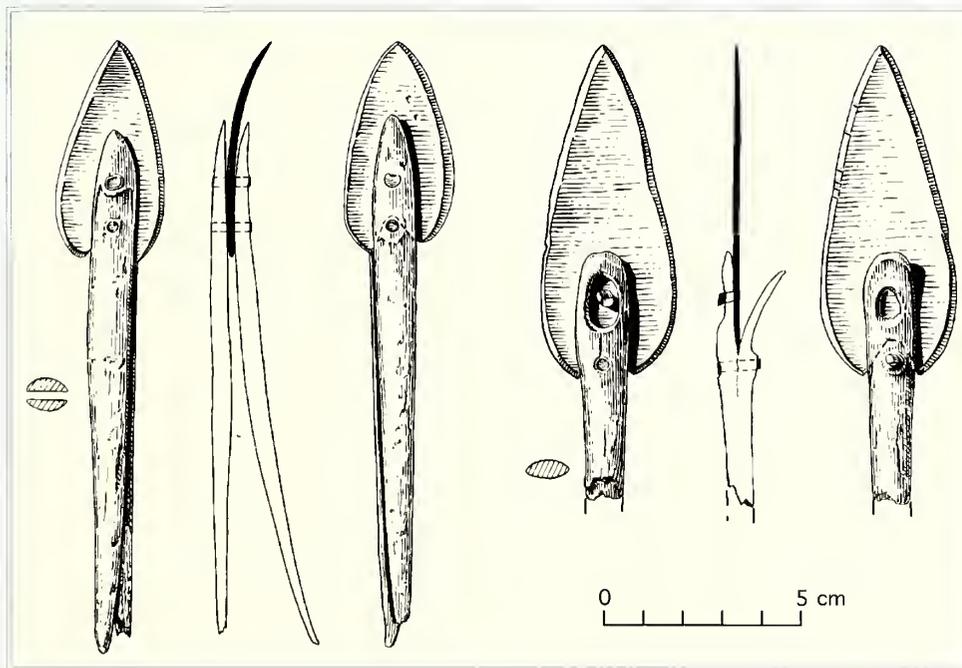


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Taymyr

The Archaeology of Northernmost Eurasia

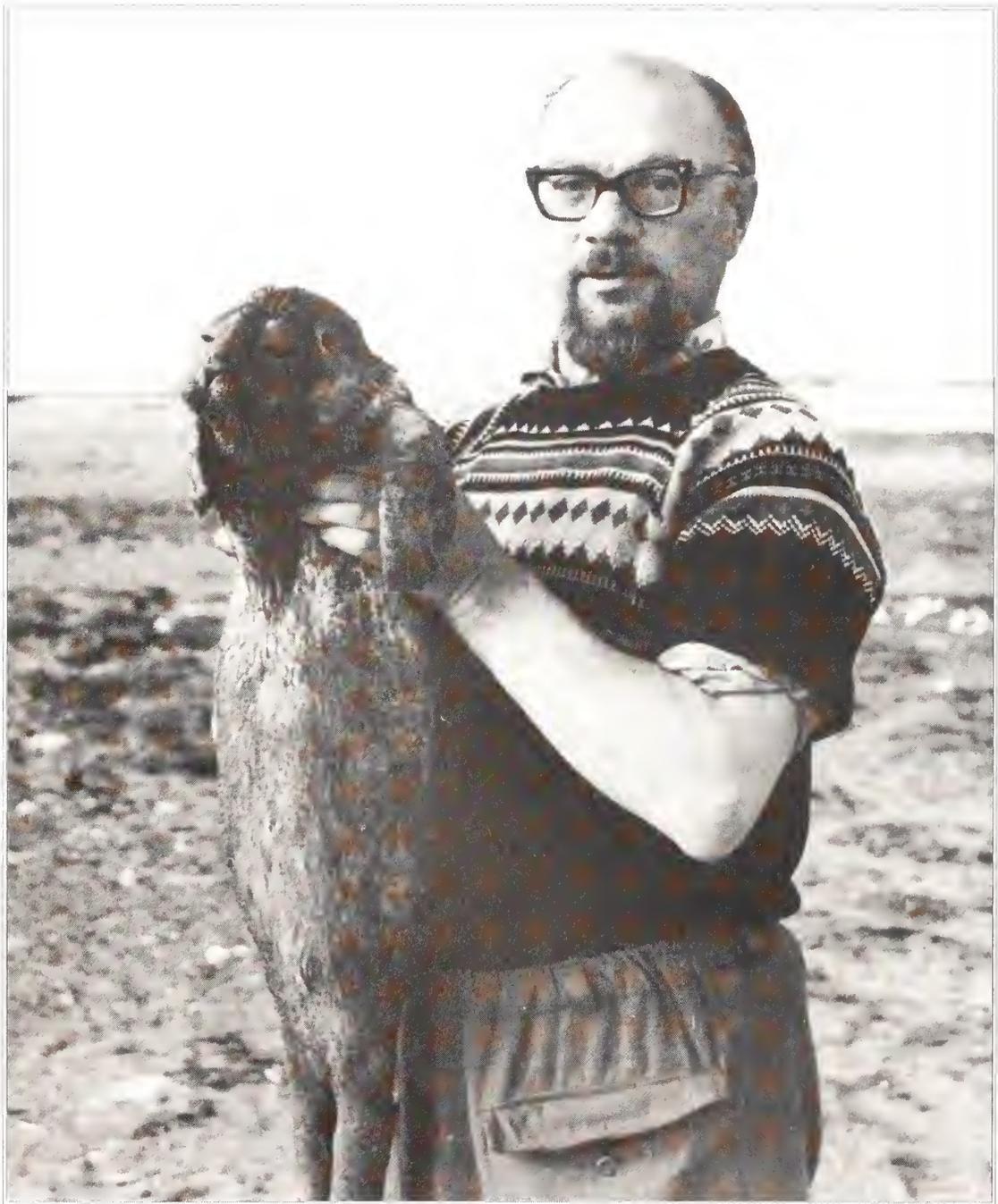


Leonid P. Khlobystin



TAYMYR

The Archaeology of Northernmost Eurasia



Leonid P. Khlobystin (1931-1988) on Svalbard/Spitzbergen, 1981. Photographer Oleg Ovsianikov.

Taymyr

The Archaeology of Northernmost Eurasia

LEONID P. KHLOBYSTIN

TRANSLATED FROM THE RUSSIAN BY
LEONID VISHNIATSKI AND BORIS GRUDINKO

EDITED BY
WILLIAM W. FITZHUGH AND VLADIMIR V. PITULKO



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Front cover: *Bronze arrowheads from the site of Staroye Barkhatovo I (Khlobystin 1998:312).*

Back cover: *Leonid Pavlovich Khlobystin on a barge going down the Pechora River, 1987. Photographer Vladimir Pitulko.*

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1/ Leonid Pavlovich Khlobystin (1931-1988), on a barge going down the Pechora River, summer 1987. Photographer Vladimir Pitulko.

foreword

IGOR KRUPNIK AND
WILLIAM W. FITZHUGH

This volume by the late Russian Arctic archaeologist Leonid P. Khlobystin (1931–1988) is the first Russian translation to be published in the Arctic Studies Center’s *Contributions to Circumpolar Anthropology* series. At a time when major advances are being made in the archaeology of the Russian Arctic, we have been concerned that many important Russian-language monographs are not accessible to Western scholars. This problem has become more acute since the end of the 1960s when the pioneering Russian translation series, *Anthropology of the North: Translations from Russian Sources*, edited by Henry N. Michael, ceased being published by the Arctic Institute of North America (AINA).

Even though some Russian monographs from Chukotka and the Russian Far East have been translated and published during the past decade by the National Park Service (NPS) in Anchorage as part of their Shared Beringian Heritage Program, there remains a major geographic gap because the NPS publications have been restricted to northeastern Siberia, leaving unsupported most of the Russian Arctic from the White Sea to Chukotka. The idea to publish more Russian Arctic monograph translations through the ASC series was further stimulated by our late colleague, James W. VanStone, who, through AINA, as an advisor to the International Research and Exchanges Board (IREX), and as a curator of the Smithsonian’s *Crossroads of Continents* exhibition,

constantly sought to expand Russian-American collaboration and publication exchange.

For our first volume we have selected a work that has an unusual history and a special Smithsonian connection. Its author, the late Leonid P. Khlobystin, died of cancer in 1988 at the age of fifty-seven. Although he had already established his reputation as the leading Russian archaeologist specializing in the Central Siberian Arctic, he was barely known outside of the former Soviet Union. Among Western scholars, Khlobystin’s work was overshadowed by that of Sergei Rudenko, Aleksei Okladnikov, Valerii Chernetsov, and Vanda Moshinskaia, whose assembled Russian papers and monographs were translated by Henry Michael in the AINA series. Further, most European and North American scholars who followed Soviet arctic research from the 1960s through the 1980s were preoccupied with cultural developments either in Chukotka or Western Siberia, areas that were more relevant to their own interests in Alaska and Scandinavia.

The authors of this foreword have personal stories to tell about Leonid Khlobystin. One of us (IK) followed his work closely for years in the former Soviet Union, mainly through his long-term associate, the late Russian ethnologist Galina N. Gracheva. For the other author (WF), the situation was very different and demonstrates how isolated and even fortuitous contacts of the “old days” eventually spurred collaboration, often several decades later.

The story is worth recording here. In 1986, Khlobystin was invited to take part in an archaeological conference at the Smithsonian Institution co-chaired by then-Smithsonian Secretary Robert McCormick Adams, C. C. Lamberg-Karlovsky of Harvard University, and Vladimir Masson, the former Director of the Leningrad Branch of the Soviet Institute of Archaeology. Although the Arctic was not of prime interest to the organizers, who were Near Eastern and Central Asian scholars concerned with the origins of complex civilizations, a few specialists of other regions were invited, including Khlobystin and Fitzhugh. We quickly found much to talk about, and by the time the meetings drew to a close, I (WF) remember being excited by having made contact with a colleague who had made so much sense of the “mysterious” Central Soviet Arctic and was interested in participating in studies of two areas of mutual interest: cultural connections between Yamal and Bering Strait and the origins of arctic maritime adaptations. Indeed, our goodbyes at the end of the conference were made with explicit plans for future collaboration. But as fate would have it, shortly thereafter I learned that he was ill, and before we had another chance to meet, he died, leaving his unfinished research in the hands of his students.

Thus, for years both of us wondered when the thousands of years of culture history Khlobystin had discovered in the Taymyr region would be made available to English-reading researchers. Sadly, Khlobystin did not live to see his major monograph in print in the former USSR. As it happened, we need not have worried about the preservation of his legacy, for within ten years, Khlobystin’s students Vladimir Pitulko and Vladimir Shumkin, both of the Institute for the Study of History of Material Culture in St. Petersburg, Russia (currently known by its Russian acronym IIMK (*Institut istorii material’noi kul’tury*)), assembled his seminal thesis, *Ancient History of Taymyr and the Formation of North Eurasian Cultures*, which he had defended in 1982 for publication in Russian. For the 1998 Russian

edition, the editors added a new introduction, a list of illustrations, and compiled a list of Khlobystin’s publications, but did not attempt to update the text or bibliography.

Even before the Russian volume appeared in 1998, one of its co-editors, Vladimir Pitulko, suggested that the Arctic Studies Center consider publishing an English edition. Given the great importance of Khlobystin’s research to circumpolar archaeology, and in particular, his synthesis of Taymyr prehistory, we responded with enthusiasm.

To English-speaking archaeologists, the Taymyr Peninsula has been one of the least-known regions of the Russian Arctic. Until Khlobystin’s thesis appeared in Russian, the region was equally mysterious to Russians. Few archaeologists penetrated Taymyr, preferring instead to work gradually into this unexplored area from the better-known regions of the Ob and Yenisey rivers in the west or from the Lena River basin in the east. A measure of the geographic isolation of the region is the fact that Taymyr remained one of the few areas of northern Russia that supported a significant population of wild reindeer (or caribou) that had disappeared in most other regions of the Russian North due to competition and predation from reindeer-herding groups.

Another factor in our decision to publish this volume is the fact that Khlobystin’s research—unlike that of his internationally known peers such as Sergei Arutiunov, Dorian Sergeev, Nikolai Dikov, Iurii Mochanov, and some senior Russian archaeologists of the earlier generation, such as Okladnikov, Rudenko, Chernetsov, and Moshinskaia—has only in one instance appeared in English. Khlobystin published a single short paper in *Arctic Anthropology*, the journal that for decades has served as the main venue for dissemination of research by Russian Arctic scholars. However, his paper, titled “The Stratified Settlement of Ulan-Khada on Lake Baikal” (1969), has nothing to do with his work in Taymyr. For reasons that are unclear, he chose to present his

major findings only in venues available to Russian polar specialists. As a result, Taymyr and most of the adjacent Russian coast from 55 to 115° E, some 2,500 kilometers along the Arctic Circle, remained *terra incognita* to Western scholars.

In a pattern familiar to many polar archaeologists, Khlobystin preferred fieldwork to publication and a small boat or a shaky field tent to his office in St. Petersburg. He published fifteen articles on Taymyr, but no major monograph or book. After completing his Taymyr field studies and defending his full doctorate in 1982 and before converting his thesis into a published monograph, he switched immediately to a new study area along the shore of the eastern Barents Sea in the western Russian Arctic. Here he made spectacular discoveries that continued almost until his death at the peak of his professional career.

Khlobystin left behind a large volume of published and unpublished manuscripts, a huge collection of artifacts and field notes now curated at the IIMK in St. Petersburg, and a flock of excellent students. However, his greatest achievement was his unsurpassed contribution to the study of the early people and cultures of the northernmost fringe of the Eurasian Arctic, a region that prior to his surveys was unknown to the non-Russian world. After his death, Khlobystin's colleagues and former students took up the challenge of completing his life's work. In five years they produced a posthumous festschrift, *Ad Polus* (1993) in which five of his latest papers were published, together with scores of other articles. Tragically, that same year, Khlobystin's partner in his Taymyr surveys, ethnologist Galina Gracheva, was killed in a helicopter crash while conducting fieldwork in Chukotka. With this double tragedy, Russian anthropological studies of the Taymyr Peninsula and of its indigenous Nganasan people were instantaneously orphaned. It took another five years before the thinned ranks of students and colleagues were able to convert his unpublished thesis into a book (1998).

A reserved man who was shy with strangers, Khlobystin never engaged in the academic feuds and turf-fighting that so often plagued the arctic anthropological community. He enjoyed interdisciplinary and collaborative work and probably published more papers co-authored with archaeologists, ethnologists, paleobotanists, geologists, and radiocarbon-dating specialists than any of his colleagues in Siberian Arctic prehistory. This interdisciplinary and cooperative spirit is part of his lasting legacy to arctic studies and illuminates his memory as scientist, partner, and mentor to many Russian arctic specialists today.

We are grateful to Vladimir Pitulko, one of Khlobystin's students and co-editor of his posthumous Russian monograph of 1998; to the Dmitrii Bulanin Publishing House and the IIMK in St. Petersburg, which produced the Russian volume; and to its English translators, Leonid Vishniatski and Boris Grudinko, all of whom greatly assisted our efforts to publish Khlobystin's Taymyr work. Special thanks are due to the Atherton Seidell Endowment Fund of the Smithsonian Institution, which supported publication with a generous grant; to John Ziker who kindly offered some of his Taymyr photographs as illustrations for this book; and to Erica Hill and Sue Mitchell, the volume's managing and production editors, respectively.

We made few changes to the original Russian edition, marked with brackets in the text, other than adding this foreword, selecting a shorter and more appealing English title, and providing a new preface written by Vladimir Pitulko. We also added a few personal photographs of Khlobystin, his crew members, and of the Taymyr landscapes taken by Vladimir Pitulko. We have also added two appendices that Western readers may find helpful. This slightly amended translation of L.P. Khlobystin's historic monograph therefore becomes Volume 5 of the ASC *Contributions to Circumpolar Anthropology* series and is the inaugural issue of a sub-series devoted to Siberian anthropology.



2/ Vladimir Pitulko excavating at the Bytyk site, Taymyr Peninsula, 1997. Photographer Andrei Ivanov.

preface to the American edition

VLADIMIR V. PITULKO

The name of Leonid Khlobystin is hardly known to the English reader, either layman or specialist, for a number of reasons. First, the overwhelming majority of Khlobystin's work was published in Russian. Second, the polar region that he studied lies beyond the traditional purview of western Arctic archaeologists. The time he was actively writing and working as a field archaeologist did not favor contact of Russian—then Soviet—scientists with their Western colleagues.

Conventionally, there are three regions upon which researchers working on the prehistory of the Arctic focus their attention. They are: (1) the Bering Strait or, more generally, Beringia, an area that includes a considerable portion of Northeast Asia bordered by the Lena River valley to the east and the Novosibirsk Islands to the west; (2) the Canadian Eastern Arctic, including Greenland; and (3) the European Arctic and Subarctic, which includes northern Scandinavia and the arctic portion of European Russia. The latter also includes the Yamal Peninsula, situated in Asia, strictly speaking—justifiable in both a cultural and historical sense.

Thus, the Taymyr Peninsula occupies the very center of the Eurasian Arctic and for a great many of my colleagues is a geographical rather than a cultural-historical phenomenon. The ancient past of Taymyr is rich in history due to its central geographic position; events there were closely related to prehistoric questions relevant to both northeastern

Asia and to the Far North of European Russia. These questions include the origins of reindeer herding and ceramics, and how and why major cultural transitions occurred. Leonid Khlobystin's book is dedicated to these questions.

When I became acquainted with Leonid Khlobystin in 1981, I was an archaeology undergraduate at Leningrad State University. Khlobystin was a senior researcher at what was then the Leningrad Branch of the Institute of Archaeology of the USSR Academy of Sciences—now the Institute for the Study of History of Material Culture of the Russian Academy of Sciences. Khlobystin was the institute's deputy director for science and research, one of the most successful Soviet archaeologists, a man in his prime, just past fifty. When we got acquainted, it was difficult to foresee that in two years' time we would work together and that in another four years he would be gone. Incidentally, in those years he was working on this very book, which originated in his full doctoral thesis, completed in 1982.

Khlobystin's book presents a revised version of his doctoral thesis, since he had no time to rewrite it as a monograph. Instead, he devoted time and effort to a new project—research on the arctic region between the rivers Pechora and Ob. This research complemented his Taymyr work; he intended to eventually summarize his entire body of work on the Taymyr, Yamal, and Pechora regions. This was not to be.

Khlobystin's name was known to me long before we became acquainted in 1981, the year I missed my last and only chance to participate in his Taymyr field trip to the Verknyaya (Upper) Taymyra River, the last of his Taymyr surveys spanning fifteen years. By that time, Leonid Khlobystin had already become one of the great Russian archaeologists. There are few big names in Russian Arctic archaeology—Aleksii Okladnikov, Nina Gurina, Nikolai Dikov, Iurii Mochanov, Svetlana Fedoseeva—and Leonid Khlobystin is surely positioned prominently within this cohort.

My own archaeological career started in the city of Magadan, where I took part in a number of Nikolai Dikov's surveys. Later I worked in the field with Khlobystin on his Pechora River project. At the same time, I was working under Nina Gurina (after Khlobystin's death, Gurina became my Ph.D. advisor). In the fall of 1977, sitting by the dying campfire at the Ushki site, I heard Khlobystin's name for the first time. Dikov and I were talking about labrets (pierced lip decorations) and how they were worn in the past, while exchanging opinions on the Avachinskaya site excavations near the city of Petropavlovsk-Kamchatski. Dikov asked, "Do you know that labret-wearing was far more popular than believed and could actually include all of northern Northeast Asia, Taymyr included? The point is Khlobystin keeps finding labret-like objects while excavating Maimeche culture sites in Taymyr."

The name connected with this curious fact stuck in my memory. Later, reading the archaeological literature, I realized that Khlobystin was single-handedly and very successfully correcting a lacuna in our knowledge of the archaeology of a critical arctic region—the Taymyr Peninsula. He was addressing questions such as the origin of the arctic reindeer-breeding economy, the origin of ceramics, and the Neolithic transition in northern Eurasia. His attempt to relate culture history to the natural history of the region under consideration was undoubtedly one of

the strongest aspects of his research. Those years he was one of very few in the world advocating this approach.

After graduation, I tried to dedicate myself to research on archaeological materials from Northeast Asia, following the example of my first teacher, Professor Dikov. When we talked before I left Magadan, Dikov told me: "Try to work with Khlobystin. It'll be good for you anyway, and your whole future may be connected with it." Dikov was right. I met Khlobystin on 22 April 1981—the day of the so-called Lenin Communistic *Subbotnik* [the day of public volunteer work in the former Soviet Union], organized by the Leningrad Branch of the Institute of Archaeology. Every year on that day, even senior scientists concerned themselves with some senseless work, which had been neglected through oversight, carelessness, or want of resources. In this particular case, in the courtyard of the institute a group of doctoral students and professors of different ages were cheerfully shoveling snow. At that time, a university fellow of mine, Igor Maniukhin—now an Early Iron Age specialist from Petrozavodsk, Karelia—who was about to participate in Khlobystin's expedition to the Verknyaya Taymyra River, introduced me to Khlobystin. Though I had seen Leonid Khlobystin before, attending Palaeolithic Department meetings at the institute and listening to reports about his work in Taymyr, I had not been formally introduced to him. It was obvious to me that he was a man of colossal scientific erudition, very even-tempered and with a well-developed sense of humor and irony. He had the authority and respect of his colleagues, in spite of his relatively young age. His stories and slides accompanying his reports introduced us to research in regions that were strikingly different from any others studied by members of the institute. Khlobystin's work awakened within me, the son of a Russian geologist, the deepest instincts of the early explorers. This was the kind of life that I wanted to live, the kind of science I wanted to do, and the man

who was doing this work embodied all the characteristics of leadership that I could think of.

I did not hesitate when, a few years later, in 1984, Khlobystin offered me a chance to participate in his Pechora River project, which he had just launched. Unfortunately, the project did not last. Khlobystin's illness allowed him only four years. But by that time, we had completed all the preliminary work and were soon to discover new archaeological sites, outline the culture history of the Palaeolithic in the region, and excavate a series of magnificent bronze castings. During the short time I had with Khlobystin, we were in close contact discussing expedition plans and their results, while in the field we shared the journey, risk, and work. Nothing can bring people closer than hardship—snow storms that obliterated our camp, endless kilometers of surveys, voyages among blocks of ice on unreliable vessels, bread mixed with sand, a last shared cigarette, campfires on empty shores, cold, and rain. Through these trials, I came to think of Khlobystin as my friend. His death was the first genuine loss of my life, and the day we buried him was the day I grew up—a dank St. Petersburg day in March with light snow.

When I recall Professor Leonid Khlobystin, my teacher, companion and friend, I feel both gratitude and sorrow. Gratitude—because thanks to him, I have become what I am; my effort to continue his work helps me in my own. Thanks to Khlobystin, I count among my friends the people he knew—Galina Gracheva, Svetlana Studzitskaia, Lena Shleonskaia, German Ivanov, Igor Krupnik. As a tribute to

Khlobystin, we prepared the manuscript of his doctoral thesis. It took until 1998 to publish it in Russian. I should mention that this publication excited great interest both in Russia and abroad and the edition is now sold out.

Our knowledge of the Taymyr region has not changed in the last twenty years since Khlobystin's pioneering work for two reasons: the break-up of the Soviet Union and the lingering economic recession that followed. Very little archaeology has been done in Taymyr since Khlobystin's death and nothing can match his work, both in terms of its sheer volume and scientific depth.

The English language version was prepared thanks to the support and effort of the people who knew Leonid Khlobystin; the translation was done with the support of Professor Knut Helskog (Tromsø University, Norway) by Leonid Vishniatski, of the Palaeolithic Department of the Institute for the Study of History of Material Culture of the Russian Academy of Sciences, St. Petersburg, where Khlobystin worked for many years. Publication of the manuscript by the Arctic Studies Center became possible thanks to the decision of William Fitzhugh and Igor Krupnik to include the work in the ASC *Contributions to Circumpolar Anthropology* series.

I bow my head in memory of Leonid Khlobystin. I feel an element of uncertainty and profound respect for the work of a man who single-handedly brought thousands of square kilometers of a vast and severe arctic landscape to the attention of scientists throughout Russia and the world.



3/ *Khlobystin's field crew at the Belyi Nos polar station, before its move to Vaygach Island, Kara Sea, 1987. Left to right: Leonid Khlobystin, Lena Shleonskaia, Andrei Khlobystin, Dmitrii Matveev. Photographer Vladimir Pitulko.*

preface to the Russian edition

GALINA N. GRACHEVA, VLADIMIR V. PITULKO,
VLADIMIR IU. SHUMKIN, AND VLADIMIR I. TIMOFEEV

The name of Leonid Pavlovitch Khlobystin (1931–1988), a talented archaeologist and a pioneer in the study of the prehistory of the Russian Arctic, is well known and needs little introduction. However, time goes by quickly. It is already more than ten years since he passed away [1998], and some people who knew him well are also gone. It is possible that this book, prepared by Khlobystin in the early 1980s and intended for publication at that time, would now look somewhat different. Many new discoveries have been made across the circumpolar region, and they could have had a substantial impact upon some of the ideas that were forwarded by Khlobystin more than fifteen years ago.

Khlobystin's field surveys were extensive and included the Crimean Peninsula and Central Asia to the south, the Kola Peninsula and Svalbard in the European Arctic, Lake Baikal, Kamchatka Peninsula and Central Siberia, the valleys of the Mezen and the Pechora rivers in the Russian North, Vaygach Island in the Barents Sea, the Yamal Peninsula and, finally, the Taymyr Peninsula in the Russian High Arctic. Every field season demanded a new journey and vigorous work—work that led to contact with ancient cultures and contributed to the formation of a broad-based historical vision.

Khlobystin's research is remarkable for raising fundamental issues and searching for new approaches to them. All of his major publications demonstrate an

abiding interest in larger problems. For instance, his small monograph devoted to the Lipovaya Kuria site in the Miass district of the Chelyabinsk region—the southern Trans-Ural area—contains not only a careful description of the material he had excavated from 1962 to 1963 and 1966, but also provides a broader historical context for the formation of forest-based “Andronoid” cultures inhabiting the periphery of the Andronovo culture area (Khlobystin 1976:49–63).

Khlobystin's works are rich in original ideas and approaches. Unfortunately, many of these ideas have never been worked out in detail due both to their author's demanding standards and to his overloaded schedule of scientific, public, and administrative work. For a number of years he was the deputy director for science of the Leningrad Branch of the Institute of Archaeology of the former Soviet Academy of Sciences in Leningrad. His insightful paper “Sociological Problems in the Neolithic of Northern Eurasia” (1972a:26–42; see also Appendix 1) contains a number of ideas regarding the structure of Neolithic sites in the North, their economy and social relations as reflected in architecture and material culture. Khlobystin's erudition enabled him to explore original hypotheses about the social structure of northern Neolithic societies. For example, he proposed that social inequalities, and possibly slavery, existed in the Neolithic societies of the forest zone of Russia. He also suggested that men

belonged to totem-based clans, while women traced descent matrilineally (1972a:39, 42).

Khlobystin found it necessary to introduce new terms designed to reflect different economic adaptations. He coined the term “Ago-Neolithic” to designate groups of hunters, gatherers, and fishers, whereas he applied the term “Agro-Neolithic” to early agriculturalists. Though some of the points made in the paper are debatable, the ideas stimulated subsequent research. In one of his earlier papers, presented in 1968 at a conference devoted to the problem of ethnic and cultural communities in the Neolithic, he applied formal lithic analysis to a series of projectile points. At the time, such studies were just beginning in Russian archaeology. Khlobystin, however, had started to develop this approach much earlier, in his student days. Unfortunately, he was unable to pursue this subject in subsequent research. Khlobystin was also among the first to explore the Siberian Mesolithic and Neolithic through interdisciplinary studies of important sites such as Tagenar VI and Ust-Polovinka.

The earliest settlement of the Arctic was always of interest to Khlobystin. Questions involving the virtually unexplored northern sections of Western and Central Siberia also engaged him. Until Khlobystin’s surveys, almost no archaeological research had been conducted there since Valerii N. Chernetsov’s work in the 1950s and 60s. In 1965, Iurii G. Korolev, who was working on a geodetic expedition on the Yamal Peninsula, discovered an ancient Yorkuta site in the interior. The materials from the site were passed to the Institute of Archaeology in Leningrad. This accidental discovery demonstrated the necessity of systematic field explorations in tundra and arctic areas.

In 1966, Khlobystin’s efforts led to the formation of the Polar Field Research Team (*Zapoliarnyi ortriad*), which was soon reorganized and became the Polar Expedition. Even the first expedition to the Yamal Peninsula in 1966 produced interesting materials that made it possible to correct earlier

dates and to describe for the first time the so-called Yar-Sale-type ceramics. The 1966 work in Yamal was carried out in close cooperation with ethnologist Liudmila V. Khomich. The resulting work showed how fruitful such cooperation could be.

In 1967, Khlobystin began his long-term survey project in Taymyr. The vast territory of the peninsula combined with its sparse population made the explorations very time-consuming and sometimes even dangerous—all the more so because of limited means. The only transportation the expedition had in 1967–1968 was an inflatable rubber dinghy. Nonetheless, Khlobystin’s team managed to survey a considerable part of central Taymyr and to discover and excavate several sites in the Pyasina and Kheta watersheds, including Tagenar VI, the oldest archaeological site known from the peninsula (dated to between 6000 and 5000 B.C.).

One surprising discovery was that of a bronze-casting workshop dated to the twelfth century B.C. at the site of Abylaakh I. An image on a mold from this ancient workshop was adopted as the emblem of the Polar Expedition. Equally important were the materials from the Maimeche I and IV sites (4000 to 3000 B.C.), including three unique steatite labrets. The new materials made it possible for Khlobystin to provide evidence in support of Aleksei Okladnikov’s hypothesis that the ancient inhabitants of Taymyr were connected to many of the adjacent East Siberian Neolithic populations. Comparative analysis led to the conclusion that the Taymyr labrets dated to an earlier period than lip decorations from America and Northeast Asia. Khlobystin’s work made it possible to speak of an Asian origin for this form of material culture.

Khlobystin was an extremely talented archaeological surveyor—a quality that was to shine in the Taymyr expeditions. Archaeology in the tundra zone and on the border between the tundra and the forest demanded special abilities, and Khlobystin was able to use his talents to make unique discoveries. Since

1969, the Polar Expedition included an ethnographic group from the Leningrad Branch of the Institute of Ethnography and the Museum of Anthropology and Ethnography (Kunstkamera). Students from the Department of Ethnography of Leningrad University and staff researchers from the State Historical Museum in Moscow also took part in field projects. Such cooperation broadened the range of study to include the economies and lifeways of the Nenets, Enets, Nganasan, Dolgan, Evenk, and other native people of the Central Russian Arctic. These projects also produced data on old interments, camps, and sacred sites found in the course of reconnaissance work. Archaeological finds were contextualized using rich ethnographic materials.

In 1969, Khlobystin's team surveyed the valleys of the Avama and Dudypta rivers with the help of an old wooden boat equipped with a light motor. More prehistoric sites were identified. Some of them were heavily eroded and yielded only surface finds. This was the case with the Ivanovskaya site, where white and yellow chalcedony and rose jasper were discovered in situ. The spatial distribution of cores, flakes, and blades allowed the researchers to determine the place where an ancient flint knapper had once worked.

Another survey, along the mouth of the Yenisey River, the Yenisey Bay, and adjacent parts of the Gydan Peninsula produced few archaeological finds. A Bronze Age site was discovered at the mouth of the Golchikha River. The expedition also identified and excavated a number of burials of Samoyedic speakers (Nenets) from the nineteenth century, children's cemeteries from the seventeenth century and associated bone points, and several ceremonial sites, including an important one located on Shaytan [Russian for "wooden figure"] Cape. The discovery of a partially intact shaman's sledge with some cult objects placed on the tundra many years ago was another success. The sledge was found near the gas pipeline running from Messoyaha to Norilsk; it is a

wonder that it escaped total destruction. Today the sledge is part of the unique collections of the Peter the Great Museum of Anthropology and Ethnography in St. Petersburg.

The field season of 1971 was one of the longest and most productive. Using two boats named in jest "Kary-To" and "Lo-Han" [both names are Russian words for "wash-tub" intentionally altered to sound like Samoyedic and Chinese names, respectively], the expedition explored the Pyasina River, from its upper reaches to the Mokoritto River mouth and continued the excavation of burials at the mouth of the Golchikha River. Some new sites with evidence of bronze casting were found in the Pyasina River basin. These sites supported the identification of a distinctive "Pyasina culture," dated to the ninth through the fourth centuries B.C., which was connected with the boreal forest portion of the Yenisey River valley to the south. Material from several more ceremonial sites was collected. The expedition participants also attended and documented a Nganasan shaman's ritual performance (*kamlanie*).

In 1971, Khlobystin's team garnered attention for its search for traces of the so-called *Syupsya*, a legendary tribe that supposedly had lived in Taymyr before the formation of its present-day ethnic groups (e.g., the Nganasan, Nenets, and Enets). The expedition studied places called "Syupsya graves" by the Nganasan and Dolgan, which appeared similar to Chukchi or Eskimo burial grounds. The so-called "graves" proved to be bulges of frozen ground encircled with disintegrating blocks of stone.

In 1972 the expedition returned to the upper reaches of the Pyasina River via the Dudypta River, Tagenar Lakes, and the Volochanka, Kheta and Khatanga rivers to the settlement of Zhdanikha. In 1972 and 1973, the expedition focused on the excavation of ancient long-term dwellings at the Pyasina River sites of Dyuna I-IV and Polovinka. Dyuna III turned out to be the first site that provided evidence for migrations from West Siberia at the end of the

first millennium A.D. The excavation of the site at the Polovinka River mouth demonstrated once again that the earlier finds connected to bronze casting were not accidental. An ancient bronze plate resembling an eye and decorated with a fluted pattern invited analogies to the sun-eye symbol of the Nganasan. According to Nganasan beliefs, wearing such an image on the chest ensures health and well-being. In 1974, the survey work moved to the east, to the Khatanga, Kheta, Novaya, and Bludnaya rivers, and the shores of Lake Labaz. There the expedition discovered artifacts and features such as a wooden figurine burial and the remains of old Russian winter huts.

During the eight years that the Polar Expedition worked in Taymyr, Khlobystin's team explored nearly all areas contiguous to the old Khatanga road, which connected the former village of Dudino [the present-day town of Dudinka] with the town of Khatanga and Khatanga Bay. The exploration of the northern portion of the Taymyr Peninsula, far from the main waterways, seemed nearly impossible due to the lack of funds for air transportation. Particularly attractive for Khlobystin was the Verkhnyaya Taymyra River with its tributaries, the Gorbitya and Logata rivers. According to the information received from ethnologist Boris O. Dolgikh and local native residents, the Nganasan and Dolgan, and judging by the latitudinal position of these rivers, Khlobystin expected to find camps and kill sites left by ancient caribou hunters.

It was not until 1981 that Khlobystin, with help from the Norilsk Institute for Agriculture in the Far North, was able to conduct a survey in northern Taymyr. This project produced new evidence demonstrating that this area was regularly visited by ancient hunters during the first millennium A.D., and as long ago as the fifth millennium B.C.

Khlobystin intended to continue the exploration of the northern interior of the Taymyr Peninsula. Specifically, he planned to conduct reconnaissance work in the area of Lake Taymyr, considered by many eastern Nganasan to be their motherland. However,

this project was never realized. The 1981 field season demonstrated once again the logistic challenges of working in the northern interior of the peninsula without adequate transportation and sufficient fuel.

During his Taymyr years, Khlobystin frequently helped the Taymyr Regional Museum in Dudinka, advising its staff and preparing the first archaeological exhibition for the museum. There is no need to explain the importance of the Polar Expedition's work in Taymyr. Until Khlobystin's work, only four archaeological sites had been identified there. He discovered over two hundred new sites. This made it possible to answer many questions related to the genesis of aboriginal ethnic groups, to demonstrate the regional diversity of this historical process and its connection with similar processes occurring in adjacent regions. Although new projects will produce new insights, Khlobystin's work will endure, in particular, his thesis, *The Ancient History of Taymyr and the Formation of North Eurasian Cultures*, which he defended in 1982 and which became the core of this book.

In his thesis, Khlobystin formulated a number of hypotheses fundamental to our understanding of the processes that took place in northern Eurasia prehistorically. For example, Khlobystin demonstrated that the idea that a single circum-polar culture descended from a Uralic-speaking ethnic group could be rejected. One of Khlobystin's primary conclusions was that empirical data can reveal the basic mechanisms of culture change: "the fact that cultures of the Far North have features in common is due to a number of reasons, the most important of which are ecological and due to diffusion (Khlobystin 1982:33). Many of Khlobystin's ideas find more and more support in recent discoveries. For example, Khlobystin suggested that the southern portion of East Siberia included "one of the centers where people independently mastered ceramic production. After their appearance in the southern part of East Siberia in the fifth millennium B.C., net ceramics quickly spread, and by the fourth millennium, were

manufactured throughout the region. The spread of these early ceramics was not associated with the spread of a single ethnic group, but rather was the result of cultural diffusion” (Khlobystin 1982:9). Although we now know that the dates are earlier than Khlobystin thought, the idea itself, so clearly formulated, remains of central importance to the study of the early Neolithic cultures of Northern Eurasia.

In 1982 and 1983, in connection with the construction of the Turukhansk hydroelectric power station, Khlobystin carried out salvage surveys in the zone slated for flooding. In 1984, the Polar Expedition began its surveys on Vaygach Island in the southeastern Barents Sea. The work was conducted both on the island itself and along the adjacent areas of the Yugor Peninsula and the Korotaikha River valley. In 1987, the last field season for Khlobystin, his expedition started to explore the Lower Pechora River valley. This final survey, much like those undertaken in previous years, was extremely productive. For the first time in the history of archaeological research in the polar areas of northern Russia, the expedition excavated stratified sites from the first millennium A.D., Mys Vkhodnoy (1984–1986) and Karpova Guba (1985). Additionally, the expedition discovered unique sacrificial sites at Cape Diakonov (1984–1987) and Bolvanskaya Gora (1985). In 1985, the Ortino sites were discovered along the lower reaches of the Pechora River. The data obtained in these years laid the foundation for further studies of the prehistory of the region and are of primary importance to historical reconstructions. Unfortunately, Khlobystin had only a short time left to consider those new data in detail.

Khlobystin's life ended just as he reached his prime. He was bustling with the new plans and he had just made significant new discoveries on Vaygach Island and the Yugor Peninsula in the eastern Barents Sea. In April of 1987, he organized a session at the Institute of Archaeology that focused upon Russian Arctic history and culture. This was the first forum on the archaeology of the Russian Far North, and Khlobystin was the chairman of its organizing committee. At this meeting, he spoke about the necessity of joining forces with and coordinating the activities of natural and social scientists studying the history of the Arctic. No one else had the creative and organizational abilities to accomplish such a task, but Khlobystin's time had run out.

Aware that his terminal illness left him only a few months, Khlobystin continued to work, trying to accomplish as much as possible in the time he had left. At the end of 1987, he was the chairman of the Soviet-Polish working group devoted to the Neolithic of the Baltic Sea region. He was also the head of the Neolithic group at the Palaeolithic Department of the Institute of Archaeology, and he continued to produce new publications. As always, he watched over the careers of his students and the participants of the Polar Expedition.

The inestimable contribution Leonid Pavlovitch Khlobystin made to Russian historical science, and particularly to the archaeological study of the Eurasian Arctic, has established his name as one of the greatest researchers of the prehistory of the circumpolar region.

abbreviations

AINA	Arctic Institute of North America
ASC	Arctic Studies Center, Smithsonian Institution
GIN	Geological Institute, Russian Academy of Sciences, Moscow
IIMK	Institute for the Study of the History of Material Culture, St. Petersburg
IM/IMSOAN	Institute of Permafrost (Institut merzlotovedeniia), Siberian Branch of the USSR Academy of Sciences, Yakutsk, Russia (presently inactive)
IREX	International Research and Exchanges Board
LBIA	Leningrad Branch of the Institute of Archaeology
LC	Library of Congress
LE	Leningrad Branch of the (former) Institute of Archaeology, USSR Academy of Sciences, currently IIMK, Institute of the History of Material Culture, Russian Academy of Sciences, St. Petersburg, Russia
LU	Leningrad University (currently St. Petersburg University, St. Petersburg, Russia)
MAE	Museum of Anthropology and Ethnography, St. Petersburg
MAG	Northeast Complex Research Institute, Far Eastern Branch of the Russian Academy of Sciences, Magadan, Russia
MO	Institute of Geochemistry and Analytical Chemistry, USSR Academy of Sciences, Moscow, Russia (presently inactive)
NIMA	National Image and Mapping Agency
NPS	National Park Service
RAN	Russian Academy of Sciences (Rossiiskaia Akademiia Nauk)
SOAN	Institute of Geology and Geophysics, Siberian Branch of the USSR Academy of Sciences (presently, Institute of Geology, Siberian Branch of the Russian Academy of Sciences), Novosibirsk, Russia

We are grateful to Dr. Yaroslav Kuzmin for his assistance with several acronyms for the Russian radiocarbon-dating institutions.

note on radiocarbon dates

Unless otherwise stated, all radiocarbon dates presented in this volume are uncorrected and have not been calibrated.

note on Cyrillic transliteration

Two coexisting systems are in use in the United States for transliterating Russian Cyrillic letters into English: that of the Library of Congress (LC), and that of the National Image and Mapping Agency (NIMA, formerly the U.S. Board of Geographic Names). The LC system is used for bibliographic references; the NIMA system applies to geographic names (place names) and to most ethnic names.

All Russian or Siberian geographic names are transliterated here according to the NIMA system, which uses *ya*, *yu*, and *yo* for Cyrillic Я, Ю, and ё (Yakutsk, Yuzhno-Sakhalinsk, etc.). Throughout this volume, Native Siberian ethnic names are transliterated in accordance with the *Peoples of the Soviet Union* map produced by the National Geographic Society in 1989, which basically adheres to the NIMA system (Yakut, Yukagir, Koryak, Nanay, etc.). Most of these ethnic names are already established in Western anthropological literature—thanks largely to the Jesup Expedition’s pioneering publications. This system also results in names reminiscent of several Native American ethnonyms familiar to North American readers: Yurok, Maya, Yup’ik, Eyak, Yokut, Yakutat Tlingit, and so on. Furthermore, the NIMA-based spelling of ethnic and geographic names is similar to the Russian/Cyrillic transliteration system adopted in England and Canada and to the one used by modern Russian authors when writing papers in English. The NIMA system is also applied here for transliterating a few Russian or Native Siberian personal names, words, and ethnographic terms.

In contrast to the NIMA system, the Library of Congress transliteration system uses *ia*, *iu*, and *io* for the Cyrillic Я, Ю, and ё and an apostrophe for the Russian soft sign (*b*). Because today’s highly standardized electronic library catalog formats are based on the LC system, names of Russian authors and all titles of items in the bibliographic reference sections in this volume adhere to the LC system. Using two transliteration systems in a single book may be inconvenient, but every effort has been made to adhere strictly to each of these patterns in its designated application in order to establish a high level of consistency for all future Arctic Studies Center publications. For the convenience of readers, an alternative NIMA-based transliteration of Russian authors’ names is sometimes provided in parentheses in those cases where such a pattern has been established by earlier publications (for example, the original Jesup Expedition series, *Anthropology of the North: Translations from Russian Sources*, etc.). Despite our efforts, we may not have been able to eliminate all potential cases of confusion or the occasional idiosyncratic usage.

We are grateful to our colleagues Pavel Ilyin (U.S. Holocaust Museum), Michael Krauss (Alaska Native Language Center, University of Alaska Fairbanks), and Marjorie Mandelstam Balzer (editor, *Anthropology and Archeology of Eurasia*) for their advice on transliteration practices for ASC publications.



4/ Northern side of Lama Lake bordered by the Putorana Mountains in southern Taymyr, 1997. Photographer Vladimir Pitulko.

Introduction

In his opening address to the symposium "The problems of Ethnography and Anthropology of the Arctic Zone," held in Moscow in 1964 as a part of the Seventh International Congress of Anthropological and Ethnological Sciences, Boris O. Dolgikh pointed out "that the major task of ethnography of the Arctic is to determine the origins of the people who live on the northernmost portion of this planet" [Dolgikh actually used the Greek word *oekumene*, which is popular in Russia]. This task "involves the question of initial arctic settlement and the history of ethnic, economic, and cultural change" (Dolgikh 1970a:447). He noted further that to answer this question required archaeological research. Indeed, the problems of ethnography and anthropology of the Arctic parallel those of archaeology, and archaeological investigations now play a leading role in this joint effort [to understand culture change in the Arctic]. A huge span of time, beginning with the initial occupation of the polar region until ethnographic studies of its northern peoples began in the middle of the nineteenth century, can be studied only by using archaeological data.

Russian Arctic archaeology celebrated its bicentennial anniversary in 1987. In 1787 the prominent Russian Navy explorer Gavriil A. Sarychev carried out the first archaeological explorations in the Russian North. He excavated several semi-subterranean dwellings at Cape Baranov, situated several tens of kilometers east of the Kolyma River mouth (Sarychev 1802:95, 96). In the following years, surface finds

were occasionally collected in polar areas; some limited excavations of ancient sites occurred, but did not attract the interest of professional archaeologists. Only in the Soviet period [i.e., after 1917] has the study of the northernmost Russian and Siberian past received proper attention.

On the Kola Peninsula, archaeological work was carried out primarily by A. V. Schmidt, B. F. Zemliakov, and Nina N. Gurina. In the Bolshezemelskaya tundra and in the polar Urals, a number of ancient sites were found by the geologist Georgii A. Chernov. In the lower reaches of the Ob River, near the city of Salekhard, and on the Yamal Peninsula, discoveries connected with an ancient maritime culture were made by Vasilii S. Andrianov, Valerii N. Chernetsov, and Vanda I. Moshinskaia (Moszinska). At the mouth of the Taz River, R. E. Kols found sites dating from the second millennium B.C. to the first millennium A.D. A number of sites dating to different time periods were discovered and studied on the lower reaches of the Lena River and on the Kolyma River by Aleksei P. Okladnikov. Okladnikov, together with A. P. Puminov and Il'ia S. Gurvich, published materials from sites on the Olenek and Indigirka rivers, as well as the first Neolithic finds from the interior Chukotka (Chukchi) Peninsula, collected by the geologists N. N. Levoshin and N. A. Grave.

In 1946, the Kolyma Expedition headed by Aleksei P. Okladnikov was successful in determining that the dwellings excavated by Sarychev had belonged to the Shelag, a legendary indigenous tribe with an Eskimo-

like culture. The Shelag supposedly populated the western section of Chukotka. Another scientist engaged in the study of ancient Eskimo cultures in Chukotka was Sergei I. Rudenko (1947). Okladnikov discussed archaeological investigations of the Eskimo period in a number of general articles and attempted to distinguish between ancient cultures in the polar zone, identify links between them, and compare prehistoric cultures with the historic and present ethnic groups (Okladnikov 1947a, 1950a, 1951, 1953, 1960a, 1960b).

In the polar regions of Russia, systematic archaeological explorations began in the 1960s as a result of the foundation of the northern divisions and research centers of the USSR Academy of Sciences [today the Russian Academy of Sciences, commonly known by its Russian acronym, RAN] in the northern cities of Syktyvkar, Yakutsk, and Magadan. Thanks to the fieldwork of V. I. Kanivets, V. E. Luzglin, and Lev P. Lashuk in the northern Arkhangelsk Province (*oblast*), the Komi Republic, and the Yamal-Nenets Autonomous Area; of Iurii A. Mochanov, Svetlana A. Fedoseeva, I. V. Konstantinov in northern Yakutia [now the Sakha Republic]; and of the late Nikolai N. Dikov, as well as Dorian A. Sergeev and Sergei A. Arutiunov in Chukotka, our knowledge of the history of Russian (Eurasian) Arctic and Subarctic settlement has expanded greatly. Important data on the ancient history of the Kola Peninsula were obtained by the Kola Expedition of the former Leningrad Branch of the Institute of Archaeology of the USSR Academy of Sciences [now the Institute for the Study of History of Material Culture] under the leadership of Nina N. Gurina. The discoveries of ancient sites made by geologists, biologists, and other specialists also contributed to the accumulation of archaeological materials. However, the absence of coordination of this research resulted in uneven archaeological study of polar areas. Many regions either remain unexplored or provide only limited data on ancient settlement patterns.

Until the beginning of work by the Polar (*Zapolyarnaya*) Expedition from the Leningrad Branch of the Institute of Archaeology, the northernmost portion of Central Siberia—the Taymyr Peninsula—had remained one of these little-known regions. In his lecture to the Circumpolar Conference held in Copenhagen in 1958, Okladnikov, one of the founders of Russian Arctic archaeology, noted that “the northernmost and at the same time the most inaccessible part of Asia—the Taymyr Peninsula and neighboring regions—is a blank space on the archaeological map” (Okladnikov 1960a:39). Indeed, by the 1960s, all the materials from this immense region, with an area that exceeds that of Norway, Sweden, and Denmark combined, amounted to nothing more than isolated finds from four locations; moreover, finds from three of these sites were virtually unknown to archaeologists. Among these was the first ancient artifact found in Taymyr—a ground slate axe found near the town of Dudinka (Petri 1926), now in the Irkutsk Regional Museum (Collection 56-1).

In 1935, newspapers published a note about the discovery of a Palaeolithic site on the bank of the Popigay River. According to the article, the finds included several stone tools, reindeer bones, and objects of unknown function (Panichkina 1937:267). Some of these materials may have been transferred to the Irkutsk Regional Museum in the city of Irkutsk, which curates the bones of reindeer and a needle-case from the Popigay River, Khatanga District, Taymyr Autonomous Area in Collection 3. These materials were found at a depth of about one meter near a Russian *izba* [peasant log cabin], 11.5 kilometers down the Nyuchchadkhalyak River, the eastern tributary of the Popigay.

Also important was the discovery by Okladnikov of ancient sites near the present town of Khatanga. In 1940 and 1941, a winter camp and traces of a temporary camp of Russian explorers dating to the early seventeenth century were found during hydrographic explorations on the northeastern

coast of Taymyr, near Cape Chelyuskin, the northernmost tip of the Eurasian continent. Here, on northern Faddey Island and on the shore of Sims Bay, several sites and another Russian camp were explored in 1945 by an archaeological expedition headed by Okladnikov. It was during the course of this expedition that prehistoric settlements were investigated for the first time (Okladnikov 1947a). Three of five sites found by Okladnikov yielded stone tool inventories that can be attributed to the Late Neolithic and the Bronze Age. An important chronological marker for the Khatanga River site comes from an old "vegetable garden," which produced a ceramic vessel retaining traces of manufacture with a cord-wrapped stick or mallet characteristic of the Belkachi culture of Yakutia. This artifact dates the Khatanga site to the third millennium B.C. and identifies it as the northwesternmost site of the Belkachi culture, confirming Okladnikov's conclusions about the close relationship between the Neolithic cultures of Yakutia and the Lower Khatanga River and about the "possible ethnic proximity of the oldest populations of these regions" (Okladnikov 1947a:44).

Two other sites, one from the Khatanga River garden and another on the left bank of the Khatanga six kilometers downriver from the settlement, were attributed by Okladnikov to the Early Iron Age. The comparison of the inventory of these sites with the finds from Yakutia allowed him to conclude that during this period, the inhabitants of the Khatanga River were culturally similar to the coeval culture existing in adjacent regions of Yakutia. For many years, the sites discovered by Okladnikov on the Khatanga River remained the northernmost settlements known in Eurasia; his primary conclusions have retained their significance until the present.

Ten years passed before traces of an older site were found on Taymyr. In 1955, G.A. Znachko-Yavorsky from the Institute of Geology of the Arctic found a prismatic core on the northwestern shore of

Lake Labaz. However, this find remained unknown to most archaeologists.

In general, the polar region of Eurasia is unevenly and rather poorly explored by archaeologists. This is due first of all to the fact that the territory is difficult to access and has severe weather. Ancient sites are found in frozen soils and are free of snow for only a short period during the summer. For these same reasons the Far North is very sparsely populated. Some subjective factors have also adversely affected archaeological exploration of circumpolar areas. Archaeological attention has been directed to sites in the south where the development of ancient cultures was more visible archaeologically. The ancient cultures of the North were considered to be stagnant, poor in material, and without scientific significance. In Taymyr, these biases manifested themselves in the extreme.

Since in the northern portion of western Siberia sites with stone inventories older than the first millennium B.C. were unknown prior to the work of the Polar Expedition, the immense territory from the Khatanga River on the east to the Bolshezemelskaya tundra on the west remained *terra incognita* for archaeologists engaged in studies of the Palaeolithic and Bronze Ages. All suppositions about the incorporation of this territory into one or another ethnic or cultural province remained hypothetical from an archaeological point of view. The hypothesis about the existence of a prehistoric circumpolar culture, advanced by Gutorm Gjessing and supported by some archaeologists and ethnographers remained untested (Chernetsov 1964; Gjessing 1944; Simchenko 1976).

Questions about the ethnogenesis of the peoples of the Eurasian Far North cannot be solved without consideration of archaeological data because the written sources about peoples such as the Saami, Nenets, Enets, Nganasan, Dolgan, Even, Evenk, Yukagir, Chukchi, and Eskimo are limited to the recent past. Thus, the first records of Samoyedic-speaking peoples of the North are contained in

Povest vremennikh let [the oldest Russian chronicle] in stories about campaigns against the Yugra and Samoyedic speakers that occurred in A.D. 1096 and 1114 (Andrianova 1950:167, 197). Before Russian expansion into Siberia, information about northern Siberian peoples usually had a fantastic character. The first detailed information about many Siberian peoples dates to this time. These materials were used by ethnohistorians Boris O. Dolgikh and Il'ia S. Gurvich in their work on the ethnic structure of the Siberian native population at Russian contact (Dolgikh 1960; Gurvich 1966). Therefore archaeological investigations have a central role in elucidating the past of the northern peoples of Siberia.

In 1966, I initiated the Polar Expedition, a long-term archaeological survey team at the Leningrad Branch of the Institute of Archaeology. The main purpose of the expedition was to study the early history of the peoples of the Siberian Far North from the earliest settlement to the formation of the ethnic nations living there now. The expedition explored the sites of different periods, since the territories under consideration (excepting the lower reaches of the Khatanga River) had never been subjected to archaeological exploration before.

The expedition worked in areas settled by several Siberian native nations, including the Nenets, Enets, Nganasan, and Dolgan. The material culture of these modern northern peoples was derived from their ancestors, who originally developed the core features of arctic cultures. As Fritjof Nansen has noted (1969:9) "the original culture, conditioned by the nomadic way of life on the tundra, was created not in a day, not in a year, and not even in two or three centuries, but [rather] developed slowly over many centuries (if not millennia) and many generations."

From the very beginning, the expedition's work combined archaeological and ethnographic investigations. Beginning in 1969, the ethnographic group headed by Galina N. Gracheva, from the Institute of Ethnography of the Academy of Sciences, was an inte-

gral part of the Polar Expedition's work. As a result, extensive ethnographic and ethnoarchaeological data was collected. Some of this material has been used in this book, while the remainder awaits publication.

In 1967, after working in the lower Ob River area, where I identified numerous occupation sites with stone assemblages dating from the second through first millennium B.C. (Khlobystin 1967), we began explorations in Taymyr. Over the course of nine field seasons (1967–1974, 1981), the expedition systematically explored the territory of the Taymyr Peninsula and adjacent areas. Taymyr is situated between two huge regions, East Siberia and West Siberia, where archaeological cultures of various origins served as sources for the formation of numerous native groups. In Taymyr one might hope to find both the boundaries between these original cultures as well as a solution to the problem of the origins of circumpolar culture more generally.

The entirety of the Taymyr (Dolgano-Nenets) Autonomous Area is situated north of the Arctic Circle. Its area, including the northern islands, encompasses 862,100 square kilometers. The Taymyr Peninsula occupies only the northern half of the autonomous area. The peninsula juts into the Arctic Ocean, ending at the northernmost point of Eurasia, Cape Chelyuskin. Along the shores of the Kara and Laptev Seas are the Coastal (*Primorskaya*) Plain and the Byrranga Mountains. The Yenisey River flows to the west. The eastern border of the peninsula is formed by Khatanga Bay (Fig. 5). The southern border parallels the northern boundary of the Middle Siberian Plateau, which in turn is formed by the low mountains of the Putorana and the Anabar Plateaus. Between this boundary and the Byrranga Mountains, the North Siberian Depression stretches like a corridor joining the West Siberian Depression and the Yenisey River valley with northern Yakutia.

Taymyr can be divided into four large river basins. Most of the western rivers flow into the mighty Yenisey. The Pyasina River basin is also situated to

the west. The source of this river is connected to the so-called "Norilsk Lakes": Keto, Lama, Glubokoye, Pyasino, etc. The Pyasina flows northward and is fed by several large tributaries: the Dudyppta, the Agapa, the Tareya, and the Pura rivers. Southeast Taymyr is occupied by the Kheta and Kotuy River basins, which join to form the Khatanga River. In northern Taymyr, along the southern edge of the Byrranga Mountains, is the Verkhnyaya Taymyra River and Lake Taymyr, the second largest freshwater lake in Siberia. The Nizhnyaya Taymyra River flows north from Lake Taymyr, cutting through the Byrranga Mountains.

The natural conditions of Taymyr are severe. Climate is continental and winter lasts for eight or nine months. To the south, the polar night lasts fifty-two days and in the summer, the sun does not set for seventy-two days. The average annual temperature is about 12°C below zero (10°F).

Most of the North Siberian Depression is occupied by shrub tundra dotted with innumerable lakes. There are glaciers in the Byrranga Mountains, and the shore of the Arctic Ocean is primarily arctic tundra. Southern Taymyr is covered by taiga (forest-tundra); its northern border follows the Dudyppta and Kheta rivers. To the north, on the Novaya River, is the world's northernmost stand of trees, situated in the Ary-Mas locality. The northern taiga zone begins in the Putorana Mountains.

The flora and fauna of Taymyr are rich and peculiar. The main resources important for inhabitants of the region are walrus and seal in coastal waters, fish in rivers and lakes, and waterfowl in both areas during the summer. The most important mammal in Taymyr is the 'wild' reindeer (*Rangifer tarandus*), a Eurasian variant of the North American caribou, which numbered about 500,000 in the early 1980s. Herds of reindeer migrate seasonally over the North Siberian Depression along their traditional routes. Wild reindeer have been the primary subsistence resource for native peoples of Taymyr since time immemorial, and for this reason, the human population became

concentrated here, while the valleys of the southern plateau were more sparsely populated; the Byrranga Mountains remained largely unpopulated.

Nganasan, Enets, Nenets, Evenk, and Dolgan are considered the indigenous peoples of Taymyr. The ancestors of the Nganasan lived here for a long time. Their culture retained many features inherited from ancient reindeer hunters (Dolgikh 1952; Popov 1936, 1948). Presently there are about 1,000 Nganasan in Taymyr. Enets are considered to be relatively recent arrivals, compared to the Nganasan, although by the time the Russians arrived, they already inhabited the lower reaches of the Yenisey River (Dolgikh 1970b). The Enets, together with the Nenets and Nganasan, belong to the Samoyedic linguistic group. The Dolgan appeared in Taymyr in the seventeenth century and later became a distinct ethnic group. Their language is derived from the Turkic group, inherited from the Sakha/Yakut, who live farther east (Dolgikh 1963).

In his work devoted to the ethnogenesis of the Nganasan, Dolgikh used information from the Khatanga River sites discovered by Okladnikov (Dolgikh 1952:80). To some extent these materials confirmed his thoughts about the existence of genetic connections between the ancestors of the Nganasan and those of the Yukagir, who populated the northern portion of eastern Siberia. However, the scarcity of evidence did not provide sufficient support for his hypotheses and he had to restrict himself to citing Okladnikov's work [i.e., Okladnikov 1947a].

In beginning the study of the ancient past of Taymyr we hoped that archaeological investigations would provide information about the ethnogenesis of the Nganasan people. In general the expedition set the following goals: to fill the immense "blank space" on the archaeological map of the Russian Arctic, roughly between 80° and 115° east longitude; to ascertain the date of the earliest settlement of Taymyr and to outline the stages of development of its ancient cultures; to determine their origins and characterize their relationships with cultures of

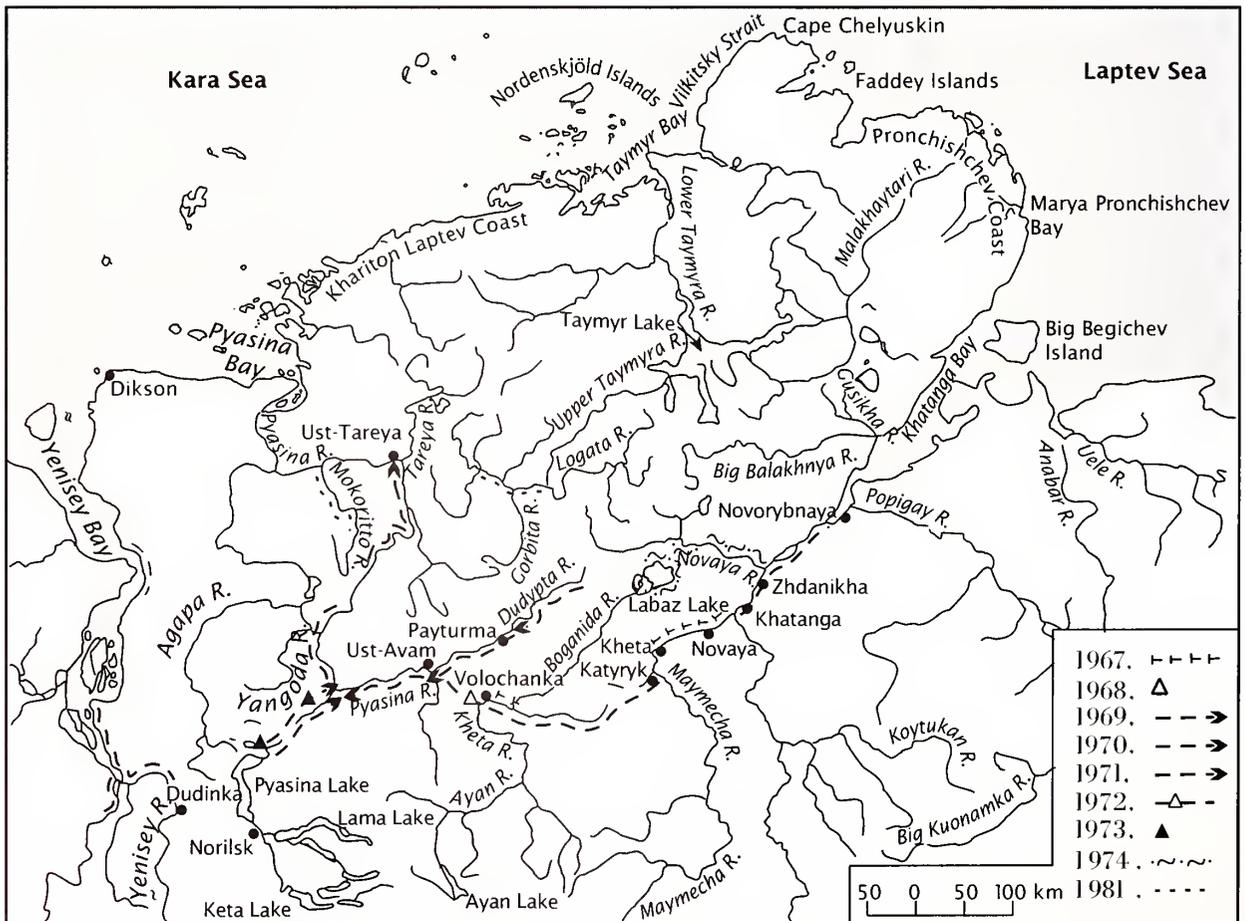
adjacent areas; to describe the subsistence economy of Taymyr's ancient inhabitants and determine when reindeer breeding first appeared; and to collect materials related to ancient social organization. We also wanted to ascertain whether the ancient cultures of the arctic regions were really as culturally conservative as was supposed by many researchers. If they were, we wanted to identify the reasons for this conservatism. Finally, we wanted to determine how the Nganasan people were related to ethnic and cultural divisions of the past. In sum, we actually had one principal goal: to reconstruct the ancient history of Taymyr.

Reaching this goal involved solving several problems common to all investigations of the cultures of the Far North. The first was to identify the reasons for settlement in this far northern region—reasons that probably differed across time and space. The

second problem was to determine particular regional relationships between ancient ethnic groups, their cultures and the area's environmental and climatic conditions: how did humans adapt to new ecological conditions and how were economy, demography, and social structure related in the past?

For more than sixty years ethnographers and archaeologists have been stimulated by the problem of the origins of the so-called "circumpolar culture." There are several interpretations of this term, and researchers have generated various explanations for the similarity of many native cultures of the Far North. Was there ever a single uniform circumpolar culture? If so, when and how was it formed? These questions must also be answered.

Beginning in 1967, when the expedition began to work in Taymyr, we systematically explored this northernmost part of the Eurasian continent (Fig. 5).



5/ Map of the Taymyr Peninsula with areas surveyed by the Polar Expedition.

During the first year, the expedition explored the Volochanka River valley, the lower reaches of the Tagenarka River, and the vicinity of the present-day Volochanka village, a settlement situated on the Kheta River. In addition, we traversed the Kheta from the Gorelaya River to Katyryk village (Khlobystin 1968). These projects were of a prospecting nature, and they led to the discovery of several prehistoric sites, such as Tagenar VI, Maimeche I, and Abylaakh I, which yielded important Mesolithic, Neolithic, and Early Bronze Age materials. In 1969, excavations were carried out at some of these sites as well as at the newly discovered Maimeche IV site (Khlobystin 1969a). The third year of exploration (1969) was devoted to survey of the Avam and Dudypta rivers. Materials dating from the Neolithic to the late medieval period were found at twenty-one locations (Khlobystin and Gracheva 1970).

In 1970, the expedition planned to explore the banks of the Yenisey River mouth and the shore of Yenisey Bay (Khlobystin and Gracheva 1971). The most intensive prospecting work embraced part of the right bank of the Yenisey River from the Dudinka River mouth to the town of Levinskie Peski, from the Sukhaya Dudinka River mouth to the town of Ust-Port, from Kerepovsky to the Troitskiye Pesky settlements, as well as the settlements of Karaul and Vorontsovo, and the environs of Shaitansky Cape. On the left bank of the Yenisey River, our survey route followed the river terraces from the Levinskie Peski settlement to the village of Nosok. We also explored the lower reaches of some of the Yenisey River tributaries, including the Dudinka, the Sukhaya Dudinka, the Malaya Kheta, and its right tributary, the Podyakha River; the Bolshaya Kheta, the Gusikha, the Yara, and the Golchikha rivers. This work showed that the Yenisey River valley was sparsely populated in ancient times, though traces of a Neolithic/Early Bronze Age site were found at the Golchikha River mouth, and old burials were excavated on the Podyakha and Golchikha rivers.

Beginning in 1971, work was moved to the Pyasina River. During the first season the river was explored from its origin at Lake Pyasino to the point where the Mokoritto River flows into the Pyasina. The areas adjacent to the mouths of the Agapa, Yangoda, Tareya, Lyungfada, and Mokoritto rivers were explored, as well as the banks of the Dudypta from the mouth of Avam to the confluence of the Dudypta and Pyasina rivers. We also surveyed the southern part of the shore of Purinskoe I Lake. More than thirty-nine sites dating from the Mesolithic to the medieval period were discovered and a number of sites were studied (Khlobystin and Gracheva 1972). Most interesting was a stratified site at the mouth of the Polovinka River, which yielded the first evidence for the existence of bronze casting in the Pyasina River valley.

In 1972, the expedition carried out explorations in the Pyasina and Kheta River basins (Khlobystin and Gracheva 1973). The survey began at the upper reaches of the Pyasina River and passed through the waterways linking western Taymyr with the eastern part of the region. We surveyed along the Pyasina River to its confluence with the Dudypta River and along the Dudypta and Avam to and including the portage to the Tagenarskiye Lakes. Here the expedition boats were carried into the Kheta River basin and we then passed through the Tagenarka, Volochanka, Kheta, and Khatanga rivers to the town of Zhdanikha. During this field season numerous sites dating to different time periods were discovered and some excavations were carried out at a site located at the mouth of the Polovinka River and at Dyuna III, where the remains of a dwelling dating to the ninth or tenth century A.D. were examined.

In 1973, we continued excavation at Dyuna III and surveyed the area surrounding Melkoye, Glubokoye, Sobachiye, and Lama Lakes where several ancient sites were found (Khlobystin, Melent'ev, and Studzitskaia 1974). The next year we continued archaeological and ethnoarchaeological work in eastern Taymyr

(Khlobystin, Gracheva, and Studzitskaia 1975) where we explored the northern half of Labaz and Khargy Lakes, the Kheta and the Khatanga rivers from the Novaya settlement to south of the Popigay, and the lower reaches of the Khatanga. Thirty-eight sites were identified and investigated. The supposed site of the winter camp of the Khariton Laptev Expedition of the early 1700s was excavated—the remains of cabins were found downstream from the modern town of Novorybnoe—and Nganasan burials dating to the first half of the twentieth century were located in Ary-Mas.

In 1976 we continued work in the northern portion of western Siberia (Khlobystin 1977), and in 1977 the expedition explored the lower reaches of the Kureika River and the northern part of Dyupkun Lake, both situated on the border between Taymyr and the Evenk Autonomous Area (Khlobystin 1979a).

Thus, the expedition explored the main rivers of the western and southeastern parts of Taymyr. More than two hundred archaeological sites from the Mesolithic through the medieval period were discovered. A number of ceremonial sites were studied, and several old interments were excavated, among them the ritual burial of an anthropomorphic figurine.

Thanks to the work of the Polar Expedition, Taymyr became one of the most fully studied regions of northern Siberia. Based on artifact typologies, stratigraphic data, and a series of absolute dates, we developed a cultural sequence for the region that may have great significance for constructing a more precise history of cultural developments in adjacent areas.

Unfortunately, the expedition was unable to conduct work in the Taymyr Lake area and on the coast of the Arctic Ocean because these areas could be explored only with the use of a helicopter. If a culture of maritime hunters, yet unknown, existed on the Taymyr coast of the Arctic Ocean, then the sites of the unstudied Taymyr Lake area would probably belong to cultures already identified in the Pyasina,

Kheta, and Khatanga River basins. Migrating groups would have to pass through these basins and leave evidence of their presence in order to get to Taymyr Lake. Reindeer hunting forced the inhabitants of Taymyr to roam from place to place, following migration routes and spending winter seasons in the southern forest regions; in spring they traveled far to the north to the Byrranga Mountains and in the fall they returned to the forests near the spurs of the Putorana Mountains.

Taymyr still hides evidence of its ancient inhabitants, but the materials obtained by our surveys make it possible to answer many questions. This evidence enables us to characterize settlement patterning in the region; to understand the peculiarities of cultural development; and to reconstruct general aspects of Taymyr prehistory. In this monograph I shall try to answer these questions by presenting the results of the Polar Expedition and drawing on comparative material from other territories of northern Eurasia, since historic events taking place in the north of Central Siberia can be understood only with respect to the general background of historical and cultural processes connected with the settlement of northern Eurasia more generally.

The limited scope of this book does not permit discussion of all materials obtained by the Polar Expedition. I present only the most informative sites, those containing stratified or intact single component assemblages, in order to characterize the stages of cultural development on Taymyr. Finds from other sites are used to illustrate or complement the main points.

This book is presented from a scientific perspective, especially with respect to sciences that overlap with archaeology. Paleogeography and ethnography, disciplines that allow us to better understand the meaning of archaeological finds, are also incorporated.

I would like to thank several colleagues who worked on the materials recovered by our sur-

veys: Galina M. Levkovskaia, who carried out the palynological analysis from Tagenar VI and the Ust-Polovinka settlement; N. B. Selivanova, who did the petrographic analysis of stone raw materials used in northern Yakutia and on Taymyr; and E. S. Iodova, who analyzed the resin samples from Ust-Polovinka. A great contribution was made by the researchers of the Radiocarbon Laboratory of the Leningrad Branch of the Institute of Archaeology (LBIA): R. K. Romanova, Iu. S. Svezhentsev, V. M. Molebnikov. Thanks to their work we now have a series of absolute dates for many prehistoric sites on Taymyr. The spectral analysis of bronze objects was carried out on the initiative of a prominent researcher on Taymyr mineral resources, Nikolai N. Urvantsev from the Institute of Arctic Geology. A series of such analyses was made by D. V. Naumov at the Spectral Laboratory of the LBIA, and by O. A. Diuzhikov, V. A. Fedorenko, and V. V. Distler at the Institute for Geomagnetic Studies of the USSR

Academy of Sciences. Osteological materials were identified by the late Nina M. Ermolova (LBIA).

The archaeological materials forming the foundation of this work would not have become known except for the enthusiastic, often selfless labor of many of my fellow workers who took part in the expedition. I am very grateful to V. B. and Z. B. Altman, Galina N. Gracheva, G. V. Ivanov, V. E. Kalenov; A. N. Melent'ev, S. V. Studzitskaia, A. A. Todorova, A. A. Todorov, and others.

Considerable assistance was rendered to the expedition by the government bodies of the Taymyr and Yamal-Nenets Autonomous Areas; by the employees of the Taymyr Regional Museum in the city of Dudinka and the Yamal-Nenets Regional Museum in Salekhard. I cannot enumerate here all those people who helped us over these many years, but I am nevertheless pleased to express my gratitude for their many contributions.



6/ *Archaeological field camp of the Russian-German expedition at Levinson-Lessing Lake, Central Taymyr, Byrranga Mountains, 1996. Photographer Vladimir Pitulko.*

Climate, Environment, and the Initial Colonization of the Eurasian Arctic

Palaeolithic Occupation of Polar Regions

Major climatic fluctuations in the Pleistocene enabled the Palaeolithic inhabitants of periglacial zones and northern sea coasts to penetrate the North during interstadial periods. The discovery in the Pechora subarctic region of a number of Upper Palaeolithic sites (Kanivets 1976) suggests that ancient hunters moved northward, crossed the Arctic Circle, and established settlements in arctic regions. However, subsequent deterioration of the climate forced these hunters to leave the circumpolar regions. Therefore, it would be unjustified, at least at this stage in our knowledge, to assert that the population of the European Arctic developed directly from its original Palaeolithic inhabitants.

Some of the Siberian subpolar regions, even during the maximum phase of the Sartan glaciation, remained free of ice. Such regions include North Yakutia as well as the coastal areas of Chukotka and West Siberia. Characteristic of periglacial ecosystems, animal and plant life persisted in various manifestations, occupying newly ice-free areas during the interstadials. Under such ecological conditions human communities could exist in Northern Yakutia and in the Far Northeast. However, no traces of such communities have been discovered to date, and the Palaeolithic sites of the Kolyma and the Indigirka rivers date to the later phase of the Sartan glaciation; the Kokorevo and Taymyr interstadials parallel the Bølling and Allerød warm periods.

The Allerød was a time of incipient forest development in Northern Europe, when the forest bordered the present timber line. Tree vegetation penetrated along river valleys into the tundra zone, as known in West Siberia (Levkovskaia 1971, 1977). What is now the tundra was a country of open tundra mixed with bushes along the rivers and steppe plants on watershed divides. The average yearly temperature was probably similar to that of the present.

Due to the expansion of the forest and a sharp increase in annual snowfall in the south, herds of mammoths retreated north to the forest-free regions with less snow, reaching as far as the New Siberian Islands. Following in their wake, Palaeolithic hunters penetrated the Arctic. This migration may have started before the Kokorevo interstadial (13,000–12,200 B.P.), corresponding to the Bølling in western Europe [but see Pitulko et al. 2004 —*Ed.*].

Berelekh, a dwelling site of mammoth hunters [which until the recent Yana site discovery was the world's northernmost Palaeolithic settlement] was located on the Berelekh River, the Indigirka's western tributary, at about 71° N, was excavated in the 1970s (Mochanov 1977; Vereschagin and Mochanov 1972). On the basis of the tools found, Iurii A. Mochanov dates the site to the final phase of the Dyuktai culture. Also from the Berelekh River is a stray find recovered in 1965: a mammoth tusk with a gigantic Palaeolithic animal engraved on it (Bader 1975). The

find suggests that inhabitants of the Berelekh site actually observed mammoths and did not just use mammoth bones from the "mammoth cemetery" on which the dwelling site is located. However, it is possible that the Berelekh inhabitants were familiar with dead, frozen mammoths (Gromov 1972) and could have used mammoth flesh for food, as the inhabitants of the Shikaevsk Palaeolithic site probably did (Petrin and Smirnov 1975:83). The date of the Berelekh occupation layer is $12,930 \pm 80$ B.P. (GIN 1021) and $13,420 \pm 200$ B.P. (cal. IM 152); a mammoth tusk from the "cemetery" is dated to $12,240 \pm 160$ B.P. (LU 149). Thus, the site existed during the Kokorevo interstadial.

Farther east, on the Kolyma and in Chukotka, no reliably dated Palaeolithic sites have thus far been discovered. Material from the Maiorych location (Mochanov 1977:90–92) is scanty, and the artifact defined as a wedge core more closely resembles a utilized scraper. As for recent reports about Palaeolithic artifacts from Chukotka (Dikov 1979:130), interpretation should wait until more detailed material has been published [Dikov published a full report on his Chukotka work in 1993; the English translation appeared in 1997.—*Ed.*]

Systematic geological investigations of the Lower Yenisey and the adjacent territories of the Taymyr and Gydan Peninsulas have provided a considerable body of data on the geological changes and evolution of the climate and environment in the Late Pleistocene and Holocene, making it possible to regard those territories as the local reference region (Kind 1974: 8). Based primarily upon N.V. Kind's investigation (1974), the environmental and climatic events on the Taymyr Peninsula in the Late Pleistocene may be briefly outlined as follows:

At the time of the Sartan glacial maximum (the Gydan stage) ca. 20,000 B. P., the Taymyr Peninsula was under an ice sheet. In the period preceding the Taymyr interstadial (Allerød), concurrent with glacial melting, there was a transgression of Arctic Ocean waters onto newly ice-free lowlands, probably caused

both by the general rise of the ocean level and local isostatic adjustment following the melting of glacial ice. Terminal moraine formations (e.g., the Nyapan ridge), dammed Lake Noril'skoe and inundated Lakes Pyasino, Melkoe, Lama, and Glubokoe. The existence of the proglacial basin was dated by S.L. Troitsky to 14,000–12,000 B.P. The sediments of that basin are seen in the banded clays of the 50 meter terraces of the Pyasina and the Agapa.

