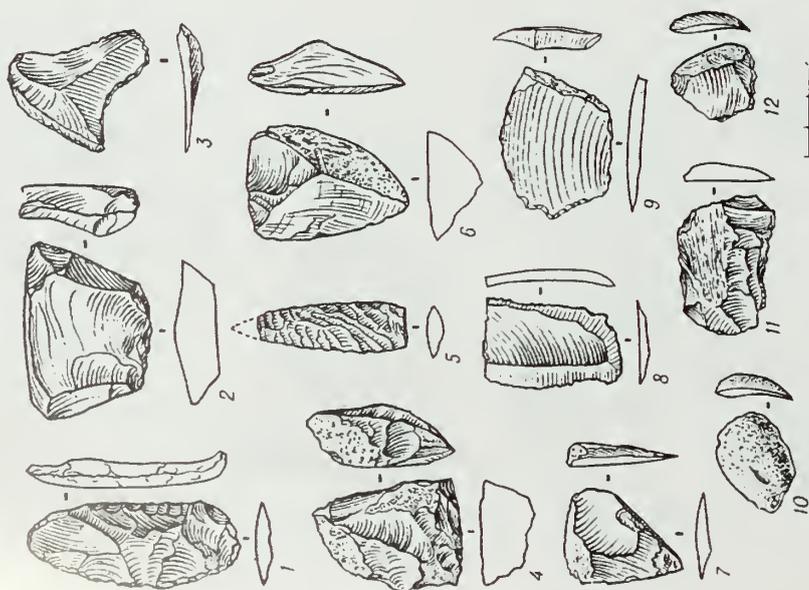


Plate 87. Obsidian artifacts from the Osinovaia Spit site (63, 64).  
1—knife, 2,4—skreblors; 5—point; 6-12—flakes.

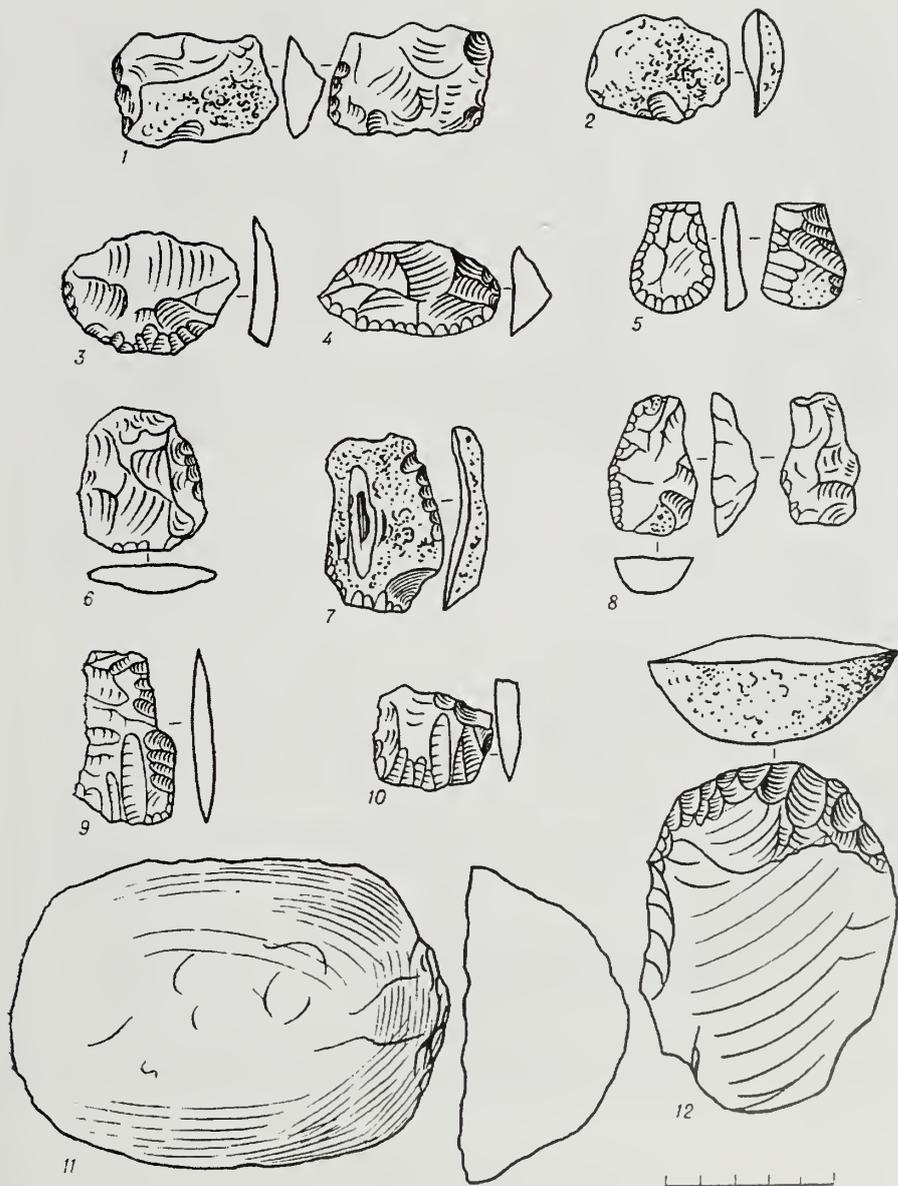


Plate 89. Obsidian skreblos and scrapers from the Osinovaia Spit site (63, 64) (1-12).

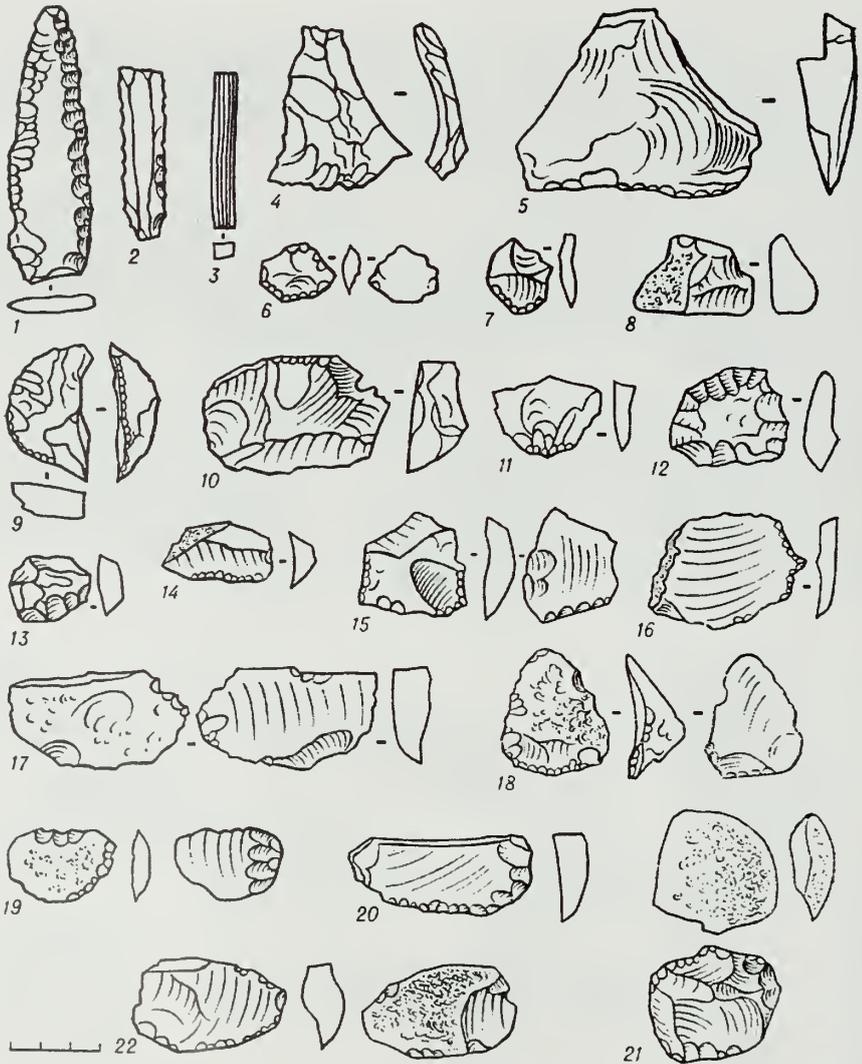


Plate 90. Obsidian artifacts from the Osinovaia Spit site (63, 64). 1—knife; 2—knife-like blade; 4-21—scrapers.

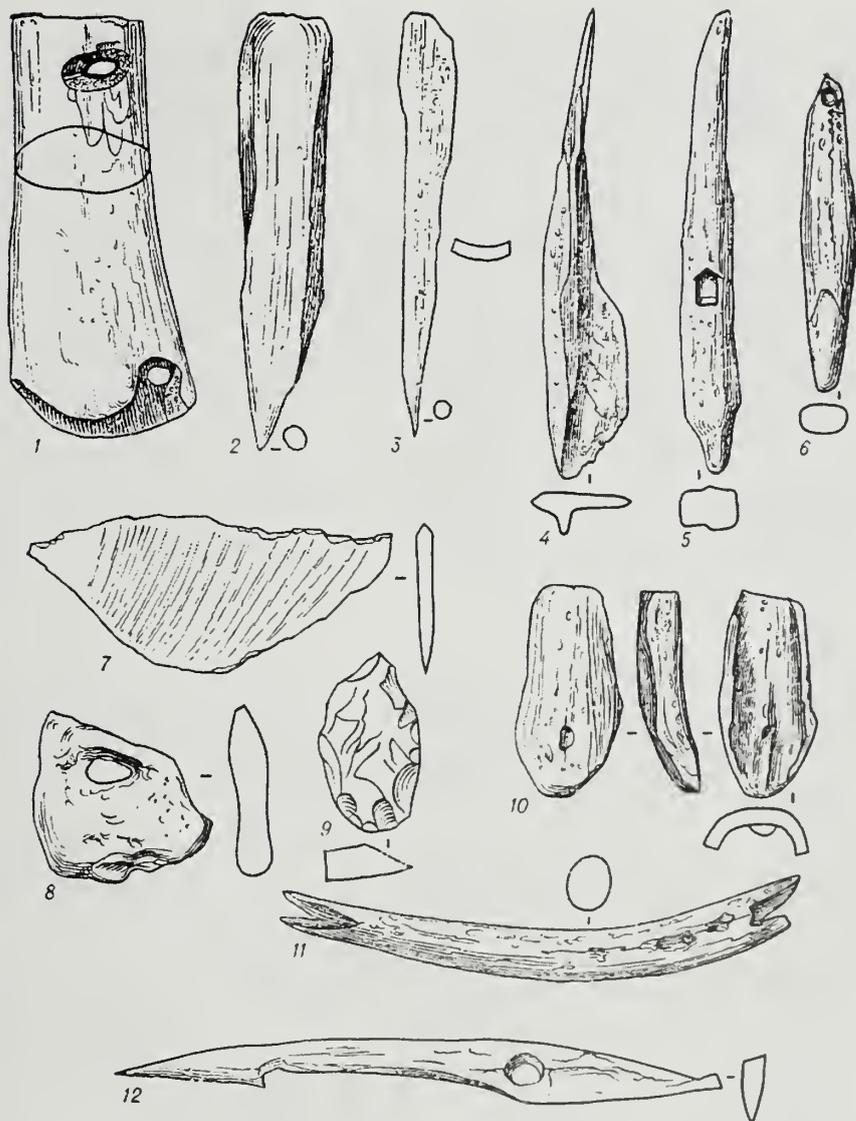


Plate 91. Bone artifacts from excavations on Osinovaia Spit (63, 64) (1-12).

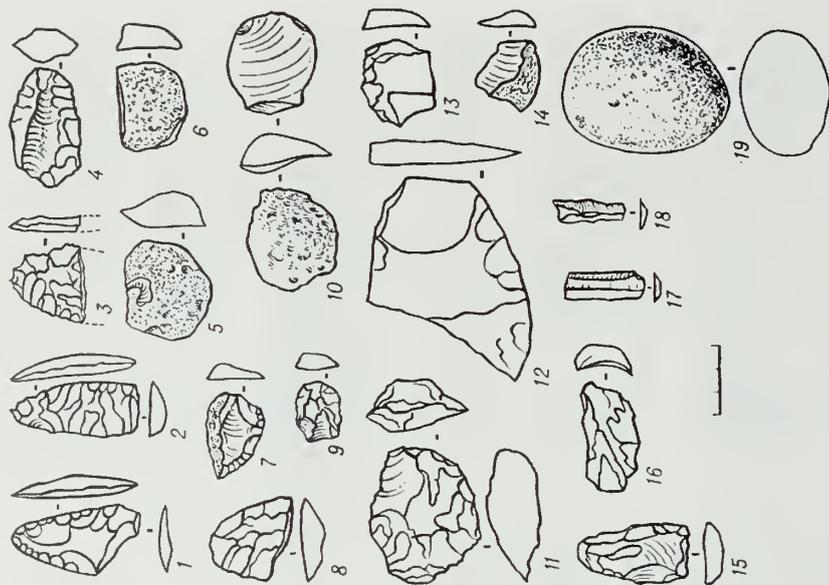


Plate 93. Stone tools from the Osinoiva Hill Site (81) (1-19).

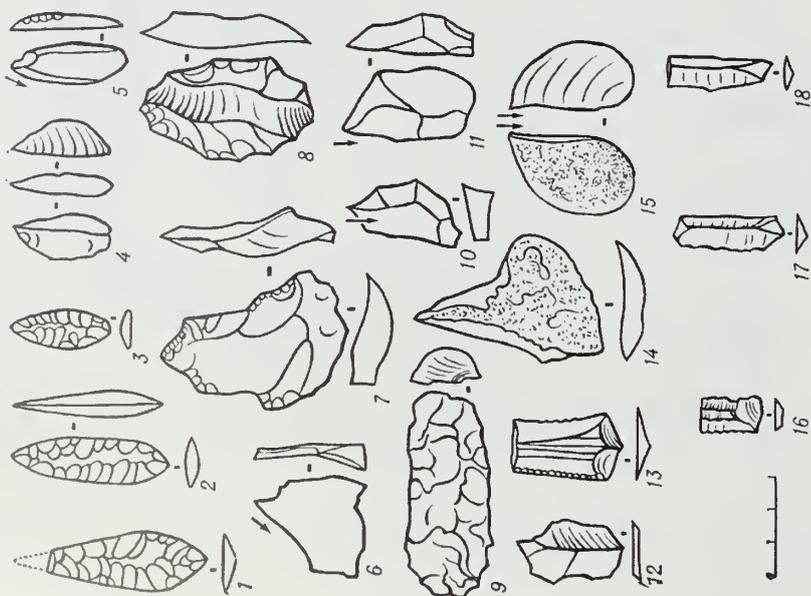


Plate 92. Obsidian tools from the Osinoiva Hill site (66) (1-18).

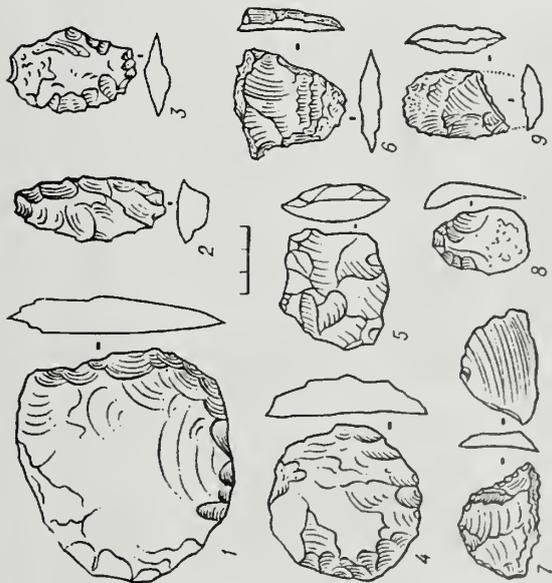


Plate 95. Artifacts from the burial in Kurgan 9 in Ust'-Belaita cemetery (72) 1-9—points, 10—adze, 11—scraper, 12—odd piece, 13—harpoon head, 14—knife, 16—burin; 15, 17, 18—flakes. 1-12, 14, 15, 17, 18—stone, 13—walrus tusk, 16—bronze

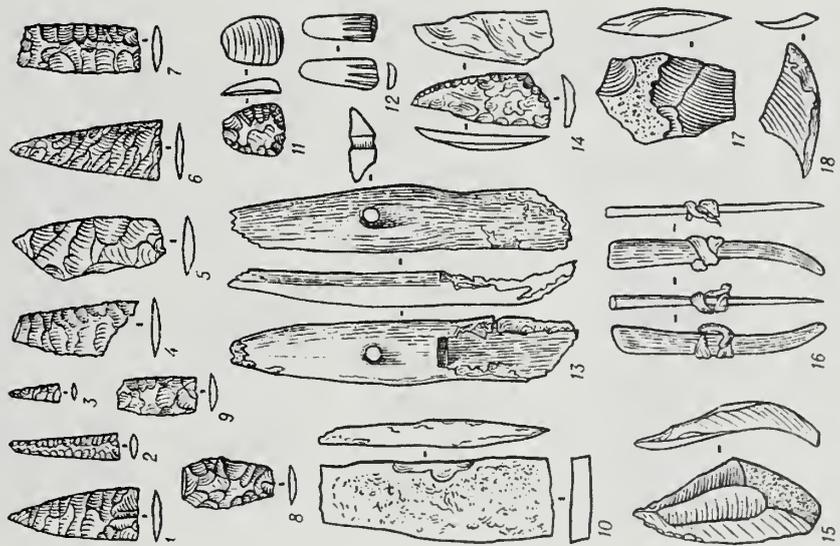


Plate 94. Obsidian tools from Krasno Spit (67) (1-9)

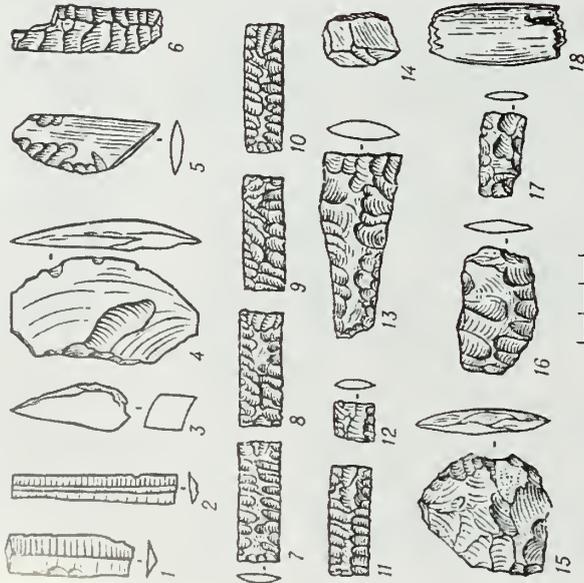
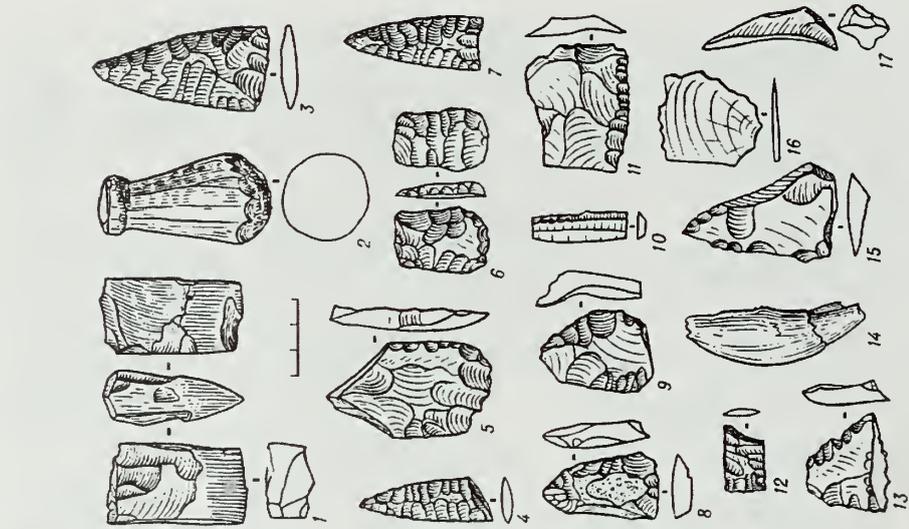


Plate 96. Tools from the burial in Kurgan 9 in Ust'-Belaita cemetery (72). 1, 2—knife-like blades; 5, 13, 16—knives; 6-12, 17—unset blades; 15—scraper, 3-14—flakes; 18—odd piece. 1-17—stone; 18—bone.

Plate 97. Burial inventory from the lower level of Grave 1 in Kurgan 9 in the Ust'-Belaita cemetery (72). 1—adze; 2—plug; 3, 4, 7—arrow points; 5, 6, 8, 9, 11, 13—scrapers; 10—knife-like blade; 12—inset blade; 14—bear canine; 15-17—flakes 2, 14—bone; 1, 3-13, 15-17—stone.

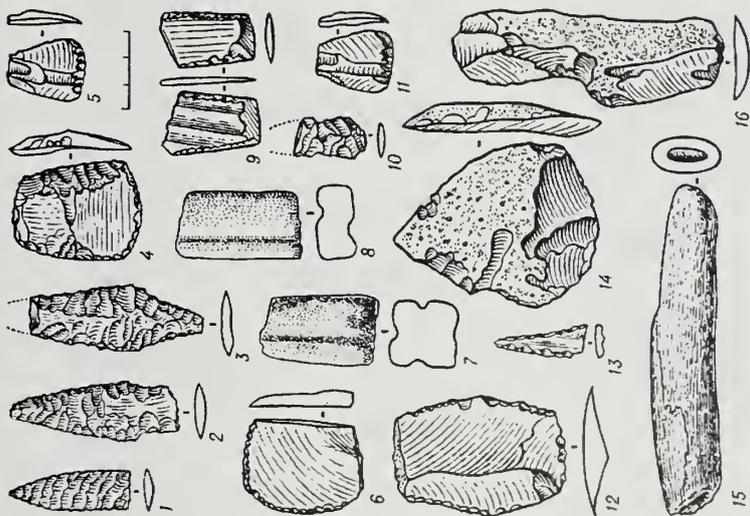


Plate 99. Stone and bone (15) artifacts from the pit under Grave 1 in Kurgan 9 at Ust'-Belau (72). 1-3—points; 4, 5, 11, 14, 16—scrapers; 6, 9, 10, 12—knives; 13—pointed tool; 15—handle, 7, 8—grinding stones. 1-6, 16—flint; 7, 8—sandstone, 9, 13—argillaceous slate, 11—chalcodony; 10, 12, 14—obsidian; 15—deer antler.