According to Andreeva and Kind (1980), the latest intrusion of the Polar Basin waters into the Taymyr Peninsula lowland dates to Karginsk times (50,000–24,000 B.P.). No traces of a younger intrusion have been discovered because of the minor scale of the Sartan glaciation.

Due to climatic amelioration about 12,000 B.P., conditions even in the central part of the Byrranga Mountains were suitable for mammoths. As is the case today, tundra communities were located there (Tikhomirov 1950). The dates of the mammoth remains found on the Mamontovaya River, a western tributary of the Lower Taymyr River, at $11,700 \pm 300$ (MO 3) and $11,450 \pm 250$ (T 297), as well as their burial in sediments of floodplain Terrace II, suggest that mammoths were already extinct at the end of the Taymyr interstadial (Kind 1974:59). The final phase of the Sartan glaciation, known as the Norilsk stage, lasted eight hundred years and was over soon after 10,500 B.P. This period was distinguished by abrupt climatic deterioration and relative aridity. At the end of the phase, Lake Melkoe was surrounded by marshy tundra indicative of a severe climate.

Thus, the period of the last Sartan interstadial was the most favorable period for life on the Taymyr Peninsula. Did mammoth hunters succeed in penetrating the Taymyr Peninsula within that span of time? No indisputable proof can be offered at present; however, a tool found on the Taymyr Peninsula resembles some Palaeolithic artifacts of Siberia. It was found lying on the wind-eroded upper surface of floodplain Terrace II on the western bank of the Pyasina and its tributary, the Polovinka River. Here,

at the point of confluence on floodplain Terrace I, a stratified settlement with evidence of Neolithic occupation was discovered dating to the third millennium B.C., as well as Iron Age dwelling sites dating to between the sixth century B.C. and the eleventh century A.D.

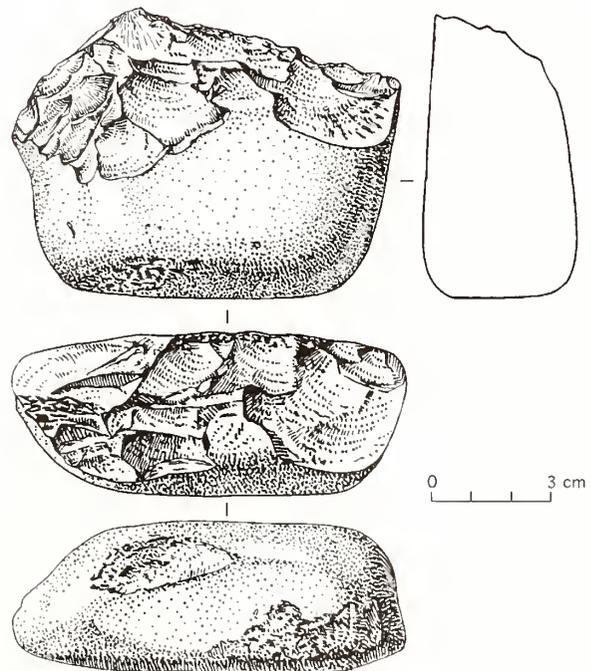
The tool is a chopper-like sub-rectangular object made from a flat gray-green chert pebble (Fig. 7). One edge of the pebble was heavily flaked from one of the wide flat sides, forming a straight oblique edge trimmed by fine retouch (the edge angle is 76 degrees). The dimensions of the tool are as follows: distance from the remaining pebble edge to the working edge: 5.6 to 6.9 cm; width: 9.1 cm; thickness: 3.3 cm. Two opposite corners of the butt show traces of battering, indicating that the tool was also used as a fabricator. According to Zoia A. Abramova's classification of pebble tools, the find belongs to the chopper type B3 (Abramova 1972a:133). Such implements are characteristic of Afontovo and Kokorevo cultures of the Yenisey Palaeolithic.

Choppers, amply represented in the Upper Palaeolithic complexes of East Siberia, have been found at the dwelling sites of Krasny Yar and Verkholenskaya Gora (Layer III) on the Angara, Makarovo II on the Upper Lena, in Dyuktayskaya Cave in the Aldan Basin, at the Oshurkovo settlement in the Trans-Baikal Region, and at some other Upper Palaeolithic sites of East Siberia. They are characterized by thorough secondary retouching of the working edge, which distinguishes them from earlier choppers. Choppers are also encountered at some Mesolithic sites in East Siberia. On the Yenisey, choppers similar to the one from the Pyasina bank were discovered only in Layer B of the Biryusa site, which dates, presumably, to the Pleistocene. Examples of chopper-like tools were recovered from the Badai Early Mesolithic site complexes of Ust-Belaya and Sosnovy Bor on the Upper Angara. Referring to these implements, G. I. Medvedev wrote: "The chopper . . . did not outlast the Palaeolithic. . . . What we call a "chopper" in the Mesolithic represents attenuation

in the evolution of the "classical form" (Medvedev 1971:108, tables 27 and 46). However, some artifacts from the above-mentioned sites correspond to the types of choppers found in the cultural layers of Palaeolithic sites located at the headwaters of the Yenisey River.

Mochanov points out that there is a small number of choppers among the artifacts of the Sumnagin tradition, which he dates to the Late Palaeolithic (Mochanov 1973b) but which, on the basis of dates ($10,800 \pm 200$ to $6,200 \pm 100$ B.P.) and the lithic assemblage, is typically Mesolithic. In respect to the Sumnagin chopper-like pebble tool forms, Medvedev's opinion seems to be justified given that published specimens of such tools include no choppers typical of the Yenisey and Angara Palaeolithic. Consequently, there are no analogues among them to the Pyasina chopper.

Finally, mention should be made of the interesting choppers found on the Kolyma River. Here, at the Siberdik site, in Layer III, choppers were lying together with bifacial tools. In the portion of the site



7/ A chopper-like tool from Ust-Polovinka on the western bank of the Pyasina River.

dated to $6,300 \pm 170$ B.P. (Krill 248) there was a fragment of pottery associated with the choppers (Dikov 1977:215–221). Thus, the period the choppers were in use extends at least into the fourth millennium B.C. There are reports of choppers found in combination with blades in the lower layer and together with leaf-shaped arrowheads in Layer II of a site in the Congo estuary dated to 9470 ± 530 B.P. (Krill 314) and 8655 ± 220 B.P. (MAG 196), respectively (Dikov 1977:222; 1979:90–96).

Based upon the finds of pebble tools listed above, the Taymyr Peninsula chopper may date to between 13,000 and 6000 B.P., a wide interval. A period of climatic deterioration known as the Norilsk stage [often called the Younger Dryas, 12,000–13,000 B.P. —*Ed.*] of the Sartan glaciation occurred within this span of time and lasted almost a millennium, during which the Taymyr mountains were covered by glaciers and the last mammoths died out [cf. Vartanyan et al. (1993) —*Ed.*]

It is not plausible that the Taymyr Peninsula was colonized at a time of such extreme conditions. As indicated by marine transgression evidence, Terrace II of the Pyasina River had not yet formed by the time of the Kokorevo interstadial. The formation of the two post-Karginsk floodplain terraces took place after the transgression and were associated with the landrise in late and postglacial times (Kind 1974:39). Therefore, the chopper found on Terrace II could have belonged to migrants that appeared in the Arctic either during the Taymyr interstadial or in the early postglacial period. The Yenisey Valley was the probable route of entry, suggesting that pebble tools may be found on the east side of the Evenk River.

There is no reason to associate the Pyasina chopper with the Sumnagin tradition. Thus, most likely the artifact is a trace of the first occupation of the Taymyr subpolar region during the Taymyr interstadial. One stray find does not provide a solid basis for such an inference; yet consideration should be given to this possibility. With respect to that particular find, chopper-like tools may also have been used

during the Iron Age, in the first millennium A.D., as discussed in Chapter Four.

What was the fate of the Palaeolithic inhabitants of Siberian Arctic regions during the final stage of the Sartan glaciation? Did they leave for the American continent, or retreat southwards, merging with Mesolithic populations; or did they continue living somewhere in Far Northeastern Siberia until new migrants arrived? These questions have yet to be solved for each region. However, one can make a strong argument that the Palaeolithic of the Siberian Arctic came to an end with the demise of the mammoth fauna [see Vartanyan et al. 1993 for new evidence on the survival of mammoths until the mid-Holocene —*Ed.*].

The drastic climate changes that occurred at the end of the Pleistocene resulted in the expansion of forests (driving mammoths into the subpolar territories) and the development of a modern tundra complex during the Norilsk stage of the Sartan, which completely supplanted the forest-tundra-steppe vegetation. As a consequence, the biotic communities that had supported mammoths were disrupted. In the opinion of Konstantin K. Flerov, the dominance of sphagnum-type vegetation left large herbivorous Pleistocene mammals without their principal forage (1965:127). Nikolai K. Vereschagin (1979) attributes their extinction to the climatic change at the close of the Pleistocene and the beginning of the Holocene. During the Norilsk stage, the ecological niches suited to mammoth habitation were reduced to a minimum, and Palaeolithic humans, whose lifeways and existence depended upon increasingly-scarce mammoths, expedited their demise.

A dramatic cultural change need not always result from the disappearance of a preceding ethnic group. The survival of an ethnic group, however, may be inferred from archaeological material only when some continuity is evident between their respective cultures. Thus far no such phenomenon has been recorded in North Siberia, with the possible exception of the “relic Palaeolithic” dwelling sites on the Kolyma River (Dikov

1979:90–100); however, the presence there of pebble tools is likely due to the technology required by the use of coarse crystalline raw material.

The Arctic Climate during the Early and Middle Holocene

In the Old World permanent habitation of the subpolar regions began in the Mesolithic. The appearance of humans is almost simultaneous throughout the great arctic expanses of Eurasia and is associated with the climatic amelioration that began in the Early Holocene and persisted into the Boreal period (8,000–6,000 B.P.).

Despite some fluctuations, environmental conditions in the subpolar regions throughout the Early Holocene displayed a constant trend toward amelioration. Even in Pre-Boreal times the climate had improved to such an extent that there was tree and shrub vegetation in the southern parts of the present tundra. On the Karginsky Promontory of the Taymyr Peninsula (the lower Yenisey, at about 70 degrees north latitude) a beaver dam has been discovered containing alder branches dating to 9540 ± 50 B.P. (GIN 260; Firsov et al. 1974:123). Beaver dams built at about that time in northwest Alaska (McCulloch and Hopkins 1966:1095–1098) contained branches of poplar, alder, willow, tree-like birch, and spruce. According to Vasari's data for northern Finland, the Pre-Boreal climate was continental and arid, and the Boreal period was marked by higher humidity (Vasari 1962).

In the Boreal period the flora became more diverse and plant distributions shifted northward. The tundra of North Siberia was characterized by the "birch-tree" spore-pollen diagram spectrum. The southern tundra was a spruce, birch, and alder habitat, while the forest-tundra zone was dominated by spruce, pine, fir, and cedar (Levkovskaia 1971, 1977). The remains of alder and birch discovered by Lavrushin in the lower reaches of the Indigirka River date to $7,820 \pm 210$ (MO 233) and $7,850 \pm 250$ B.P. (MO 234) (Ivanova 1963).

The Holocene Climatic Optimum occurred in the Atlantic Period (6,000–3,000 B.P.); mean annual temperatures were considerably higher than at present, and ice cover ceased to exist throughout the Polar Basin (Borisov 1968). In the Atlantic Period the vegetation zone borders shifted northward between 300 and 450 kilometers (Tikhomirov 1962). There was presumably no tundra zone on the Kola Peninsula, and in northern Scandinavia tundra survived only in the mountainous regions. When the forest cover of the Bol'shaya Zemlya tundra was at its maximum, tree vegetation reached the sea coast (Chernov 1947:75) [More recent climate and vegetation studies have altered this view substantially (MacDonald et al. 2000; Makeyev et al. 2003), documenting a Climatic Optimum with tree and shrub vegetation zones reaching northern limits as early as 8000 to 9000 B.P. in the Taymyr-Laptev regions. —*Ed.*]

In West Siberia the boundary between the tundra and forest-tundra crossed the Yamal Peninsula at about 68 degrees north latitude, while in East Taymyr the tree-line was located at about 72 degrees north latitude. The mixed tundra-parkland vegetation included spruce, larch, tree-like willow and birch supplemented by pine and fir in the southern parts of the tundra zone (Levkovskaia 1976). Pollen analysis and wood macrofossils show that the forest-tundra in East Siberia reached the coast of the Polar Basin (Khotinskii et al. 1971).

One of the first to note the marked northward expansion of forest vegetation on the Taymyr Peninsula was the famous arctic traveler and geographer Adolf E. Nordenskiöld during his expedition along the Yenisey River in 1875. Finding "in the most recent deposits of the Yenisey tundra ... far north of the present forest border, thick stumps of large trees," the explorer concluded that "in the past the timber line on the Yenisey passed much farther north than now" (Nordenskiöld 1881:370).

Remains of tree vegetation in the form of stumps are often encountered in the Taymyr tundra. Members of the Polar Expedition saw a large number

of tree stumps on the northern shore of Labaz Lake between 72 and 73 degrees north latitude, where at present shrubs survive only in creek valleys. A large stump dating to 5180 ± 150 B.P. (IM COAN 28) has been found on the Zakharova Rossokha stream in the Novaya River basin. At that time the territory was covered by a broken birch forest with spruce-alder strips and alder groves. The bogs were fewer and less developed than at present (Kul'tina et al. 1974). However, tree vegetation during the Atlantic period extended farther north. Macrofossils of larch have been found at 76 degrees north latitude (Zubkov 1948). According to some evidence, there once was tree vegetation on Cape Chelyuskin, the northernmost point of Taymyr. Forest-tundra extended to the northeast of the Taymyr Peninsula along the Pronchishev coast, which is now an arctic tundra subzone. According to palynological evidence, the base of floodplain Terrace I formed in the Middle Holocene is characterized by a pine zone (Berдовskaia et al. 1968).

Material accumulated as a result of investigating the peat bog on Karginsky Promontory, including a number of radiocarbon dates, indicates that in the period between 6400 and 3100 B.C. [uncalibrated], birch associations dominated the western part of the Taymyr Peninsula (Firsov et al. 1974). Palynological data for the central part of the peninsula were obtained by Levkovskaia on the basis of specimens from a stratigraphic column at the Mesolithic site of Tagenar VI (Levkovskaia et al. 1972). In the Atlantic period, at the time when the inhabitants of Tagenar VI made a fire, about 6020 ± 100 B.P. (LE 884), the conditions that prevailed were those of a northern tundra subzone dominated by both tree and shrub species of birch and alder. Considerably smaller areas were occupied by coniferous trees, such as larch, spruce, and pine.

Thus, in the Middle Holocene the forest vegetation on the Taymyr Peninsula was the northernmost in the world. This distinctive feature, resulting from the region's continental climate, has survived into mod-

ern times, with Taymyr, at 73 degrees north latitude, having the world's northernmost "island" of forest cover—the Ary-Mas woods on the Novaya River.

On the whole, the Atlantic period throughout the Eurasian North had temperatures two to four degrees above the present values, as well as higher humidity (Kats and Kats 1946), the latter contributing to the expansion of floodplains and promoting the development of extensive marshes and bogs. There was also a more active process of peat formation, one manifestation of which is the peat bog on Cape Karginsky; peat formation reached maximum levels during Atlantic and early Sub-Boreal times.

The shifting of vegetation zones and the corresponding northward advance of fauna were primary factors in the penetration of human groups into subpolar regions formerly associated with northern taiga and forest-tundra. Another factor responsible for settlement in the Far North was population growth, which forced humans to colonize new territories. The impact of these factors varied both spatially and temporally. Whereas the initial occupation of the subpolar regions was dominated by ecology, the subsequent stages of colonization were largely determined by demography.

Thus, changes in ecological conditions in post-glacial times brought about the movement of hunter-gatherers who were completely dependent upon these resources, and such groups began to locate their settlements in higher latitudes. During the Climatic Optimum nearly all parts of the Arctic were colonized, with the probable exception of the Polar Basin islands and the territories not suitable for occupation by Mesolithic hunters, such as waterlogged areas of West Siberia and mountainous regions.

The subsequent climatic deterioration was not severe enough to cause hyperborean hunters to completely abandon these territories, and post-Neolithic cultural developments enabled them to surpass their predecessors in adapting to the new environmental conditions.

Consequently, the descendants of those who arrived in the polar regions in Boreal and Atlantic times, the North Eurasian Mesolithic, may be considered the aboriginal population of the Arctic.

In the subsequent colonization of the circumpolar zone, the original population contributed significantly to the cultural development and ethnogenesis of later inhabitants of the region, and eventually to the present indigenous people of Taymyr. In order to evaluate the hypothesis about the existence of a single circumpolar culture [as proposed, for instance, by Bogoras 1929 —*Ed.*], it is necessary to survey archaeological sites of the Eurasian circumpolar zone dating to the Mesolithic, while at the same time acknowledging that according to this hypothesis, ethnogenesis occurred and subpolar culture originated in the Urals during Neolithic times.

On the Concepts of “Mesolithic” and “Neolithic”

Before discussing the archaeological evidence, we must examine the terms “Mesolithic,” “Epi-Palaeolithic,” “Neolithic,” and the derivatives “Sub-Neolithic,” “Survival Neolithic” and “Pre-ceramic Neolithic.” I shall leave aside the history of these terms, their meaning and appropriate use since this would require a comprehensive study in archaeological historiography.

I shall concern myself only with the concrete use of the terms in studying Stone Age sites of Siberia. I am prompted to do so by the assertion made by Mochanov that the Sumnagin culture of northern Europe is a Palaeolithic or, to be more precise, “Late Palaeolithic” tradition, or, alternatively, is a tradition of the “Holocene Palaeolithic.” [The sole exception is Mochanov’s paper “The Early Neolithic of the Aldan” (1966), in which the author, as he later admitted, “rashly” used the terms “Pre-ceramic Neolithic” and “Mesolithic”.]

Rogachev (1962, 1966) rejects the commonly used term “Mesolithic” and advocates the use of “Palaeolithic” until the emergence of Neolithic cultures. Let

us consider the theoretical basis of Rogachev’s view since Mochanov proceeds from Rogachev’s concepts without presenting his own arguments, other than stating that the Pre-Neolithic “constitutes a single whole with the Palaeolithic” (Mochanov 1969:138). Recall that Mochanov denies a connection between the Dyuktai and Sumnagin cultures, which renders his statement altogether illogical. I shall not consider Rogachev’s argument that since the term “Mesolithic” was not used or was used in a different sense by Russian and Soviet archaeologists until the 1950s, we, too, should follow their example.

Rogachev’s fundamental premise is that the basic features of cultures referred to as “Mesolithic” originated in the Upper Palaeolithic. His second premise concerns the difficulties involved in distinguishing the Upper Palaeolithic from the Epi-Palaeolithic. No distinct dividing line can be drawn on the basis of lithic typologies between the Late Pleistocene cultures of East Siberia and those of the Early Holocene that followed. Continuity in the evolution of Palaeolithic and Mesolithic cultures is particularly evident with respect to the traditions of the Middle Yenisey and the Angara basins. Continuity is also apparent in the Trans-Baikal territory, where the blade technique originated as early as the Palaeolithic, whereas the Palaeolithic tradition of using pebble tools persisted into the Holocene. Aleksei P. Okladnikov is correct to stress the progressive evolutionary character and uninterrupted continuity of the autochthonous development of Siberian cultures in the Late Pleistocene and Early Holocene (Okladnikov 1966a, 1968).

Definition of a clear-cut Palaeolithic-Mesolithic boundary is also complicated by the chronological variation in economic strategies in different parts of Siberia due to different ecological conditions and lithic resources. Nina M. Ermolova’s research has provided fresh insight into this problem (Ermolova 1966, 1972). Such evidence justifies the use of the term “Epi-Palaeolithic” as applied to some early Holocene cultures of Siberia, especially to those retaining pebble tools. I have applied this term to

sites in the Lake Baikal region (Khlobystin 1964a, b, 1965). The concept “Epi-Palaeolithic” has a more restricted scope than “Mesolithic” and as such should be applied to sites of Holocene age immediately succeeding those of the Upper Palaeolithic and preserving features of the preceding Palaeolithic culture. It would be erroneous, therefore, to extend the use of the term “Epi-Palaeolithic” to cultures of Pre-Neolithic times.

The cultures that succeeded the Upper Palaeolithic traditions followed fundamentally new historical paths. The descendants of the Upper Palaeolithic generations that witnessed the great ecological changes associated with the onset of the Holocene had at their disposal the achievements of their Palaeolithic forebears in technology, procurement strategies, and social relations. They could not, however, fully preserve the culture they inherited; it had to be transformed in a multitude of ways since the environment was changing.

Cultures of the Late Mesolithic differ radically from those of the Palaeolithic, both in industry and in socio-economic organization. Sometimes, as in the case of the Early Neolithic of Taymyr, Mesolithic cultures differ from those of the Neolithic only in one trait: they lack pottery. For this reason such cultures can be referred to as “Pre-ceramic Neolithic,” a term I used for denoting sites of the Khin’sk, the final stage of the Mesolithic in the Lake Baikal region (Khlobystin 1965). The term “Pre-ceramic Neolithic” is analogous to the terms “Proto-Neolithic” and “Pre-Neolithic.” Because a common view is that “there is no real Neolithic without pottery” (Ravdonikas 1947:144), the term “Pre-ceramic” is needed. “Pre-ceramic Neolithic” has a more restricted meaning than “Mesolithic.” Thus, if the “Epi-Palaeolithic” sometimes corresponds to “Early Mesolithic,” then the “Pre-ceramic Neolithic” represents the final stage of the Mesolithic.

The presence of pottery in “Stone Age” cultures is an indication to reclassify them as “Neolithic.” However, pottery is often merely a formal indicator, since for some societies the appearance of pottery

was not associated with fundamental changes in the way of life.

Had the opponents of the term “Mesolithic” been consistent and logical throughout, they would have had to assign to their “Late Palaeolithic” category the Early Neolithic cultures of the Taymyr Peninsula, Yakutia, and many other territories, for the principal components of those cultures originated in the Mesolithic, just as many features of the Mesolithic are evident in the Upper Palaeolithic. Whereas by convention the end date of the Mesolithic is defined by archaeologists, its beginning is marked by climatic change at the Pleistocene-Holocene transition. That transition separated the Palaeolithic from a new epoch characterized by the search for new modes of existence, an epoch crucial for human cultural change—the Mesolithic. According to archaeological evidence, during the Mesolithic, before the appearance of indicators that guide archaeologists in distinguishing the Neolithic, new forms of economy—agriculture and cattle breeding—originated in the Near East, Hindustan, and the Balkans. During the Mesolithic, specialization in subsistence activities was beginning among groups of hunters, gatherers, and fishers. In all cases subsistence needs determined the development of those forms of Palaeolithic tools that conformed to the new requirements, as well as the invention of new implements and utensils.

Criticism of those who object to distinguishing the Mesolithic is substantiated by Formozov, who opposes the views of Rogachev and Mochanov (Formozov 1970). Thus, the conventionally adopted lower boundary of the Mesolithic—the epoch succeeding the Palaeolithic and distinguished by the wide distribution of cultures characterized by prismatic blades and tools made from them—is the geological boundary between the Pleistocene and Holocene. This approach is tenable wherever Upper Palaeolithic cultures were not supplanted by immigrant Mesolithic traditions but rather display cultural continuity. This has been demonstrated by

Kol'tsov with respect to the cultures of the Southern and Eastern Baltic.

There are two fundamentally different points of view on the concept of "Neolithic." Some investigators, following the example of Lubbock, who introduced the term in 1863 (Lubbock 1876), regard the Neolithic as a stage in the archaeological periodization of material culture that preceded the incipient use of metal tools and was marked by the appearance of pottery and a mature lithic technology. Other researchers, confusing archaeological periodization with the cultural evolutionary schemes developed by Morgan and Engels, associate the Neolithic with the appearance of a new subsistence strategy—cattle breeding and agriculture—actually equating the Neolithic with the middle stage of barbarism. The spread of this view of the Neolithic was largely due to V. Gordon Childe, whose term "Neolithic revolution" stressed the progressive significance of the transition from the period of appropriating the products of the land to that of their incipient reproduction as articles of consumption, subsistence products in particular (Childe 1949:33, 34, 66). At the same time, Childe pointed out that the most appropriate strategy for the archaeologist was to base his classification on tool production technology (Childe 1949:54).

The archaeologists advocating this point of view, illogically identifying the Neolithic with one set of characteristics (related to the economy) and the Palaeolithic, Mesolithic, Eneolithic, etc., by another set (tool types and raw materials), were confronted with the nonuniform evolution of human societies resulting from natural and historical factors—for in the case of many prehistoric peoples, changes in tool technology did not coincide with changes in subsistence economy. These archaeologists introduced the terms "Sub-Neolithic," and "Survival Neolithic," etc., for societies with a hunting and gathering economy and Neolithic material culture.

Ideally, both archaeological cultures and chronological dates should figure in the study of prehistory.

However, this is not always possible given the present level of archaeological knowledge. Therefore, the terms "Agro-Neolithic" and "Ago-Neolithic" may be used to contrast Neolithic cultures with different subsistence economies (Khlobystin 1972a).

Two features indicate the beginning of the Ago-Neolithic: the earliest pottery and the incipient mass production of stone tools by bilateral retouch and grinding techniques. Local metallurgical production (bronze casting) or wide distribution of imported metal tools are features characteristic of the post-Neolithic.

The Mesolithic of the European and West Siberian Arctic

Among the earliest inhabitants of the European Arctic were representatives of the Komsa culture, or the "Arctic Palaeolithic" (Bøe and Nummedal 1936; Freundt 1948; Gurina 1971, 1973a; Luho 1956b; Odner 1966; Zemliakov 1937, 1940). Numerous Komsa settlements, discovered on the sea coast of northern Norway (Finnmark) and the western part of the Kola Peninsula, are located on ancient thirty to eighty meter-high terraces or beach ridges. Geological dating on the basis of these terrace locations places the settlements between the seventh and sixth millennia B.C. (Gurina et al. 1974), i.e., at the close of the Boreal and the beginning of the Atlantic Period. Some settlements attributed to the Komsa tradition have also been discovered in the interior of Norway and the Kola Peninsula.

The Komsa tradition is represented by small dwelling sites with Mesolithic-like assemblages composed of arrowheads, scrapers, burins, knives, and drills made primarily of quartzite, slate and, less frequently, rock crystal and flint. Occasionally prismatic and discoid cores, large sidescrapers, coarse chopping tools and geometric microliths are encountered at the sites. Traces of a round tent-like dwelling have been discovered, as well as quarries and lithic workshops. Komsa people seem to have been hunters and coastal gatherers living in small groups.

Different hypotheses have been advanced about the origin of the Komsa culture. The comparable traditions in Fennoscandia are the Fosna and, to some extent, Suomusjarvi culture. [Today, the oldest Fosna and Komsa sites date to 10,000 B.P.—*Ed.*] Fosna sites have been discovered (Freundt 1948; Hagen 1963) on the Atlantic coast of Norway, north of Bergen and in the sub-polar regions of Helgeland. Also attributable to the Fosna culture are some finds from southeastern Norway (Fulke Estfoll) and the west coast of Sweden. The dating of Fosna culture is controversial. There are grounds to correlate its material culture with the assemblages of Lungbu and Pinnberg sites of the eighth millennium B.C. which, in the final analysis, link Fosna with the Ahrensburgian tradition.

The appearance of Fosna culture in Scandinavia is associated, in all probability, with the penetration of people with a Pinnberg-related culture from Denmark into southern Sweden. This penetration could have taken place in the Early Boreal Period, when the isostatic rise of the bottom of the strait that connected the Yoldia Sea with the ocean resulted in the joining of Scandinavia with the southern Baltic coast and the formation of Ancylus Lake. From southern Sweden, via Estfoll, the Fosna migrants could have made their way through the river valleys (including Gudbrannsdalen) over the mountains to the Atlantic coast and thence northward to the sub-polar regions.

Both the Fosna culture and the Komsa tradition are characterized by tanged arrowheads and geometric microliths. E. A. Freundt regarded Fosna and Komsa as closely related cultures. According to A. Hagen (1967:42), the Komsa culture arose from Fosna and possibly other sources as well. V. Luho (1956b:299) opposed the view that the Komsa culture originated from the Fosna tradition, suggesting that it resembled the Mesolithic of Finland instead. Some investigators recognize this resemblance and agree that the origin of Komsa may be associated with Mesolithic sites in Finland and comparable Karelian sites.

Two Mesolithic traditions—the Askola (Luho 1956a) and the Suomusjarvi (Luho 1967)—are distinguished in Finland. [Beginning in the mid-1970s, the existence of a single Suomusjarvi culture covering the territory of Finland and dated from the end of the eighth through the fifth millennium B.P., has been recognized by most archaeologists studying the Northern European Palaeolithic.—*Ed.*] Askola culture is dated to the eighth through seventh millennia B.C., and Suomusjarvi, regarded as a subsequent stage in the development of the Askola culture, is dated to the seventh through fourth millennium B.C. They are now viewed in conjunction with the Mesolithic sites of Karelia as a single Mesolithic culture with certain local peculiarities (Pankrushev 1978:61).

Within this framework, the Askola-type sites, dominated by quartz tools and a few specimens of slate, and Suomusjarvi-type sites, characterized by the continued use of quartz tools and more numerous and diverse slate implements, may represent two stages of Mesolithic evolution. Mesolithic finds from the Finnish Subarctic, the discovery of Mesolithic dwelling sites in the Lower Kem' region dated, arguably, to the tenth through eighth millennium B.C. (Anpilogov 1972; Pankrushev 1978), and on the Kandalaksha shore of the Kola Peninsula dated to the late seventh through fifth millennium B.C. (Pesonen 1978), which bear some resemblance to Komsa sites—these lines of evidence provide support for the hypothesis of a Mesolithic migration [into Western Siberia] from Finland and Karelia. [Such suppositions on dating and the direction of a Mesolithic migration have not been supported by studies carried out in the 1980s and 1990s.—*Ed.*]

In the Upper Volga area and the Vycheгда region, rare specimens of trapezoidal flints have been encountered, whereas in southern Karelia, in some parts of the Vologda and Archangel districts and the Komi ASSR, leaf-shaped arrowheads made of blades have been found (Gurina 1977a:24–27). However, at this stage there is no reason to ascribe the appearance in the Komsa culture of trapezoids

and tanged arrowheads to cultural influence from these regions, although there is some evidence of a possible penetration of the Kola Peninsula by certain cultural elements characteristic of the Volga-Oka traditions.

The dwelling sites of southern Karelia with flint blade assemblages similar in raw material and type to artifacts from the Volga-Oka Mesolithic sites point to the appearance in the Late Mesolithic (ca. seventh through fourth millennium B.C.) of migrants from the Upper Volga (Pankrushev 1978:62–64). Nina N. Gurina discovered on the Shuniyoki River (in the northwestern part of the Kola Peninsula) dwelling sites that yielded arrowheads made of local slate blades with points and tangs formed by retouch, as well as conical cores typical of the Volga-Oka Mesolithic. These and other finds suggest that the occupation of the Kola Peninsula in the Mesolithic proceeded from two directions: northwest and south (Gurina 1977b).

Hagen's hypothesis that Kosma developed out of the Fosna tradition is reasonable. Thus the formation and evolution of the Komsa culture was determined both by the appearance in North Fennoscandia and the Kola Peninsula of Fosna migrants and repeated ethnic migrations from Finland and Karelia. These migrants imparted to the Komsa culture features typical of the Askola-Suomusjarvi and Upper Volga traditions. It is difficult to ascertain which of the two migration waves—either from Norway or from Karelia and Finland—preceded the other and which ethnic components dominated in Komsa culture. This question may be answered by distinguishing between earlier and later Komsa industries. However, there is reason to believe that different ethnic groups, primarily those associated with the Mesolithic cultures of the southern coast of the Baltic, contributed to the formation of Komsa. The influence of the Upper Volga Mesolithic presumably reached the region at a later stage.

Inasmuch as Upper Volga Mesolithic origins are related to the Mesolithic cultures of the Baltic and

Southeast Europe, there is support for the idea that these early peoples represented a Europoid anthropological type rather than a Uralic one. Pankrushev's hypothesis (1978:91, supplement IV, fig. 1) about the colonization of Karelia and southern Finland in the Early Mesolithic from the tenth through seventh millennium B.C. by proto-Saami people migrating from the region northeast of the Urals is not supported by evidence from northeastern European Mesolithic sites.

The archaeological material collected by the geologists Georgii A. Chernov and A. I. Blokhin in the central part of the Bolshezemelskaya tundra (Chernov 1948) made it possible to identify Mesolithic dwelling site complexes from the Pechora sub-polar region (Khlobystin 1973b; Vereshchagina 1973). The sites where Mesolithic artifacts were found were small, and the finds, as a rule, were not numerous. The paucity of artifacts suggests small bands leading a mobile way of life. Camps were discovered on high (15 to 20 meter) river banks. The site Sandibey I on the Kolva River tributary of the same name yielded a representative assemblage.

Mesolithic inhabitants of the Bolshezemelskaya tundra made blade tools from prismatic and conical cores of jasper-like flint. Blades were used to produce end- and sidescrapers, angle burins and burins with finely retouched working edges, borers, knives and insets with retouched edges, as well as tanged arrowheads. Scrapers were manufactured from flakes. Mesolithic artifacts from the habitation sites of the Pechora sub-polar region are analogous to those of the Mesolithic period discovered in the taiga zone bordering the Bol'shaya Zemlya tundra in the south (Kanivets 1973; Luzgin 1972), and among the material from Mesolithic sites of the Vychegda region in the Severnaya Dvina River Basin—Yavron'ga I and other sites (Burov 1961, 1974; Kanivets and Vereshchagina 1973).

The "microlithic" character of the Bol'shaya Zemlya settlements prompted O. N. Bader and G. M. Burov to suggest that they were Mesolithic, with

origins among the Vychegda sites and the Kama Mesolithic (Bader 1961:16, 1966:199; Burov 1961, 1965:158–161). The distribution of Mesolithic sites over the hydrographic network that connects the Pechora sub-polar regions with the Kama provides evidence supporting this idea. However, neither blade arrowheads nor spear-like scrapers similar to those of the sub-polar Mesolithic have been discovered at Mesolithic sites on the Kama River. Nevertheless, the scanty Kama Mesolithic material appears related to the southern Ural Mesolithic. However, according to G. N. Matiushin (1964; 1976:139), Swiderian-type arrowheads have been found in Bashkiria. Therefore, further investigations may produce such arrowheads in the Kama region, although in all probability the Mesolithic industry of that region had its own distinctive features.

Arrowheads are characteristic of the Mesolithic of the huge area covering Upper Volga, Oka, Upper Dnieper basins, and the Baltic lands (Kol'tsov 1965, 1977; Tret'iakov 1963). The Mesolithic finds from Vissky Peat Bog I and from other Sindor sites are similar to the Mesolithic Baltic complexes (Burov 1967:62–166), and to the Pechora Mesolithic and the Mesolithic of the Upper Volga. This evidence suggests that the colonization of the Pechora River downstream area and of the northeastern part of the European USSR proceeded from the southwest—from the Upper Volga basin via the Severnaya Dvina River.

Due to the lack of absolute dates, the Pechora sub-polar Mesolithic chronology must be based on typological comparison with dated complexes of other regions. V.I. Kanivets found similarities with Sandibey I and sites of the third stage of the Volga-Oka Mesolithic and dated that group to about the sixth millennium B.C. (Kanivets 1973:23). Radiocarbon dates on Mesolithic materials from the Yavron'ga I site ($8,530 \pm 60$ BP; LE 853) and Vissky Peat Bog I ($7,090 \pm 70$; $7,090 \pm 80$; $7,150 \pm 60$; $7,820 \pm 80$; $8,080 \pm 90$; samples LE 713, 685, 684, 616, and 776 respectively), i.e., seventh through sixth millennium B.C., support the idea that human habitation

in the Pechora sub-polar region dates to the sixth millennium B.C., although sites of the Sandibey I type could have existed there in the fifth millennium B.C. or even later, until either Neolithic culture penetrated the region or originated there. In the territory under review those cultures are represented by sites whose material suggests they are related by origin to the pit-comb traditions of the Upper Volga (Khlobystin 1973b:59–60).

In the Siberian Arctic, stretching for thousands of kilometers from the Urals to the Chukchi Sea, Mesolithic sites are rare. The exception is the Taymyr Peninsula, where a number of Mesolithic habitation sites have been identified. The relevant material will be discussed after a review of sites from extreme northern Siberia.

A tool complex found on the Korchagi Promontory, on the bank of the Ob River down-stream from Salekhard, represents the Mesolithic of West Siberia (Khlobystin 1977). Here, on an eroded, wind-swept terrace fifteen to twenty meters high, an assemblage was exposed in the loess. Among the finds were three small cores of dark gray jasper-like rock: two prismatic and one pyramidal; a brownish jasper core from a quadrilateral blank; and a black siliceous slate object shaped like a core blank with a flat dorsal side. There was also a large sidescraper of light brown quartz and three small scrapers. Two of the latter are of the endscraper type, made from short thick blades. The blank used for the third was a heavy chip. Debitage was present, but no blades, indicating that blades produced at the site, which was given the name "Korchagi I-B," were removed by the inhabitants.

Typological identification of the Korchagi complex presents difficulties since it is the only one known in northern West Siberia containing artifacts suggestive of the Upper Palaeolithic. Similar cores and scrapers are encountered at Mesolithic sites east of the Middle Urals, and on these grounds the artifacts from the Korchagi I-B site are referred to as Mesolithic. Nearby, in undisturbed strata, a carbo-

naceous band was identified above the find in the loess deposits. Carbon from the band dates to 7260 ± 80 B.P. (LE 1376) and confirms that Korchagi I-B is a Mesolithic site.

I have suggested elsewhere that the northern portions of West Siberia were colonized relatively late because the humid climate of the Atlantic period made the swampy West Siberian depression a nearly impassable barrier to human movement (Khlobystin 1973a; Khlobystin and Levkovskaia 1974). However, along the ridge of the Urals there are territories with high elevations which in the Atlantic could have been used to penetrate the North as far as the region of present-day Salekhard, where flat uplands or “continents” are situated. Such “continents” rise over the river valleys and in some cases stretch for long distances, such as the Ob-Polui “continent” where the Mesolithic site Korchagi I-B was discovered on Cape Korchagi. As this is the only such site known for this region, further investigations are needed to determine the extent to which Northwest Siberia was colonized; but for the time being we can assume that the region was sparsely populated during the Atlantic.

The Mesolithic and Early Neolithic in East Siberia and Taymyr

The climate of Eastern Siberia was more favorable for the settlement of polar regions than that of Northwest Siberia. The East Siberian climate is more continental (Borisov 1975:130, 131) and has less annual precipitation than the West Siberian tundra. In all probability during the Atlantic Period, when the Polar Basin was free of ice, this condition prevailed also. Warmer temperatures, when compared with the West Siberian lowland, also contributed to the settling of the vast Siberian polar areas. These areas are still poorly known archaeologically, and therefore there are few sites that date to the Atlantic. Sites have been recorded, however, in the basins of the Anabar and Olenek rivers and on the Indigirka and Kolyma rivers.

A number of sites have been identified by investigators from the Institute of Arctic Geology, which surveyed the area between the Anabar and the Olenek (Glushinskii and Khlobystin 1966; Khlobystin 1970; Konstantinov 1970; Okladnikov and Puminov 1958a, b). Sites discovered in the basins of these rivers contained an abundance of artifacts belonging to core and blade industries. The blade tradition persisted here until the Bronze Age, as indicated by materials from the Buolkalaakh site. One of the reasons for this phenomenon was the presence of local outcrops of flinty slate. This raw material is easily flaked into bladelets and facilitated the manufacture of blade artifacts. Tools from a site on the Timir-Bilir River are made of this flinty slate. This site is situated in the watershed of the Anabar and the Olenek rivers. In 1961, the geologist F. F. Iljin gathered a small but representative collection of stone tools on the third terrace of the Timir-Bilir River. The collection includes three small arrowheads made of knife-like blades produced by retouching the tip and the base from the ventral side, a burin on a truncated bladelet, and two endscrapers with steep-backed retouch but which retain (thanks to the fact that they are made of massive blades) the traits of endscrapers. In addition, there are several flakes and many blades. Some of the latter display marginal retouch on the ventral surface and were probably used as insets. One of the projectile points displays diagonal retouching typical of the cultures of the Lena region.

The juxtaposition of this assemblage, consisting of archaic forms, with materials of Mesolithic and Neolithic cultures of eastern Siberia, points to the great antiquity of the Timir-Bilir site. In the Lower Lena region, arrowheads made of knife-like blades and some other tools similar to those from Timir-Bilir were found by Okladnikov near Lakes Uolba and Kylarsa on hills that once served as seasonal fishing camps (Okladnikov 1946:10-57, tables IV, V, VII). In the Baikal region such artifacts existed during the Hin (Final) Stage of the Mesolithic, dated to the sixth through fifth millennium B.C. (Okladnikov

1950c:157–164). The absence of the tanged arrowheads from Aldan sites of the Sumnagin culture is probably characteristic of the Mesolithic and Early Neolithic of East Siberia and thus does not disprove the early age of the Timir-Bilir finds. Such arrowheads are known among the Early Neolithic artifacts from another large Yakutsk river, the Vilyui (Fedoseeva 1968:49, 50). A fragment of such an arrowhead was also found in Evenkiya at the Tura I site excavated by Andreev. Similar arrowheads found on the Indigirka River and on the Chukchi Peninsula are described below.

Mochanov, who formerly disputed the use of bows and arrows in Sumnagin culture (Mochanov 1969:131, 1973b:40), is now inclined to think that some of the blade arrowheads are Sumnagin (Mochanov 1977:246–248). Taking into consideration the tool typology of the Timir-Bilir site, its position on the third terrace, and the presence of Late Neolithic sites with other types of arrowheads on the Anabar and the Olenek, a reasonable date for the Timir-Bilir site is the Late Mesolithic or Early Neolithic, or between the fifth and fourth millennia B.C. Thus, the site may be one of the first settlements in the polar regions of East Siberia dating to the beginning of the Atlantic Period.

Among surface finds coming from other sites of the eastern part of the North Siberian lowland, for example, from the Ulakhan-Kyuelsane site in the Uele River basin, where materials were collected by geologists Iljin and Ermolayev in 1966, and from the site located on the east bank of the Anabar River eighteen kilometers upstream from Uryung-Khaya village, where materials were collected by Iljin in 1960, are blade artifacts—burins on a break, tiny insets, endscrapers—that date to the Mesolithic or Early Neolithic.

According to available data (Mochanov 1977:99, fig. 18) from northern Yakutia, Sumnagin sites were found on the Indigirka River (the Yubileinaya site) and on the lower reaches of the Kolyma River on the Panteleikha River (Panteleikha I-VIII and Pirs).

Tanged arrowheads made on blades (Mochanov 1977:table 86) that could represent the Sumnagin culture were found at the Yubileinaya site. At sites on the Kolyma River, Sumnagin culture endscrapers were made on massive blades and blade-like flakes that could be distinguished from Neolithic and Early Iron Age artifacts. Some other tools from these sites, such as endscrapers and knives and insets made on microblades, may belong, as noted by Mochanov (1977:203–207) both to the Sumnagin culture and to the Neolithic. The Burulgino site on the lower reaches of the Indigirka River was thought to date to the sixth through fifth millennium B.C. (Beregovaia 1967:87), but subsequent work has demonstrated that the site was incorrectly dated (Fedoseeva 1972:261).

As for the Chukchi Peninsula, the Mesolithic and Early Neolithic can be inferred from surface finds from sites near Lakes Tytyl and Ionigytkhyn, as well as from a tanged arrowhead made on a blade recovered at the Ust-Belaya site. This tool is similar to arrowheads from Yubileinaya (Dikov 1979:130–134).

Tagenar VI

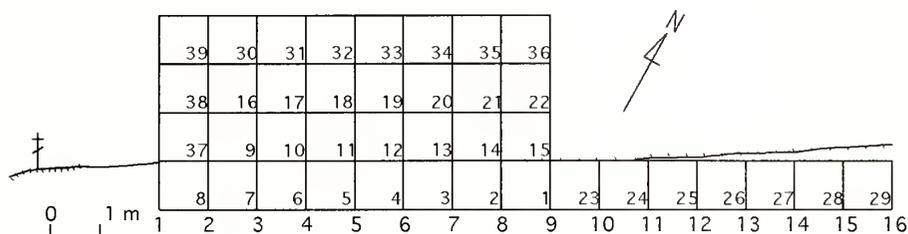
The Tagenar VI site is the oldest precisely dated site with evidence for the settlement of the Taymyr region during the Atlantic Period. It was discovered by the Polar Expedition in 1967 and investigations were carried out in 1968 and 1972. The site is situated on the left bank of the Tagenar River, five kilometers from its confluence with the Volochanka River, which is part of the Kheta and Khatanga River basins. The most efficient route linking the Yenisey River region of North Siberia with the lower reaches of the Lena River follows the Tagenar and the Volochanka rivers. The site occupies a small sandy hill on the first terrace, five to seven meters above the present river level.

Thirty-nine square meters were excavated at the top of the hill along the edge of a blowout (Fig. 8). Stratigraphy was documented as follows (Fig. 9): under a weakly developed turf cover (0–0.02 m) lies a gray-yellow sand level (0.02–0.34 m) containing a thin brown humus lens. This turns into a sandy layer

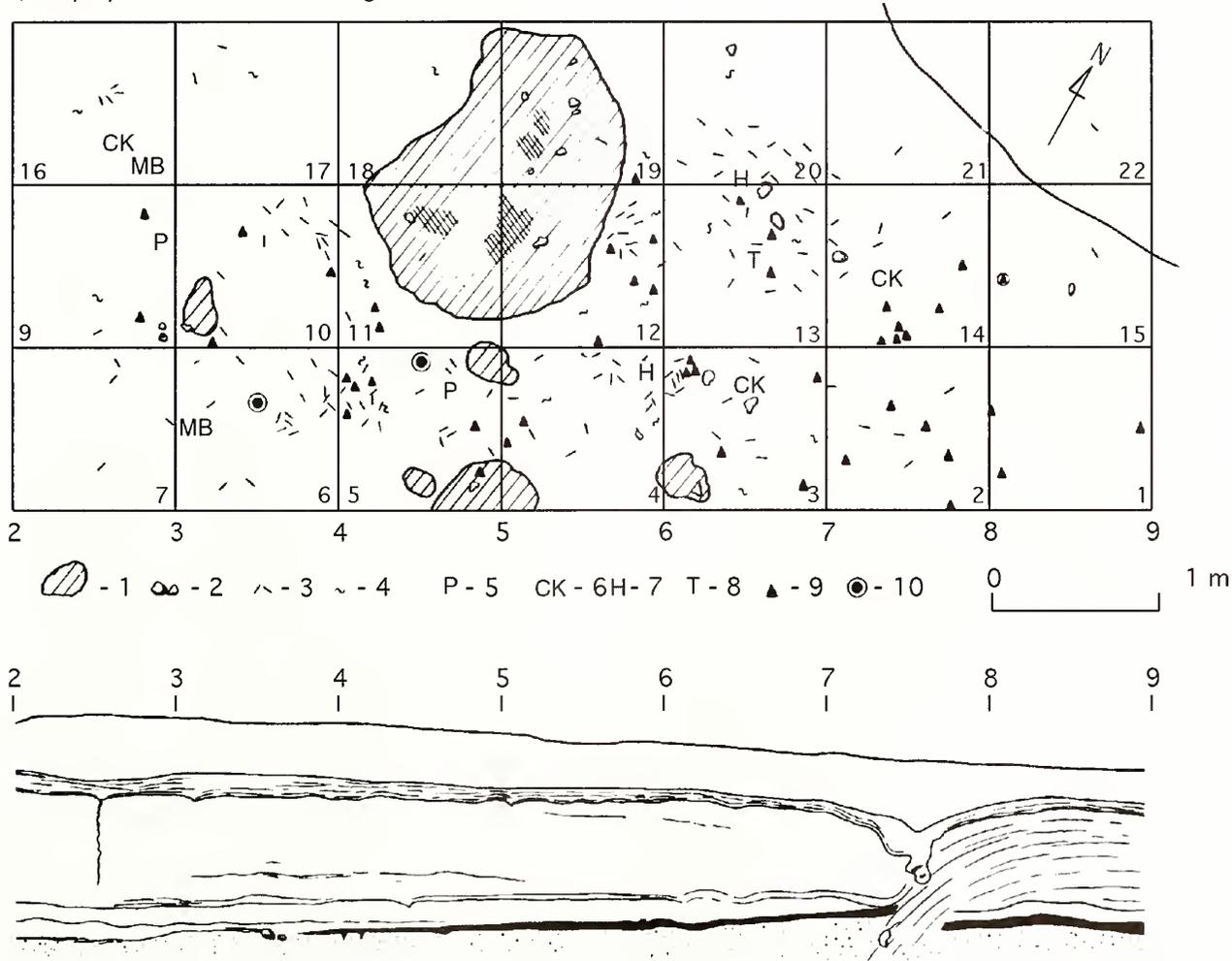
(0.34-0.47 m) with lenses of dark brown humus, which are more dense at greater depths. The sandy stratum has a distinct lower terminus, at which point ground-ice wedges begin that occasionally become thin descending fissures. A long wedge (0.8-1 m) was found cutting through underlying deposits of brownish laminated sand (0.47-1.32 m), which contained eight or nine lenses of humus and charcoal ranging

in thickness between 0.5 to 2 centimeters. Hearths and pieces of burnt wood and bark are associated with these lenses.

A 1 to 3 centimeter horizontal lens composed of humus and charcoal 1.20 to 1.32 meters from the surface contained red and black discolorations from hearths, small stones, stains of crimson ocher, and lithic artifacts. This cultural layer is underlain



8/ Map of the excavations at Tagenar VI.



9/ Spatial distribution of materials at Tagenar VI (top). Legend: 1 = charcoal; 2 = rocks; 3 = microblades; 4 = retouched blades; 5 = burins; 6 = scrapers; 7 = cores; 8 = chisels; 9 = flakes; 10 = gravers. Stratigraphic profile of Tagenar VI (bottom), showing frost edge at 7.5 east, square 2.

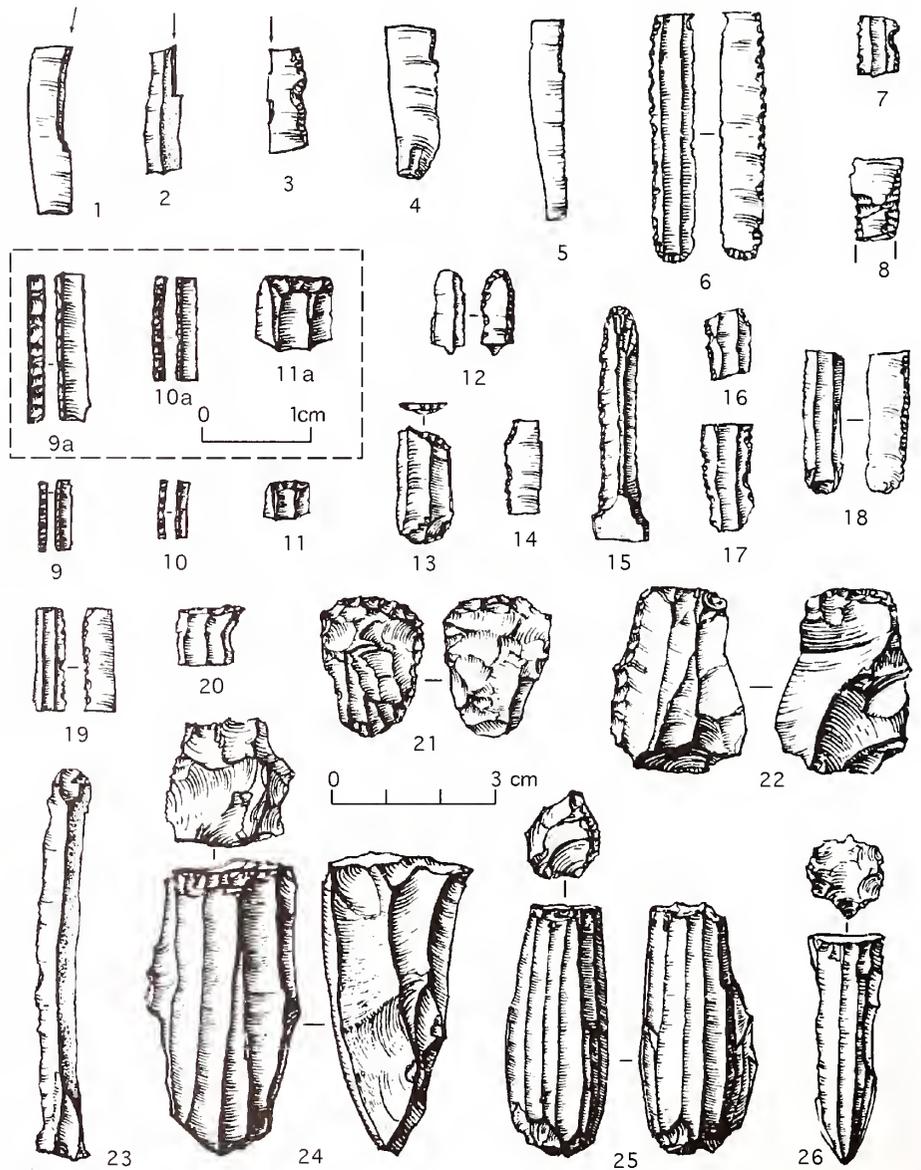
by yellow and sometimes gray coarse-grained sand resembling channel alluvium. Cultural materials are unevenly distributed within this level. Charcoal fragments, small burned stones, and bird and animal bones were concentrated near a large hearth. Bones from this stratum are poorly preserved and only reindeer teeth could be identified. Thin prismatic bladelets and associated fragments (215 specimens, including retouched pieces) constitute the majority of cultural materials. Only sixty-two flakes were found, and most were very small. Microblades were detached from prismatic cores made

of gray, pink, and white slabs of flint. Three such cores were found during the excavation (Fig. 10:24–26). The original size of the cores is indicated by the blades removed from them, which reach 7.7 centimeters (Fig. 10:23). Prismatic blades were primarily used as knives, and the majority display use-wear. Marginal, poorly executed retouch was often seen on blades (Fig. 10:14–19), which may have been used as insets in composite tools.

Based on the micro-insets, these composite tools were highly developed. Two backed microblades measuring 10 and 13 millimeters long and 2.5 and 3 millimeters wide, respectively, displayed careful, steep, small-faceted retouch (Fig. 10:9, 10). Inset slots could have been cut either by ordinary burins on a break

(three such burins were found: Fig. 10:1–3) or by angular and beak-like cutters. The angular cutters are truncated blades with tiny retouch that forms something like a burin facet (Fig. 10:4, 5).

Another type of cutter has a beak-like point distinguished by marginal notch near the point of truncation (Fig. 10:6, 7). One blade has sloping ventral retouch and probably represents a fragment from a perforator or an arrowhead (Fig. 10:8). The small size of lithic artifacts and the limited retouch, which is characteristic of this complex, is also evident



10/ Lithic artifacts from Tagenar VI.

in endscrapers: some were produced by detaching several small flakes from broken blades (Fig. 10:11, 13, 20). Blades more thoroughly worked by steep dorsal retouch along an edge and the rounded proximal end were used as endscrapers and sidescrapers (Fig. 10:15). The sole tool made from a flake is an oval endscraper. Its dorsal and ventral surfaces display retouch; the working edge is hardly damaged but has been polished, probably as a result of skin processing (Fig. 10:21). A massive removal from a prismatic core was used to manufacture a chisel-like tool (Fig. 10:22). Its curved working edge was formed by several blows from the ventral side, while the dorsal surface retains the scars resulting from the core stage. Slate flakes with partially ground surfaces show that the inhabitants of the site were familiar with grinding technology.

There are two radiocarbon dates for the Tagenar VI site. One was obtained from charcoal gathered on the periphery of the cultural layer where some admixture from the overlying humus-charcoal stratum may have occurred: 5160 ± 60 B.P. (LE 789). Another date was obtained from charcoal taken from the hearth and its associated cultural remains. This sample yielded a date of 6020 ± 100 B.P. (LE 884), i.e., the end of the sixth millennium B.C.

The analysis of spores and pollen samples extracted from the site's stratigraphic profile was carried out by Levkovskaia and colleagues (1972). The results indicate that arboreal pollen is absent in the strata underlying the cultural layer, but during the period when the site was occupied, there were taiga forests in the vicinity. Arboreal and shrub species of birch and alder predominated, and conifers (larch, fir, pine) were of secondary importance. This pollen assemblage corresponds to the 1b subzone (birch forests with shrub birch and larch) of the Atlantic Period, as known from the pollen diagram of the peat bog near Cape Karginsky. Tagenar VI also dates to the same time as the Karginsky peat bog. The climate at that time was warm and moist. While now there is tundra around the hill on which the site is

situated, there may have been more lakes and bogs when it was inhabited. Today the Tagenar basin is a part of the northern forest-tundra subzone and has a sparse growth of larch stretching along the banks of the river.

Tagenar VI is not the only Mesolithic site known from Taymyr. Among the ancient sites found by the Polar Expedition while exploring the banks of the Pyasina River (the main waterway of the western part of Taymyr) are a number of sites (e.g., Pyasina I, III, IV, V, XI, XV; Lantoshka II; Malaya Korennaya II and III; Kapkannaya II) where assemblages and tools made from Mesolithic-type microblades were found. Tools from these sites were usually manufactured of slate or flinty hornstone [chalky or poor quality flint or chert. —*Ed.*] brown or dark gray in color.

In Taymyr the most suitable places for human habitation were used repeatedly by early peoples of this region. Sites that face the sun, are open to the wind (to drive away mosquitoes), and are located on well-drained sandy ridges or high terraces near the mouths of small rivers are considered most desirable. Most of these locations are used for summer camps, after the flood season, and their surfaces are often disturbed by aeolian erosion, leaving artifacts scattered or in localized accumulations. Other types of sites were occupied only for short periods of time and contain minimal traces of human activity. Activity areas were usually of limited extent and frequently do not overlap, permitting materials to be divided into different chronological complexes. Thus for the majority of such sites it is possible to distinguish typologically earlier assemblages from later ones. Lantoshka II contains an assemblage that has been identified as having no admixture.

Pyasina I

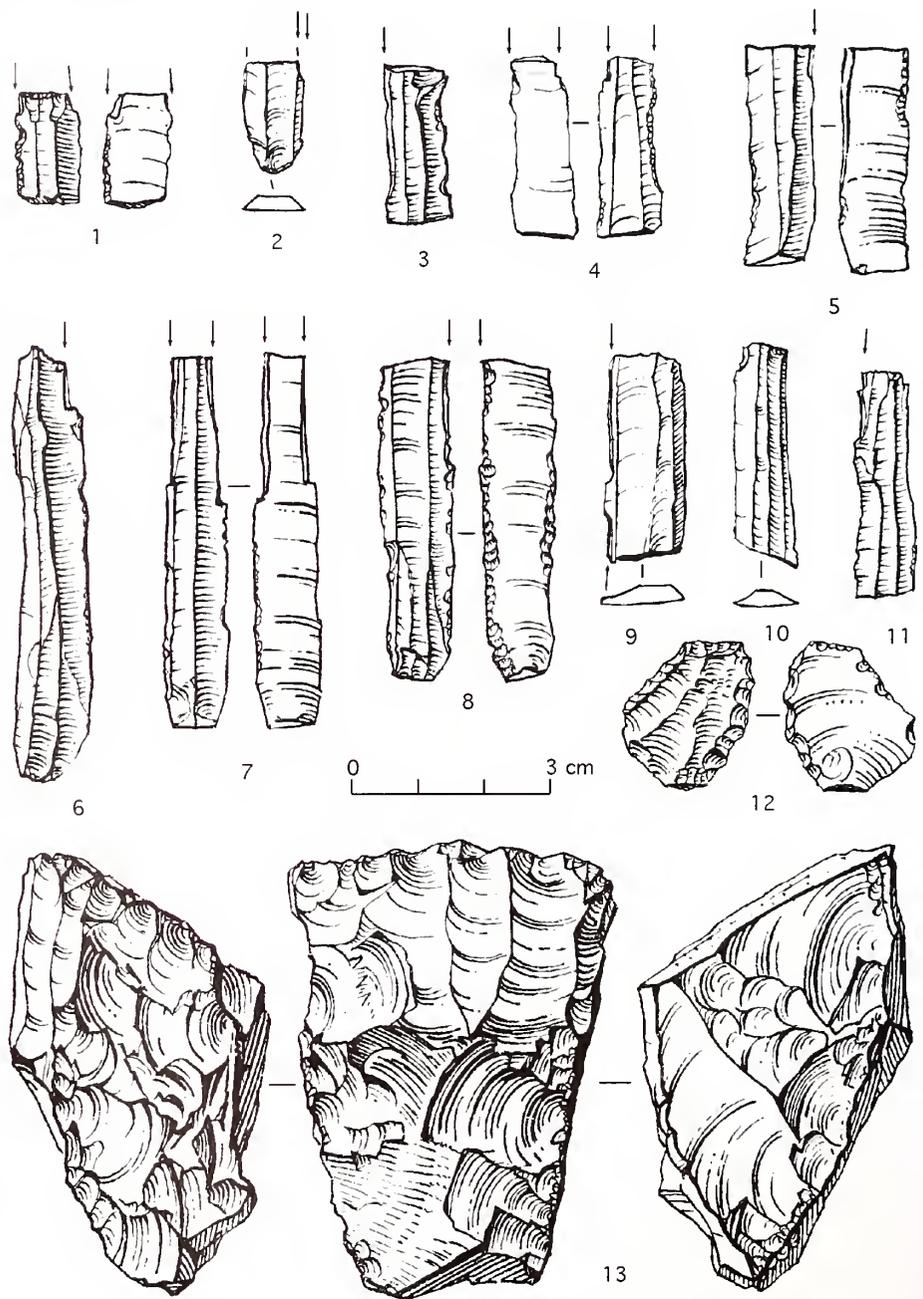
The Pyasina I site is notable for its microblades. The site is situated on the left bank of the Pyasina River, 5 kilometers downstream from the Bolshaya Korennaya River mouth and has two clearly identifiable terraces: the first one at five to six meters, and the second at

nine meters above the river level. Two cultural layers were revealed on a cape-like projection of the second terrace. The first cultural layer, represented by a 5 centimeter-thick layer of dark brown sand with charcoal stains was found directly under the turf.

Artifacts from this layer included thin-walled ceramics dating to the Iron Age. Below, in gray-yellow sand at a depth of 10 to 24 centimeters, is dark brown humus broken by cryogenic processes that contains ashy spots

three to six centimeters thick. Microblades are rare in this layer. However, ninety, with two or three ridges, or arrises, on the dorsal side, were collected from a blowout near the excavation over an area of 20 square meters. Only twenty-eight flakes and chips of slate, light jasper, and chalcedony were identified during the excavation. Accompanying them were 103 microblades. The majority were made of gray and black slate, while some were made of light-colored jasper. Some may have been struck from a large flat-backed core (Fig. 11:13) found in a blowout 15 to 20 meters away from the main concentration of artifacts. This core has been classified as a flat-backed core because it, as well as some other examples found in the Siberian polar zone, has a purposefully flattened ventral surface

(i.e., the side opposite the flaking surface). Judging by the character and color of raw materials, it is possible that other blades were removed from no more than four or five cores. As a rule these cores are rather large, with a width ranging from eight to thirteen millimeters and a length that may exceed 60 millimeters. Almost all microblades were used as tools, but only thirty-two display retouch. Others were used simply



11 / Lithic artifacts from Pyasina I.

as knives, as indicated by use-wear. The function of the tools was ascertained by use-wear analysis.

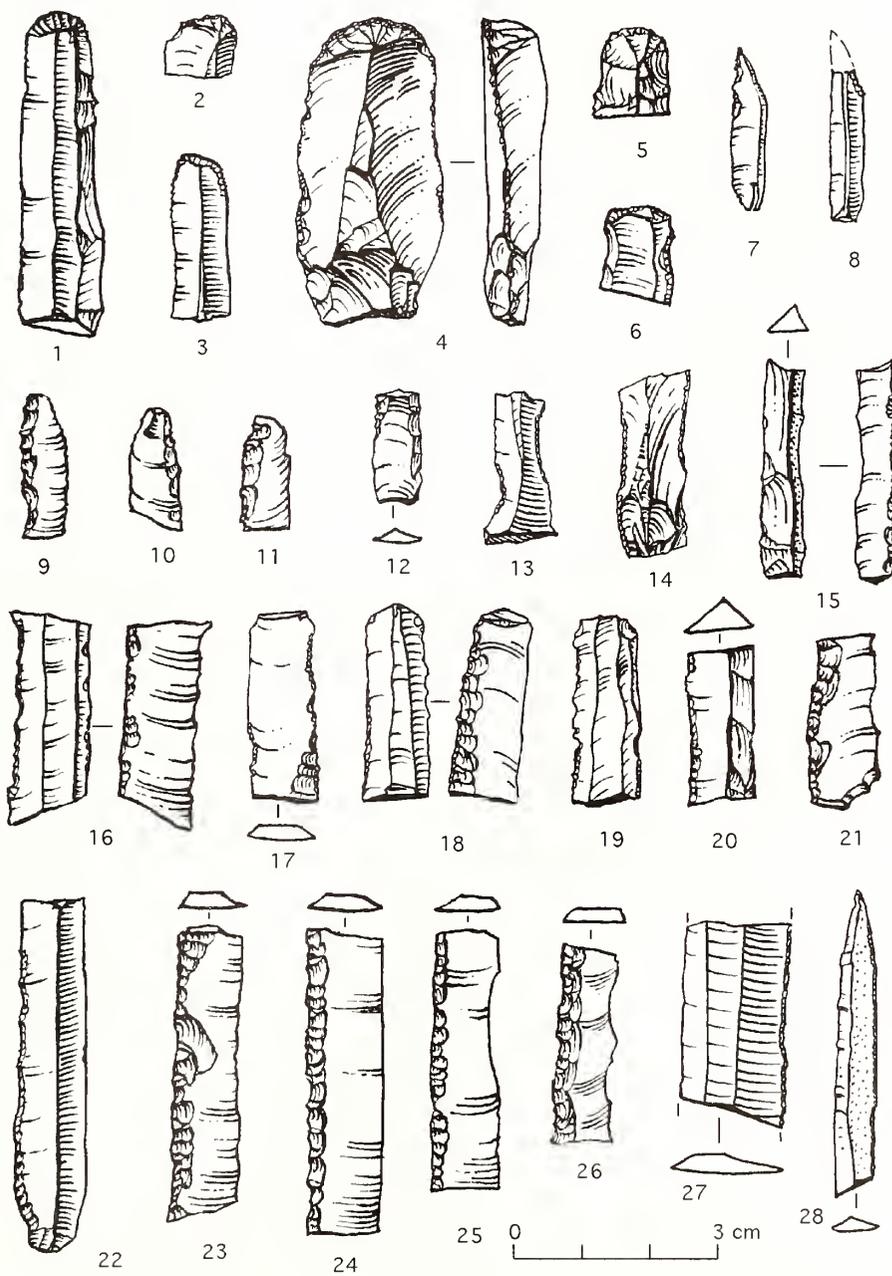
Thirteen microblades were made into burins (Fig. 11:1-11). Four have burin facets on two corners of the same end; two burins were formed by two burin blows from the same edge; seven were created by single burin blows. The burins were often resharpened by additional blows. One tool has one corner formed by a burin blow, and another formed by dorsal retouch (Fig. 11:5).

The blades used for manufacturing these tools had earlier been utilized as knives or sidescrapers.

Of a total of five endscrapers, four have oval-convex working edges and in one case the truncated end of a blade was used without additional retouch (Fig. 12:1-6). On the lateral edges of a long endscraper there are use-wear traces resembling that found on knives. Edges of a massive endscraper bear clear evidence that the tool was also utilized as a sidescraper. Use-wear suggests that twelve microblades were used as sidescrapers (Fig. 12:20, 21, 23-26), of which four have extensive marginal retouch on their ventral surfaces and served originally as insets. One group of endscrapers is composed of small microblades with retouch on the ventral surface near the bulb of percussion (Fig. 12:9-11). Four microblades

were used as saws (Fig. 12:16, 22) and have edges with denticulated retouch. Two perforators were made from small microblades (Fig. 12:7). A broken perforator has a point shaped by steep retouch (Fig. 12:8).

A group of tools differing from those described above was found accompanied by Late Iron Age ceramics near the main accumulation of microblades a short distance from the preserved deposits. These



12/ Lithic artifacts from Pyasina I.

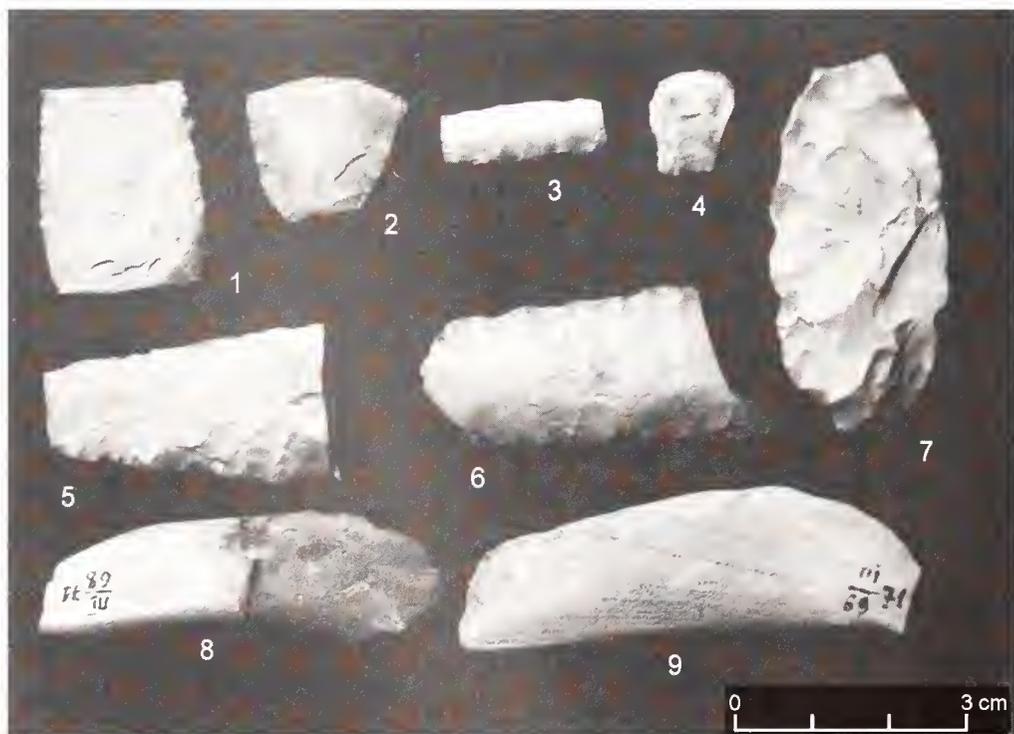
tools included two semi-lunar knives made of bluish flinty rock that show evidence of grinding. Their cutting edges were sharpened only from one side (Fig. 13:8, 9). Also found were a fragment of a bifacially retouched inset (Fig. 13:3) and a half-finished leaf-shaped tool made from a primary flake removed from a slab of flinty bluish rock (Fig. 13:7). Especially interesting are five objects of slate identical to the type of rock used to manufacture the microblades from the Pyasina I site. These include one bifacially retouched inset (Fig. 13:3) and fragments of four bifacially retouched knives or points (Fig. 13:1, 2, 5, 6).

These tools do not belong to the complex that includes the Iron Age ceramics; the connection of this complex to the microblade complex remains unclear. It is possible that bifacially worked tools appeared as early as the Mesolithic in Taymyr. The entire complex of stone tools from Pyasina I, where ceramic materials may have been present but did not survive, dates from the Early Neolithic. Finally, bifaces and blade tools may belong to two different chronological complexes: Neolithic and Mesolithic.

Such a combination of tools has never been reported for any known Neolithic site in Taymyr.

Lantoshka II

An eight-to-ten-meter high terrace that forms one bank of the Pyasina River stretches from the mouth of the Lantoshka River (a right bank tributary of the Pyasina) northwards. The surface of the terrace is broken by rows of small blowouts that stretch along the edge of the terrace. A small, but diagnostic collection of stone tools, consisting of twelve flakes, eight of which can be classified as blade-flakes, and fifteen prismatic blades, was gathered over an area about 150 square meters. The majority of blades are large—their width varies from 9 to 12 centimeters—made of gray, brown, and beige flinty slate. Smaller blades (5 to 8 cm wide) are made of jasper-like rock. Use-wear analysis suggests that all were utilized; their edges retain traces of cutting and planing. The upper end of one of the massive blades is polished, and transverse striations are seen on its rounded end, indicating that this tool was used as



13/ Lithic artifacts from Pyasina I.

a polisher (Fig. 14:24). Four blades were retouched and two were insets. They have sloping unilateral ventral retouch, which enabled them to be fastened in the groove of a composite tool more symmetrically (Fig. 14:21). The same retouch is seen on the blade's broken end (Fig. 14:28), which originally also served as an inset and was later used as a sidescraper. Its edge was also worked by steep retouch.

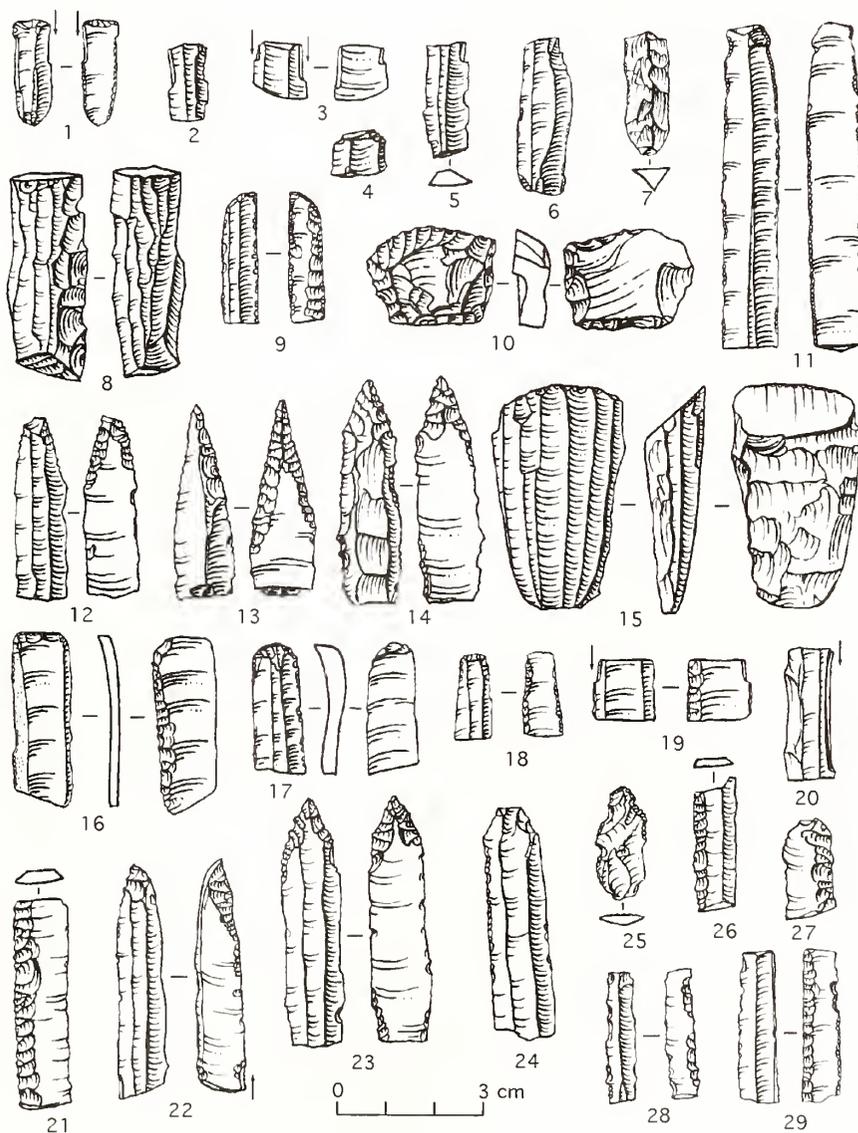
One large blade (Fig. 14:23) has a symmetrical point made by bifacial retouch on the end with the bulb of percussion. The opposite end of the blade is truncated, and the lateral edges near the break are trimmed by steep retouch, probably to create a better surface for hafting. The blade is asymmetric in cross-section and the slant of its point, evident under microscopic examination, functioned as a sidescraper and a push plane. Use-wear evident on the lateral sides show that the tool was also utilized as a knife. However, it could also have been used as an arrowhead. The only chalcedony tool is a blade-flake, which has notches and a beaked projection on one end, all formed by steep marginal retouch. The projection was the main working part of the tool and was used as an endscraper (Fig. 14:25).

Pyasina III

One and a half to two kilometers downstream from the Pyasina I site, on the eight-meter-high right bank terrace, the remains of a number of

settlements dating to different periods were found. Stream valleys and ravines divide the terrace into several sections, two of which had concentrations of cultural remains separated by a stream valley. Upstream is Pyasina III; downstream, Pyasina IV.

The surface of the Pyasina III terrace is disturbed by blowouts and contained five concentrations of materials. Three of the concentrations yielded artifacts including crude flakes of quartzite, fragments of crucibles, arrowheads, an endscraper of quartzite, a congealed lump of bronze, and ceramics from the



14/ Lithic artifacts from Pyasina III (nos. 1-14); Pyasina V (15); Malaya Korennaya I (16, 17); Malaya Korennaya II (18-20); Lantoshka II (21, 23-25, 27, 28); Malaya Korennaya III (22, 26); Istok Glubokiy (29).

Late Bronze or Early Iron Age. In the other two concentrations only stone artifacts, including microblades, were found. In the higher, southern part of the site on an area of 10 to 15 square meters, six flint flakes (one with massive scraper retouch), and fragments of eleven microblades of jasper, including a crested blade, were collected. Use retouch is observable on these blades. Steep retouch forms the convex working edge of an endscraper formed on the end of one of the blades (Fig. 14:4).

The second concentration of stone artifacts was found near the edge of the terrace, in the middle of a large blowout. The collected objects were scattered over an area of 15 to 20 square meters. They include twenty-three small flakes of flinty rock, an endscraper, a core, seventeen prismatic blades, and one crested blade. The blades are made of jasper and flinty slate identical to that from the Pyasina I site. The core is made of flinty slate. Its back (the rear side, opposite the blade spall surface) is slightly sharpened by flaking, indicating that it belongs to the type known as a sharp-backed core (Fig. 14:8). However, it is strongly reduced and close to the prismatic core type. The core has two striking platforms; blades were struck from opposite ends.