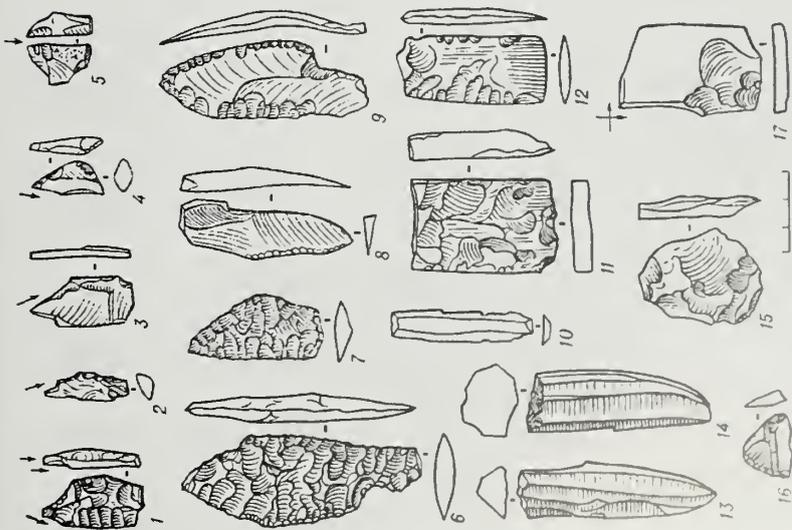


Plate 98. Stone artifacts from the pit under Grave 1 in Kurgan 9 at Ust'-Belau (72). 1-5, 17—burins, 6-9—knives, 10—knife-like blade, 11, 12—adzes, 13—core, 14-16—scrapers.

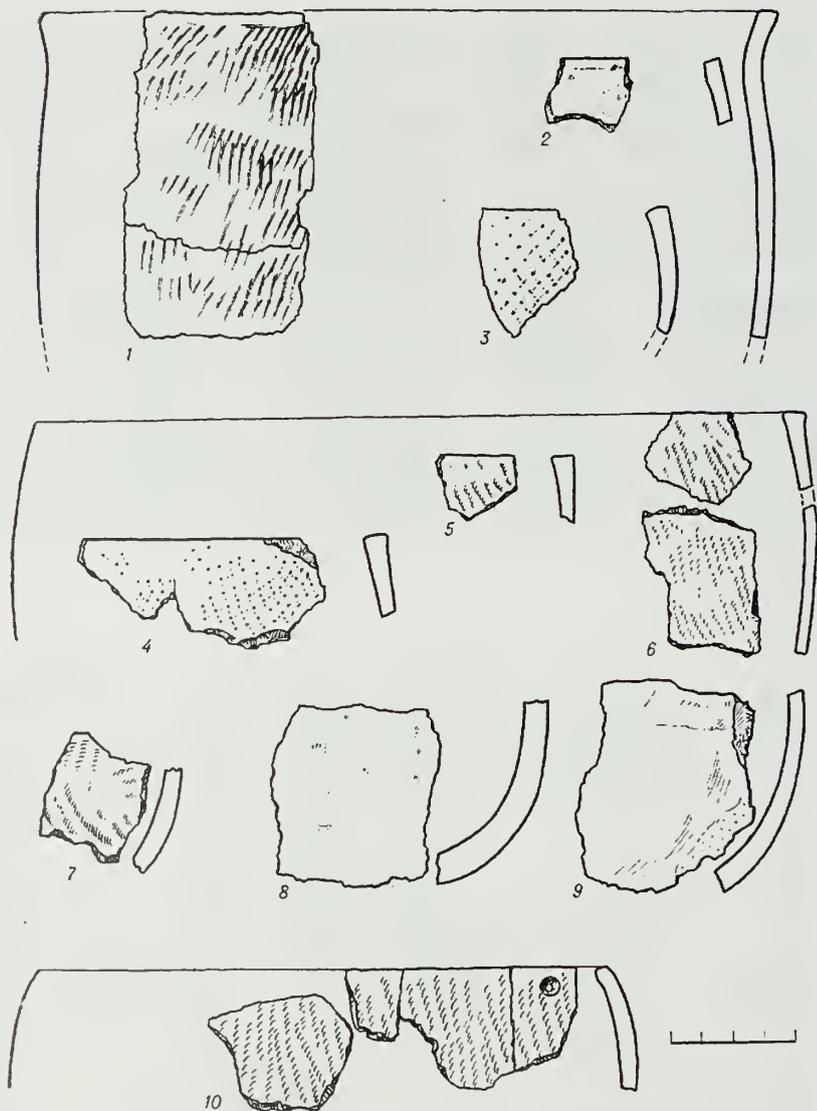


Plate 100. Fragments of clay vessels from the Ust'-Belaia cemetery (72) and from the Kameshki site (58). 1-9—Ust'-Belaia cemetery; 10—Kameshki.



Plate 101. Stone artifacts from the Omuryno cemetery (73)

Plate 102. Stone artifacts from the Chiknaevskara site (74).  
 1-5—cores; 6, 9-15—knife-like blades; 7, 8,  
 16-18—cores.

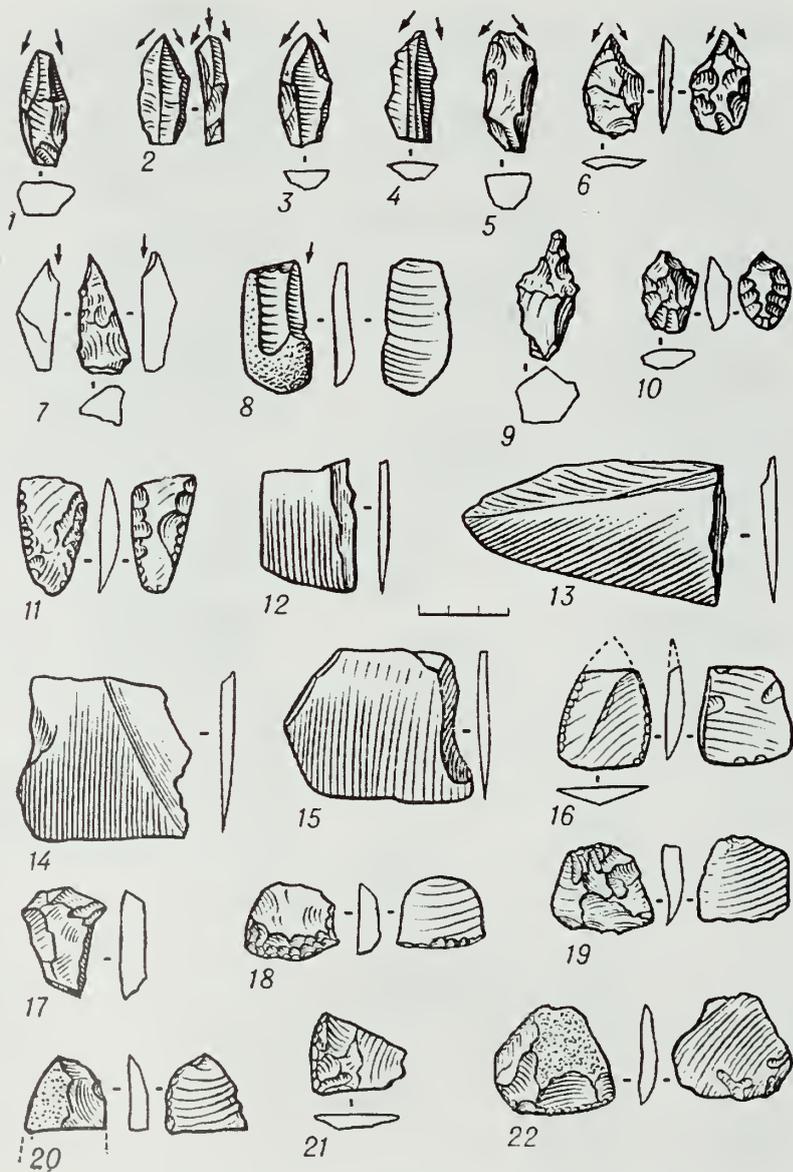


Plate 103. Stone artifacts from the Chikaevskaia site (74). 1-8—burins; 9—punch; 10, 16-22—scrapers; 11-15—knives. 1—chalcedony; 5—quartz; 2, 3, 6, 7, 9, 10, 17, 18—flint; 12-15—argillaceous slate; 4, 8, 11, 16, 19, 20-22—obsidian.

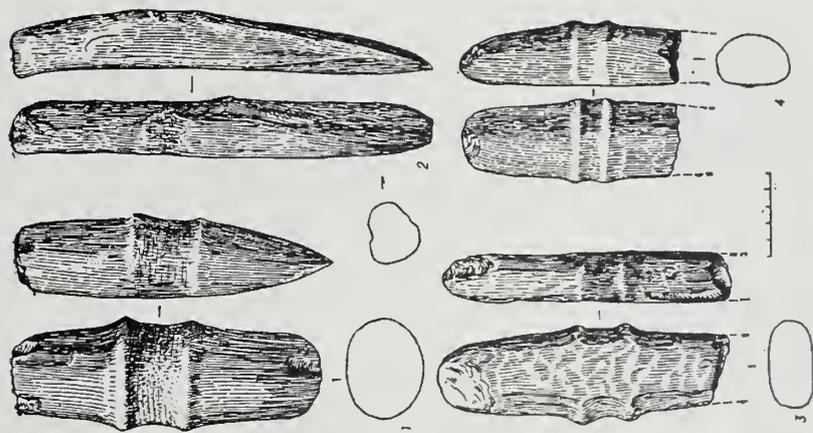


Plate 105. Stone splitting adzes from the Chikaevskaia site (74) (1-4).

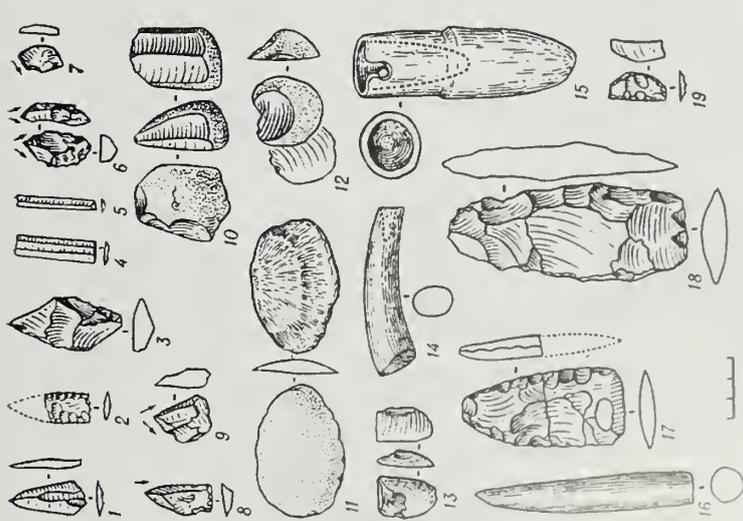


Plate 104. Stone artifacts from the Chikaevskaia site (74) 1—blade flake; 2—point fragment; 3—punch; 4, 5—knife-like blades; 6-9—burnus; 10—core; 11-13, 19—scrapers; 17—axe; 18—adze; 14, 16—bone artifacts 1, 7, 8—flint; 2, 6, 9, 20—chalcidony; 3-5, 10, 12, 13—obsidian; 11, 18, 19—argillaceous slate.

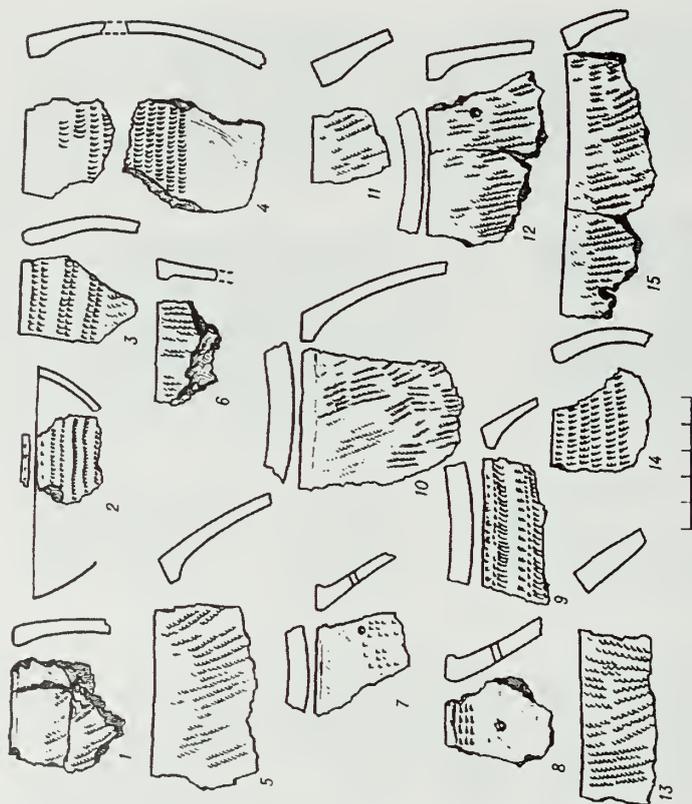


Plate 107. Fragments of ceramics from the Chikaevskaia site (74) (1-15).

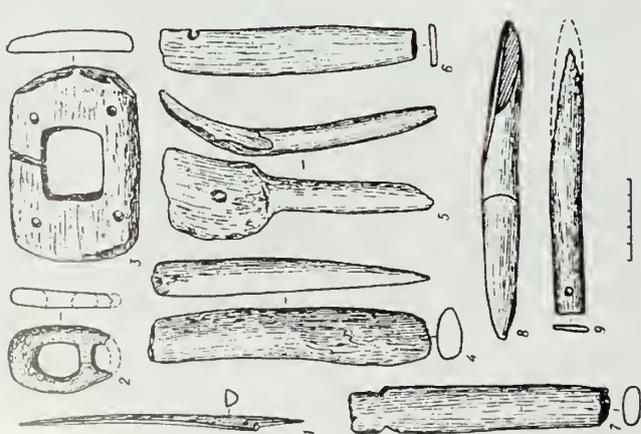


Plate 106. Bone artifacts from the Chikaevskaia site (74). 1—point; 2, 3—clasps; 4—adze; 5—spatula; 6, 8, 9—knives; 7—blank 1—walrus tusk; 3—whale bone, 2, 4, 5, 8—deer antler.

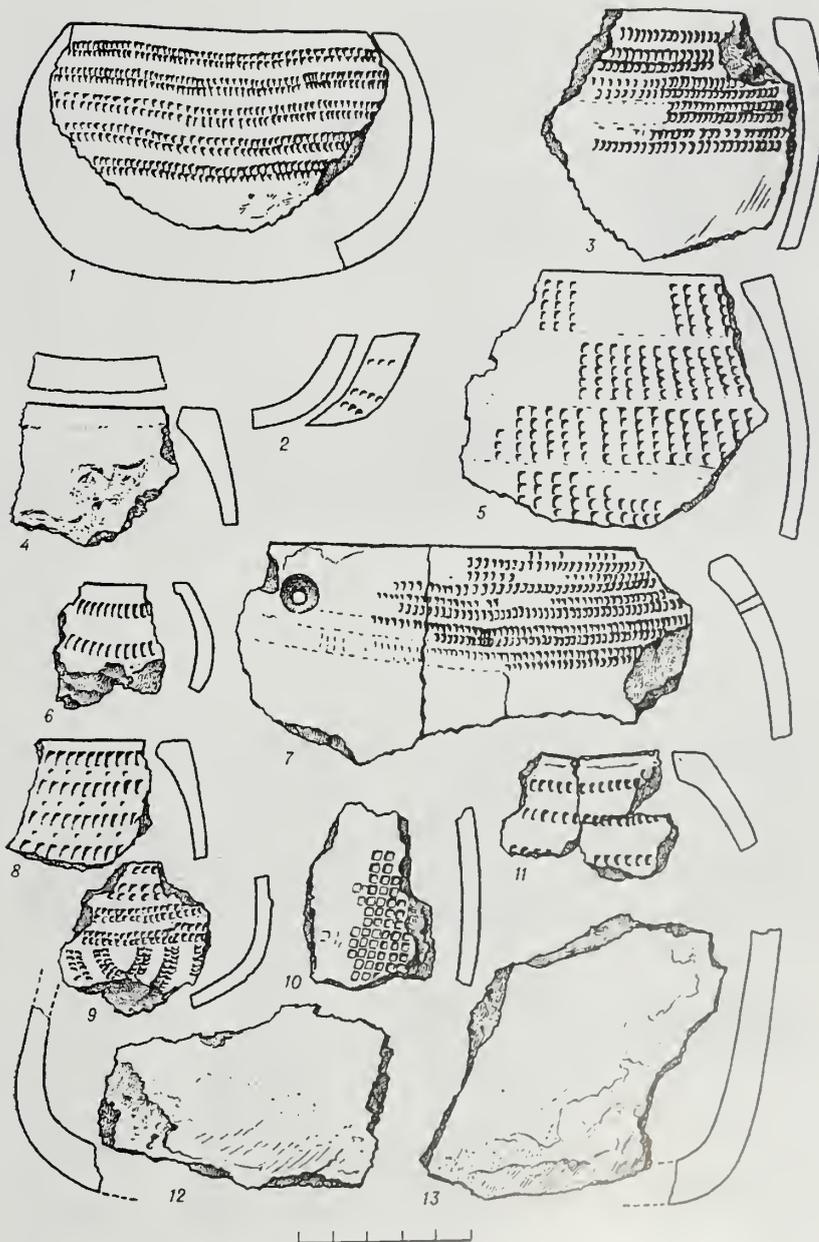
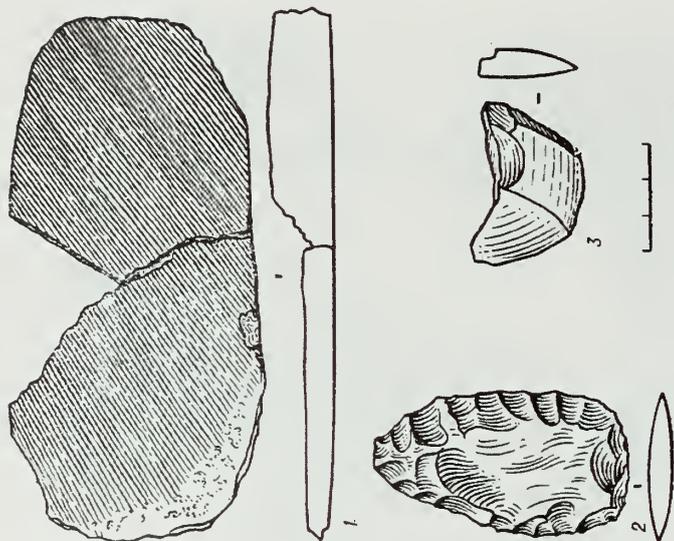
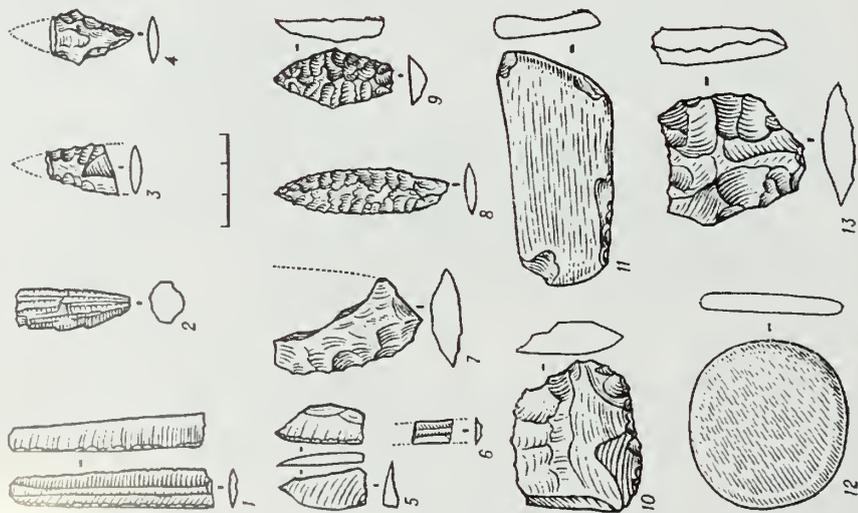


Plate 108. Fragments of ceramics from the Chikaevskaia site (74) (1-13).



**Plate 110.** Stone objects from the second site at KM 102 (79). 1—ground slab; 2—adze/skreblo; 3—flake.



**Plate 109.** Stone artifacts from the first (73) and second (79) sites at KM 102 on the bank of the Anguema River. 1, 6—knife-like blades; 2—core; 3, 4, 8, 9—arrow points; 5—graver, 7, 10, 13—knife and scraper fragments; 11, 12—ground slabs.

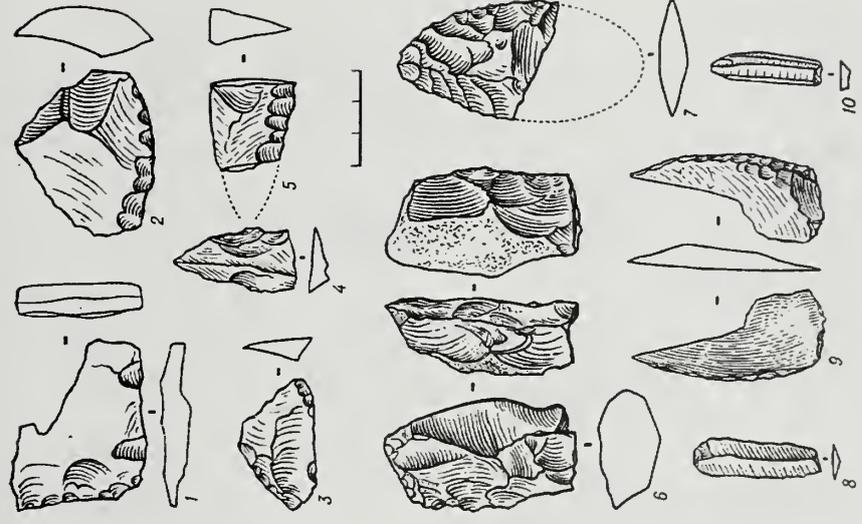


Plate 112. Stone tools from the third site at KM 102 (80) (1-10).

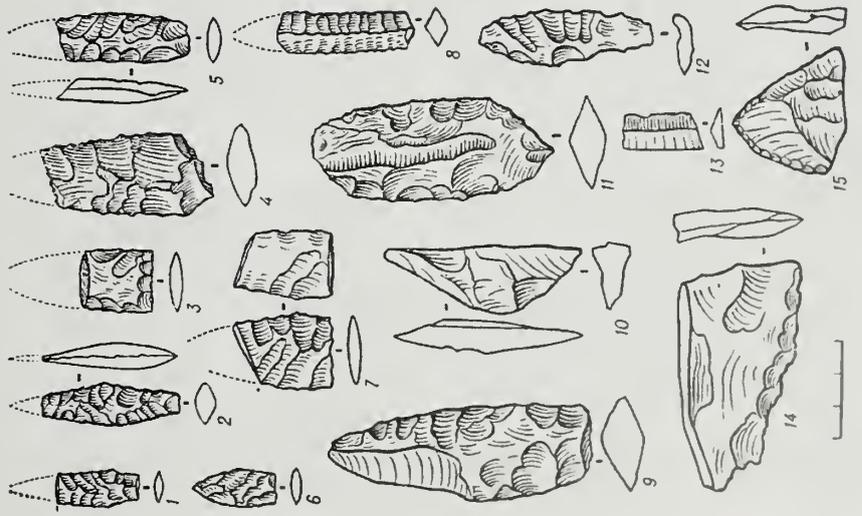


Plate 111. Projectile points and knives of flint from the third site at KM 102 (80) (1-15).