The endscraper is made of whitish jaspery rock (Fig. 14:10) and has blade scars on its dorsal surface. This artifact has three working edges, each formed by steep retouch. The left edge of the tool was renewed by a blow from the ventral side. One of the blades was turned into an endscraper, but its working edge is partially broken. One blade served as an inset; the edge that was inserted into a handle was thinned by ventral retouch and another edge has marked use retouch. A large blade was used as a knife and an endscraper: there is tiny use retouch on two of its edges and on the rounded end. Another blade also served as a knife. Four burins-on-a-break were made of small blade fragments (Fig. 14:1, 2).

Three points on blades are especially interesting. One (Fig. 14:13) made of light beige flinty slate stands out for its careful manufacture. This tool resembles a

triangular arrowhead with a straight base and shows no clear evidence of use-wear. The second point is made of brown slab flint (Fig. 14:14) and the third from light gray jasper (Fig. 14:12). They are pointed on the proximal end, but are not as carefully made as the first. Their working edges, formed by bifacial retouch, meet at an angle of 41 degrees. The absence of use-wear on the pointed ends allows them to be identified as arrowheads.

Pyasina IV

The promontory on the lower bank, where Pyasina IV is situated, has two collection areas and yielded materials from different time periods. The major concentration of artifacts, made of flinty slate, is situated in the middle of the site area at the same elevation as Pyasina III. In 1971 and 1972, eighty-six flinty slate blades and twenty-three blades of jasper and chalcedony were collected from a blowout. A small accumulation of flinty slate blades was also found in the upper area of the site in 1973. Single blades were found in different areas of the site: chalcedony blades predominated in the upper area; there were three burins-on-breaks (Fig. 15:8-10) among the flinty slate blades in the middle part of the cape, and one of the burins had facets on all four corners; there were also five small endscrapers (Fig. 15:2-5, 7), an angular cutter (Fig. 15:18), five insets, two blades with uneven marginal retouch (Fig. 15:11-17), and a fragment of the upper end of a blade with steep unilateral retouch, which served as a sidescraper (Fig. 15:19). A crested blade made of light flinty slate was intensively used as a reamer: its upper end served as a point without any additional treatment. The tip of the tool is highly polished (Fig. 15:27). Three broken blades have ends pointed by retouch (Fig. 15:22, 24, 25). These objects are undoubtedly stems of arrowheads that were probably leaf-shaped. A burin-on-a-break made of jasper was also found here.

In the upper site area, two endscrapers were found (Fig. 15:1, 6), as well as one leaf-shaped arrowhead with a broken point (Fig. 15:26), the stem of

another arrowhead rounded by ventral retouch (Fig. 15:23), and a core (Fig. 15:21). The core is biconical in form; blades were struck from the two opposite ends. Chalcedony blades and some blades of jasper were used either as sidescrapers or as knives, and one amorphous chalcedony blade flake was worked as an endscraper.

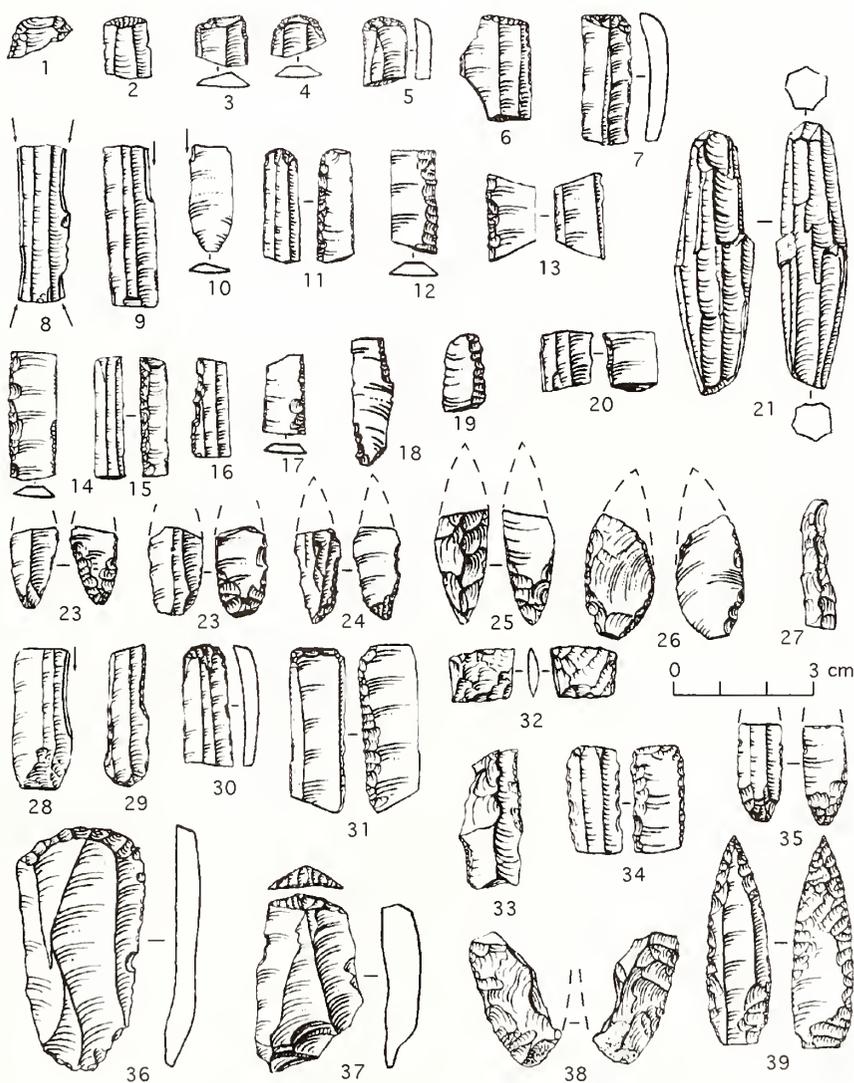
In a previous publication of the 1971 materials, chalcedony endscrapers were ascribed to the same complex as the slate blades because they had been found together in one area (Khlobystin 1973a:fig. 14:17-19). Subsequent work has shown that chalcedony tools and slate blades form separate assemblages. Chalcedony probably began to be used on the site later, in the third millennium B.C., when corded ceramics appear—a ceramic sherd was recovered in the middle area of the site. The artifacts of flinty slate might be assigned to the Mesolithic (like the materials from Lantoshka II and Pyasina III) if not for the leaf-shaped arrowheads. Arrowheads have been found at Early Neolithic sites like Abylaakh and Glubokoe I together with net-impressed ceramics. Whether such ceramics existed at Pyasina IV or whether leaf-shaped arrowheads appeared in Taymyr for the first time in the Pre-ceramic is unclear; therefore the Pyasina IV assemblage should date either to the end the Mesolithic or to the Early Neolithic.

Kap kannaya II

The blade artifacts from the Kapkannaya II site should be

dated in a similar way. This site is situated 72 kilometers from the source of the Pyasina River, on its right bank at the mouth of a small river. The right bank of this river valley and the 8 to 10 meter terrace of the Pyasina form a small narrow projection with steep slopes and a level surface containing numerous blowouts. Stone tools and ceramics were collected from the front of the terrace facing the Pyasina over an area of about 100 square meters.

The collection includes small fragments of Ymiyakhtakh (Bronze Age) and Pyasina (Early Iron Age) vessels, bifacial endscrapers (Fig. 16:11, 21-24)



15/ Lithic artifacts from Pyasina IV (nos. 1-27); Bolshaya Korennaya I (28, 29); Malaya Korennaya I (30, 31); Pyasina XV (32, 34, 35); Pyasina XI (33, 37, 38); Yara-Tanama (36); Kholodnaya V (39).

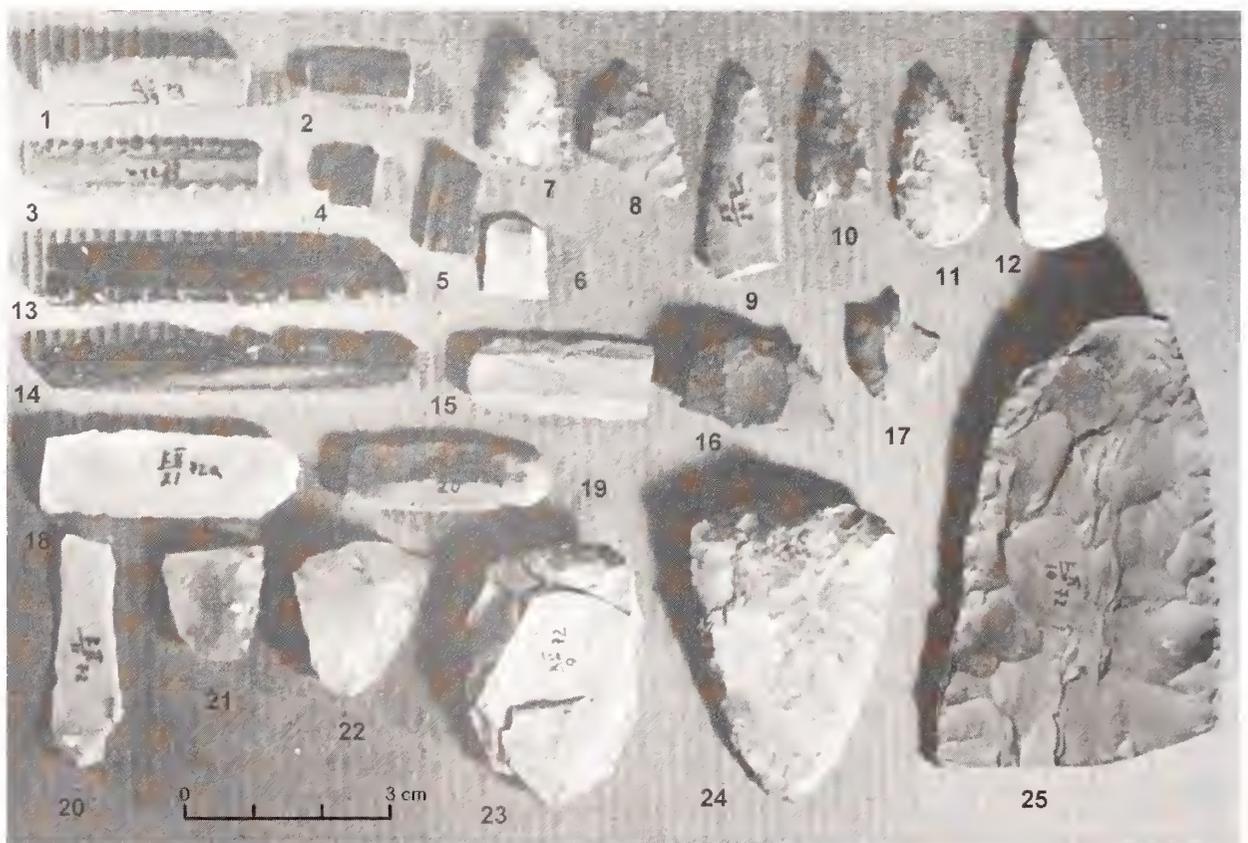
and arrowheads (Fig. 16:7, 10–12), and shouldered perforators made of blue-gray flinty slate (Fig. 16:16, 17). Seventy-seven prismatic blades were recovered, six of jasper, one of emerald-colored chalcedony, and the others of flinty slate. This slate resembles hornstone and has a beige patinated surface and is black or dark gray on a fresh break. The patina forms on the exposed surfaces of artifacts and is associated with physical and chemical changes that make the material soft and brittle. The majority of blades and flakes made of this slate have broken edges, making it difficult to ascertain how they were used.

Among the tools that have been preserved are a burin-on-a-break (Fig. 16:5), a small endscraper (Fig. 16:6), seven blade insets with unilateral ventral retouch, and an inset with bilateral retouch (Fig. 16:1–4, 13–15). A point formed by marginal ventral retouch (Fig. 16:9) resembles arrowheads of Lantoshka II and Pyasina III. Another arrowhead fragment (Fig. 16:8) has one surface covered entirely with retouch scars,

while the other is retouched only along the margin and belongs, together with the arrowheads from Pyasina IV, to the leaf-shaped type characteristic of Early Neolithic sites. Finally, Kapkannaya II yielded one slate flake struck from the edge of the striking platform of a prismatic core and two blades of light jasper (Fig. 16:18, 20). The edges of the jasper blades are retouched, but only lightly. This retouch served to make a working edge, not to facilitate insertion into the groove of a composite tool, as was the case with flinty slate blades.

In general, the blade complex at Kapkannaya II suggests that the site was settled during the transitional period between the Mesolithic and the Early Neolithic.

Since use of flinty slate for manufacturing blade tools of Mesolithic and Early Neolithic types is characteristic of the early Pyasina River sites, it is possible to date a number of other sites that contain similar artifact assemblages to the Pre-ceramic, although



16/ Lithic artifacts from Kapkannaya II.

the assemblages of these sites are not as numerous and diverse as the materials from Kapkannaya II. A group of such sites is situated on the right bank of the Pyasina River six to seven kilometers downstream from the village of Cresty. Pyasina XI is remarkable for its large flakes and blades, which include nine blades, one large endscraper (Fig. 15:37), and a crested blade with notches made by light retouch (Fig. 15:33). One blade and two bifacial fragments are made of jasper, and one of the latter was originally either a leaf-shaped knife, or, more likely a dart point (Fig. 15:38).

At Pyasina XIII flinty slate blades were recovered together with bifacially worked chalcedony and jasper tools that date to the Developed Neolithic or Early Bronze Age.

A collection of flinty slate artifacts was also collected from Pyasina XV. Besides flakes and blades, this collection included the stem of a blade arrowhead (Fig. 15:35), a blade inset (Fig. 15:34), and a fragment from a bifacially retouched inset (Fig. 15:32).

The majority of artifacts found at Malaya Korennaya II, which is situated on the right bank of the Pyasina River downstream from the point where the Malaya Korennaya River flows into the Pyasina, belongs to the Late Bronze Age or Early Iron Age. However, there was also a flake detached from the striking platform of a prismatic core, a burin-on-a-break (Fig. 14:20), a burin-on-a-break of a blade inset (Fig. 14:19), and six flinty slate blades. An endscraper made from a jasper blade was also found (Fig. 14:18).

In 1971 at the nearby Malaya Korennaya III site, an accumulation of materials was discovered in a blowout. Artifacts included crude endscrapers, a fragment of a ground adze, a fragment of a crucible, flint, chalcedony and quartzite flakes, and Iron Age ceramics, with both smooth undecorated surfaces and with rhomboid net-like designs. Two prismatic blades stand out from other finds. One is made of dark gray, nearly black, flinty slate and had been made into a saw by unilateral ventral retouch (Fig. 14:26). Another, of dark brown flinty slate, was origi-

nally an arrowhead similar to those found at Pyasina III and Lantoshka II (Fig. 14:22). Its proximal end was sharpened by flat ventral retouch and a long burin blow, and another burin blow had been struck from the distal end. The blade was also used as a knife, as is indicated by use-wear on the preserved edge. This point indicates a Mesolithic occupation, while a net ceramic fragment found in another blowout is a Neolithic type.

As noted above, the identification of Mesolithic and Early Neolithic blade tools in surface collections not associated with ceramics can be difficult. Below, I discuss sites where flinty slate blade tools were found without Neolithic ceramics. Although this chapter is devoted to the Mesolithic, it is possible that these sites date to the Early Neolithic. One such site is near the Korennoy field camp. The majority of these artifacts date to the end of the first millennium B.C., but the assemblage includes one burin-on-a-break (Fig. 15:28) and a marginally retouched blade, both made of flinty slate.

A complete flat-backed core of flinty slate was found at Pyasina V, near an old Dolgan interment. The core was probably uncovered in the course of digging the grave pit. The striking platform forms a sharp angle with the flaking surface (Fig. 14:15).

The Kholodnaya V site on the Dudypta River probably dates to the Mesolithic–Early Neolithic. Only three artifacts were recovered from a large blowout: a blade, a flake, and an arrowhead. The latter was formed by retouching a microblade (Fig. 15:39). Its stem is broken, and the break was subsequently used for removing a burin spall. Flakes, blades, and a blade inset of flinty slate (Fig. 14:29) were found on a promontory at the eponymous lacustrine source of the Glubokaya River. Here white jasper flakes bearing marginal retouch and ceramics with ribbed impressions were found that date to the Early Bronze Age.

An endscraper on a wide, thin blade of transparent brown jasper, found on the Yare-Tanama River (Fig. 15:36), most probably dates to the Mesolithic–Early

Neolithic. This marks the first find of a stone tool from the Gydan Peninsula.

The Polar Expedition found many sites that yielded only artifacts belonging to blade-based industries. These sites are primarily from the Kheta-Khatanga River basin in eastern Taymyr and are situated on elevated banks and on hills rising above the surrounding tundra. In spring these hills emerge from under the snow before other areas of the terrain. Strong, frequent winds combined with snow-blasting destroy vegetation and erode the soil, leaving a residual cover of small pebbles—sorted or unsorted—displaying “desert varnish.” Blades and cores, found singly or in groups, are found among these pebbles as well as in blowouts. Representative sites include Labaz V, VI, and IX; Samos; Ust-Popigay I; and Bludnaya II.

The Samos site, on a twenty-meter-high terrace on the right bank of the Khatanga River, yielded 217 blades and blade fragments as well as a small number of flakes and chips of flinty slate and yellow and pink jasper. The majority of the flakes were derived from prismatic cores. A small, elongated conical core, from which a few bladelets were detached (Fig. 17:10), was also recovered. Among blade artifacts were four burins on breaks, two blades with marginal dorsal retouch, and two blades with lateral notches formed by light retouch.

Bludnaya II yielded fifty-eight blades and blade fragments, seventy-two flakes, and a fragment of a conical core made of light-colored jasper (Fig. 18:4). Three burins-on-breaks were made on blades. Only one blade has clear evidence of retouch and was used as a sidescraper. Aside from jasper artifacts, a chalcedony core with two opposed flaking surfaces was recovered (Fig. 18:5). Since no other chalcedony artifacts were found here, this core should be considered unrelated to the other artifacts.

Fifty-one blades, a fragment of a flat-backed core, and three small flakes were collected [at Ust-Popigay I] on a small hill on the high, right bank of the Khatanga River upstream from its confluence with the

Popigay. Flinty slate, light brown and brown jasper-like rocks served as raw materials. Blades were used to manufacture a burin-on-a-break and micro insets similar to those found at Tagenar VI (Fig. 19:14). Two blades have marginal dorsal retouch, which in one case forms a saw-like edge (Fig. 19:5, 6).

At Labaz VI on Lake Labaz, two exhausted prismatic cores and two core fragments were found, as well as one possible core preform made of a slab of flinty slate (Figs. 18:1; 20:1, 6-8). Seventeen blades and three jasper flakes (similar to the jasper from the Bludnaya II site) were found associated with them. Labaz V and IX yielded blades and a prismatic core (cores were also found at Labaz VI), which date them to the Mesolithic or Neolithic.

Blade industries discovered on the Khatanga River near Novorybnoye village persisted until the Late Bronze Age. The lithic technology found at these sites resembles that of sites from neighboring regions such as the basins of the Anabar and Olenek rivers. Endscrapers have not yet been found in the eastern part of Taymyr, and in general are absent from sites dating to the Mesolithic and Neolithic.



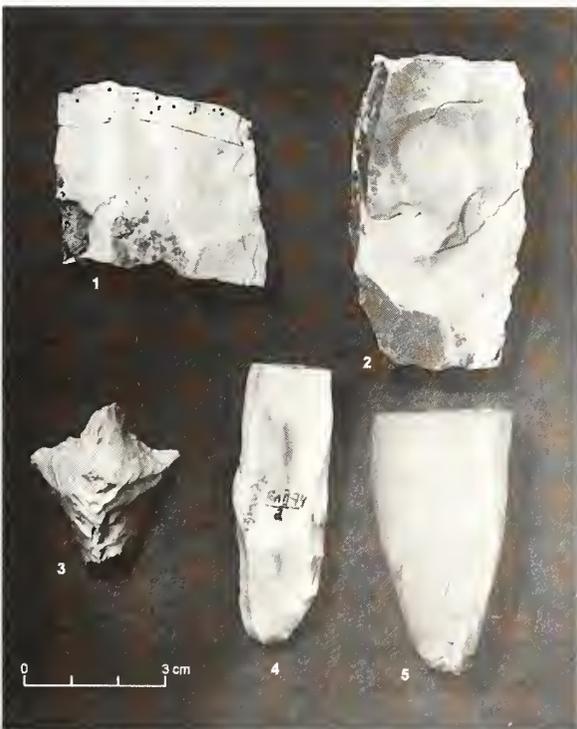
17/ Lithic artifacts from Novaya I (nos. 1, 3); Novaya IV (2); Novaya II (4, 5, 8); Khargy I (6); Novaya VI (7, 9); Samos (10).

The prevalence of tools made from well-formed prismatic blades is typical for the Mesolithic and Early Neolithic sites of Siberia. Blade technology persisted in Taymyr until the Early Iron Age, although blade artifacts became rare by the Early Bronze Age and were replaced by bifacial tools.

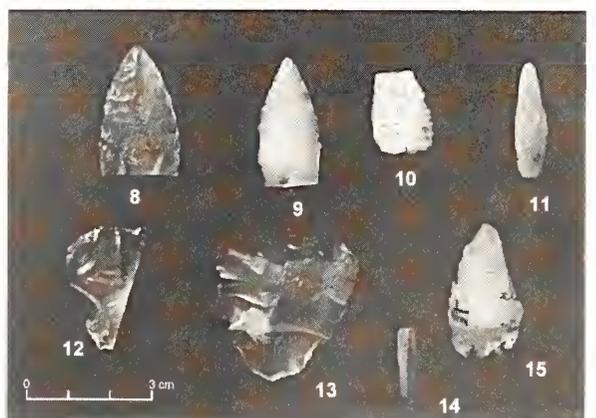
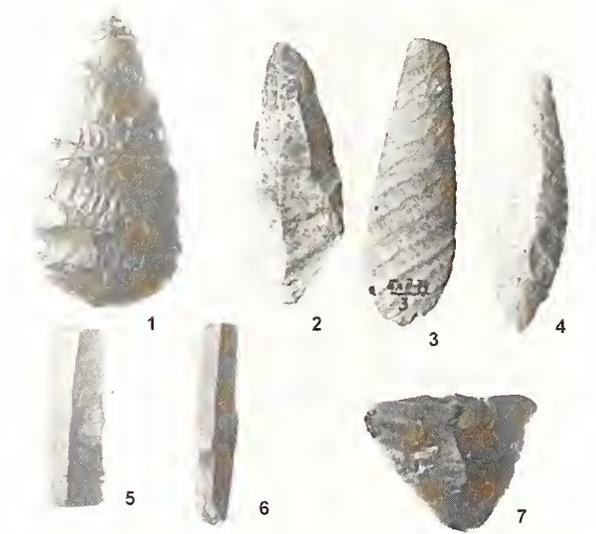
Characteristic of Taymyr Mesolithic sites is the use of flinty slate, and white, pink, yellow, and brown jasper. These materials were used to produce conical, prismatic, and flat-backed cores. Prismatic blades were used to make scrapers; insets with ventral retouch that aided insertion of the base into composite tools; saws and notched blades; burins-on-a-break; cutters; and arrowheads pointed at one end. As early as the Pre-ceramic period, blade arrowheads with sharpened bases and leaf-shaped arrowheads formed by marginal retouch began to appear. It is still unclear when the first stone arrowheads appeared in East Siberia. Only in the Angara region are “non-standard, but made by perfect retouch” arrowheads known, dating, undoubtedly, to the Late Mesolithic (Medvedev et al. 1975:77). However, the appearance

of arrowheads in the Late Mesolithic is characteristic of all Mesolithic cultures of East Siberia.

Both Mesolithic and Neolithic tools analogous to those known from Taymyr and made of similar raw materials have been found east of Taymyr in the Anabar and Olenek River basins. At the same time, arrowheads from the Early Neolithic sites of Abylaakh and Khorbusuonka I were made on blades and have leaf-shaped outlines or prepared stems (Konstantinov 1970:38, 88, 89). The Early Neolithic date for the leaf-shaped arrowheads is confirmed by materials from Layer VII of the stratified Belkachi I site on the Aldan River, where leaf-shaped arrowheads



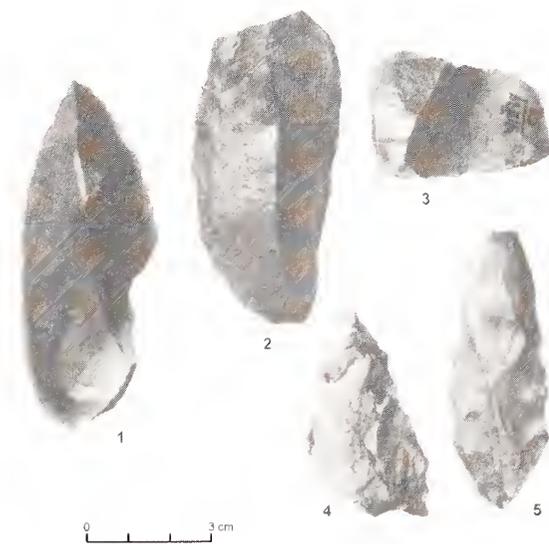
18/ Lithic artifacts from Labaz VI (no. 1); Novorybnoye VI (2); Labaz III (3); Bludnaya II (4, 5).



19/ Lithic artifacts from Novorybnoye I-b (no. 1); Novaya VII (2); Bludnaya II (3); Novorybnoye II (4); Ust-Popigay I (5, 6, 14); Labaz II (7, 10); Labaz XI (8); Labaz I (9); Khargy III (11, 15); Labaz VIII (12, 13).



20/ Lithic artifacts from Labaz VI (nos. 1, 2, 6-8); Labaz III (3, 4); Novorybnoye I-b (5).



21/ Lithic artifacts from Novaya VII (no. 2); Novorybnoye VI (1, 5); Ust-Popigay I (3); Khargy III (4).

were recovered with net ceramics associated with the Syalakh culture (Mochanov 1970:table 15:1, 5). Pointed blades usually identified as perforators are found deeper in Layers IX and XI at the same site in a Sumnagin culture context.

Compared to points from the Pyasina region, those from Belkachi are more diminutive. This is the case for almost the entire blade inventory from these layers, perhaps due to peculiarities of raw materials. Blade arrowheads, collected on a beach near Belkachi I (Mochanov 1969:55, tables 2:10, 11; 16:1, 4-6), are also similar to those from Pyasina and perhaps should be considered comparable to the Mesolithic levels of a Belkachi site in eastern Yakutia [Sakha Republic —Ed.]. Some of the Sumnagin points on blades probably served as arrowheads; the same may be true of points found at the upper Angara River valley sites in the Lake Baikal (Cape Bodun) and Trans-Baikal regions (Okladnikov 1950c:figs. 15-17), in assemblages that directly precede Neolithic sites. Such points disappear with the appearance of standardized forms.

Based on typological comparisons, the Pyasina sites with points on blades should be considered Mesolithic. Other Taymyr sites noted above probably date to the Mesolithic or the Early Neolithic, assuming that ceramics were not present or were not preserved and that some Mesolithic tools continue into the Early Neolithic.

On the basis of the radiocarbon date for Tagerar VI and typological comparisons of the Mesolithic and Early Neolithic Taymyr sites with cultures of adjacent areas, especially those of Yakutia, the Mesolithic of Taymyr probably dates to the fifth millennium B.C.

Mesolithic Sites of Taymyr and the Siberian Forest Zone

In order to determine the routes through which Mesolithic people entered the Taymyr subarctic region it is necessary to compare the Taymyr materials with those from similar sites in the Siberian taiga zone. The search for similarities is facilitated by the fact that Mesolithic sites have not been found in the northern part of West Siberia adjacent to Taymyr, with the exception of Korchagi I-B. The western Siberian Mesolithic sites nearest to Taymyr are known only to the southwest, in such areas as

Omsk [Chernoozeriye IVa and possibly Chernoozeriye II (Gening et al. 1973); Kurgan (Kamyshnoye site); and Sverdlovsk, where numerous sites have been discovered, among them Vyika II, Istok II, Krutiki I and II, Yurjino VI (Serikov and Arefyev 1975; Serikov 1976; Starkov 1980:21–36)]. Blades struck from prismatic and pencil-like cores, and tools made from these blades dominate the complexes of these sites. Tools include burins-on-a-break, pointed blades, side blades, and knives. Notched blades with lateral or end notches are also common. Endscrapers are rare, and the majority are made of flakes. Burins-on-a-break, ground celts, arrowheads, and diminutive trapezoids are represented only by single specimens.

No significant differences are seen among materials from sites in the mid-Trans-Ural region, suggesting that a single Mesolithic culture existed throughout this region. Arrowheads and trapezoids are not typical, and their presence may be explained by the influence of the Yangelskaya culture of the southern Urals, where such tools are common (Matiushin 1964b, 1976). The inhabitants of the Middle Urals preferred to manufacture arrowheads of bone, such as those found in the Shigir peat bog, although it is possible that oblique points were also used as arrowheads (Matiushin 1969). In general, the Mesolithic sites of the Trans-Ural zone, with their characteristic tool kit, cannot be considered progenitors of the Taymyr Mesolithic.

Nor do we find the roots of the Taymyr Mesolithic in the taiga of Middle Siberia. In part this is due to the fact that no Mesolithic sites have been identified in Evenkia. Furthermore, the Angara variant of the East Siberian Mesolithic is distributed through the forest zone of the Middle Yenisey, evident in the materials from Layers 3 through 17 of the Strizhovaya Gora site (Guliaev et al. 1976; Medvedev 1975) and from Levels VIII through XX of the Kazachka site on the Kan River.

The Mesolithic of East Siberia seems to be composed of three distinct provinces: Angara, Trans-Baikal, and the Lena River. These provinces differ

in their specific traditions probably as a result of individual culture histories and the peculiarities of local ecology, economy, and history.

Thanks to the work of archaeologists from Irkutsk under the leadership of G.I. Medvedev, many Mesolithic sites in the Angara region have been investigated in recent years, allowing us to outline the prehistory of the Angara Mesolithic (Medvedev 1968a, 1971; Medvedev et al. 1975). Two groups of sites existed in the Angara Early Mesolithic: the Baday group associated with the local Palaeolithic, and the Verkholensko-Idinskaya group, which has roots in the Trans-Baikal region.

The beginning of the Mesolithic is dated to about 12,000 years ago. By the end of the Mesolithic, 8,000 years ago, a new cultural complex developed through interaction between these two cultures. Sites of these complexes display rather monotonous inventories. If the first two stages of the development of the local Mesolithic are characterized by the use of macro-lithic tools and blade-focused industries (transverse burins, frontal cores, and a gradual increase in the percentage of wedge-like cores, a growth of the diversity of inset tools, the appearance of harpoons, fish-spears, bone fishhooks, adzes and hatchets, and multifaceted dihedral burins), then the final stage is characterized by polyhedral core-like burins and borers, points-on-blades, symmetrically notched adzes, ground slate points, bone points and fish-hook shanks, bifacial insets, and arrowheads. The materials of the Ust-Belaya site demonstrate the distinct Mesolithic economy of the Angara-Belsky region with its fishing and deer- and moose- (*Alces alces*) hunting focus.

Blade points with lateral notches, resembling Kelteminar arrowheads, were found in burials in the Chastye and Khinskaya Valleys, and in a great number of Trans-Baikal sites (Debets 1930; Okladnikov 1950c:157–163). G.I. Medvedev, who studied use-wear on the Trans-Baikal points, came to the conclusion that they were not arrowheads, but rather borers and micro-burins (Medvedev 1968b). G.F.

Korobkova, studying use-wear on arrowheads from Central Asia, found that they were used as borers as well as for other purposes (Korobkova 1969:114, fig. 17). Judging by the use-wear on the point from Lantoshka II, this tool was also used as a push plane and a knife. Usually arrowheads have no specific use-wear traces. Does this mean they did not also function as arrowheads when secondary use is present? We cannot abandon the idea that blade points with lateral notches from Trans-Baikal were arrowheads. In any case, they represent a striking feature of the blade industry of the region. G. F. Debets ascribed them to the Daurian Neolithic culture (Debets 1930). These observations have been confirmed in many respects by the excavations of the stratified Studenoye site near the village of Nizhny Narym (Konstantinov and Nemerov 1976), where arrowheads with lateral notches were associated with ceramics. Choppers found with these distinctive arrowheads demonstrate that many Mesolithic traits persisted into the Early Neolithic. Mesolithic layers also contained blade artifacts associated with pebble tools. The presence of Gobi-type cores and bone fishhooks is worthy of special note. Arrowheads were not found in the deeper levels of Studenoye.

Daurian points have not yet been recovered from stratified contexts that could demonstrate a Mesolithic association. Thus, the Khinskie burials of West Baikal may not date to the Late Mesolithic. Rather, they may be evidence of westward human migration from east of Baikal. Based on their inventory, these burials may belong to the Trans-Baikal Early Neolithic and so may represent the western penetration of a Trans-Baikal population. However, the absence of Daurian points at Mesolithic sites, taking into account the rarity of the latter in Trans-Baikal, does not mean that these points did not exist in the Late Mesolithic.

Recent publications describe materials from Trans-Baikal Mesolithic sites (Kirillov and Rizhskii 1972; Konstantinov and Nemerov 1976; Okladnikov 1971a). Although this period requires further study,

it is possible to identify some of its notable and characteristic features: extended coexistence of pebble tools and choppers with tools made from blades; Gobi cores; large sub-triangular points on blades; and large sidescrapers, transverse burins, and bone fishhooks.

A number of sites have been located on the shores of Lake Baikal (Goriunova 1978; Khlobystin 1965; Shmygun and Endrikhinskii 1978) dating to the Early Mesolithic (Ludarskaya I, III, Kurla I, III, VI), and to its final stage as seen in the lower layers of Ulan-Khada, Sagan-Nuge, and Layers VII through IX at Itekhei. In addition to a characteristic assemblage (for example, drill cores and Baikal-type fishing hooks made of slate), the materials from these sites combine features of the Angara Mesolithic with those of the Trans-Baikal region. Thus, Baikal may be the zone of contact between Angara and Trans-Baikal.

Among the artifacts of the Trans-Baikal region, Daurian points are of great interest due to their similarity to points from Taymyr. Some specimens (Debets 1930:table VII; Okladnikov 1950c:fig. 17) are identical to Pyasina points in shape and treatment, such that they could be assigned directly to Trans-Baikal if not for the vast territory of Evenkia and Yakutia [Sakha Republic] separating Taymyr from Baikal.

Yakutia may be identified as the third province of the East Siberian Mesolithic. The Sumnagin culture existed here during the Early Holocene (Mochanov 1969, 1973a, b, 1977). Stratified Sumnagin assemblages are found in southeastern Yakutia on the Aldan River, a major tributary of the Lena. These sites include Belkachi I, Sumnagin I, and Ust-Timpton. Sumnagin sites are also known from the Olekma, Amga, Maya, Ulya, Vitim, Vilyui, Indigirka, and Kolyma rivers. Radiocarbon dates indicate this culture existed between $10,074 \pm 100$ B.P. (LE 861, Ust-Timpton) and $5,900 \pm 70$ B.P. (LE 678; Belkachi I, Layer VIII), i.e., from the middle of the ninth to the end of the fifth to sixth millennium B.P. (Mochanov and Fedoseeva 1975a; Mochanov et al. 1970).

An abundance of blades is characteristic of the Sumnagin industry. These blades were used for manufacturing endscrapers and sidescrapers, burins-on-a-break and transverse burins and cutters, knives and insets, and blades with oblique edges and points. The blades were struck from prismatic, pencil-like cores. A small percentage of tools is composed of sidescrapers and adzes and axes made from pebbles. Multifaceted burin-drills have also been recovered. Flaked adzes and pebble plummets appeared during the late stages of Sumnagin cultural development. Ground and bifacially retouched stone tools are absent from Sumnagin sites. The other characteristics of the culture, which, during the early Holocene was characterized by a microlithic blade-focused industry, are typical for the majority of Mesolithic cultures.

Searching for the roots of Sumnagin culture, Mochanov originally thought it was connected with yet-unidentified cultures of Yakutia (Mochanov 1969:141). Now that Dyuktai Palaeolithic sites have been discovered, Mochanov has concluded that there are no connections between Sumnagin and Dyuktai (Mochanov 1970:63); that “the Sumnagin people were descendants of one of ‘the western’ Palaeolithic populations from the Yenisey region” (Mochanov 1973b); and that “the Sumnagin culture, judging by its appearance, is genetically linked with the Malta-Afontovo cultural group” (Mochanov 1973b:42). Astakhov shared the conviction that the Yenisey region was the homeland of the Sumnagin culture (Astakhov 1973:195). To some extent this hypothesis springs from the similarities between the Sumnagin culture and the Upper Palaeolithic sites of the Yenisey region (Mochanov 1969:140).

The absence of continuity between Dyuktai culture and Sumnagin and the search for the origins of Sumnagin in southern Siberia require an examination of the formation of blade-focused Mesolithic industries characteristic of taiga cultures. In Eastern Europe and West Siberia, the manufacture of tools on blades was common as early as the Upper Palaeolithic. The general opinion is that southern Middle and East

Siberian pebble tool cultures with occasional blade artifacts existed during the Upper Palaeolithic and Mesolithic and that blade-dominated assemblages appeared only in the Late Mesolithic. Therefore Sumnagin sites, such as the second levels of Kurla III and VI on the north shore of Lake Baikal, seem to appear suddenly. Admittedly, there are some Upper Palaeolithic sites in the Angara region (Malta, Krasny Yar), that have yielded materials that suggest the possible development a blade-focused industry. The Early Mesolithic evidence indicates that a macrolithic tradition persisted, although the percentage of macrolithic tools is small, and at the Strizhovaya Gora site on the Kan River, which dates to the Early Mesolithic, pebble tools are absent.

On the Middle Yenisey, Layer B of the Ust-Biryusa site was considered to be a typical Mesolithic site. Materials from this layer are similar in many respects to the artifacts from the underlying Upper Palaeolithic layer (Layer C), which resemble materials of the Afontovo culture (Gurina 1964; Khlobystin 1972b). However, cryogenic soil evidence forces us to date Layer B to the end of the Sartan Epoch and to assign its assemblage to the Upper Palaeolithic. The dating of this layer was recently done by Tseitlin (1979).

Thanks to the work of Abramova (1979a, b), the Palaeolithic Kokorevo culture has been identified in the Minusinsk depression. Unlike the coeval Afontovo culture, in the Kokorevo culture, blade tools outnumber macrolithic artifacts such as pebble tools and large sidescrapers. Bone and antler artifacts, which were used for darts and daggers in which microblade insets were inserted, are also notable. Microblade insets and microblades were also found at Afontovo sites (Abramova 1979a; Khlobystin 1972b). Bone artifacts with grooves found at the Oshurkovo site demonstrate that this type of tool also occurred in the Trans-Baikal region. Oshurkovo dates to the end of the Palaeolithic—to the very beginning of the Mesolithic. Clearly the foundations for blade-focused Mesolithic cultures existed in the Upper Palaeolithic of southern Siberia.

Ecological changes during the Pleistocene-Holocene transition resulted in a transformation of subsistence resources, which led to the development of composite tools with blade inserts. The reorientation of the hunting economy, which became focused on steppe and forest-steppe ungulates (judging by the palynological evidence, which needs further chronological definition, suggesting that a cold steppe vegetation probably prevailed in most of the Minusinsk depression, on the Krasnoyarsko-Kanskaya steppe, and in the Trans-Baikal region during the Early Holocene) forced Mesolithic groups to lead a more mobile way of life and to employ a lighter tool-kit, resulting in the abandonment of macrolithic tools. The latest contribution to studies of the Siberian Mesolithic (Lisitsyn 1980) has shown that the role of blade technology increased steadily, especially at sites in the steppe zone, where inhabitants inherited the Kokorevo traditions.

Similar processes were at work in the Trans-Baikal region (Konstantinov 1979). In both areas descendants of the indigenous Palaeolithic population continued to manufacture small quantities of pebble tools. But those groups that began to move toward northern Siberia at the very beginning of the Holocene were forced to abandon many old traditions and to adopt blade industries. This is probably how the Sumnagin culture appeared. If this culture had its roots in the Palaeolithic of the Yenisey, the bearers of the local Yenisey traditions, i.e., ancestors of the Sumnagin people, had to go through the Angara region and the Upper Lena, where their settlements date to the final stage of the Palaeolithic—i.e., the beginning of the Mesolithic. The origins of the Sumnagin culture will probably be found at these sites. However, such sites have not yet been identified. Baikal sites, such as Kurla I, III, and VI, have blade industries that are considered to be the beginning of the Mesolithic of Yakutia, so the origin of these developments remains unclear.

Similar features can be noted in comparing Sumnagin assemblages with material from Mesolithic

and Neolithic sites of the Trans-Baikal region. The source of the microblade industry is the wedge-shaped core of the Trans-Baikal Palaeolithic, which was gradually replaced by prismatic cores. Bone inset points from the Oshurkovo site demonstrate that composite tools with bone hafts and insets made of microblades existed in the Trans-Baikal region (Mochanov sees such tools only on the Yenisey River). There are also flaked axes and adzes resembling Sumnagin tools on Trans-Baikal sites. So far, the entire blade industry characteristic of the Sumnagin culture is represented to a greater or lesser degree among the Trans-Baikal finds. In particular, I would note the similarity between the Trans-Baikal points made from blades with those of Yakutia. Some types represented in the blade industry of the Trans-Baikal region—for example, arrowheads with lateral notches—are absent from the Sumnagin materials; however, these tools appeared late and probably in the final stage of the Late Mesolithic, after the divergence of the Mesolithic of Yakutia from the Trans-Baikal Early Mesolithic.

Sumnagin peoples could have penetrated Yakutia via the Vitim and Olekma basins from Trans-Baikal. Environmental changes at the Pleistocene-Holocene transition forced hunting groups to alter their hunting strategies and to adjust to the fauna of new biotic communities. In the Angara and Trans-Baikal regions local economies began to focus on fishing and roe deer hunting. Sites became seasonal, and human groups became more mobile, exploiting new territories in search of prey. In the taiga areas of Yakutia, Sumnagin peoples who occupied territories vacated by the Dyuktai population focused mainly on hunting moose (*Alces alces*). The Sumnagin culture developed in the forests of the upper Lena Basin, and from there Sumnagin peoples reached the Anabar and Olenek watersheds and eventually penetrated Taymyr through the North Siberian lowlands.

The blade assemblages of the Tagenar and Pyasina sites are quite similar to the inventories of Sumnagin sites. Points from Pyasina III, Lantoshka

II and Malaya Korennaya III are analogous to points from Belkachi I, where, unfortunately, their context is unclear, although they probably belong to the upper portion of the Sumnagin levels. The greatest similarity is between the assemblage from Tagenar VI and tools from Layers X through XX at Belkachi I. The notable feature of the Tagenar complex is the distinctive treatment of microblade insets using steep retouch. Layers X through IX at Belkachi I date between $6,750 \pm 70$ (LE 698) and $5,900 \pm 70$ (LE 678) and agree with the radiocarbon date obtained for Tagenar VI: $6,020 \pm 100$ B.P. (LE 884).

The chronological and typological similarities between the Aldan and Taymyr sites attest to a cultural unity between these areas, which are separated by several thousand kilometers, and which, in turn,

can be considered an indication of kinship of their corresponding human groups.

Another fact demonstrates connections between the Mesolithic of Taymyr and northern Yakutia. The petrographic analysis of flinty slate, from which most blades from Pyasina I are made (determined by analysis carried out by N.B. Selivanova), has shown that this material is very similar to flinty slate from the Buolkalaakh and Sappyn sites, between the Anabar and Olenek rivers. The flinty slate used by inhabitants of Pyasina was probably mined from deposits in northwest Yakutia. Probably, the first inhabitants of Taymyr, who must have come from the east, retained connections with the people living between the Khatanga and the Lena and continued to obtain raw materials from this region.



22/ *Kapchug Lake in the midst of the Putorana Mountains, southern Taymyr, 1997. Photographer Vladimir Pitulko.*

The Taymyr Neolithic

The Taymyr polar zone, as well as the adjacent regions of Siberia, was part of the area occupied by Ago-Neolithic cultures. [See Chapter 1 for Khlobystin's rationale for this usage for a non-food-producing Neolithic, often expressed in other archaeological contexts as "Epi-Neolithic." —*Ed.*] Actually, cultures with food-producing economies appeared here only in the Iron Age. Therefore, while the term "Neolithic" will be used in the following discussion, we speak of cultures that are "Ago-Neolithic."

Early Holocene East Siberia and far northeastern Asia can be considered a discrete historical and cultural region because here the transition to the Neolithic is associated with the formation of cultures using "net" ceramics—a kind of earthenware decorated with small-mesh net impressions. In other parts of Siberia and the Far East, the Early Neolithic is characterized by other types of ceramics. Taymyr, due to its geographical position, hydrographic and orographic systems, and because northern West Siberia was sparsely populated, had closer historical connections with East Siberia. In the Early Neolithic, as we shall see, Taymyr became part of the East Siberian cultural-historical community.

The Early Neolithic

In 1967 and 1968, occupational evidence left by some of the first Neolithic inhabitants of Taymyr was discovered during excavation of the lower portions of the Abylaakh I site—one of the most interesting sites in Taymyr. In addition to Early Neolithic artifacts,

this site yielded materials dating to the Bronze Age (see Chapter 3).

Abylaakh I is situated on the right bank of the Kheta River, 17 kilometers upstream from the present village of Katyryk, where the Abylaakh River flows into the Kheta. Here a long, narrow terrace projection 15 meters high and 15 to 20 meters wide stretches west-northwest for about 120 meters. The site is located about a hundred meters from the river banks at the widest, flattest portion of the promontory (Fig. 23). The elevated bank of the Kheta is overgrown with larch, Labrador tea, or *Ledum*, and dwarf birch. Although this region is 500 kilometers north of the Arctic Circle, the vegetation is surprisingly dense and the trees are quite large.

The excavation (Fig. 24) encompassed 125 square meters, about one-third of the prime area for prehistoric settlement along the northern edge of the cape facing the Abylaakh Valley. The shape of the excavation area was determined by the distribution of finds as well as the location of trees. The stratigraphy (Fig. 25) was fairly uniform throughout the excavated area. Under the turf layer, which consisted of a level of gray humic sand (2 to 12 cm thick), a yellowish sandy loam (2 to 15 cm thick) was mixed with brown-gray loam or sandy loam. These layers were disturbed by numerous cryogenic deformations that caused partial redeposition of cultural remains. Two large frost wedges began at the surface near a pit-like depression that was 25 to 30 centimeters deep and 0.9 by 1.1 meters in diameter, located in

the western part of the excavation in Sections 60 and 82. Another large wedge of ice, as much as 40 centimeters wide, crossed the central part of the excavation from south to north. These wedges cut through the cultural layers and extended into the underlying loam. Apparently the disturbance caused by hearths resulted in the formation of frost wedges as soon as the settlement was abandoned. Cultural remains were recovered in the yellow loam layer, but were also found in the turf level. Occasionally frost wedges were responsible for cultural materials being transported into the otherwise sterile loam.

Typology, depth, and stratigraphy facilitated sorting the Abylaakh I assemblage into two chronologically distinct complexes. The earlier complex includes ceramics decorated with net impressions and blade tools. Net ceramics are not numerous—only fourteen sherds were recovered—making it difficult to reconstruct vessel form. Only a single small rim fragment enables us to infer that the vessel to which it belonged was a small (13 cm in diameter) pot with a closed, miter-like form [shaped like a bishop's cap]. The rim is flat and projects inwards. Beginning one centimeter below the rim the vessel is decorated with a row of small, round pits about five millimeters in diameter.

The sherds have abundant crushed fired clay inclusions [grog] and small angular pieces are easily observed in breaks. The sherds are well-fired and dark brown or sometimes reddish in color; however, preservation is poor and the sherds crumble easily as a result of the grog temper. Although poor preservation is characteristic of arctic ceramics in general due to low firing temperature, the grog admixture was especially unsuited to the severe climatic conditions of East Siberia and the Subarctic. Perhaps this is why people began to use hair as temper for earthenware paste at a later date.

Vessels were coated with a clay slip on the inside and outside, making the body appear to have three layers. Sherd thickness varies from 5 to 8 millimeters. Rims were widened by adding extra clay. The inner

surface is smooth, while the exterior body surface is covered with small-mesh net impressions from the base to the rim. Pit-like impressions made by small knots and imprints of thin sinew from which the net was woven can be clearly seen. Some sherds display impressions of rhomboid-shaped mesh. The size of diagonals (8 by 10 mm or 4 by 7 mm) indicates that game bags rather than fishing nets, or nets woven specifically for ceramic production, were used. The rather shallow impressions of the line and the unsystematic arrangement of pits left by small knots demonstrate that in this case nets were not frameworks inside of which vessels were molded, but rather served to decorate the surfaces of the pots after the pots were modeled but before they were fired.

This use of nets in manufacturing vessels reflects the older tradition of modeling vessels in net bags that has been documented for the Isakovo vessels from the Baikal region (Okladnikov 1950c:170–171). Despite adopting a new technique to form pots, the ancient potters of East Siberia nevertheless retained the custom of making net impressions on the surfaces of their vessels. Sherds of net ceramics were recovered primarily in the eastern portion of the excavation area, in the lower part of the yellow layer bordering the brown-gray or sandy loam. In Section 113, a sherd with net impressions was found associated with blades [Khlobystin's use of 'blade' and 'knife-like blade' generally signifies a parallel-sided blade struck from a prismatic core. —*Ed.*] beneath a small Bronze Age hearth.

Stone artifacts associated with net ceramics were distributed over the excavation area in a different manner. These materials were found mainly in the western part of the excavation in a strip that crossed adjoining squares from north to south. Almost all blades came from the lower part of the cultural layer. This was especially clear in the pit-like depression in the layer of yellowish sandy loam (Sections 60 and 82) where blades lay on the bottom separated from upper finds by a sterile sand lens. Close to this pit, in

the lower part of the yellow layer, a blade core made of light jasper (Fig. 26:8) and a large endscraper of the same material were found (Fig. 26:10). The latter was made on a thick flake whose ventral side was retouched with several flaking blows, whereas the dorsal surface retained the primary cortex. Although this tool resembles a hump-backed, left-sided endscraper, it is actually a round scraper, since it has steep retouch around its entire edge, and all edges were intensively utilized. Originally this scraper was used to process soft materials, probably skins, because its edges are rounded smoothly and have use-wear striations. Later, one edge of the tool was used to scrape hard material, possibly wood, resulting in the formation of small scars. This scraper differs considerably in its form and use from the stemmed endscrapers that are frequently associated with waffle-ribbed ceramics from the upper layers of the site.

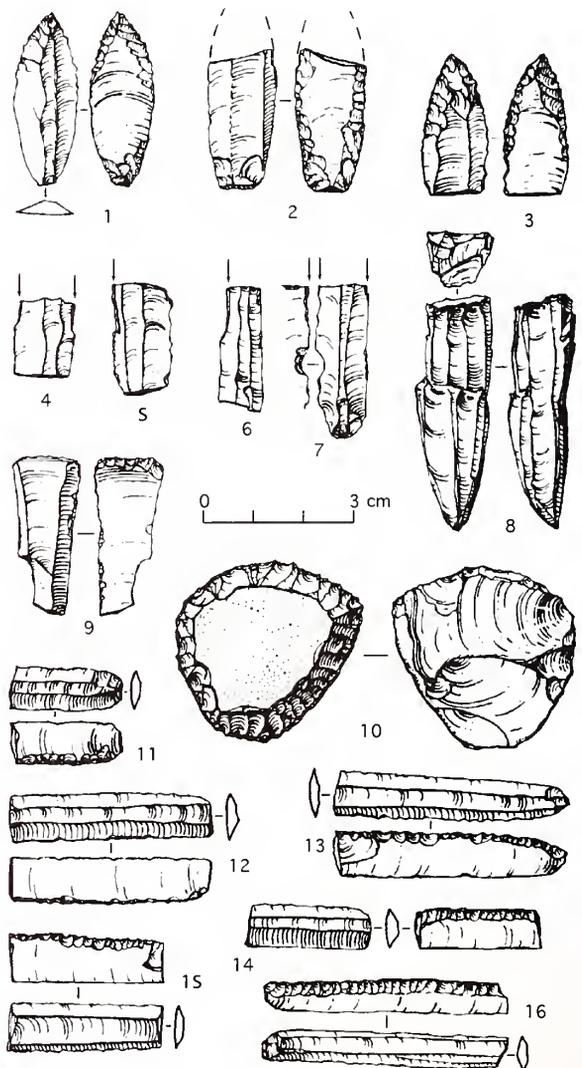
Three small, leaf-shaped arrowheads made on blades were found at the same location in the lower level, northeast of the depression. One jasper arrowhead was intact (Fig. 26:1). A fragment of another arrowhead, found in neighboring Section 92 with both ends broken, was made of gray flinty slate (Fig. 26:2). The third arrowhead, made on a blade of light jasper, is missing its base (Fig. 26:3). These arrowheads have been shaped by small sloping retouch from the ventral surface. Only the points of the artifacts are retouched from the dorsal surface. The hafted part retains the bulb of percussion.

Burins made on breaks were also manufactured from light-colored jasper blades (Fig. 26:4-7). Three of these have shortened proportions. The fourth is made on a blade that once served as a knife, and its edges bear traces of use-wear.

Six blades were retouched in a way that suggests they were mounted as composite tools (Fig. 26:11-16). These blade insets are made of light jasper and flinty slate. One of the insets was associated with a net-impressed sherd under Hearth 6 in Section 113; another was found at the bottom of the depression

in Section 60. A fragment of a blade, found in the lowermost part of the yellow layer in Section 50 under Hearth 3, can be classified as a blade inset. This blade, removed from a core of gray flinty slate, was retouched from the ventral surface, removing the incurving bend in the lower end of the blade and making it serviceable as a knife, as evidenced by edge damage (Fig. 26:9). Other blades were used in a similar manner but without additional retouch.

A number of artifacts similar to the upper level finds were recovered from the lower part of the cultural deposits [due to cryoturbation]. These include steep-backed and hump-backed endscrapers;



26/ Lithic artifacts from the lower cultural layer of Abylaakh I.

thin, bifacially retouched perforators; and triangular arrowheads with straight bases—all generally made of chalcedony. Based on appearance and material type (light jasper), another tool can be assigned to the upper-level assemblage: a massive flake, triangular in cross-section, that resembles small Mousterian handaxes in some respects. However, it was used as a crude perforator or reamer.

A hammerstone also belongs to this complex. This artifact is a large flattened pebble of fine-grained quartz; the ends bear traces of utilization. The hammerstone was found in gray sandy loam beneath a fire-reddened spot that, judging from associated finds, dates to the Bronze Age.

No traces of hearths were identified in the layer associated with the earliest settlement at Abylaakh I, except for small sooty spots in the lower part of the yellow layer. Accumulations of small pebbles were found in the gray sandy loam between Sections 5 and 9. Because such stones were not found in the subsoil, these accumulations were probably anthropogenic.

Only the finds from the lower cultural deposits and those that differ typologically from the upper level (Bronze Age) complex have been assigned to the earlier complex, which is characterized by artifacts on blades and by use of light jasper (as at the Mesolithic site of Tagenar VI) and dark gray flinty slate, which is typical for the Pyasina sites dating from the Mesolithic through the Early Neolithic. This pattern of raw material use is characteristic of early Taymyr sites and has been documented at another early Neolithic site, Glubokoe I.

Glubokoe I is located in southwestern Taymyr, more than 400 kilometers from Abylaakh and is situated on the shore of Lake Glubokoye at the foot of the northwestern slope of the Putorana Plateau. The site was discovered in 1973 when the Polar Expedition undertook a survey around Lakes Melkoye, Glubokoye, Sobachiye, and Lama. These lakes are of recent origin, and fill canyon-like hollows between mountains up to 1000 meters. The lakes are linked by rivers full of rapids. Taiga forests

predominate at the foot of the mountains while the uplands have tundra vegetation. Such vegetation has persisted in this region since the Atlantic Period, when the mountains were freed of glacial ice. The lakes are rich in fish, but the reindeer and mountain sheep that graze here occur only in small herds, making them difficult to hunt. The ecology of this lake area differs considerably from the part of the Kheta Valley where the Abylaakh I site is located. In the Atlantic Period, when forest vegetation reached its maximum northern distribution, the vegetation differences between Abylaakh I and Glubokoe I were probably minimal and less than they are at present.

Glubokoe I is located on a 20-meter-high steep-fronted terrace that forms a promontory where the southern shore of Lake Glubokoye intersects the west mouth of the Badikha River. The site is separated from the lake by a wide band of low-lying land. Artifacts were distributed over a small, level section on the lake side of the terrace. The excavation area (21 square meters) covered the entire main area of the site. A child's burial, probably left by Dolgan people, the ethnographic occupants of this region, was identified, and we discovered that the excavation of this grave had disturbed the earlier cultural deposits.

The stratigraphy is generally uniform, although with some cryogenic deformation. A 3-centimeter-thick level of light brown sandy loam containing charcoal spots lies under a humic layer 6 to 10 centimeters deep. The sandy loam turns into a dark brown cultural layer 1 to 5 centimeters thick, with charcoal stains and lenses indicative of hearths. Below this, the light brown sandy loam reappears, underlain, 20 centimeters from the surface, by a dark brown sandy loam with pebbles.

Four hearths were identified within the cultural layer, at slightly different levels. Three hearths are located in the upper portion of the cultural layer, and one in the lower portion, suggesting some chronological difference between them. Slow sedimentation within the cultural zone makes it difficult to divide the finds purely on the basis of

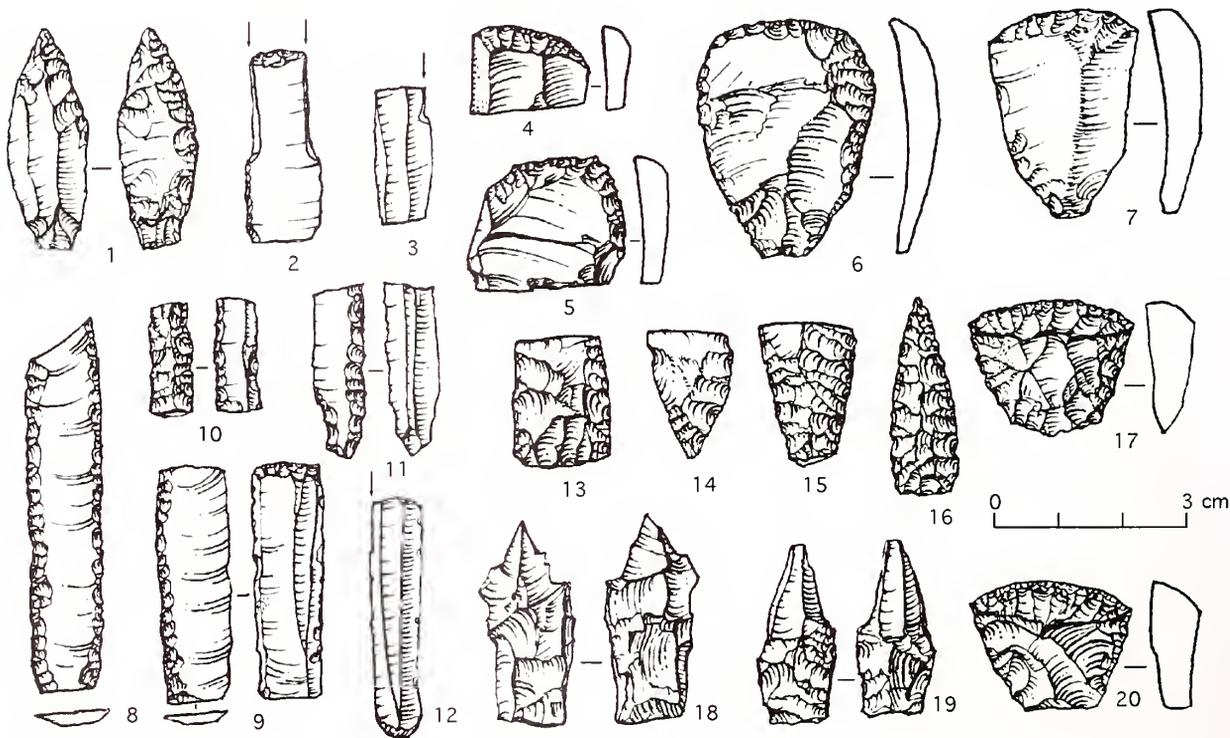
stratigraphy; however, by combining tool typology and depth it is possible to some extent to divide the collection into complexes.

Directly under the turf layer we recovered metal artifacts, including a well-preserved iron knife dating to the early centuries A.D. The stone inventory and ceramics generally occurred at a depth of 13 to 18 centimeters from the surface in a humus- and charcoal-stained layer near the hearths. A number of typologically earlier artifacts lay under this layer in light brown sandy loam. Stratigraphy and typology allow these artifacts to be divided into two complexes. One should attribute to the upper complex two blades with marginal ventral retouch that served as insets.

These blades (Fig. 27:8, 9) lay beneath one of the hearths in light brown sandy loam, which also contained a burin-on-a-break (Fig. 27:3). A leaf-shaped arrowhead made from a prismatic blade, a burin-on-a-break, four endscrapers, and a blade inset with its ventral surface covered completely by

retouch (Fig. 27:1, 2, 4-7, 10), all found in the lower part of the cultural layer, belong to this complex also. Another burin-on-a-break (Fig. 27:12) and a blade worked by ventral retouch, shaped like a stem (Fig. 27:11), may also be part of this complex. However, a burin and a blade found in the upper part of the cultural layer are typologically more similar to finds from the lower layer.

There are a few flakes and blades at the site, and most of the flakes are small. Sixty-eight flakes and twenty-three blades were recovered from the upper part of the cultural deposits, and thirty-nine flakes and twenty-two blades were found in the lower complex. The presence of prepared blades combined with such a small amount of debitage indicates that tools were rarely manufactured at the site. This is confirmed by the character of the raw materials. The flinty rocks most commonly used are diverse in composition and are generally represented by single flakes. Sixty-eight flakes of gray-green flinty slate predominate. Only two tools are made of this



27/ Lithic artifacts from Glubokoe I. Nos. 1-10 are from the lower level; nos. 11-20 are from the upper level.

slate—a burin-on-a-break and an endscraper—and both were found in the lower level.

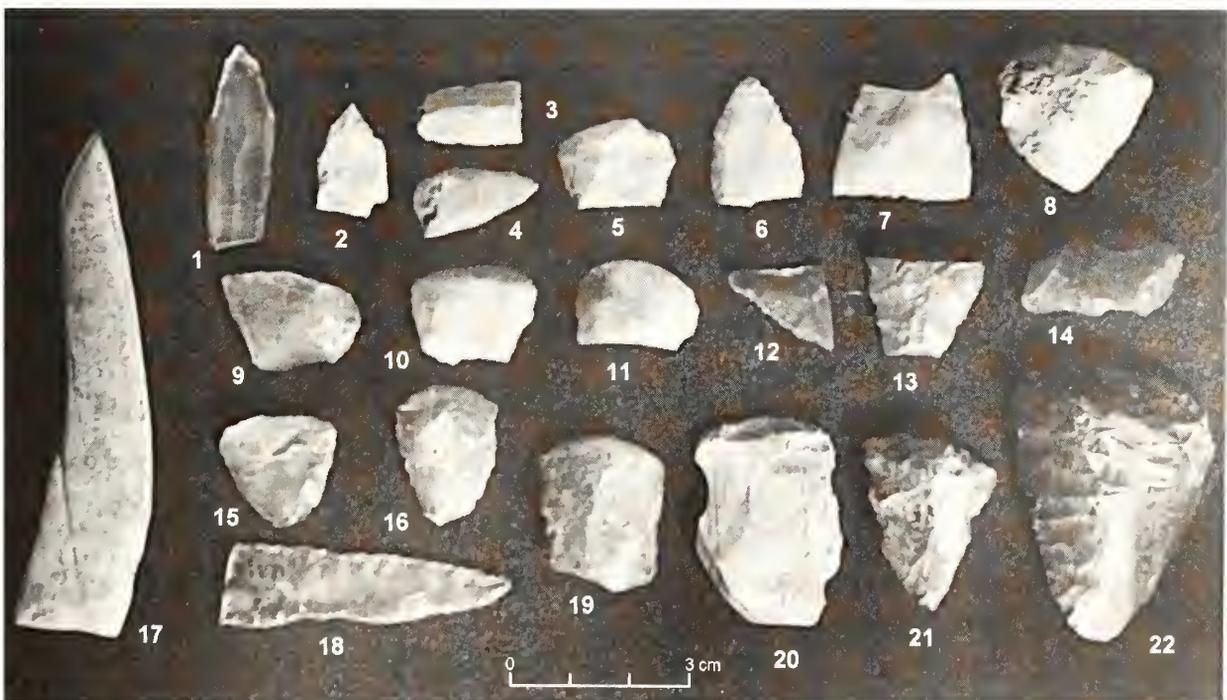
The lower part of the cultural deposits revealed ceramic body sherds and the base of a small round vessel. The diameter of the mid-section of the vessel was about 15 centimeters. Body sherd fragments were also found in the upper half of the deposits. Their surfaces were covered with cord impressions, and near the bottom of the vessel the impressions of a large-mesh net have been preserved. This net was woven from thick cord, and its rhomboid-shaped cells have diagonals measuring 1 by 1.5 centimeters in size. The thickness of the walls is between 3 and 7 millimeters. The sherds are dark brown in color and the earthenware paste contains an admixture of coarse-grained sand. Unfortunately, the upper part of this vessel has not been found, hindering its reconstruction. Judging by its lower portion, the vessel was round bottomed and miter-like in shape.

In summary, the complexes originating in the lower layers of Abylaakh I and Glubokoe I contain similar sets of tools, including blades, leaf-shaped arrowheads, and small vessels decorated with “net”

impressions. Other similarities are evident in raw materials. These features are also characteristic of sites such as Pyasina VII and VIII.

Pyasina VIII is situated on the right bank of the Pyasina River 77 kilometers from its source. Sherds of thick-walled (7 to 8 mm), cord-impressed ceramics were recovered in the course of clearing a brownish humus layer 10 centimeters below the surface. These ceramics resemble the vessel from Glubokoe I. Blades of flinty slate and pinkish jasper and a slightly damaged endscraper of the same jasper were associated with the sherds (Fig. 28:8). On the basis of raw materials found in situ, we were able to identify surface finds belonging to the same cultural context, including two other endscrapers made on flakes of the same raw material; an endscraper on the end of a blade of flinty slate; a fragment of an arrowhead made from a blade of pink jasper with marginal retouch; and a blade retouched into what appears to be an arrowhead (Fig. 28:10, 11, 20, 6, 2).

A sherd similar to those recovered at Pyasina VIII was found on an island at Pyasina VII, 3 kilometers upstream from Pyasina VIII. Materials from these sites



28/ Lithic artifacts from Pyasina VIII.

differ from those of Mesolithic sites of Taymyr only by the presence of ceramics, endscrapers on flakes, and the shape of arrowheads. If ceramics were absent, the lithic inventory would be attributed to the Mesolithic. The continuity in the lithics serves to prove that the emergence of the Taymyr Early Neolithic did not result from the arrival of a new population bearing a different culture. Rather, it represents the development of the culture of indigenous Mesolithic inhabitants of Taymyr who adopted ceramic technology from their southern neighbors.

Net ceramics appeared in the southern part of East Siberia in the fifth millennium B.C. and quickly diffused. By the fourth millennium, they were being manufactured throughout East Siberia, including the Chukotka Peninsula. As this technology spread among Mesolithic peoples, the lithic inventory of the Early Neolithic retained many features characteristic of Mesolithic cultures. According to radiocarbon dates, which fall between 5970 ± 70 B.P. (LE 676) and 4760 ± 60 (LE 736), the Syalakh culture of Yakutia, which replaced the Mesolithic Sumnagin culture, can be dated to the fourth millennium B.C. (Mochanov and Fedoseeva 1975a). The most striking 'Neolithic' feature of Syalakh sites is the presence of ceramics, typically miter-shaped pots with net-impressed surfaces, decorated with a belt of pits located slightly below their thickened rims. Sometimes there is an appliquéd band decorated with incisions that is attached to the upper part of the pots. The lithic inventory retains Mesolithic characteristics, as evidenced by tools made of blades (burins-on-breaks, endscrapers) that continue to be widely used. Thin, leaf-shaped arrowheads appear. Another innovation is bifacially worked tools made on massive flakes, as well as ground axes and adzes.

In the Baikal region, the early Neolithic is represented by the Isakovo culture, which replaced the Khin sites of the Late Mesolithic. The ceramics of this culture are the "net" type. There are no reliable radiocarbon dates for the Isakovo culture, but it is probably coeval with the Kitoi culture which, judging

by the burials in the Kitoi burial ground (i.e., Grave #13) and on Bourhan Cape (Olhon Island at Lake Baikal), is also characterized by net ceramics. There are two dates for the Kitoi culture: 5720 ± 50 B.P. (LE 1076) and 6550 ± 35 (SOAN 790).

Typological comparison of materials from adjacent areas of northwestern Yakutia (the Anabar and Olenek Basins), where Syalakh materials come from multicomponent Aldan sites, indicates some similarity between the sites of these regions and hence the possibility that the Syalakh culture may have penetrated far to the northwest. The Neolithic transition in Taymyr may be connected with the influence of this culture. In fact, the Abylaakh I and Glubokoe I materials are very similar to the materials from Early Neolithic sites of the Olenek and the Middle Lena. Net ceramics, along with tools on blades, including arrowheads, have been found at Abynalaakh and Khorbusuonka I on the banks of the Olenek River (Konstantinov 1970:83, 91).

The Syalakh culture sites of Evenkia could also be a source of the Neolithic influences on Taymyr. The Early Neolithic is well represented in Evenkia at the Tura I site, which is situated on the Lower (Nizhnyaya) Tunguska River (Andreev and Studzitskaia 1968:153; 1969:207). Numerous tools made on blades (endscrapers, burins-on-breaks, cutters, insets, etc.) were found here in association with net ceramics and typical Neolithic tools. There is an arrowhead among these finds that was made from a blade by pointing its ends with the aid of ventral retouch. Typologically, the inventory of this site is more similar to the materials of the Isakovo and Serovo cultures of the Baikal region than to Syalakh materials.

Therefore, the ceramic traditions that penetrated Taymyr may originate from different sources associated with the two main routes of entry into the peninsula: from Evenkia through the Yenisey Valley and the Kotuy River, and from Yakutia through the North Siberian lowlands. This idea is conjectural at this point, since the early Neolithic cultures of Evenkia and Yakutia are similar in many respects

and have not been sufficiently studied to determine regional differences. Given the peculiarity of the Early Neolithic assemblages of the Upper Viluy River (Fedoseeva 1970b:67), differences will eventually be identified.

The Early Neolithic sites in Taymyr belong to an independent culture, although they are linked genetically to the local Mesolithic. This culture may be called Glubokozerskaya after the site on Lake Glubokoye and is part of the widespread Early Neolithic cultural community of northern East Siberia.

Thanks to joint efforts of archaeologists and physicists, we now know that there were several centers where people learned independently to make ceramic vessels. One was probably the southernmost of the four main Japanese islands—Kyushu Island. The earliest ceramics were found at Fukui Cave in a stratum radiocarbon dated to $12,700 \pm 500$. The ceramics from a second layer were dated to $12,400 \pm 350$ (Chard and Morlan 1970:117, 118, 126; Ikawa 1964:99, 100). Therefore, the origin of the ceramic Jomon culture dates to the end of the Pleistocene. Spreading north across Honshu Island, ceramics reached Hokkaido about the seventh millennium B.C. (Oda and Kelly 1975). West Asia was another independent center for the invention of ceramics, which occurred about the same time in Syria and Asia Minor and in Iran and Iraq. Here the earliest ceramics date to the seventh millennium B.C.

Each of these centers had its own particular ceramic technology. The presence of “net” ceramics is indicative of the independent origins of earthenware in East Siberia. Net ceramics first appeared somewhere in southern East Siberia and spread quickly to neighboring areas. During the fourth millennium B.C. these ceramics were being manufactured throughout East Siberia, even on the Chukotka Peninsula. The similarity between the Early Neolithic of Taymyr and the precisely dated Syalakh culture permits us to date the early ceramics from Glubokoe I and Abylakh I to the fourth millennium B.C.

Some of the Taymyr sites where ceramics have not been preserved probably date to the same millennium. Several of these sites, with materials that date to both the Mesolithic and the Neolithic (Kapkannaya II, Pyasina XV, Malaya Korennaya III, Kholodnaya V, Labaz V, VI, IX), were discussed in Chapter 1. Materials from Dyuna II, Novorybnoye II, and Novaya VII can be dated to the Early Neolithic.

Dyuna II is situated on the left bank of the Pyasina River 71 kilometers from its source. Here fragments of four blades, a core of flinty slate, three blades of brownish flint, and a flake of black flinty slate were recovered from a single unit. The flake was treated by marginal retouch; its form resembles that of an almond-shaped arrowhead, and it was probably a preform for such a tool.

A leaf-shaped arrowhead made from a large prismatic blade of pinkish jasper was found at Novorybnoye II on the right bank of the Khatanga River. Its dorsal surface is almost completely covered with oblique flat retouch, and only the central ridge remains untouched. On the ventral side of the blade, the point and the base were formed by retouch (Fig. 19:4). Similar arrowheads were found in the seventh level, equivalent to the earliest Syalakh layer of Belkachi I (Mochanov 1969:table 15:1, 2, 5).

This description of early Neolithic sites concludes with a discussion of lithic materials from the Novorybnoye I-b site. This site may date to the next stage of the Neolithic. Fifty-nine blades and fragments, a prismatic core (Fig. 20:5) and an endscraper with a spear-like shape made from a large blade or blade-like flake (Fig. 19:1) were collected at the site. One surface of the endscraper was prepared entirely by flat retouch, while on the other side only the edges have been retouched. The round working edge of the scraper is formed by steep retouch. All these tools were made of brown jasper. Only two of eight small flakes were made from a black flinty slate. These two flakes were removed from a ground stone tool.

The manufacture of net ceramics continued during the next stage of the Taymyr Neolithic. Visual observations indicate distinct differences between the impressions on the surface of these ceramics. Sometimes they resemble the impressions of crudely made textiles; these ceramics have been termed “pseudo-textile” in some publications. This name is also applied to ceramics with a decorative design that is similar to a woven pattern. This terminological muddle necessitates the use of different nomenclature for different kinds of net-like impressions.

I propose dividing net ceramics into four types distinguished by their impressions: (1) *small mesh or large mesh ceramics* with clear impressions of net mesh; (2) *net-pit ceramics*, characterized by impressions of small net knots; (3) *net-textile ceramics*, which display net impressions that so densely cover the surface that they appear to have been created by a woven or knitted fabric; and (4) *net-corded ceramics*, in which net impressions appear to have been made using a cord-wrapped stick. Some vessels display various combinations of two or more of these types. Such ceramics may be called simply “net” ceramics. One example is the vessel from Glubokoe I. The walls of this vessel carry cord-like impressions, whereas the bottom retains large mesh impressions.

The Neolithic of the Third and Second Millennia B.C.

If the Early Neolithic inhabitants of Taymyr still lived under Atlantic climatic conditions, then the Sub-Boreal, which began at the very end of the fourth millennium B.C., brought severe ordeals for their descendants. The first half of the third millennium B.C. was still warm, but the climate became dryer and more continental. Though arboreal vegetation remained in the same areas as in the Atlantic Period, its composition began to change. According to pollen studies, the region of Karginsky Cape on the Yenisey River was part of a subzone characterized by alder and birch forests with larch and fir (Firsov et al. 1974),

while central Taymyr, judging from data obtained from Tagenar VI, was a subzone of northern taiga larch forests of the central Siberian type (Levkovskaia et al. 1972). Beginning in the middle of the third millennium B.C., the climate began to worsen. The forest tundra was already predominant near Karginsky Cape, but northern taiga remained in the region of the Tagenarka River. In general the climatic conditions of Taymyr were better than at present, even during the second part of the Sub-Boreal.

Sites representative of three cultures appear in Taymyr during the third millennium. The Khatanga II (Kuchuguy-Yurvakh I) site, discovered by Okladnikov at the location of present-day Khatanga village in 1945 (Okladnikov 1947a), represents one of these cultures. A large triangular knife, seven endscrapers made on flakes with almost continuous retouch, two multifaceted burins similar to core-like burins, elongated narrow arrowheads with concave bases and symmetric points, fragments of ground adzes, microblades, and other chalcedony and flinty slate objects were found on the site near two hearths. A fragment of a bone base with a deep groove for insets was found in one hearth. (This is a rare phenomenon for Taymyr, where bones are poorly preserved at early sites.) Ceramics are represented by fragments of one large pot with a round base and an intentional projection in the center. The external surfaces of the sherds were covered with cord impressions after the vessel had been formed using a cord-wrapped mallet.

Okladnikov dated this site to the Developed Neolithic of Yakutia, based on similar materials from the Middle Lena sites, Kullaty and Malaya Munku (Okladnikov 1947a:44; 1950b:21–79; 1955a:85). After the discovery of stratified sites on the Aldan River—important for distinguishing the Neolithic cultures of Yakutia—these Middle Lena sites have been ascribed to the Belkachi culture, dated between 5000 ± 100 and 3900 ± 100 B.P., to the third millennium B.C. (Mochanov 1969; Mochanov and Fedoseeva 1975a).

The tool assemblage of the Khatanga II site is similar in many respects to the lithic inventory of the Belkachi culture, which consists of bifacially retouched or ground artifacts typical of the Developed Neolithic in which blade-focused technology continued to be used. Considerable change occurred in the production of ceramics, which were manufactured by a cord-wrapped paddle. Because of the impressions of this paddle, the Belkachi ceramics are called “corded.” Another indicator of Belkachi ceramics is the addition of an extra coil of clay to the rim to make it thicker. Near the edge of the rim is a row of small pierced holes.

Belkachi ceramics were found on three other sites in Taymyr. Sherds of a gray, thin-walled (4 to 5 mm) vessel were found in the first level of Pyasina IV. Judging from the sherds, a thin twisted cord was rolled vertically over the surface; unfortunately, this ceramic was accompanied by surface finds dating from different times, making it difficult to isolate the lithic inventory associated with it. Artifacts made of flinty slate blades, dating from the Mesolithic, and Iron Age ceramics were among the materials collected here. Such ceramics are usually not associated with prismatic blades and chalcedony tools. Therefore the possibility arises that the chalcedony materials found on the first level (blades, a flake struck from a conical core, an inset, a triangular arrowhead, a blade inset from a composite knife, and endscrapers on flakes and chips) are associated with the corded ceramics. Blades of white flinty rock may be attributed to the same complex. Several analogous artifacts were found in the second level. Perhaps it too was occupied by Belkachi people.