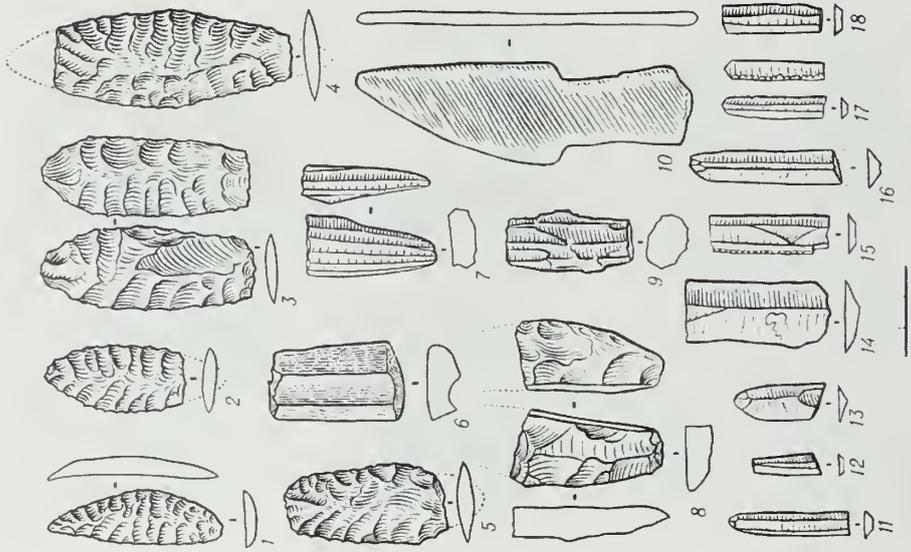


Plate 114. Stone artifacts from the fourth site at KM 102 (81)  
(1-18).

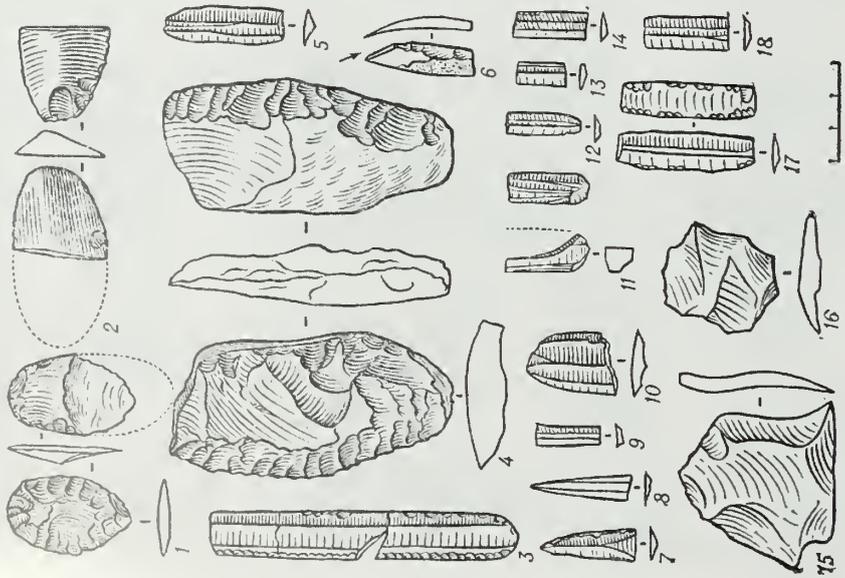


Plate 113. Stone artifacts from the fourth site at KM 102 (81)  
(1-18).

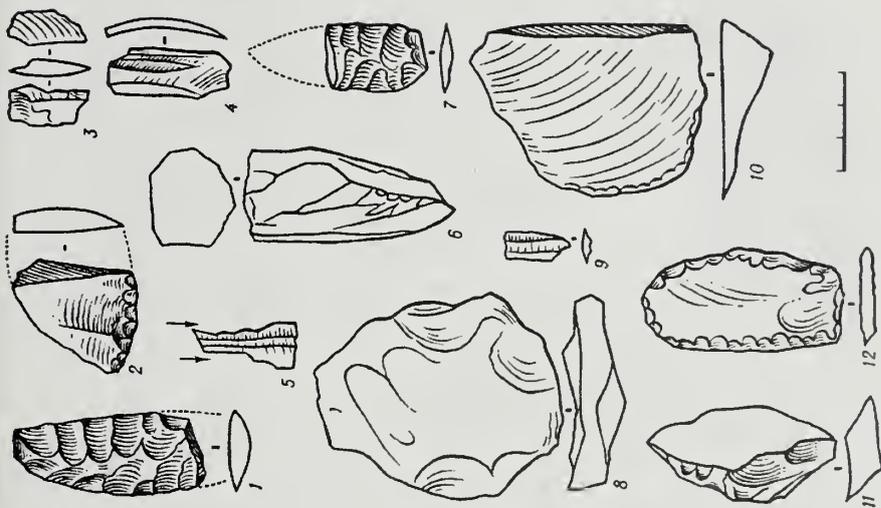


Plate 115. Stone artifacts from the Anguema sites. 1— from the grave; 2—at KM 115 (82); 3-6—at KM 123 (84); 7-9—at KM 129 (85); 10-12—at KM 134 (86).

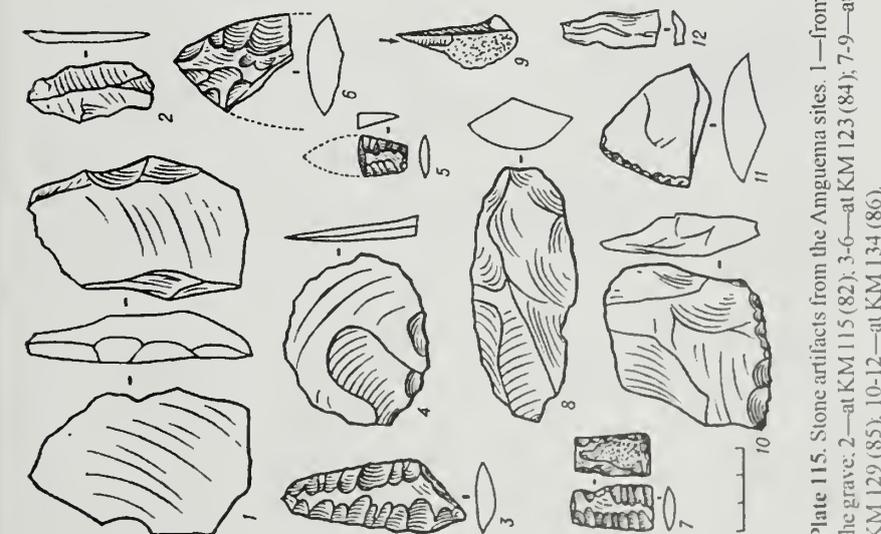


Plate 116. Stone items from the Anguema sites. 1-2—from KM 134 (86); 3-4—from KM 143 (88); 5-12—from KM 145 (89).

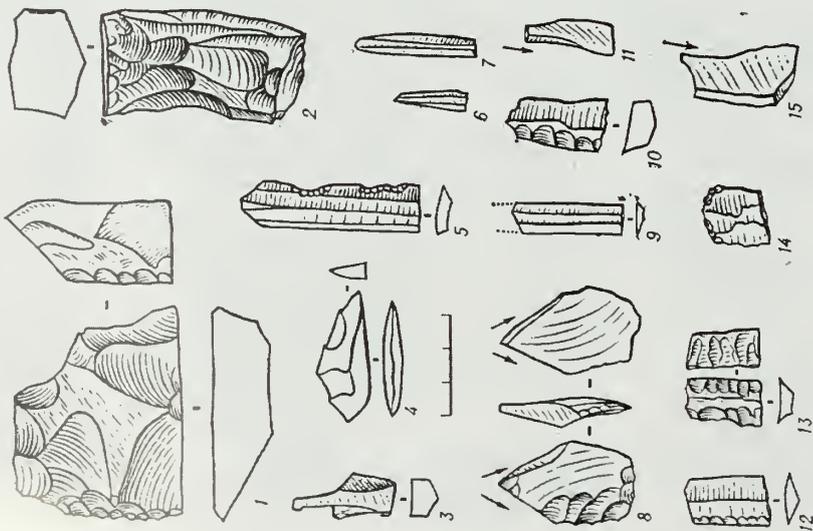


Plate 117. Stone artifacts from the Anguema site at the mouth of Yakitka River (93) (1-15).



Plate 118. Flint stemmed arrow points from the Ekiatop cemetery (95) (1-18).

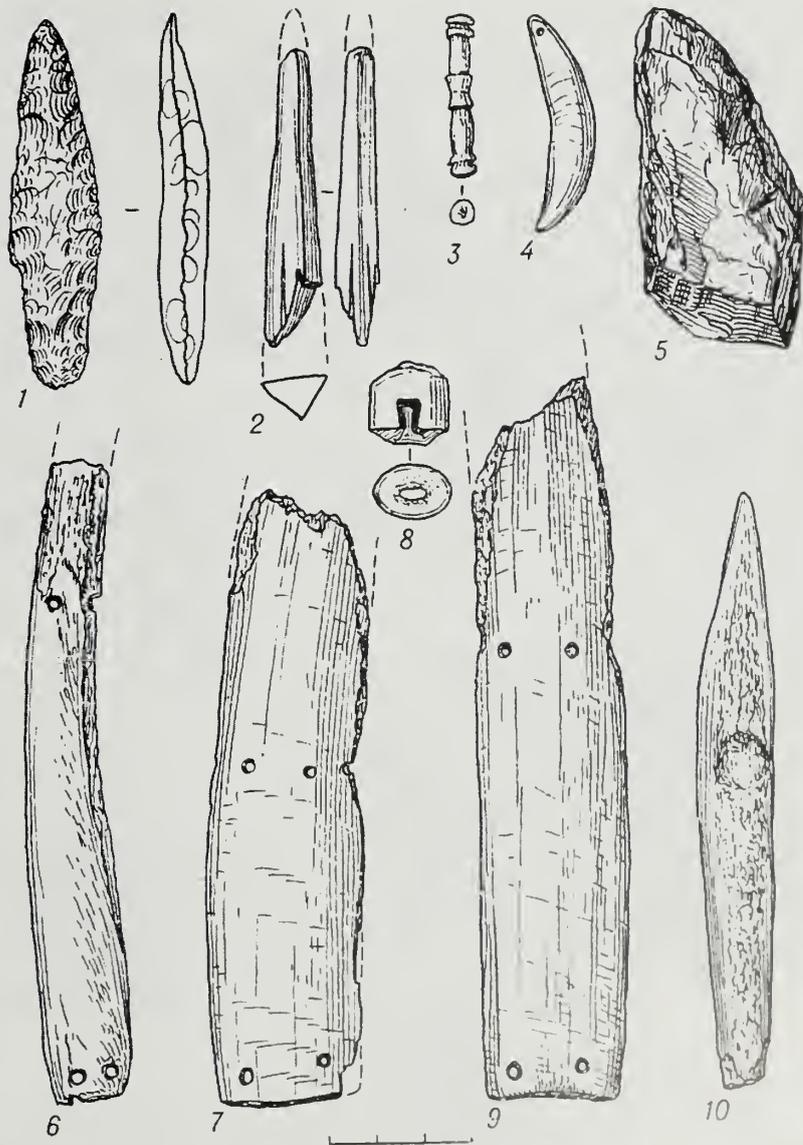


Plate 119. Artifacts from Pegtymel' cave (98). 1,5—stone, 2, 3, 4, 10—bone; 6-9—armor plates

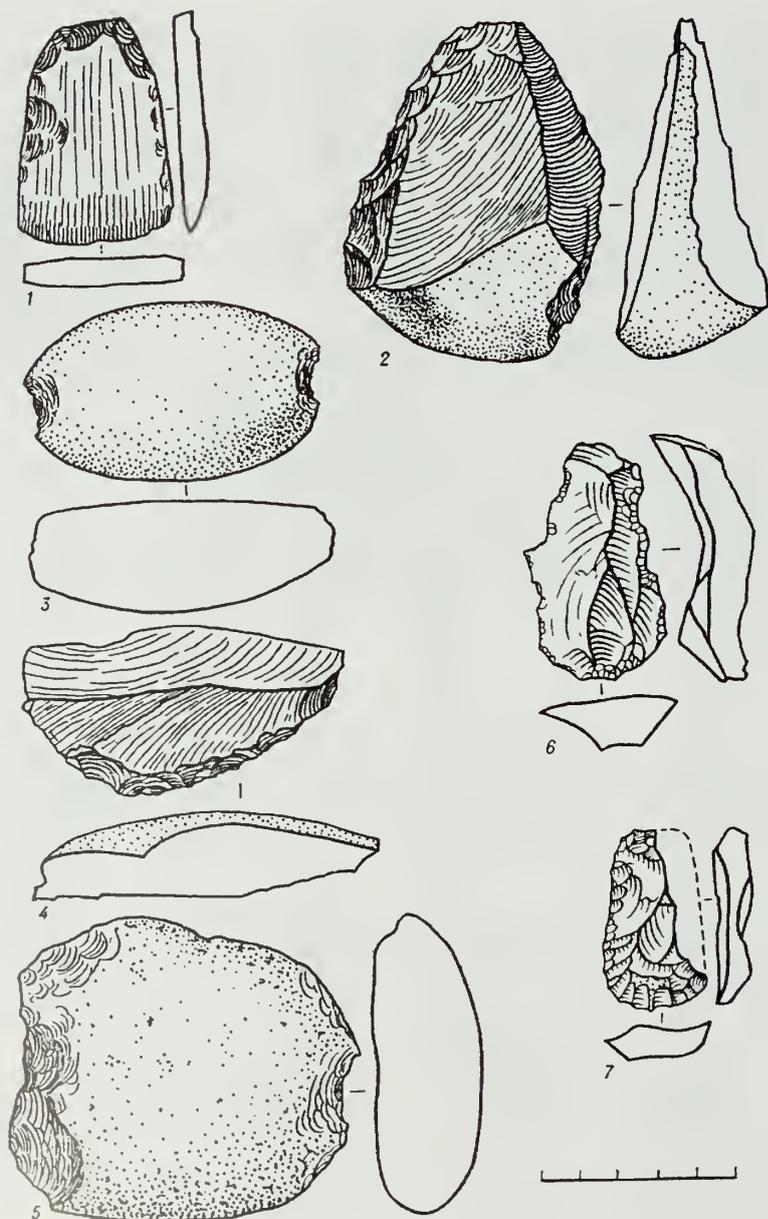


Plate 120. Stone artifacts from the site at Lakhtina Lagoon (104) (1-7). 1—adze; 3-5—weights; 6, 7—scrapers; 2, 4—knives.

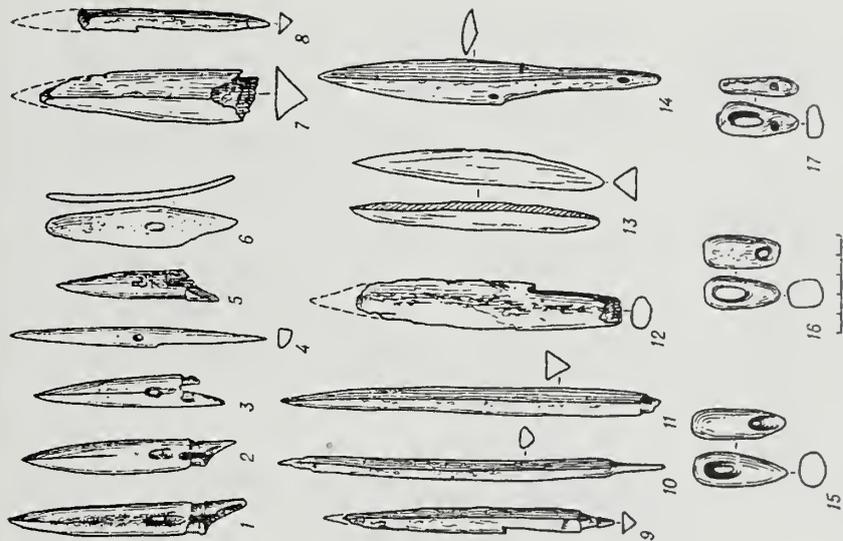


Plate 122. Bone artifacts from the site at the Seventh Moorage (105). 1-6—logging harpoon heads; 7-13—arrow points; 14—knife; 15-17—snaps.

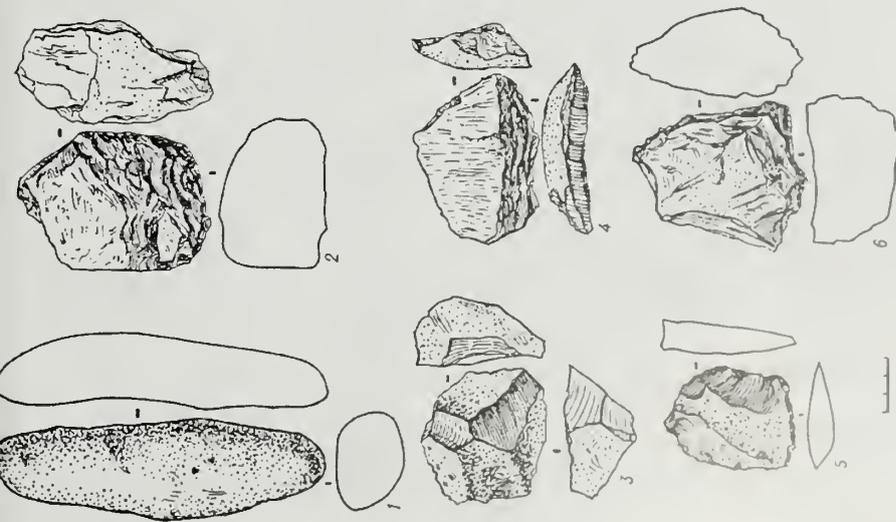


Plate 121. Stone hammer, skreblo-like tools, and flakes from the Lakhitna site (104) (1-6)

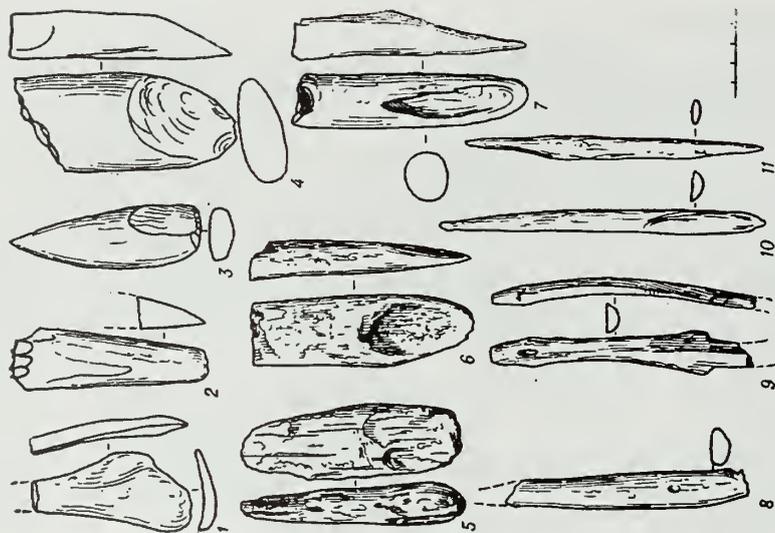


Plate 124. Bone artifacts from the site at the Seventh Moorage (105). 1—spatula; 4-7—adzes; 3—odd piece; 8-11—knives.

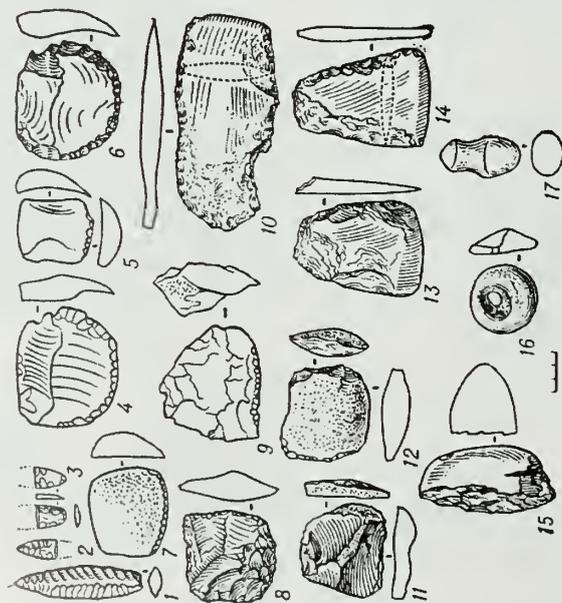


Plate 123. Stone artifacts from the site at the Seventh Moorage (105) (1-17).