Small sherds with poorly preserved impressions of thin cord were also collected from the Pyasina II site. Flat-backed cores of pink jasper—one intact and one broken (Fig. 29:19, 20)—were found together with these sherds, as well as a flake removed from a core of white flinty rock, twenty-nine blades of white flint, chalcedony, and pink jasper, and eight blades of gray flinty slate. Nine blade insets (Fig. 29:9–15) and five

blades with small retouch on the ventral side, which were used as sidescrapers and as knives, were made of pink jasper and flinty slate. One blade was pointed to serve as a perforator with the aid of ventral retouch (Fig. 29:2). Two blades have oblique retouched ends. A small triangular arrowhead (Fig. 29:1) was made of an elongated flake with marginal retouch. A fragment of an endscraper of crimson jasper was turned into a dihedral burin (Fig. 29:3). A slab of sandstone was used as a saw (Fig. 29:17). A number of small flakes and chips were of the same raw materials as the tools. Large flakes of dark gray flinty slate were struck from a ground artifact. Near a hearth containing an accumulation of burnt and cracked stones, calcined bones were found with a fragment of a tool, possibly a perforator, among them, as well as a piece of antler with traces of sawing.

Thick-walled (7 to 8 mm) ceramics were found during the excavation of Boyarka I, situated on the right bank of the Kheta River at the confluence of the Boyarka River. The surface of the ceramics display impressions of crudely woven strips of bark that resemble wickerwork. Traces of closely spaced, linear decoration are present on the sherds. Sherds with parallel impressions of twisted cord, typical for the Belkachi culture, were found together with thick-walled ceramics. A barrel-like prismatic core with two opposite striking platforms (Fig. 30:12), five endscrapers on amorphous chalcedony and flinty flakes, a burin-on-a-break made on a prismatic blade (Fig. 29:4), a crested blade with use-wear indicating that it served as a sidescraper, a fragment of an inset or of an arrowhead, and a fragment of some large artifact were found in association with these two types of ceramics. There were also blades made of pink and white jasper, chalcedony, flinty slate, and flint of brownish color. An activity area was identified where the knapping of chalcedony occurred. Here the cultural layer was filled with chalcedony flakes and chips. About one thousand such items were gathered from an area of about 0.3 square meters.



29/ Lithic artifacts from Pyasina II (nos. 1–3, 5–17); bone artifact from Pyasina II (18); and from Boyarka I (4).

Some sites without ceramics can also be attributed to the Belkachi culture. First of all is an elongated leaf-shaped arrowhead of pink jasper found in Area I at Bludnaya II. Its base is round and its surface is treated by oblique flat retouch along the lateral margins (Fig. 19:3). Similar arrowheads are characteristic of the Belkachi culture. A crude blank for an analogous arrowhead was found at Novorybnoye VI, the site of a workshop (Fig. 21:5). A massive laminar flake detached from a pencil-like core of pink jasper (Fig. 19:2) was found at Novaya VII in association with large flinty slate flakes, twenty-seven prismatic blades, and numerous small flakes of light pink jasper and flinty slate. The distal end of the laminar flake is pointed by rough ventral retouch. The flint knapper was probably going to manufacture an arrowhead similar to those from Bludnaya II. There is also a knife-sidescraper

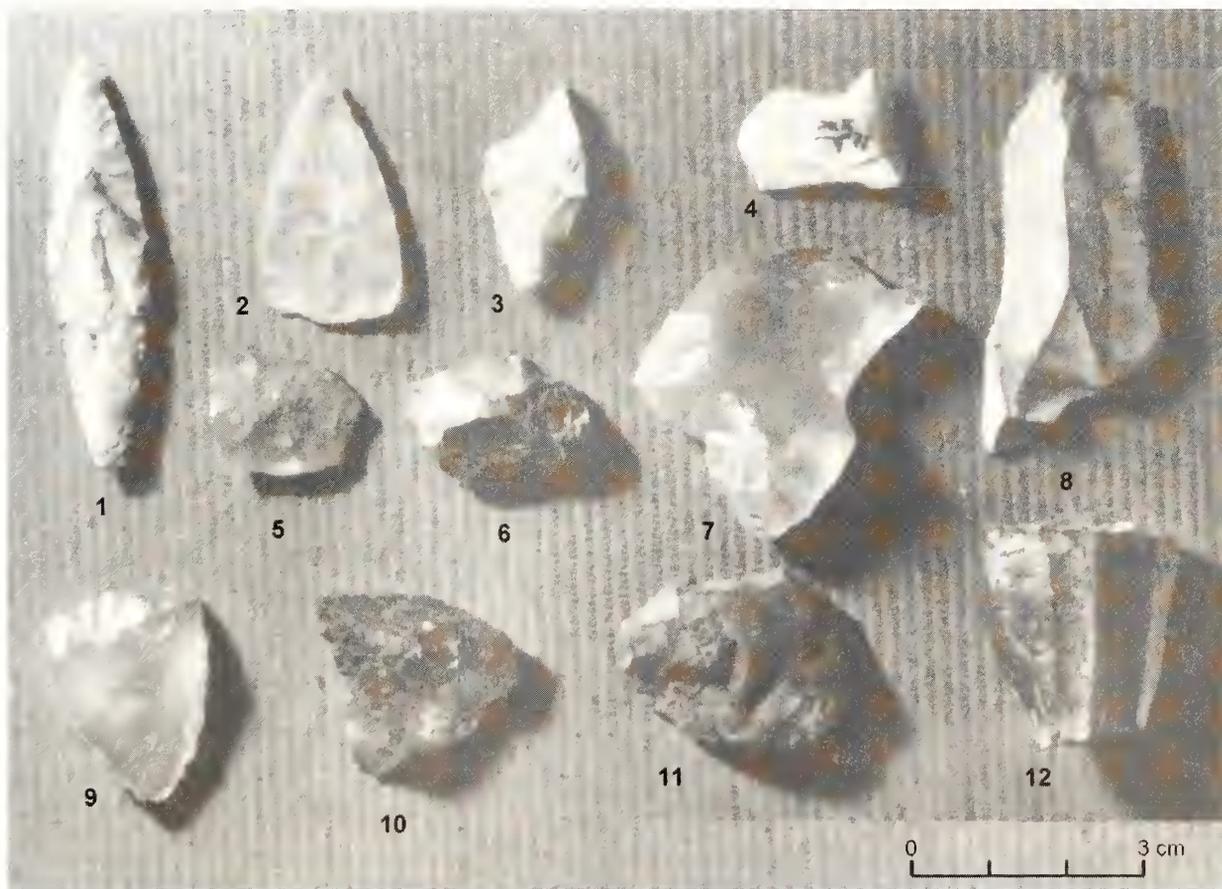
made from a large blade of gray-green flinty slate (Fig. 21:2). The convex side of the blade was sharpened by retouch. The other edge has steep retouch and was used as a sidescraper as indicated by use-wear.

Some other sites of Eastern and Western Taymyr have tool types and raw materials similar to those known for the Belkachi culture but, as many of the types found on these sites could belong either to the Neolithic or to the Early Bronze Age, it is better to describe them at the conclusion of the section devoted to the Neolithic. Taking into consideration the small number of Belkachi sites known in Taymyr, one may suppose that the number of Belkachi people who penetrated the northwest was small. Corded ceramics have been found only at the Khorbusuonka I site in the Anabar and Olenek River basins (Konstantinov 1970).

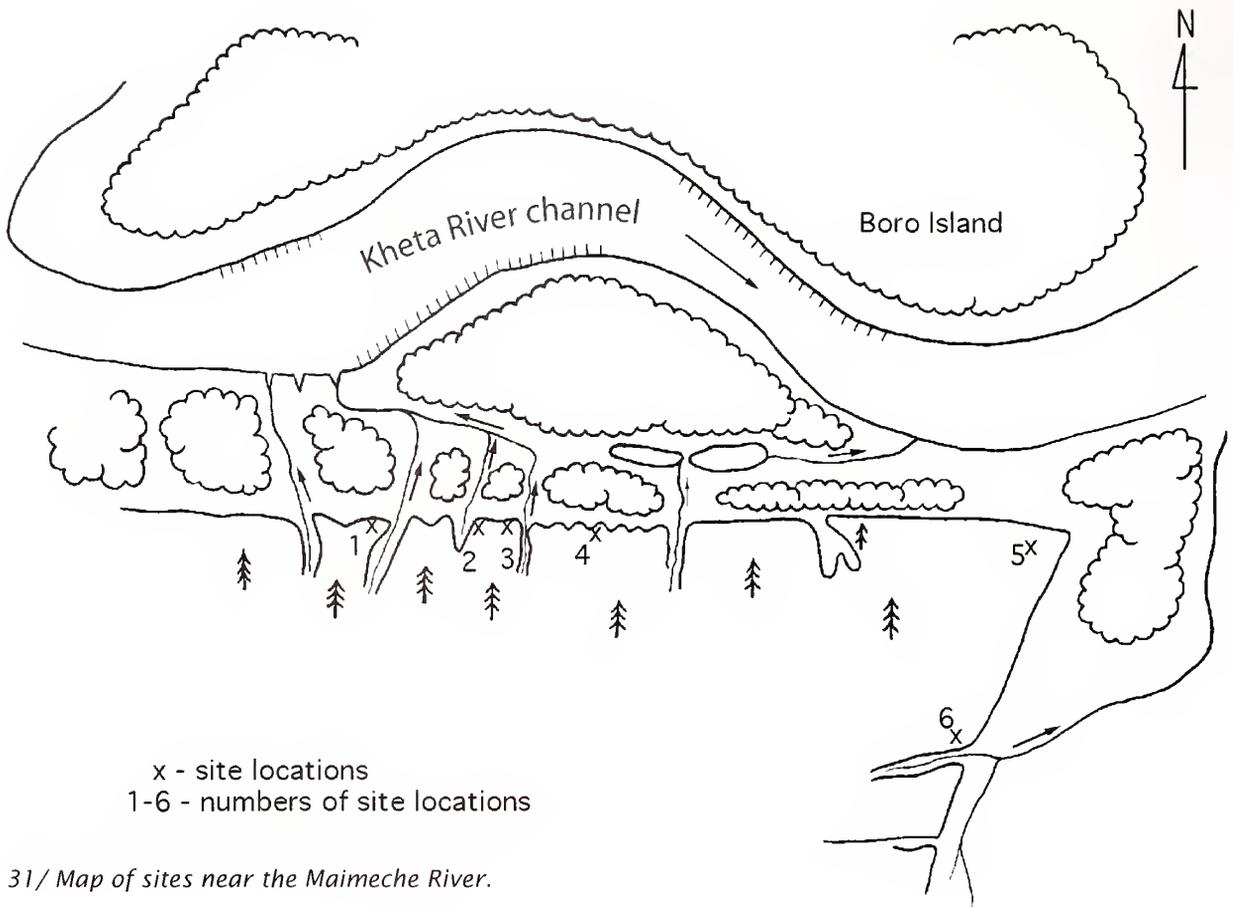
The spread of Belkachi culture was probably hampered by another population that existed in eastern Taymyr in the third millennium B.C. which left sites such as Maimeche I and IV. These sites were identified by the Polar Expedition on the right bank of the Kheta River (Fig. 31). The Maimeche I site is situated 3 kilometers downstream from Katyryk village. Going along the high bank about one kilometer farther we find ourselves at Maimeche IV, and 1.5 to 2 kilometers farther downstream we arrive at the Maimeche River. I would like to point out that the right bank of the Kheta is called “stone,” whereas its left bank is called “tundra.” These names emphasize the fact that the Kheta and Khatanga Valleys represent the boundary of the northernmost forest in the world—to the north of this boundary tundra begins. In the vicinity of the sites the “stone”

bank is densely overgrown with larch that rises above the Kheta River some 11 to 13 meters and is separated from the main riverbed by a narrow flood plain. The steep bank is cut through by several deep, narrow gullies with brooks flowing through them. Ancient sites are situated, as a rule, on cape-like projections of this bank which are bounded by ravines and well drained.

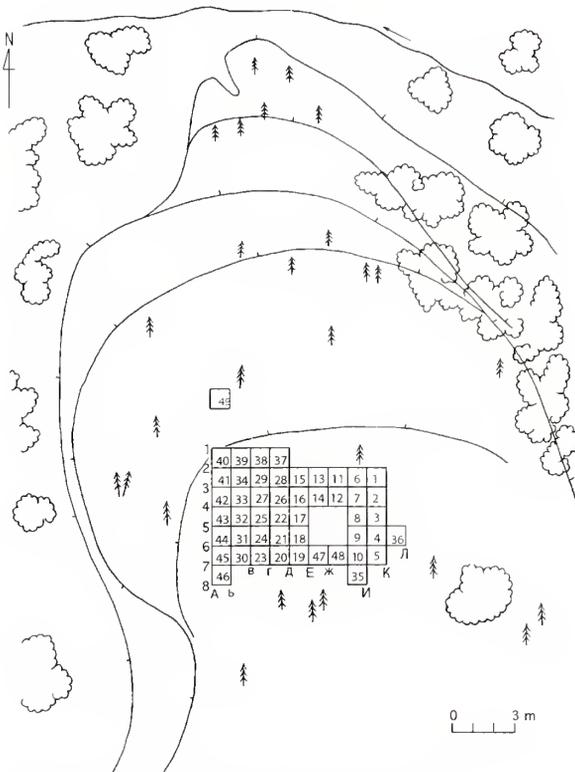
The Maimeche I site occupies a spit on the left bank of one of these stream valleys (Fig. 32). There are about 200 square meters of flat ground suitable for living. The first excavation, put in the center of this area in 1967, produced only a few artifacts. Subsequent excavations, carried out in 1968 and 1972, showed that the richest section of the site stretched along the western edge of the point facing the Kheta Valley. Such a location becomes



30/ Lithic artifacts from sites located in the Kheta and Khatagna River valleys: Faktoriya (trading station) (no. 1); Skhyr-Chuyepe-Yuryakh I (2); Sakhyr-Chuyepe-Yuryakh III (3, 8); Zhdanikha III (4, 6, 7); Ust-Boyarka (5); Ust-Zhdanikha (9); Boyarka I (10-12).



31/ Map of sites near the Maimeche River.



32/ Map of excavations at Maimeche I.

understandable when one considers that the entire surface of the point is thoroughly warmed by the summer sun and that wind blowing from the river valley carries away mosquitoes.

The main part of the site was exhausted by excavating 54 square meters. The stratigraphy is typical of shallow sites of the region: a humic turf layer 7 to 12 centimeters thick, below which is a yellowish sand level 6 to 10 centimeters thick, and below that, gray loam. The layers were disturbed here and there by small frost wedges. In addition, one large wedge crossed the excavation area from southwest to northeast. The cultural layer near this wedge became deformed and its materials penetrated deeply into the underlying gray loam, whereas its original position was directly beneath the turf layer. Excavations at the very end of the hot summer of 1967 revealed permafrost that began at a depth of half a meter from the surface.

The remains of a living complex were identified in the eastern half of the excavation, near the river where the majority of artifacts were concentrated. A charcoal-humus layer 6 to 7 centimeters thick was found here at the bottom of the sandy layer and in some places under the loam layer as well. It consisted of very thin alternating layers of black, brown, and reddish soil covering an area of 4 to 5 square meters. On its southeast side, this area had round outlines and was bounded by a ledge that cut into the loam (Fig. 33). The greatest observed height of the ledge was 25 centimeters. Along the southwest and northeast sides, the boundary of this area was diffuse and its edges were overlapped by the loam layer here and there. Along the northwest side, it was disturbed by the above-mentioned large frozen wedge. The southeast edge of the area lay at a depth of 30 to 35 centimeters; toward the northwest the depth decreased. In general this area turned out to be the fill of a round hollow, 2.3 to 2.5 meters

in diameter, with low steep walls. This can best be interpreted as the base of a *golomo*-type dwelling dug into the earth [a *golomo* is a semi-subterranean rectangular wooden structure formerly found among Yakut peoples; see Fig. 169b].

At the northern edge of the living area at a depth of 12 centimeters we found a large round stone with a flat surface on which large flakes of greenish flinty slate were lying. Numerous flakes also lay in the lower part of the sandy layer at a distance of 1.5 to 2 meters to the south and west of this stone, which had served as an anvil for knapping greenish-gray flinty slate pebbles. More than two thousand flakes removed from such pebbles were located in an area of 4 square meters. Because their distribution coincided with the outlines of the charcoal-humus stained area, whereas beyond the limits of the stained area the number of flakes decreased sharply, one supposes that the anvil was situated in a dwelling at the edge of a bench. Another similar stone, 15 centimeters in

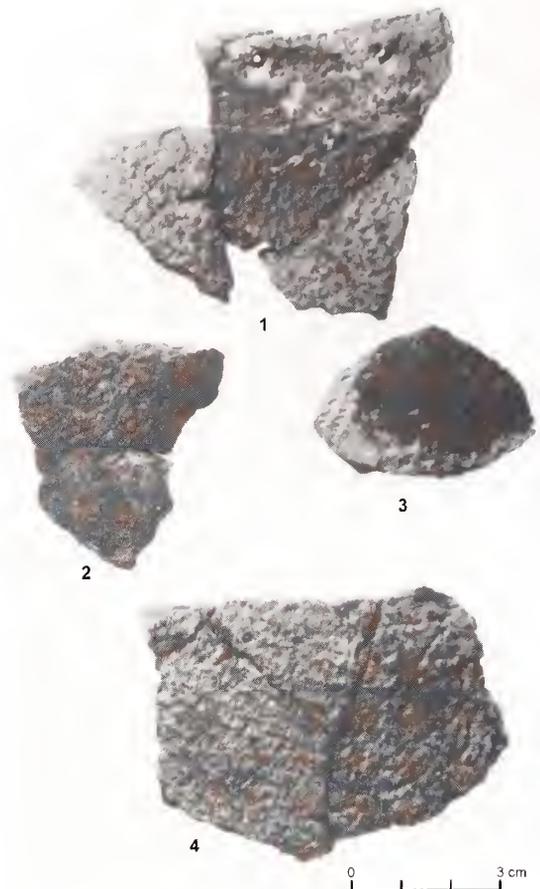


33/ Photo of excavations at Maimeche I; a portion of a semi-subterranean house is visible in the foreground.

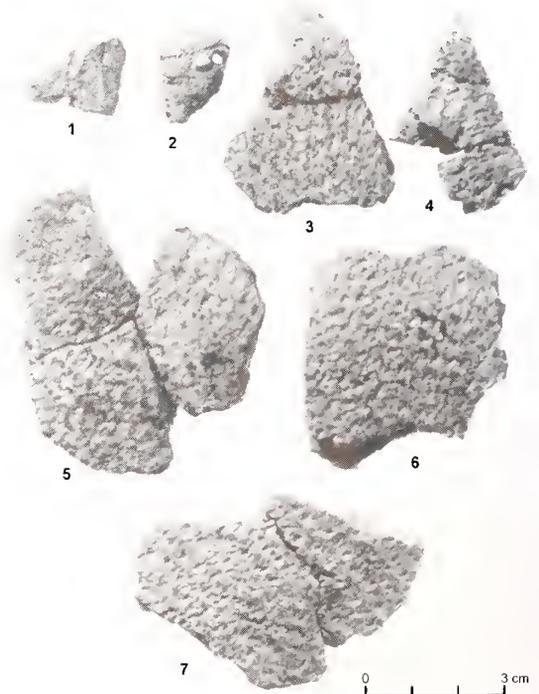
diameter, lies east of this area and beyond its limits; because the central sections of the flattened sides of this stone were hardly damaged, it probably also served as a stone-knapping anvil, although few flakes were found near it. A large flat stone cobble lying in Section 52 was also used as an anvil, judging from its damaged flat surfaces. There was an accumulation of flakes on and around this stone. Three coarse-grained pebbles with damaged ends had been used as hammerstones.

The cultural layer of the site contained a small number of sherds—a typical situation in the Arctic where climatic conditions do not favor the preservation of ceramics. The sherds belong to no fewer than six vessels of the same type (Figs. 34, 35). These are round-based pots, modeled from clay mixed with reindeer hair and, more rarely, with pieces of crushed, fired clay. The wall thickness depended on the size of the vessels: thus, a pot with a rim measuring 12 centimeters in diameter is thin-walled (3 mm), whereas another pot, with a rim 20 centimeters in diameter has thicker walls (6 to 7 mm). The walls were formed by two-layered modeling. The rims are slightly thickened by the application of an extra coil of clay 2 to 2.5 centimeters thick to the exterior. The edge of the rim was either flat or rounded. The surfaces of the pots are covered with pit-like impressions from large net knots, making the sherds resemble so-called “textile ceramics.” According to the proposed nomenclature (see page 54), they are net-pit type ceramics. Very few sherds show clear impressions of mesh with diagonals 3 by 5 millimeters and 5 by 5 millimeters. The thickened rims were sometimes decorated with horizontal lines made with small dentate stamp impressions. When the decoration was complete, a number of small holes were pierced into the edge of the rim. The vessels were fired in a reducing environment that gave them a black color.

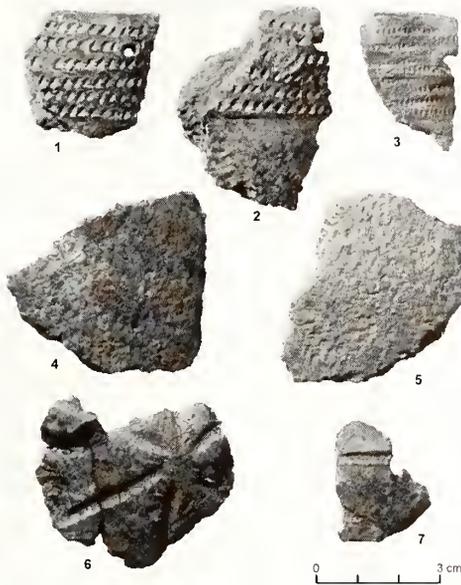
The lithic assemblage from the site is rather monotonous. Tools were made primarily of chalce-



34/ *Ceramics from Maimeche I.*



35/ *Ceramics from Maimeche I.*



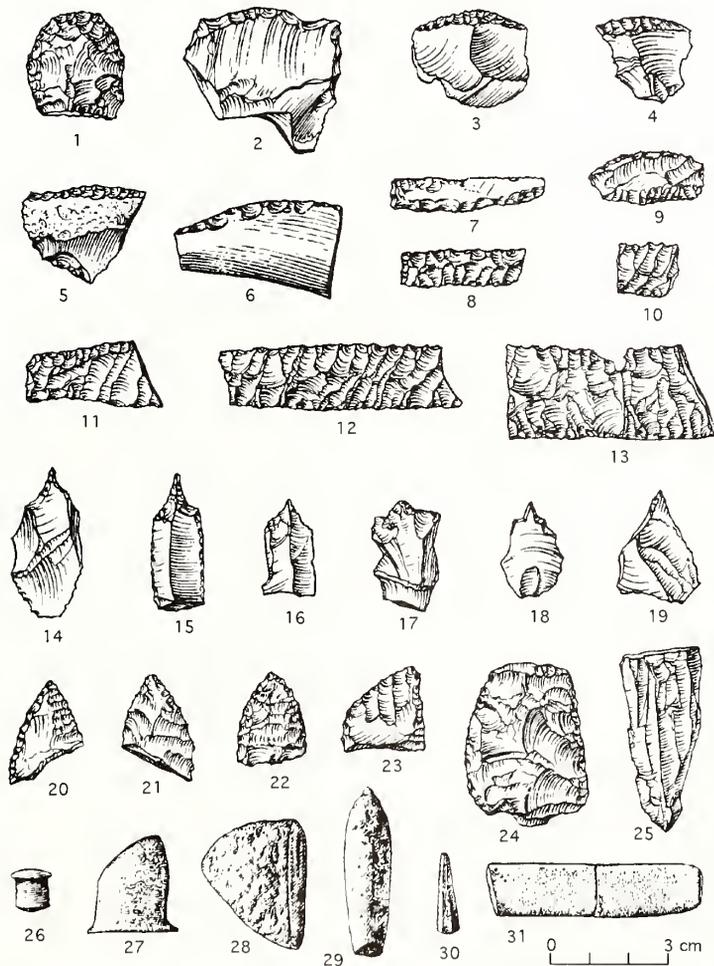
dony, and only a small number were made of gray-green flinty slate. The most distinct group are the perforators (Fig. 37:14–18). There are five such tools, two found in the humus area of the dwelling. All the perforators are of the shouldered type. Two were made from crude blades, three from flakes. Both the shoulders and a thin point 3 to 6 millimeters long were formed by small careful retouch; the body of the tool was small but sufficient to support the fingers. In addition to these typologically distinct perforators, there is a perforator made of a pointed chalcedony flake (Fig. 37:19).

Numerous insets and inset knives were also found. Small insets, which could go into the long grooves of composite tools, are represented by only two specimens (Fig. 37:7, 8). These are narrow (3 mm wide) microblades worked by bifacial retouch;

the thinner edge was inserted into the hafting slot, and they have been hardly damaged by use-wear. The inset knives (six specimens) were also made from blades, but of a much larger size (Fig. 37:10–13). They are represented by fragments measuring between 15 and 22 millimeters long. The length of intact tools could exceed 5 centimeters. Their working edges are heavily worn. Slight asymmetry of edges indicates that the cutting edge was intentionally placed at an angle to the handle. A blade flake with a partially worked surface was probably an inset (Fig. 37:9). The overwhelming majority of inset blades were made of chalcedony, which is stronger than flinty slate. However, there is a beautiful semi-lunar knife in the collection that was ground from a flake of flinty slate (Fig. 37:6). Its cutting edge, like the knives of the Nganasan and Dolgan [and Nenets], is unilaterally sharpened, which makes it helpful for scaling fish and planing wood.

There is also a distinctive tool that is frequently found on Taymyr sites, an

36/ Ceramics from Maimeche I.



37/ Lithic artifacts from Maimeche I.

angular cutter—a small implement with two knife edges that meet at a 70-degree angle (Fig. 37:23). Similar cutters have been found on other sites, with edges that meet at angles varying from 65 to 100 degrees. An artifact made of a large piece of chalcedony, resembling a sidescraper or a fragment of an adze in shape, probably should be assigned to this cutting-tool category. Its convex edge has large facet retouch, and another, slightly concave edge has sharpening retouch and shows evidence of use-wear (Fig. 37:24). Only one carefully finished endscraper was found at the site (Fig. 37:1). It is made of chalcedony and has evidence of retouch. Four other tools identified as endscrapers were made of crude flakes with retouch only on their working edges (Fig. 37:2–5). One endscraper was used to process convex surfaces (Fig. 37:2). There is also an interesting 1.5 centimeter-long micro-endscraper made on a tiny chalcedony flake with a slightly convex working edge with diminutive retouch.

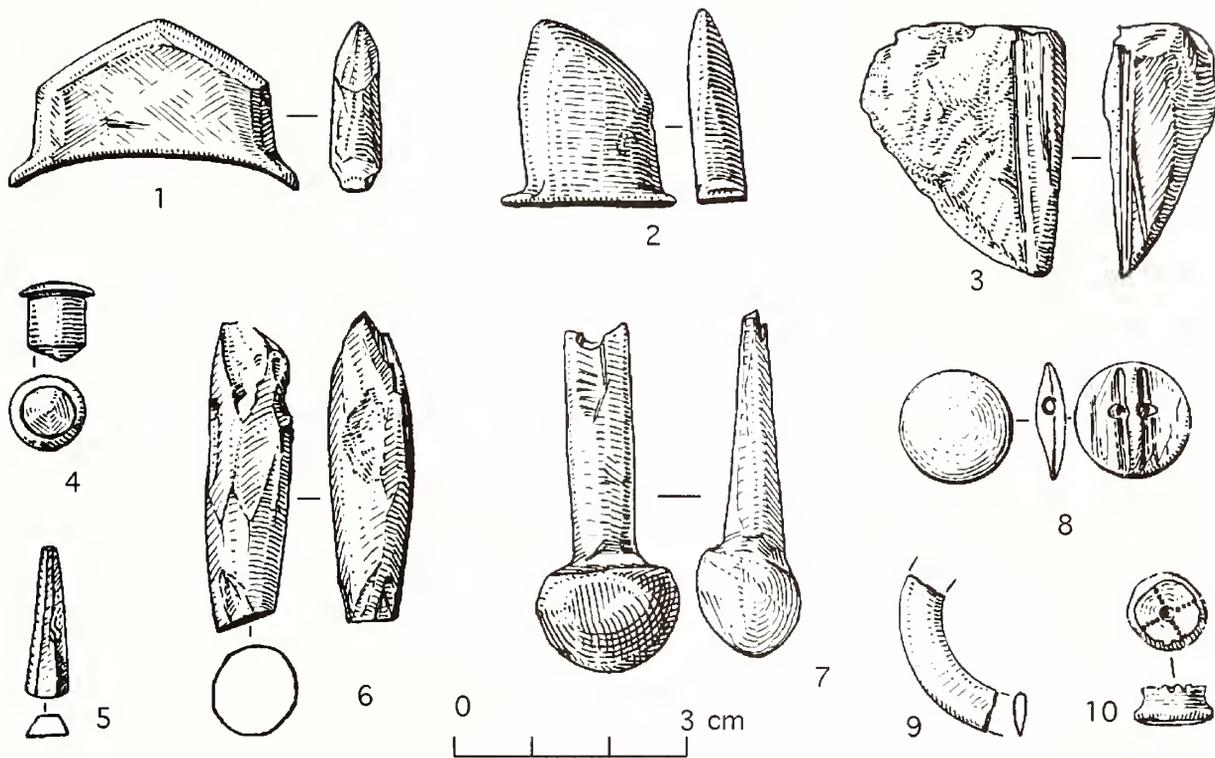
The small number of endscrapers found at Maimeche I is rather unusual for Taymyr, as is the absence of distinct arrowheads. At Maimeche IV, endscrapers are represented by several types, whereas at Maimeche I, only three endscrapers were found, all made casually from chalcedony flakes and with shapes resembling triangular arrowheads with oblique bases (Fig. 37:20–22). However, use-wear indicates they may have served as cutting tools as well. In addition, two fragments were found that probably represent parts of arrowheads.

A slate whetstone fragment was found inside the dwelling. Its other half was found in the fill of a large frost wedge. The whetstone measures 7 by 12 by 50 millimeters. Grooves on its surface indicate that it was probably used to sharpen needles (Fig. 37:31). Pieces of porous sandstone with use-wear indicating an abrasive function were found among flakes. These were used for sawing and grinding slate rocks. Waste flakes processed in this way testify to the manufacture of ground stone tools at the site. Maimeche I inhabitants were occupied mainly with

knapping flinty slate pebbles that they gathered along the banks of the Kheta in the second half of summer, when pebbles were exposed. The rather unusual tool assemblage for an arctic hunting site, with small numbers of endscrapers and arrowheads, can be explained by the use of the site as a tool production locality.

The excavation area yielded 4302 flakes. Chalcedony flakes are few in number, and prismatic blades are equally rare (fifty-nine examples). One conical chalcedony prismatic core was found that had broken and was abandoned on the site. An attempt had been made to remove blades from parts of this core, and then one end of the lower part was refashioned into an endscraper. Only this artifact, among the many chalcedony artifacts, has a white patina. The upper part of the core was abandoned in the dwelling and fell into the fire, where it cracked. The refitted core (Fig. 37:25) is 4.2 centimeters in length, while some of the blades are as long as 5 centimeters.

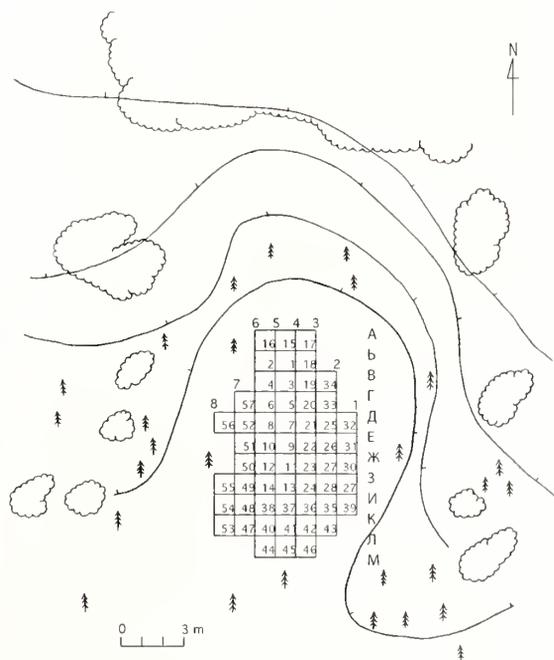
The discovery of a personal ornament made for insertion into a hole pierced in the lip or cheek is the most remarkable artifact recovered from the site (Fig. 37:27, 38:2). In shape this piece resembles a labret and its asymmetry suggests it was a lateral type meant to be inserted near the edge of the mouth; originally it may have been paired with a second ornament (Fig. 39). This piece measures 7 by 25 by 18 millimeters. The labret was cut from light brown steatite and then ground into shape. There is also a knob-shaped ornament (Figs. 37:26; 38:4) measuring 19 millimeters and with a diameter of the head of 10 millimeters. These ornaments may have been manufactured at the site, because a piece of steatite sawn from a nodule was found nearby. According to the information received from local Dolgan, the same or similar steatite is found in the upper reaches of the Maimeche River. Two objects made from poorer quality steatite—a rod-like blank (Figs. 37:29, 38:6) and something similar to a hairpin (Figs. 37:30, 38:5)—were also recovered; however, the function of these two specimens is unclear.



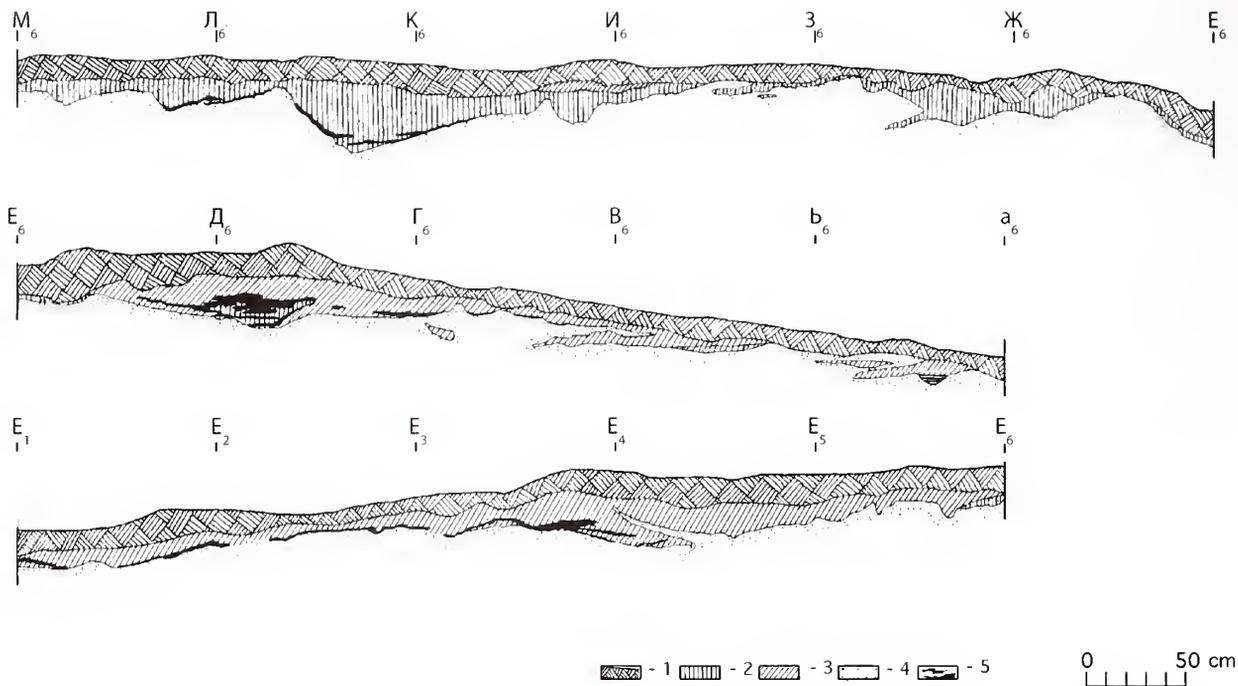
38/ Steatite (soapstone) ornaments and ornament preforms from Maimeche IV (nos. 1, 7-9); Maimeche I (2-6); Khargy III (10).



39/ Reconstruction of lateral labret use.



40/ Map of excavations at Maimeche IV.



41/ Stratigraphic profile of Maimeche IV. Legend: 1 = upper soil (turf); 2 = yellow sand; 3 = red-brown sand; 4 = gray, loamy sand; 5 = charcoal lenses.

Maimeche IV is situated about one kilometer from Maimeche I and occupies a small point on the old bank of the Kheta River. The flat surface of the point was almost entirely covered by the 61-square-meter excavation area (Fig. 40). The main part of the site was uncovered in 1968, and the excavation area was expanded in 1972. Stratigraphy is as follows (Fig. 41): (1) a turf layer (9–12 cm); (2) yellow or reddish-brown, loamy sand 3 to 20 centimeters thick; and (3) gray, loamy sand. The order of the deposits is complicated by frost wedges and heaves. In 1968, permafrost was encountered 15 centimeters below the surface and greatly impeded excavation. We noted a thin loamy lens on the surface of the frozen layer. This lens was probably caused by soil being washed into the space vacated by melting snow and ice.

The artifacts are associated with the second layer, where remains of three hearths were found. The hearths appear as diffuse, ashy spots without clear boundaries. The lenses of Hearths 1 and 2 are very thin. Hearth 3 consisted of several charcoal-

stained, loamy lenses with a typical thickness of 12 centimeters. Because of cryogenic deformation of the cultural layer, the artifacts lay at different depths, often in the subsoil following ice wedge channels. Organic materials were poorly preserved. There was no charcoal, only charcoal stains. The crown of a single reindeer tooth was the only bone material recovered.

The Maimeche IV assemblage is similar to that of Maimeche I. Ceramics were poorly preserved and are represented by only a few small fragments with net impressions on the external surfaces (Fig. 42). The net had small mesh (6 by 3 or 6 by 4 mm) and was woven from thin (sinew?) threads 0.20 to 0.25 millimeters thick. On many sherds, the mesh did not leave imprints and the surface is covered only with knot impressions. Some sherds have smooth surfaces. Sherd thickness is about 5 millimeters. The paste contains hair.

Judging by the rims and decorations, the sherds represent fragments from four vessels. Their rims were thickened from the outside by the addition of

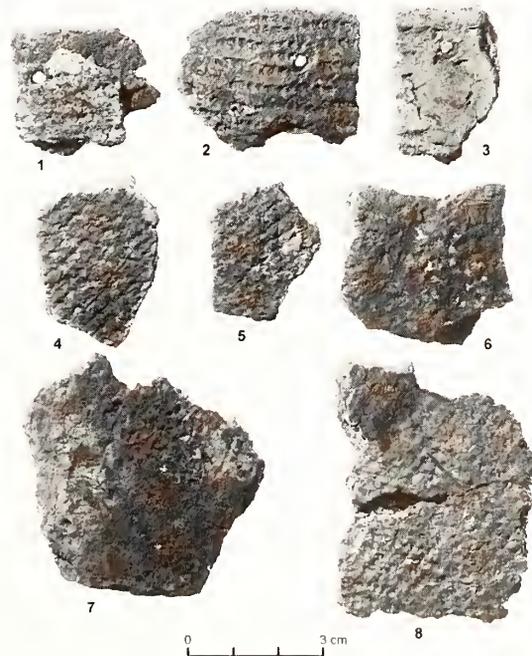
a wide, thin coil. Rims of two vessels were decorated with horizontal comb stamping. The rim of the third vessel has lines drawn in a zigzag pattern with pits located at the top of the zigzag. The rim of the fourth vessel carries a pattern of horizontal rows of shallow pits. A row of holes, pierced from the outside with the aid of a thin rod, is located slightly below the rim. There are also fragments of a round-bottomed vessel decorated with three lines that cross in the center of the bottom, forming a “star” shape. The pots were miter-like in form and rather small; the reconstructed rim would have been about 17 centimeters in diameter. The edges of some rims are straight.

Knapping of pebbles of flinty slate was carried out here, just as at Maimeche I. Accumulations of slate flakes were found near the hearths. More than 1400 of these flakes were found in an area of 4 square meters south of Hearth 1. In the same area we found a large flat cobble with a depression in the center—an anvil analogous to those found at Maimeche I. A number of slate flakes lay nearby. One meter away from the anvil was a large split pebble of flinty slate. Hammerstones were not found at the site, but on the northern side facing the river, where traces of flint knapping were sparse, we found small pebbles of gneiss about 3 centimeters in diameter. Nine such pebbles were recovered in Section 18. Similar pebbles, intentionally selected by size, lay in neighboring sections. They have no traces of wear. These pebbles lay as if stretched in a line, suggesting that they may have been used as net weights.

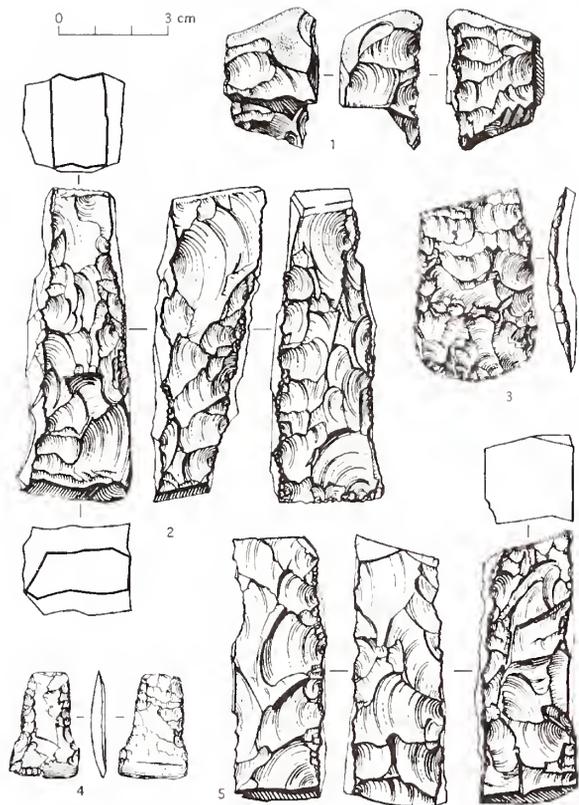
Although artifacts were manufactured of flinty slate at this site, including blades, this raw material was used primarily to make adzes with rectangular cross-sections. Three unfinished flaked tools of this kind were found (Fig. 43:1, 2, 5). Flakes removed from ground adzes were found among numerous flat flakes, mainly in the southern part of the excavation. On some of these, ridges are visible between the ground surfaces. One of the surfaces, as a rule, represents the remnant of the striking platform.

An adze working edge is clearly visible on one of the flakes. The width of the adze near the working edge is 3.7 centimeters. Another flake was removed from a lateral side of the same adze near its butt; judging from the thickness of the flake, the adze was 1.6 centimeters thick. Flakes with traces of grinding differ in color and in quality of slate, suggesting they may have been detached from three different artifacts. Both the intentional splitting of ground tools and the secondary use of the flakes have been reported by Okladnikov for sites in the Lena region—for example, the Kullaty and Syalakh Lake sites (Okladnikov 1945:89; 1950b:61). Pieces of coarse-grained sandstone served as abrasives for sharpening ground tools.

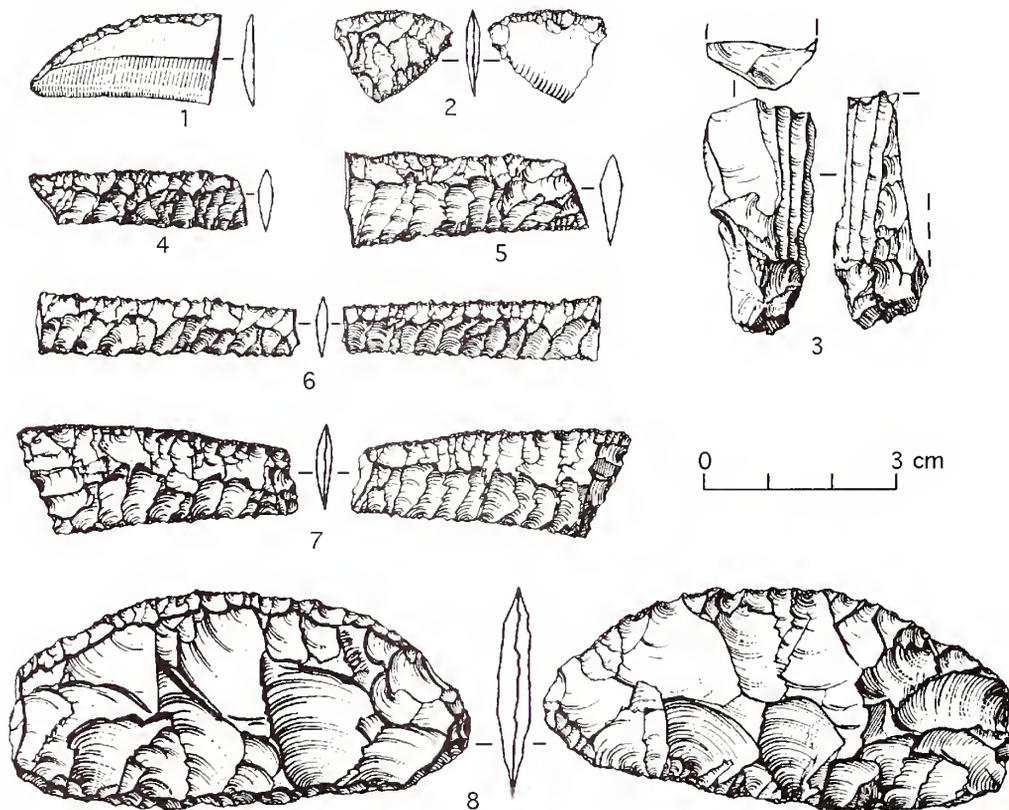
More than 3,000 flakes and chips of flinty slate were found in the excavation area. Chalcedony was also knapped here, in contrast to Maimeche I. The overwhelming majority of microblades were made of these raw materials. Some artifacts of this kind were also made of jasper. In all, 126 prismatic blades were found. There are flakes removed from chalcedony cores (Fig. 44:3), a striking platform of a prismatic



42/ *Ceramics from Maimeche IV.*



43/ Adzes and adze preforms from Maimeche IV.

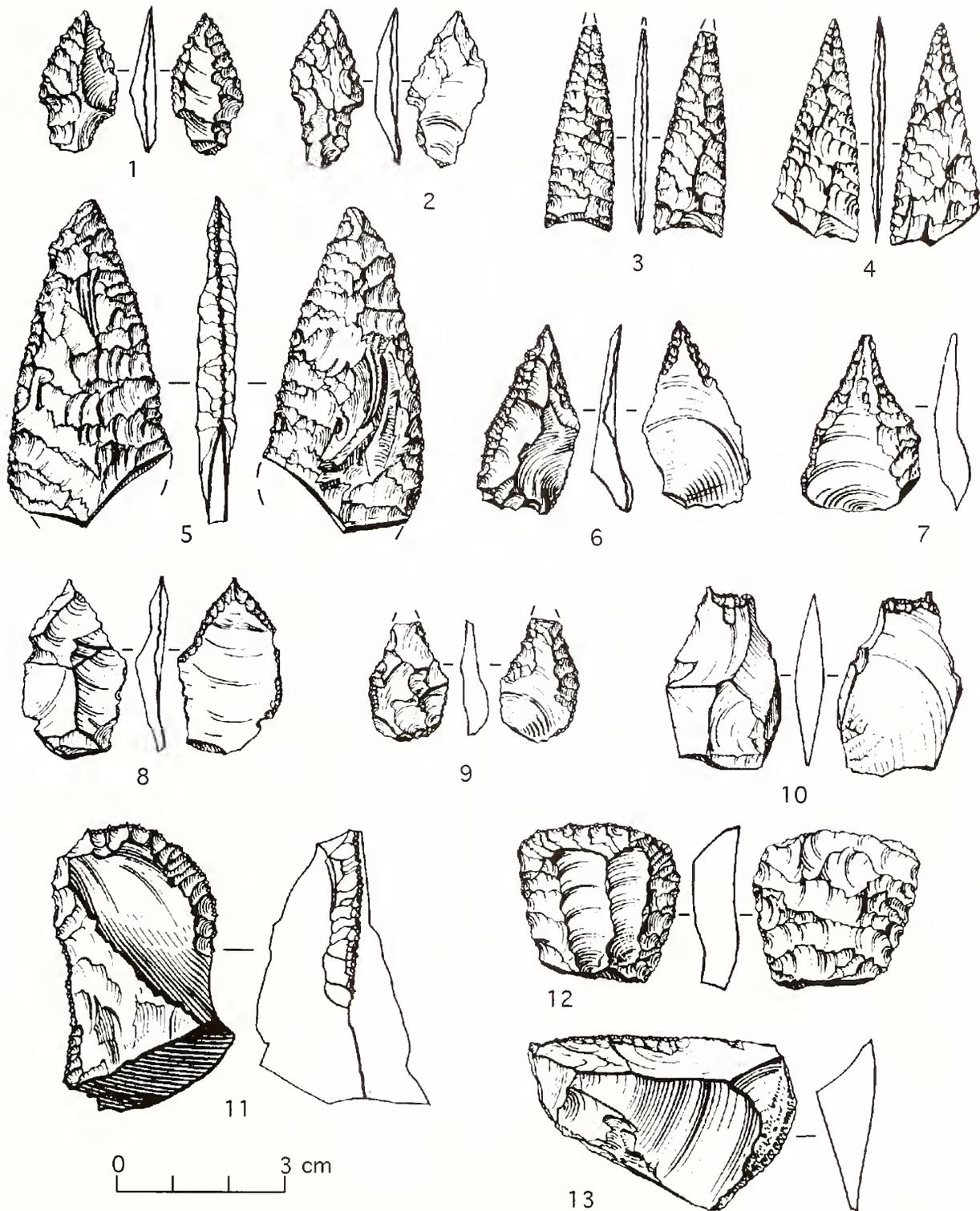


44/ Lithic artifacts from Maimeche IV.

core of flinty slate, and amorphous chalcedony pieces with scars left as the result of blade removal; intact cores are absent.

Most tools were made from chalcedony. The collection of slate tools includes, in addition to the above-mentioned adzes, a half-finished half-moon-shaped knife (Fig. 44:8), a crescent-shaped ground knife (Fig. 44:1) and a small chisel (Fig. 43:4). The half-moon-shaped knife is flaked over its entire surface; its edges are retouched; both the cutting edge and the butt are denticulate. Black flinty slate was used to manufacture the ground knife. One of its sides is flat, another has three edges. The edges of the butt are retouched. The chisel is made on a flake. This tool is retouched; only its working edge was bifacially sharpened with the aid of an abrasive. The chisel has a stem fashioned by steep retouch and was intended for fastening in a handle.

A chisel made from a large chalcedony flake (Fig. 43:3) was probably used for wood processing.



45/ Lithic artifacts from Maimeche IV.

The concave flute of the tool was formed by the natural curve of the flake. Only the dorsal surface is retouched. Retouch sharpening of the working edge covers the dorsal side only. Cutting tools are represented by two chalcedony knives of the inset type (Fig. 44:4, 5); a large inset of light pink jasper (Fig. 44:6); a fine chalcedony knife (Fig. 44:7); and a small knife made from a chalcedony flake. The first three tools were carefully worked by flat bifacial retouch. There is also a fragment of a leaf-shaped knife and a fragment of a large, unfinished chalcedony knife. The collection of cutting tools includes fragments of two small completely retouched insets and a blade inset, one edge of which is bifacially retouched. The working edge of one chalcedony inset (unfortunately represented by only a fragment) was turned into a saw edge with small, very regular teeth made by carefully placed denticulate retouch.

The group of perforators includes six tools (Fig. 45:6–10). These were made of flakes; only their points and the adjacent shoulders were formed by retouch. Only one perforator was made of flinty slate; the rest are chalcedony. There is also a small blade flake which, based on its shape, resembles a

perforator. Originally it probably served as an inset, as indicated by the retouch sharpening its edges, and was later used as a notched push-plane. Two notches were made on one of its ends by steep retouch, and this produced something like a point. Another flat chalcedony flake also has notches. A number of flakes have retouch and endscraper use-wear. A massive chalcedony blade-flake serves as an example of this type (Fig. 45:13). Its high, straight working edge shows retouch that formed during wood processing. The opposite edge is heavily worn from skin processing and is rounded and lustrous. Linear use-wear can be seen on this tool with the aid of a binocular microscope.

An endscraper made of a massive chalcedony flake (Fig. 45:11) has a rounded working edge shaped by steep retouch. There are numerous nicks on the working edge caused by processing some hard material such as bone. One chalcedony blade was turned into an endscraper, and another very carefully made endscraper was produced from smoky brown chalcedony (Fig. 45:12). This piece was retouched from all sides and can be classified as a truncated backed endscraper with a convex working edge. The endscraper was probably hafted. The working edge of the tool was heavily damaged from scraping some hard material. A series of unilaterally retouched blade-flakes (four specimens) were used as sidescrapers.

Eight arrowheads, most of which are broken, were found at the site. An arrowhead with a broken point (Fig. 45:3) and a fragment of a small arrowhead, both made of jasper-like flint, belong to the type of elongated-triangular arrowheads characterized by concave bases. A chalcedony arrowhead with a broken base may belong to the same type (Fig. 45:4). These tools were made very carefully. Two triangular-tanged arrowheads were more casually made from chalcedony flakes (Fig. 45:1, 2). The ventral surfaces of these flakes were treated only along the edges. The same may be said regarding three leaf-shaped arrowheads represented by their bases only. A base



46/ *Reconstruction of medial labret use.*

of some other tool, probably a dart or spear head, was also recovered.

The most remarkable finds from Maimeche IV are ornaments made of gold-colored steatite, the same raw material found at Maimeche I. The repeated discovery of such objects associated with net ceramics and a lithic complex identical to the Maimeche I complex eliminates any question of whether these materials date to different time periods. In the northern part of the excavation area we found a round protuberant button with an opening made by double-sided boring (Fig. 38:8) and a pentagonal labret with a concave bottom and projections near its base (Fig. 38:1). It was probably worn through a hole beneath the lower lip and rested against the gums. The projection prevented it from slipping out. The symmetry of the piece indicates that it belongs to the medial type, i.e., it was worn beneath the lower lip rather than at the sides (Fig. 46).

A fragment of a steatite rim was found in the southeast corner of the excavation area. The rim is flat; external diameter is 30 millimeters; and internal diameter is 25 millimeters (Fig. 38:9). A mushroom-like pendant (Fig. 38:7) lay in Section 22, near the center of the excavation area. A suspension hole was made by double-sided boring on the flattened end of its stem. At this point, the pendant was broken.

Circlets, probably representing bracelets, made of slate, amber, and bone are found frequently at Neolithic sites of the Eurasian forest belt from the Baltic region to the Aldan River in Yakutia. A fragment of a ring of white nephrite was found in Layer V of Belkachi I on the Aldan River. This layer contained materials belonging to the Belkachi culture. One radiocarbon date (LE 775) was obtained: 4880 ± 90 B.P. (Mochanov 1969:91, table 89:1, 4). In the Angara region, judging by finds from the Tsiklodrom cemetery, marble and nephrite circlets were being made by Kitoy culture people (Khoroshikh 1966: fig. 5:80; Okladnikov 1950c:385, fig. 122). Such artifacts were also used during the Early Bronze Age

when they became the favored adornment of people of the Glazkovo culture (Okladnikov 1955b:269). A fragment of a nephrite circlet associated with bronze tools was found in Burial Mound 9 of the Ust-Belsky graveyard on Chukotka (Dikov 1969:fig. 29).

The remaining ornaments from Maimeche I and IV are almost unique. There is a single comparative specimen for the mushroom-shaped pendant (Dikov 1979:fig. 61). This comparison is striking for a number of reasons. First, the object is nearly identical to the pendant from Maimeche IV in both shape and size and is made of a soft stone. Second, the piece was found on the Kamchatka Peninsula—extremely far from Taymyr. Third, the Kamchatka specimen dates to the Palaeolithic (Dikov 1979:58) and comes from Layer VI at the Ushki site, which is earlier than $10,360 \pm 350$ B.P. (Mo 345) and $10,760 \pm 110$ B.P. (MAG 219). [New radiocarbon dating and analysis of the early levels of the Ushki site have been reported by Goebel et al. (2003). —*Ed.*]

Beginning in the first half of the third millennium B.C., so-called “buttons with bored V-shaped holes” made of amber are known from Neolithic sites in northern Europe, especially in Latvia (Vankina et al. 1973:214). However, none of these finds resemble the buttons from Maimeche IV. Closest in date are objects of bone that formed part of an ornament string recovered from the Afanasyeva Gora cemetery on the Yenisey River. The ornaments were worn on the left hand of a woman buried in one of the graves. The interment dates from the end of the third millennium B.C. (Gryasnov 1969:50, pl. 3).

The most notable aspect of the pin-like object from Maimeche I was its head portion, as the stem was probably meant to be inserted into a base. Similar pin-like adornments made of walrus tusk have been found in ancient Eskimo burials at Uelen and Ekven on the Russian side of Bering Strait. Identified as “nail-like” objects by Sergei A. Arutiunov and Dorian A. Sergeev, these artifacts served to decorate or “embroider” wooden objects (Arutiunov and Sergeev 1962:15; 1969:79, fig. 42:1–5; 1975:35, 36). The

same function may be suggested for the pin from Maimeche. [Similar pins have been used by North American Eskimos for two thousand years as “wound plugs” to pin a sea mammal’s wound closed in order to prevent the loss of blood between killing and butchering. —*Ed.*]

In connection with this find it is necessary to mention a steatite rod obtained in the course of excavations of the Tura I site in Evenkia. Its length is 13 millimeters and diameter is 7 millimeters. One end of this piece is rounded and highly polished. Although differing from the pin-like object in the absence of a head, the rod resembles it in raw material—both appear to be made of the same raw material—and second, in function. There are also buttons with tangs or attachments from burials in the above-mentioned cemeteries. Arutiunov and Sergeev have suggested that round buttons were probably used as ornaments on clothes, while other types most likely functioned as hunting equipment (Arutiunov and Sergeev 1969:144). These links between Taymyr and the North Pacific coast suggested by similar ornaments become more evident when we consider the Taymyr labrets.

Besides the labrets from the Maimeche sites, a similar ornament was found in eastern Taymyr in the vicinity of Lake Labaz at the Khargy III site, which dates to the Early Bronze Age.

Beyond Taymyr, labrets made of walrus tusk have been found by Dikov on the northern coast of the Chukotka Peninsula at the mouth of Ikolivrunveem River in 1963 (Dikov 1977:187, table 166:12). This piece is a flat, medial-type labret but has a short body, unlike the labret from Maimeche IV. This piece belongs to the Puduk culture and dates to about A.D. 900. Another medial labret made of steatite and similar to the Maimeche piece was found in Layer II at Ushki II and dates to the Developed Neolithic, but the radiocarbon date $1,052 \pm 25$ B.P. (MAG 32) indicates that it is closer in age to the Puduk labret (Dikov 1969:209, fig. 59, 114; 1977:73). A small

labret from the Avacha River in southern Kamchatka is similar to the Maimeche finds (Ponomarenko 1976: table 1:17). This object, as well as the those from Layer II at Ushki, belongs to the Tarinskaya Neolithic culture, which dates to the second and first millennia B.C. The Eskimo–Aleut traditions notable in this region can be traced to the late Palaeolithic Layer VI at Ushki, where labrets were found in 1978 (Dikov 1979:126, 127).

Finally, there is an object of white nephrite from the Kalkey site on the Turukta River (the Middle Lena). Based on its lithic inventory and ceramics, this site dates from the third to the beginning of the second millennium B.C. (Okladnikov 1943:fig. 6; 1955a:79, 80, color plate). The nephrite object is described as an ornament or amulet. It is identical in shape to a medial labret but is larger in size. Given ethnographic examples of even larger and heavier lip adornments, one cannot deny the possibility that this piece was used as a labret.

Even if the ornament from Turukta was not a labret, materials from Neolithic Taymyr contribute to the ancestry of such objects, which were distributed throughout the northern coast of the Pacific Ocean and even occur in South America. Investigators studying labrets tend to believe this custom could not have originated in the Arctic, where climatic conditions do not favor it. William H. Dall suggested that labrets spread north from Central America (Dall 1884), and Charles E. Borden supported this view, suggesting that Eskimos and Aleuts may have borrowed labrets from Northwest Coast Indians (Borden 1962:13). Other scholars propose that labrets reached Eskimo–Aleut cultures from the South Pacific along the Asian coast through Japan, the Kurile Islands, and Kamchatka (Liapunova 1979:201, 202; Vasil’evskii 1973:95). Dikov has suggested that simple lip adornments may have diffused from north to south together with other Eskimo–Aleut cultural elements. He considered the Taymyr ornaments to be relics of the culture that penetrated Taymyr from the

south—part of the same cultural and ethnic tradition that included the late Palaeolithic of Kamchatka (Dikov 1979:181, 208).

Given the discovery of labrets on Taymyr, the hypothesis has been advanced that groups of sea mammal hunters from the Bering Sea coast may have reached this area from the arctic coast to the east (Gurvich and Simchenko 1980:145). However, because direct cultural contact between Taymyr and Northeast Asia can be traced neither in the Mesolithic nor in the Neolithic, there is no reason to consider Kamchatka the region where this practice appeared for the first time, even though this is where the earliest labrets are known. Therefore, eastern Siberia should be considered the region from which the custom of wearing lip adornments and ornaments such as the mushroom-shaped pendant originated. From there such objects could penetrate Northeast Asia as well as America and Taymyr.

The radiocarbon dates obtained for the Mesolithic (4070 B.C.) and the Early Bronze Age (1150 B.P.) of Taymyr, which are supported by dates from stratified sites in Yakutia, leave too broad a chronological period into which the Taymyr sites of the Developed Neolithic, the Maimeche sites among them, can be placed. This period may be reduced by one thousand years due to the existence of the early Neolithic sites of Taymyr and the coeval Isakovo and Syalakh cultures of East Siberia. The net ceramics of these cultures lack the thickened rims so characteristic of the Maimeche vessels. In the Baikal region the thickening of rims and small holes near rim edges are characteristic of ceramics of another type, without net imprints. The surfaces of these vessels are covered with cord impressions. The rim thickening, as a rule, is triangular in cross-section. The vessels were decorated with lines left by rocker-stamping and sometimes also by comb impressions. Such ceramics are represented in Layer IX of the Ulan-Khada site, where they lay above the stratum containing the net ceramics and under the

stratum with Ust-Belaya ceramics. A date of 3660 ± 60 B.P. (LE 883) is available for the latter (Khlobystin 1964a; 1973b).

Therefore, these ceramics can be dated to the end of the fourth and the very beginning of the third millennium B.C. I have identified them as the Posolsk type because they have been found in great numbers at a site near Posolsk on Lake Baikal. Specimens of this type are distributed from the Trans-Baikal zone to the Yenisey (the Nyasha site) and are found on sites in Evenkia. In the Trans-Baikal zone, this ceramic has no holes at the edge of the rim and displays different ornamentation. It may be called the Trans-Baikal variant of the Posolsk type. Evidently the Trans-Baikal zone was the center from which corded ceramics spread to the Angara, the Middle Amur, and to Yakutia at the end of the fourth and the beginning of the third millennium B.C. As early as 1970, Valerii N. Chernetsov documented the diffusion of the Daurian culture with cord-decorated ceramics, which took place in the third millennium B.C. (Chernetsov 1973:15–17).

In Yakutia, Belkachi ceramics correspond to those of the Posolsk type both in appearance and period. However, they differ slightly in ornamentation and in rim thickness. Thus, Belkachi ceramics have a half-moon-shaped thickening of the rim cross-section. This links the Belkachi vessels with the pot from Maimeche. As noted above, the Belkachi culture is characterized by corded ceramics. However, in Layer II of the site excavated by Okladnikov at the Kullaty River mouth on the Middle Lena—in territory where the Belkachi culture was distributed—fragments of pots with the half-moon rim thickening and with net-impressed surfaces have been found in association with typical Belkachi ceramics (Okladnikov 1950b:57, table XV, 5) and are nearly identical to the ceramics from the Maimeche sites.

From the typological point of view these ceramics are intermediate between net ceramics without thickened rims and corded ceramics with thickened

rims. Either the appearance of the Maimeche ceramic style was a particular stage in the development of the material culture of the ancient inhabitants of the Lena Basin; or they co-occurred with corded ceramics, as seen at the Kullaty site; or they represent an independent culture—a question that can be answered only with additional fieldwork, especially between Taymyr and the Middle Lena. The possibility that Maimeche ceramics are the diagnostic feature of an independent culture, coeval to some extent with Belkachi, seems most plausible because Maimeche ceramics are found in an unmixed context in Taymyr but have not yet been found on the Aldan.

The Maimeche culture probably resulted from consolidation of Belkachi peoples with the indigenous population of Taymyr that lived there since the beginning of the Mesolithic. Boyarka I is interesting in this regard because net and corded ceramics were found there in association. On one hand, it may be a chance find; on the other, it may reflect the coexistence of Taymyr aborigines with newcomers. As a hybrid, Maimeche culture must be to some extent coeval with Belkachi sites or be slightly younger, i.e., dating either from the third millennium B.C. or to the very beginning of the second millennium B.C.

Thus, in the third millennium B.C., new methods of ceramic manufacture, connected with a new rim shape and the use of a cord-wrapped stick, spread over East Siberia. As has already been observed for the Early Neolithic Period, net ceramics, although appearing at first glance rather uniform, continued to show specific local features that allow us to trace differences that existed between the Angara and Yakut provinces. The corded ceramics of these provinces had specific features. In Eastern Europe, the spread of ceramic technology employing the stab-drag design was adopted by Mesolithic peoples. These ceramics spread from a single center, supposedly from the Southern Urals near the Caspian Sea. Therefore we see not a single culture distinguished by their similar ceramics, but a number

of related Early Neolithic cultures with different Mesolithic roots displaying differences in ceramic decoration. Thus, the spread of the early ceramics in Eastern Europe was not a phenomenon connected with the spread of an ethnic group, but rather the result of cultural diffusion.

The same process took place in Eastern Siberia in the Developed Neolithic Period. Although corded ceramics with externally thickened rims appeared first in the territory occupied by a single ethnic group, its spread from the Yenisey River to the Okhotsk Sea, and from the East Sayan Mountains and the Yablonovy Range to the northern coastal regions does not mean that this entire region was invaded by a single ethnic group. Rather it was the new “ceramic fashion” that spread, and this fashion was perceived differently in different regions. We find one variety of corded ceramics in the Angara-Baikal region and, judging by some isolated finds, in Evenkia (the Posolsk ceramics). The Belkachi ceramics are found in the southeastern and central parts of Yakutia; from there, Belkachi ceramics were brought to Taymyr and far northeastern Asia. The third variant, net ceramics with thickened rims, is present at Maimeche sites in East Taymyr.

All of these varieties were probably connected with different ethnic communities that appeared in the Mesolithic and Early Neolithic. Iurii A. Mochanov has written that Belkachi ceramics “can be considered to be a proper technological adoption rather than connected with the arrival of a new ethnos” and “the Belkachi culture appeared as a result of the autochthonous development of the Neolithic tribes of Yakutia, influenced by contacts with the population of adjacent regions” (Mochanov 1969:181). This may also be true for Maimeche culture, which resulted from cultural development of part of the Neolithic population of Yakutia and eastern Taymyr. Its association with Belkachi culture manifests itself not only in ceramics but also in its lithic inventory. We shall have to enumerate almost all of the tool types found at Maimeche sites if we are to compare

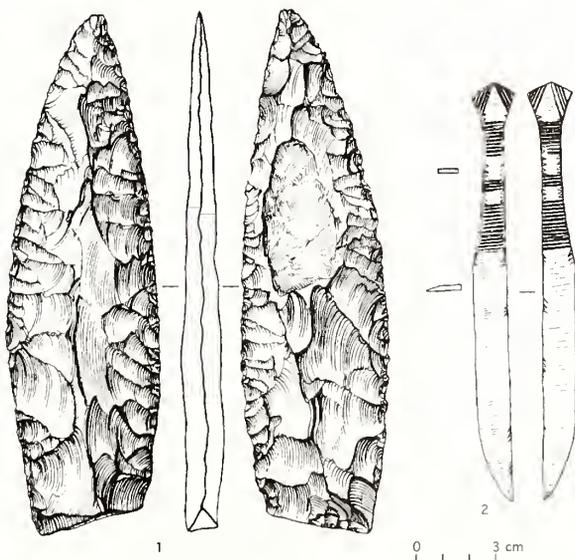
them with tools found at Neolithic sites in Yakutia. Nevertheless, the presence of certain ceramics and ornaments at Maimeche sites demonstrates the special character of such assemblages.

There are other sites in Taymyr, besides Maimeche, with net ceramics that date to the third millennium B.C. Ceramics with large square net-mesh impressions were found at Abylaakh IV, located on the right bank of the Kheta River one kilometer downstream from Abylaakh I. The net was woven from thin threads. The thickness of the sherds is 6 millimeters. Fragments of a thin-walled vessel (2.5 to 4 mm) with a smooth surface and bearing waffle-like impressions were also found. This vessel dates to the Early Iron Age and was associated with forty-four prismatic blades and a single ridge flake in the cultural layer. Only three blades were made of chalcedony and one of flinty slate, while the others, as well as a flake removed from a flat-backed core, were of white flinty rock. Numerous small flakes are of the same raw material. Three of the blades show marginal retouch, which occurred when the tools were used for scraping and cutting. A dihedral burin was made of a flake of

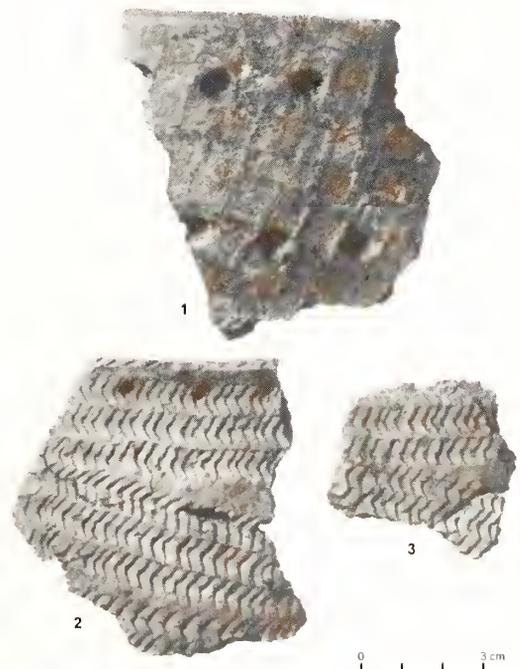
some kind of white rock. A shouldered perforator on a flake and a knife-endscraper were made of the same raw material. In addition to these tools, there was also a fragment of a chalcedony endscraper, two retouched chalcedony flakes used for scraping, and a large whetstone made from a slab of gray flinty slate. Two sides of this piece and numerous grooves on its surface were apparently used to sharpen metal tools. This artifact is the only object in the assemblage that can be connected with the waffle ceramics. The remaining tools, together with the net ceramics, date to the Developed Neolithic.

Small sherds of net ceramics and flakes of flinty slate, chalcedony, and flint were found at Ust-Boyarka, on a point downstream from where the Boyarka River flows into the Kheta. Fragments of net ceramics were also found among fragments of Early Iron Age vessels on sites such as Malaya Korennaya I and III on the Pyasina River. These sites yielded stone tools and blades that date to the Developed Neolithic.

There are several sites that lack ceramics but, judging by the lithic inventory and raw materials (pink jasper, flinty slate, and chalcedony), are nonetheless



47/ Lithic from Dyupkun Lake (left) and iron knife from Lake Glubokoye (right).



48/ Ceramics from Istok Pyasiny (1) and Ust-Polovinka (2, 3).

similar to Belkachi and Maimeche sites. These sites (Novaya VIII, Khargy I and II, Labaz I, V, VIII-XII, Tagenar IV and V, Tagenar Lake III, Volochanka II) can be dated to the third and the first half of the second millennium B.C. Different raw materials are represented at Crestovy Mys, Bludnaya I, and Novorybnoye V.

I have identified these sites as Neolithic, but I may be in error, as many Neolithic-type tools continued to be manufactured into the Early Bronze Age. Only a small number of tool types help us identify non-ceramic sites that date to the Early Bronze Age. Another diagnostic feature is the widespread use of chalcedony.

In the southern part of Taymyr, the Developed Neolithic is represented by a large spearhead (Fig. 47:1) found on the northwestern shore of Dyupkun Lake (Khlobystin and Studzitskaia 1976). In size, shape, and treatment it resembles some knives and daggers from the Poligus and Baikit sites on the Podkamennaya Tunguska River and from the Tura I site (all of which were investigated by Andreev) as well as finds from the Serovo burials in the Baikal region (Okladnikov 1950c:figs. 63–65). Two small sites situated on the same shore of Dyupkun Lake can be dated to the Neolithic or Early Bronze Age (Khlobystin 1978a).

A site with ceramics of another type existed in western Taymyr in the third millennium B.C. at the same time that net ceramics were in use elsewhere. This site was uncovered at the stratified Ust-Polovinka settlement, located on the left bank of the Pyasina River downstream from the mouth of the Polovinka River, a tributary of the Pyasina. Here in sandy deposits on the first terrace, cultural layers contained the remains of several settlements that replaced each other over several centuries beginning in the middle of the first millennium B.C. I shall describe the finds connected with these settlements in Chapter 4, but turn now to the description of materials from the earliest cultural layer, which dates to the Neolithic.

The terrace had been damaged by numerous blowouts, but a small section with undisturbed cultural deposits had been preserved and excavations were carried out in these sections. The remains of the earliest cultural layer were noted near Excavation Area III in one of the blowouts. The overlying deposits had been eroded but thanks to the firmness of the humus layer, a small section of the cultural layer was protected from destruction. According to the profile, the depth of overlying sediments was about 0.8 meters. The cultural layer was discovered in a 1.5 square meter area and consisted of a thin (0.5 to 1.5 cm) lens saturated with charcoal and humus, underlain by pure, coarse-grained sand. The concentration of charcoal fragments was extremely high in one area in this layer. This may have been a hearth, for we found fragments of the upper part of a pot (Fig. 48:2, 3).

The clay used for shaping the pot contained grit. The rim of the vessel is slightly everted, and the edge of the rim is flat and covered with impressions made by a stick with a triangular notched end. The reddish-brown exterior of the sherd was decorated with the same type of ornament. Three decorative lines are found under the rim while other lines, made using the same stick, diverge from them at a sharp angle and descend toward the bottom, leaving a triangular zone devoid of imprints. A row of small shallow pits also encircles the vessel beneath the rim. The thickness of the vessel walls is 7 millimeters, and toward the rim the thickness decreases to 8 millimeters. In addition to this sherd, the layer contained a perforator made from a blade of flinty slate. One of its ends was formed as a point with an oblique edge by small sharpening retouch. The retouch was made along both edges from the ventral side and on the oblique end from the dorsal side.

One radiocarbon date was obtained on charcoal from the cultural layer. According to this date the age of the layer is 4060 ± 120 B.P. (LE 1017), about 2110 years B.C. The date corresponds to the ceramic

materials, which appear to be Neolithic. The Neolithic ceramics that were found at the Ust-Polovinka site have no analogues among the ceramics from the Lena Basin. Even if such ceramics were to be found there some day, we would have to consider them to be unrelated because they would have typological roots neither in the Syalakh culture, nor among the ceramic materials of Belkachi. Ceramics similar to those from Ust-Polovinka are found in the taiga regions south of Taymyr, on the right tributaries of the Yenisey River.

In 1963, during a survey of sites in the vicinity of Baikit village, situated at the middle course of the Podkamennaya Tunguska, Andreev collected ceramics that he described as "very original" (Andreev and Fomin 1964:94, fig. 27:4). They lay in a place designated Point I and were associated with various stone artifacts. Andreev gave only a brief description of these ceramics (Andreev 1963), represented by only a few sherds from several vessels. Their rims are thickened relative to their walls and slightly turned in. Edges of the rims are decorated with oblique lines made by a rocker stamp. There are small round pits beneath the edges of the rim. The same lines cover the exterior of the vessels, and on some of the sherds the lines form a string of triangles. This design was noted in the article by Andreev. However, there are some sherds in the collection that display a zonal design: several sherds carry horizontal lines from which other lines, made by a rocker stamp, diverge symmetrically at a 60 degree angle. The ceramics are well-fired and the temper contains grit. No base fragments were identified. Andreev later found fragments of vessels covered with comb or smooth stamp impressions at Baikit I (Andreev and Fomin 1966:106, Fig. 46:6, 7, 9). Rows of oblique impressions alternate with horizontal zigzags. Andreev considered both types of ceramics identical to ceramics from the Chadobetz site on the Middle Angara. The question of the coexistence of these two types remains open, although there is no doubt that they belong to different cultures.

Because the Baikit I materials were surface finds, it is impossible to associate the lithics with a given ceramic type. However, the lithic inventory contains some types that could not belong to the same complex as the ceramics. Stone artifacts are represented by triangular arrowheads with straight bases, fragments of retouched knives with convex backs, endscrapers on flakes, and large knife-like blades. There are blanks, fragments, and intact specimens of rectangular ground adzes that are common on taiga sites but rare in the tundra. There are twice as many flakes as blades. Blades were used as knives and show evidence of utilization. These blades were removed from prismatic and conical cores. Only five cores were found, but their actual number must have been considerably greater. The majority of artifacts are made of hornstone-like rocks, in addition to raw materials such as dolerite, jasper, and other flinty rocks.

Andreev dated these materials from the end of the third to the beginning of the second millennium B.C. However, we have every reason to date the linear-pit sherds to the middle and second half of the third millennium B.C.

The comparison of the linear ceramics from Baikit I with those from the Polovinka River mouth demonstrates a great resemblance between the pots manufactured by the Neolithic inhabitants of the Pyasina River and those of the Podkamennaya Tunguska River. These ceramics can be combined into a single type—the Baikit type. The correspondence between the dates proposed by Andreev with the radiocarbon dates enables us to assign the Baikit ceramics distributed on the banks of the Yenisey in Evenkia and on Taymyr to the end of the third millennium B.C. The discovery of these ceramics on the Pyasina River reflects the penetration of their makers from Evenkia into Taymyr. The fact that the Baikit ceramic complex differs sharply from the coeval ceramic materials of East Siberia demonstrates the ethnic independence of its creators and the distinctiveness of their culture. It seems

likely, therefore, that a distinct Baikit culture will be identified in the future.

The similarity of the Baikit ceramics to those from the Trans-Ural region was noted for the first time by Chernetsov, who compared the Baikit materials with the ceramics of Kozlov Mys I, which is situated on the shore of Lake Andreyevskoe in the Tyumen region. Chernetsov believed that the entire Neolithic complex of the Middle Yenisey, the Lower Angara, and the Podkamennaya Tunguska was similar to collections from the second and third stages of the Ural Neolithic, except for some intrusive forms that appeared here from the areas occupied by the Serovo and Kitoy cultures (Chernetsov 1964:8). Referring in particular to Andreev's Evenkia finds and to my own in Taymyr, Chernetsov proposed that the ancient inhabitants of the Ural region, moving northeast, settled as early as the fourth millennium B.C. on the Middle and Lower Yenisey, including the lower reaches of its right bank tributaries, incorporating these regions into the Ural-West Siberian Neolithic and Bronze Age cultural community.