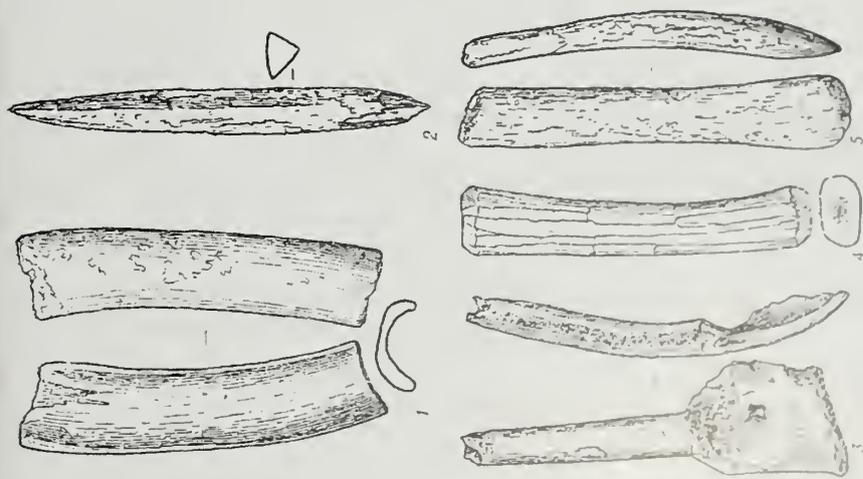


Plate 125. Bone items from the site at the Seventh Moorage (105) (1-5) (1/3 actual size)

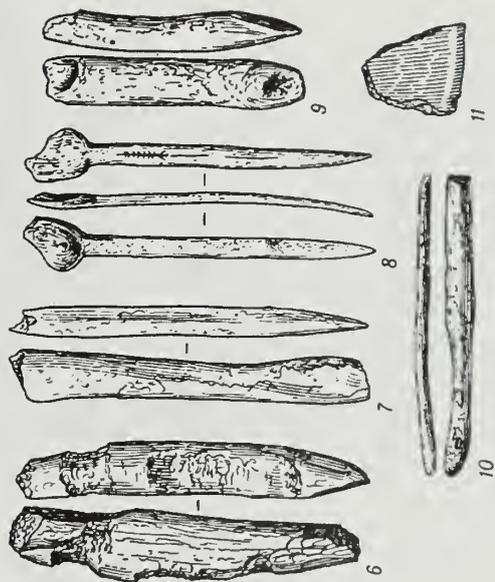
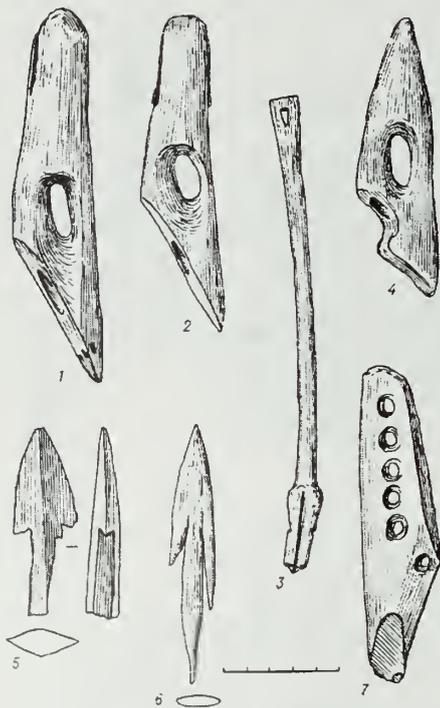
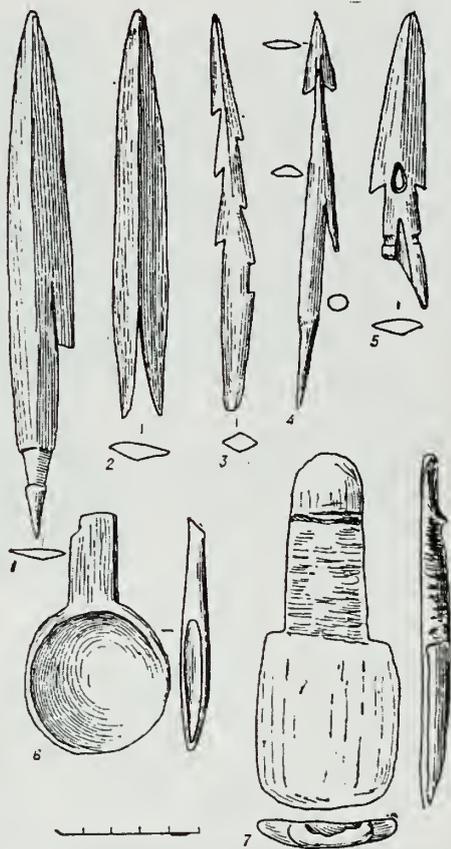


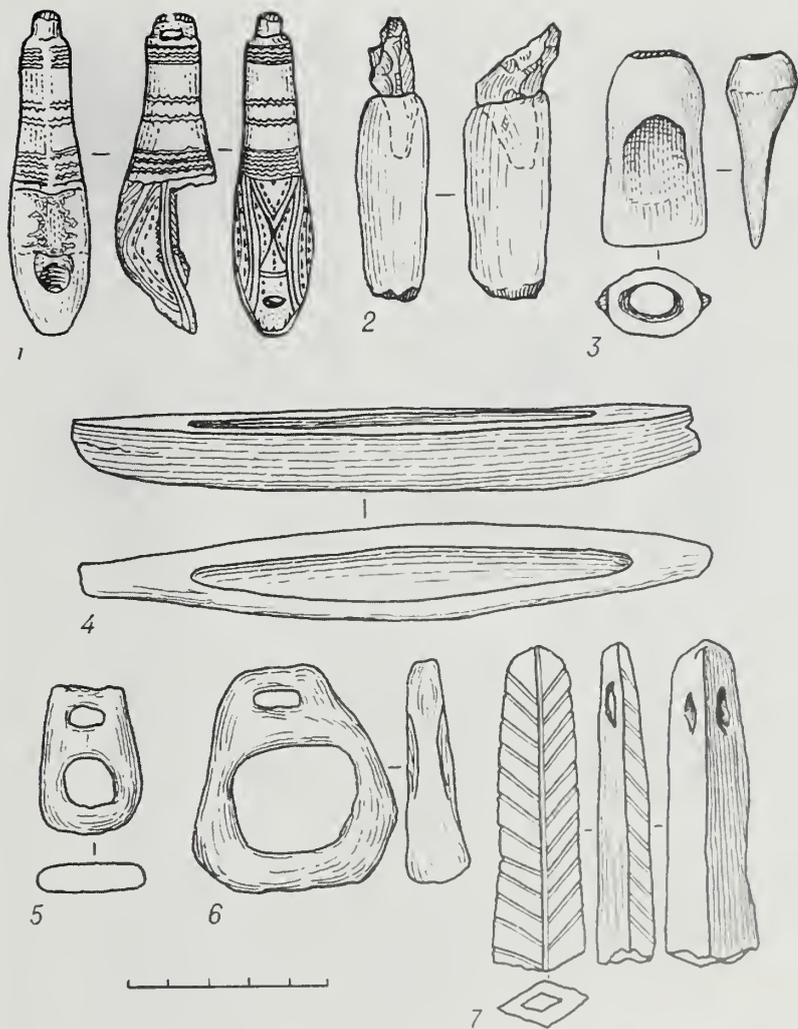
Plate 126. Bone objects from the site at the Seventh Moorage (105) (1-11).



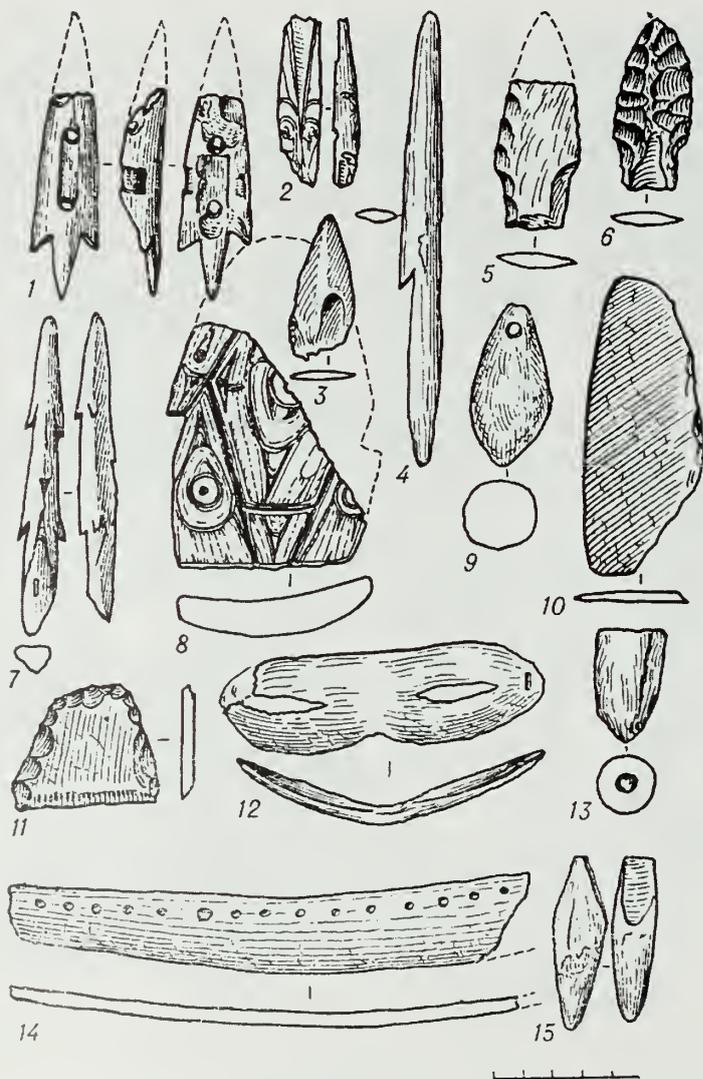
**Plate 127.** Objects from the early pit houses at Sireniki (106). 1, 2, 4—whaling harpoon heads; 3—bow fragment; 5, 6—arrow points; 7—detail of a boat hook. 1, 2, 4-7—walrus tusk; 3—deer antler.



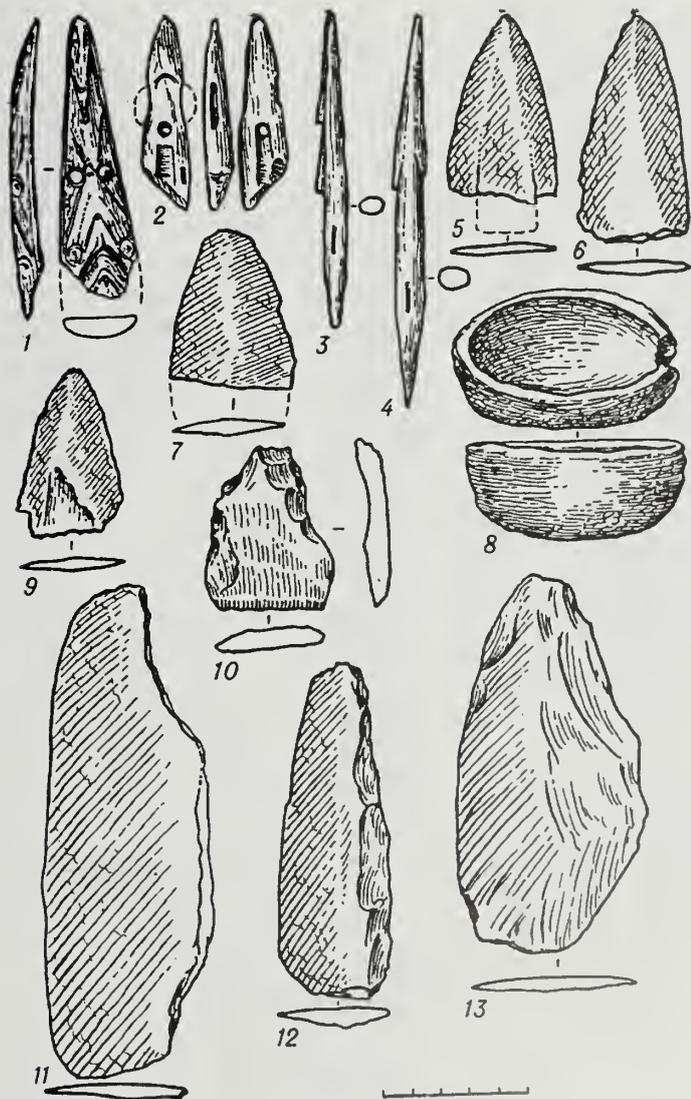
**Plate 128.** Objects from the early pit houses at Sireniki (106). 1, 2—arrow points; 3, 4—dart points; 5—toggling harpoon head; 6, 7—spoons. 1-5, 7—walrus tusk; 6—deer antler.



**Plate 129.** Objects from the early pit houses at Sireniki (106). 1—fishhook shank. 2—stone burin in a bone handle. 3—adze. 4—model boat; 5, 6—clasps. 7—amulet.



**Plate 130.** Bone and stone tools from Yandogai (107). 1, 2—toggling harpoon fragments; 3, 5, 6—points; 4—leister point; 7—harpoon head; 8—fragment of a decorated plate; 9—weight for a bird bola; 10—knife; 11—adze; 12—snow goggles; 13, 14, 15—arrow points; 14—fragment of a sled runner. 1, 2, 7-9, 12-15—walrus tusk; 4—deer antler; 3, 5, 6, 10, 11—argillaceous slate.



**Plate 131.** Tools from the Old Bering Sea layer at Nuniamo (109). 1, 2—toggling harpoon heads. 3, 4—leister points; 5-7, 9—points; 8—lamp, 10—adze; 11-13—knives. 1-4—walrus tusk. 8—wood. 5-7, 9-13—argillaceous slate.

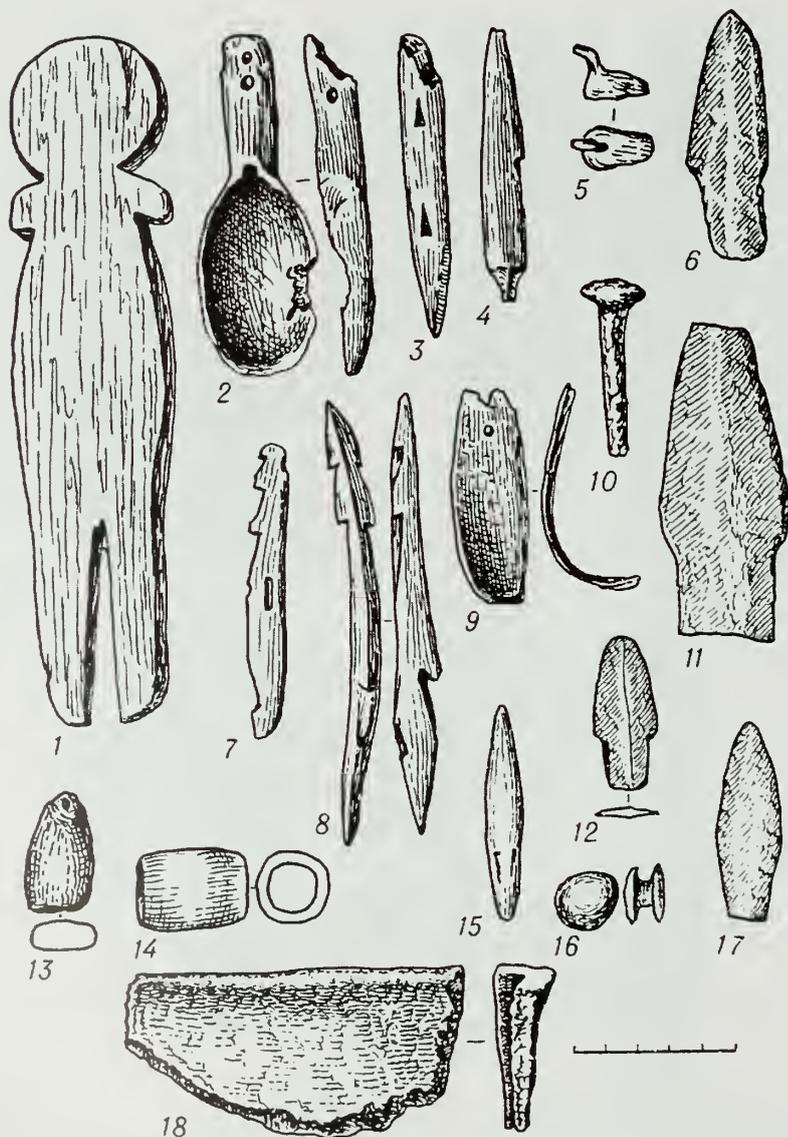


Plate 132. Tools from Nuniamo (109). 1, 5—amulets; 2—spoon; 3—piece of a foreshaft for seating a harpoon head, 4, 7, 8—leister points; 6, 11, 12, 17—points; 9—piece of a scraper for removing fat; 13—pendant; 14—bead; 10—nail; 15—harpoon foreshaft; 16—stopper for a harpoon float; 18—rim fragment of a clay vessel. 1—wood; 2-5, 8-10, 15, 16—walrus tusk; 13—walrus tooth; 7, 14—deer antler; 6, 11, 12, 17—argillaceous slate; 18—ceramics.



Plate 133. Toggling harpoon heads and other artifacts from Nunlamo (100). 1, 2, 4-12, 15—walrus tusk; 3, 16—deer antler; 13—with inset blade of argillaceous slate; 14—walrus tusk and iron.

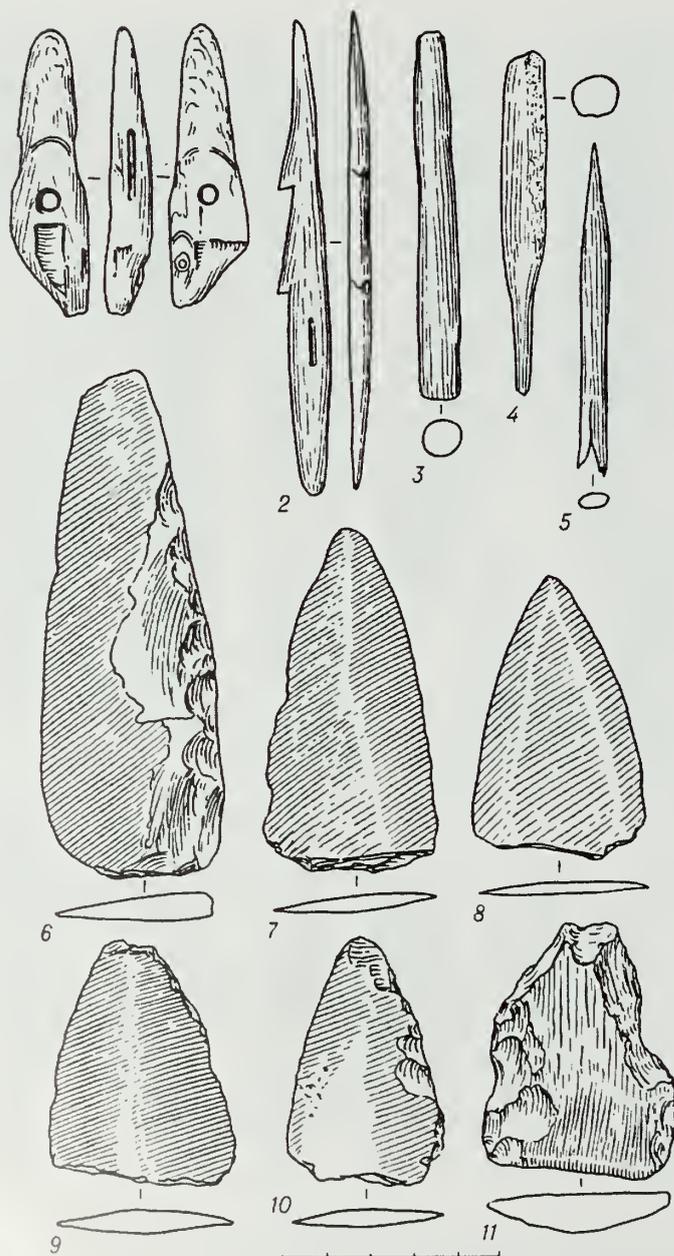


Plate 134. Artifacts from Nuniamo. Exposure 4 (109). 1—toggling harpoon head; 2—leister point; 3—bone rod; 4, 5—points; 6-10—knives; 11—adze. 1-5—walrus tusk; 6-11—argillaceous slate.

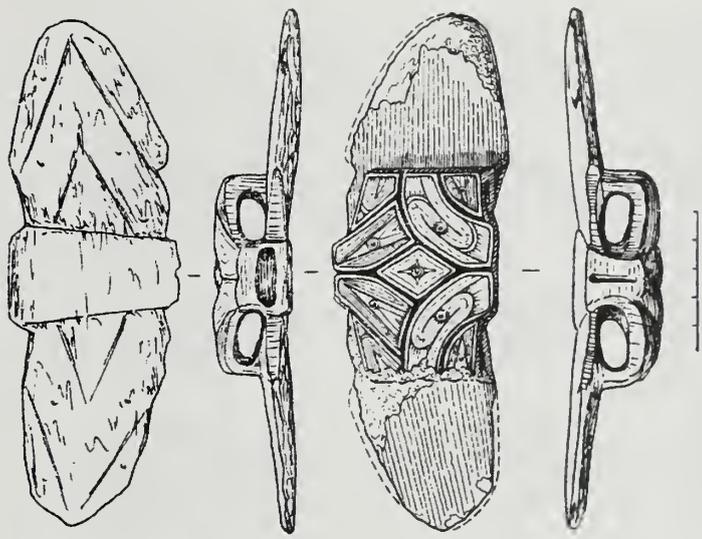


Plate 136. "Winged objects" from Grave No. 1 of the First Emmynytyn cemetery (115).

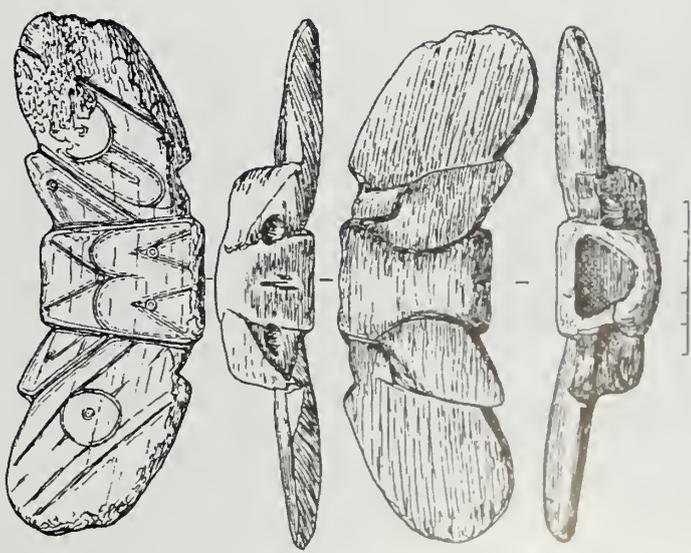


Plate 135. "Winged objects" from Nuniamo (109).

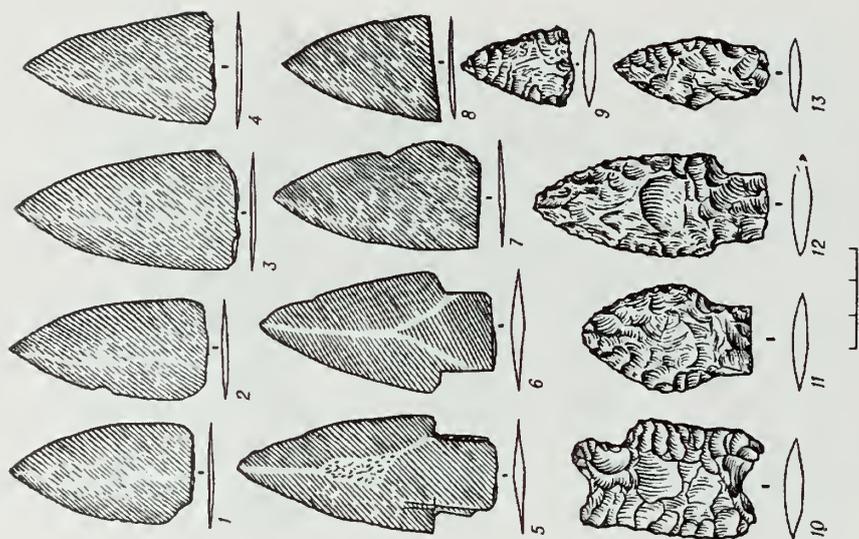


Plate 138. Stone points and scraper from Grave No. 9 of the First Emmynytyn cemetery (115) (1-13).

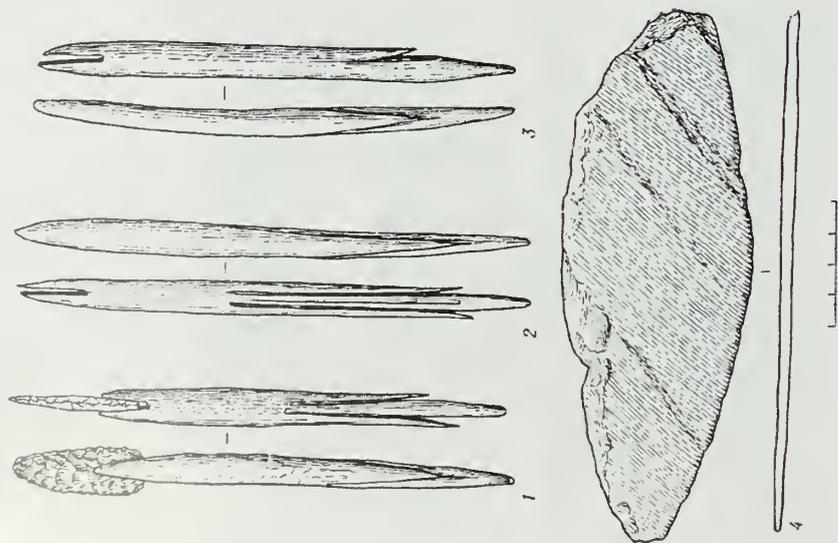


Plate 137. Objects from Grave No. 8 of the First Emmynytyn cemetery (115). 1—arrow point; 2, 3—bone point mounts; 4—ground slate knife.

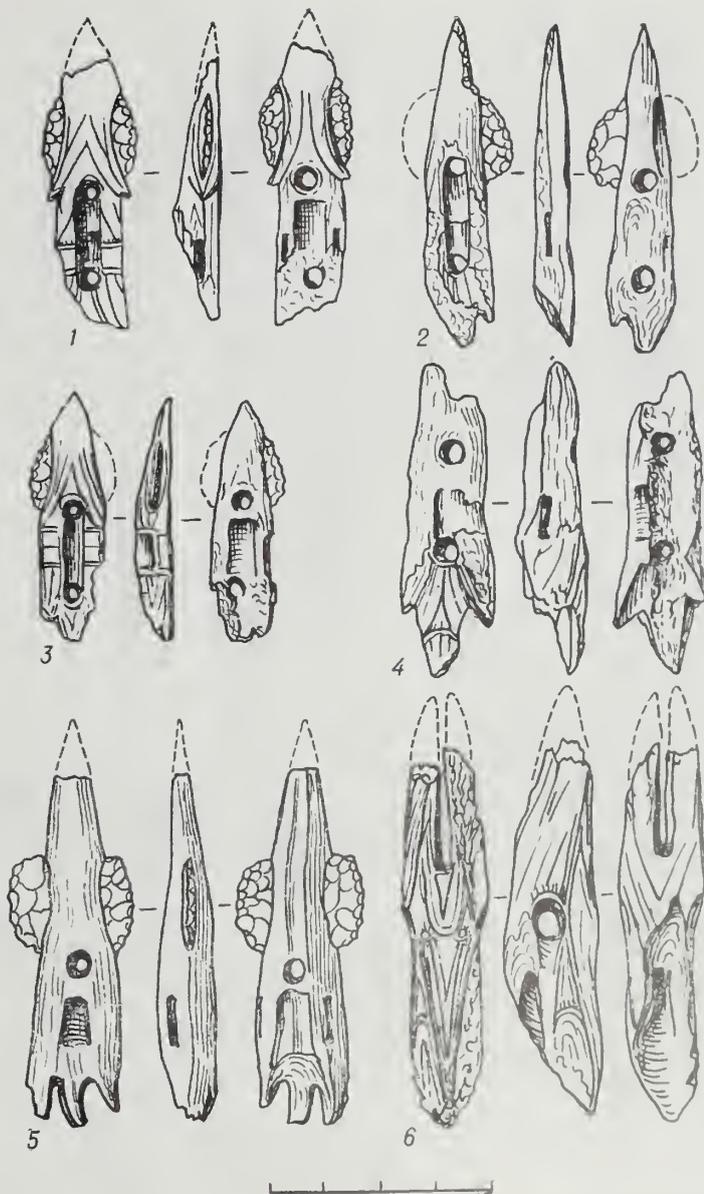


Plate 139. Toggling harpoon heads from Grave 9 of the First Enmyntyn cemetery (115) (1-6)



Plate 140. Rods of walrus tusk and other artifacts from Grave 9 of the First Enmyntyn cemetery (115) (1-16).

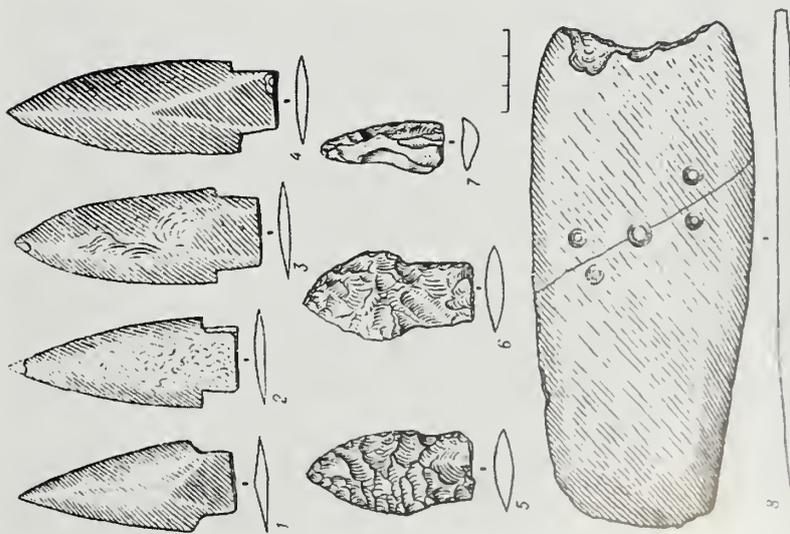


Plate 141. Stone points and knife from Burial No. 10 of the First Emmynytyn cemetery (115) (1-8).

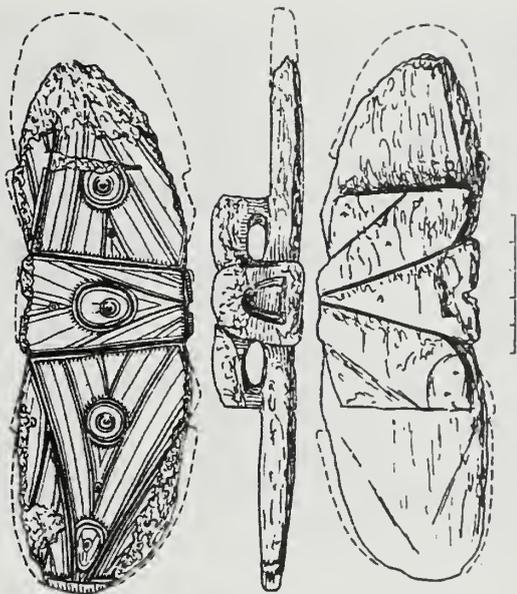


Plate 142. "Winged object" from Grave 10 of the First Emmynytyn cemetery (115).

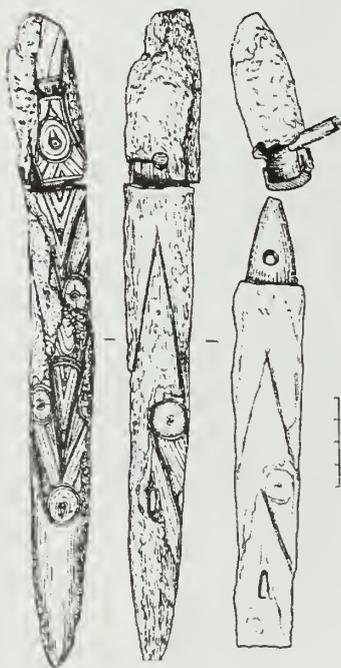


Plate 143. Compound rod of walrus tusk from Grave 10 of the First Enmynytnyn cemetery (115).

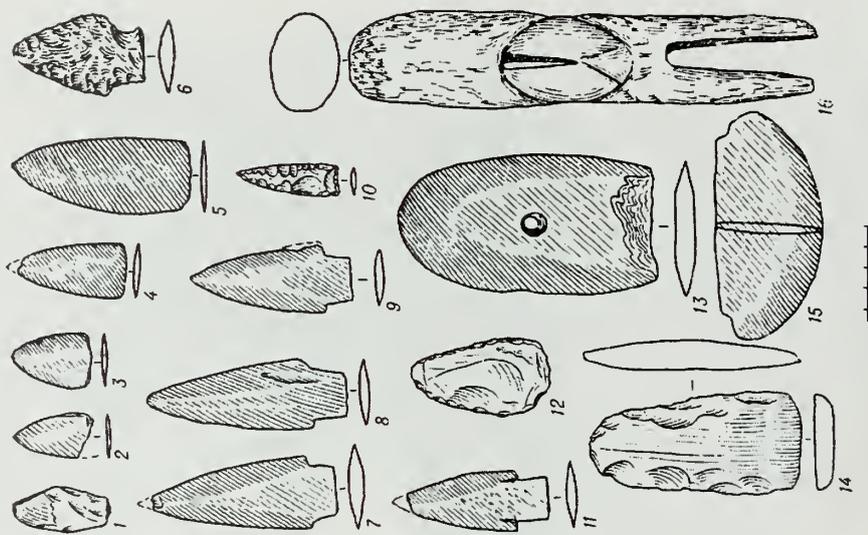


Plate 144. Stone and bone artifacts from Graves 11 and 12 of the First Enmynytnyn cemetery (115) 1—burin, 2-12—points; 13, 15—knives; 14—adze; 16—harpoon head.

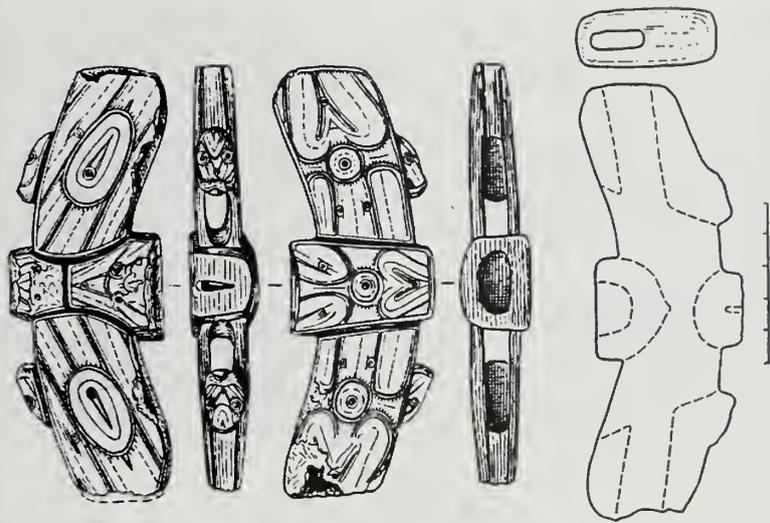


Plate 146. "Winged object" from Grave 12 of the First Emmynytyn cemetery (115).

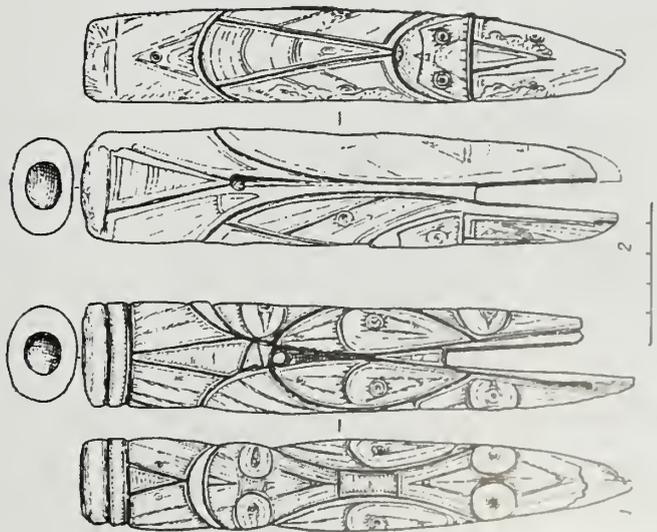
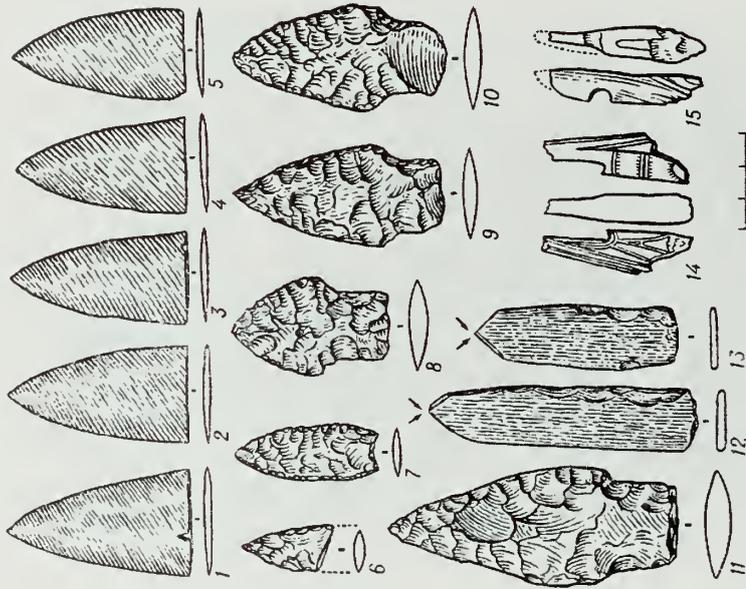
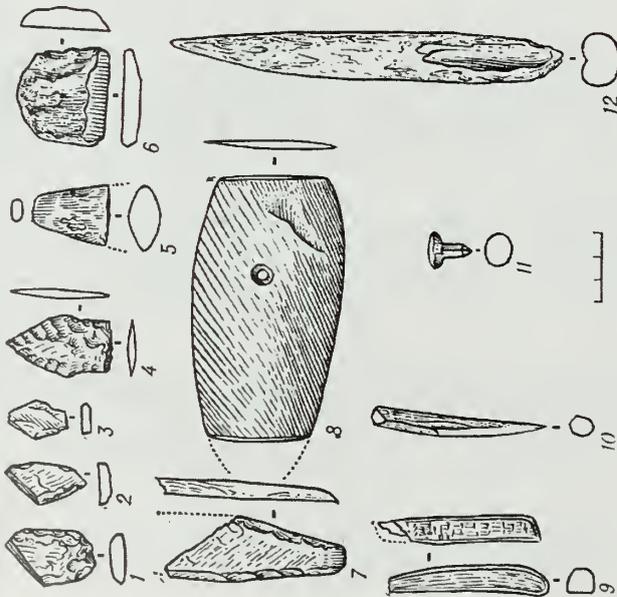


Plate 145. Harpoon socket pieces from Grave 12 of the First Emmynytyn cemetery (115) (1-2).



**Plate 148.** Stone and bone artifacts from Grave 2 of the Second Emynynyn cemetery (116). 10, 11—points; 12, 13—burins; 14, 15—pieces of toggling harpoon heads. 1-13—argillaceous slate; 14, 15—walrus tusk.



**Plate 147.** Stone and bone artifacts from Grave 12 of the First Emynynyn cemetery (115). 1, 3—burins; 4—point; 5, 6—adzes; 7, 8—knives; 2, 9, 10—odd pieces; 11—nail. 1-8—stone; 9-12—bone.

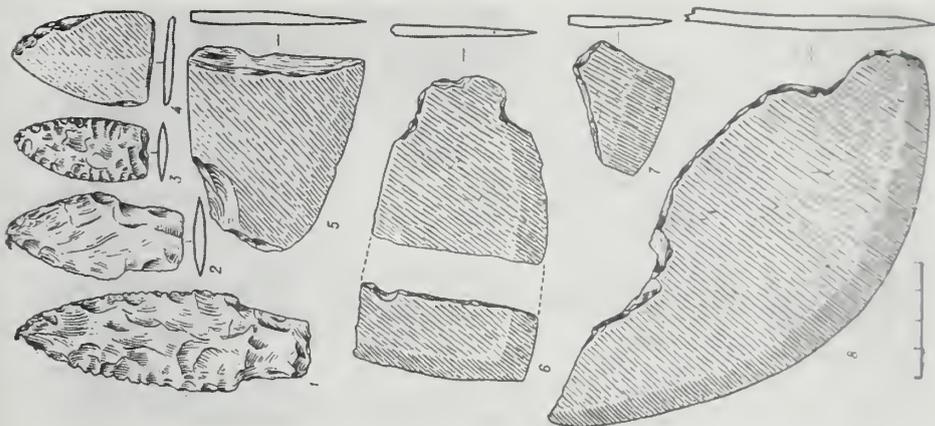


Plate 150. Stone artifacts from Burial No. 4 of the Third Emmynytyn cemetery (117).  
1-4—points, 5-8—knives

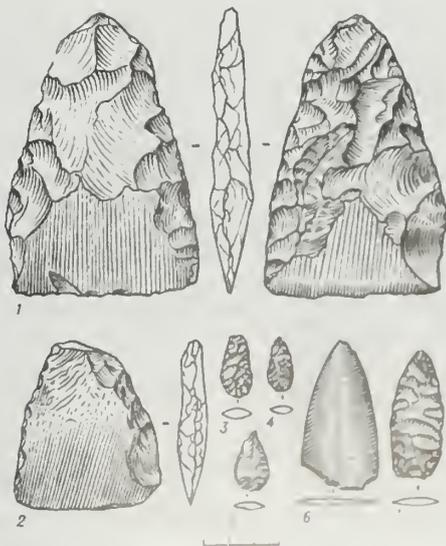
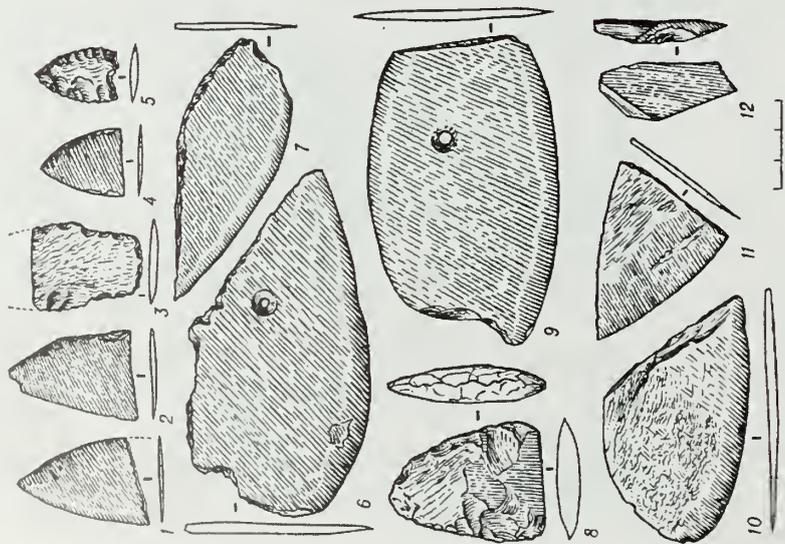
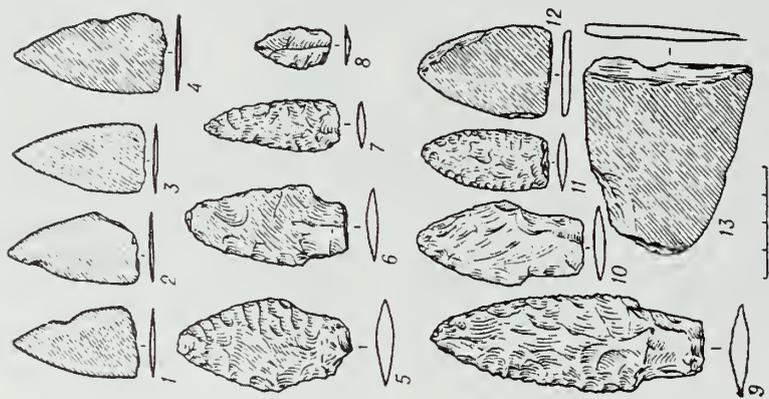


Plate 149. Stone artifacts from Grave 2 of the Second Emmynytyn cemetery (116) 1, 2—adzes, 3-7—points



**Plate 151.** Stone artifacts from Burial No. 5 of the Third Enmynytyn cemetery (117) 1-4—ground points; 6, 7, 9-11—knives; 8—adze; 12—burin.



**Plate 152.** Ground and flaked stone points and a knife from Burial 7 of the Third Enmynytyn cemetery (117) (1-13).

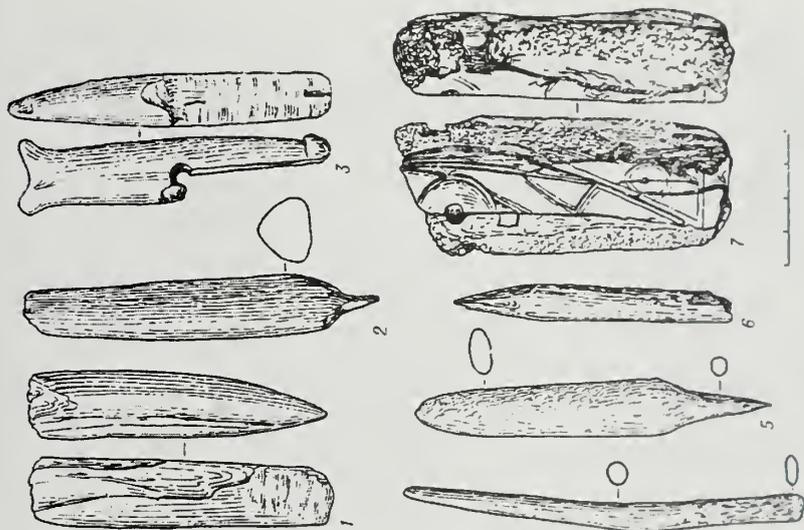


Plate 154. Bone tools from the excavation at Inchoun (120) 1—pick; 2, 4-6—punches; 3—detail of a fishhook, 7—piece of a toggling harpoon socket piece. 1-5, 7—walrus tusk; 6—sea baculum

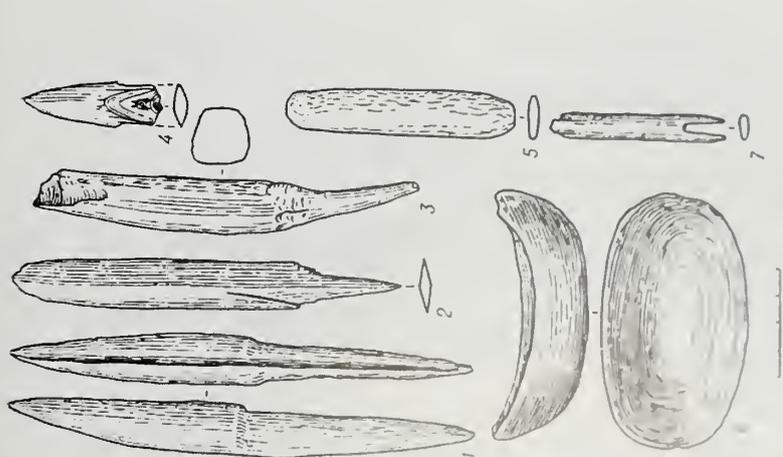


Plate 153. Bone tools from the excavation on the slope of the hills at Inchoun (120). 1—ice pick, 2—point, 3—punch, 4—piece of a toggling harpoon head, 5—flat particle, 6—scraper for removing fat, 7—haft for a point

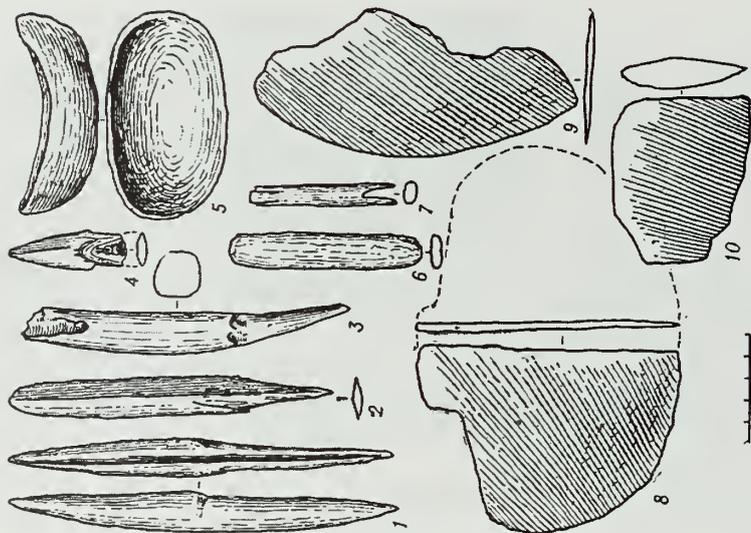


Plate 156. Artifacts from the Uten Old Bering Sea site (122). 1—point with slot for inset blade; 2—point; 3—pick fragment; 4—piece of a toggling harpoon head; 5—scraper for removing fat; 6—plate of walrus tusk; 7—point fragment; 8-10—knives. 1-7—walrus tusk; 8, 10—arctic slate.