As early as 1947, Okladnikov wrote about the advance of the East Ural Neolithic and Bronze Age culture to the Yenisey (Okladnikov 1948:20). On the Middle Yenisey, near Krasnoyarsk, this culture bordered upon the large cultural area of the Baikal Neolithic, which occupied the entire Angara Valley and the territories adjacent to Lake Baikal (Okladnikov 1950a:28). Excavations carried out subsequently in the submerged area near the Bratsk hydroelectric station yielded ceramics decorated with comb stamped belts that permit us to discuss the penetration of the West Siberian population into the Middle Angara (Okladnikov 1958). This is why Okladnikov, when publishing the Neolithic and Bronze Age materials from sites such as Bazaikha and Sobakinskaya in the Krasnoyarsk region and noting the decoration similar to that of the Trans-Ural ceramics, came to the conclusion that cultural influence from the Yenisey to the east had reached the Oka River in the Angara Basin and probably

penetrated the Angara to the Upper Lena (Okladnikov 1957). Okladnikov connected the Middle Yenisey finds with the ancestors of Samoyedic peoples who had come, in his view, from the west—from the Ural region.

Chernetsov thought that the eastern members of the ethno-cultural community that existed at one time in the territory stretching from Scandinavia to Taymyr were the ancestors of the Yukagir (Chernetsov 1964:5, 9, 10). Indeed, the designs on Baikit ceramics are similar to some of the decorative patterns found on Kozlovskaya vessels from the Trans-Ural Neolithic (Bader 1970:162; Chernetsov 1968). Chernetsov and Bader connected the origin of this style with the influence of the Kelteminar culture.

Melent'iev (1978) discovered a series of sites in the Trans-Caspian area that are similar to Trans-Ural sites. This similarity confirms that the formation of the Trans-Ural forest Neolithic was influenced by the southern cultures. The appearance of the Neolithic in this region dates to the end of the fifth and the beginning of the fourth millennium B.C. (Bader 1970; Chernetsov 1968; Krizhevskaya 1968; Starkov 1980). The origins of this process may date to the middle of the fifth millennium B.C. From the very beginning, the Trans-Ural Neolithic was characterized by ceramics with linear-pit and wavy-drawn designs. This design style persisted, judging from sites of the Koshkinskaya culture of the Tobol River basin and the left bank of the Lower Irtysh (Khlobystin 1979b; Kovaleva 1979; Kovaleva and Varankin 1976; Kovaleva and Potemkina 1980; Krizhevskaya 1970), into the Late Neolithic when, at the same time, the comb design tradition was developing.

In the eastern region of West Siberia, sites with Early Neolithic ceramics are not known. On the Upper and Middle Ob there is a group of sites dated to the Developed and Late Neolithic (Matiushchenko 1973; Molodin 1977). Some of these sites, belonging to different stages of the Verkhneobskaya culture (Zavyalovo 8, Kiprino), or situated north in the taiga zone of the Vakh Basin (Bolshoy Laryak II), contain

ceramics with linear-pit ornamentation, and there are overlapping triangles among them (Molodin 1977: table III: 5, XII: 2; Posrednikov 1973a:table 2:2, 3, 5, 7). These sites, which date from the end of the fourth to the second half of the third millennium B.C., probably appeared under the influence of Trans-Ural cultures, perhaps as a result of direct eastward penetration of their carriers. This design tradition persisted through the middle of the second millennium B.C., enabling Mikhail F. Kosarev to call the Late Neolithic ornamental style of the Upper and Middle Ob area "autochthonous" (Kosarev 1972). Naturally, the origin of Baikit ceramics may be found among these very sites.

Most similar to the Baikit ceramics is material from Novokuskovo on the Chulym River. Different opinions exist about the age of the site. Matyushchenko related Novokuskovo to the Verkhneobskaya (the Upper Ob area) Neolithic culture and dated it to the fourth and end of the third millennium B.C. (Matiushchenko 1966, 1973), while Kosarev assigned it to the Samus culture (fourteenth through thirteenth centuries B.C.), assuming that the settlement was occupied from the end of the Neolithic onward (Kosarev 1974:51–55). Indeed, there are types of ceramics belonging to different time periods among the materials collected. There are fragments of thick-walled vessels (12 to 13 mm thick) with smooth external surfaces decorated with obliquely placed lines of rocker stamping. These lines are sometimes combined with triangles. The sherds contain an admixture of grog and grit. These sherds differ to some extent from Samus ceramics and can be considered Neolithic, of the Baikit ceramic type.

In Evenkia, ceramics decorated with pricked lines were discovered not only at Baikit I, but also at sites such as Baikit II and Ust-Kamo on the Podkamennaya Tunguska River (Andreev and Fomin 1966). They are present among the material found by Khoroshikh during the survey of the Nizhnyaya Tunguska River (Khoroshikh 1949). However, these ceramics differ in a number of attributes from the Baikit type and

can be compared with the later Glazkovo ceramics of the Baikal region. In Yakutia, where cut and stamped patterns are found, this method of ornamentation was not used in the Neolithic. Based on available samples, this form of decoration came into use in Yakutia no earlier than the first millennium B.C. (Okladnikov 1950b:table V). The ceramics with such ornamentation are widely distributed in the Angara region and the Baikal area.

Sherds of net ceramics decorated with pricked lines were found in Layer IX of the Ulan-Khada site on Lake Baikal. Evidently, we must date them to the early stages of the Serovo culture (Khlobystin 1964a), although this sort of decoration appears on Posolsk-type vessels. Given the occurrence of the Posolsk ceramics at stratified sites such as Ulan-Khada, Gorely Les, and Kazachka, they date from the end of the fourth to the beginning of the third millennium B.C. Perhaps the appearance of the linear-pricked ornamentation on this ceramic type resulted from the influence of West Siberian Neolithic cultures. In this respect it is worthy to note that the pricked lines on the ceramics are thin, resembling the linear-pricked ceramics of West Siberia. On the later East Siberian ceramics, the lines were made using broader sticks. The decoration on the net ceramics of Ulan-Khada appeared as a result of influence from the Posolsk ceramic tradition—in other words, net ceramics coexisted for some time with Posolsk ceramics.

A pot covered with cord impressions and prick marks was found together with net ceramics in Layer VII of the Kazachka site on the Kan River (Generalov 1979a, b). This pot is nearly identical to the Posolsk ceramics, and its presence in Layer VII, associated with net ceramics, leads one to suppose that the formation of the layer went on at least until the end of the fourth millennium B.C., if not later. The radiocarbon date obtained for Layer VI (6660 ± 190 B.P., LE 1231) is probably incorrect. This layer yielded fragments of pots decorated with horizontal pricked lines, or by lines of pricked comb and smooth impressions.

At the Gorely Les site on the Belaya River, a tributary of the Angara, similar ceramics (which I call "West Angara") were found in Layer IV, above the Posolsk ceramics (Savel'ev et al. 1974). Frequently West Angara ceramics have a few widely scattered belts of round pits above the main design. This tradition is typical of western Siberia during the Neolithic and the Bronze Age. Besides Kazachka, examples of this decoration were found on sites such as Atalanga on the Ilym River, Mironovo on the Uda River, and on the site at the Belaya River mouth. The most plausible date for the West Angara ceramics is the middle of the third millennium B.C., assuming that the Posolsk ceramics date to the first half of the third millennium.

The ceramics from Layer IIa of the site at the Belaya River mouth are worthy of special note. Its paraboloid vessels were decorated with the aid of a stamp. A pattern of parallel horizontal zigzags is characteristic of this type. Similar vessels occurred in Layer IX at Ulan-Khada, where they were associated with fragments of net and Posolsk ware. They lay at the bottom of the bed in association with Layers II through VIII. These ceramics (Ustbelskaya) are a distinct type that may have been brought from western Siberia and the Trans-Ural region (Savel'ev and Medvedev 1973:63). On the Middle Yenisey, the vessels decorated with pricked lines were found at a series of sites (Ladeiki, Bazaikha, etc.). On ceramics from Unyuk, these lines form designs composed of horizontal lines, zigzags, and oblique lines. In addition to these ceramics, which resemble both West Angara and Ustbelskaya types, pots decorated completely by comb stamp impressions were found. One of the pots had a flat bottom. The pots decorated with impressions shaped like insect larvae and with flattened bottoms were found at Ust-Sobakinskaya. This may be the result of East Siberian influence, where flat-bottomed vessels appeared as early as the Neolithic.

It is difficult to say whether the Baikit ceramics were connected with the Early Neolithic ceramics

of Trans-Ural and western Siberia, or whether they represent an isolated variant of the "autochthonous" Neolithic culture of the Ob region. On the whole, in spite of some ornamental peculiarities, they correspond well to ceramics from Angara sites that contain West Angara and Ustbelskaya ceramics and date to the second half of the third millennium B.C. These sites reflect a West Siberian influence that penetrated east from the Yenisey. Most likely, this influence resulted from population movements.

The custom of decorating pots with pricked impressions has been noted in the region east of Lake Baikal in particular, on the Amur River, where these ceramics are represented by the Gromatukhino culture (Okladnikov and Derevianko 1977). Thus, during the Neolithic this method of ornamentation spread across the forest-steppe zone in the southern region of eastern Siberia, as far as the Amur region and the littoral area. Its absence from the Yakut province in the East Siberian Neolithic was undoubtedly connected with ethno-cultural processes.

However, it is reasonable to propose that these ornamental traditions were brought by different groups having different origins. In Evenkia ceramics with comb ornamentation can be typologically divided into early and late. Thus the comb ceramics from Baikit I belong to the early type. The ceramics coming from the site at the mouth of the Podkamennaya Tunguska River should be considered later. They are decorated with rows of comb impressions in which small pairs of pits are placed on the combed pattern (Andreev and Fomin 1966:109, Fig. 45:10). This design is characteristic of the Early Bronze Age of West Siberia.

The use of stamps to create decorative impressions is characteristic of the end of the Bronze Age. This is confirmed by finds from the Surgutikha site, situated on the river of the same name, a left tributary of the Yenisey (Nikolaev 1963b:127, table 8), and by the ceramics of the Pyasina culture of Taymyr, discussed in Chapter 4. This phenomenon is probably due to the confluence of two ornamental traditions that

resulted either from mutual interaction or influence, or as a result of direct assimilative contacts between different groups.

The third millennium B.C. was for Taymyr and for the Yenisey's right-bank region the period when

two cultural traditions with roots in West and East Siberia met for the first time. Their interaction was not perceptible in the Neolithic Period, but it manifested itself clearly in the Bronze Age, when a new population from East Siberia penetrated Taymyr.



49/ Taymyr boreal forest landscape near the abandoned village of Dolgany, on the upper Avam River, 1996. The river never freezes here because of the running water. Photographer John Ziker.

Taymyr in the Early Bronze Age

The availability of natural resources—food, material for clothing, and heat for dwellings and cooking—determines, to a great extent, why certain regions are populated. There were periods in human history when climatic changes brought about the colonization of new territories or the depopulation of formerly inhabited areas.

The explanation of the relationship between environmental and cultural change is a major subject of study in archaeology. The colonization of the Eurasian Far North was intimately related to the Climatic Optimum, a time when forest vegetation shifted northward. The Holocene Climatic Optimum roughly dates from 7500 to 4500 B.P. (Kind 1974); this span of time includes all known dates of Mesolithic and Early Neolithic sites in the Eurasian Arctic. It is important to determine the time when forest landscapes in the high latitudes were replaced by the tundra that still exists today and to identify attendant historical and cultural processes.

Climatic Changes in the Late Holocene

Scholars of climate change give different dates for the beginning of the deterioration that led to the alteration of vegetation zones. According to Blitt-Sernander's scheme, which is supported by many specialists, climatic deterioration coincided with the beginning of the Sub-Atlantic Period (ca. 500 B.C.). According to G. M. Levkovskaia, the transformation of natural conditions occurred in the Arctic between 3500 and 3000 B.P. (Levkovskaia 1977). However,

some palaeogeographers believe that deterioration began at the boundary of the Atlantic and the Sub-Boreal, roughly corresponding to the mid-third millennium B.C. (Khotinskii 1971; Kind 1974; Lavrushin et al. 1963).

Indeed, judging by the Karginsky peat bog, the population of the Arctic first felt climatic deterioration around 4500 B.P. when the Karginsky Cape forest gave way to forest-tundra. However, the effects of that deterioration on the vegetation, animals, and life-way of humans were particularly manifest in the latter half of the second millennium B.C. (3375 ± 35 B.P.). This date was obtained from a layer of the Karginsky bog that showed drastic retardation in the growth and replacement of forest-tundra vegetation by southern tundra associations (Firsov et al. 1974).

According to G. M. Levkovskaia, in West Siberia the tundra expansion phase occurred after 3600 ± 170 B.P. (LG 34). According to H. Nichols, the cold, dry climate began in northern Canada around 3200 B.P. (Nichols 1971). About 3000 B.P., the Polar Basin was again covered with a mantle of ice; between 2500 and 1500 B.P. its ice cover was comparable to the present (Borisov 1968).

Permafrost development resulted in the destruction of tree vegetation. Analysis of tree microfossils and pollen from the Taymyr tundra indicates that all of these fossils date prior to the second millennium B.C. Thus, all available evidence indicates that by the end of the second millennium B.C. the tundra zone had expanded to its present limits and the climate

was roughly the same as today, although somewhat drier. There are grounds to believe that it was during the second half of the Sub-Boreal that the Arctic became an extreme zone characterized by long and severe winters; short, cool summers with occasional high temperatures; frequent strong winds; and magnetic disturbances due to the proximity of the magnetic pole; as well as the long polar nights and summer days without sunset that are the hallmarks of the north. In addition to these challenges were the monotonous, desolate landscapes and the paucity of animal and plant life. In Taymyr, with its continental temperatures, these characteristics take particularly harsh forms.

The expansion of the tundra zone also affected the behavior of animals—reindeer in particular. The seasonal migrations of reindeer herds became longer due to the increased distance between their summer grounds in the northern tundra and their winter taiga forest retreats. Specialists in reindeer breeding have calculated the capacity of reindeer pastures (Syroechkovskii 1975). Their calculations show that the capacity of tundra and forest-tundra reindeer pastures is roughly twice that of the taiga zone. Therefore, expansion of the tundra and forest-tundra promoted an increase in the population of reindeer, the principal game animal in the Far North.

Climatic and environmental changes never failed to influence Taymyr inhabitants; their culture and economy in particular had to adapt to the new circumstances. These adaptations produced a culture of reindeer hunters studied by I.B. Simchenko (1976). Although this adaptation served as a buffer between human society and nature, climate conditions in the polar region in the second half of the Sub-Boreal were generally unfavorable to humans. Certain accommodations to some of these conditions, for example, the long nights, were presumably developed by the first inhabitants of the Far North. The new conditions, however, necessitated acclimatization that contributed to genetic variation in human populations on the extreme fringe of the

oecumene or inhabited world, eventually leading to the formation of distinctive indigenous ethnic groups on the Taymyr Peninsula—the Nganasan—as well as the Chukchi and Eskimo (Aleksiev 1968; Alekseeva 1977; Zolotareva 1962).

Over the course of three thousand years since the formation of extreme climatic conditions in the Siberian polar region, the climate underwent several changes. According to Nichols, the cold minimum on the arctic coast of Canada occurred in the last centuries B.C.; then, in the first centuries A.D., around 1800 B.P., temperatures began to rise. The fact that the climate in the first millennium B.C. became milder and more humid is also indicated by pollen analyses from West Siberia, which show a spruce pollen peak (Levkovskaia 1971).

The stratified Ust-Polovinka settlement on the Taymyr Peninsula had a stratigraphic section dating from the mid-first millennium B.C. to the present. Radiocarbon dates from this location make it possible to date the pollen diagram drawn by Levkovskaia on the basis of specimens from the second dig (Fig. 50). In the mid-first millennium B.C., there was some tree vegetation in the Pyasina culture area, but most of this territory was occupied by moss-tundra (Specimen 18, depth 85 cm), and subsequently, by forest-tundra (Specimen 17, depth 80 cm). The vegetation comprised a scattered spruce-larch forest, alder thickets, grass communities associated with sedge, various herbs, and moss.

After 150 B.C. (Specimen 14, depth 70 cm), an improvement in climate led to increased forest development, and tree pollen rises to 74.7%. Coniferous trees play a greater role in forest formation, with their pollen accounting for 78.8%. Spruce pollen, at 37%, is the highest. At the end of this phase, pollen of Siberian cedar and fir began to occur, indicating the northward shift of the northern taiga forest. Grass associations at that time were already being formed mainly by various herbs rather than by sedge. Whether or not cedar or fir were present remains an open question, but the presence of their pollen indi-

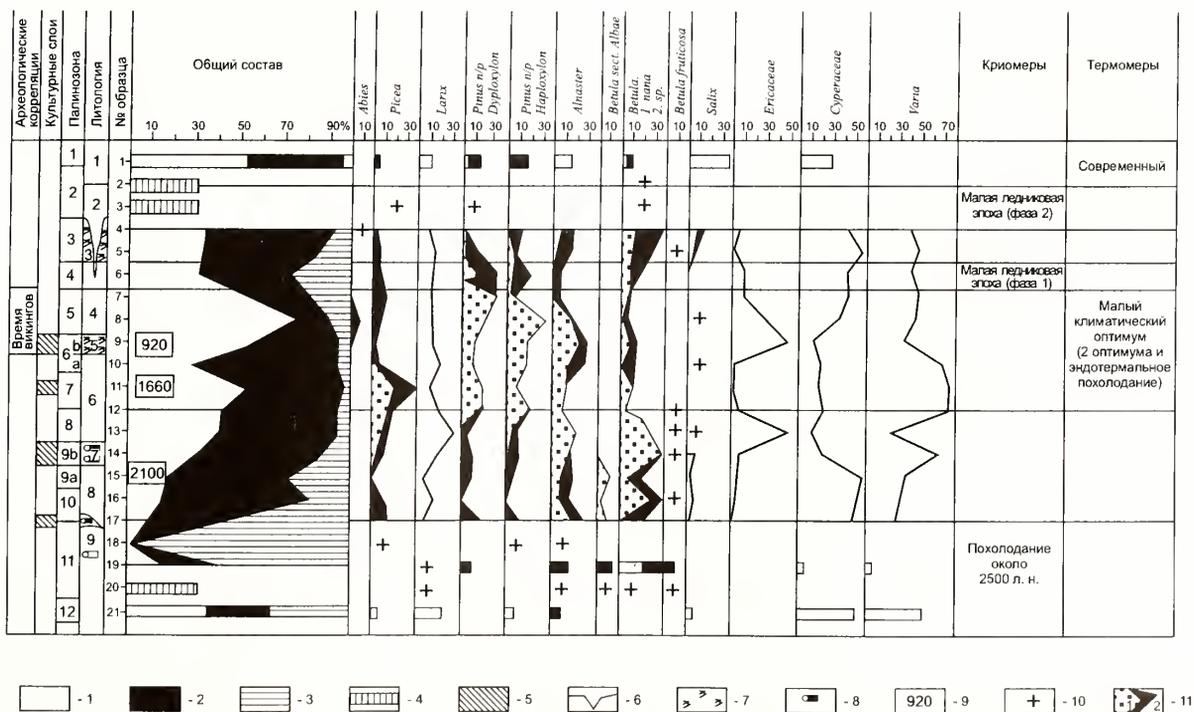
cates a northward shift of the northern tree border. This vegetational phase dates to 920 ± 100 B.P. (LE 1148), or A.D. 1030, and comes from Specimen 10 at a depth of 50 centimeters.

Beginning at the buried soil level (Specimen 6, depth 30 cm), the tree pollen content of the spectra decreases considerably, to between 32 and 37%. The role of coniferous trees in forest formation gradually declined, as seen by a decline in tree pollen from 74% at the beginning to 26% at the end. The grass associations in that period are formed primarily by sedge, and various herbs become less common. At the end of the phase, spruce had practically vanished. Spruce pollen content does not exceed 2 to 2.8%, whereas in surface samples from spruce-vegetated areas it generally accounts for 10%.

The buried soil layer was encountered in other tests at Ust-Polovinka, as well as in a section and some pits of Tagenar VI, where it is generally accompanied by permafrost. The dating of Layer 1a was accomplished using observations of the dead vegetation at Dyuna III, located 20 kilometers down the Pyasina River from the Ust-Polovinka site. There,

above the remains of a dwelling built of poles, long slender larch trunks, sheets of bark, and stumps of large larch trees were found buried in the sand. As the dwelling is dated to A.D. 900 and the buried trees were at least two hundred years old, their destruction by the dune must have occurred in the twelfth or thirteenth century. Therefore, the initial growth of the trees occurred in the tenth or eleventh century, when the soil layer dated to A.D. 1030 was being formed.

It is not clear whether dune formation was due to increasing continentality or to local factors. The formation of the soil occurred during a warm phase followed by a climatic change with higher continentality and lower temperatures. As a result, the soil was disturbed by cryogenic processes. This change probably began in the thirteenth century and reached its maximum—known as the “Little Ice Age,” or LIA—between the sixteenth and the first half of the nineteenth century. The LIA is separated from the last climatic deterioration at the end of the first millennium B.C. by a period of 1800 to 1900 years, which corresponds to the climatic fluctuations identified



50/ Pollen diagram of samples from Ust-Polovinka. Palynologist G. M. Levkovskaia.

by A.V. Shnitnikov (1957) and the periodic fourth order variations of the climate defined by Sinitsyn (1965). It is noteworthy that in the fifteenth century [ca. A.D. 1450], Norse settlements disappeared from Greenland (Henning 1962:432, 433). The second half of the nineteenth century is marked by a warming of the Arctic. The deterioration of the climate in the second millennium B.C. did not have such a pernicious effect on polar hunters as the Little Ice Age did on Greenland's Norse agriculturists.

The ancient ethnic groups of the Arctic did not leave the polar regions and adapted to the tundra and forest-tundra zones that had shifted south. On the other hand, the major cultural transformations that were taking place due to the migrations of the Andronovo groups, who were forced by a drought to leave some steppe regions (Khlobystin 1976:38–45; Kosarev 1974:31), brought new populations and skills into and beyond the Arctic Circle. Of these new skills, bronze casting was the most important.

The lowering of ocean levels that began in the mid-third millennium B.C. intensified the drainage of the West Siberian Lowlands, which together with the development of permafrost made northwest Siberia fit for extensive colonization by migrants from the south (Khlobystin and Levkovskaia 1974:239). The Polar Expedition discovered numerous sites on the Yamal Peninsula and in the lower Ob region that dated to the second millennium B.C., while only three sites dating to earlier times are known there. The appearance of the wide tundra expanses and permafrost made speedy migrations possible latitudinally in both winter and summer. Among other things it promoted the distribution of waffle pottery in the Eurasian Arctic; this pottery is one of the characteristic features of Ymiyakhtakh culture.

The Ymiyakhtakh Culture of Taymyr

Waffle pottery settlements were first discovered in Yakutia by A.P. Okladnikov, who associated them with the Late Neolithic or the Early Bronze Age and

to the Glazkovo culture material from the Lake Baikal region dating to the second millennium B.C. (Okladnikov 1946, 1950b). When I published the Buolkalaakh assemblage, which had been found in 1961 on the left tributary of the Olenek River, I dated it to the Bronze Age, between the second and first millennium B.C. (Glushinskii and Khlobystin 1966). The assemblage included fragments of pots with broad sub-conical bodies and hair-tempered spherical vessels with waffle impressions on their surfaces. Rims of the vessels were slightly everted. Tools made of flinty slate included trihedral arrowheads, triangular and trapeziform endscrapers, and a large spearhead. There were also prismatic blades, tools made on blades, and a perforator with a trihedral stem. Vessel form, the way in which they were manufactured, and the methods of processing stone tools have been compared with the materials from the Lena sites discovered by Okladnikov and led to the conclusion that the Olenek Basin had been part of the same culture zone that included the contemporary Buolkalaakh sites of the Lena Basin.

Subsequently Iurii A. Mochanov identified the Ymiyakhtakh culture (Fedoseeva 1980; Mochanov 1969), to which the Buolkalaakh complex may be attributed. Mochanov ascribes this culture to the Late Neolithic, between 3900 and 3100 B.P. (Mochanov and Fedoseeva 1975a, b). Two dates used to define the period, 3900 ± 50 (LE 858) from Layer 8 of the Sumnagin I site and 3800 ± 100 B.P. (LE 1025) from the Chuchur-Muran burial ground, give rise to doubts about their correctness. A date of 3750 ± 50 (LE 859) is available for Layer 9 of Sumnagin I, and there is another date for Layer 8: 3310 ± 130 (LE 874). The remaining dates are concentrated in the last centuries of the second millennium B.C.

The Ymiyakhtakh culture is characterized by broad, sub-conical and spherical pots and by round-based bowls tempered with hair. The surface of the vessels may be smooth, ribbed, or have check-stamped (waffle) impressions. The cells of the waffle pattern are usually small, measuring 5 by 5 millime-

ters. Vessels were ornamented with a row of pits under the rim and sometimes with linear designs.

The stone assemblage is remarkable for its diversity and high quality of workmanship. The most common tool types are trihedral arrowheads—triangular points with straight lateral edges and straight or concave bases. Elongated tanged arrowheads are also present. Endscrapers are carefully flaked over their entire surfaces and are consistently triangular or trapezoidal in form. Multifaceted burins are characteristic of this assemblage. On some sites with check-stamped ceramics, bronze casting materials were also found: drops of bronze and crucible fragments. Sites with waffle ceramics are widespread across East Siberia, but not all are associated with Ymiyakhtakh culture. Sometimes this pattern is found on Glazkovo ceramics. It has also been observed in cultures post-dating the Ymiyakhtakh culture.

A number of Ymiyakhtakh sites have been found in Taymyr. The most significant among them is Abylaakh I (Figs. 51–58). This site was mentioned in Chapter 2 in connection with the Early Neolithic complex associated with its lower layer. Its upper layer contained traces of an Ymiyakhtakh settlement. The Ymiyakhtakh materials lay directly beneath the turf layer at a depth of 7 to 10 centimeters in a yellow sand layer 2 to 15 centimeters thick (Fig. 25). The sand was intermixed with a brownish-gray loam that underlay it. The layer was disturbed by cryogenic deformation and some materials had fallen through fissures into underlying deposits. Artifacts were scattered all over the yellow layer and were not associated with any single horizon. In some places they formed small accumulations near hearths. Six hearths and three fire-reddened areas were found in the layer.

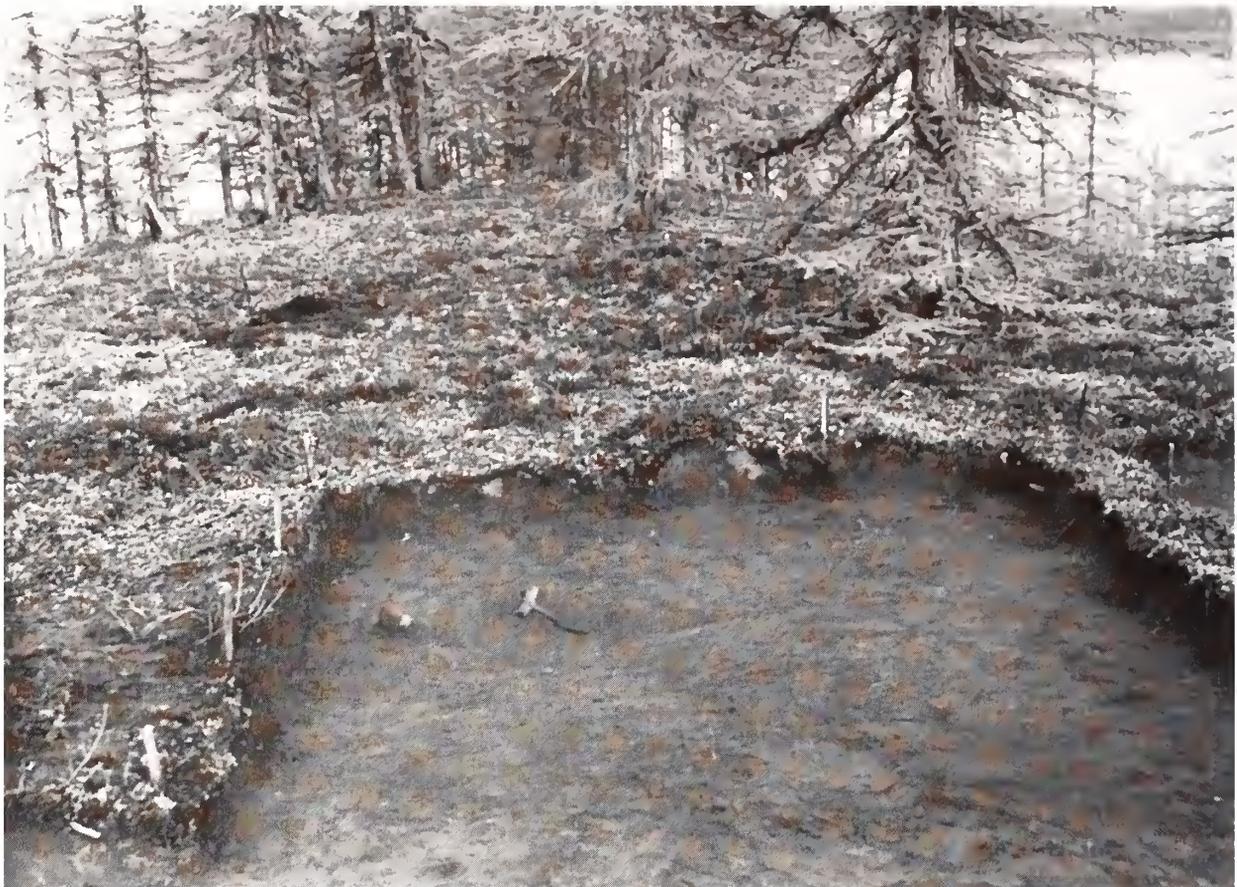
Hearth 1 was situated in the southeastern part of the excavation area near the edge of the point occupied by the site. It was about 1.5 meters in diameter and had a round outline. The hearth was indicated by a lens-like red spot containing charcoal and had a maximum thickness of 8 cm. There was an accumulation of burned, fire-cracked stones and pebbles

in the center of the hearth with a thin charcoal lens nearby. A large stone lay on the southeastern edge of the hearth, surrounded by a charcoal layer. An arrowhead, an endscraper, flakes, knife-like blades and fragments of ceramics were found near the hearth.

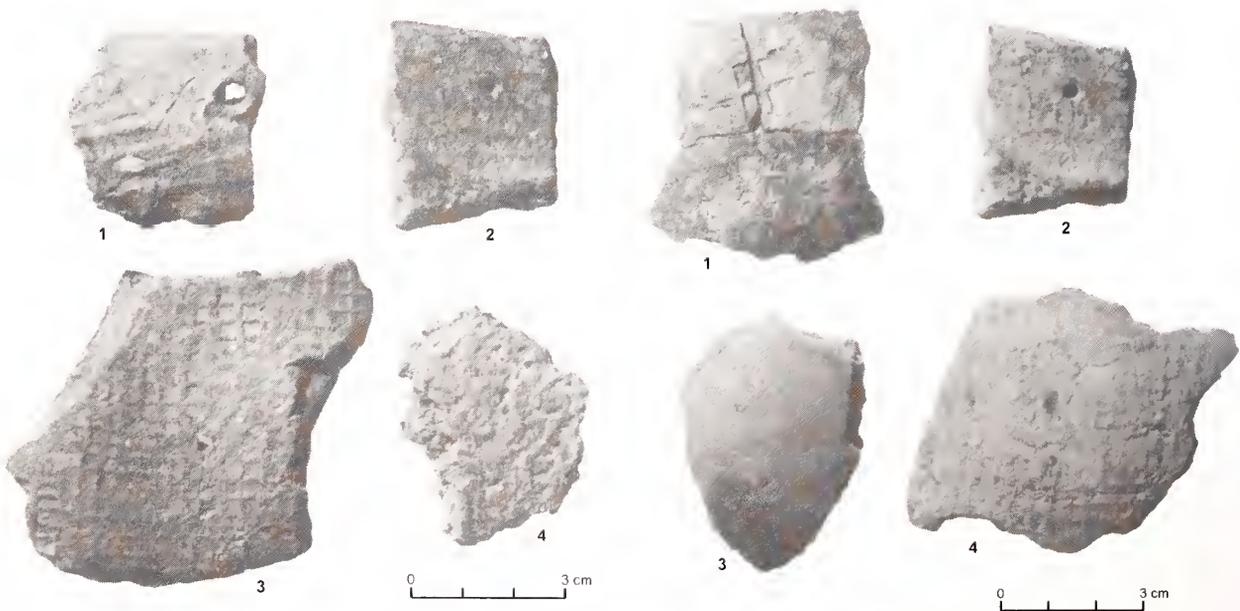
Hearth 2 was situated in the center of the excavation area. It was elongated (1 by 1.7 m) and appeared as a charcoal lens lying on the yellow sand level, overlain by a layer of red, fire-burned loamy sand intermixed with charcoal. The eastern part of the hearth was destroyed by a large frozen wedge. The thickness of the hearth was 7 to 12 centimeters. Burned stones, pottery sherds, flakes, and calcined fish bones were scattered over the surface of the hearth. The area contained many decorated ceramic fragments and fragments of a crucible. A proximal fragment of a celt was found near the hearth in Square 9.

Hearth 3 was also situated near the center of the excavation area, occupying the entirety of Square 49, most of Square 50, and extending into adjacent squares. It also had an elongated outline (1.2 by 2.1 m) and its charcoal layer was 7 cm thick, had a lens-like shape and lay on the yellow sand. This layer was overlapped by red loam and sand (6 cm). The eastern part of the hearth was damaged by a frost crack. Fragments of two crucibles, drops of bronze, pieces of decorated ceramics, small calcined bones, numerous small flakes, potsherds, and river pebbles were found in and near the hearth. One radiocarbon date of 3100 ± 60 B.P. (LE 790), or about 1150 years B.C., was obtained from this feature.

East of Hearth 3 was an elongated (1.30 by 2.36 m) reddened area with charcoal lenses in the loam and sand; the border overlapped Hearth 3. All artifacts were recovered in the red layer and nothing was found nearby. Among the artifacts were a piece of bronze, an arrowhead, an abrasive, fragments of two cores, knife-like blades, flakes, and ceramics. A pebble with damaged ends that had served as a hammerstone and fragments of a crucible were found. Hearth 3 and the red spot near it were probably



51/ Photo of excavations at Abylaakh I. Note antler in foreground.



52/ Ymiyakhtakh-type (waffle) (nos. 1-3) and net (4) ceramics from Abylaakh I.

53/ Ymiyakhtakh-type ceramics from Abylaakh I.

connected with bronze casting. Nearby to the north were a fragment of a clay mold for a celt or axe (Square 60) and fragments of a sandstone mold for casting an anthropomorphic figurine (Square 75).

Hearth 4, with a diameter of 50 centimeters, was located on the edge of Squares 78 and 79. This feature was thin (0.5–1.5 cm) and had only a small amount of charcoal. Stone tools had been made nearby, judging from the accumulation of nearly one-fifth ($n = 373$) of all the flakes found at the site in this 6 square meter area.

Hearths 5 and 6 were discovered in the southeast corner of the excavation area. They were situated side-by-side, but in different levels, with Hearth 5 two to three centimeters below Hearth 6. The smaller Hearth 5 (40 cm in diameter) was situated on the boundary of Squares 113 and 116 and contained a flinty slate pebble. Hearth 6 was larger, about 2 meters in diameter, but more diffuse and its charcoal lenses were contained within small pits. A large stone lay on the northern edge of the hearth. Few artifacts were found near these hearths. Small, thin areas of red, burned sand with small amounts of charcoal were found in Squares 21 and 39. As there were no depressions that could be interpreted as excavated dwellings, accommodations were probably surface structures.

Osteological materials were represented only by reindeer bones. Usually they were found individually and were poorly preserved. However, Square 35 had a large accumulation of bones that formed a decayed deposit 0.5 cm thick which extended into neighboring squares. A worked piece of a reindeer antler lay in Square 34 (Fig. 51).

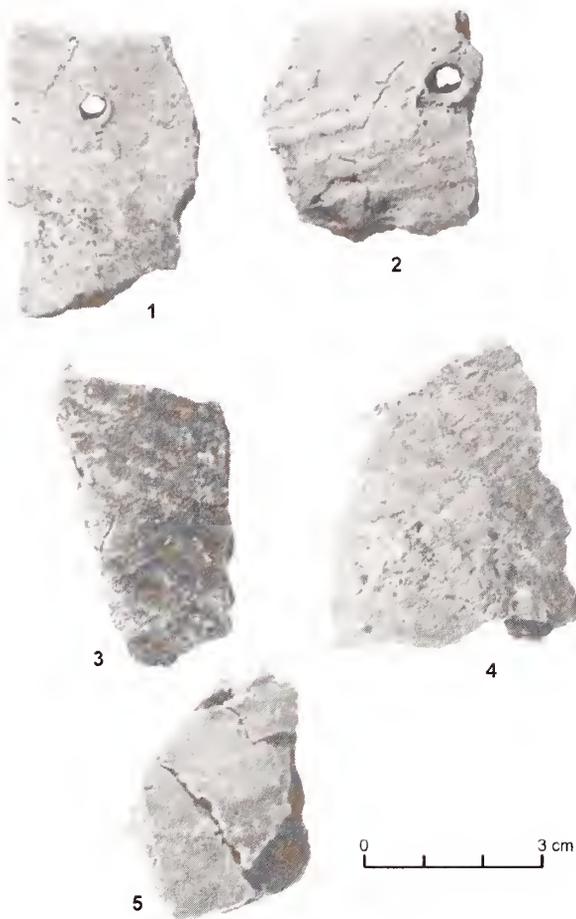
The ceramics found in the upper cultural layer of Abylaakh I can be divided into two functional groups: a ware for daily use and articles involved in bronze casting. The ceramics are represented by fragments of at least nine vessels (Figs. 52–54). Unfortunately they are poorly preserved due to their friable nature; many sherds were destroyed in the fires where bronze melting had occurred. The earthenware paste

contained an admixture of brittle hair, probably of reindeer. Up to three layers are visible in the thicker sherds. Paddling was by an incised paddle that left rectangular waffle impressions, or ribbons, on the external surface of the pots. The waffle net cells are small, measuring sixteen squares per square centimeter. On some sherds, impressed sections alternate with smooth surfaces.

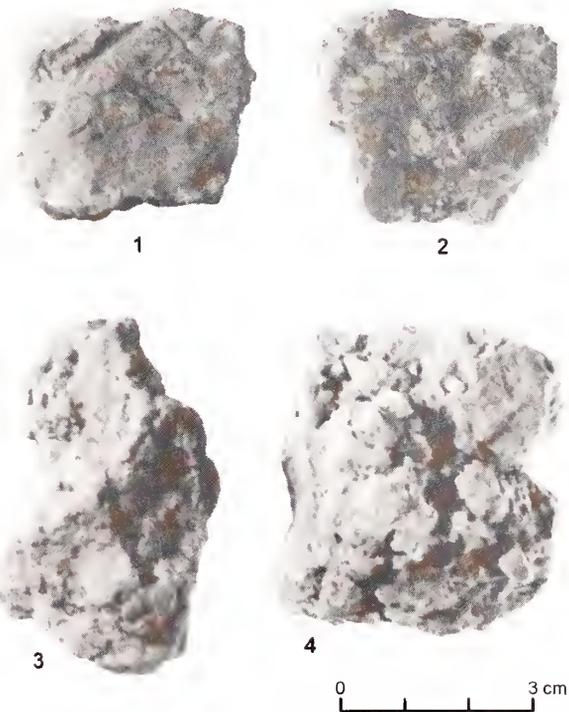
The pots are round-based and have spherical or sub-conical bodies. The edges of the vessels are rounded or, less frequently, straight. Only in one case was a rim thickened by attaching an extra coil to the external side. One pot had a slightly convex neck. The thickness of the walls of different vessels varies considerably. Some sherds have a thickness of 13 millimeters, whereas others are only 5 millimeters thick. The only decoration on the pots was a belt of pits situated near the rim edge. The upper part of a vessel with a convex neck was strengthened by a sinew net with large cells (Fig. 55:1). The distance between the net cords is 10 mm. Sherds of this vessel were found among pieces of slag. Fragments of a small, round-based bowl (Fig. 53:4) were found at the western edge of Hearth 2. Its diameter is 9.5 centimeters, its height 5 centimeters, and wall thickness about 5 millimeters. No temper was observed in the earthenware paste; however, hair imprints are sometimes present on the exterior.

The ceramics for daily use from the upper layer of Abylaakh I are fully in line with the ceramics of the Ymiyakhtakh culture, especially with those from sites of northern Yakutia. They differ from the vessels of Belkachi I in the absence of linear decorative patterns.

Fragments of four crucibles for bronze casting were recovered at Abylaakh I (Figs. 56:1–3; 58:1–3). Their form can be reconstructed from fragments that allowed one crucible to be restored. The crucibles were small and oval and have a spout for pouring. Sizes are very standard, measuring 4.5 centimeters across. The bottoms are severely burned; in one case it was possible to determine height—about 3



54/ *Ymiyakhtakh-type ceramics from Abylaakh I.*



55/ *Slag-coated ceramics from Abylaakh I.*

centimeters. The capacity of the crucible is approximately 15 cubic centimeters. At the rear of the crucibles, their bottoms widened, forming a projection that allowed the crucible to be held to pour out the metal. The crucibles were made of clay that had no apparent admixture, which distinguished them from the ceramic ware for daily use. The edges of the crucibles had slag adhering and a copper inclusion was identified in one of the fragments.

The projections on the Abylaakh crucibles (Fig. 56:1) resemble handles found on the crucibles from the Stary Siktyakh site, situated on the Lower Lena within the Arctic Circle. At Stary Siktyakh, waffle ceramics and stone tools similar to those of the Ymiyakhtakh culture were recovered in association with fragments of crucibles (Okladnikov 1946:89, tables XIII, XII). A crucible with a different shape and size was found at an Ymiyakhtakh site near Pokrovskoe village (Okladnikov 1950b:table XXXIX). A different type of crucible with handles and a laterally positioned spout comes from the Kullaty site and from a site near the regional hospital of Yakutsk, where they were found in association with waffle ceramics and with ceramics dating to later time periods (Okladnikov 1950b: table XXXIX: 1, fig. 23). On the whole, the Abylaakh crucibles have an appearance that distinguishes them from Yakutian forms.

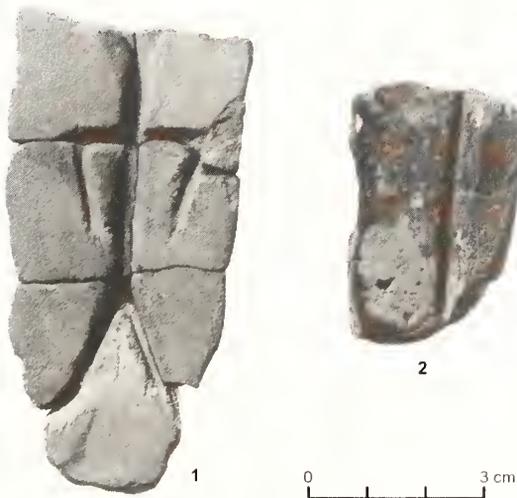
A mold for casting celts or axes was made of the same clay used for the crucibles. A fragment of a half-mold was found (Figs. 57:2, 58:4) with a rounded external surface; the matrix for the middle part of the axe was cut out on the inner surface. Judging from this fragment, the axe was hexahedral in cross-section, with flat surfaces and projecting longitudinal ridges. Such a form is typical for the celt/axes of the Seim-Turbino type (Bader 1964:65; Tikhonov 1960:37). In all probability the clay molds were used only once because the molds had to be broken to extract the cast.

Numerous pieces of porous, burnt ceramic slag were found in Hearths 2 and 3 (Fig. 55:3-4). Some of these are probably vessel fragments that fell into

the fire and melted. Remains of the original surface were preserved on three pieces that seem to be parts of a large vessel. Imprints of a net woven of sinew were observable on their surfaces; the diagonal cell impressions measure 1.2 centimeters long. Similar ceramic slags have been found in a bronze-casting



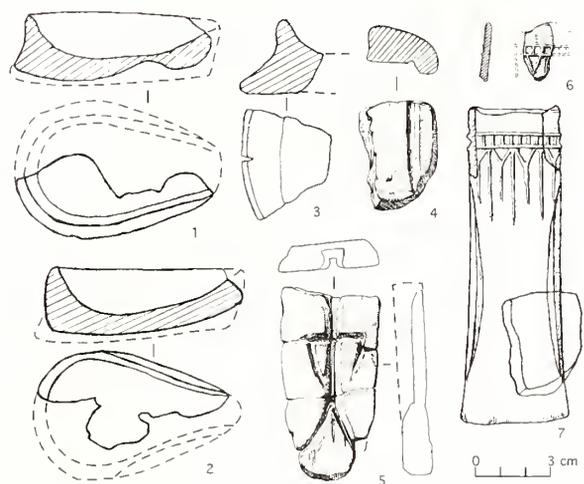
56/ Fragments of a crucible and small bowl from Abylaakh I.



57/ Sandstone molds from Abylaakh I.

area at the regional hospital site in Yakutsk, which Okladnikov interpreted as remnants of a coating for a melting pot (Okladnikov 1950b:101). Similar slags were found at Ust-Polovinka in a hearth where bronze was melted (Excavation Area 11, Hearth 2; see Chapter 4). At Abylaakh I and Ust-Polovinka, artifacts were accompanied by a red loamy mass, which probably served as an external coating for crucibles, supporting Okladnikov's interpretation.

Another indication of bronze casting is a small fragment of the hafting portion of a celt decorated with an ornamental belt consisting of two thin lines; the space between the lines is filled with an ornamental pattern typical of celts of the Seim-Turbino type. However, on the celt from Abylaakh there are vertical triangles and vertical lines beneath the belt, which are absent on the celts of the Seim-Turbino type (Fig. 58:6). Such lines are present on some celts from the Middle Urals which are ascribed to one of the West Siberian groups of celts dated to the beginning of the first millennium B.C. (Tikhonov 1960:52–54). The Abylaakh celt is similar to the Baikal type (the Baikal type includes a celt in the Irkutsk Local Museum and one found on Lake Baikal near Goremyki village, and the celt that was transferred to the Archaeological



58/ Materials associated with bronze casting at Abylaakh I: crucible fragments (nos. 1–3); sandstone molds (4–5); bronze celt fragment (6); reconstruction of the celt from Abylaakh I (7).

Commission by “a man who has come from the Angara”). It was found on the shore of Lake Baikal near Listvennichnoe village. The characteristic feature of these celts is lateral projections. P.P. Khoroshikh dated these celts to the Karasuk Period (Khoroshikh 1970). Taking into consideration the similarity of the Baikal celts to the Seim-Turbino type and the age of the Abylaakh finds, the celts must date to the thirteenth or twelfth century B.C.

The Abylaakh celt was cast of tin-bronze. The spectral analysis carried out by D.V. Naumov in the Laboratory of Archaeological Technology of the Institute of Archaeology (Leningrad) has demonstrated that the alloy consisted of 92% copper and 7% tin. In addition, there was trace evidence of lead, silver, nickel, and other elements. The same composition was identified in the drops of metal found in the hearths at Abylaakh I.

The sandstone mold (Figs. 57:1; 58:5) is a unique find. After refitting its fragments, it was determined to be a cast for an anthropomorphic figurine. This mold is made of a slab of fine-grained reddish sandstone with an irregular oval shape and a truncated end. Its length is 7.5 centimeters; width 4 centimeters; and thickness 1.3 centimeters. An anthropomorphic form is cut out of the inside surface of the mold. The head and the body are represented by one line that starts at the wide butt of the slab. The body line bifurcates, forming feet planted apart at a sharp angle. The upper half of the body line is crossed at a right angle by the line forming the shoulders. The arm lines descend from the shoulder line. The length of the figure is 6.5 centimeters; width of shoulders is 2.4 centimeters; width of the groove representing the body is 4.5 to 5 millimeters; and the width of the other grooves is 3 millimeters. The depth of the grooves varies from 4 millimeters for the body to 2.5 to 3 millimeters for the hands and legs. The grooves are trapezoidal in cross-section. The figurine lacks any indication of sex.

Similar figurines and images depicted in different media are widely distributed in the art of Siberian

peoples. Thus, human figures are pecked on the reddish sandstone cliffs of the Tepsey Mount in the South Siberian part of the Yenisey River valley. The same technique was used on the sandstone slabs that bordered the Tagar graves near Lake Shira (Rygdylon 1959:tables IV, VII). On limestone rocks near Kamenka village on the Lower Angara, similar images were covered with red ochre (Okladnikov 1966b:102, table 174:1).

Ethnographic examples of these figures are also known. Five figurines represented in the same pose as the Abylaakh “man” are depicted on a shaman’s breastplate from Evenkia. The surface of the plate is covered with a yellowish-gray material and dark red paint and fringed with white deer hair. The central figurine has no head, and the other heads are represented as circles (Ivanov 1954:151–153, fig. 4b). Strikingly similar to the Abylaakh mold is a mold in the Yamal-Nenets Regional Museum in Salekhard (Fig. 59). The figurine mold, made of wood, has the same



59/ *Wooden mold from Yamal-Nenets Regional Museum, Salekhard, Yamal-Nenets Autonomous Area, Russia.*

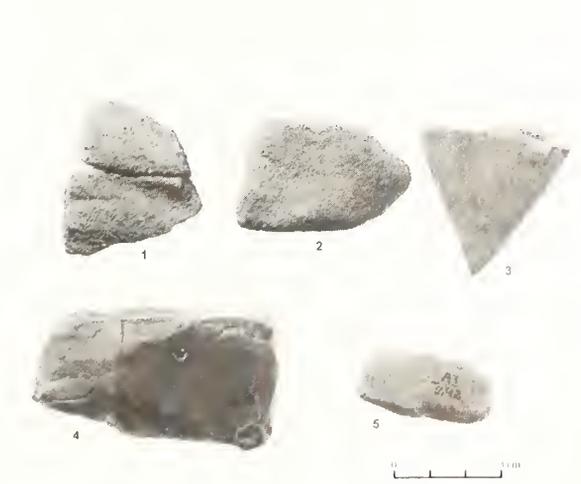
shape and pose and was cut in the same way. It was made of wood; there is another part of the mold in which only part of the cast is cut out. The height of the figurine is 14.5 centimeters. It has both hands and feet. Judging by the inscription on the mold, the piece was made either at the end of the nineteenth or at the beginning of the twentieth century and is Nenets (Ivanov 1969:fig. 82).

These examples show that the age of the stylized anthropomorphic figurines, which lack any traits indicative of their antiquity, cannot easily be determined. The only thing that is certain is when a form or image appeared first. The Abylaakh type seems to have appeared in the thirteenth century B.C.

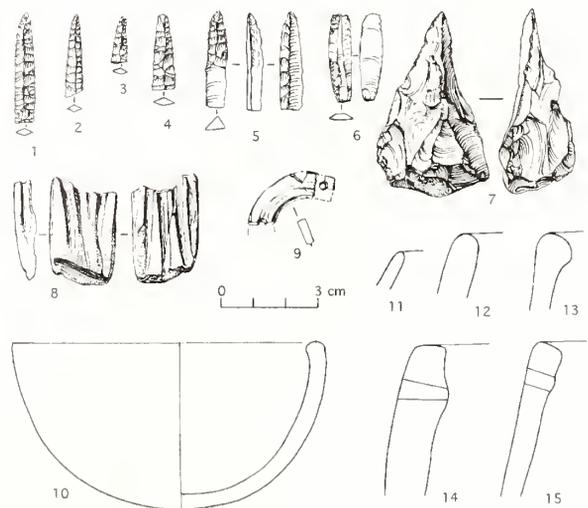
Some stone abrasives from the upper layer [at Abylaakh I] are related to the production of metal tools. A bar of slate found in Square 19 near Hearth 2 bore traces of grinding resulting from the sharpening of metal tools (Fig. 60:4). A fragment of a similar abrasive, somewhat smaller in size, was found north of Hearth 3. Other abrasives are made of coarse-grained sandstone. Several pieces of sandstone display flat ground surfaces. One large sandstone piece has special grooves for sharpening [narrower or pointed objects]. Another bar-like piece shows traces of boring. There is also a small slate slab that has numerous deep grooves on both its surfaces and on one lateral side (Fig. 61:8). This slab was probably used for sharpening needles.

Included in the lithic assemblage is a trihedral arrowhead made of brown flinty slate (Fig. 62:17). This arrowhead represents superlative stone working evident in its symmetry and careful finishing work. Such arrowheads are typical of the Ymiyakhtakh culture. They are present in assemblages from Buolkalaakh, Uolba II, Tuoy-Khaya, Konzaboy, and other sites in Yakutia (Glushinskii and Khlobystin 1966:fig. 3:3, 4; Okladnikov 1946:table XII:1, fig. 3:2; Fedoseeva 1968:fig. 15:1; 1980:182, 183, fig. 102:66-69). On the Chukotka Peninsula, they are represented in North Chukotka culture sites identified by Dikov (Dikov 1977:table 84, 1979:135, fig. 51:18, 19), and on Kamchatka they are known from the materials described by Dikov for the Ushki Neolithic culture (Dikov 1979:fig. 41:10, 42:8). The trihedral shape of these arrowheads may be related to their possible origin in bone arrowheads and spearheads, which usually were trihedral because of the natural proportions of the preforms (Khlobystin 1970:fig. 2; Okladnikov 1946:178, table XVII; 1950b:table 1).

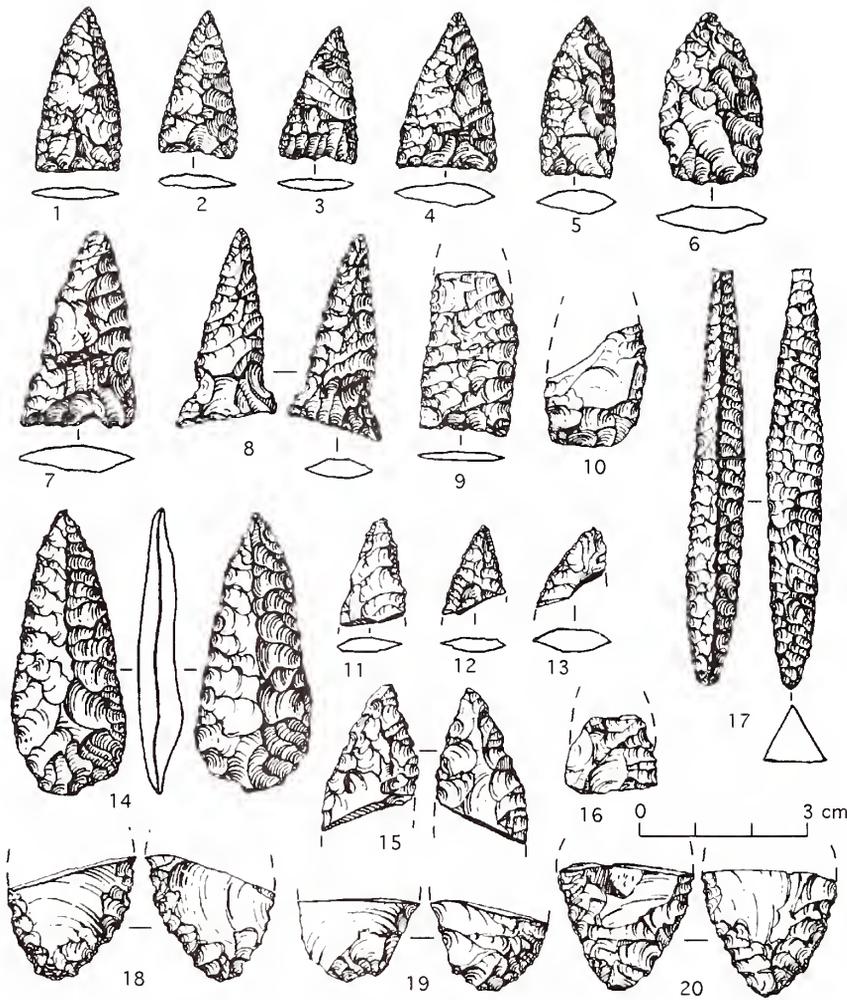
Fragmentary arrowheads were also found. There are five triangular arrowheads with straight or slightly concave bases (Fig. 62:1-4, 16). One arrowhead has



60/ Sandstone abraders from Abylaakh I.



61/ Lithic artifacts (nos. 1-7); slate slab with grooves (8); ring fragment (9); reconstruction of a ceramic vessel (10); and rim profiles (11-15) from Abylaakh I.



62/ Retouched points from Abylaakh I.

convex edges (Fig. 62:6). Two arrowheads are triangular with lateral notches, and one of these is remarkable for its sharply oblique base (Fig. 62:7, 8). One intact and one broken arrowhead can be described as leaf-shaped with rounded bases (Fig. 62:18, 19). Two fragments may be parts of leaf-shaped arrowheads made from flakes of flinty slate with marginal retouch (Fig. 62:13, 20). The latter, as well as fragments of other similar arrowheads (Fig. 62:15, 16), could be connected with the Early Neolithic complex from the lower layer. The overwhelming majority of arrowheads are made of transparent chalcedony, and only a few tools are made of grayish-white jasper-like rock or of flinty slate.

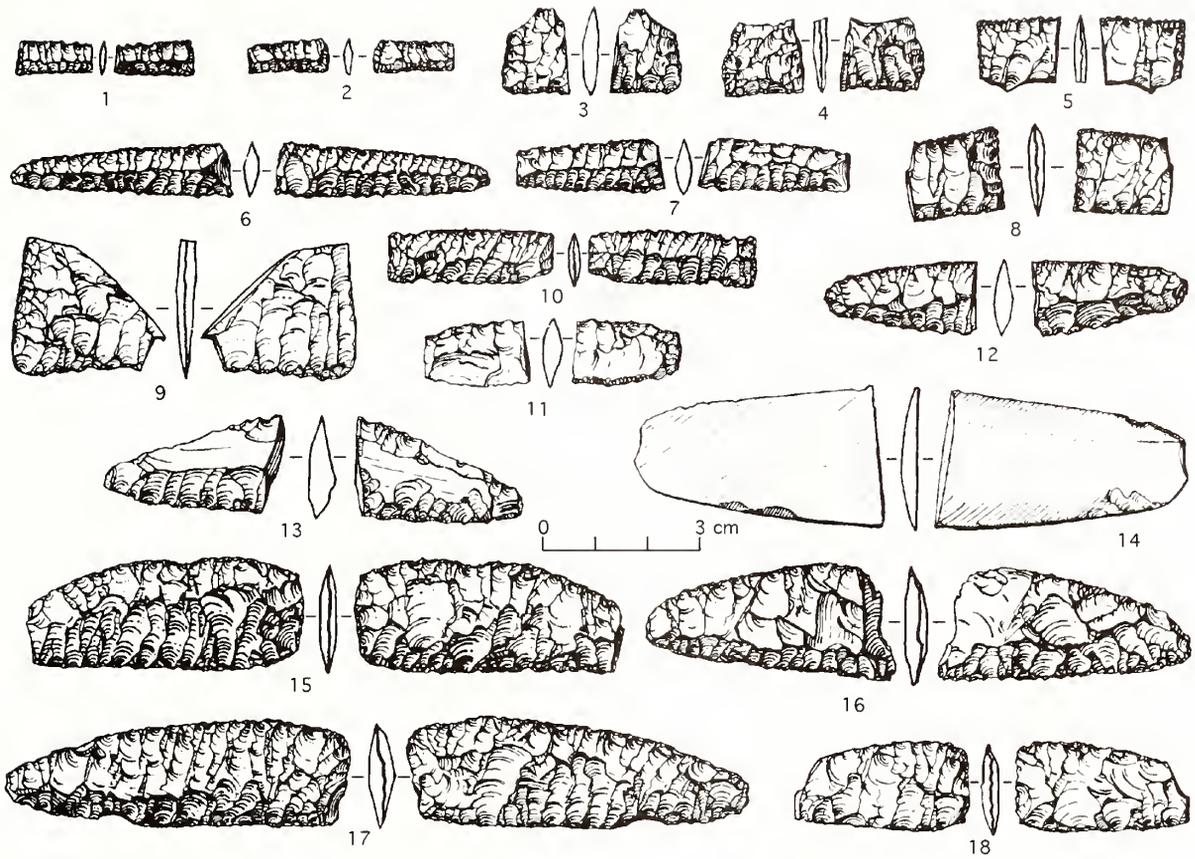
Seven knives were found in the upper layer. They were probably all shaped like a half-moon with a trun-

cated base and were intended for insertion into handles. One groundstone knife was made of pinkish-gray flinty rock (Fig. 63:14); another was made of beautiful flaked red jasper (Fig. 63:15). The remaining knives are of chalcedony (Fig. 63:9, 13, 16-18). There are fragments of three chalcedony artifacts reworked from broken knives or large insets (Fig. 63:3-5, 8). Insets for composite tools were made of chalcedony and flinty slate (Fig. 63:1, 2, 7, 10, 11). They were carefully retouched over their entire surfaces. There are also two end-insets (Fig. 63:6, 12).

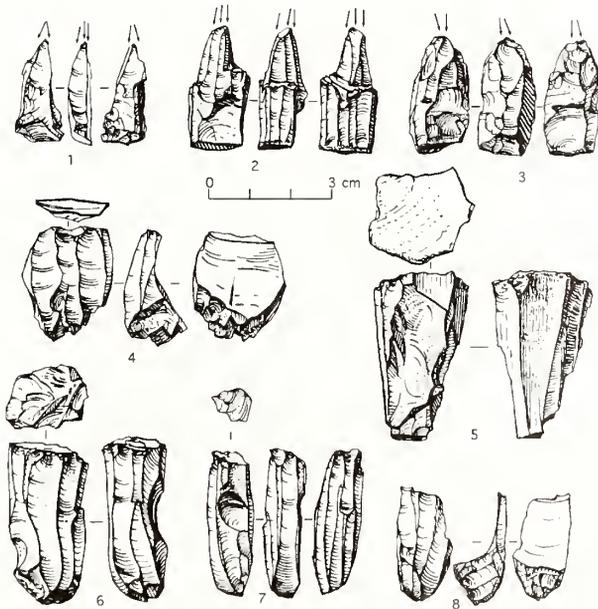
Three chalcedony perforators were found near Hearth 1 (Fig. 61:1-3). Two of these were found at the edge of the hearth but show no signs of thermal damage. The third

perforator was made of light-colored jasper. All these tools are thin, quadrangular in cross-section, and retouched over their entire surfaces. One perforator, made on a flint flake, was found in the eastern part of the excavation area. It is trihedral in cross-section and both sides were retouched (Fig. 61:5). Its point was also retouched, and it shows clear evidence of polish from use-wear, indicating that the tool served some other function in addition to piercing.

A large trihedral flake of light jasper was used as a reamer (Fig. 61:7). Use-wear in the form of scars and polish are easily observed both on its point and on the adjacent sections of its lateral sides. Together with other tools we found three articles in the upper layer with working edges that had been sharpened by several burin blows. Two of these represent so-



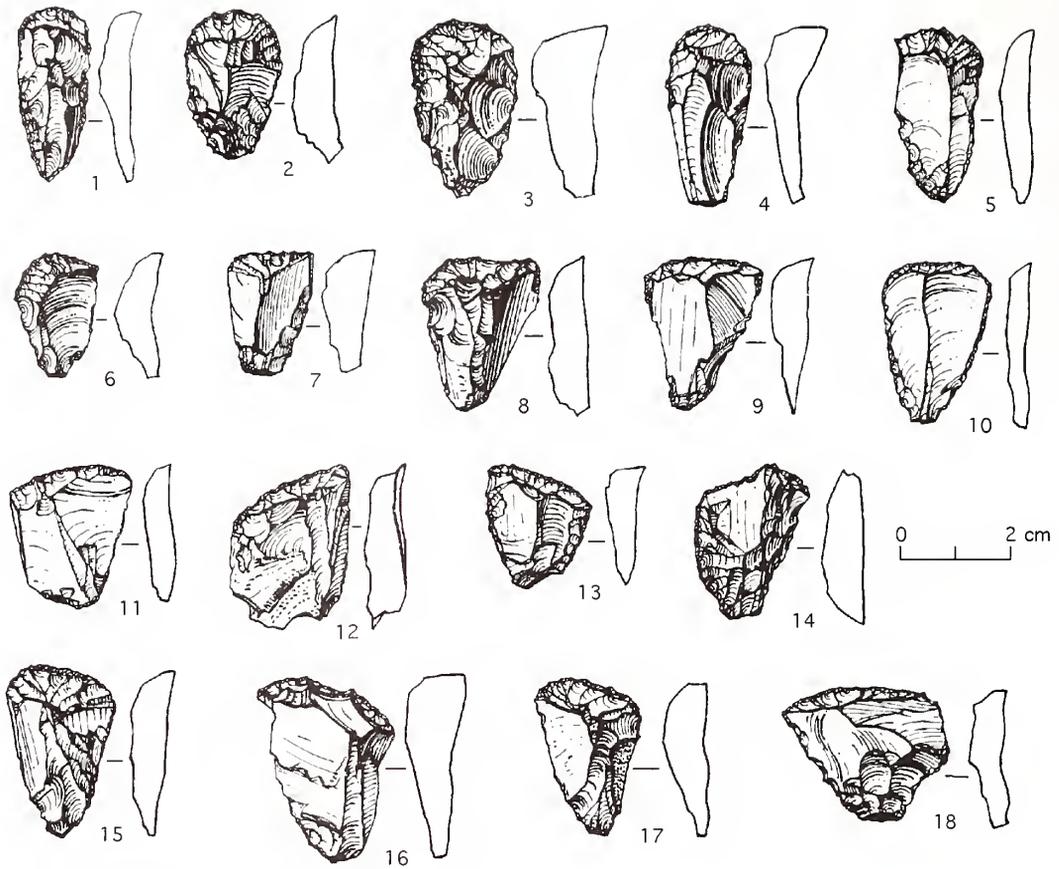
63/ Retouched insets and knives made of red jasper (no. 15), chalcedony, flinty slate, and ground stone (14) from Abylaakh I.



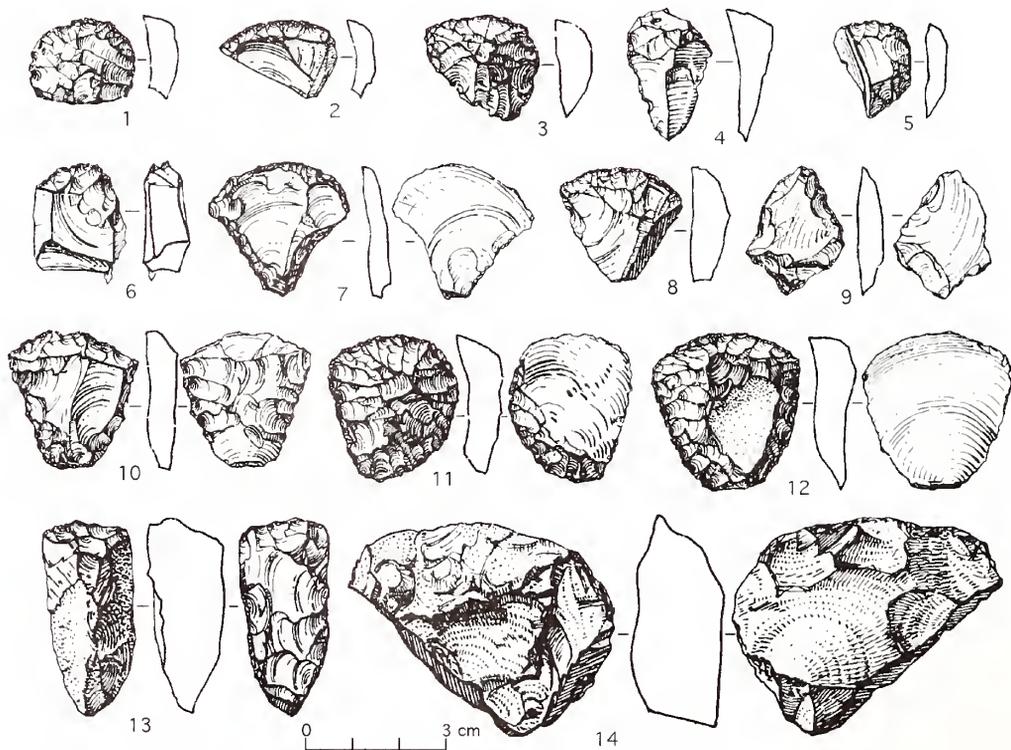
64/ Cores from Abylaakh I.

called "core-drills." A tool made of a light jasper core served probably as a multifaceted burin (Fig. 64:2). A chalcedony tool served as a borer. Its point and lateral sides bear use-wear. A chalcedony flake removed from a core was used as a multifaceted burin (Fig. 64:1).

Endscrapers were the most numerous tools at the site, and the excavation area of 125 square meters yielded sixty endscrapers (Figs. 65-68), of diverse shapes. There are trapezoidal endscrapers, endscrapers on the ends of laminar flakes, pole-axe-like endscrapers, sharp-backed, and oval-backed endscrapers. Usually they have convex working edges. Tools with straight working edges are unusual. A number of endscrapers have working edges beveled on the long axis. Often one of the working edge corners formed a projection. Endscrapers were made both of flakes and of blade flakes. Their butts were bifacially



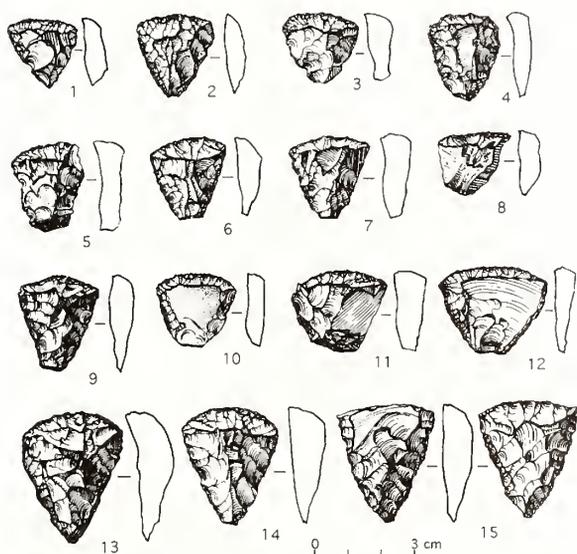
65/ Scrapers from Abylaakh I.



66/ Scrapers from Abylaakh I. No. 14 is a sidescraper.



67/ Scrapers from Abylaakh I.



68/ Scrapers from Abylaakh I.

worked to be inserted into a handle. Some tools were processed by retouch over their entire surfaces.

These endscrapers are notable for their color and the texture of the raw material. The majority of endscrapers were made of transparent chalcedony, but some were made of smoky-colored, milky, and striped chalcedony. Jasperous and flinty slate rocks were also used. Especially notable is a massive endscraper that is trihedral in cross-section (Fig. 66:13)

and was made of dark amber-colored cornelian. Traces of pitch remain on some endscrapers near their butt ends. This substance was used to fasten the tools into handles.

There is only one sidescraper in the assemblage (Fig. 66:14). It was made of a large flake of gray quartzite and its convex working edge has bifacial retouch and is heavily worn. Many retouched flakes, chips and blades, primarily of chalcedony, were found in the upper layer. The working edges of some were formed by steep retouch, and they served as sidescrapers and push-planes, as was the case of one blade that was used as a sidescraper. Some other retouched artifacts were used for cutting. There are also fragments of other tools, the edge of a possible spearhead among them. One piece of beige flinty slate retains a ground surface.

Prismatic blades with parallel scars on the dorsal surface are few in number. Some of these pieces may belong to the Early Neolithic complex that lay in the lower part of the cultural deposits of the site. In total, 532 blades and 2181 flakes were found in the two cultural layers, indicating that blades were very significant in the stone inventory of the Ymiyakhtakh inhabitants of the Abylaakh site. Many fragments of blades bear use-wear that suggests that they were utilized as insets in composite tools without additional working. Besides the "core-drills," five other cores were found in the upper layer (Fig. 64:4-8). They all are chalcedony and belong to a prismatic core type.

Flinty rocks were reduced in two areas in the upper layer: near Hearth 4, where almost a sixth of all flakes were found, and near Hearth 3, where 306 flakes (a seventh of all flaked pieces) were collected in an area measuring 6 square meters. Many flakes were found in the lens of Hearth 3. A hammerstone made from a quartzite cobble was found near this hearth.

Noteworthy is the absence of groundstone tools for wood processing on the site. Bronze tools may have been used instead.

The only ornament found on the site is a fragment of a ring made of soft stone resembling slate (Fig. 61:9). Its external diameter was 3.5 centimeters; inner diameter was 2.1 centimeters; and thickness was 3 millimeters. It was made by cutting on both sides. One surface, probably the external one, is ground and the other shows deep furrows of preliminary processing. The ring was broken in ancient times, and there is evidence of two bored holes. These holes are far apart at a distance equal to one-fourth of the ring; there may have been four symmetrically placed holes on the ring. The fragment was utilized as indicated by the sharpening of one of its ends; another end, where the break goes through a hole, has a smoothed edge that could have resulted from wear on a finger.

Finally, there was an article of reindeer antler that was recovered in Square 34. It was made from the first tine on the lower part of an antler. The antler was cut off at both ends and has the shape of a mallet or drumstick. Similar articles were found in the Mesolithic layers of Ust-Belaya on the Angara River but were made of red deer antlers (Medvedev et al. 1971:56, 73, tables 12:3, 32:2), whereas similar pieces made of reindeer antler were found in one of the dwellings of the Mezin Palaeolithic site. [Such artifacts have also been found at the Mesolithic site of Zhokhov and at some Yakutian Neolithic sites. —*Ed.*]. According to G. F. Korobkova, who has examined the use-wear on this piece, it was used as a drumstick to beat mammoth shoulder blades and other bones and was thus part of a set of percussion instruments. The poor preservation of the drumstick found at Abylaakh makes it difficult to determine its function through use-wear analysis. It may have been used as the find from Mezin—as a drumstick for playing a drum or tambourine. The presence of the mold for an anthropomorphic figurine (Fig. 57:1), which was probably used for ritual purposes, suggests that the drumstick may have been used by a shaman.

The ceramic and lithic assemblages of the upper layer of Abylaakh I indicate that this complex corre-

sponds to the Ymiyakhtakh culture in terms of both type and age. At the Lena sites, the association of bronze casting with artifacts of the Ymiyakhtakh culture could give rise to doubt because of the presence of ceramics from a later time period. Thus, the discovery of a bronze-casting workshop at Abylaakh indicates that Ymiyakhtakh sites, dated to the end of the second millennium B.C., should be dated to the Early Bronze Age.

Abylaakh I is an outstanding Bronze Age site from the polar zone of East Siberia. The fortunate combination of the radiocarbon date with artifacts from the northernmost bronze-casting workshop in the world indicates that the site has great significance not only for the interpretation of this complex, but for Siberian archaeology in general.

First of all, the discovery on Taymyr of a bronze-casting workshop dating to the thirteenth century B.C., as well as the discovery of traces of bronze casting at the Sary Siktyakh site, situated beyond the Arctic Circle on the Lower Lena, demonstrate that the inhabitants of the polar region had technology comparable to that of populations from southern East Siberia. Their hunting economy, well adapted to local environmental conditions, certainly cannot be regarded as a sign of backwardness. Moreover, the domestication of reindeer may have been beginning at this time.

Second, the time period when celts similar to the Seim-Turbino type existed in eastern Siberia can be determined. Third, the discovery of a unique mold for casting an anthropomorphic figurine establishes a date for this type of image, which is often seen in Siberian rock art. Finally, the discovery of a bronze-casting workshop at such a high latitude sheds light on the question of how bronze metallurgy spread among the hunting groups that populated the taiga zone of Siberia.

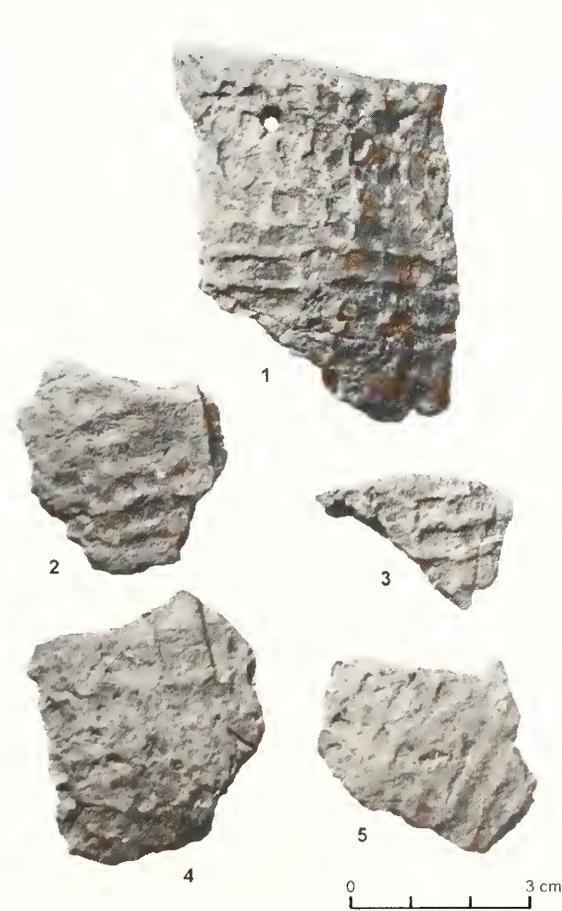
Returning to the Ymiyakhtakh sites of Taymyr, we must consider material from sites such as Kholodnaya II and III. These sites were discovered on the right bank of the Dudypta River, 2.5 kilometers

upstream from the Kistyktakh River mouth. (The Kistyktakh is a left tributary of the Dudypta.) Here the 6 to 8-meter-high terrace is cut by ravines and divided into several promontories. Cultural remains were found on five of these points near the riverside edge of the terrace and were absent on its inner part. All finds were collected from blowouts. The points where these materials were found have been numbered in accordance with their order downstream, from Kholodnaya I to Kholodnaya V.

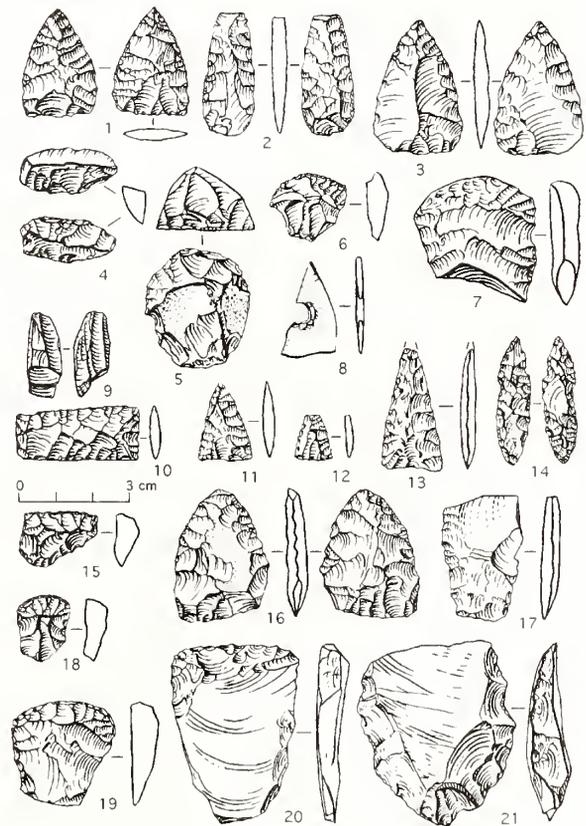
The Kholodnaya III site situated on the middle promontory yielded the greatest number of artifacts. Fragments of a small pot with a rim diameter of 15 centimeters stand out among them. The pot has a broad sub-conical body with a constricted rim 15 centimeters wide (Fig. 69) and a bulging body. The edge of the rim is straight. The external surface is covered with rectangular small-mesh waffle impres-

sions. The thickness of the sherds is 5 millimeters. They are friable and retain impressions of hair, which served as a tempering agent. There is a small hole at the edge of the rim on one of the sherds. The hole had been pierced before the vessel was fired and, together with other such holes, was probably a form of decoration. A fragment of a crucible was found with a sherd of this pot.

The majority of tools from the site belong to types characteristic of the Ymiyakhtakh culture. Two arrowheads have triangular shapes and slightly concave, nearly straight bases (Fig. 70:11, 13). They were made of greenish flinty-slate rock. The third arrowhead, made of chalcedony, belongs to the same type but differs in its small size (Fig. 70:12). There is a chalcedony core that someone tried to turn into a multifaceted burin or borer. However, since the blank broke, the tool remained unfinished



69/ Ceramics from Kholodnaya III.



70/ Lithic artifacts from Kholodnaya II (nos. 1, 3-7); lithic (2) and bronze (8) artifacts from Kholodnaya IV; lithic artifacts from Kholodnaya III (9-21).

(Fig. 70:9). There are two chalcedony endscrapers (Fig. 70:15, 18) and another endscraper of the pole-axe type with a quartzite-like cortex of jasper (Fig. 70:19). The same rock was used for a knife blank (Fig. 70:17). With the exception of a large bifacially worked inset of flinty slate (Fig. 70:10) and the point of a laminar flake of jasper, which was evidently used as a reamer, all other artifacts are blanks for either large endscrapers or adzes or axes. They were made of flint and flinty slate.

A fragment of a mold was also found at Kholodnaya II. The fragments of ceramics collected here were so damaged that it was impossible to determine their types. However, tools from this site can be attributed to the Ymiyakhtakh culture (Fig. 70:1, 3–6).

On the Zayachya site, situated on the Dudypta River, a burnt trihedral arrowhead was found in a hearth (Fig. 71:4). As long as such arrowheads are found only on Ymiyakhtakh sites, the Zayachya site should be attributed to this culture, too. A trihedral arrowhead blank, used for detaching blades, has been found at Dudypta VI (Fig. 71:5). The ceramic sherds with small-mesh rectangular waffle impressions, found on sites such as Pyasina V on the Pyasina River, Ivanovskaya, Kylkai, and Dudypta XI on the Dudypta River, indicate that all of these sites should be attributed to the Ymiyakhtakh culture. The lithic assemblage of Ivanovskaia (Fig. 72), where chalcedony artifacts predominate, is similar to that of Abylaakh I.

Sherds with ribbed impressions were found at Pyasina V along with waffle ceramics (Fig. 73). These finds were accompanied by fragments of elongated triangular arrowheads with straight bases. There were also fragments of leaf-shaped arrowheads, one of which had a concave base (Fig. 74:8). A blank for a leaf-shaped spearhead (Fig. 74:1) and a piece that may have been a fragment of a large tanged arrowhead or a perforator blank (Fig. 74:2) were also recovered, as well as fragments of inset knives; an article with a very complex bifurcate shape (Fig. 74:12); flakes and prismatic blades. All of these

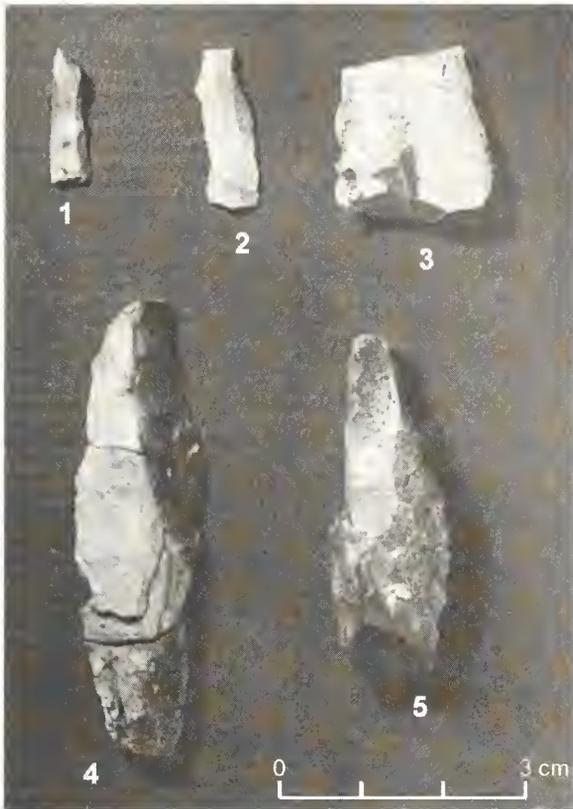
artifacts were made of flint and flinty slate, and only one blade was made of chalcedony. A pendant was made of a thin slab of fine-grained sandstone. Only a fragment of its upper part with a bored hole for lashing has been preserved (Fig. 74:3). Traces of copper oxide are present on a burned bone disc.

The Pyasina V lithics differ from those of the Ymiyakhtakh culture in their poor execution, which is characteristic of Early Iron Age lithics. This site probably dates to a period when the Ymiyakhtakh culture was ceasing its independent existence in western Taymyr. A bifurcate tool (Fig. 75:7), similar to that found at Pyasina V (Fig. 74:12), was found among the tools from Ivanovskaia. Based on this artifact, the site should be dated to the Bronze Age (Fig. 75:7–10, 13–15, 19). Sites such as Avgustovskaya I on the Dudypta River, and Istok Glubokiy on Lake Glubokoye, where thin-walled ceramics with ribbed impressions and hair inclusions were found, should also be attributed to the late Ymiyakhtakh, or to sites associated with this culture.

On the Paiturma IV site, at the upper reaches of the Dudypta, sherds of a vessel with characteristics typical of the Ymiyakhtakh culture were found: closed form, a belt of holes beneath the rim, hair inclusions, and rhombic-lattice impressions from a pottery paddle. This surface appearance is characteristic of vessels dating to the Late Bronze and Early Iron Age. The ceramics from Paiturma IV, as well as the ribbed ceramics have to be dated to the Late Ymiyakhtakh Period—approximately the beginning of the first millennium B.C.

In the eastern part of Taymyr there are a number of sites where endscrapers, arrowheads, and core-like burin-drills similar to Ymiyakhtakh lithics were found. The absence of ceramics at these sites precludes definitive conclusions about their cultural affiliation. Most tools at these sites were made of chalcedony.

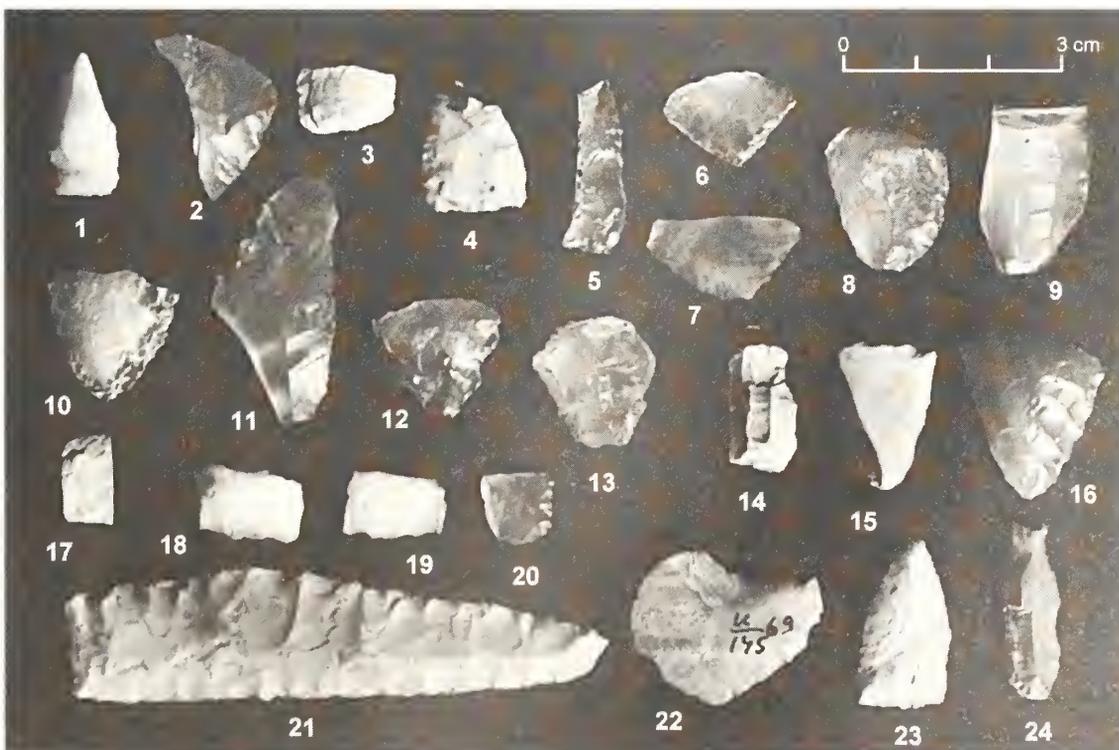
The Khargy III site, which was mentioned in Chapter 2 in connection with the labret find, is one such site. It is situated on the northwestern shore of Khargy Lake. In the course of a surface collection, the



71/ Lithic artifacts from Kylkai (nos. 1-2), Dudypta VIII (3); Zayachya (4); Dudypta VI (5).

following tools were found at the site: a blank for a flint spearhead, or of a spear-like knife; a blade with ventral retouch; a secondary burin spall (Fig. 19:11), flakes and blades of chalcedony and jasper; and a chalcedony multifaceted burin of the “core-drill” type (Fig. 19:15). The “core-drill” burin allows us to date Khargy III to the Early Bronze Age, because such artifacts have not been found on Taymyr among Neolithic materials. This assemblage also yielded a small, white, marble-like stone artifact shaped like a fish vertebra (Fig. 38:10). This piece measures 10 millimeters by 5 millimeters. One disc of the artifact is larger than the other; the edges of the disc are damaged. There is a round pit in the center, from which four dotted lines diverge in a cross pattern. Each line consists of four dots. In general the ornament has an appearance of a swastika-like rosette. It is probably a labret meant to be inserted through the lips or cheek with the ornamented side showing.

In form, the labret from Khargy III resembles ancient Eskimo specimens that have been identified by scholars as nozzles for floats—the latter are found



72/ Lithic artifacts from Ivanovskaya.



73/ *Ceramics from Pyasina V.*

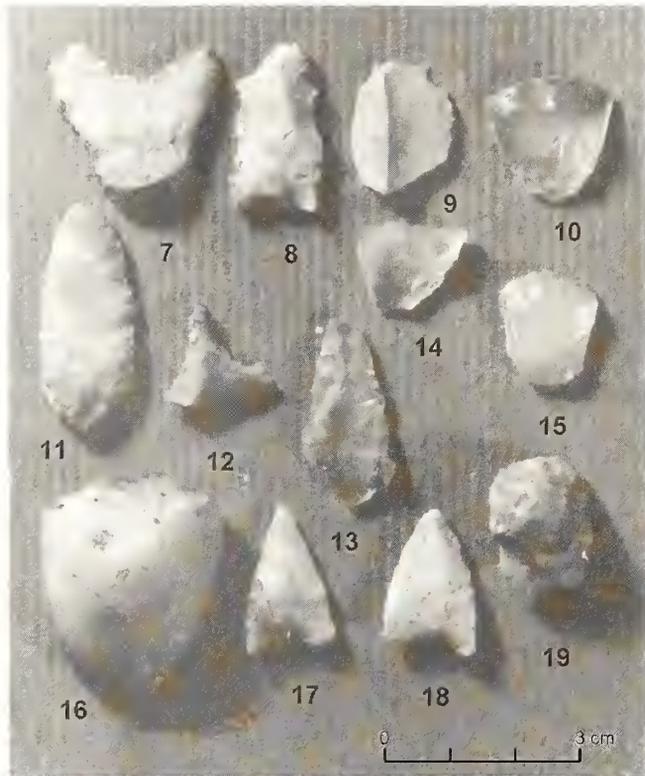
on skin bags that, when filled with air and tied to a harpoon, keep the captured sea mammal afloat. Such an interpretation was offered by S. I. Rudenko for an object similar to the Khargy labret that was found at Uelen (Rudenko 1947:79, table I:18). Similar labret forms are known from America, the Kurile Islands, and northern Hokkaido.

The Khargy III labret demonstrates that the tradition of wearing lip adornments persisted into the Early Bronze Age. This find indicates that the descendants of Maimeche people existed in eastern Taymyr at the end of the second millennium B.C., when they intermarried with newcomers. Another supposition is that labrets were used by Ymiyakhtakh newcomers, in which case the Khargy labret must be associated with Ymiyakhtakh culture. However, labrets were not used by the Yukagir, Chukchi, and Koryak who are probably partially descended from Ymiyakhtakh peoples.

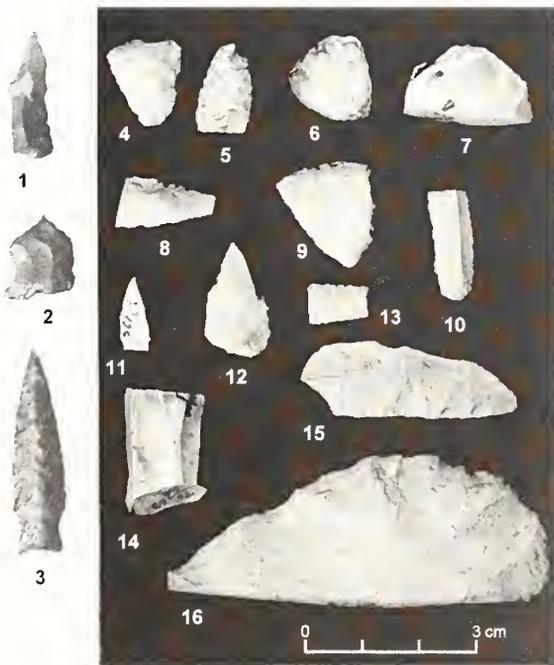
Among the finds that could be coeval with the Ymiyakhtakh culture or date from a later time period are a lanceolate arrowhead (Fig. 76.3) from Tagenar



74/ *Lithic artifacts from Pyasina V.*



75/ Lithic artifacts (nos. 1, 3, 4, 6, 11, 12, 16–18), a piece of bitumen (2), and a piece of clay (5) from Pysina III. Lithic artifacts from Ivanovskaia (7–10, 13–15, 19).



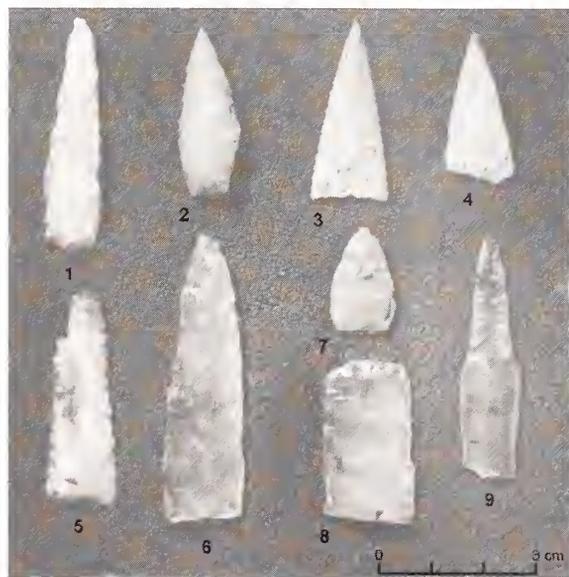
76/ Lithic artifacts from the Volochanka River valley: Tagenar II (nos. 1, 2); Tagenar Lake I (3, 14, 16); Tagenar V (4, 6–8, 10–12, 15); Volochanka II (5); Volochanka I (9); Tagenar II, Location 4 (13).

Lake I made of dark brown jasper with careful bifacial retouch.

An interesting artifact has an outline resembling a fish, with a proximal end wider than the distal end. The body of the tool is constricted a little, and the base is concave with bifurcate corners. A multi-spurred arrowhead of yellowish-white jasper (Fig. 18:3) was recovered from Labaz III, as well as a multifaceted chalcedony burin-drill (Fig. 20:4); a triangular, elongated chalcedony arrowhead with a straight base that was turned into a dihedral burin by two burin blows (Fig. 20:3); an inset blade transformed into a burin on a break; a blade with lateral notches; a fragment of a prismatic core; and prismatic blades and flakes of pink and white jasper. The above-mentioned large multi-spurred arrowhead (Fig. 18:3) is trihedral in cross-section, resembling in this respect the Ymiyakhtakh tools. There are projecting spurs on the ridges in the middle part of the artifact. Unfortunately, its point, base and one of the spurs are

damaged. There are no lithic specimens comparable to this arrowhead; it resembles the so-called “multi-spurred arrowheads” of antler found in Ust-Polui on the Lower Ob (Moshinskaia 1953:76, table I:21–28; 1965:table I:4–6, 11, 15). These arrowheads are similar to the “clawed arrowheads” that were probably used for hunting waterfowl (Moshinskaia 1953:76). This use appears unlikely for the massive arrowhead from Labaz III. When this artifact was shown to Nganasan people, they suggested it could have been used as the head of a *khorei*—a reindeer prod. However, this idea could be true only if the reindeer decoy hunting method had appeared as early as the Bronze Age. Most probably, this arrowhead was used to hunt geese on shore.

Among the aceramic Pyasina sites dated to the Early Bronze Period is a site at the Talovaya River mouth. Here, in a small blowout, five chalcedony artifacts were collected: a fragment of an elongated triangular arrowhead with a slightly concave base (Fig. 77:5); a perforator made on a prismatic blade with its point formed by fine, oblique retouch (Fig. 77:9); a fragment of a tool used as a scraper; and a flaked chalcedony slab. Keeping in mind the small area where the materials were collected, this assemblage resembles the inventory from a burial place.



77/ Lithic artifacts from Malaya Korennaya I (nos. 1–4, 6, 7) and Ust-Talovaya (5, 8, 9).

Distribution and Development of Check-Stamped Pottery

The discovery of check-stamped, or waffle, pottery in the eastern and western parts of the Taymyr Peninsula and Ymiyakhtakh tools indicates that Taymyr was part of the Ymiyakhtakh culture area. At the end of the second millennium B.C., Ymiyakhtakh peoples from the Lena River basin south of the Arctic Circle began the successful colonization of polar regions. East of the Taymyr Peninsula, in addition to the Anabar-Olenek interfluvial and the Lower Lena areas, Ymiyakhtakh sites such as Ularovskaia Protoka (Okladnikov and Gurvich 1957) and Burulgino were found on the Indigirka River (Fedoseeva 1972), and the sites of Labuya, Nizhne-Kolymaskaia, and Konzaboy were found on the Kolyma. Ymiyakhtakh-style waffle pottery is characteristic of North Chukotka culture (Dikov 1979:fig. 50). Ribbed pottery characteristic of the Ust-Belaya tradition of Chukotka is dated by Dikov to the period between the end of the second and the first half of the first millennium B.C. (Dikov 1979:147, 148), which corresponds to the dating of Taymyr ribbed pottery to the late and post-Ymiyakhtakh periods.

The first to call attention to the appearance of waffle pottery from Siberia in the West Eurasia polar region was Okladnikov, who noted similarities between pottery fragments found in Burial X of the Oleny Ostrov cemetery on the northern Kola Peninsula and the check-stamped pottery of Yakutia (Gurina 1953:376; Okladnikov 1953:156; Schmidt 1930:table VI:4). The fragments had sub-rhombic impressions made with a paddle. This was not the only example of such pottery in northern Europe. Fragments of vessels decorated with a rhombic waffle pattern have been found in northern Norway. Sites with waffle pottery nearest Oleny Ostrov are known from Varanger on Kelmo Island and near Vardø (Gjessing 1935:25–38; 1942:275–278, fig. III:3; Solberg 1909:71, 72). There are reports of finds near Nordkapp [North Cape, Norway] and in

Storbukt. The southwesternmost point of its distribution is Kirkhellaren on Sanda Island in the Trena Archipelago just south of the Arctic Circle (Gjessing 1943:129–131, table XXXVII).

The pottery discovered in northern Norway has asbestos temper, a feature typical of the cultures of the Scandinavian North, the Kola Peninsula, and polar regions of Finland and Karelia during the Bronze and Early Iron Ages. The Saami, the indigenous inhabitants of those regions, also used asbestos temper in making ceramic vessels. However, investigations at Anttila II, in northern Finland on the Kemijoki River just south of the Arctic Circle, yielded specimens of rhombic waffle ware with both asbestos and hair temper (Carpelan 1970:34).

Dates for the appearance of waffle pottery in northern Europe have been refined by radiocarbon dating (Gurina 1953:53) of the lining of Burial 4 at the Oleny Ostrov cemetery, 3000 ± 50 (LE 800). According to Gurina's observations, the cemetery cannot be divided into chronologically different complexes. Hence, the Burial 4 date can be applied to the cemetery as a whole and extended to Burial X, which contained waffle pottery. Thus, the waffle pottery of the Kola Peninsula and Finland is contemporaneous with Ymiyakhtakh pottery.

When Gurina and Okladnikov noted the similarity between the pottery from Oleny Ostrov and that of Yakutia, there was no evidence of assemblages containing the same kind of pottery from the vast expanses extending from the Lower Lena to the White Sea. Gjessing did not know of the finds in Yakutia and, in defining waffle pottery as one of the distinctive features of circumpolar culture, he had to refer to similar specimens from distant regions—North America and the Kamchatka Peninsula (Gjessing 1944:43–45).

As a result of the discoveries in the Anabar-Olenek interfluvial and the work of the Polar Expedition on the Taymyr Peninsula, the distribution of waffle pottery as far as the Pyasina River in the western part of the peninsula was established.

In 1966, when a Polar team was surveying the lower reaches of the Malaya Khadyta River on the southern Yamal Peninsula, a fragment of a pot with small-mesh waffle was found in the collection from Khadyta-yakha I. Another specimen found farther west was a fragment with rectangular cells from the Moi-Yarei site in the Bolshezemelskaya tundra, discovered in 1907 by A. V. Zhuravskii during a survey of the Kolva riverbanks (Zhuravskii 1909:298). The lithics and pottery from the site were sent to the Museum of Anthropology and Ethnography in St. Petersburg where examination of Collections #1184 and 1457 revealed waffle pottery with hair temper. Waffle ware was also found in the Kolva River basin in 1947 by G. A. Chernov, who was collecting finds at Point 2 at the Sandibey VI site. Waffle pottery was not the principal type of pottery at any of these sites; other contemporaneous wares of local cultures dominated. At Khadyta-yakha I, for example, Yarsale-type ware dated to the end of the second and beginning of the first millennium B.C. was recovered along with waffle pottery. Drops of copper and fragments of crucibles were also found here and were shaped somewhat like the crucibles from Abylaakh I.

At the Sandibey V site discovered by Chernov, in addition to sherds from the Early Metal Epoch, there were fragments with wavy impressions made using a rolling stamp. Similar ornamentation was noted at sites east of the Middle Urals where it was dated to the end of the second millennium B.C., at the earliest. Similar pottery found on sites in the subarctic reaches of the Pechora River was given the name "Korshak" ware by V. I. Kanivets who dated it to the mid-second millennium B.C. (Kanivets 1974:22–25, 124–126). Since Kanivets' dating was based on the Suzgun and Yolovo cultures of the Andronovo type, which dated to the last quarter of the second millennium B.C. (Kosarev 1974:117), the roll-stamped Korshak pottery cannot be dated prior to the close of the second millennium B.C.

With finds dating from the second through first millennium B.C. and evidence that the populations

of Eastern Europe and West Siberia were culturally related to the inhabitants of the adjoining taiga zones, the appearance in those regions of waffle pottery can be explained only by the penetration of a cultural tradition from the east, from the general area of the Taymyr Peninsula. The route by which waffle pottery extended into the west lay across the tundra and forest-tundra zones beyond the Arctic Circle. Indeed, this process was promoted by the expansion of those zones as a result of climatic deterioration in the second half of the second millennium B.C. as well as by the reduction in marshland.

How were the skills for manufacturing ceramics with a spatula-mallet that left waffle impressions spreading? Was this process associated with the westward movement of an ethnic group or were the cultural skills alone proliferating? Or was the appearance of waffle pottery a convergent phenomenon? The latter assumption is at odds with the dating of the waffle pottery found in the Eurasian Arctic. The available radiocarbon dates are closely spaced: 2950 ± 50 B.P. for Burulgino on the Indigirka River; 3100 ± 60 B.P. for Abylaakh I on the Taymyr Peninsula; and 3000 ± 50 B.P. for the Oleny Ostrov cemetery on the Kola Peninsula. These dates are inconsistent with the idea of convergence where emphasis is placed on a causative rather than temporal relationship. Since the convergence theory is not adequately developed, the above argument is merely a tentative proposal. Nevertheless, why would different ethnic groups with dissimilar pottery-making traditions simultaneously develop a new technology that did not stem from the demands of cultural evolution and that died out without further development? From the standpoint of convergence advocates, this phenomenon defies explanation. Even less explicable from this standpoint is the spread of hair temper in combination with the paddle production technique.

A more plausible explanation is that the pottery represented a "fashion trend." But why was the trend confined only to the waffle patterns and why did neighboring cultures fail to adopt other peculiarities

of pottery production and ornamentation? Finally, why did the proliferation process develop over certain natural zones and bypass the forest region inhabited by ethnic groups related by origin or culture to the population of the polar region? In this respect the Anttila II site is an exception.

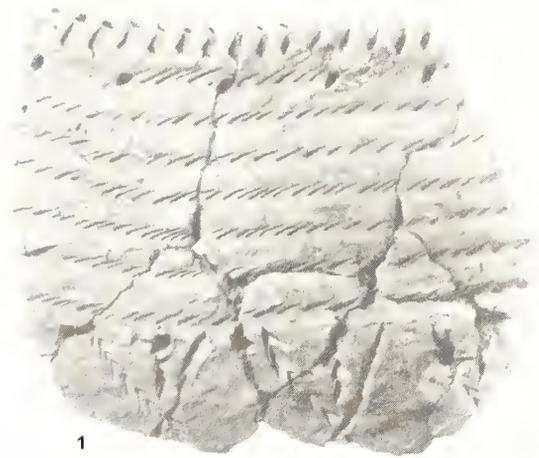
The most tenable view sees the migration of the ethnic group representing that cultural tradition behind the spread of this pottery type. Moving along the tundra and forest-tundra corridor, between the coast of the Arctic Ocean and the boundless tracts of taiga, bypassing the principal territory where the Finno-Ugric-Samoyedic community was developing, that ethnic group was coming into contact with different aboriginal ethnic groups, leaving traces in the form of waffle pottery fragments and gradually intermarrying with the local population. Noteworthy in this respect are the traits shared by the inhabitants of the Pechora and West Siberian polar regions and the ethnic groups of extreme Northeast Asia (Lashuk 1958:33-36; Prokof'iev 1939:21, 22; 1940:73).

The phenomenon of common cultural characteristics peculiar to the ethnic groups of the North is the result of a number of circumstances, primarily ecological factors and the diffusion of cultural developments. However, some of those characteristics—lexical cognates in particular—are presumably due to contributions to various cultures made by ethnic groups associated with the Ymiyakhtakh tradition that were widely distributed in the polar region at the turn of the second millennium B.C.

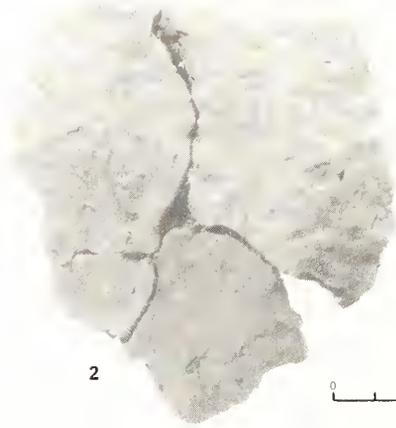
C. Carpelan, the investigator of Anttila II, noting the presence of "imitated textile" ware in East Siberia and North America, indicated at the same time that the origin of the ware in northern Fennoscandia had not been fully explained (Carpelan 1974:27). After familiarizing himself with the publications of the Polar Expedition, he argued that the appearance of waffle pottery in Fennoscandia was the result of its introduction by migrants from Taymyr (Carpelan 1975:23).

The first local residents to be encountered by the migrating groups of the Ymiyakhtakh people on their way west were descendants of the Baikit culture living on the Pyasina River. Contact between the two groups resulted in the appearance of pottery reminiscent of Pyasina IV-A. Pyasina IV-A was discovered in 1971 on the right bank of the Pyasina River, downstream from the mouth of the Malaya Korennaya River and sixty-nine kilometers from the source of the Pyasina. Here a ten-meter-high terrace is cut by a large stream valley; the right bank of the stream and the near side of the terrace form a prominent ledge rising to the top of Terrace II. On a small platform at the base of the rising slope, an ash lens was located beneath a 10 centimeter-thick humus layer. Near the ash in a blowout near the excavation, the following were recovered: a tiny borer, a chalcedony knife, blades, and flakes found in association with a fragment of thick-walled pottery, and a small crucible. The crucible (Fig. 79), oval in plan with the spout at the narrow end and a slightly rounded bottom, is very small in size: 6 centimeters in length, 4.7 centimeters at its widest, and 1.9 centimeters tall. Its capacity does not exceed 12 cubic centimeters. The crucible, assigned to the "Pyasina" type, differs in shape from those used at Abylaakh I and is of a type widely distributed among the Pyasina River sites.

The pottery fragment recovered (Fig. 78:1) is from a round-bottomed vessel of sub-conical shape; the rim diameter, measuring about 25 to 26 centimeters, was smaller than that of the middle part of the pot. It was approximately 20 centimeters in height, and the walls were about one centimeter thick. The paste contains coarse gritty earth as a temper. Inside the pot, evidence of smoothing was visible. The upper half of the vessel is covered with decoration. The surface of the rim and the outer edge are marked by slightly inclined pricks made with a sharp stick. Under the rim, groove-like lines girdling the pot were made with a rocker-stamp with small conical pits 4 millimeters in diameter stretching along the uppermost and under the lowest lines. Descending



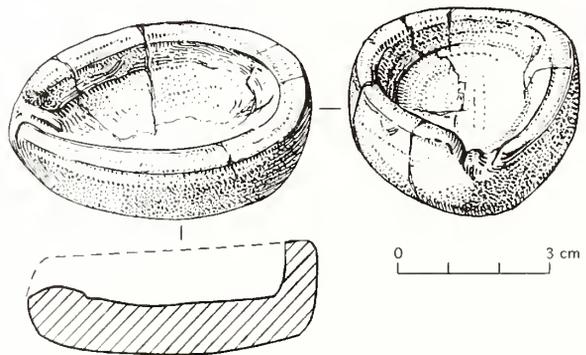
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78/ *Ceramics from Pyasina IV-A.*



79/ *Crucible from Pyasina IV-A.*

from every other pit of the lowest line are slanted lines that intersect at an angle of 55 to 56 degrees to form triangular streamers.

If only the upper part of the design is examined, an apparent relationship to the Neolithic Baikit

decorative style becomes evident, especially to a Baikit pottery fragment from Ust-Polovinka. However, the entire lower part of the Pyasina IV-A pot is covered with “waffle” impressions typical of Ymiyakhtakh pottery. The impressions are randomly scattered, and the paddling was done on wet clay, spattering the edges of the quadrangular cells. The paddle pattern was formed by narrow (3.5 mm) cuts spaced 4 millimeters apart and intersecting at right angles. Thus, the pot combines features of two pottery-making traditions: the Baikit and the Ymiyakhtakh and is thus of a hybrid type.

The appearance of such hybrid ware reflects the fusion of two cultural traditions and, most likely, assimilative connections between Pyasina peoples, descendants of the Baikit cultural group and Ymiyakhtakh migrants from the east. Such pottery must be later than the Ymiyakhtakh culture. Since there were settlements on the Pyasina with pottery of a different type dated to the sixth century B.C., Pyasina IV-A should be dated to the early first millennium B.C. The rim of another, smaller pot found near the ash lens should also be mentioned. This fragment was decorated with pricked horizontal lines made with dentate rocker-stamping. Hereafter, the term “early Pyasina ware” will be used to refer to the pottery found at Pyasina IV-A.

Due to its extensive distribution, the Ymiyakhtakh culture exerted considerable influence on many of the inhabitants of East Siberia who adopted its waffle pottery. Waffle-impressed vessels persisted in Taymyr through the second half of the first millennium B.C. Such vessels were produced at the same time and subsequently in other regions of East Siberia and the Far East while, in Yakutia, the original territory of the Ymiyakhtakh peoples, other cultures were developing. It would be erroneous, therefore, to assign every site with waffle ceramics to the Ymiyakhtakh culture. Even while Ymiyakhtakh was in existence, waffle pottery could have been used by ethnic groups of other cultural traditions, for example, the asbestos-ware culture of northern

Scandinavia. The waffle pottery sherds from sites in the Baikal and Trans-Baikal regions—Chenche Duskachan, Fofanovo, Posolskoye, Ulan-Khada, Peschanaya Bay, and the Baikalsky settlement—may be similarly interpreted. Waffle impressions have also been observed on pots belonging to the Glazkovo tradition, although most of these impressions were applied in a different manner. An interesting comparison can be made between Ymiyakhtakh pottery and the ware found by M.G. Levin’s expedition at the Dushkachan settlement (curated at the Institute of Anthropology, Moscow State University, Collection 8540). This ware is decorated with a rhomboid-lattice pattern, closely spaced rows of comb impressions, and vertical pricks made with a stick. As with the Ymiyakhtakh specimens, the paste contains hair. Mochanov and Fedoseeva assigned the site on Lake Tatyano in the Kolyma arm of the Indigirka delta to the Ymiyakhtakh culture (Fedoseeva 1980:149; Mochanov 1969:190, 191; Okladnikov and Gurchik 1957). Fragments of two vessels with a rhomboid-waffle pattern were recovered at the site. A small, globe-shaped vessel was decorated with five thin parallel ridges applied near the rim. The pot surface appears burnished. The presence of a temper in the paste could not be determined. The appearance of such ridges is associated in Yakutia with the Ust-Mil culture and dates from the beginning of the tenth century to the mid-first millennium B.C. (Fedoseeva 1970a, 1974).

Thin, appliquéd ridges and large rhomboid-waffle impressions are characteristic of the Iron Age pottery of Taymyr, which enabled the Lake Tat’yanino site to be dated to the second half of the first millennium B.C. (Khlobystin 1975:105). The Lake Tat’yanino site should not be attributed to the Ymiyakhtakh culture, nor should pottery from Ularovskaia Protoka on the Indigirka (Okladnikov and Gurchik 1957) or the Kurung I and Bolshaya Kyuske sites on the Olekma River (Zykov 1978). Pottery from these sites apparently developed under the influence of the Ust-Mil tradition; it differs markedly from Ymiyakhtakh ware.

Pottery with waffle impressions on the surface has been found at a number of settlements on the Magadan coast of the Okhotsk Sea. R.S. Vasil'evskii assigned the materials from Atargan, Nargabyen, Three Brothers Cape, Kip-Kich and Varganchick to the ancient Koryak culture (Vasil'evskii 1971). In describing the impressions on the sherd surfaces, Vasil'evskii uses the term "pseudo-textile" without making a distinction between typical waffle and textile imprints.

Many other sites in the region, such as Bogurchan, Zav'yalov Island Dwelling I, Alevin Cape, Orochan, Sivuch, Astronomicheskaiia Bay, Srednyaya Bay, Nantandza, Itkilan Bay, Tavatum, Nayakhan, Kulka, and Kavran—which Vasil'evskii considers to be associated with the use of "pseudo-textile" stamps, actually contain vessels produced using a paddle to create waffle impressions. Vasil'evskii notes that "pseudo-textile" pottery is thin-walled relative to other ceramics found at some of the above-mentioned sites; its waffle imprints are 4 to 5 millimeters, less frequently 3 or 8 millimeters in thickness, whereas the smooth-walled wares are, as a rule, over 1 centimeter, and occasionally as much as 2 to 2.7 centimeters thick. According to Vasil'evskii, round-bottomed vessels with the outer surface completely covered with "pseudo-textile imprints" predominate over other types of ceramics at ancient Koryak sites. The rims of such vessels are slightly everted; the relatively thin walls measure 4 to 6 millimeters thick; maximum diameter of the vessels is 18 to 24 centimeters; height is 20 to 25 centimeters. Vasil'evskii dates the "pseudo-textile" vessels to between the sixth and thirteenth centuries A.D., noting their development from sharp-bottomed to round-bottomed, egg-shaped, and globular pots occasionally decorated with applied ridges with transverse incisions (Vasil'evskii 1971:132–135).

Waffle pottery from the ancient Koryak culture owes its origin to intra-continental influences, most likely to the Ymiyakhtakh culture of Yakutia. Ymiyakhtakh culture sites were discovered by the

Lena Region Expedition on the Kolyma River and the Kukhtuy River near the Okhotsk Sea coast. Descendants of the Ymiyakhtakh culture apparently formed part of the ancient Koryak community.

Of interest here are the burials excavated by A.V. Beliaeva and G.A. Pytlyakov at Astronomicheskaiia Bay, Srednyaya Bay, and Three Brothers Cape. The interments have not been dated. Some of the graves contained stone spearheads; a bone harpoon knob and a harpoon head with a closed socket were also among the finds. Dull blue glass beads were found in one of the graves at Astronomicheskaiia Bay. A pot with waffle patterning on the surface was recovered from Burial 2 at Three Brothers Cape (Beliaeva 1967). Other glass beads appear in the Siberian Arctic in the sixteenth century; their distribution among the indigenous ethnic groups of Siberia is associated with the establishment of trade relations with the Russians. Russian settlers would have taken some time to penetrate far north-east Siberia; therefore, the burial containing the bead should be dated to the seventeenth century at the earliest. The graves in Astronomicheskaiia Bay and on Three Brothers Cape cannot be regarded as contemporaneous; the latter must be earlier. According to G.F. Debets and N.N. Mamonova, the skulls found in the graves may belong to Yukagir or Even [formerly Lamuts] (Beliaeva 1967:84). These finds are of great interest relative to the ethnic aspect of the Ymiyakhtakh culture.

Some specimens of waffle pottery found at ancient Koryak sites may date to as early as the first millennium B.C. If the thirteenth-century date proposed by Vasil'evskii for the later types of Koryak waffle pottery is correct, it marks the latest date for that method of producing pottery in northern Eurasia.

Fragments of pots with waffle patterns have also been found among ancient Eskimo cultures. Examples were found at the Sireniki dwelling site. Fragments with traces of ribbed paddling and one piece with a indistinct "check-stamp" were discovered among sherds of more typically Eskimo thick-walled vessels

near Chaplino Promontory (Rudenko 1947:38, 52, 93, table 26). Waffle pottery has also been found at the Miyowagh site on St. Lawrence Island (Collins 1937:169, fig. 17) and at many settlements in Alaska where it is dated to the mid-first millennium B.C. and later. Finally, pots with waffle-patterned surfaces have been recovered from Mokhe sites in the Amur River region dated to the fifth through eighth centuries A.D., namely the cemetery near Troitskoye village and the Sikachi-alyan settlement (D'iakova and Shavkunov 1975:165, fig. 3).

The waffle-pottery-making tradition indicates that Ymiyakhtakh peoples may have been involved in the origins of many East Siberian and Northeast Asian peoples. Although there are few osteological materials associated with the tradition—two skulls from the Chuchur-Muran cemetery and one skull each from the Ust-Belaya cemetery and the Boguchan burial—they differ so significantly (Dikov 1979:154; Fedoseeva 1980:80, 82; Gokhman 1961; Levin 1958:162, 163; Iakimov 1950) that they cannot be considered to be the same type. Ymiyakhtakh culture may have had a complex, polyethnic composition. Waffle pottery therefore cannot be associated with any single ethnic community. Otherwise it would be logical to assert that the Norton culture that existed in Alaska in the mid-first millennium B.C. and the Ymiyakhtakh sites of East Siberia are associated with one ethnic group.

According to Mochanov (1969:196), Ymiyakhtakh peoples influenced the development of the ancestors of northeastern Asian peoples (Chukchi and Koryak). The involvement of waffle (pseudo-textile) pottery groups in Koryak ethnogeny has been discussed by Vasil'evskii (1971:174–176, 192). Dikov regarded the Ust-Belaya culture as a northeastern Asian tradition most likely ancestral to the Chukchi. Noting that waffle pottery was an element of both the ancient Koryak and the North Chukotka cultures, Dikov suggests that ceramic similarities were the original source of the Chukchi-Koryak community (Dikov 1979:140, 154–159, 212). Okladnikov

(1955a) associated waffle pottery sites with the ancestors of the Yukagir and Nganasan. The idea that waffle pottery groups were the Asian ancestors of the Yukagir or the proto-Yukagir is convincing (Khlobystin 1969b, 1973c:163; 1975:104), assuming that linguistically they were not yet part of the Ural community. Fedoseeva also concludes that Ymiyakhtakh peoples played an important part in the formation of northeastern Asian populations and that they could have contributed to the ethnogeny of the Yukagir (1980:215).

Sites such as Pyasina IV-A and Dushkachan, which combine the Ymiyakhtakh waffle pottery tradition with patterns from East Siberia, indicate complex origins for the population that created them. The formation of the ancient Yukagir thus occurred through a combination of East and West Siberian features. The relationship of the Yukagir language to the Ural linguistic group and to the Samoyedic languages in particular has been noted by some scholars (Collinder 1940; Harms 1977; Meschaninov 1948). Kreinovich (1958:254) concluded that, in addition to some Altai languages, the Samoyedic languages played an important role of the formation of Yukagir.

Lexical equivalents for “copper” and “bronze” in the Yukagir and Samoyedic languages indicate a time period when the ancient Yukagir were still in contact with East Samoyedic-speaking peoples. The Yukagir word “norokhon” (copper) has parallels in all Samoyedic languages. The Samoyedic names for copper have a similar phoneme, “nar” or “nor”; that is, “norumu” (Nganasan), “nara” (Enets), “nyar” (Selkup), and “nyarava” (Nenets). These words have a common stem evident in the words “noru” (Nganasan), “narzese” (Enets), “nyarky” (Selkup), and “nyar'yana” (Nenets) for “red.” The Yukagir for “red” is “n'amut'-enil.” The word “n'ornej,” meaning “yellow,” is obviously a derivative of the word for “copper.” The fact that in the languages of other Yukagir neighbors the words for “copper” and other metals have stems other than “nor” or “nar” suggests that the word for “copper” was adopted by the Yukagir from Samoyedic,

together with the knowledge of copper metallurgy at a time when the two ethnic groups were in contact (Khlobystin 1979a). This contact may be dated to the second half of the second millennium and the early part of the first millennium B.C., a period marked by sites with evidence of mixed Ymiyakhtakh and West Siberian traditions.

The words for “iron” in the Yukagir language, “ludul” and “t’yon,” differ from those in the Samoyedic languages, where they can be traced to a single Finno-Ugric-Samoyedic stem—“vas.” This suggests that at the time of their first experience with iron, the Yukagir were no longer in contact with Samoyedic-speaking peoples, possibly because some other ethnic group was wedged between them. The common phoneme “tu” is found in both “dul,” the Yukagir word for iron, and “tul’a,” the Ket word for copper. In some languages, the words for “copper” or “iron” were understood to mean “metal”; thus, the idea that

the Yukagir adopted the word for iron from the Ket, or some other ancient people of the Yenisey region would appear plausible. At least in the Early Iron Age, about the second half of the first millennium B.C., the Yukagir were in contact with Yenisey ethnic groups. Apparently during that period, Ket ethnic groups were spreading northward along the Yenisey valley (Dul’zon 1962) and were responsible for the separation of the Yukagir from Samoyedic speakers.

The propinquity of the Yukagir and the Nganasan anthropological types was consistently noted by Zolotareva (1962, 1968, 1971, 1975) who came to the conclusion that there could have been a still closer relationship between these types in the past, when they formed a fairly homogeneous anthropological community associated with the primeval population of the Yenisey-Lena interfluvial. That population apparently represented the Khatanga anthropological type.



80/ An abandoned Nganasan camp along the Avam River, near the village of Ust-Avam, western Taymyr, 2001. Old poles from a skin-covered tent (choom) are lying on the ground in front of the abandoned ritual sleigh. According to local beliefs, to touch the contents of the old sleigh would bring misfortune. Photographer John Ziker.

The Early Iron Age and the Medieval Period



The Iron Age of Siberia has not been uniformly investigated. In West Siberia, as well as in the Ob and Irtysh Basins, a number of sites have been found dating to various periods of the Iron Age. Their cultural identification and chronology are dealt with in numerous publications, V.N. Chernetsov's studies (1953a, b) foremost among them. Survey work on Iron Age sites in Evenkia was begun by G.I. Andreev, but unfortunately was of short duration. At present, only a few sites are known in Evenkia. There are many sites dating to the Iron Age in Yakutia but the number of finds is small. Furthermore, many artifacts were mixed with or resemble material from other periods, especially the Bronze Age, making the identification of Iron Age sites difficult. As a result, the Early Metal Period [a general term used by Russian archaeologists to designate a period of time in which some kind of metal was in use —*Ed.*] has remained understudied, although as early as the 1940s, Okladnikov identified the types of pottery characteristic of the Iron Age and proposed a chronology (Okladnikov 1945, 1946).

An important contribution to our knowledge of the Iron Age in Yakutia was made by S.A. Fedoseeva (1968, 1970a, b, c, d, 1974) who identified Ust-Mil pottery typical of the Bronze and Early Iron Age and established a chronological framework based on the study of Vilyui sites and stratified Aldan settlements. The Ust-Mil culture was dated from the early tenth to the middle of the first century B.C.; the beginning of the Iron Age was dated to about the beginning of the Christian Era. I.V. Konstantinov (1978) elaborated

upon Fedoseeva's work; he was the first to review all available material on the Early Iron Age in Yakutia.

The Iron Age of the forest and tundra zones of East Siberia is still poorly known; even the stratified Aldan sites give only a rough idea of the evolution of cultures during the Early Metal Period over the immense territory of East Siberia for over two thousand years. The study of these sites is of primary importance because of the many questions regarding the ethnogenesis of East Siberian peoples. The investigation of sites on Taymyr dated from the first millennium B.C. to the first millennium A.D. has much to contribute to these questions. Prominent among the Taymyr sites is the stratified settlement of Ust-Polovinka.

The Ust-Polovinka Site and the Pyasina Culture

In the mid-first millennium B.C., the population of the Taymyr Peninsula entered the Early Iron Age. Excavations of a settlement at the mouth of the Polovinka River resulted in the discovery of extraordinary material from this period. Several layers of Iron Age deposits buried in sand and datable by radiocarbon methods make the site a point of reference in the study of the Iron Age of North Siberia.

The small Polovinka River is a left-bank tributary of the Pyasina River and discharges into it 53 kilometers downstream from its source in Lake Pyasino. At the mouth of the Polovinka on its left bank is a sand ridge that is also an ancient natural levee (Fig. 81)

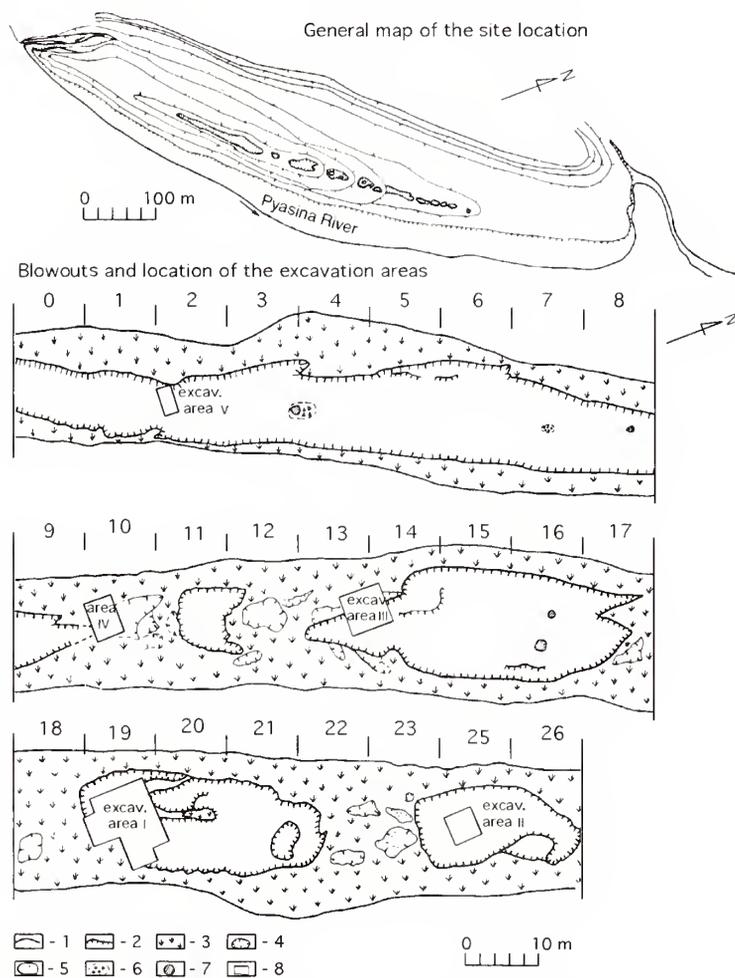
a little over 600 meters long and 15 to 25 meters wide. It rises 0.7 to 1.5 meters above the terrace on which it is located; the middle is the highest part of the ridge. The levee is separated from the Pyasina by a 20-to-30-meter floodplain, the width of which varies due to water level fluctuations. The terrace is about 4.5 meters high in the dry season. The gently sloping inside edge of the levee merges with the surface of the terrace, as does its northern end. Beyond the levee lies a marsh and still farther is the gentle rise of Terrace 2.

Most of the levee has been damaged by wind erosion, with small areas of stable turf surface between the blowouts. In the blowouts are accumulations of

hearth stones, patches of burned soil, stone artifacts, traces of bronze casting, and occasional fragments of pottery. In some places, the blowout walls display charcoal bands in cultural layers. The first finds were encountered in the blowouts near the mouth of the Polovinka and subsequently were found in all blowouts as far as the northern end of the levee; however, they are concentrated mostly in its middle section. Typological analysis of the materials and stratigraphic observations indicate that these materials are not all contemporaneous.

The settlement was discovered in 1971 and investigated in 1972 and 1973, when five areas of the levee were excavated. Excavation Area I was 88 square meters; Area II, 30 square meters; Area III, 36 square meters; Area IV, 24 square meters; and Area V, 8 square meters. Foundations of semi-subterranean dwellings were found in Areas I, II, and III; remains of a dwelling were discovered in Area IV; excavation of Area V revealed a hearth contemporaneous with the dwellings. Additionally, a hearth containing some Baikit pottery was exposed 10 to 12 meters north of Area III. The stratified deposits over the dwellings comprised cultural layers of several later Iron Age occupations.

Correlation of stratigraphic sections with cultural layers of Areas I through IV and radiocarbon dates indicates that besides a Neolithic site, there existed on the levee at least five successive settlements dating to three different occupation periods between the mid-first millennium B.C. and the twelfth century A.D. The earliest period consists of material from Cultural Layer II of Excavation Area III; Cultural Layer III of Areas I, II and IV; and Cultural Layer IIA of Area II. This material served to identify the Pyasina culture. The next stage of occupation is associated with the Malokorenninsk

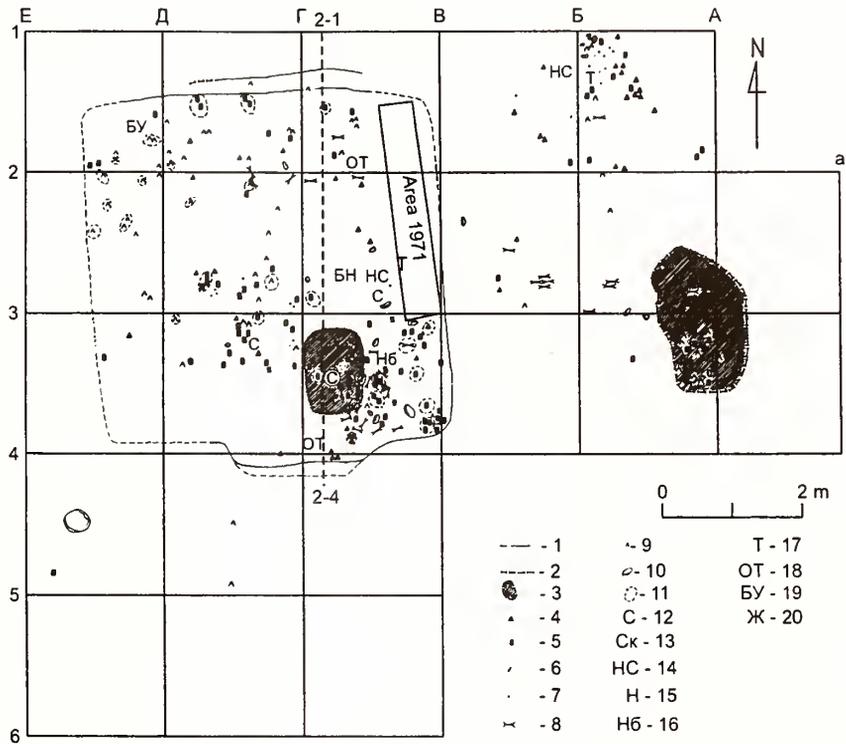


81/ Map of the Ust-Polovinka site. Legend: 1 = outline of the beach ridge; 2 = outline of blowouts; 3 = turf surface; 4 = small blowouts; 5 = rock accumulations; 6 = flake concentrations; 7 = hearths; 8 = excavation areas.

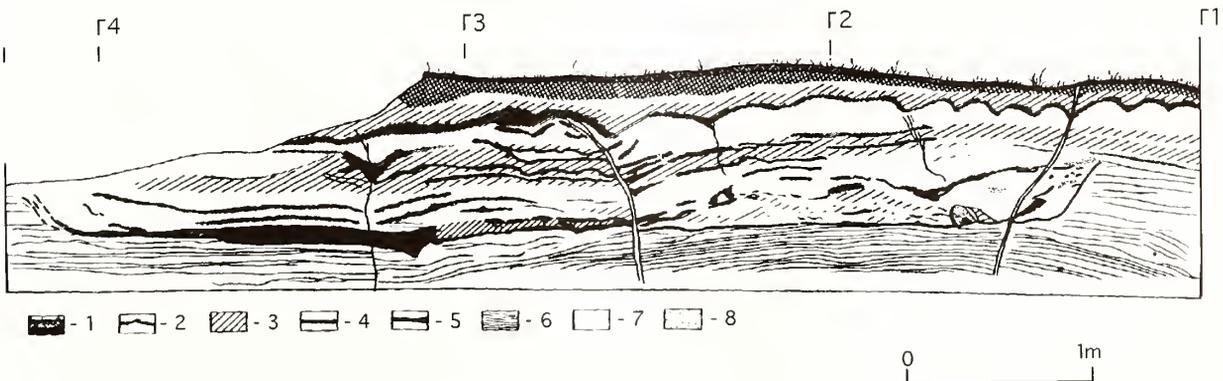
culture. The first traces of habitation associated with this culture came from Cultural Layer II of Excavation Area II, whereas Cultural Layer II of Areas I and IV appears to mark the final period in the occupation of Ust-Polovinka by the Malokorenninsk population. Finally, Cultural Layer I in Areas I through IV indicates that Ust-Polovinka was occupied by people who may be associated with the ancient Tungus tradition.

The Pyasina culture, named for the concentration of sites on the Pyasina River, is exemplified at Ust-Polovinka by dwelling complexes and corresponding artifacts. The dwellings were dug some way into the laminated sand, the principal constituent of the levee. The dwelling exposed in Excavation Area I (Figs. 82, 83) had a rectangular foundation pit; the edges were oriented almost precisely with the cardinal directions. The pit extends from south to

north for 5.5 meters, measures about 4.5 to 5 meters in width and about 27 square meters. Most of the northern and southern edges of the pit walls were well preserved. The recorded height of the northern



82/ Map of Excavation Area I, Ust-Polovinka. Legend: 1 = outline of floor of house-pit; 2 = outline of upper level of pit; 3 = hearths; 4 = flakes; 5 = ceramics; 6 = blades; 7 = bronze; 8 = bone; 9 = bowl and crucible fragments; 10 = rock; 11 = artifact concentrations; 12 = scrapers; 13 = sidescrapers; 14 = arrowhead; 15 = stone knives; 16 = bronze knife; 17 = whetstones; 18 = hammerstone; 19 = bronze ornament; 20 = iron fragments.



83/ Stratigraphic profile of Excavation Area I, Ust-Polovinka. Legend: 1 = upper soil (turf); 2 = buried soil; 3 = brown sand and humus; 4 = humus lenses; 5 = charcoal lenses and hearths; 6 = bedded sands; 7 = light, sandy loam; 8 = gray sand.

and southern walls is 0.3 meters and 0.2 meters, respectively. The sloping condition of the walls indicates crumbling and suggests that they used to be more upright and of greater height. Wind erosion affected the western and eastern pit walls. In the latter case, the dwelling boundary can be identified by the charcoal cover of the floor and the coincident distribution of finds.

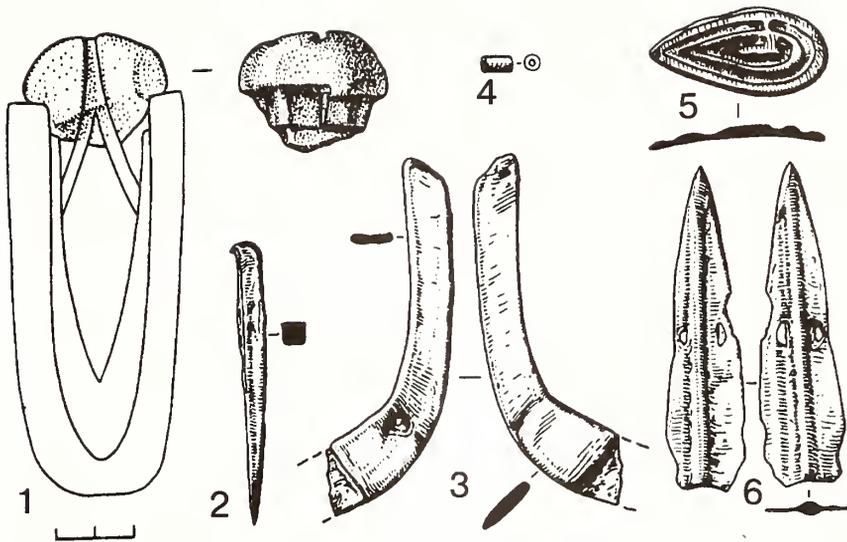
The even surface of the floor inclines slightly to the south; the difference in the floor level between the northern and southern sides of the pit is 0.1 meters. In its northeastern section, the floor is marked by a thin charcoal layer and in the western section by a brown crust of caked sand with mottled crimson-to-black spots containing small pieces of charcoal and a material resembling rotten hides. In the southeastern corner, the charcoal layer was as much as 6 to 8 centimeters thick and was divided into three levels by sand lenses of a lighter color that merged in the middle of the pit. These lenses were probably formed by sand falling from the roof through the wooden cover when the dwelling was unoccupied, providing evidence of seasonal use.

In the southeastern quarter of the dwelling, a section of floor 1.2 meters from the eastern wall and 0.7 meters from the southern wall had abundant charcoal and ash remains, forming an accumulation that was sub-rectangular in plan and measured 0.9 by 0.6 meters. An accumulation up to 10 centimeters thick was slightly below the ground level, underneath the charcoal layer on the floor; in all probability this feature was a hearth. There was also charcoal concentrated in the corner of the dwelling behind the hearth. Here, in the floor layer, lenses of birch-bark were found as well as dry, rotted matter resembling hides. This corner also yielded most of the artifacts. Reindeer bones in a poor state of preservation lay among large stones, as well as flakes, several stone scrapers, a pebble tool, fragments of crucibles, and drops of bronze. There were also sizable accumulations of large pot sherds. One of the bones had been worked into a shape resembling a harpoon base. Ten

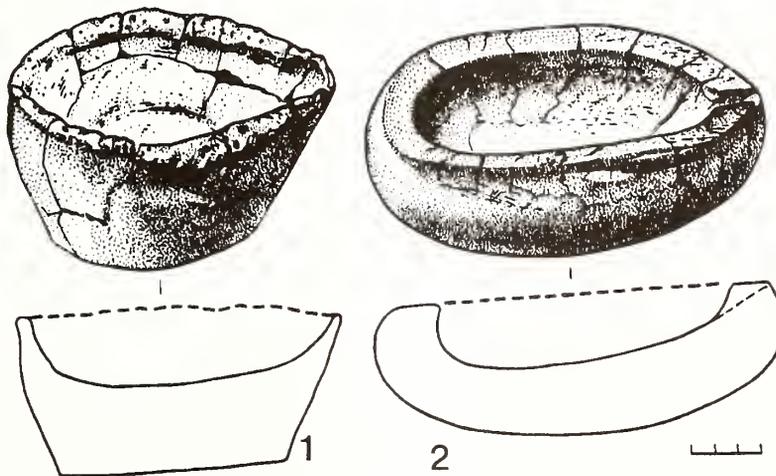
to fifteen centimeters east of the hearth lay an angle knife with a bronze handle and an iron blade (Fig. 84:3); the lower section of the knife was covered with a piece of birch-bark, which is probably the remains of a sheath.

There were also finds such as scrapers, flint flakes, small fragments of pottery, and pieces of crucibles and drops of bronze northwest of the hearth in the center of the dwelling. In the northern section of the foundation pit were bronze arrowheads (Fig. 84:6) and a fragment of a tetrahedral needle or borer, as well as a bronze casting—an oval plate with concentric fluting on one side (Fig. 84:5). Strewn in the northwestern corner were numerous fragments of crucibles, one of which we were able to restore and which, together with other fragments, provides information about their type (Figs. 85:1; 86:1). This crucible is oval and has a flat bottom 4 centimeters thick, a semi-ovoid 150 cubic centimeter reservoir and walls that thin toward the top edge. The narrow end has a spout. The crucible measures 13 centimeters in length and 11 centimeters wide; it is 6.5 centimeters high at the spout end and 7.5 centimeters high on the opposite side. The capacity of some crucibles was increased by building up the sides, which made the edges thicker. Sometimes the edges above the melted metal line are fused and have bronze inclusions. A marked disintegration of the crucible bases can be observed by the burning of the clay, which was finely washed and contained no admixture. Such crucibles differ from the round-bottomed vessels used for melting and casting metal in their fine paste. Fragments of at least twelve crucibles were found in the dwelling.

The stone inventory consists of eleven scrapers (Fig. 87:2-4, 6, 7, 9-14), a leaf-shaped arrowhead or knife fragment (Fig. 87:1), a chisel-like tool (Fig. 87:8), a borer made of a chalcedony blade (Fig. 87:15), three blades, and a core. A flat grinding stone, sub-oval in shape and with thinned edges (Fig. 88:1) found in the western section of the dwelling was probably used for sharpening metal tools.



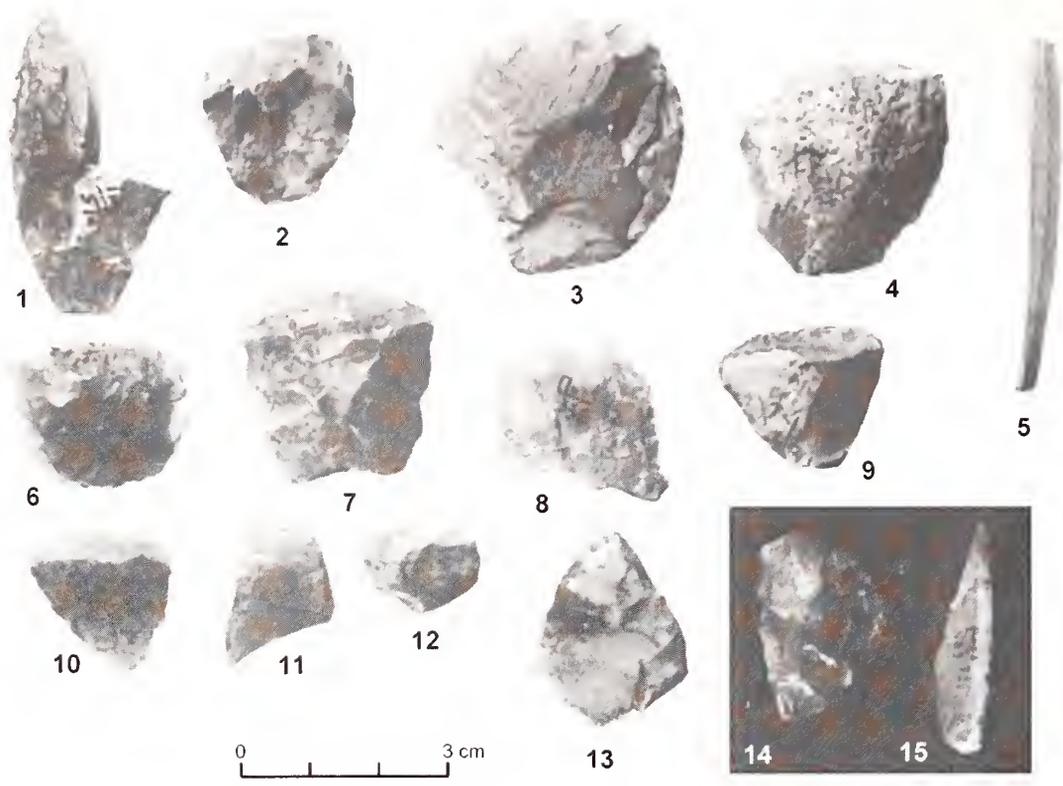
84/ Artifacts from Ust-Polovinka: mold core for celt casting (no. 1); metal artifacts (2, 3, 5, 6); and a bead (4).



85/ Crucibles from Ust-Polovinka.



86/ Crucibles (nos. 1, 3) from Ust-Polovinka and Pyasina IV-A (2).



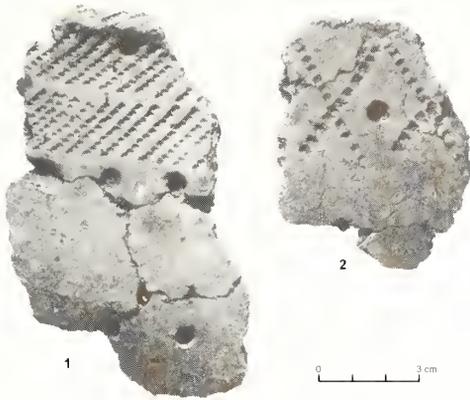
87/ Lithic artifacts from Excavation Area I, Ust-Polovinka.



88/ Grinding stone from the dwelling located in Excavation Area I, Ust-Polovinka (left) and from Malaya Korennaya I (2).



89/ Partial ceramic vessel from the dwelling located in Excavation Area I, Ust-Polovinka.



90/ Ceramics from the dwelling located in Excavation Area I, Ust-Polovinka.



91/ Ceramics from the dwelling located in Excavation Area I, Ust-Polovinka.



92/ Artifacts from Ust-Polovinka: an iron tool (no. 1) and ceramics from the dwelling (2).

A similar artifact was found among the material at Malaya Korennaya I (Fig. 88:2). Two pestle-shaped pebble tools were recovered from the dwelling. Lying near the firepit was a charred cylindrical bead (Fig. 84:4). Such beads were common in the second half of the second to early first millennium B.C. in the south of East Siberia among Glazkovo, Shiversk, and other contemporaneous peoples (Okladnikov 1955b:167–174); they were in use in South Siberia in the Andronovo and Karasuk traditions and are known from the Tagar culture as late as the first half of the first millennium B.C. (Kiselev 1951:79, 130, 230). Another find was a piece of pitch apparently used to fill cracks or cover the seams of birch-bark objects.

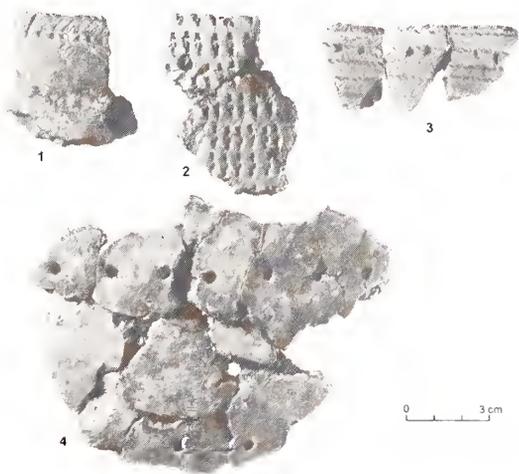
Among the other finds are fragments of nine pots with distinctive decoration consisting of rocker-stamp impressions or rows of comb-stamp impressions and belts of widely spaced pits (Figs. 89–94). A notable feature is the use of a decorative triangular ridge at the rim (Figs. 89, 91:1).

No postholes were discovered in clearing the floor, which suggests that either the dwelling had a log frame or, more likely, that the roof rested on the edge of the foundation pit and may not have been fastened in the ground, as is the case with modern wooden *golomo* structures. As Graham Clark has noted, very complex houses can be built without digging a single posthole (1953:140). The dating of the charcoal from the lens in the southeastern corner of the floor of the dwelling was 2830 ± 70 B.P. (LE 1104).

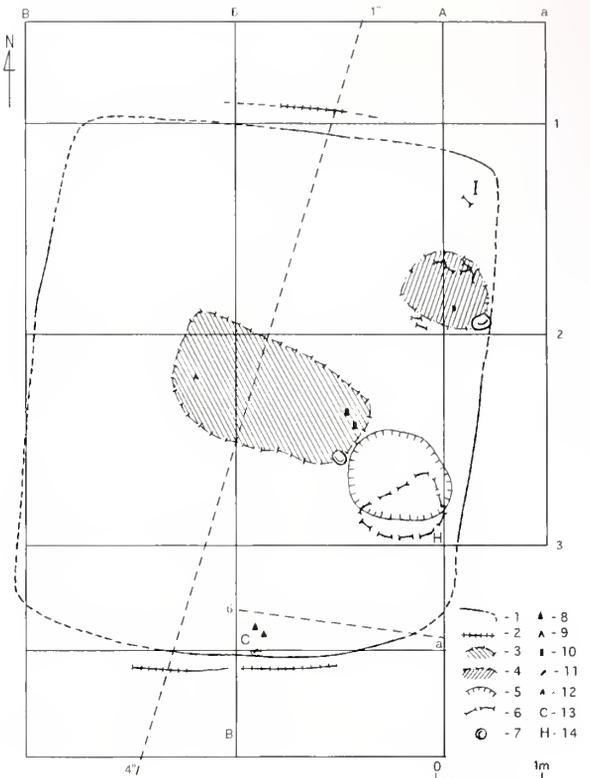
The dwelling in Excavation Area II (Figs. 95, 96) is located on the levee 40 meters northeast of Dwelling I. Over the central part of the dwelling rose a section of levee with intact, stratified deposits. However, the edges of the dwelling lay beyond that section and were partially destroyed by wind erosion. The northern and the southern walls of the foundation pit were 0.2 meters high. In several wind-eroded places, it was possible to identify the base of the wall. Although the floor and the underlying sand were wind eroded in some places, the distribution



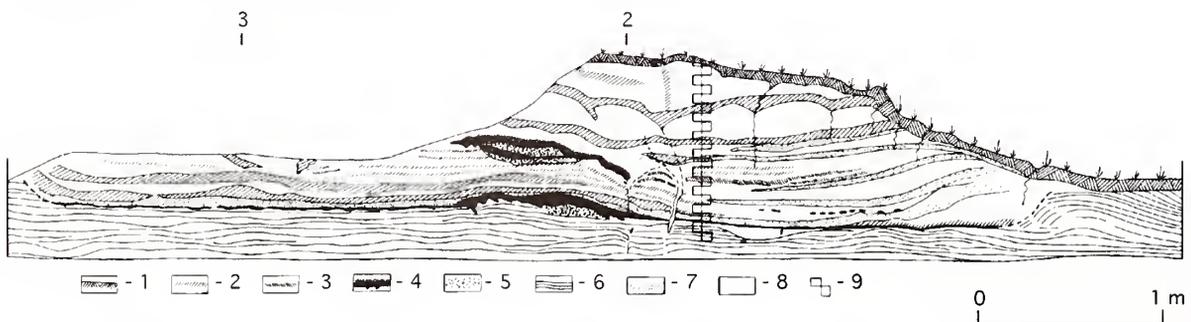
93/ Pyasina-type ceramics from Ust-Polovinka Area I dwelling.



94/ Pyasina-type ceramics from Ust-Polovinka Area I dwelling (1, 2, 4) and Area II (3).



95/ Map of Excavation Area II, Ust-Polovinka. Legend: 1 = outline of floor of house-pit; 2 = outline of upper level of pit; 3 and 4 = hearths; 5 = slab-covered pit; 6 = bones; 7 = stones; 8 = flakes; 9 = bowl and crucible fragments; 10 = ceramics; 11 = blade concentration; 12 = scrapers; 13 = sidescrapers; 14 = arrowhead.



96/ Stratigraphic profile of Excavation Area II, Ust-Polovinka. Legend: 1 = upper soil (turf); 2, 3 = buried soil; 4 = charcoal lenses and concentrations; 5 = annealed sands; 6 = bedded sands; 7 = light sands; 8 = yellow-gray sand; 9 = pollen samples.

of the thin black or brown humus-charcoal lens that marked the floor revealed the general location of the walls of the foundation pit and thus indicated its outline. The rectangular depression extended 5.3 meters in the southwest to northeast direction and 4.2 meters in the northwest to southeast direction; its total area amounted to some 22 square meters. As in the case of Dwelling I, there were no traces of postholes inside the depression.

The dwelling was heated by a fire made on a small pile of sand and the charcoal layer rose 5 to 10 centimeters above floor level. Preliminary clearing suggested that the hearth had a sub-oval outline, was elongated to the southeast, and measured 1 by 1.2 meters. It was later established that the hearth was originally rectangular in shape and measured 1 by 0.9 meter, but the charcoal layer had slipped to the southeast down the slope of a hole dug near the hearth. The charcoal layer in the hearth was as much as 6 centimeters thick; the underlying sand was baked to a depth of 8 centimeters and was bright red in color. The charcoal from the hearth yielded a date of 2490 ± 100 B.P. (LE 1146). Among the charcoal were large fragments of a pot resembling the vessels from the dwelling in Excavation Area I, fragments of a crucible, and small charred bones.

Near the southeast edge of the hearth, on the slope of the hole, lay a large flat stone. The hole measured 0.74 by 1 meter and had an oval outline and a trough-shaped cavity that reached the underlying sub-soil sand. The hole was 15 centimeters deep in the center as measured from floor level. The hole was surrounded by and filled with brownish humus-sand with a sprinkling of charcoal and contained broken bones and three reindeer skull caps without antlers. The floor lens in the northeastern corner of the dwelling contained reindeer bones in a poor state of preservation. In the eastern part of the dwelling was Hearth 5, which measured 0.5 by 0.7 meter. A fragment of a vessel and some burned bones were found in the 4-centimeter-thick charcoal layer. As the humus lens of the floor was under the hearth,

it appears that the hearth was constructed after the dwelling had been abandoned.

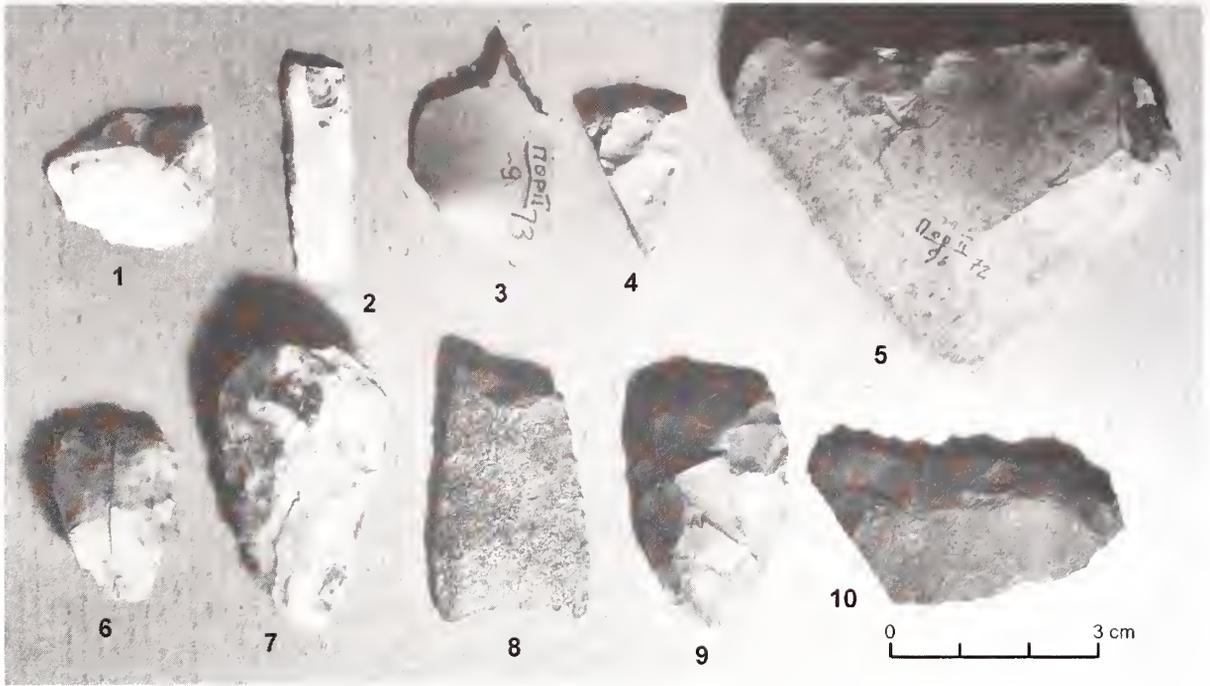
Compared with the dwelling in Excavation Area I, the finds in the Area II dwelling were few and their distribution was chaotic. Lying in the hearth were fragments of a pot with a rim diameter of about 20 centimeters, decorated with an applied rim and four rows of stamped impressions (Fig. 97).