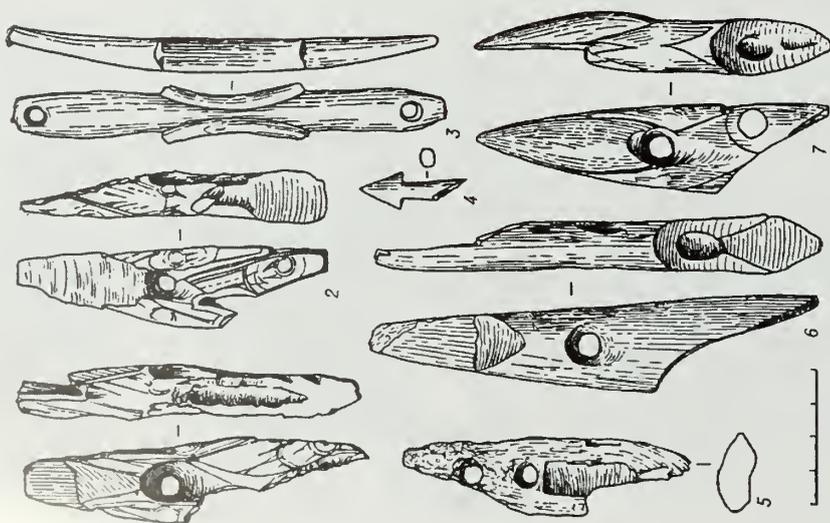


Plate 155. Toggling harpoon heads from the Old Bering Sea house at Inchoun (120) (1-7).

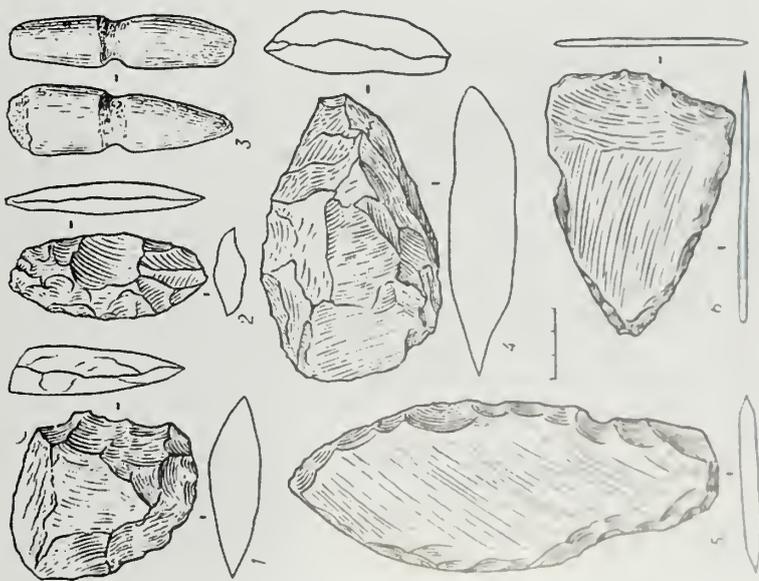


Plate 157. Tools of argillaceous slate and walrus tusk. Chettun (124). 1—skreblo, 2, 4-6—knives, 3—plug

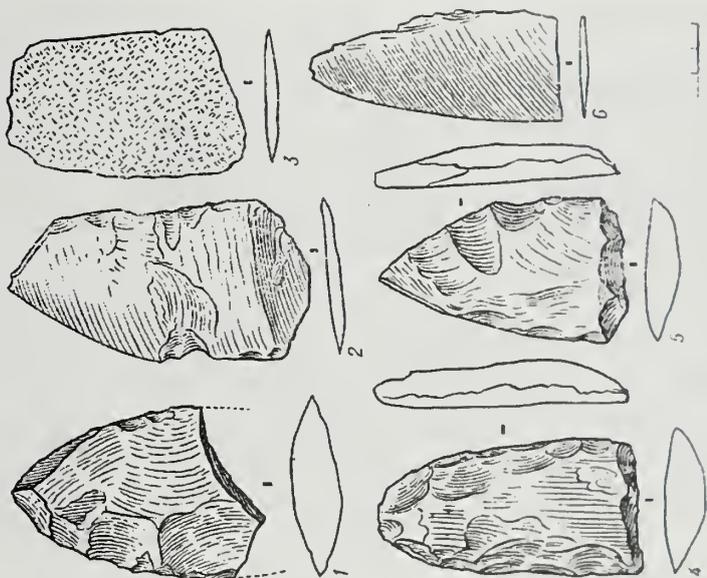
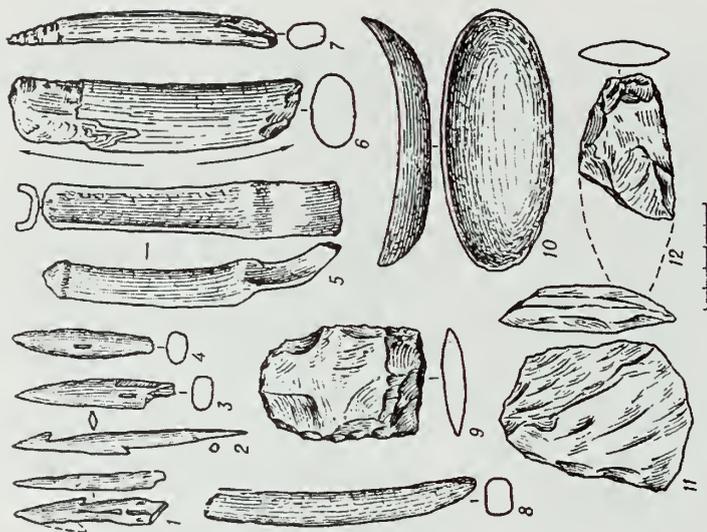
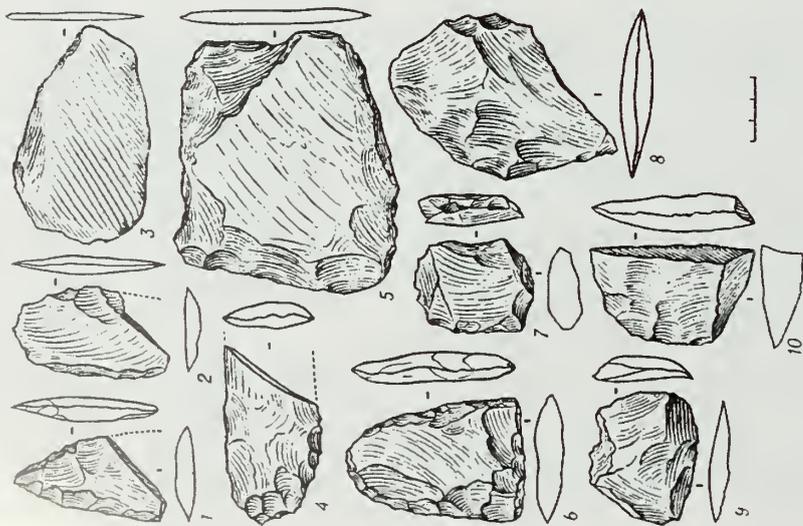


Plate 158. Tools of argillaceous slate. Chettun (124). 1-3, 6—knives, 4—adze, 5—adze blank



**Plate 160.** Artifacts from the cultural layer at Ekichuerveem (125). 1—toggling harpoon head; 2—leister point; 3, 4—points; 5—handle of a pressure flaker; 6—pick/mattock; 7—ice pick; 8—piece of walrus tusk; 9—knife/scrapper; 10—scraper for removing fat; 11—skreblo; 12—knife fragment. 1-8, 10—walrus tusk; 9, 11, 12—argillaceous slate.



**Plate 159.** Tool of argillaceous slate. Chettun (124). 1-5—knives; 6—adze blank; 7-9—scrapers.

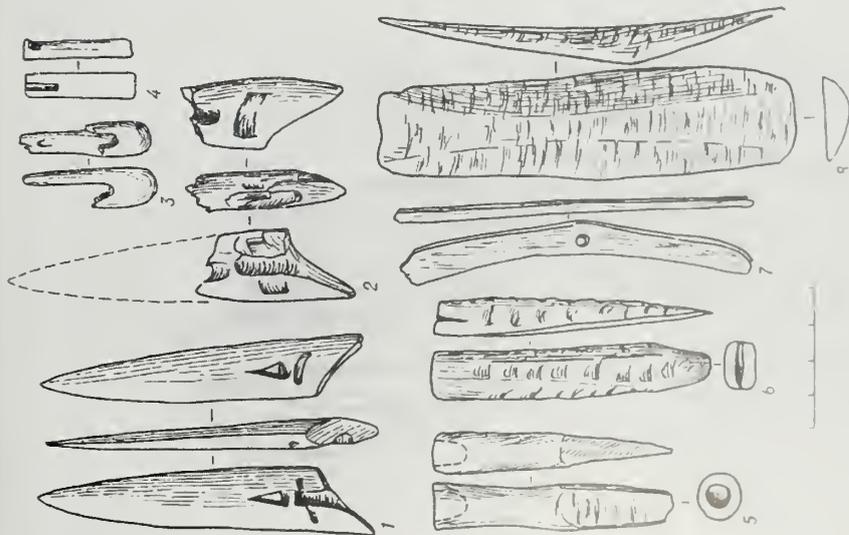


Plate 161. Bone tools from the Chegittum site (126). 1. Toggling harpoon head and fragment. 2—toggling harpoon head and fragment. 3—fishhook fragment. 4—detail of a fishhook. 5, 6—handles. 7—odd bone item. 8—scraper. 1-5—walrus tusk. 6-8—deer antler.

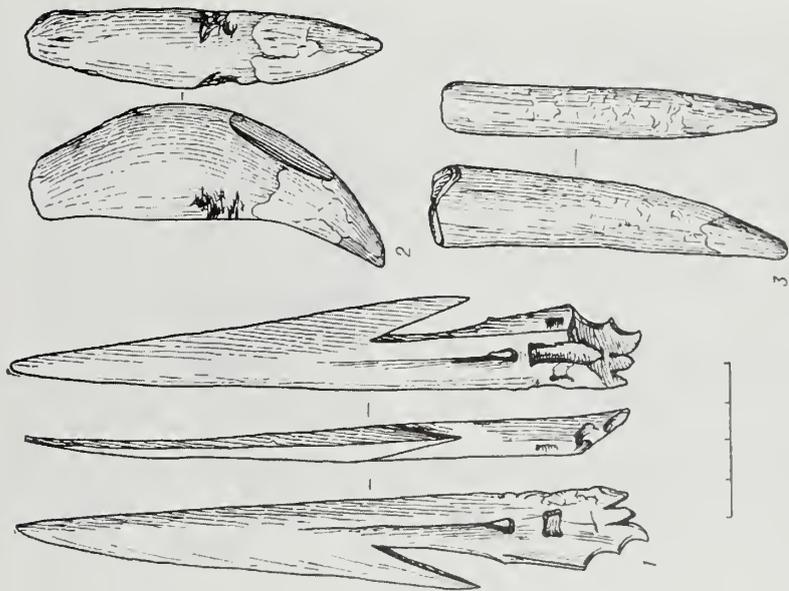
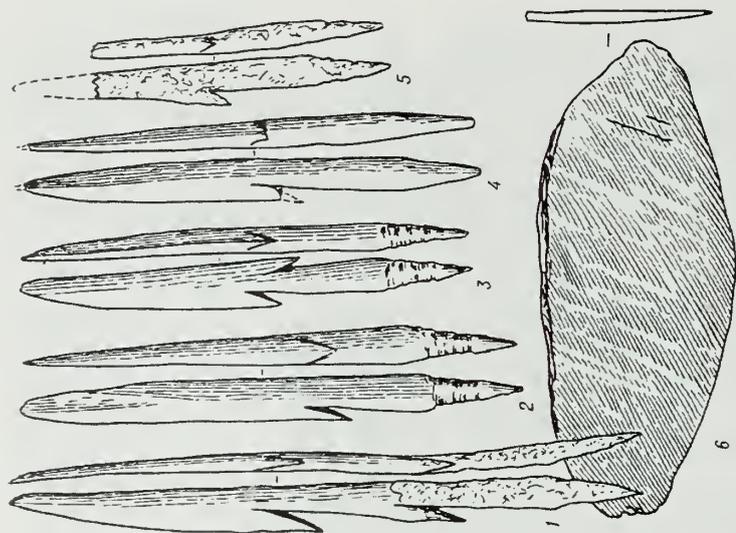
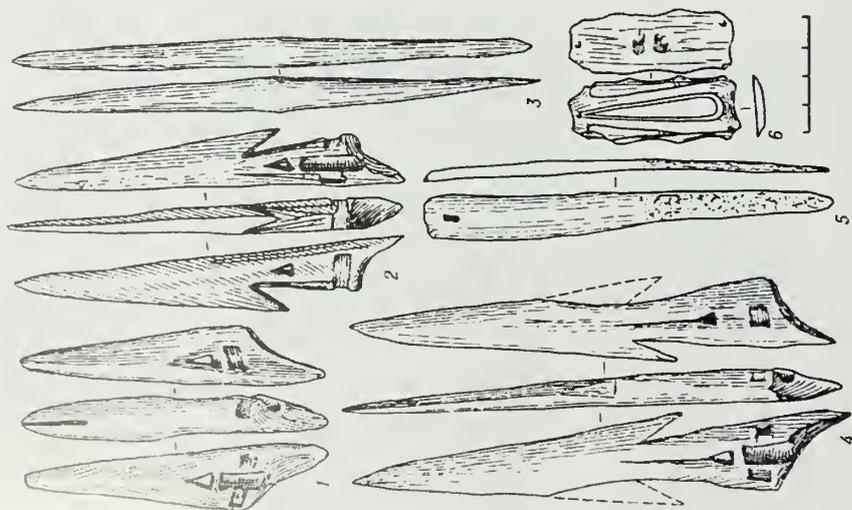


Plate 162. Toggling harpoon head and bear camine from Burial 1 of the Chegittum cemetery (128) (1-3).



**Plate 164.** Dentate bone points and ground slate knife from Grave 7 of the Second Chegutun cemetery (128). 1—long bone; 2-4—walrus tusk; 5—nasal bone of a whale; 6—argillaceous slate.



**Plate 163.** Artifacts from Grave No. 4 of the Second Chegutun cemetery (128). 1-2, 4—toggling harpoon heads; 3, 5—bone rods; 6—badge. 1, 2, 6—walrus tusk; 4—nasal bone of a whale; 5—bone rod.

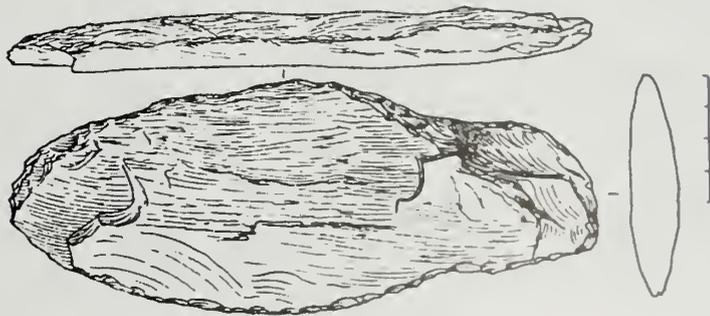


Plate 165. Slate knife from Grave 7 of the Secon Chegitun cemetery (128).

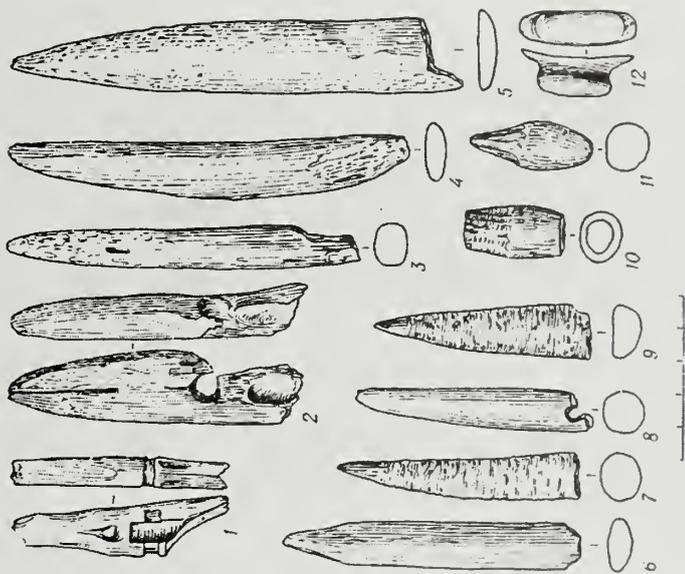
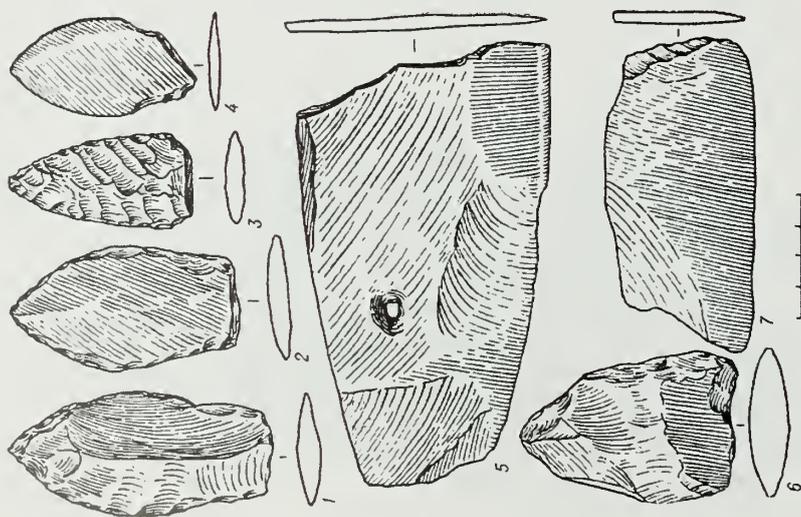
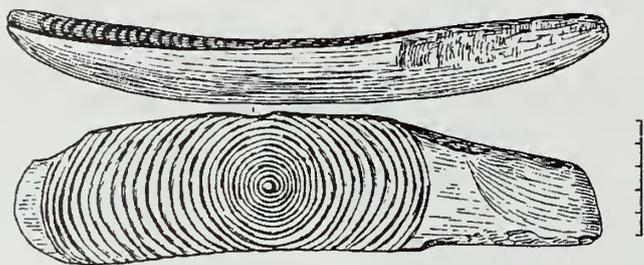


Plate 166. Bone artifacts from the early Ikolivrunveem site (133). 1, 2—toggling harpoon heads, 3-9—points; 10—socket, 11—odd piece; 12—labret.



**Plate 167.** Tools of argillaceous slate. Ikolivrunveem (133). 1-4—points; 5, 7—knives; 6—adze. 1, 3, 4—from the excavation; 2, 5-7—from the grave.



**Plate 168.** Ceramic stamp of walrus tusk. Ikolivrunveem (133).

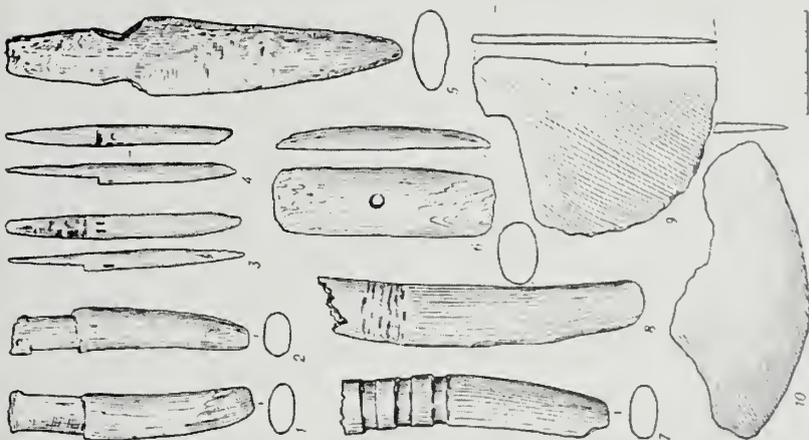


Plate 170. Artifacts from the early sites at Enurmino (136, 137), Ilitlen Island (139), and at Uten (122). 1-4—Enurmino; 5-8—Ilitlen; 9, 10—Uten. 1, 2, 5, 7, 8—picks/mattocks; 3, 4—ice picks; 6—odd bone piece; 9,

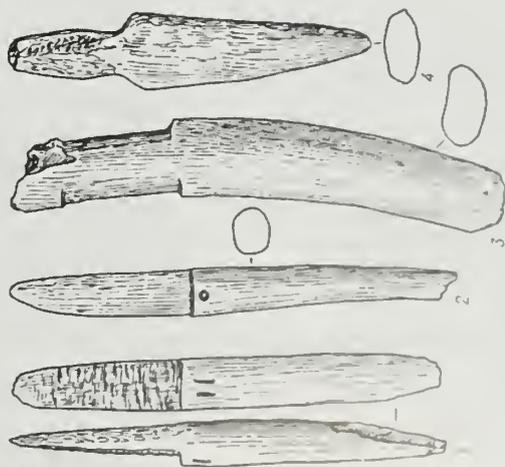


Plate 169. Artifacts of walrus tusk. Enurmino (136, 137). 1, 2—ice picks; 3, 4—picks/mattocks.