Fragments of one of the other two pots found in the dwelling were lying on the floor and on the wind-eroded surface. This pot was small and round-bottomed (Fig. 94:3) about 11 centimeters in height with a rim diameter of 10 centimeters. The decoration consisted of a row of pits and six encircling pricked lines made with a narrow, angled stick. The imprints of the stick are so close together that the composition resembles a cord imprint. Only a few undecorated fragments remained of the third pot.

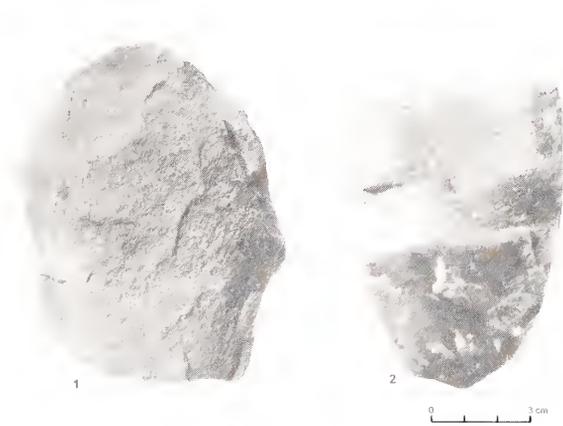
Fragments of at least three flat-bottomed crucibles, a scraper showing extreme use-wear (Fig. 98:7), a borer made from a discolored flake (Fig. 98:3), three small retouched chisels (Fig. 98:4, 6, 9), and a large quartzite pebble turned into a chopping tool (Fig. 99:2) were also recovered from the dwelling. The other finds



97/ Vessel fragment from Excavation Area II, Ust-Polovinka.



98/ Lithic artifacts from Excavation Area II, Ust-Polovinka.



99/ Lithic artifacts from Ust-Polovinka.

included a grinding plate, pieces of flint, a blade with edge retouch (Fig. 98:1), and small potsherds. Lying next to the southern wall was a pile of six blades of different varieties of siliceous schist that were probably left there wrapped or bound together.

The small number of finds and the thin floor layer suggest that the dwelling was in use for a short time. It was abandoned and fell into ruin while the Pyasina culture was still in existence. This conclusion is indicated by finds from Layer IIA in the laminated

sand that filled the foundation depression. Layer IIA is marked by a sprinkling of charcoal and Hearth 3 was located 17 to 20 centimeters above Hearth 4. Hearth 3 was a black mass of charcoal 1 to 1.8 meters in diameter, about 5 centimeters thick in the center. Part of a small pot with a rim diameter of 5.5 centimeters was recovered from the hearth. The vessel is ornamented around the rim section with several rows of tiny impressions. Judging by the decoration and the consistency of the clay paste, this pot is related to Pyasina-type pottery. Near the hearth and in the layer containing small pieces of charcoal lay tiny pieces of porous ceramics that resembled daubing material more than pottery fragments.

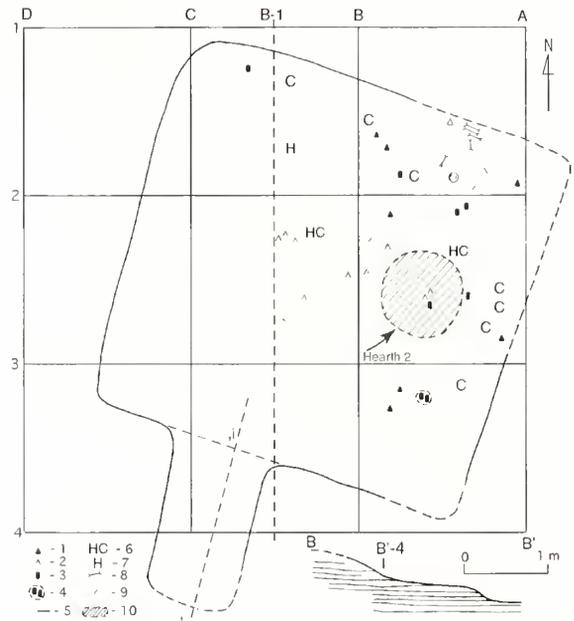
The dwelling in Excavation Area III (Figs. 100, 101) is 50 meters southeast of Dwelling I. The western half of the foundation pit was in a satisfactory state of preservation and was hidden under the deposits of the uneroded part of the levee. The deposits measured 90 centimeters thick from the dwelling floor. The eastern wall of the dwelling was destroyed by wind erosion. However, the floor edge, and thus the outline of the dwelling, could be determined by

a layer of brownish humus-sand interspersed with small pieces of charcoal that terminated abruptly at the wall.

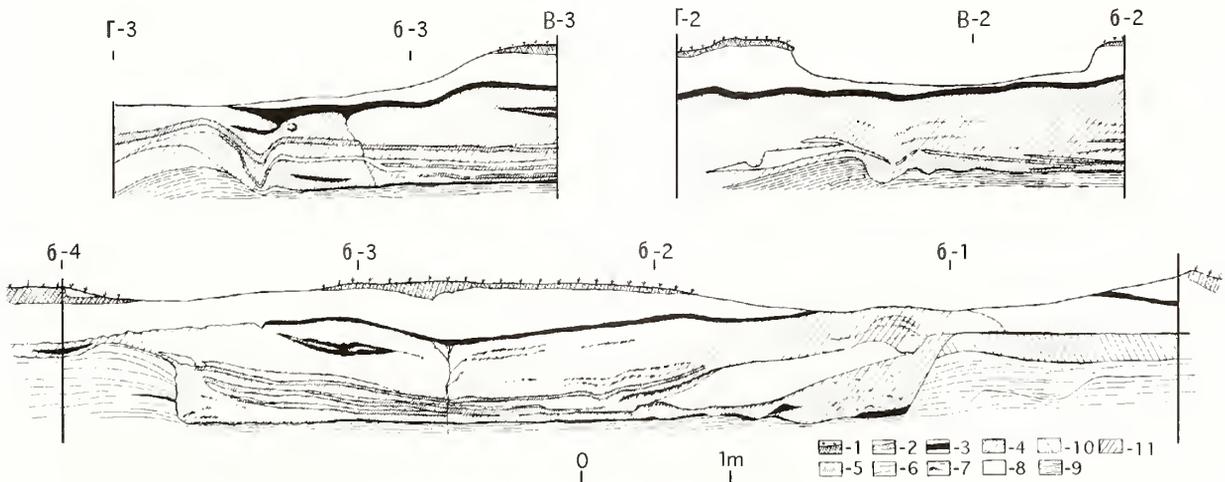
The foundation pit was dug into gray laminated sand and, judging by the remaining walls, was at least 60 centimeters deep. The vertical walls were apparently reinforced with wood, which prevented them from collapsing, yet no traces of any post structures were found in the pit. Rectangular in outline, the pit was oriented almost along a north-south axis. Measuring 5 by 4.6 meters, it covered an area of 23 square meters. The 1.4 meter-wide entrance in the southern pit wall had a 20-centimeter-high step at the edge of the pit; the entrance then ran horizontally for one meter and rose at an angle of 30 to 35 degrees. The end of the entrance was lost in the overlying deposits. The length of the remaining entrance corridor was 1.8 meters.

A 15-to-20-centimeter-wide trench ran along the western wall of the foundation pit. The humus-charcoal accumulation on the floor was divided into two levels by a sand lens, which probably resulted from occupation intervals. Pieces of birch-bark and traces of bones and hides (?) were found in the northeast. In the middle of the eastern half of the dwelling, at floor level, was Hearth 2, which had a round outline

and a diameter of one meter. In the hearth and next to it lay a broken crucible and fragments of pottery. One fragment bore traces of ribbed paddle impressions; the other was part of a rim decorated with an incised pattern.



100/ Map of Excavation Area III, Ust-Polovinka. Legend: 1 = flakes; 2 = bowl and crucible fragments; 3 = ceramics; 4 = artifact concentrations; 5 = scrapers; 6 = arrowhead; 7 = knife; 8 = bones; 9 = blades; 10 = hearths.



101/ Stratigraphic profile of Excavation Area III, Ust-Polovinka. Legend: 1 = upper soil (turf); 2 = humus lenses; 3 = buried soil; 4 = dark yellow sand; 5 = humus lenses; 6 = yellow sand; 7 = charcoal lenses and concentrations; 8 = gray sand; 9 = bedded sand; 10 = brown sand; 11 = light brown sand.

Four scrapers were found between the hearth and the eastern edge of the dwelling. Most of the finds, however, came from the northern part of the dwelling, including broken crucibles, small fragments of pottery, flakes, four blades, a triangular arrowhead (Fig. 102:11), a flake (Fig. 102:15), and scrapers. In all, ten scrapers were found in the dwelling (Fig. 102:2, 5, 8-10, 12-14, 16). Charcoal from the hearth dated to the fourth century B.C., 2290 ± 100 B.P., or 340 B.C. (LE 1103).

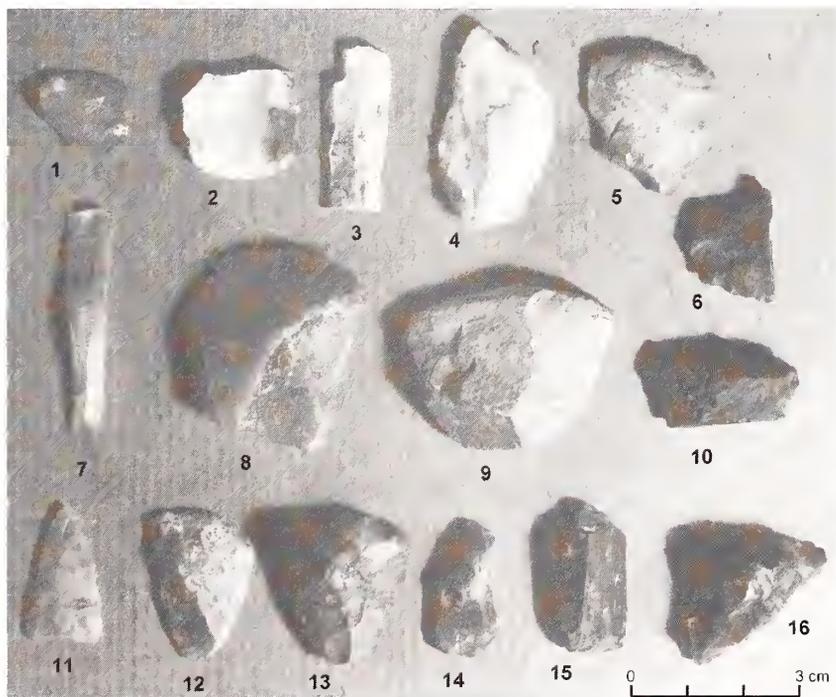
In Cultural Layer III of Excavation Area IV, which covered 16 square meters, a rectangular accumulation of charcoal was found that contained partially burned pieces of wood (Figs. 103, 104). The accumulation measured 2.2 by 2.7 meters; the charcoal layer, up to 8 centimeters thick, was divided by two or three light-colored sand lenses. The accumulation has well-defined borders and resembles a large hearth surrounded by pieces of wood. Recovered from it was a scraper (Fig. 105:1), an arrowhead (Fig. 105:3), bones, fragments of round and oval crucibles, and drops of cast bronze. Similar objects were found near

the hearth. In addition to flakes, three scrapers (Fig. 105:2, 4, 5), a heavy, utilized plate of siliceous schist with traces of retouch (Fig. 105:8), a broken knife, and near the southeastern corner, a pebble flaked at one end that was used as a fabricator, and a flat boulder that served as an anvil were recovered. Some of the pottery fragments were decorated with pricked designs. Another find was a piece of pitch, probably from larch wood, used to seal birch-bark boats.

The radiocarbon date of the charcoal accumulation is 2440 ± 90 B.P., or 490 B.C. (LE 1149, uncorrected). The fact that the depth at which the finds were discovered corresponds to that of the dwelling floors in Excavation Areas I, II and III suggests these deposits were part of a single occupation.

The hearth in Excavation Area V was in a wind-eroded spot, 78 meters south of Excavation Area IV, on laminated sub-soil sand. The round area of burned soil measured about one meter in diameter. The charcoal layer was 12 centimeters thick in the center of the hearth. Several stones lay next to it. The abundant pieces of charcoal in the hearth were

dated to 2430 ± 50 B.P., or 480 B.C. (LE 712, uncorrected). The charcoal layer contained many fragments of slag-encrusted pottery as well as a broken clay core [used to form a socket for a celt handle] (Fig. 84:1), parts of molds and crucibles, drops of cast bronze, and charred bones. Near the hearth lay a scraper (Fig. 105:6). The upper part of the hearth was affected by wind erosion. Two large arrowheads that lay nearby should probably be regarded as artifacts from a later period. The same is true of a thin-walled potsherd and three triangular arrowheads (Fig. 105:9-11) found in clearing the deposits of sand over the hearth.



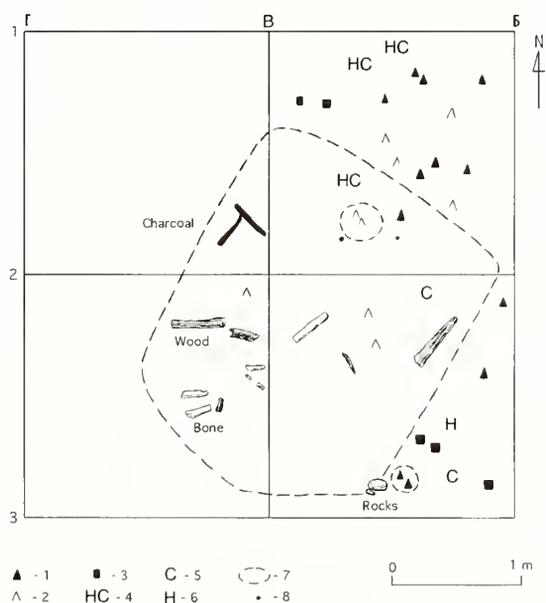
102/ Lithic artifacts from the dwelling (nos. 1-3, 5-16) and the first layer of Excavation Area III, Ust-Polovinka.

The abundant remnants of bronze casting, charcoal, and evidence of high temperature that affected the color of the sand underlying the charcoal layer and caused the encrustation of the pottery all point to the hearth as a locus of bronze casting.

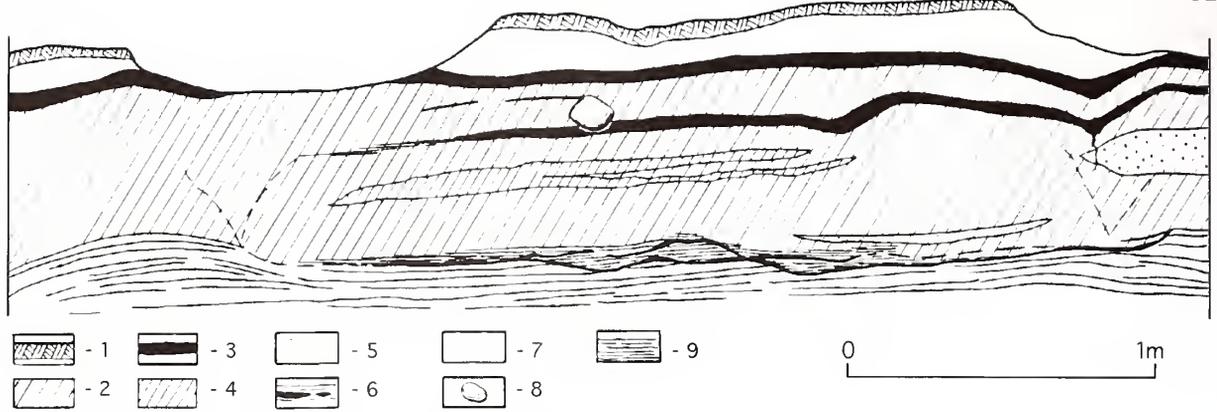
Pottery of the Pyasina culture is represented at the settlement by fragments of more than twenty vessels. The pots are egg-shaped, with slightly everted rims. The rim diameter generally measures between 25 and 30 centimeters, although there are some vessels with rim diameters of 20, 10, or even 5.5 centimeters. The pot from Dwelling I (Fig. 80) that was in a better state of preservation than the other vessels has a rim diameter of 25 centimeters, a maximum body diameter of 32 centimeters, and a reconstructed height of 28 centimeters. The vessels are distinguished by thick walls that usually measure 0.7 centimeter in thickness and as much as one centimeter on the larger pots. As a rule, the walls thin towards the rim. The pots were made using a stamping technique that gave the sherds a character-

istic lamellar appearance. However, only three pots have distinct paddle impressions: large rectangular “waffle” cells on the lower part of a pot from Dwelling I and ribs on vessels from Dwellings II and III. The rest of the pottery was apparently shaped with a smooth paddle and burnished afterwards. A characteristic feature of Pyasina pottery is coarse-grained temper, sometimes with the addition of a small amount of hair—evidence of the continuing traditions of the Ymiyakhtakh culture.

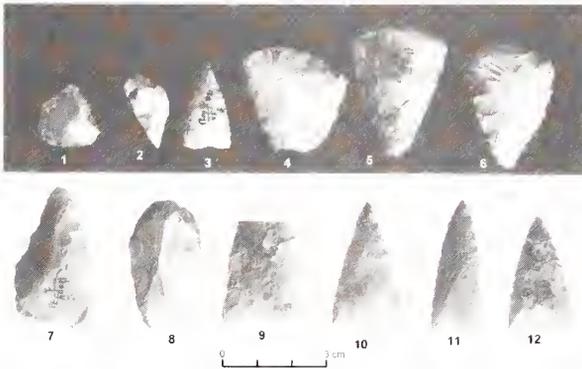
Pyasina pottery has distinctive ornamentation consisting of such elements as rounded pits, vertical or inclined comb-stamps or stick impressions, applied ridges (coils with triangular cross-sections that were applied below the rim), and grooves. Decoration was applied to the rim edge and to the upper part of the vessel. The straight section of the rim and its exterior were decorated with slanted impressions. Below the rim was the principal ornamental band consisting of two, three or four horizontal rows of vertical or slanting, densely placed comb-stamp impressions. The latter often formed a linear pricked design. Under the rim of four pots was a ridge with oblique pricked lines. A horizontal zigzag consisting of the same elements as the principal belt was sometimes applied beneath the rows of impressed designs. Under the band of one of the pots was a row of large Xs with pits between them, impressed using a comb stamp (Fig. 81:2). The decorative band on another vessel is framed with groups of three pits (Fig. 84:1). Typical of Pyasina pottery is the pattern of several—usually three—bands of deep pits, spaced 4 to 5 centimeters apart, with finger-pressed bulges inside the pots. The pricked pattern could be the basic ornament by itself. However, more often it was applied over the previously made combed or pricked ornamentation, alternating with pricked lines or filling the spaces between zigzags and crosses. Despite the diversity of ornamentation, Pyasina vessels constitute a single typological group with various combinations of distinctive features.



103/ Map of Excavation Area IV, Cultural Level III, Ust-Polovinka. Legend: 1 = flakes; 2 = bowl and crucible fragments; 3 = ceramics; 4 = arrowhead; 5 = scrapers; 6 = knife; 7 = artifact concentration; 8 = bronze droplets.



104/ Stratigraphic profile of Excavation Area IV, Ust-Polovinka. Legend: 1 = upper soil (turf); 2 = brown sand; 3 = buried soil; 4 = brown-gray sand; 5 = light gray sand; 6 = charcoal lenses; 7 = yellow-gray sand; 8 = rocks; 9 = bedded sands.



105/ Lithic artifacts from Ust-Polovinka: Excavation Area IV (nos. 1-5, 8); Excavation Area V (nos. 6-7, 9-11).

Of particular interest among the remains of the Pyasina culture are metal artifacts. Metal objects are generally rare finds at settlement sites, and their discovery in Dwelling I at Ust-Polovinka is another indication that the dwelling was destroyed by a natural calamity. Especially interesting is the metal angle knife with an iron blade and bronze haft forming an angle measuring 120 degrees (Fig. 84:3). In order to make such a knife, it was necessary to place the blade into a mold and pour bronze to form a haft. The flat haft, 1.5 to 2 millimeters thick, weighs about 20 grams and measures 7 centimeters to the bending point, where it is connected to the blade and extends 3 centimeters over the joint. It was cast of tin-arsenic

bronze based on copper with a high (1.5%) nickel content. The entire surface of the haft is thoroughly patinated. Only a small piece remains of the corroded 1.7 centimeter-wide blade.

Composite angle knives were in widespread use among the ancient peoples of Siberia as early as the Neolithic; the tradition of making such tools was carried on by ancient bronze casters who fashioned single-cast angle knives that imitated composite models (Khlobystina 1961). The bronze and iron angle knife was the earliest find of this type. Bronze-iron objects made their appearance in the earliest phase of the Iron Age. In Siberia such articles (daggers, straight knives, arrowheads, etc.) are characteristic of the second phase of the Tagar culture (Chlenova 1967:22, 23; Grishin 1960:185; Kiselev 1951:175), the earliest dating from the fifth through the fourth century B.C. The age of the Ust-Polovinka knife, as determined from the radiocarbon dating of Dwelling I (2830 ± 70 B.P.) is appreciably older.

In the northern Caucasus and in the lands north of the Black Sea, composite metal and early iron artifacts appeared from the ninth through the first half of the seventh century B.C. (Krupnov 1960:321-324; Terenozhkin 1961:185, 186; 1976:104-106). The first iron made its way into the region north of the Black Sea from the northern Caucasus. In all likeli-

hood, it was from the northern Caucasus that iron also penetrated West Siberia. Iron was probably in use in the south of West Siberia earlier than its use in the Tagar culture. However, considering the unquestionable ties between the Pyasina culture and West Siberia, familiarization with iron on the Taymyr Peninsula could have taken place independently of the cultures of South Siberia. In any event, even assuming that the charcoal in Dwelling I resulted from burning wood from trees of great age, the dates from other Pyasina sites fit within the fifth through fourth century B.C. time period. These dates correspond to the second stage of the Tagar culture, indicating iron production skills advanced quickly into Taymyr. Thus, the knife from Ust-Polovinka is the most ancient of all known iron tools of the Siberian region north of the Arctic Circle, and its discovery dates the Pyasina culture to the Early Iron Age.

Another unique artifact is a flat, leaf-shaped arrowhead with a slightly concave base and a "rib" on either side along the midline that reinforces it (Fig. 84:6). The arrowhead was cast in a double-sided, slightly asymmetrical mold; as a result the "rib" was somewhat off center. In the center of the arrowhead, near the rib edges, are holes formed from the cast that were intended for fastening the arrowhead to the shaft. The arrowhead, 8.3 centimeters long and weighing 9.8 grams, has no known parallels among Siberian tools.

No less unique is the flat plate found together with the knife and the arrowhead in Dwelling I. The oval-shaped artifact is tapered at one end like an eye. Smooth on one side, the plate is decorated on the other with two grooves that follow the outline. The ornament may be interpreted as the likeness of the iris and pupil of an eye, which it also resembles in size, measuring 4.4 centimeters in length and 2.3 centimeters wide. The plate is also convex, like an eyeball; it is 2 millimeters thick and weighs 9.3 grams.

A bronze ingot weighing 73.1 grams was made of the bronze pieces extracted from the mold channels

after casting. The clay core that forms the internal cavity of a celt provides evidence of the production of large tools. A tetrahedral awl, 7.2 centimeters long and weighing 12.1 grams, was found on the wind-eroded section of Plot 9 and is probably associated with the Pyasina culture. Tetrahedral awls were in use among populations of South Siberia and the Trans-Baikal region at the end of the second and first millennia B.C. All of these finds, along with numerous crucibles and molds, are good indicators of the advanced state of development of the Pyasina metal industry.

Lithics were still of considerable importance in the Pyasina culture. Judging by finds from dwellings, small arrowheads and scrapers similar to those existing in the Bronze Age were produced as before. However, there were also some new features. Long and heavy bifacially worked scrapers with curved working edges appear for the first time. These tools display considerable use-wear. Another feature is careless retouch. No ground stone tools were discovered. Few blades were found in the dwellings, and they differ in raw material; perhaps they were collected at older sites and were not made by Pyasina people. The discolored surface and fresh retouch of the borer from Dwelling II and the scraper from Dwelling IV are relevant here. The raw material used was more diverse, but of lower quality. Chalcedony and jasper were used infrequently and tools of quartzite and low-grade siliceous schist began to appear. Quartzite and chert pebbles were also used; pebbles were employed either for flaking or as crude chopping tools. The chopper-shaped tool found on Terrace II at the mouth of the Polovinka mentioned in Chapter 1 may represent the Pyasina tradition. Among S.L. Troitsky's collections from the Zhdanikha settlement on the Khatanga River in eastern Taymyr is a large flaked pebble resembling a Palaeolithic tool. Crude chopping tools made from large pebbles also occur at Early Iron Age Yakutian sites (Fedoseeva 1970c:147; Konstantinov 1978: table V, 10).

Similar changes to the lithic inventory took place as the Malokorenninsk culture replaced the Pyasina tradition. At Ust-Polovinka, stone artifacts from Pyasina and Malokorenninsk layers were mixed together so that it was difficult to identify them as belonging to one culture or the other (Figs. 106–113). As the Malokorenninsk deposits had eroded to a greater extent than the Pyasina deposits, the surface lithics may represent the Malokorenninsk culture.

On the basis of the material from Ust-Polovinka, the following may be identified as Pyasina sites: Pyasina XVI and XVII, Beregovaya, Dyuna V, and some surface materials from Pyasina III and IV, Malaya Korennaya I and III, Bolshaya Korennaya II, Kapkannaya II, as well as pottery from the Istok Pyasiny site.

Istok Pyasiny was found by geologists from Norilsk while surveying rock outcrops on the high left bank of the Pyasina River where it turns sharply, making its way among the boulders of the Nyapansk moraine ridge, which backs up Lake Pyasino. The rim section of a pot with distinctive Pyasina features was found here. Judging by the sherd (Fig. 48:1), it was a large, thick-walled, open-shaped pot with a rim diameter of about 32 centimeters. The clay paste was tempered primarily with hair—probably reindeer hair—as well as with grog [crushed pottery] and coarse-grained sand. The walls were about 8 millimeters thick and the rim has a rounded edge. The vessel was made using a paddle that left large “waffle” impressions on the surface.

The site of Beregovaya is located on the left bank of the Pyasina, twenty kilometers downstream from Ust-Polovinka. Sherds collected at Beregovaya were tempered with coarse-grained sand and decorated with diamond-shaped waffle impressions and round pits. Other sherds had triangular cross-section ridges similar to ridges on the pots from Ust-Polovinka. Some of the fragments are slag-encrusted on the inside. Pieces of a small (rim diameter of 10 cm) undecorated pot have hair impressions on the surface.

Stone artifacts include a fragment of an arrowhead with a round base (Fig. 114:7), a scraper made of a flake (Fig. 114:8), fragments of two unidentified tools, made using a light-colored jasper-like stone, and four quartzite scrapers (Fig. 114:3–5, 10). A large oval scraper retained cortex on its dorsal side (Fig. 114:10). Two of the quartzite scrapers and a large scraper of siliceous schist (Fig. 114:1) display extreme use-wear; the use-wear on the working edges is visible even to the naked eye. Another find was an unfinished axe-type tool made from a quartzite pebble (Fig. 114:11). The predominance of quartzite flakes ($n = 78$) over flint ($n = 10$) indicates the growing importance of quartzite for making stone implements. A thin abrasive stone plate was also found at the site.

The finds from the wind-eroded site of Dyuna V, discovered two kilometers upstream from Beregovaya, consisted of fragments of pottery with features typical of Pyasina ceramics and a small number of objects of chalcedony and light-colored jasper. Two small scrapers were recovered; both displayed extreme use-wear. One, of dark gray siliceous schist, had a pole-axe shape and a curved working edge characteristic of scrapers of the Early Iron Age.

Fragments of a vessel similar to the small pot from Layer IIA of Ust-Polovinka Excavation Area II have also been found at Pyasina XVI. The hair-tempered vessel had a rim diameter of 6 centimeters and was decorated with a band of pits. Below the pits were rows of pricked designs made with a denticular stick (Fig. 115:4). Other finds from Pyasina XVI consisted of a scraper (Fig. 116:14), two blades—one of white jasper and the other of gray siliceous schist—and two flakes from a polished schist artifact.

Conspicuous among the Pyasina pottery from Pyasina III is a pot with two grooves near the rim intended for the attachment of appliquéd bands (Fig. 115:1). The vessel is an example of the practice of decorating vessels with several ridges, a feature of Malokorenninsk pottery.

Pyasina pottery at Pyasina IV included fragments of eight vessels. Five were of poor workmanship and decoration (Fig. 117:1-4, 6), ornamented only with rows of pits and in four cases with comb impressions on the rim. The open-mouth pots had rim diameters of 22 to 24 centimeters, walls measuring 5 to 7 millimeters thick, and slightly curved rims. Comparison with the specimens of Pyasina pottery from Ust-Polovinka suggests that these poorly decorated pots were either household ware or, more likely, date to the final phase of Pyasina culture when its ornamentation traditions were in decline. Of some interest in this connection is another pot (Fig. 115:2) similar in size and shape to those described above but decorated near the rim with rows of dentate impressions, which distinguish it as Pyasina-type pottery.

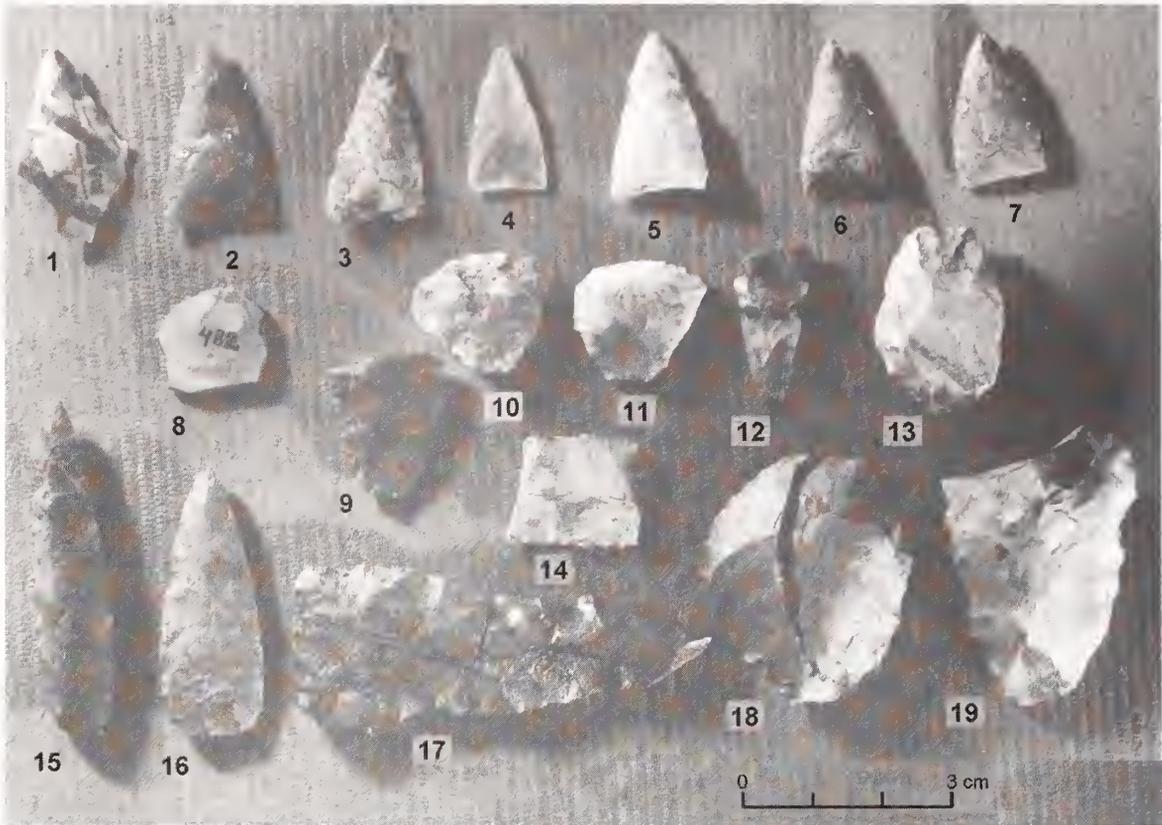
Fragments of pots ornamented only with pits and comb impressions on the rim are present among the surface material from Ust-Polovinka, Malaya Korennaya II and III, and Bolshaya Korennaya I and II. At these sites, as at Pyasina IV, such pottery occurred together with Malokorenninsk-type pottery, which exemplifies the further evolution of Pyasina pottery. It seems that poorly ornamented pottery may be characteristic of Pyasina-type pottery that coexisted with the Malokorenninsk variant.

Pottery of the Pyasina culture combines two traditions with different origins. One tradition, which manifests itself in the use of the stamping technique and hair temper, is associated with the Ymiyakhtakh culture. The other, characterized by different decorative techniques and coarse sand temper, stems from both the Baikit culture and the cultural traditions of West Siberian ceramics. The Baikit influence can be traced through Pyasina IV-A ware, the hybrid nature of which was described in Chapter 3. Pyasina IV-A vessels may be defined as the early Pyasina ware from which Pyasina pottery inherited linear-prick patterns. West Siberian traditions were the source of the comb patterns and bands of pits seen in Pyasina pottery. Pits, sometimes made over other design elements, are a distinctive feature of pottery from Neolithic

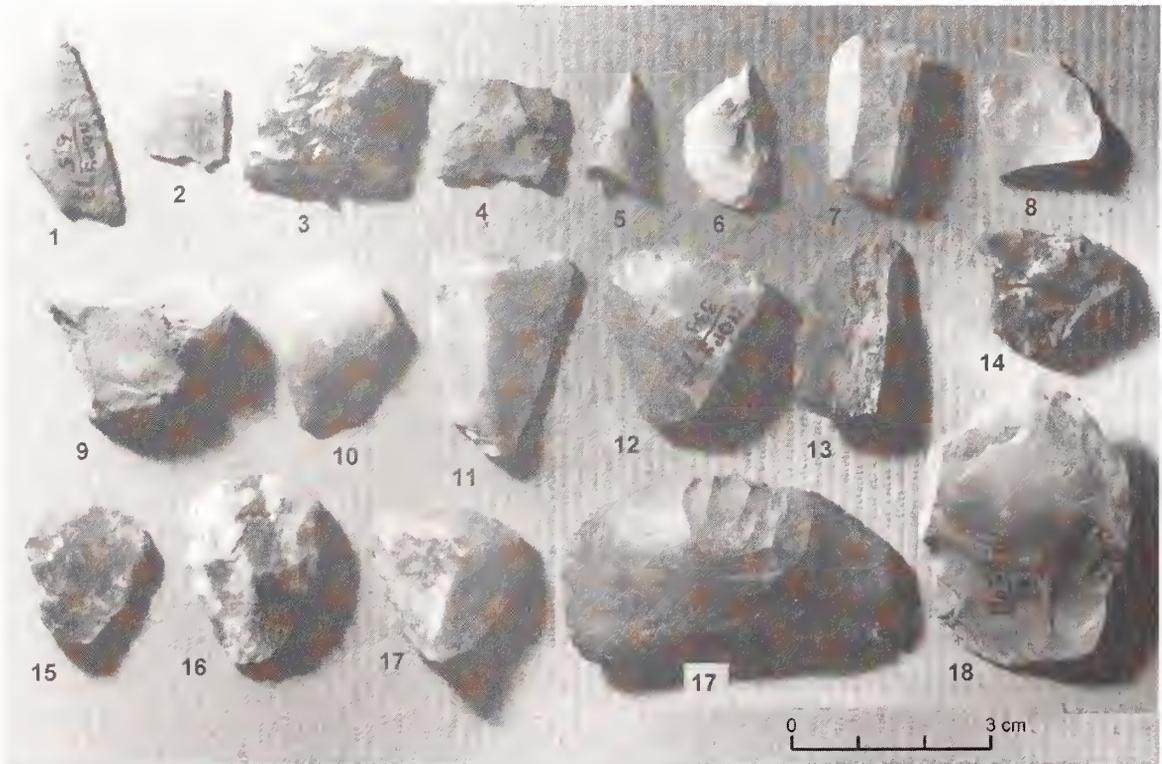
Irtysh sites. This decorative tradition persisted in the comb-pit cultures and related Andronovo-like cultures of the Bronze Age in West Siberia, surviving at least until the mid-first millennium B.C.

I.P. Chemyakhin familiarized me with Beloyarsk pottery identified on the basis of material from the Barsova Gora settlements. In the seventh century B.C., the round-bottomed Beloyarsk vessels replaced the earlier flat-bottomed types. Beloyarsk pottery is the only ware in West Siberia that closely resembles the contemporaneous Pyasina ware. Particularly remarkable is the occurrence of crucibles with Beloyarsk pottery that are similar to the crucibles and molds of the Pyasina culture. Taking into account that western traditions other than those of Baikit manifest themselves in Pyasina pottery, it is safe to assume that Pyasina peoples had cultural and, probably, ethnic ties with their southwestern neighbors. Thus, the Pyasina culture is a hybrid phenomenon that originated at the boundary of two large cultural regions and resulted from the fusion of cultures created by ethnic groups with different origins.

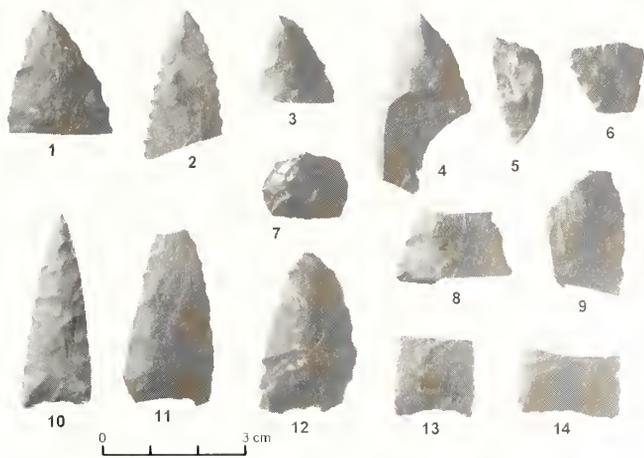
The radiocarbon dates for the Pyasina culture that were obtained for Ust-Polovinka's Pyasina complexes are 2830 ± 70 (LE 1104), 2490 ± 100 (LE 1146), 2440 ± 90 (LE 1149), 2430 ± 50 (LE 712), and 2290 ± 100 (LE 1103) B.P., i.e., the ninth through fourth century B.C. The first date appears to be too early given that an iron knife was found in Dwelling I; the age of Dwelling I is based on that date. The first iron artifacts in the southern regions of Siberia date to the seventh century B.C., therefore, the date of the dwelling is probably too early. However, the rest of the radiocarbon dates are beyond question, and dating Dwelling I, along with the other Pyasina complexes, to the mid-first millennium B.C. would still imply that we are dealing with the earliest iron tool found in North Eurasia. If we assume that the initial development of the Pyasina culture dates to the first stage in the interaction of Ymiyakhtakh and Pyasina peoples, embodied in Pyasina IV-A pottery, then the Pyasina culture developed between the ninth



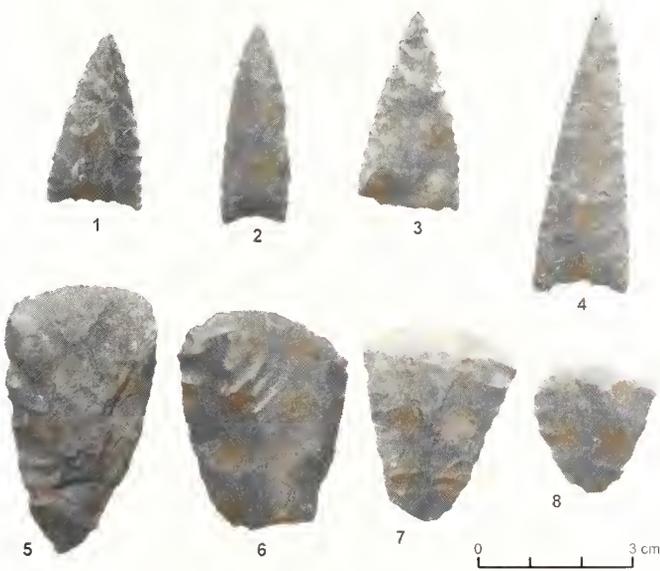
106/ Lithic artifacts collected from the surface, Ust-Polovinka.



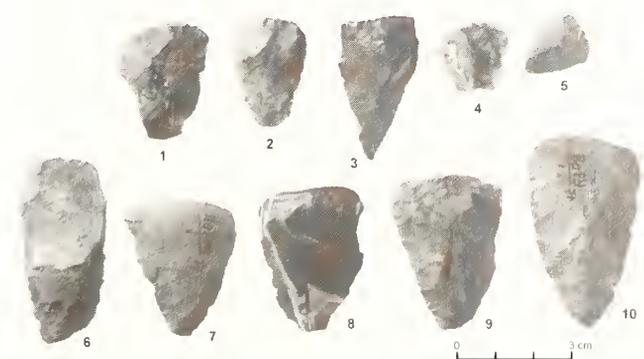
107/ Lithic artifacts collected from the surface, Ust-Polovinka.



108/ Lithic artifacts from the surface, Ust-Polovinka.



109/ Arrowheads and scrapers from the surface, Ust-Polovinka.



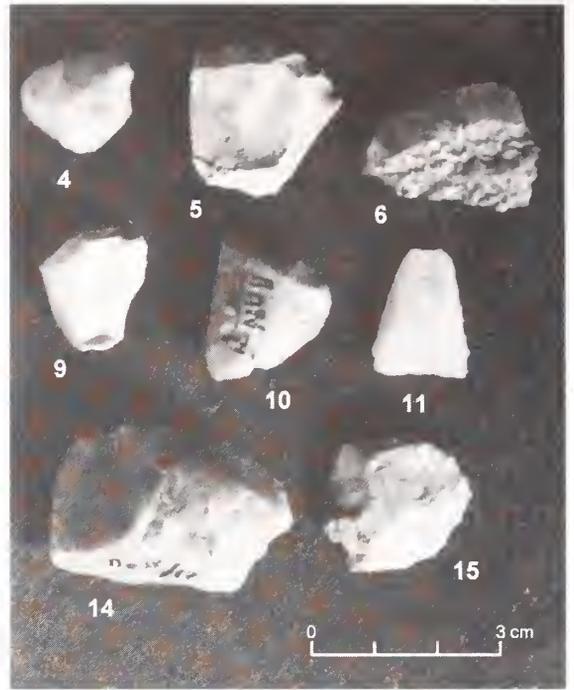
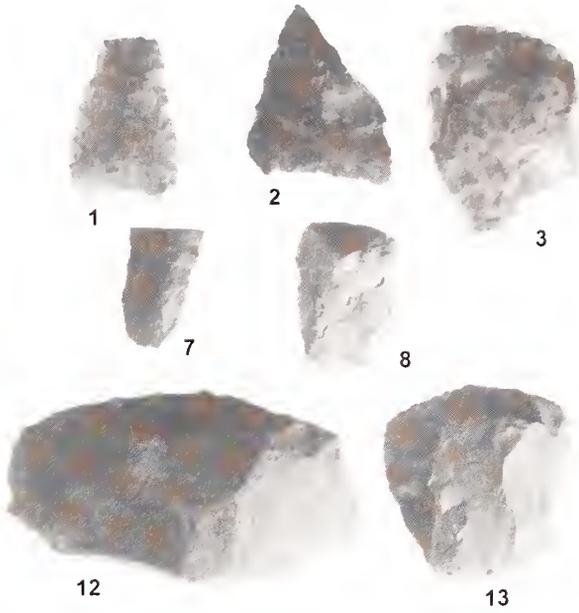
110/ Scrapers from the surface, Ust-Polovinka.

and eighth century B.C. The division between Pyasina culture and the Malokorenninsk tradition that succeeded it should be dated to the third through second century B.C. since there is a date for the Malokorenninsk culture of 2100 ± 50 B.P. (LE 1147), or 150 B.C. (uncorrected) based on charcoal from Hearth 2 of the cultural layer of Ust-Polovinka Excavation Area II.

The Malokorenninsk Culture

The Malokorenninsk culture has been identified on the basis of material from Cultural Layer II of the Ust-Polovinka settlement as well as finds from Malaya Korennaya I, Bolshaya Korennaya II and Pyasina IV and VIII. The oldest Malokorenninsk cultural layer at Ust-Polovinka is Layer II in Area II. Exposed in this layer was Hearth 2, located 15 centimeters above Hearth 3 in Layer IIa (Fig. 96). Hearth 2, rounded in outline, with a charcoal-stained diameter of one meter, is a peculiar feature. Under an upper layer of red baked sand five to six centimeters thick is a charcoal-rich stratum containing an upper five-centimeter-thick lens of baked sand with ash inclusions and a lower two-centimeter-thick band with three centimeters of baked red sand. The central part of the hearth has a maximum thickness of 17 centimeters; its northern section is damaged by a frost crack. The radiocarbon date of 2100 ± 50 B.P. (LE 1147) is based on charcoal from this hearth.

In and near the hearth were numerous finds, mainly pieces of burned clay in the baked sand between the charcoal lenses. The pieces crumble readily and only some retain their original surface, which shows traces of smoothing, hatching, engraved lines, and occasionally imprints of some rough, grass-like vegetation. Some pieces with thinned edges resemble crucibles. The pieces of burned clay and the lens in which they were embedded are presumably the remains of a bronze-casting feature. In and



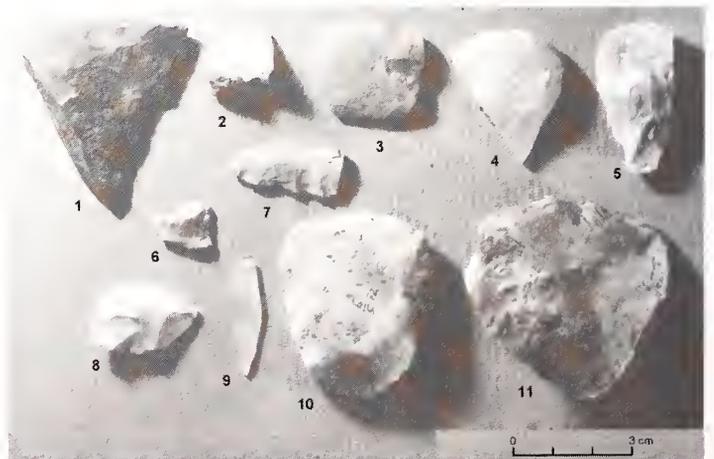
111/ Lithic artifacts collected from the surface, Ust-Polovinka.



112/ Abrasives and pebble tools from the surface, Ust-Polovinka.



113/ Side-scraper from Ust-Polovinka.



114/ Lithic artifacts from Beregovaya.

next to the charcoal layer were large, broken, thick-walled crucibles.

One restored crucible (Figs. 85:2; 86:3) measures 16.5 centimeters long, 12.5 centimeters wide, and 6.5 centimeters high, is oval in shape, has 1 to 1.5 centimeter-thick walls and a two-centimeter-thick bottom. The narrow end of the crucible has a spout. The crucible has a volume of 130 cubic centimeters and resembles the small crucible from Pyasina IV-A and those crucibles found in the hearth of Excavation Area V at Ust-Polovinka. The bottom of the vessel was broken and the rim was fused in places and had bronze inclusions. Fragments of at least two similar objects with some bronze and bone fused to the sides were recovered from the layer. However, Layer II contained very few droplets of bronze.

The lithic inventory of Ust-Polovinka includes fragments of three triangular arrowheads (Figs. 98:8; 107:2, 3) found on the fringes of the hearth, a scraper (Fig. 98:9), and a blade. In and near the hearth were over sixty splinters and flakes of siliceous schist, quartzite, flint, and reddish jasper, some heavily burnt.

Erosion at the edge of the hearth exposed some of the artifacts, including a sherd with closely spaced pricked lines made with a triangular pointed stick (Fig. 124:3). Although no household pottery was found in the layer, the sherd may be linked to the similarly decorated sherd discovered on a wind-eroded section of the site (Fig. 124:1). Two ridges near the pot rim, as well as the rim edge, were engraved using a notched stick. Under the ridges the vessel was decorated with vertical lines of notched imprints and pits applied over the pattern. Other decorated sherds were also recovered (Fig. 125).

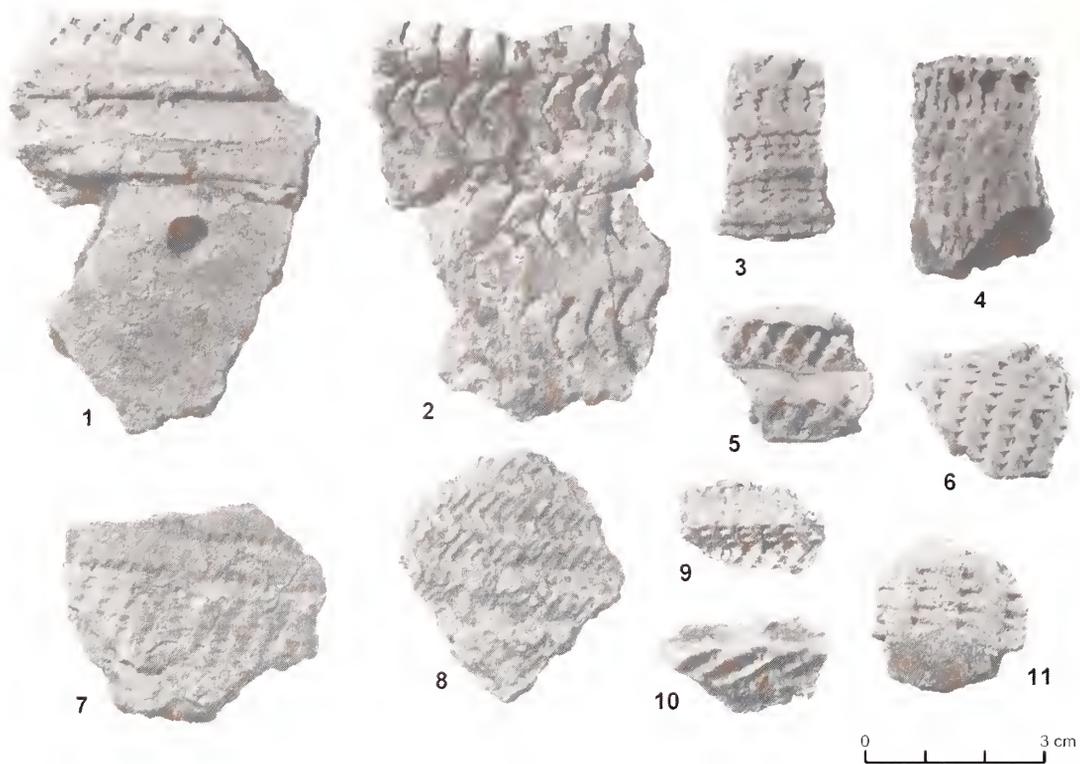
In Area I, Cultural Horizon IIa was not marked by a distinct lens and was distinguished by the position of artifacts at the base of a band of laminated sand with humic lenses. Tentatively related to this horizon was a pot rim (Fig. 126:5) found in the frost-crack between Cultural Layer II and the dwelling floor. The rim, 28 centimeters in diameter, had a rounded edge;

the fragment had two small ridge appliqué. Coarse sand was used as a temper. The edge of a crucible and a sharp-butted scraper of low-grade reddish-yellow jasper were also associated with the horizon; the scraper had a beveled working edge that was heavily chipped due to use-wear (Fig. 128:3).

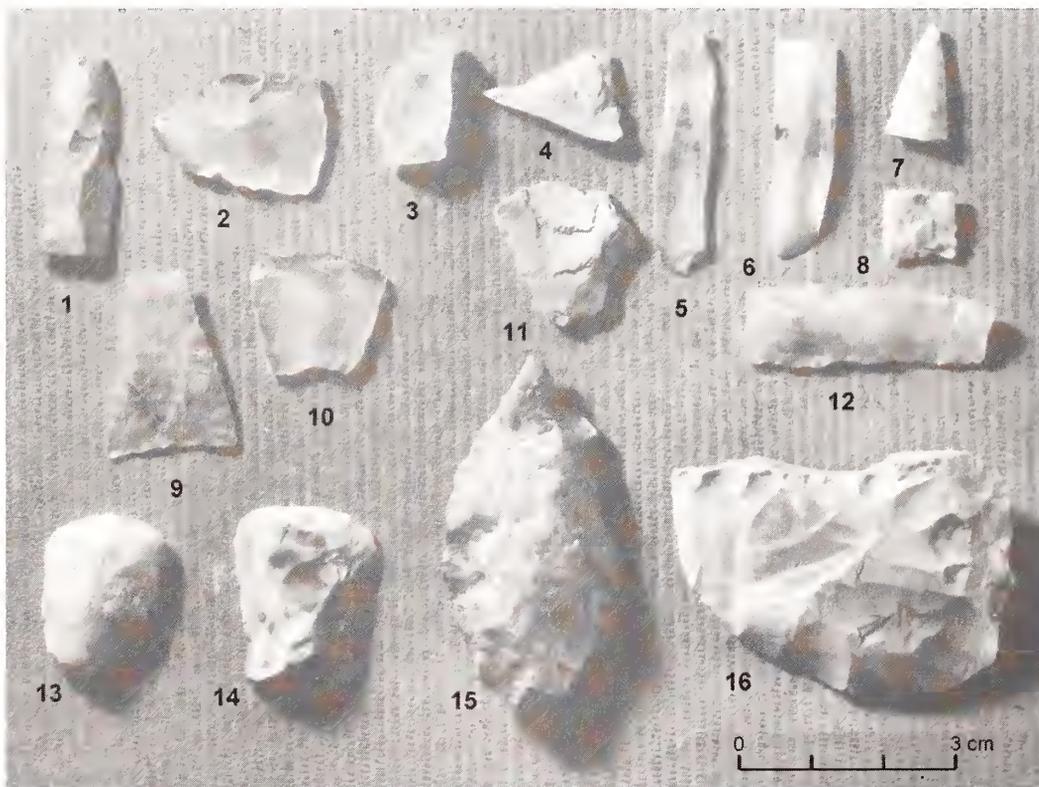
Cultural Layer II of Excavation Area I was marked by a thin charcoal lens extending around Hearth 1. The hearth had a trapezoidal outline and measured 1.2 by 1.3 meters (Fig. 127). The charcoal deposits in the hearth, up to 15 centimeters thick, rose above the surrounding charcoal band that marked the cultural layer. The deposits in the hearth contained several lenses differing in charcoal content. The hearth was made in a depression formed in the underlying strata and presumably had been bordered by a wooden frame. The radiocarbon date for the hearth is 1660 ± 180 B.P. (LE 1102), i.e., A.D. 290 (uncorrected).

Finds from Layer II (Figs. 128, 129) came mainly from the hearth feature. The layer contained a considerable amount of bronze, crucible fragments, small burned bones, a broken hammerstone, a fragment of an iron object, two triangular arrowheads, undecorated pottery, quartzite spalls and flakes, and some flakes of dark-gray chert and jasper of different colors. Stone artifacts that occurred in the upper part of the hearth were not charred. Quartzite pebbles were presumably worked near the hearth in the final phases of its use. The finds made near the hearth comprised three arrowheads, three scrapers, a grinding plate, numerous crucible fragments, and the broken rim of a pot (Fig. 126:4) similar to the vessel from Horizon IIa of Excavation Area I. Fragments of the latter vessel might have found their way into the frost-crack from Layer II.

A small iron knife (Fig. 130) was recovered from a wind-eroded section of Layer II in the northern corner of the excavation area, together with fragments of a crucible, drops of bronze, and two arrowheads—one of jasper and the other of quartzite. The knife was made from a narrow plate 4 millimeters wide, 2 millimeters thick, and 10.2 centimeters long. The distal



115/ Ceramics from Pyasina III (no. 1); Pyasina IV (2, 3); Pyasina XVI (4); Malaya Korennaya (5-7, 9, 10), Bolshaya Korennaya II (8); Pyasina XVII (11).



116/ Lithic artifacts from: Pyasina VIIA (no. 1); Pyasina VII (2, 3, 5-7); Pyasina XI (4); Pyasina XIII (8-12, 15); Pyasina XIV (13); Pyasina XVI (14); Samos (16).

half was hammered and sharpened to form a blade, and the proximal end served as a haft. A curved iron rod rectangular in cross-section and similar to a plate used for a knife blank was found on a wind-eroded spot of Plot 13 and presumably was intended for making similar knives.

Layer II in Excavation Area III is marked by a thin charcoal lens (Ib) in a depression on the site of a Pyasina culture dwelling (Fig. 131). The round hearth had a diameter of one meter; the charcoal layer in

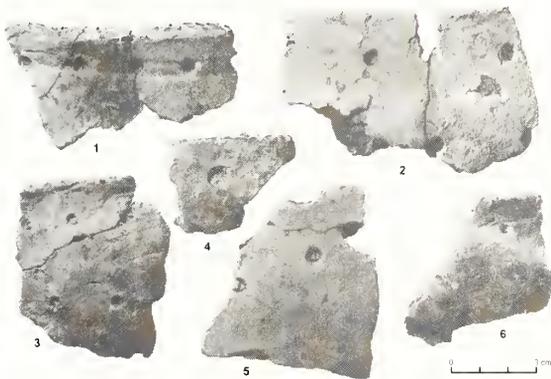
the center of the hearth measured up to 7 centimeters thick. Among the accumulation of stones and pebbles were fragments of a flat-bottomed mold. On the fringe of the hearth lay a rim fragment decorated with pricked lines and pits. Scattered near the hearth were flint spalls. Another find was a thin piece of daubing pitch with a birch-bark impression on the concave side.

Cultural Layer II in Excavation Area IV (Fig. 132) is represented by a charcoal lens containing large stones, pebble accumulations, fragments of molds and crucibles, pieces of burned clay, an undecorated pot sherd, broken reindeer teeth, three triangular arrowheads with lightly concave bases, nine flakes of different kinds of flint, a chalcedony borer, a scraper blank, a piece of sandstone, and a siliceous schist blade. The latter, with its bleached color, resembles weathered Mesolithic and Early Neolithic artifacts.

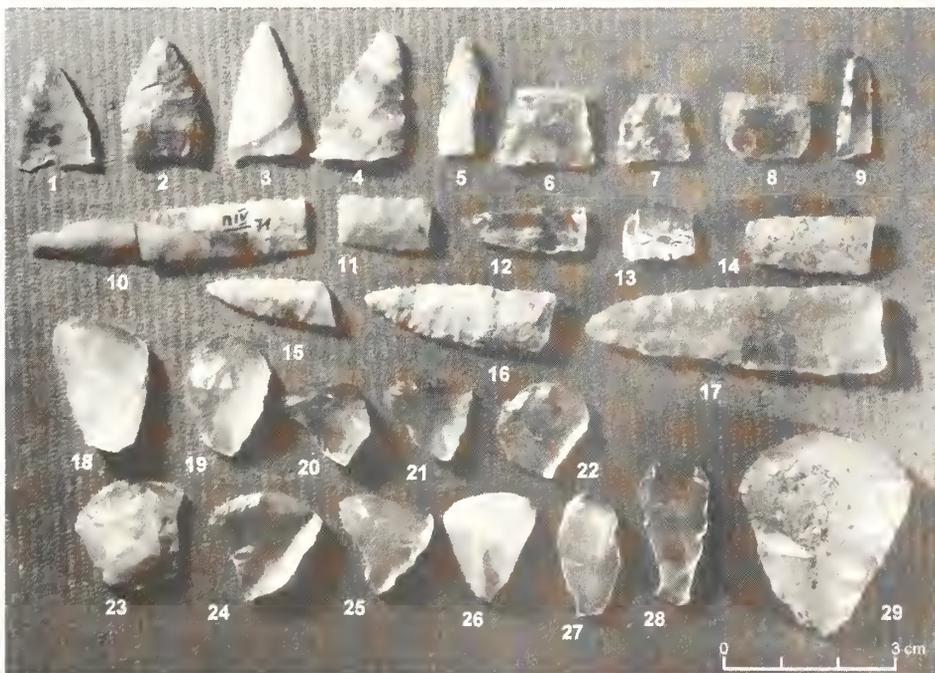
A single pot, found among the surface collections at Ust-Polovinka, is attributable to the Malokorenninsk type. The fragment, found on Plot 22 (Fig. 124:6), has a rim section decorated with an incised coil. Coarse-grained sand was used as the temper.

Malaya Korennaya I is the site that provided

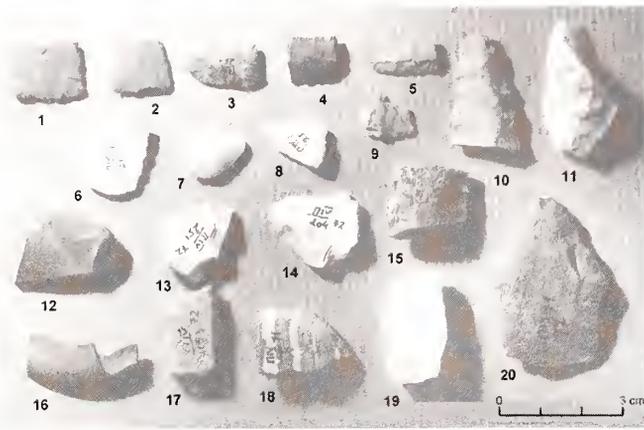
material for the original identification of the distinctive type of pottery called "Malokorenninsk." The type is represented by fragments of two pots with two ridges each (Fig. 133:7, 8) and by fragments of six to seven other vessels that differ from Pyasina ware in their coarse manufacturing (Fig. 133:1, 5, 6). Apparently associated with the Malokorenninsk type is a hair-tempered



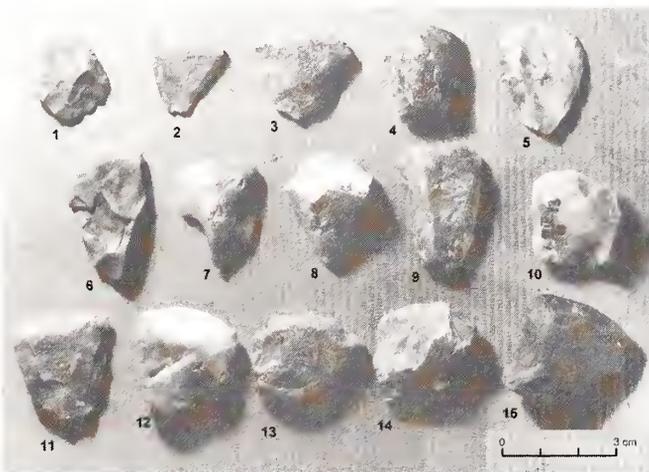
117/ Ceramics from Pyasina IV (nos. 1-4, 6) and Pyasina III (5).



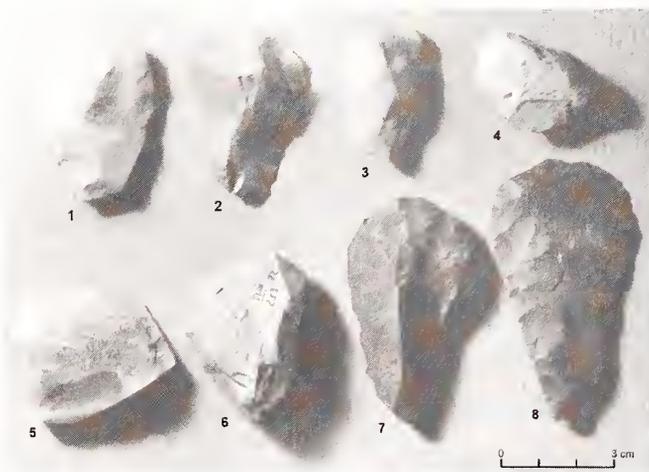
118/ Lithic artifacts from Pyasina IV.



119/ Lithic artifacts from Pyasina IV.



120/ Retouched scrapers from Pyasina IV.



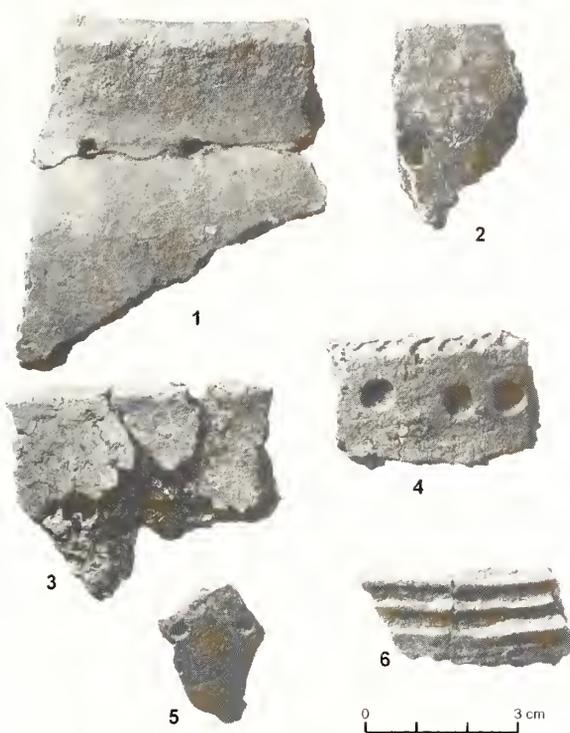
121/ Retouched scrapers from Pyasina IV.

ceramic object of irregular conical shape (Fig. 133:10). A similar, curved article was found at Pyasina IV. Both objects resemble reindeer tines, but their function is uncertain. Fragments of four Malokorenninsk-type vessels were collected at Pyasina IV; the rim sections of three of the vessels had two ridges each.

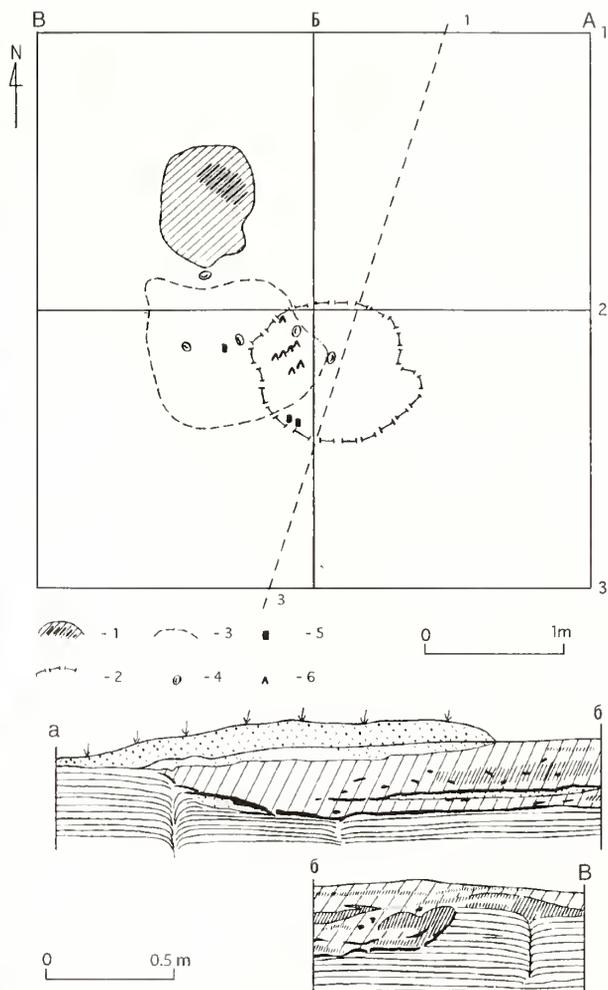
Fragments of pottery found at the Bolshaya Korennaya II and Pyasina VIII sites suggest that those sites were occupied during the Malokorenninsk culture period. However, the finds are few in number: fragments of two pots from Bolshaya Korennaya II (Figs. 115:8, 133:11) and one from Pyasina VIII. Noteworthy finds from Pyasina VIII include fragments of the flat bottom of a thick-walled pot and a hair-tempered pot. In all likelihood this unique evidence of flat-bottomed pottery production on the Taymyr Peninsula is associated with the Pyasina and Malokorenninsk cultures.

Finds from Malaya Korennaya I, Bolshaya Korennaya II, Pyasina IV and VIII are represented by surface material; in defining the Malokorenninsk complex, emphasis should be placed on finds from Cultural Layer II at Ust-Polovinka. That layer contained crucibles and molds similar to those of the Pyasina variety as well as scrapers, arrowheads, and other stone artifacts similar to those from Pyasina dwellings, but of poorer workmanship. However, there was an increasing number of quartzite and chert artifacts as well as pebble tools. The surface material from Ust-Polovinka includes large triangular straight- or concave-base arrowheads as well as some of the long, leaf-shaped, rounded-base kind (Fig. 106:15, 16).

Tools of siliceous schist are in all probability attributable to the Malokorenninsk culture. The scrapers, the arrowhead with a straight shank (Fig. 137:3), and the borer (Fig. 137:5)—all made of the same material—found at Malaya Korennaya I together with some Malokorenninsk-type pottery probably belong to this complex. The polished



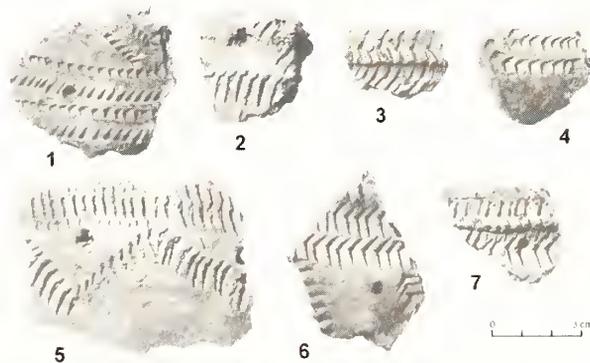
122/ Ceramics from various proveniences, Ust-Polovinka.



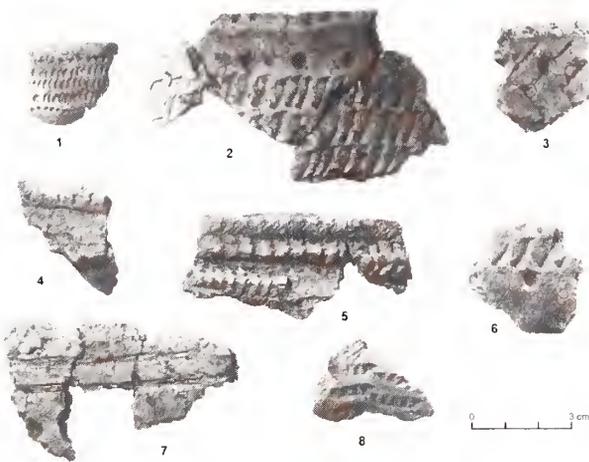
123/ Map of hearths in the upper layer of Excavation Area II, Ust-Polovinka. Legend: 1 = Hearth no. 1; 2 = Hearth no. 2; 3 = Hearth no. 3; 4 = rocks; 5 = sherds; 6 = crucible fragments.



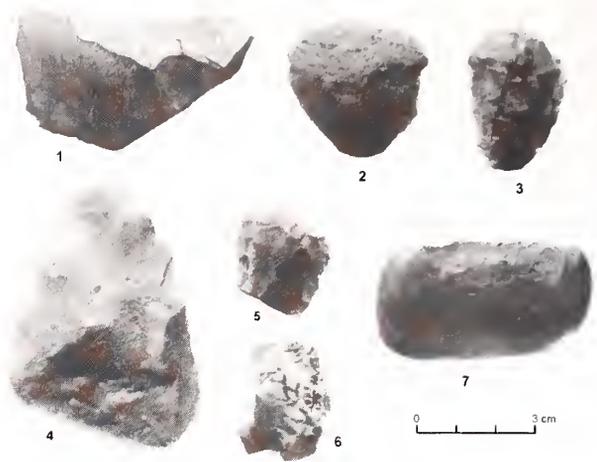
124/ Ceramics from various proveniences, Ust-Polovinka.



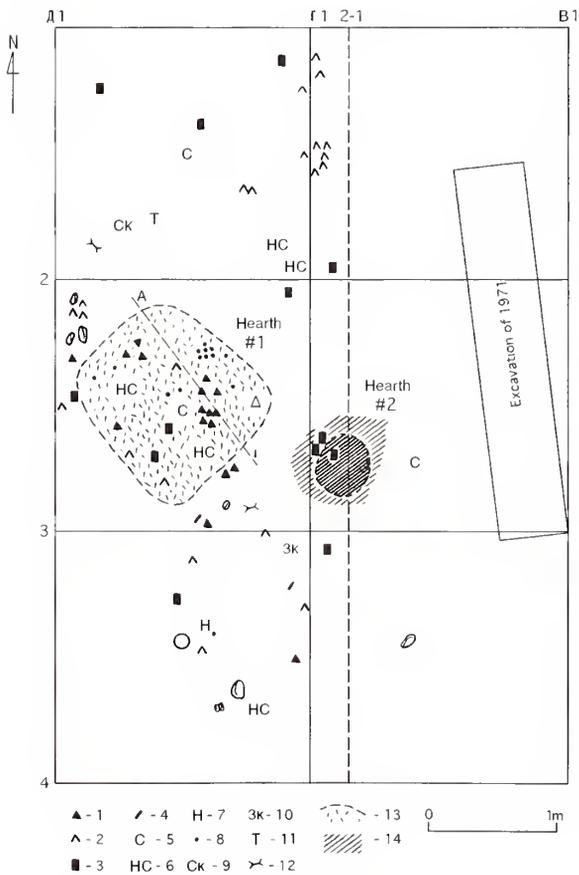
125/ Ceramics from various proveniences, Ust-Polovinka.



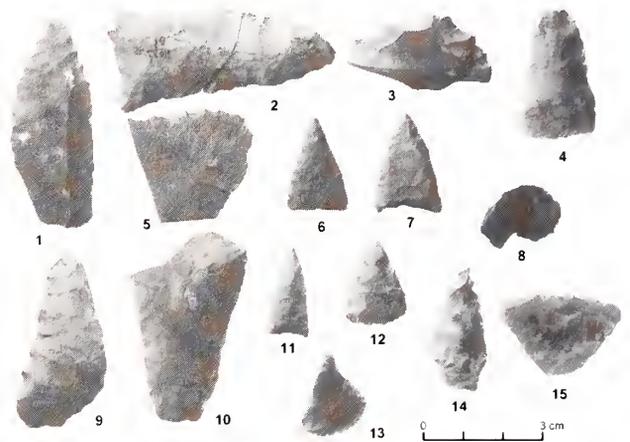
126/ Ceramics from various proveniences, Ust-Polovinka.



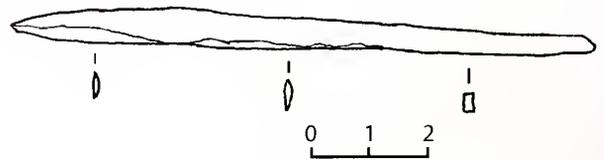
128/ Lithics from Cultural Layers II and IIA, Excavation Area I, Ust-Polovinka.



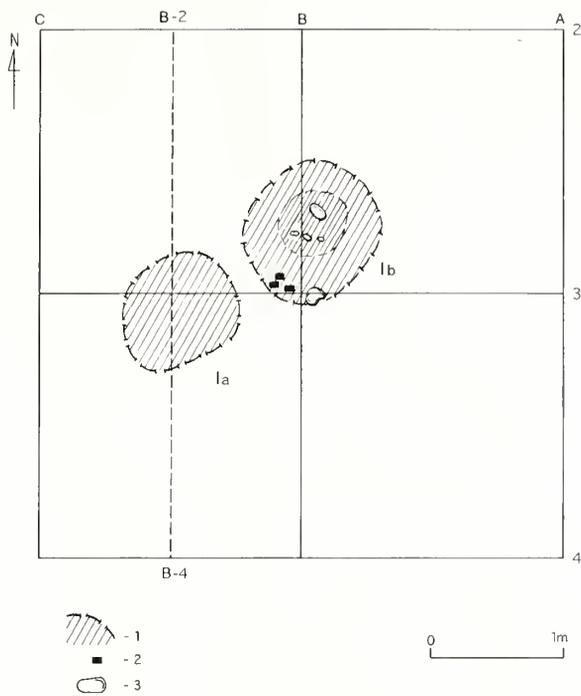
127/ Map of Cultural Layer I in Excavation Area I, Ust-Polovinka. Legend: 1 = flakes; 2 = bowl and crucible fragments; 3 = ceramics; 4 = blades; 5 = scrapers; 6 = arrowheads; 7 = knives; 8 = bronze droplets; 9 = side scrapers; 10 = fragments; 11 = whetstones; 12 = bones; 13 = hearth no. 1; 14 = hearth no. 2.



129/ Lithics from Cultural Layer II, Excavation Area I, Ust-Polovinka.



130/ The iron knife from Excavation Area I, Ust-Polovinka; 10.2 centimeters long.



131/ Map of the hearths of Layer II in Excavation Area III, Ust-Polovinka. Legend: 1 = outline of hearths; 2 = ceramics; 3 = rocks.

arrowhead fragment (Fig. 137:6) found at Malaya Korennaya III—the only one known from the Taymyr Peninsula—is probably another specimen of the Malokorenninsk culture. Similar arrowheads occur in northern West Siberia together with Late Bronze or Early Iron Age pottery. Pitch remained in use for daubing seams of birch-bark articles.

The stone inventory as a whole differs little from the Pyasina toolkit, which indicates that Pyasina traditions were preserved. Such traditions are also traceable in Malokorenninsk pottery. This pottery is distinguished from Pyasina ware by a greater number of ridges, carelessly applied ornamentation, the declining importance of comb impressions, smooth walls with no evidence of paddling, and the use of coarse sand and almost no hair temper. Pits become more prominent in the decorative composition.

In general, the Malokorenninsk complex may be regarded as the final stage in the evolution of the Pyasina culture. However, if we attach great importance to pottery and to the changes that are taking

place in this field, and consider the appearance of forged metal objects, the complex may be identified as a distinctive tradition that succeeded the Pyasina culture. Its chronological framework is bounded by the dates 2100 ± 50 and 1660 ± 180 B.P., i.e., from the second century B.C. to the third century A.D.