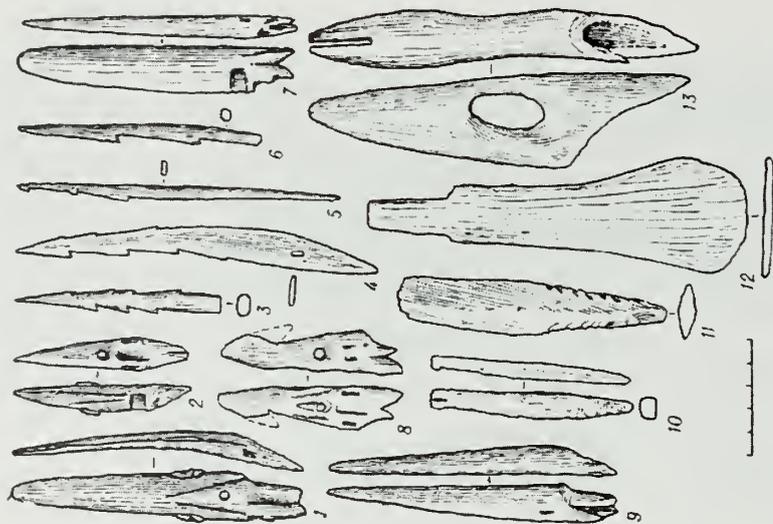


Plate 172. Artifacts of walrus tusk from the early site at Neshkan (140). 1, 2, 3-6, 10-12—from the pit house; 7-9, 13—from the surface. 1, 2, 7-9—toggling harpoon heads; 3-6—leister points; 10—detail of a fishhook; 11—point; 12—spoon; 13—whaling harpoon head.

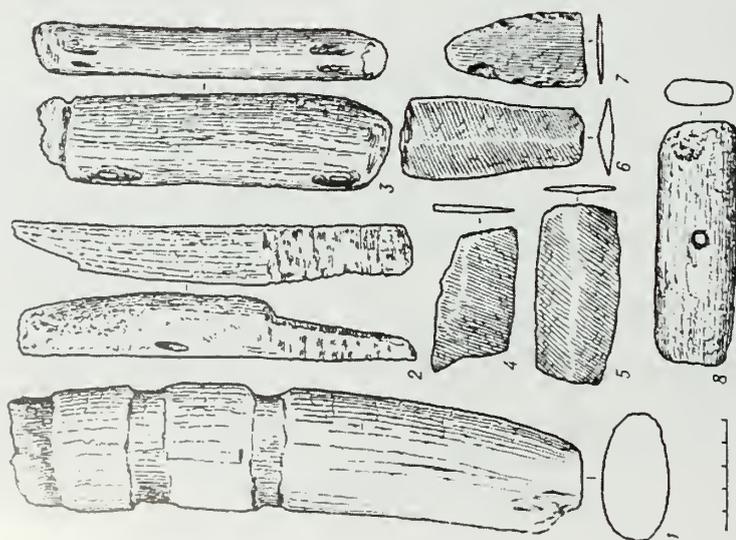


Plate 171. Stone and bone items. Iltiten Island (139). 1, 2—picks; 3—handle; 4-7—knives and points; 8—weight. 1-3, 8—walrus tusk; 4-7—argillaceous slate.

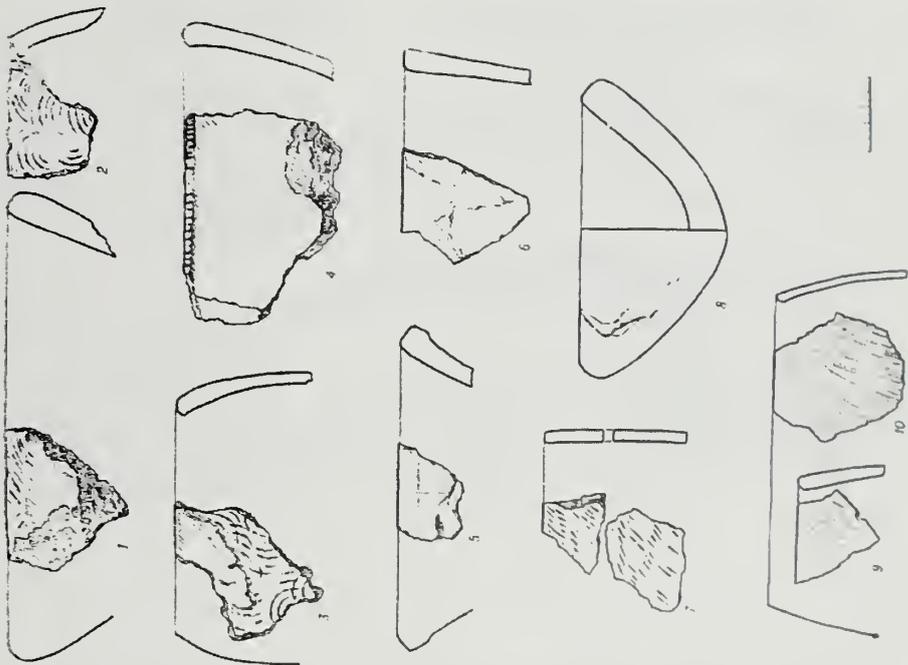


Plate 173. Artifacts from the early pit house at Neshkan (140) 1-3—stone, 4-9—bone.

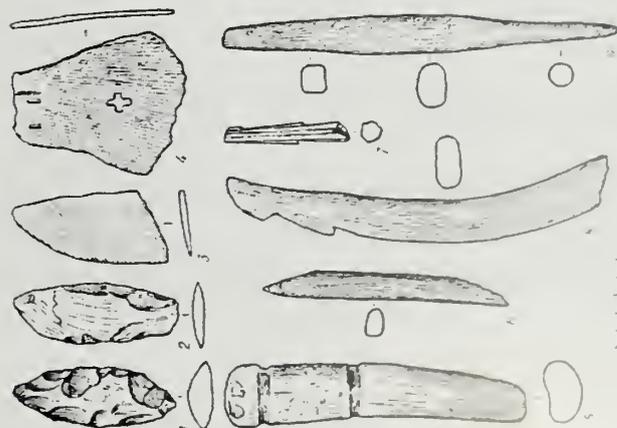
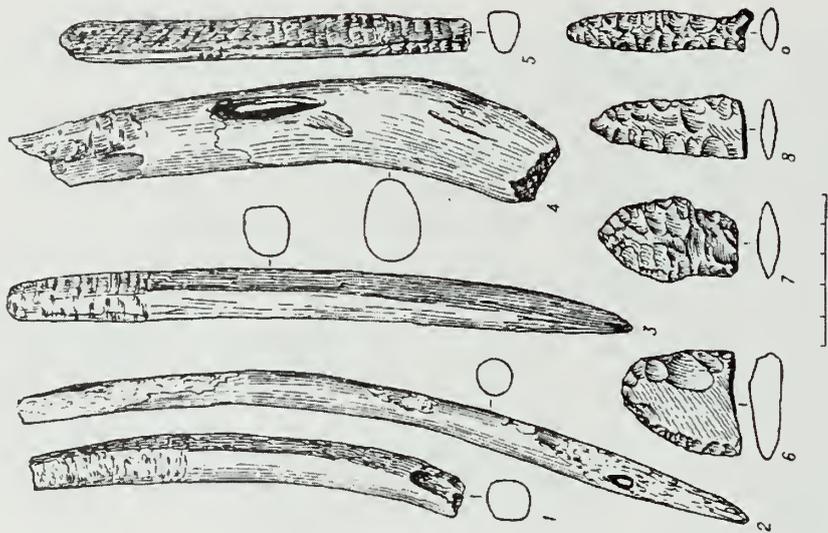
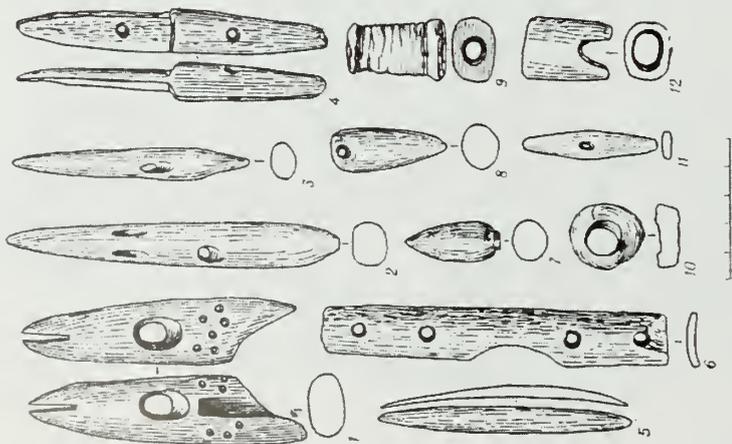


Plate 174. Fragments and reconstruction of clay vessels. 1-4—from the early pit house at Neshkan (140); 5, 6, 8—from a Chini cemetery (110); 7—from the house at Chini cemetery (111); 9, 10—from the pit house on Aion Island (166)



**Plate 176.** Bone and stone tools from the third early site, Dzheurellen (142) (1-9).



**Plate 175.** Bone artifacts, surface material from the first early camp, Dzheurellen (141).  
 1—toggling harpoon head; 2, 3—harpoon heads;  
 4—harpoon ice pick; 5—point; 6—armor plate;  
 7—arrow point; 8—bird bola weight; 9, 10,  
 12—mouthpiece for a harpoon float; 11—clasp.

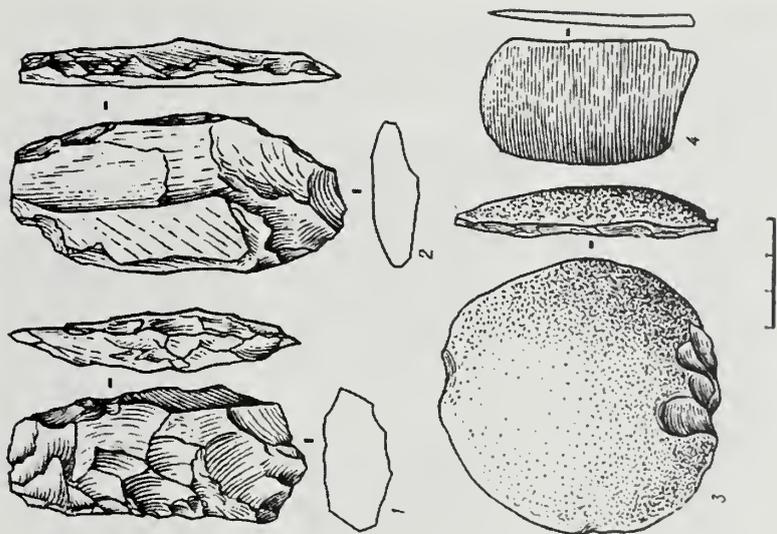


Plate 178. Stone tools from the northern end of Koliuchin Island (146). 1—adze; 4—knife; 2, 3—skreblos.

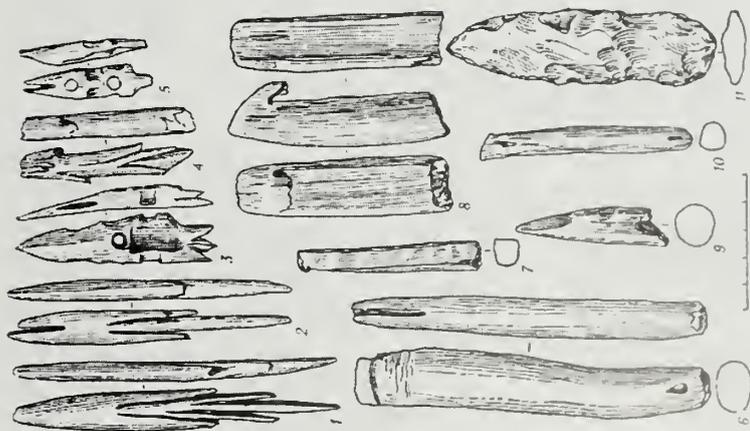
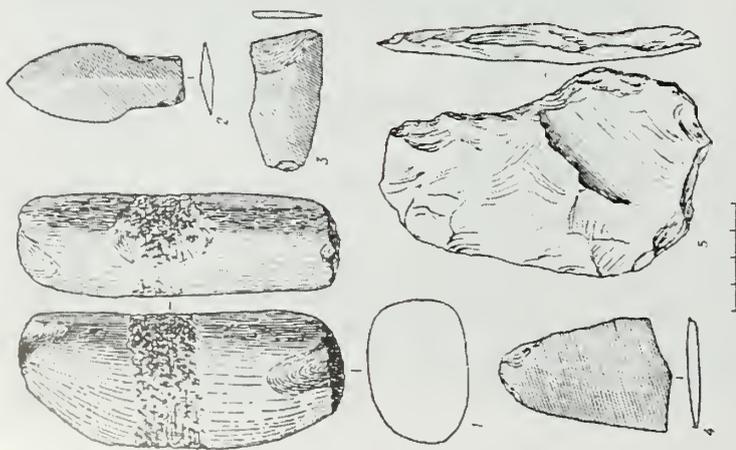
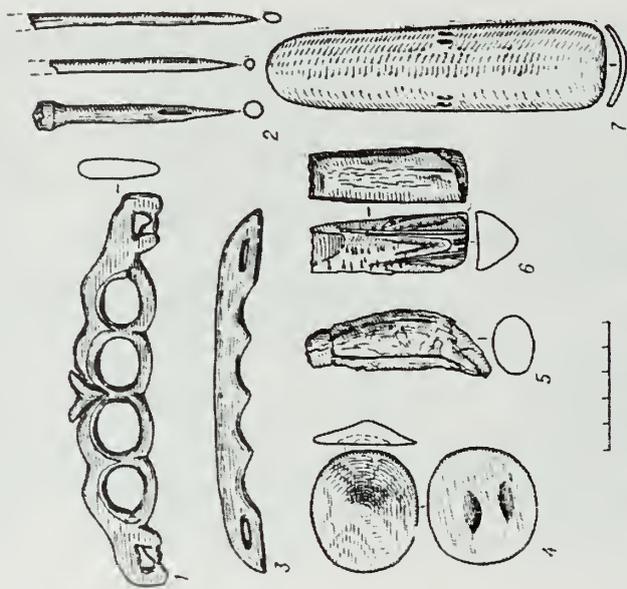


Plate 177. Artifacts from the Old Bering Sea site (third) on Cape Dzhennetlen (143). 1-10—bone; 11—stone.



**Plate 179.** Stone artifacts from the southern end of Koliuchun Island (147). 1—hammer, 2—point, 3, 4—knives, 5—skreblo. 1—walrus tusk, 2-5—argillaceous slate.



**Plate 180.** Artifacts of walrus tusk from the Old Bering Sea house near Kozhevnikova Cliff, Cape Schmidt (159). 1—object for suspending amulets, 2—needles, 3—handle; 4—button, 5—pendant of polar bear canine, 6—fragment; 7—protective plate for shooting the bow.

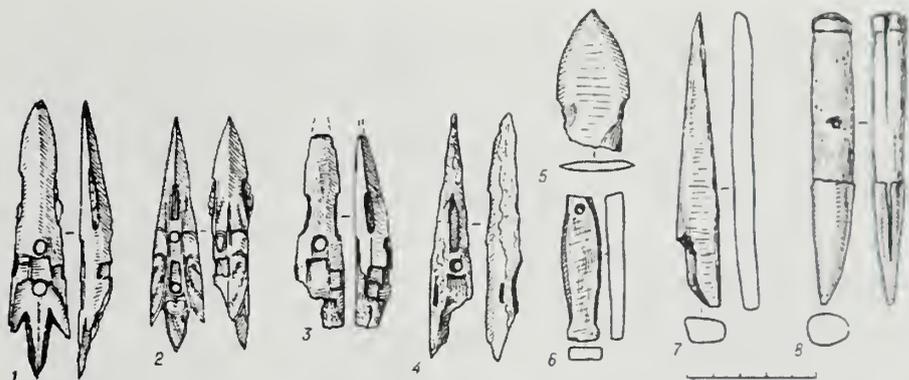


Plate 181. Artifacts from the Old Bering Sea cultural layer near Kozhevnikova Cliff (159). 1-4—harpoon heads; 5—spear end blade; 6—fish-like pendant; 7—point; 8—bear canine in a wooden handle. 1-4, 6-8—walrus tusk; 5—slate.

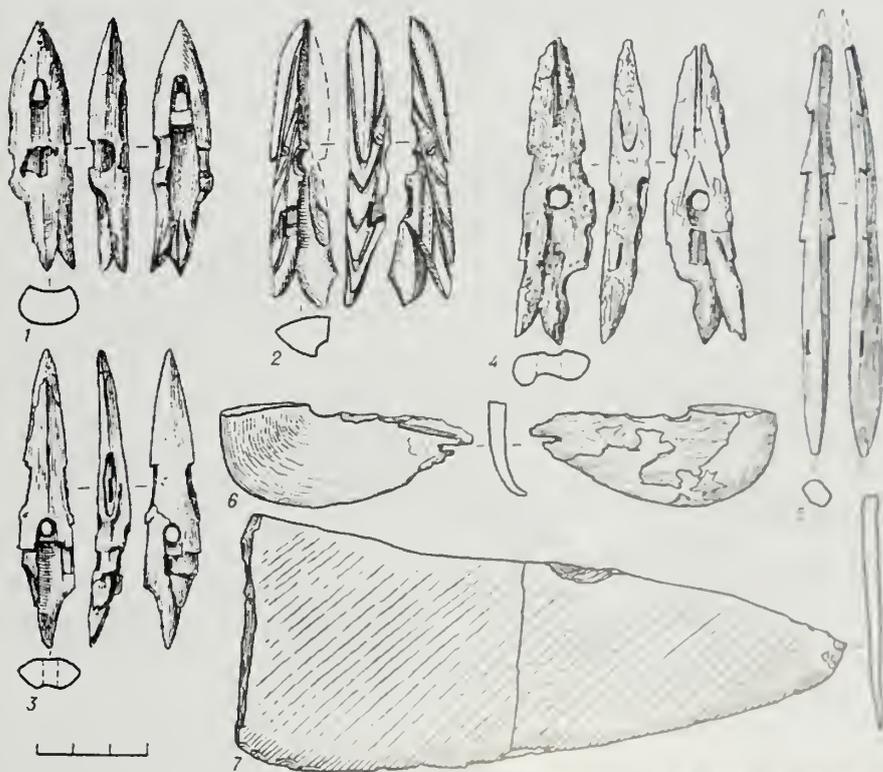


Plate 182. Artifacts from the cultural layer near Kozhevnikova Cliff (159). 1-4—top line harpoon heads; 5—dart point; 6—odd piece; 7—slate knife.

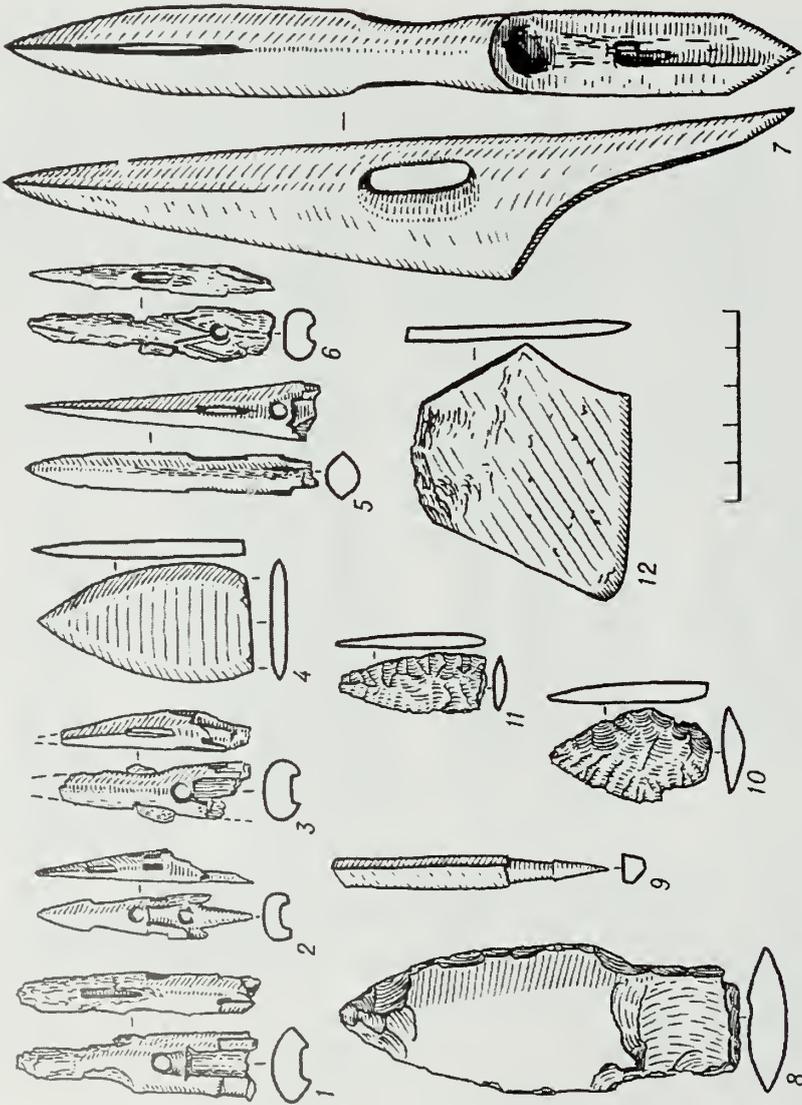


Plate 183. Artifacts from the Old Bering Sea house near Kozhevnikova Cliff (159). 1-3, 5-7—toggling harpoon heads; 4, 8, 10, 11—points; 9—arrow point fragment; 12—knife.

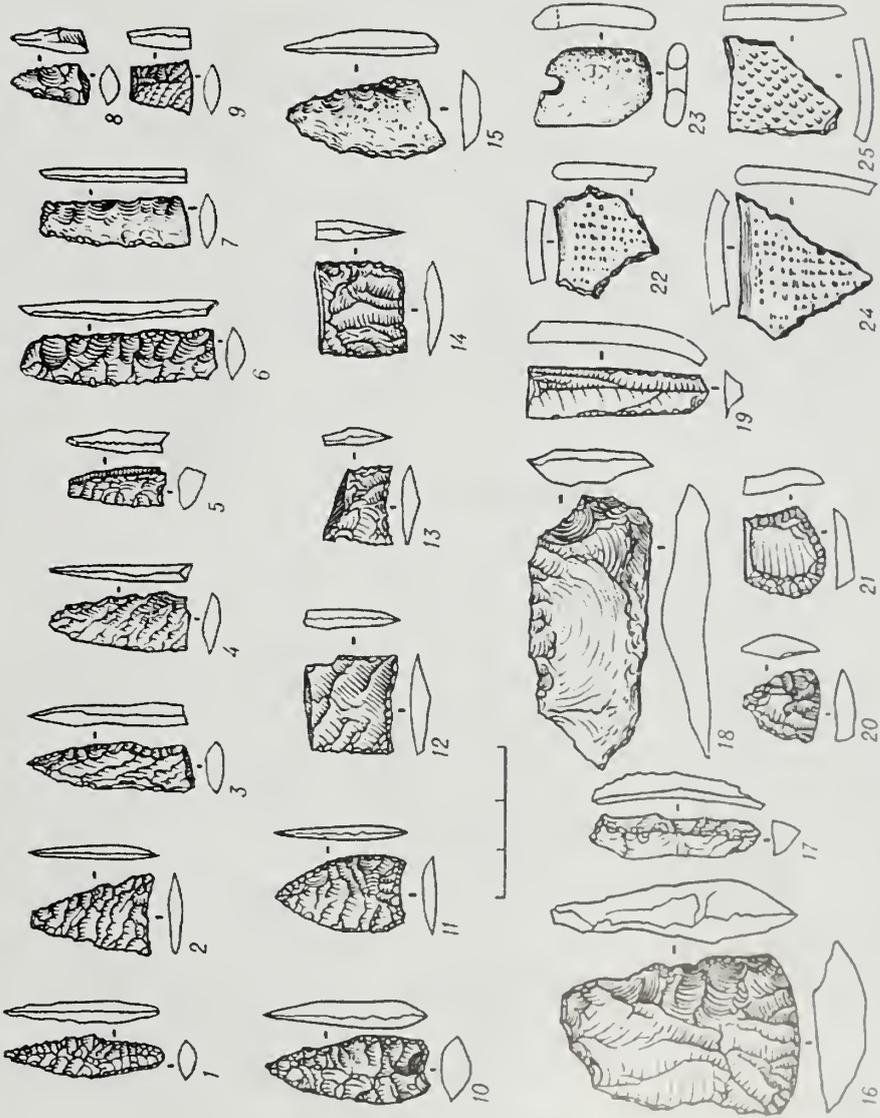


Plate 184. Artifacts from the surface of the Neolithic site in the south of Aion Island (163). 1-21—stone; 22-25—ceramics.

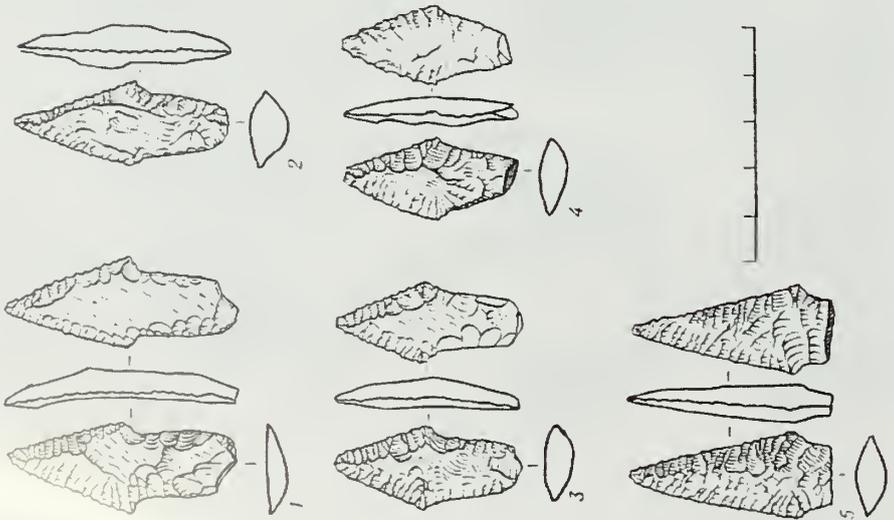


Plate 185. Flint arrow points from a dispersed Neolithic site in the south of Aion Island (163) (1-5).

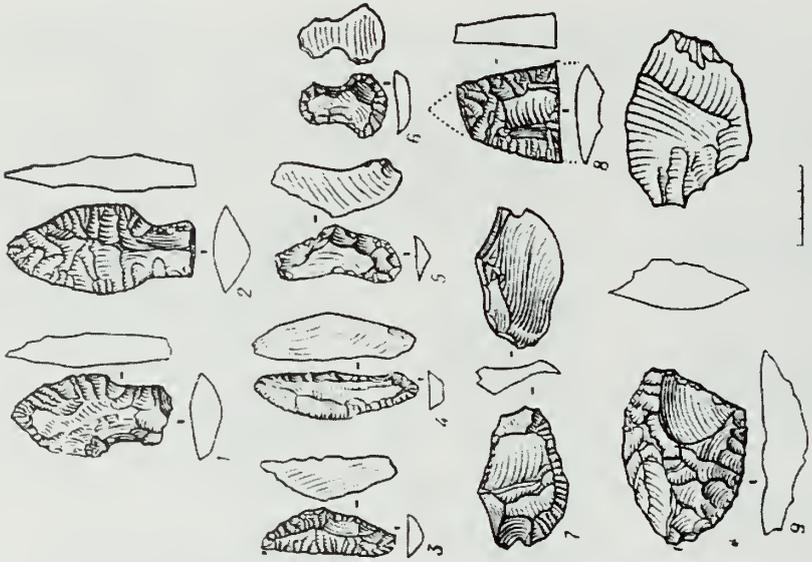


Plate 186. Artifacts of black siliceous slate from the site at Chertov Ovrag on Wrangel Island (167) (1-9).



Plate 187. Artifacts of black siliceous slate from the site at Chertov Ovrage on Wrangel Island (167) (1-11).

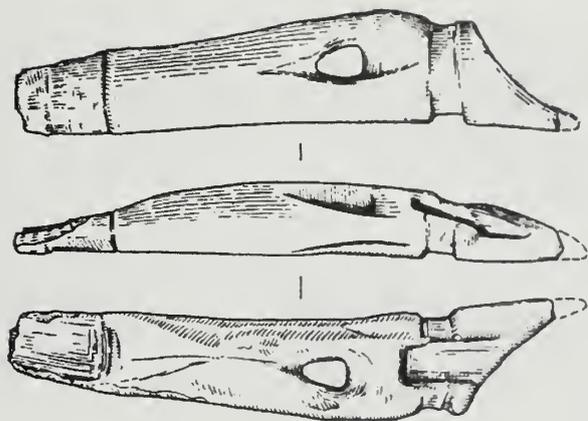


Plate 188. Toggling harpoon head from the site at Chertov Ovrage on Wrangel Island (167).

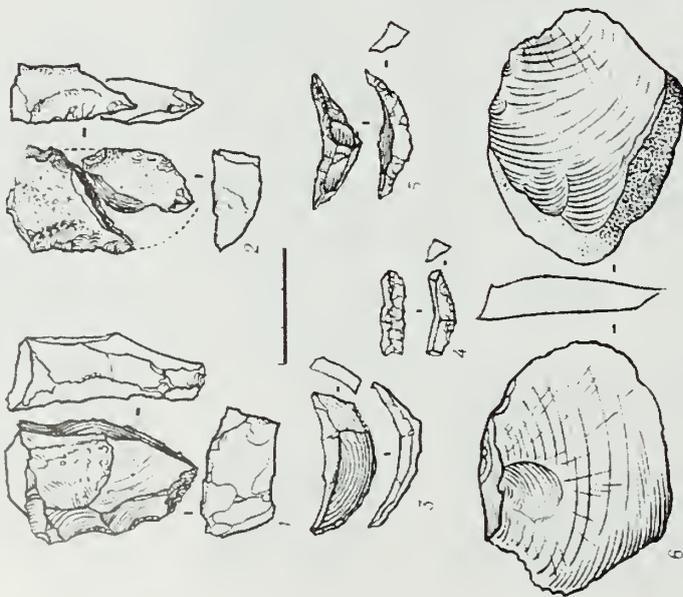


Plate 189. Stone artifacts from the Kolyma sites. 1-5—Siberdik site (168), Layer II; 6—Kongo site (169), surface.

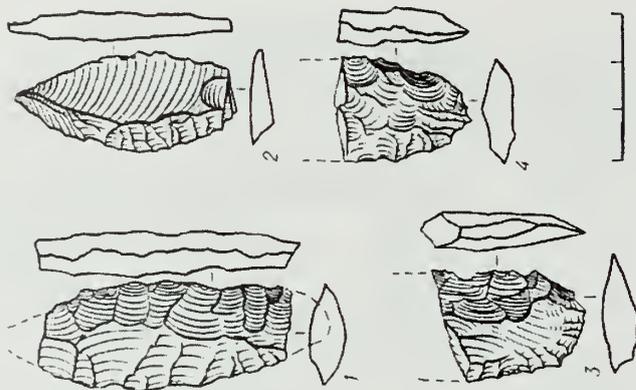


Plate 190. Flint points from the Siberdik site (168) (1-4) 1-3—Layer II; 4—Layer III.

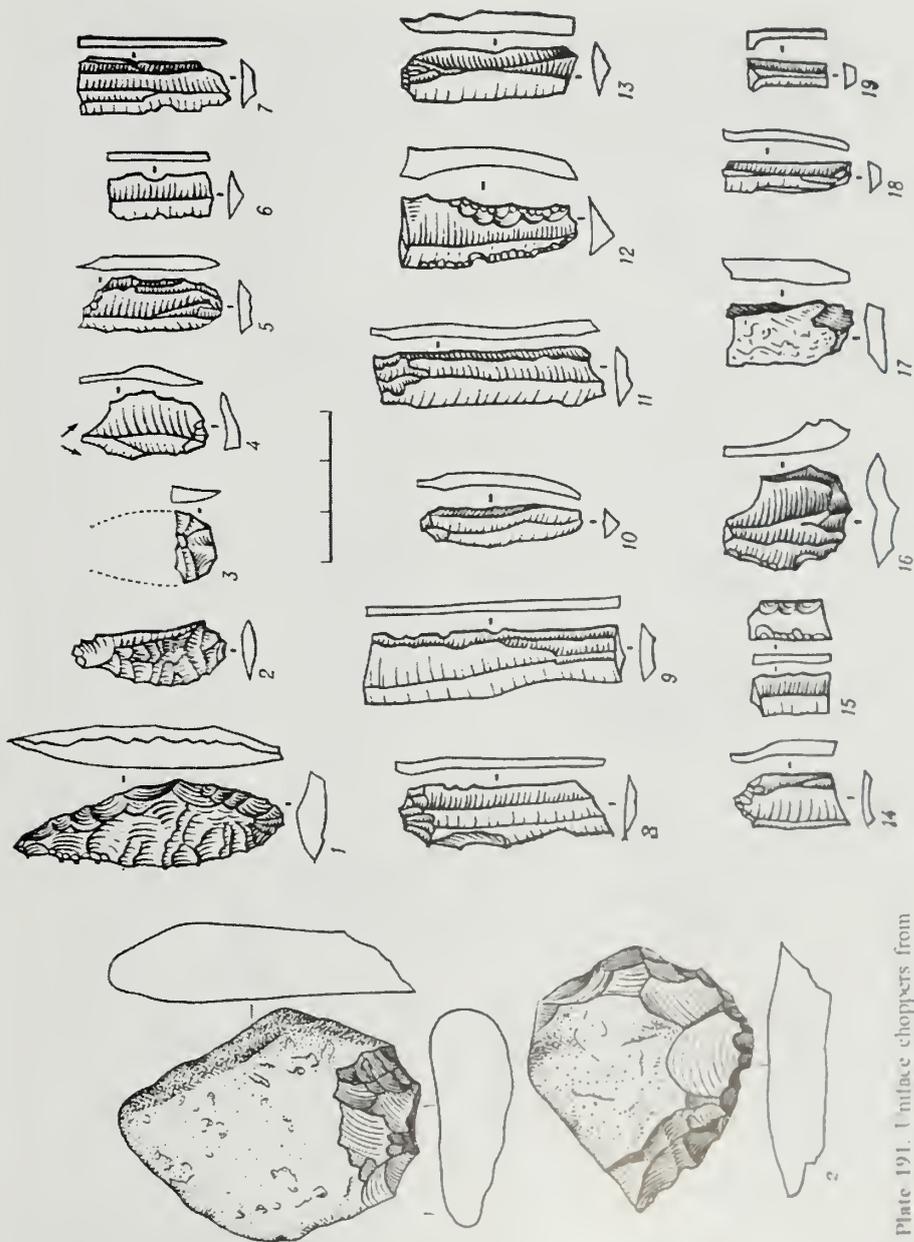


Plate 191. Unifacial choppers from the Siberdik site (168) (1-2)

Plate 192. Flint artifacts from the Kongo site (169) (1-19)

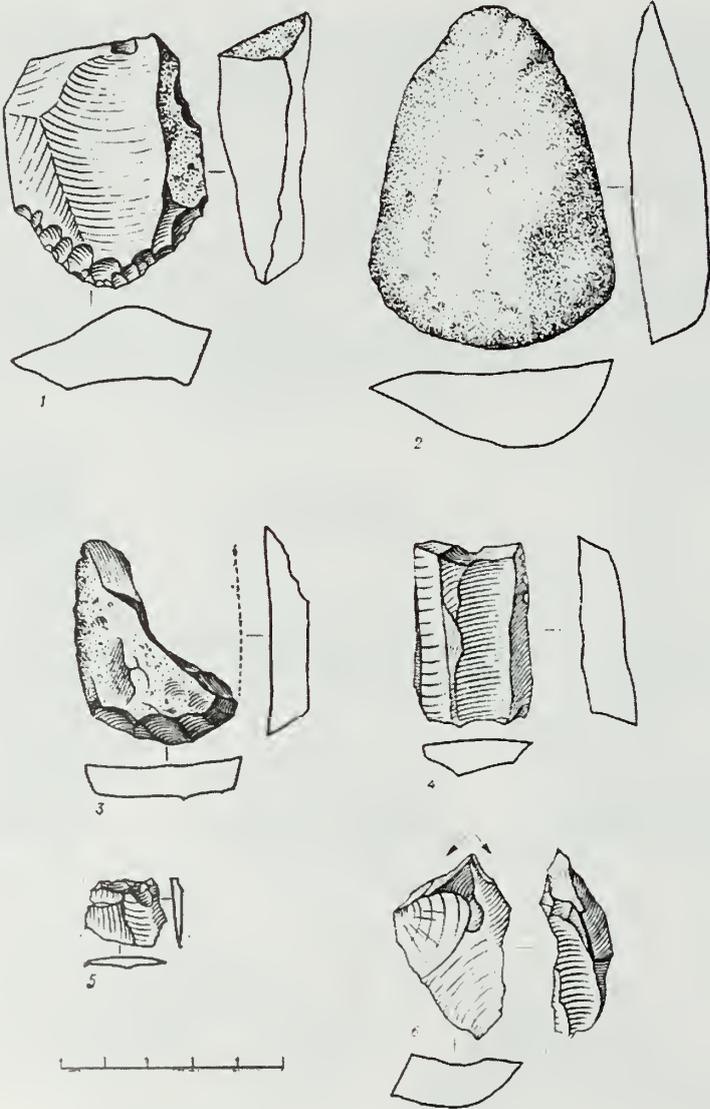
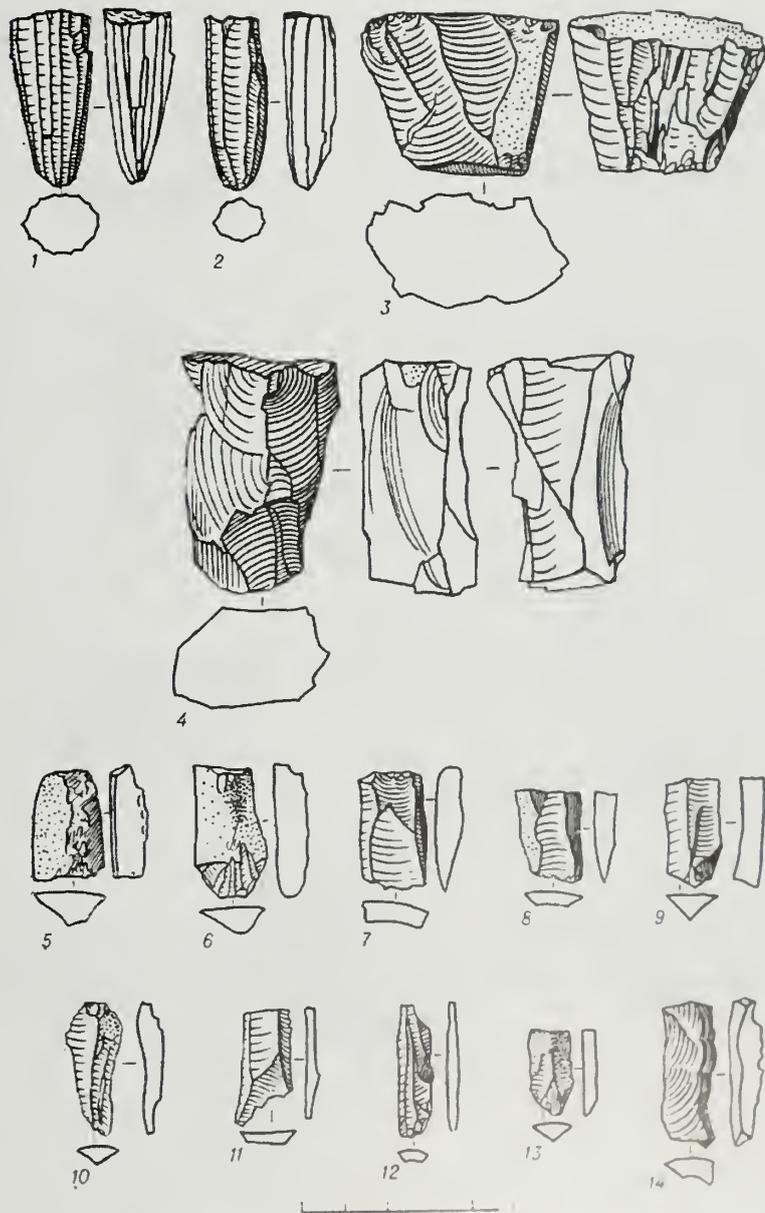


Plate 193. Stone artifacts from the Kongo site (169) (1-6).



**Plate 194.** Cores and knife-like blades of silicified laminated emery cores from the lower layer of the Malta site (170) (1-14).

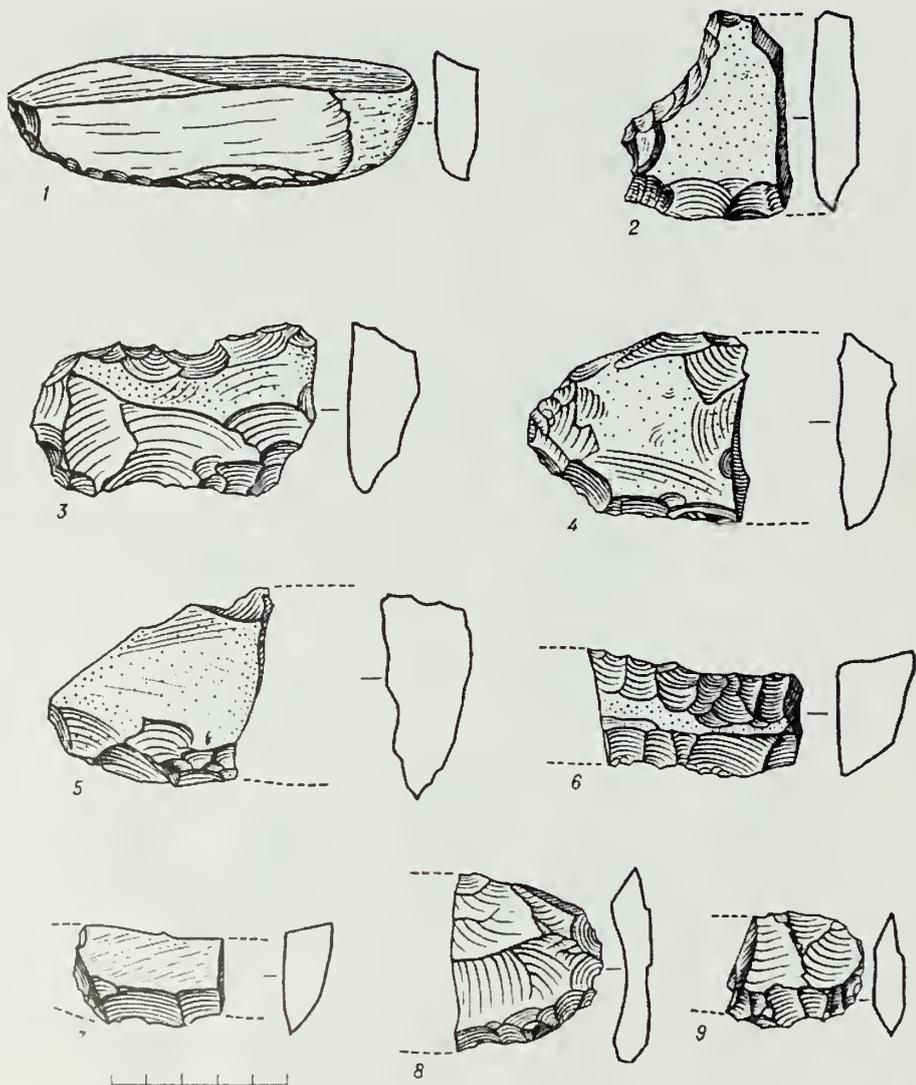


Plate 195. Knives of silicified cineraceous tuff from the lower layer of the Mal'tan site (170) (1-9).

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[See p. 394 for abbreviations]

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# Abbreviations

- AN—Akademii nauk [Russian Academy of Sciences].
- AO—Arkheologicheskie otkrytiia [Archaeological Discoveries]
- Archiv MOKM—Arkhiv magadanskogo okružnogo kraevedcheskogo muzeia [Archive of the Magadan District Regional Museum]
- GME—Gosudarstvennyi muzei etnografii [State Museum of Ethnography]
- IRGO—ImperskoeRusskoeGeograficheskoe obshchestvo [Imperial Russian Geographic Society]
- Izvestie VGO—Izvestia Vsesoiuznogo geograficheskogo obshchestva [Bulletin of the All-Union Geographic Society]
- KSIIMK—Kratkie soobshcheniia Instituta istorii material'noi kul'tury [Brief Reports of the Institute of the History of Material Culture]
- MIA—Materialy i issledovaniia po arkheologii SSSR [Materials and Investigations in the Archaeology of the USSR]
- MKAEN—Mezhdunarodnyi kongress antropologicheskikh i etnograficheskikh nauk [The International Congress of Anthropological and Ethnographic Sciences]
- SA—Sovetskaia arkheologiia [Soviet Archaeology]
- Sb. MAE—Sbornik muzeia antropologii i etnografii [Journal of the Museum of Anthropology and Ethnography]
- SE—Sovetskaia etnografiia [Soviet Ethnography]
- SSSR—Soiuz Sovetskikh Sotsialisticheskikh Respublik (Union of Soviet Socialist Republics).
- TIE—Trudy Instituta etnografii [Works of the Institute of Ethnography]
- Tr. SV KNII SO AN SSSR—Trudy Severo-Vostochnogo kompleksnogo nauchno-issledovatel'skogo instituta Sibirskogo otdeleniia Akademii nauk SSSR [Northeast Interdisciplinary Scientific Research Institute of the Siberian Division of the Academy of Sciences, USSR]
- Uch. zap. LGU—Uchenye zapiski Leningradskogo gosudarstvennogo universiteta [Study Notes of Leningrad State University]
- Zapiski ChOKM—Zapiski Chukotskogo okružnogo kraevedcheskogo muzeia [Notes of the Chukotka District Regional Museum]