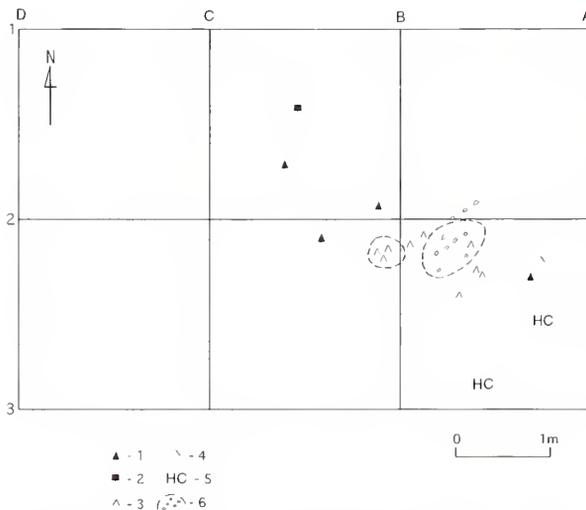
Distinguishing between the Pyasina and Malokorenninsk cultures is of great importance for determining the age of sites in the Yenisey region of the taiga zone and establishing the place of these sites relative to surrounding cultures. One of these sites is the settlement near the village of Makovskoye on the Kheta River. Excavations here revealed pottery dating to the Neolithic or the Early Bronze Age, including vessels decorated with one or two ridges, rows of pits and pit-like depressions, and notched stick imprints (Nikolaev 1963a:53, fig. 7:1-3). The vessels, very similar to Pyasina and Malokorenninsk pots, are presumably contemporaneous with those cultures and date from the second half of the first millennium B.C. to the first centuries A.D.

Another site with pottery that appears to be closely related to the Pyasina and Malokorenninsk traditions is a burial ground near the Podkamennaya Tunguska village. A small pot from the cemetery is decorated with an incised ridge, three rows of small oval pits, and comb lines engraved with a serrated wheel (Andreev 1971:fig. 15:2). The vessel was dated by G.I. Andreev to the middle or second half of the first millennium B.C. Based on that find, Andreev hypothesized that an independent taiga-zone culture would be identified at some future date.

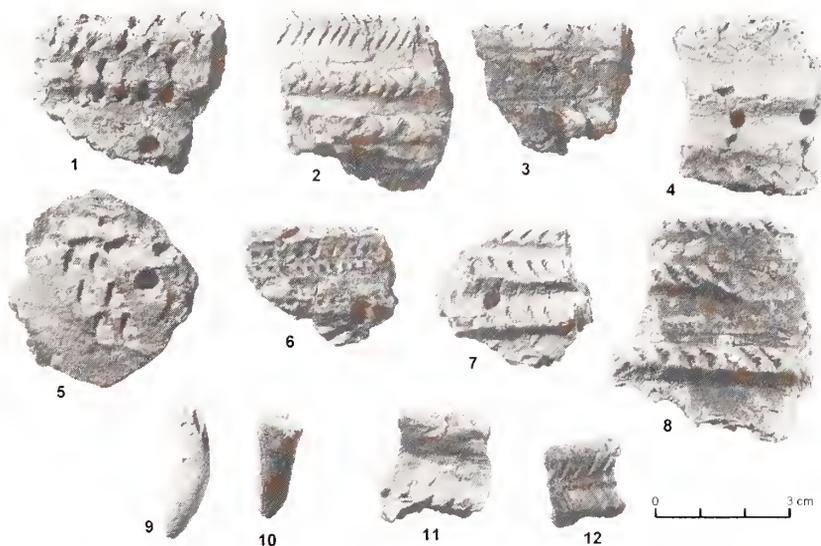
The similarity of materials discovered on the Pyasina, the Kheta, and Podkamennaya Tunguska suggests the existence in the second half of the first millennium B.C. in the tundra and forest regions of the Yenisey region of a group of sites distinguished by common principles of pottery decoration. As the number of newly discovered sites increases, other traditions comparable to the Pyasina and Malokorenninsk cultures will be defined, and one of those might be found in Evenkia, as Andreev has suggested.

The Influence of East Siberian Traditions

The evolution of the material culture of the Pyasina River sites, such as Pyasina IV-A, and sites of the Pyasina and Malokorenninsk cultures, was based on the fusion of West Siberian traditions with those of the Ymiyakhtakh culture. Such sites have not been found in any other areas of the Taymyr Peninsula. Also of interest is the Ymiyakhtakh group, which



132/ Map of Cultural Layer II in Excavation Area IV, Ust-Polovinka. Legend. 1 = flakes; 2 = ceramics; 3 = crucible fragments; 4 = blades; 5 = arrowheads; 6 = artifact concentrations.



133/ Ceramics from: Malaya Korennaya I (nos. 1, 5-8, 10); Pyasina IV (2-4, 9, 12); Bolshaya Korennaya II (11).

established no assimilative contacts with the ancient West Taymyr population and continued to develop its own cultural traditions.

Evolution of Ymiyakhtakh traditions is illustrated to some extent by a group of sites discovered on the Pyasina River and identified as a specific tradition named Ust-Cherninsk. The following occupation sites are associated with the Ust-Cherninsk culture: Ust-Chernaya I, Chernaya I, II and III, Pyasina IV, Bolshaya Korennaya II, and Lantoshka I. Unfortunately, all of these sites lack stratigraphy. However, the distinctive pottery of the Ust-Cherninsk tradition provides the means to determine the place of that tradition among other cultures of the Taymyr Peninsula and to identify typologically the Ust-Cherninsk materials that come from various sites.

Pottery of the Ust-Cherninsk culture (Fig. 139:1, 2, 4, 7-9) is represented by fragments of vessels containing hair temper. The vessels are sub-conical (or oval), i.e., round-bottomed and straight-walled with a rim diameter smaller than the greatest diameter of the body. Rims were either rounded or flat. In some cases the smoothed surfaces of the pots preserved traces of paddling in the form of diamond-shaped impressions with large cells. Some of the fragments

had impressions under the spalling surface layer. The vessels are distinguished by thin walls, with fragments usually 3 to 5 millimeters or occasionally 6 to 9 millimeters thick. The typical decoration is a narrow (3 to 4 millimeters wide at the base) sharp-edged ridge that is triangular in cross-section and generally placed about one centimeter below the rim. Occasionally, there is a row of small, deep pits under the ridge that resulted in bosses on the internal surface. Fragments of at least nine pots of this type were found at Pyasina

IV, some decorated; instead of pits, they had one or more bands of pearl-sized bosses resulting from similar pits made inside the vessel (Fig. 139:9).

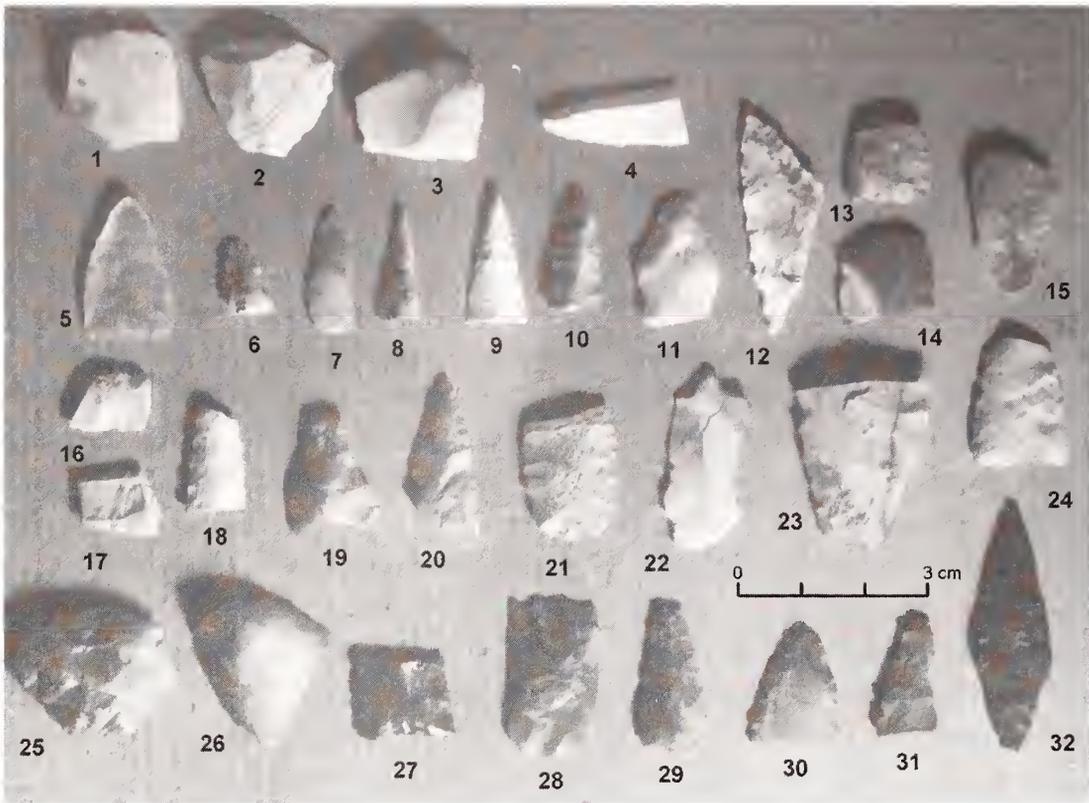
From the same site are fragments of a small decorated pot (rim diameter of about 12 centimeters) with a ridge, a band of pits, a row of slanting crosses engraved in the wet clay, and zoomorphic images (Figs. 140, 141). Fragmentary representations of two zoomorphs (Fig. 141) display cigar-shaped bodies with short parallel lines grouped in pairs that form an acute angle with the body. At the end of one of the depictions, two lines diverge to form an angle, and a single line is drawn at the end of the other representation. In all likelihood, the motifs represent fish.

Other aspects of the Ust-Cherninsk culture can be described on the basis of the few finds from sites at the mouth of the Chernaya River and from Lantoshka I. At Pyasina IV and Bolshaya Korennaya II, different cultural complexes are mixed together and it is difficult to establish a relationship between a specific type of pottery and other artifacts. The scarcity and uniformity of the finds attest to single component, short occupations. In addition to pottery, the finds from Lantoshka I comprise three chalcedony sub-triangular scrapers, three jasper and eight chert flakes, four chalcedony flakes and blades; materials from Ust-Chernaya I consisted of one scraper (Fig. 133:14) and eight jasper flakes and blades; the collection from Ust-Chernaya II included seven jasper flakes and blades; and from Chernaya I, one jasper flake and a piece of chalcedony. More finds were collected at Chernaya III: sixty-nine mostly small flakes, seventeen blades and flakes, a large blade with retouch on two sides, three scrapers (Fig. 142:5, 8, 11) and two mold fragments. The stone implements were of chalcedony and jasper as well as other kinds of flint. The jasper and chalcedony artifacts from Chernaya II comprised thirty-two flakes and blades, four blades, a chalcedony core, two flakes with retouch, two scrapers (Fig. 141:4, 6) and four arrowheads (Fig. 142:2, 24–26). A mold fragment was also found at the site.

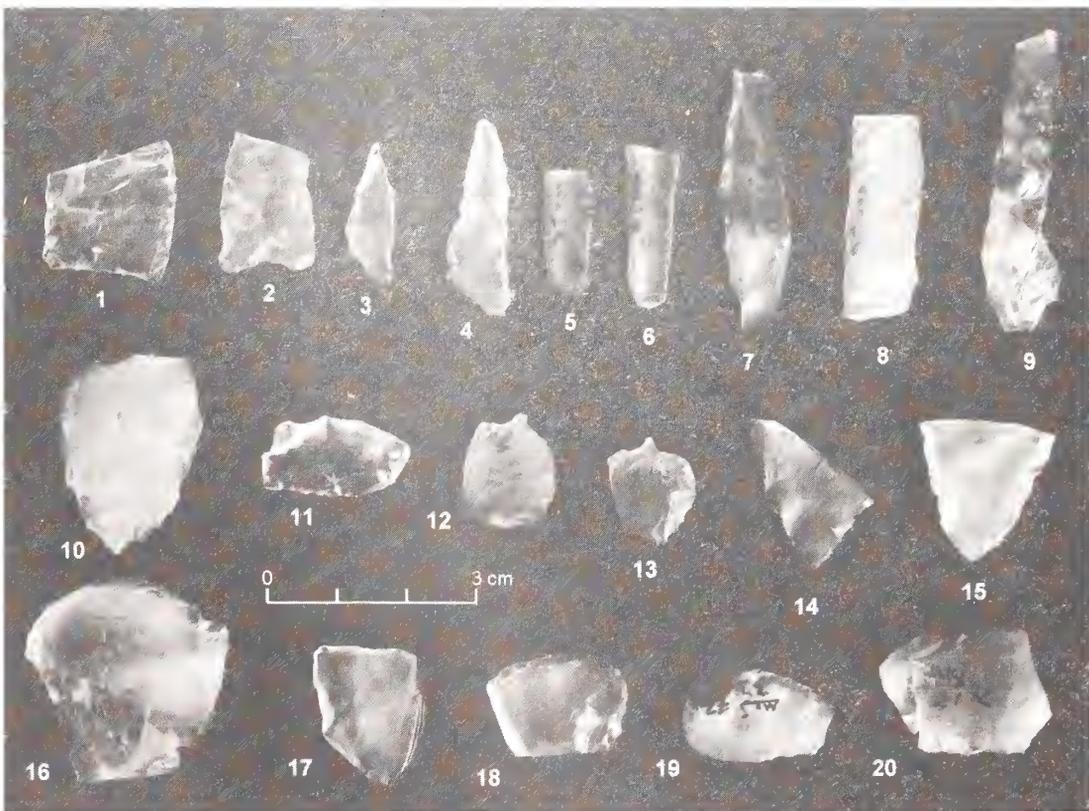
Thus, the Ust-Cherninsk sites are characterized by tools and blades of jasper and chalcedony and by the absence of artifacts of quartzite and dark-gray chert that are typical of the later Taymyr sites. The existence of bronze casting is evidenced by the molds found at the sites. The single ridge on vessels is reminiscent of Pyasina pottery. A rim fragment with a typically Ust-Cherninsk shape found at Bolshaya Korennaya had coarse-grained sand temper characteristic of the pottery of the Pyasina and Malokorenninsk cultures. That find is proof of the parallel existence of the latter cultures and the Ust-Cherninsk tradition. However, taking into account its main distinctive features—hair temper, manufacturing technique and poor ornamentation—the Ust-Cherninsk pottery more closely resembles Ymiyakhtakh ware. This is also true of the material and form of Ust-Cherninsk stone tools. The molds, however, are similar to the Pyasina, rather than Ymiyakhtakh, type.

This evidence suggests that the Ust-Cherninsk culture was the successor to the Ymiyakhtakh tradition and was contemporaneous with the Pyasina culture, dating to the second half of the first millennium B.C. This conclusion can also be drawn from comparison of Ust-Cherninsk material with that of other cultural complexes that are similar to East Siberian sites of the Iron Age.

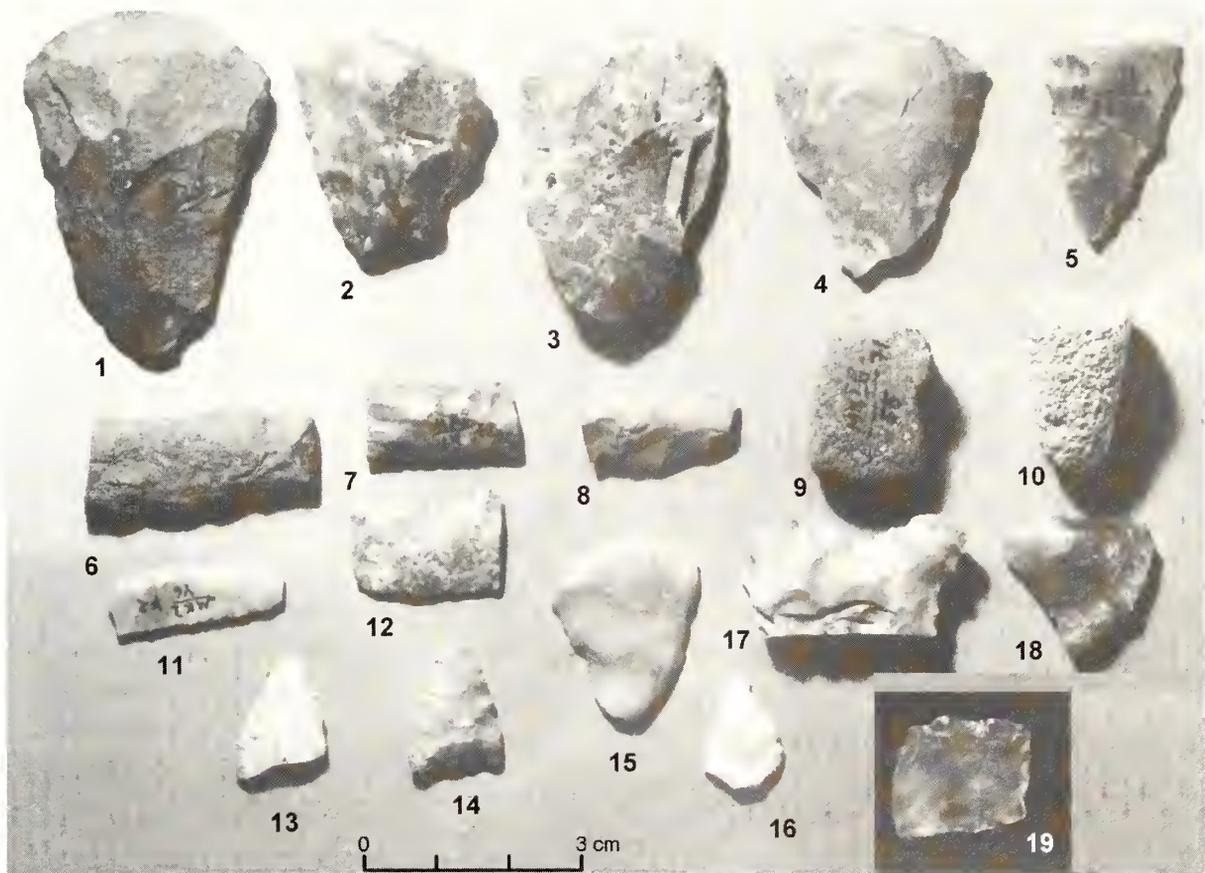
The possibility that the Ust-Cherninsk culture spread to eastern Taymyr can be inferred from fragments of a pot, comparable to Ust-Cherninsk vessels, that was found at Boyarka I. The site, mentioned in Chapter 2, is located on the right bank of the Kheta River upstream from the Boyarka River near the deserted settlement of the same name. The pot (Fig. 145:7) had a closed shape, a flat rim, and a smooth surface, and was decorated with a ridge one centimeter below the rim and with a band of small pits beneath it. The pits were made with a square stick. The clay contained a large amount of fine hair temper. The sherds, about 6 millimeters thick, have a lamellar structure; the lack of waffle impressions distinguishes them from Ust-Cherninsk pottery.



134/ *Lithics from Malaya Korennaya I.*



135/ *Lithics from Malaya Korennaya I.*



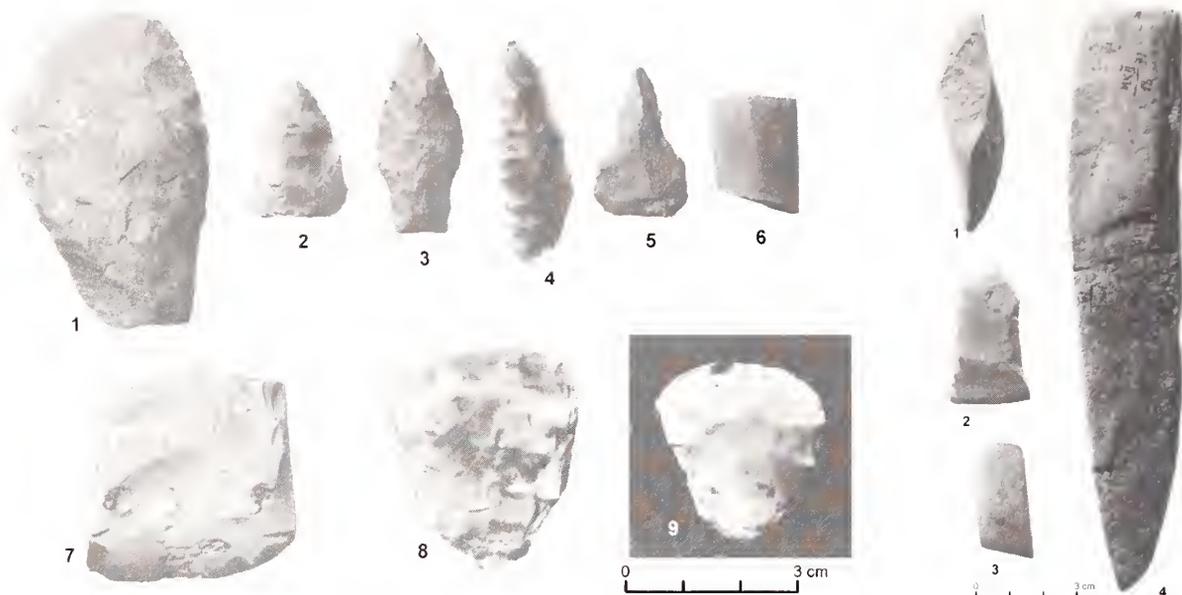
136/ Lithics from: *Malaya Korennaya I* (nos. 1–12, 17); *Malaya Korennaya II* (13); *Malaya Korennaya III* (14, 15, 18, 19); *Malaya Korennaya IV* (16).

In addition to Ust-Cherninsk ware, three more types of Iron Age pottery may be identified that display East Siberian technology and design. Tagenar pottery is represented by pots found at Tagenar II-2 and Abylaakh IV on the Kheta River. The thin-walled (2 to 3 mm thick) vessels with concave necks were presumably round. The clay contained a small amount of sand temper. The upper, decorated part of the vessels was smooth; the lower portion preserved distinct diamond-shaped waffle impressions. The pot from Abylaakh IV (Fig. 143) had a rim diameter of 17 centimeters and a body diameter of 22 centimeters. The rim thickened to 6 centimeters and was flat; its edge was decorated with shallow incisions. The decoration on the neck of the vessel comprised engraved lines and smooth-stamp impressions applied, most likely, with the butt-end of a flat stick. The impressions form seven groups of vertical zigzag

lines. The spaces between the groups are filled with horizontal lines.

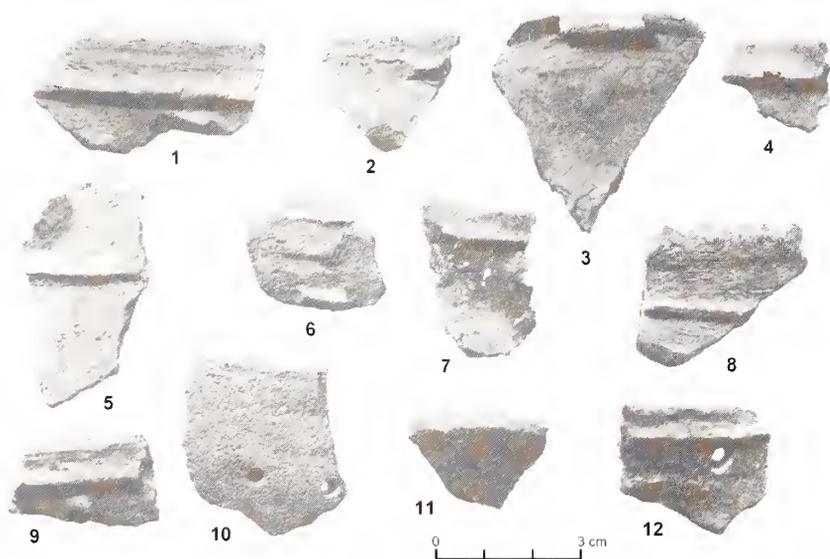
The decoration on the neck of the pot from Tagenar II-2, consisting of horizontal pricked lines made with the end of an inclined stick, resembles a linear-prick ornament (Fig. 144:2). The amount of tilt alternated with every other row so that the vertical alignment of pricks resembles zigzags. Other materials collected at the site in addition to sherds included crude flakes of black chert, flaked quartzite pebbles, and a quartzite core flaked on one side. A large pebble scraper had a retouched edge (Fig. 147:5). Attributable to the same complex as the waffle pottery of Abylaakh IV is a large slab for grinding metal objects mentioned in Chapter 2.

Boyarka II pottery has been distinguished based on material from a single site—Boyarka II—discovered on the bank of a brook discharging into the



137/ Lithics from: Malaya Korennaya I (nos. 1–5, 8); Malaya Korennaya III (6, 7); Malaya Korennaya II (9).

138/ Slate tools from Malaya Korennaya I (nos. 1, 3) and Malaya Korennaya IV (2); a whetstone from Malaya Korennaya II (4).



139/ Iron Age ceramics from: Pyasina IV (nos. 1, 2, 5, 7, 9); Bolshaya Korennaya II (4); Pyasina III (6, 10, 11); Kheta I (8); Avgustovskaya II (12).

Kheta River upstream from the Boyarka settlement, 100 meters from the mouth of the brook. Exposed at a depth of 8 to 16 centimeters in a test pit on the edge of the eroding bank was Hearth 1 in the upper cultural layer. This feature was an area of burned sand with small pieces of charcoal about 80 centimeters in diameter. The humus-charcoal band at a

depth of 35 to 36 centimeters in Cultural Layer II was found to contain jasper and chert blades as well as flakes of chalcedony and other kinds of flint. Hearth 1 contained fire-cracked stones, charred reindeer bones, pieces of burned clay—one of which had engraved lines in an unidentified pattern (Fig. 144:11)—and fragments of three or four vessels. One small pot with a rim diameter of about 8 centimeters had a slightly curved rim with

incisions. It was decorated with bands of obliquely placed linear stamp impressions alternating with rows of small, round pits (Fig. 144:8, 12). Two other pots had smooth walls and were decorated with incised ridges and rows of round pits (Fig. 145:4–6). Though the pits are shallow, the internal surface of the thin (3 to 4 mm thick) vessel walls had bosses.

The ridge of one of the pots was incised, presumably, with fingernail impressions; that of the other was comb-stamped. There were some fragments with flattened bottoms and others with slightly curved rims with incisions on the edge and finger impressions on the surface. No distinct temper was noted.

Ust-Polovinka-type pottery, discovered at Kheta I on the Kheta River, Avgustovskaya on the Dudypta River, and Pyasina I and Ust-Polovinka on the Pyasina River, is dated based on material from Cultural Layer I of the Ust-Polovinka settlement. All the material is associated with the gray humic sand of a buried soil surface with Cultural Layer I of Excavation Area I located at the top of the soil with corresponding layers of Areas II and III at its base.

Cultural Layer I in Excavation Area I of Ust-Polovinka contained Hearth 2, which was oval in shape and measured 0.4 by 0.5 meters (Fig. 127). The hearth occupied a depression and its edges rose above its center. This happens when a fire is made on frozen ground. In cross-section, the hearth can be described in this way: its base was a reddish band of sand mixed with charcoal 1 to 1.5 centimeters thick covered with a whitish ash layer containing numerous bones of small fish. On top of this layer was another charcoal lens. The deposits in the center were 8 centimeters thick. The hearth was partially distorted by a frost-crack.

The charcoal layer of the hearth contained fragments of a small pot (rim diameter about 11 centimeters) with a distinct neck ending in a flat rim, a rounded body, a flattened bottom and smooth, very thin (2 mm) walls. One centimeter below the rim was a row of small (1 mm diameter) round holes. Large grains of sand could be seen in the porous structure of the sherds.

Cultural Layer I of Excavation Area II (Fig. 123) at Ust-Polovinka was also found to contain a hearth. This feature was sub-rectangular, slightly elongated in a north-south direction, measuring 0.7 by 0.8 meters, with a charcoal layer 3 to 5 centimeters thick in the center. The northeastern section of the hearth

was the area most densely packed with charcoal. Radiocarbon analysis of the charcoal dated the hearth to 920 ± 100 B.P. (LE 1148), i.e., to the tenth through twelfth century A.D. The hearth contained small fish bones, a quartzite flake, and a fragment of a thin (3 mm) body sherd (Fig. 146:2) with a very smooth surface. The ridge on the fragment is triangular in cross-section. The fracture shows characteristic lamellar structure and slight porosity.

Cultural Layer I of Excavation Areas III and IV at Ust-Polovinka was delimited by a brownish humic lens of sand with charcoal inclusions. Heath 1A and stones were exposed in Excavation Area III. No artifacts were found in these layers.

Among the material from the disturbed layers of Ust-Polovinka were fragments of two more vessels that can be typologically associated with finds from Layer II. A fragment of a thin (3.5 mm) vessel wall with three densely placed thin ridges with triangular cross-sections (Fig. 122:6) was found in Excavation Area II, near an outlier. An accumulation of sherds from a large pot (rim diameter of 21 cm) with a protuberant body, a narrowed neck and an everted rim (Fig. 146:1) was exposed in Plot 9. The rim edge has incisions, and the neck is decorated with four thin ridges that are triangular in cross-section. This thin-walled (3 to 4 mm) pot with a smooth surface, lamellar structure, slight porosity, and no noticeable temper corresponds to ceramics from Layer I.

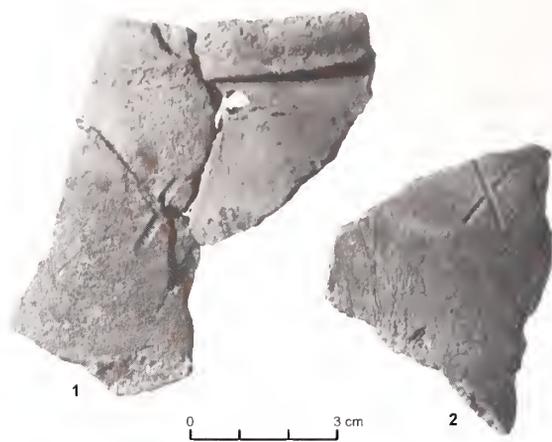
At Pyasina I, almost immediately under the turf is a humic-charcoal band from which presumably came the small fragments of gray, thin-walled (2 to 3 mm) pottery found in a blowout. Thin triangular ridges or traces of ridges were preserved on some of the fragments. Noteworthy are the fragments of two pots with concave necks, slightly bulging bodies and smooth walls, possibly sand tempered. One of the vessels had a thin rim with a diameter of 12 to 13 centimeters and was decorated on its outer edge. The neck was ornamented with several obliquely indented ridges. The other pot was similarly decorated with ridges. Associated with

the sherds were two small pieces of broken iron objects and a thin rock with traces of abrasive use-wear on one side.

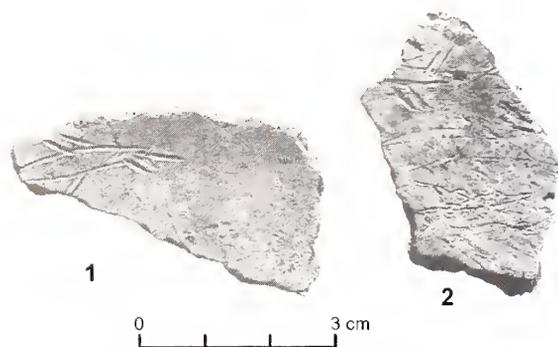
Fragments of two thin-walled pots with slightly curved rims and narrowed necks decorated with several thin triangular ridges were found at Kheta I and Avgustovskaya II (Fig. 139:8, 12). At Kheta I, the sherds were accompanied by reindeer bones; at Avgustovskaya II, where the artifacts were situated on wind-eroded spots, next to the fragments lay a scraper made from a large chert pebble (Fig. 148:1). The two sides of the convex working edge of the tool were retouched. Similar scrapers were found at later aceramic dwelling sites discussed below.

A distinctive thin-ridged ceramic variant is represented by materials from Pyasina III (Figs. 139:6, 10, 11; 145:2). Small fragments of at least seven vessels were collected in the upper part of the spit. The vessels had smooth, thin walls (1.5 to 2 mm) that thickened at the rim edge occasionally to 5 to 6 millimeters. Apparently, the vessels were sand tempered. A distinguishing feature of the fragments was high porosity. The vessels had a closed sub-conical shape that distinguished them from Ust-Polovinka ware and, judging by some fragments, they also had flattened bottoms. Four of the pots had walls terminating in a flat rim. The thickened rim of the other three vessels was slightly everted. The rim of the former pots had a shallow groove, occasionally with incisions across or at an angle to it. Only one vessel of that variety had no groove, and the upper and outer edges of its rim were decorated with angled incisions. The everted rims were thickened, and due to small oblique incisions or deep indentations, had serrated edges. It is likely that the original grooved rim variant was later modified by thickening the rim and slightly everting it.

The pots are decorated in the upper part with triangular ridges and encircling rows of small round pits. Occasionally, the ridges are adjacent to one another, as on the sherd from Excavation Area II at Ust-Polovinka. As a rule, the pit band was placed



140/ Ust-Cherninsk-type ceramics from Pyasina IV.



141/ Engraved sherds of Ust-Cherninsk-type vessels from Pyasina IV.

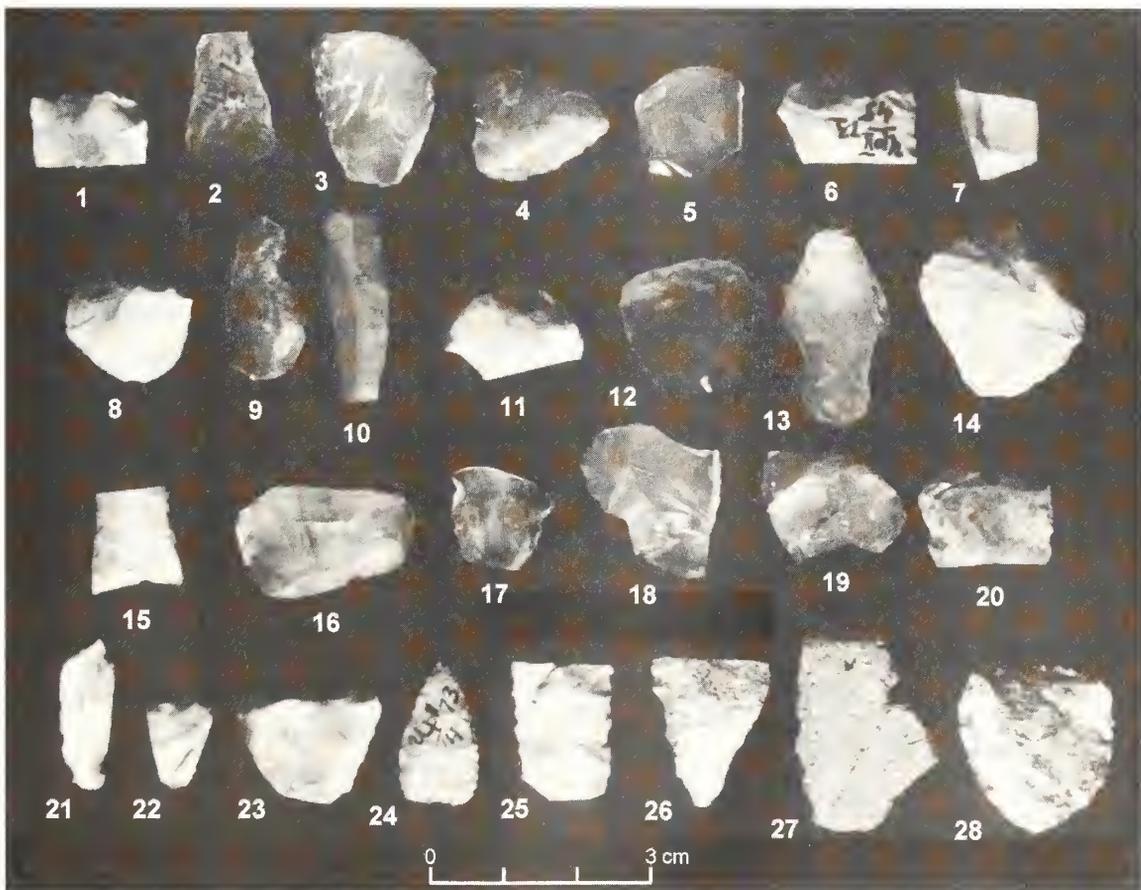
under the upper two ridges. The walls were so thin that the making of the pits caused bosses on the internal wall surface. One pot had a hole drilled under the ridge. Lying in a blowout together with the pot sherds were crude quartzite flakes, a crude, heavy scraper of gray-green chert, and a quartzite pebble scraper with the working edge showing extreme use-wear (Fig. 75:6, 16).

Similar vessels were found at excavations at Boyarka I and Maimeche II on the Kheta River and Pyasina IX on the Pyasina River. Exposed in a test pit that extended four meters from the principal excavation area of Boyarka I was a fragment of a sub-conical pot with a straight upper part, smooth, thin (3 to 4 mm) walls, and a slightly thickened rim about 20 centimeters in diameter. The ornamenta-

tion of the vessels confirms the observations based on the ceramics from Pyasina III: originally a groove with transverse incisions was made on the rim top, which was afterwards filled with clay and decorated with shallow incisions. The upper part of the pot was decorated with at least eight thin triangular ridges spaced about one centimeter apart. The clay was sand-tempered. In a test pit at Maimeche II, an accumulation of fragments of a small sub-conical pot (height 13.5 cm, rim diameter 10 cm) was found. The pot had a flattened bottom and an undecorated rim. Traces of seven thin ridges remained in the upper part of the vessel.

The principal distinctive features of the ceramics in question (identified here as the Boyarka I type) are the sub-conical shape and a peculiarly fashioned rim. The Boyarka I type is comparable both to the Ust-Polovinka type (due primarily to unincised ridges) and

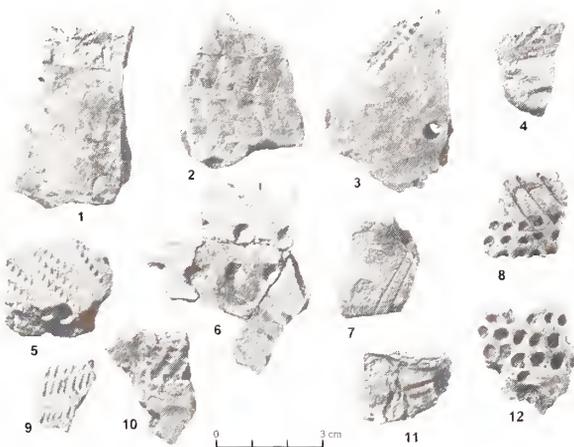
to the Boyarka II variety (due to incised ridges, pit ornamentation and sub-conical shape). Comparison shows that Boyarka I occupies an intermediate position between the Boyarka II and Ust-Polovinka types. This phenomenon may be accounted for by temporal differences as well as by the fact that the latter two types belong to different cultural groups of the Taymyr population. It seems that both ethnic integration and cultural evolution were at work. The chronological factor, however, was of greater importance in establishing the place of Boyarka ceramics among other comparable types. This assumption is based on the investigation of the pottery complexes together with the data on the Early Metal Period in the contiguous territories, Yakutia in particular. To begin with, an attempt will be made to define the relationship between the complexes, using only the material from the Taymyr Peninsula.



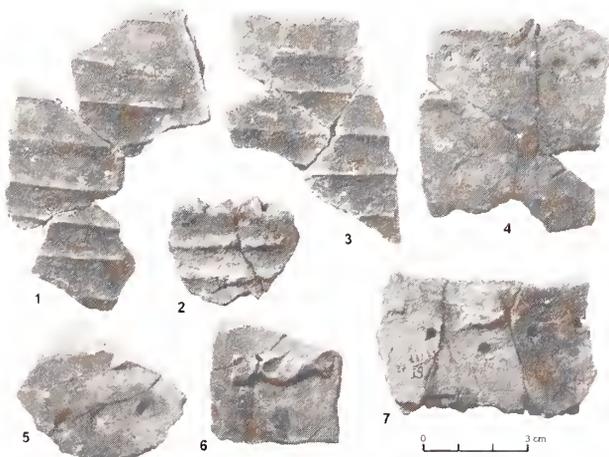
142/Lithics from: Pyasina XVII (nos. 1, 3, 12, 15–23, 28); Chernaya II (2, 4, 6, 7, 10, 24–26); Chernaya III (5, 8, 11); Popova (13); Ust-Chernaya I (14); and a sherd from Ust-Chernaya I (27).



143/ Refitted rim of a Tagenar-type vessel from Abylaakh IV.



144/ Sherds from: Malaya Korennaya I (nos. 1, 5); Tagenar II, Excavation Area 2 (2); Pyasina IV (3, 10); Pyasina III (4); Boyarka II (6, 8, 11, 12); Volochanka I (7); Bolshaya Korennaya II (9).



145/ Sherds from: Boyarka I (nos. 1, 3, 7); Boyarka II (4-6); Pyasina III (2).

The earliest of the Iron Age pottery types manifesting East Siberian traditions is the Ust-Cherninsk type, which preserves the use of hair temper and waffle ornamentation. It is distinguished from the Ymiyakhtakh ceramics of the Bronze Age primarily in its thin rim. The accompanying inventory (stone artifacts and Pyasina-type molds) suggests that the Ust-Cherninsk culture dates to the second half of the first millennium B.C. and, possibly, to the first centuries A.D.

Tagenar ware also has diamond-shaped waffle ornamentation and sand temper. The ornamentation of the narrow necks of the vessels could be due to the influence of the Pyasina culture, were it not for the similarly shaped and decorated pots that occur widely in the forest zone of East Siberia. No molds were found in association with Tagenar-type pottery which, coupled with the coarsely made quartzite tools, proves that the vessels belong to the period when iron artifacts had already achieved prominence. Tagenar ware should be regarded as of later origin than the Ust-Cherninsk type. It came into existence under the influence of cultures in the territories contiguous to the Taymyr Peninsula or was introduced by migrants from Evenkia or Yakutia. The same may be said about ceramics from Boyarka II, while acknowledging a resemblance to [ceramics from] Iron Age sites of Yakutia. The Boyarka I type, which is similar to the Ust-Polovinka type dated to the tenth through twelfth centuries A.D., is either contemporaneous with the latter or antedates it, and thus probably dates to ca. A.D. 500 to 1200. We shall now attempt to compare these types with material from territories lying farther south.

Identification of pottery from the Metal Period in Yakutia begun by A. P. Okladnikov (1943, 1945, 1946, 1950b, 1955b) was continued by S. A. Fedoseeva (1968, 1970a, b, c, d, 1974) and I. V. Konstantinov (1978), whose investigations provided insight into the evolution of cultures of Yakutia in the Bronze and Iron Ages. Based on finds from the stratified settlements Belkachi I (Layer II), Sumnagin I (Layers

III and IV), and Ust-Mil I (Layer II) on the Aldan River, Fedoseeva identified the Ust-Mil culture of the Bronze Age, radiocarbon dated to 1000–500 B.C.

Two types of ceramics are characteristic of the Ust-Mil culture. One of these is represented by thin-walled (1 to 4 mm) pots with rounded bodies, narrow necks and straight rims. The smooth surfaces of the vessels are decorated with rows of incised ridges. The other type comprises round-bottomed pots with walls 4 to 7 millimeters thick and decorated with incisions on the rim, a single row of round perforations beneath the rim, and thin, unincised ridges. Sand temper was used in both types of vessels.

Based on the decorative ornament and certain types of stone tools, some archaeologists associate the origins of the Ust-Mil culture with the Ymiyakhtakh tradition, assuming that it developed in the Middle Lena basin under the influence of a new

ethnic group that came there from the Baikal and Trans-Baikal regions and assimilated the aboriginal Ymiyakhtakh population. Fedoseeva also points to the close resemblance of the decorative style of the thin-walled vessels to the incised ridge ornamentation of the pottery of the Uril culture that was in existence during the eleventh and twelfth centuries B.C. in the Lower and Middle Amur regions. Fedoseeva (1968, 1970d) dates the thin-walled pots with narrow necks and slightly bent rims and decorated with incised or smooth ridges to the Bronze Age in the Vilyui Basin. Comparing such vessels with the Aldan ceramics, she concludes that the Vilyui was within the sphere of a single Lena Basin Bronze Age culture. However, the available specimens of Bronze Age pottery from the Aldan and the Vilyui are dissimilar enough to be ascribed to different cultures. Therefore, another view expressed by Fedoseeva in the same publication



146/ Ceramics from Ust-Polovinka (nos. 1, 2) and Pyasina IX (3).



147/ Bronze artifact (no. 2) from Dudypta XIV; lithic artifacts from: Avgustovskaya I (1); Staroye Barkhatovo II (3, 4); Tagenar II, Excavation Area 2 (5); Dudypta VIII (6); Avgustovskaya III (7); and Dudypta VI (8).

(1970c) appears more tenable. According to that view, the sole culture prevailing throughout the entire Vilyui Valley had much in common with that of the Lena Basin.

The Iron Age in Yakutia dates from about 2000 to 500 B.P., or from the last centuries of the first millennium B.C. to the fifth century A.D. (Konstantinov 1978; Mochanov and Fedoseeva 1975a). Several types of ceramics discussed by Okladnikov date to this period. I.V. Konstantinov distinguishes three of them: the Dyuktaisko-Belkachinsk, the Sumnagin, and the Ust-Mil types. These terms are not appropriate because they correspond to the names of cultures already identified in the territory of Yakutia. For this reason it is preferable to use Okladnikov's proposed terminology.

The Sangar (Dyuktaisko-Belkachinsk in Konstantinov's terminology) type is represented by round-bottomed, thin-walled pots with a more or less distinct neck and smooth surface with ribbed (more rarely diamond-shaped waffle) paddle impressions. The upper third of the vessels was ornamented with horizontal rows of obliquely placed comb-stamp impressions. Occasionally, the vessels were decorated with thick, encircling ridges also bearing comb-stamp impressions (Okladnikov 1945:table VIII). In some cases the impressions were made at an angle to the surface. Sand and fine gravel were used as temper. Such ware was found at sites on the Lower and Middle Lena (the Sangar-Khaya area, Lake Syalakh, Kullaty, Pokrovsk, and the Regional Hospital in Yakutsk) and on the Aldan (Belkachi I and Dyuktai Cave).

The Chebedal (Sumnagin, according to Konstantinov) type is characterized by very thin-walled pots with round bottoms and necks differing in the extent of curvature. These vessels have a smooth or finely ribbed surface. The temper, if any, consists of sand. The edges of the rim and the neck are decorated with encircling rows of thin triangular ridges, smooth or incised, resembling a cord. This type of pottery was found at a number of dwelling

sites in the Lena Basin, such as Siktyakh, Mukhtui, Chokurovka, Beris, Kestrimryungki, Kylarsa II, Kullaty, Kapchagai, Tumul, Ust-Chona II, Sumnagin I and others. Conceivably, the type may include pots with vertical or oblique ridges placed as links between horizontal ridges. Two variants may be distinguished in Chebedal: one with thin, smooth or cord-like ridges and the other with thicker incised ridges.

The Siktyakh (Ust-Mil, according to Konstantinov's classification) type comprises thin-walled, round-bottomed pots, sub-conical or with a distinct neck. The vessels have a smooth surface or, less frequently, are decorated with ribbed impressions. The ornamentation consists of rows of round or oval pits, caterpillar-shaped stamp impressions and indentations of other shapes. This type of ceramics also occurs commonly in Yakutia and was encountered at Stary Siktyakh, Kullaty, Ust-Mil, and Belkachi I. There are also vessels combining ornamental features peculiar to different types. For instance, from the sites of Stary Siktyakh, Kapchagai, and Mukhtui come some pots that, in addition to thin ridges, are decorated with rows of oval indentations (Okladnikov 1943:fig. 12; 1945:table I; 1946:table XVII). Such ceramics attest to the coexistence of the types under review.

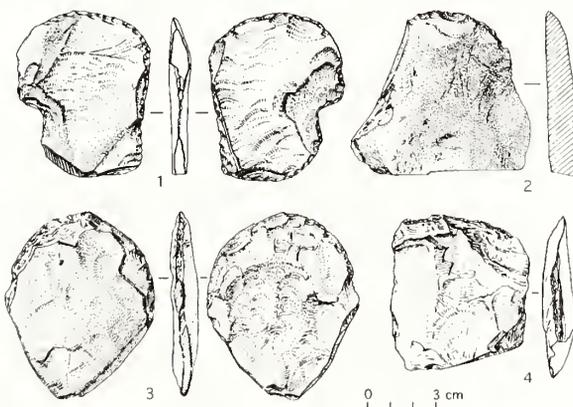
Okladnikov assigned the Sangar type to the Late Bronze–Early Iron Age. Pottery with incised ridges from sites such as Mukhtui and Stary Siktyakh was regarded as typical of the Early Iron Age and dated to the sixth through eighth century, whereas settlements with vessels decorated with smooth ridges were associated with the final stage of the Early Iron Age.

According to Okladnikov, the next stage, which lasted until the fifteenth or sixteenth century, was characterized by pottery of the so-called "small dwelling" culture. Some pots of that tradition had thicker walls than the earlier types, but on the whole, the "small dwelling" type ceramics were thin walled. The vessels had a smooth surface. Sand, gravel, and possibly crushed slate were used as tempering agents. Reconstruction indicates that the vessels were of a

closed spherical or mitre-like shape. Ornamentation consisted of one or several sharp ribbed ridges. Okladnikov regarded the types of pottery as indicators of periods or stages in the evolution of the Early Iron Age culture.

Elaborating upon Fedoseeva's ideas, Konstantinov proposed that the pottery complexes "differed in origin, both genetically and chronologically" (1978:59). The author dated the Dyuktai complex to the boundary between the eleventh and twelfth centuries A.D. and the initial stage of Ust-Mil from the third through first century B.C. Assuming that Sumnagin-type pottery developed from the preceding Bronze Age (Ust-Mil) culture, Konstantinov concludes that the earliest date for this type was the end of the first millennium B.C. He considered the Dyuktai decorative style to be imitative in origin and that Ust-Mil combined local and alien elements.

Another type of ware in Yakutia includes round-bottomed pots with rows of smooth, thin triangular ridges on an accentuated neck and diamond-shaped waffle impressions on the body. Such ceramics were found both in northern Yakutia on the Indigirka River (Lake Tatyano) and farther south, on the Olekma River (the sites of Kurung and Bolshaya Kyuske). Konstantinov suggested (1978:60–62) that pottery with diamond-shaped impressions was of local origin and not associated with the waffle ceramics of the Ymiyakhtakh culture.



148/ Sidescrapers from Avgustovskaya II (no. 1) and Lyungfada I (2–4).

Earlier, Fedoseeva (1970a:312) reasoned that waffle pottery, originating at the end of the Late Neolithic (implying the Ymiyakhtakh culture), did not last until the Bronze Age. This is an erroneous conclusion as it implies that the Ymiyakhtakh community was totally replaced by the Ust-Mil population in Yakutia, which is improbable. Ymiyakhtakh descendants may have survived in some regions of Yakutia and, as is the case in Taymyr, adopted a new variant of waffle pottery, enriching its ornamentation under the influence of other traditions, including the Ust-Mil culture.

Boyarka II and Siktyakh-type pottery share many common characteristics whereas the resemblance between the Tagenar and Sangar types is less distinct when Iron Age pottery from Taymyr is compared with the ware from Yakutia. Furthermore, the Sangar type resembles Pyasina pottery although it is devoid of widely spaced rows of pits characteristic of the Pyasina type. Certain conclusions can be drawn from these observations. One of the deductions is that Sangar pottery is an indicator of the Early Iron Age culture of Yakutia, which originated, like the Pyasina culture, in the influence and penetration of groups representing western cultural traditions.

The appearance on the Yenisey and in the Baikal region of comb pottery as a result of western culture spreading to those territories has been consistently noted by many investigators (Burilov 1975:85; Chernetsov 1953a:55; Generalov 1979a, b; Khlobystin 1978b; Okladnikov 1948:20, 1957, 1958:21–22). Comb pottery on the Angara and Yenisey dates to a wide span of time—from the Early Neolithic to the Bronze Age. The earliest appearance of pots with various kinds of comb impressions, including oval comb imprints, was recorded at the stratified settlement of Kazachka on the Kan River, a right-bank tributary of the Yenisey (Generalov 1979a, b; Savel'ev et al. 1976). Pots with such ornaments were encountered in Layer VI, radiocarbon dated to 6660 ± 190 B.P. (LE 1231), i.e., the first half of the fifth millennium B.C. Generalov's dating of that layer is from the second half of the fourth millennium B.C. to between the

fourth and third millennia B.C. Such pottery may be called the West Angara type. Judging by its position in the stratified sites of Kazachka and Gorely Les (Savel'ev et al. 1974), it should be dated to the mid-third millennium B.C. The overlying deposits of Kazachka contained ware with other types of comb designs, which attest to a long period of evolution of comb ornamental traditions that lasted until the Iron Age. Pottery with comb ornamentation has also been found in Evenkia at the Baikit I and Podkamennaya Tunguska sites (Andreev and Fomin 1966). Differing somewhat from Angara comb wares, it may be dated to the Late Neolithic to Bronze Age.

Thus, starting in the third millennium B.C., comb cultures of West Siberian origin were penetrating the territories already occupied by cultures of the East Siberian region. The evolution of the comb cultures over a long period of time while in contact with aboriginal East Siberian cultures resulted in the development in the Iron Age of cultures with the Pyasina, Sangar, and other similar types of pottery, the Tagenar type being a variant of the Sangar type. Another variant that originated in interaction with Ymiyakhtakh descendants is waffle pottery with comb designs found, as mentioned above, at the Dushkachan site on Lake Baikal.

In the course of the Iron Age, groups using Sangar ceramics were penetrating eastern Yakutia and then Chukotka, where the Vakarevo culture has been identified—the ceramics are decorated with “an ornate design of rectangular stamp impressions” (Dikov 1979:231–237).

Pottery complexes that originated in West Siberia were not ornamented with comb impressions to the exclusion of all other decoration; ornamentation also included pits. Just as the pit ornament was one of the principal features of the Pyasina culture, so were different variants of pit indentations characteristic of the Siktyakh type. However, that type apparently developed later than the Sangar tradition.

Pottery with pit indentations was encountered both in the Angara region and in Evenkia. It is there-

fore difficult to establish now where the Siktyakh type originated. The type probably developed on the vast territory of the right-bank tributaries of the Yenisey. The Boyarka II type should be considered a variant of the Siktyakh type. In all likelihood, its occurrence in the eastern part of Taymyr points to the penetration of Siktyakh groups from the northeastern region of Evenkia or Northwest Yakutia.

Yakut archaeologists argue that the Chebedal type is related to the pottery of the Ust-Mil culture. Since the Ust-Mil sites of the Aldan contained wares with both smooth and incised thin ridges, nearly all sites of Yakutia where such pottery was found were initially regarded as Ust-Mil (Fedoseeva 1970b:130, 131). The Ust-Mil culture was associated with the arrival of a new ethnic group from the Baikal and Trans-Baikal regions that assimilated the aboriginal Ymiyakhtakh population (Fedoseeva 1974:156). At the same time it was proposed that one pottery type (vessels with narrowed necks) reached the Lena Basin already in its final form (Fedoseeva 1970b:133, 1974:156). The appearance of the Ust-Mil culture in the Aldan region is dated to the early first millennium B.C. This proposal is contradicted by dates for Ust-Polovinka-type pottery, which is also smooth-surfaced, narrow-necked, and decorated with thin ridges. Moreover, similar vessels from the Baikal region, although not accurately dated, cannot be dated to the early first century B.C. An attempt to work out a typological classification of the ridged pottery of the Baikal region and to establish a chronology was undertaken by V. V. Svinin (1966:59, 60; 1970). The earliest type of Baikal pottery distinguished by Svinin was corded ware ornamented with ribbed ridges resembling bronze cauldrons or trays. He associated the pottery with the Late Bronze Age and dated it to the thirteenth through eighth century B.C. In his opinion, the latest form of corded-ware vessels was represented by pots with smooth “burnished” walls ornamented in the same style as earlier specimens. I believe such vessels were in existence in the Baikal region in the seventh through second century B.C.

Such vessels may be imitations of bronze cauldrons, but the earliest bronze specimens are dated to the eighth century B.C. (Chlenova 1967:92–109), which is in conflict with the chronology proposed by Svinin. Appearance of these vessels in the Baikal region should probably be dated to the seventh through sixth century B.C. and accounted for by the influence of the Trans-Baikal grave culture (Khlobystin 1964b:13, 14). The ridged pottery chronology of the Baikal and Angara regions needs further elaboration.

Consequently, caution should be used in approaching the problem of the origin of the Ust-Mil culture. The Ust-Mil tradition may have diverged from the complex of cultures prevailing in East Siberia in the first half of the first millennium B.C. However, the possibility of influence from the Amur area, another region of developing ridged pottery cultures, should not be overlooked. There is no doubt that pottery similar to Ust-Mil ware was still in existence in the first millennium A.D. In fact, I. V. Konovalov dated a number of the sites to the Iron Age that Fedoseeva had associated with the Bronze Age.

Ridge-decorated pottery encountered in the Baikal region and the Angara Basin is quite diverse, and some ridge-decorated types have never been discovered in Yakutia or on the Taymyr Peninsula. One of the pottery types characteristic of Southeast Siberia has thin wavy ridges and is found on the Podkamennaya Tunguska River in southern Evenkia. Also encountered in Evenkia were fragments of vessels with thin smooth or incised ridges. Occasionally, thin smooth ridges occur on vessels decorated with small toothed stamp impressions (Andreev and Fomin 1966:fig. 45).

Pots with thin smooth and incised ridges from Evenkia, like those of the Ust-Mil tradition and the Chebedal type, are comparable with the Ust-Polovinka and Boyarka I types from Taymyr. Such pots may have developed on the peninsula under the influence of cultures prevailing both in Evenkia and Yakutia. Unfortunately, the unresolved chronological problem

presented by Early Iron Age pottery precludes associating them with material from Taymyr. Further investigation of the Early Iron Age in East Siberia requires local typological studies of pottery and intraregional correlation of types, similar to the work accomplished for the Taymyr Peninsula, as a prerequisite to more general typological classification.

Konstantinov (1978:70, 71, 84–86, 98) identified thin-ridged Yakut pottery as of local origin related to Ust-Mil ware and pottery decorated with various stamp impressions as patterned after specimens from the Middle and Lower Angara. In so doing, he associated the thin-ridged type with the Yukagir and Ust-Mil ware with expanding Tungus peoples. Hence, Ust-Mil was considered by Konstantinov to represent “ancestral Yukagir tribes.” Fedoseeva, assuming that the Ust-Mil culture originated under the influence of a new ethnic group that came to the Lena from the Baikal and Trans-Baikal regions, noted the resemblance between Ust-Mil pottery and that of the Uril culture, which dominated the Middle and Lower Amur regions from the eleventh through seventh century B.C. (Fedoseeva 1974:155–156).

Pottery with incised ridges appeared in the southeast Trans-Baikal region in the Late Neolithic, in the Amogolon period, and persisted there through the Bronze Age (Okladnikov and Kirillov 1980:161, 166). Since the Tungus languages are part of the Tungus-Manchurian group of the Altai language family, their origin must have been in the southern Baikal and Trans-Baikal regions. The question remains as to whether the Yukagir language could also have arisen there. As Yukagir is closer to the Ural languages than to those of the Altai family, that possibility should be dismissed. Consequently, the idea that the Ust-Mil peoples belonged to a Yukagir-speaking ethnic group should also be dismissed.

Konovalov is incorrect in relating pottery with “stamp impressions” to the Tungus. More likely, the dissemination of pit and comb decoration, “stamp impressions” being one variant, was associated with the spread of West Siberian decorative traditions

which, in the first millennium A.D., could have been utilized by the ancient Yukagir.

The people that created the Ust-Mil culture could have belonged to one of the ancient variants of the Tungus-Manchurian language group since Ust-Mil origins overlap with the territory where Tungus-Manchurian languages were developing.

The early penetration of Tungus-speaking groups into Yakutia in the first millennium B.C. is consistent with the proposed origin of the Even and Evenk in the Trans-Baikal and Amur regions as a result of contacts between the aboriginal population and the Uvans in the second half of the first millennium A.D. (Tugolukov 1980:157-161); there could have been several stages in the northward migration of Tungus-speaking groups.

According to Evenk legends, in establishing their settlements in East Siberia, the Evenk encountered aborigines speaking a language that they could understand (Tugolukov 1980:169). Although other ethnic groups have similar legends (e.g., Nenets tales about the Sikhirtya; Enets and Nganasan narratives about Syupsya) that can be treated as widespread linguistic folklore, Evenk legends may reflect actual meetings between the Evenk and some Tungus-speaking groups, descendants of the Ust-Mil population that had migrated to the north earlier. Behind the spread of thin-ridged pottery in East Siberia was the migration of ancient Tungus-speaking groups.

Returning to the Iron Age in the Taymyr Peninsula—some pottery probably dates to the period when pottery was going out of use in Siberian regions beyond the Arctic Circle. The absence of pottery that originated after Ust-Polovinka ware suggests that in the thirteenth century pottery was no longer produced by the inhabitants of Taymyr.

Populations of the taiga regions of East Siberia were also abandoning the production of pottery, probably due to the wider use of metal utensils and a less settled way of life that resulted from the development of reindeer herding. At the turn of the nineteenth century, only the Yakut continued to

make pottery. However, old Nganasan remember the times when clay vessels were used—*satu nite*, “clay cauldron” and *moy nite*, “earthen cauldron” in Nganasan.

Evidence from dwelling sites consists of bones and charcoal lenses of hearths under the turf layer, which were encountered on the banks of large rivers surveyed by the Polar Expedition. Such sites are particularly numerous on the right bank of the Khatanga River between the mouths of the Popigay and the Bludnaya, on the left bank of the Pyasina near the mouths of the Mokoritto and the Lyungfada, as well as on the left bank of the Tareya 1.5 kilometers from its outlet into the Pyasina. Only in rare cases were any artifacts found at those sites among the bones of reindeer, geese, and large fish.

Three scrapers (Fig. 148:2-4) made from large pebbles were found on the upper spit at the mouth of the Lyungfada under the turf at a depth of 10 centimeters next to a charcoal layer from a hearth. The convex edges of the tools had crude retouch, bifacial in one case. The scrapers are similar to those from Avgustovskaya II (Fig. 148:1), where Ust-Polovinka-type pottery was found, and to the scraper from Tagenar II (Fig. 147:5), exposed together with the Tagenar ware.

Five fragments of similar scrapers (Fig. 149) lay in a pile on an eroded spot next to fire-cracked hearth stones at Dudypta XII; no other artifacts were associated. The scrapers were made from a plate of greenish chert by bilateral flaking of their edges. Such scrapers could be set into a two-handed haft similar to the *baka*-type scraper still used by the Nganasan. According to old Nganasan women, stone scrapers were produced until recently and were better for processing hides than iron tools because they did not cut the skin. Alexander F. Middendorf's observations from Taymyr (1869:543) indicate that the Avam Nganasan used stone scrapers until the mid-nineteenth century.

K. M. Rychkov (1917:56-58), who worked in southern Turukhansk territory in the pre-revolutionary

years, reported that he had seen stone implements in use among the northwestern group of Turukhansk Tungus as well as among Avam and Khatanga Samoyedic speakers. He gave a description of the tools he collected. However, Rychkov noted that "certain stone tools are sinking into oblivion and the Tungus ascribe to them supernatural origin; some are recognized as sacred and are kept as amulets." This observation suggests that the stone implements observed and collected by Rychkov were long out of use and were preserved as heirlooms or curios found at ancient dwelling sites.

Judging by their occurrence with Iron Age pottery, pebble and chert scrapers came into use when other stone tools were no longer produced and the technology of making them had been lost. This phenomenon is also apparent from archaeological material from West Siberia. At the Yamal occupation site of Yaroto I, such scrapers were the only implements occurring with fragments of Bichevnik-type pottery dated to the fifth through eighth century A.D. (Khlobystin 1967:148). A ceramic Taymyr sites that contain similar scrapers may therefore date to the late prehistoric period (A.D. 500 to 1500).

The charcoal layer of the Novorybnoye III site on the Khatanga River was found to contain, together with reindeer bones, a small sub-rectangular whetstone for grinding metal objects and a fragment of a thin bronze plate (Fig. 150:7) with pieces of another plate attached to it. The significance of the plate is apparent from finds from Pyasina VI where five fragments of thin bronze plates and two bronze buttons were found on a wind-eroded spot (Fig. 150:1-2). Two of the fragments (Fig. 150:3, 5) are pieces of two plates joined together. In order to connect the plates, cuts were made on the edges and the resulting rectangular "teeth" were alternately bent over either side. Then the plates were joined together, the teeth of one plate placed on those of the other, and the joins were soldered. The two plates had a thickened bent-over edge, and this was probably how the cauldron edge was fashioned. One of the plates had a

hole filled with a bronze rivet. The plate edges bear traces of cutting. The cauldron must have been cut into pieces, some of which were utilized and others, those with joins, thrown away.

The round, convex buttons have links on the concave side for attachment. One of the buttons is decorated on the convex side with radial grooves and the other with two concentric bosses. The edges of the latter remain as cast, as the button was never used.

Finds from Pyasina VI resemble artifacts discovered at a workshop on the Taz River (Khlobystin and Ovsianikov 1973): cuttings of copper plates with traces of riveted joins and buttons similar to the Pyasina kind. The buttons, like those from Pyasina VI, were unfinished. The workshop on the Taz River, which probably belonged to a Samoyedic-speaking population, is dated to the twelfth century. Artifacts include decorations used until recently by the Enets and the Nganasan. Buttons like those from Pyasina VI were formerly in use as decorations among the Nganasan. Based on the evidence of the workshop on the Taz River, Pyasina VI should be dated to the first half of the second millennium A.D. The site was probably the dwelling of a craftsman who made bronze decorations.

Iron Age evidence from two sites illustrates the skills of the Taymyr inhabitants and of their distinctive culture: an iron knife from Glubokoe I and two arrowheads from Staroye Barkhatovo I. The knife from Glubokoe I is in a fine state of preservation (Fig. 47:2). It differs from other iron knives on record in that, like the single-cast bronze knives of the Tagar period, it has a decorated handle forged from the same piece of metal as the blade. The knife has a straight back. The handle is decorated with three zones of horizontal lines with two spaces in between that are decorated with small triangular incisions. The pentagonal handle knob is decorated at the corners, leaving an undecorated triangular field. The blade is sharpened on only one side, thus resembling ground stone knives of the Neolithic and Bronze Age of

Siberia. This manner of sharpening homemade iron knives prevails among the aboriginal population of the Taymyr Peninsula to this day. The Glubokoe knife has no direct parallels but in form and ornamentation it is reminiscent of Tagar knives and can therefore presumably be dated to the first millennium A.D.

Arrowheads with distinctive foreshafts (Fig. 151) were found on a hill between the Dudypta River and its left-bank tributary, the Kamennaya, near the deserted trading station of Staroye Barkhatovo, in a layer of sand at a depth of ten centimeters. The bronze plate points are patinated, almond-shaped, sharpened by bilateral edge grinding, and have notched bases. The smaller-sized arrowhead (Fig. 151:1), measuring six centimeters in length, is fastened between two pieces of antler with two copper rivets, one connecting the shafts to the arrowhead and the other fastening them together in the notch. Supposedly, the base of the arrow was wedged into the end of the foreshaft. The point of the arrowhead is bent to one side. The other, larger, arrowhead (Fig. 151:2) measures nine centimeters in length, fits into the slot at the end of an oval antler foreshaft and is fastened to it with two rivets. The rivet passing through the arrowhead is of iron, the other is of copper. The distal end of the foreshaft is broken off.

Antler holders for fastening stone arrowheads to shafts were found in a burial near the Boguchan, a tributary of the Lower Lena (Okladnikov 1946:71, table X). The burial containing bronze artifacts may be attributed to the Ymiyakhtakh culture. The arrowheads from Staroye Barkhatovo I should probably be associated with the initial stage of the Iron Age when the new metal had not yet become the principal raw material.

The occurrence of two arrowheads lying together with no other finds nearby is puzzling. A possible explanation is provided by material on sacrificial sites of the ethnic groups of the North, the Koryak in particular. I. S. Vdovin (1971), investigating one of the Koryak votive sites, or *appapil'*, on the Vetvei River on the east coast of Kamchatka, found, in addition to

beads and animal skulls, hunting weapons, including wooden, bone, iron and composite arrowheads. One of the iron arrowheads was riveted to the antler shaft (Vdovin 1971:table V, 8) with a fastening technique similar to that found at Barkhatovo I. Similar artifacts found in Taymyr and Kamchatka attest to a wide distribution of this type of arrowhead among the ethnic groups of Northeast Siberia. Based on the arrowhead from the *appapil'*, one of the possible interpretations of Staroye Barkhatovo I is that it represents the remains of a votive site with no preserved objects of wood or bone.

The historical processes taking place on Taymyr were highly complex and responsible for the diversity of cultures found there. The interplay of cultures with western and eastern traditions that began in the Bronze Age resulted in the development in the western part of the Taymyr Peninsula of the Pyasina culture and its Malokorenninsk successor. Concurrently, cultures with eastern traditions were developing on the peninsula, embodied in Ust-Cherninsk and Tagenar sites. New cultures formed in the territories of East Siberia lying farther south penetrated Taymyr later; their populations left Boyarka- and Ust-Polovinka-type sites. The Ust-Polovinka sites datable to the first centuries of the second millennium A.D. are found in both the eastern and western parts of the Taymyr Peninsula where previously the Malokorenninsk culture had been in existence. In all probability, this is evidence that the Malokorenninsk population was assimilated by the new arrivals.

The history of the ethno-cultural processes that were taking place on the peninsula between the first and second millennia B.C.—processes that were vitally important in the evolution of the Nganasan, the aboriginal inhabitants of the region—would be incomplete without an account of another tradition: the Vozhpay culture.

The Vozhpay Culture

The evolution of the Taymyr Peninsula cultures in the first millennium B.C. under the dominating influ-

ence of East Siberian traditions was complicated by the intrusion of a new population from West Siberia. Presumably, the intrusion affected only the western part of the peninsula where a remarkable site was discovered and excavated on the Pyasina River. In order to appreciate the importance of that site for reconstructing the ethnogeny of the peoples of the North it is necessary to refer again to the ancient history of West Siberia.

The Dyuna III Site

Seventy-one kilometers downstream from its source, the Pyasina River has a left-bank tributary, a brook originating in the Cherepanov Lakes. The brook has cut the bank into two terraces, seven and eleven meters high; there the terrace surface, wind-eroded in many places, is covered with dunes. A number of ancient sites named Dyuna I through Dyuna VI were discovered in the vicinity of the brook. In 1972, during a high-water stage of the Pyasina, at the mouth of the brook on the gentle slope of a wind-eroded section of Terrace I, fragments of pottery were found that were decorated with a distinctive design never before encountered on the Taymyr Peninsula.

Exposed in the 6-by-8-meter excavation area at the eroding edge of the terrace was a hearth and rows of larchwood poles that represented the remains of a dwelling. In 1973, a total of 324 square meters were excavated (Fig. 152), in accordance with the expected size and orientation of the dwelling, extended over some of the blown-out sections and the edge of a high dune. Therefore, the depth of sand deposits over the cultural layer varied from several centimeters in the western part of the area to 2.3 meters in the southeastern corner. The remains of the structure lie on the horizontal surface of a brown band of sand 0.3 to 0.5 centimeter thick with charcoal inclusions. In all probability, the color of the band was due to the rotted wood remains of the dwelling.

The cultural layer is on a surface of laminated sand. The sand deposits overlying the cultural layer

were denuded in the past by wind erosion, covered with soil and later buried under aeolian sand. Within the buried soil layer is a frost wedge with a crack traceable in Squares 3 and 4 that bifurcates in Square 12 and passes into Squares 11 and 21. The wooden structural elements lying in the cultural layer were damaged by the crack.

Buried under the sand in the eastern part of the excavation area were stumps and roots of eight larches with roots reaching into the cultural layer. The bases of six larger stumps (70 to 90 cm high, 20 to 28 cm and, in one case, 35 cm in diameter at the base) were 15 to 30 centimeters above the cultural layer. The trunks had been burnt. Similar stumps could be seen on wind-eroded places in the vicinity of the site. A layer of alder leaves and other plants was found in the frozen ground between the roots of a large stump. Another large stump was encountered in Square 35. Two smaller larch stumps, 20 and 24 centimeters in diameter (Fig. 153) with bases immediately above the cultural layer were found in Square 54. The trunk of one of those trees, over 7.5 meters long with a diameter of 20 centimeters, had fallen towards the southwest. The other larch trunk, lying just above some poles, was probably a standing tree when the structure was still intact. It was partially hidden under the northern wall of the excavation pit; the top part, exposed in the pit, was 7.2 meters long. The trunk crossed Squares 8, 17, and 26 in a southwest direction. The thin trunk, 16 centimeters thick at the pit wall, was the kind used to cut 5-to-6-meter-long poles for constructing the dwelling.

In Squares 62 and 71, the sequence of cultural remains and parts of the buried trees were as follows: fragments of pottery on the floor under some bark and poles of the dwelling structure; a ten-centimeter-thick layer of sand; and a larch trunk ten centimeters above which was a stump with roots beneath the trunk. From these facts one can deduce that a deciduous forest grew twice over the dwelling remains, and each time was destroyed by shifting sand.

Wooden remains of the dwelling were found over the entire surface of the excavation area, except in the southwestern corner where they had lain close to the surface and had rotted away or were destroyed by wind erosion and denudation of the terrace edge. In the northern and eastern parts of the pit the remains extend beyond the walls. Therefore the size of the dwelling has not been determined and is difficult to reconstruct.

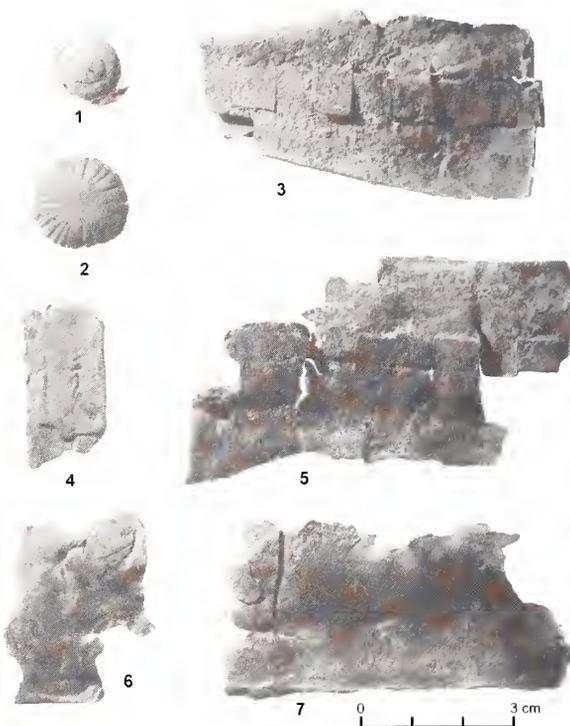
The dwelling remains (Figs. 154, 155) consisted of poles, logs, and bark lying singly or in accumulations on the northern, eastern, and part of the southern side of the hearth, which is roughly in the center of the excavation area in Squares 41, 42, 50 and 51. The hearth, rectangular in plan, extends east-west for 2.7 meters and measures 1.5 and 1.7 meters wide in the western and eastern parts, respectively. The hearth was bounded on the northern, western, and southern sides with logs lying at floor level. On the eastern side, its outlines are vague, extending over the remains of a log.

The hearth layer, 9 to 10 centimeters above floor level, had the following stratification in the center: the top consisted of a black charcoal band two centimeters thick with abundant pieces of charcoal, below which was a three-centimeter-thick reddish lens of loam or clay that was baked in the central part, and a highly fired sand layer underneath extending as much as thirteen centimeters below floor level. Encountered on and in the charcoal layer were fragments of pottery, ceramic slag, small burned bones of fish, and reindeer bones including several mandibles. In the center of the hearth was a piece of iron slag. An interesting find was a fragment of a ceramic cylinder three centimeters in diameter that widened to four centimeters at one end (Fig. 156:4) and which was reminiscent of a leg support. On the western edge of the hearth lay two large boulders that rose above the charcoal layer.

Near and on the hearth lay poles, apparently from the roof, with an orientation that coincided almost exactly with the cardinal directions. At a distance



149/ Scrapers from Dudypta XII.



150/ Bronze artifacts from Pyasina VI (nos. 1-6) and Novorybnoye III (7).

of 1.4 meters from the northern side of the hearth, along Squares 31 through 34, was an accumulation of small poles; those in a better state of preservation measured about 1.4 meters long. The poles lay parallel and close to one another, extending in a north-south direction. Traceable under their southern ends were thicker poles oriented east-west. It seems that the upper, shorter poles were tied to the lower poles, forming a single lattice-like structure. A layer of

rotten bark, most likely of deciduous trees, could be traced between and, occasionally, on the poles. The bark was in a poor state of preservation but its fibers extended along the upper poles, which suggests that the layers of bark were placed on top of the shorter poles. No bark was discovered under the poles. As decay was progressing, the stronger poles pierced the bark, which filled the spaces between them.

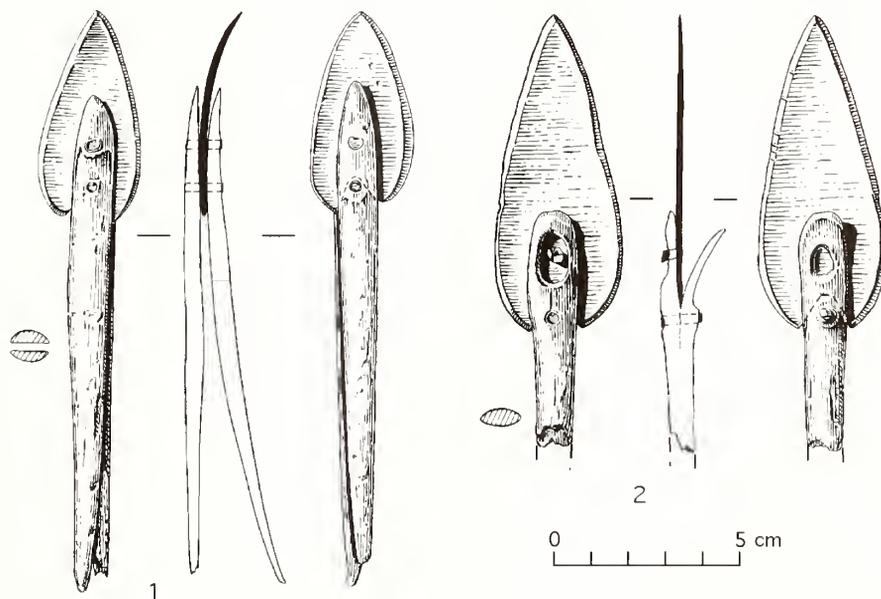
Remains of a similar structural element extending from north to south were also exposed about one meter from the eastern side of the hearth. The poles there were over three meters long. That structural element formed a right angle with the northern "lattice." It is conceivable that there had been similar lattices on the western and southern sides of the hearth. All together they formed a triangular dwelling frame. The positioning of the poles lying near the hearth suggests that the smoke hole above the hearth was fringed with another frame of poles. Heavier poles, about ten centimeters thick, found northeast of the hearth in Squares 43 and 44 form a rectangle that was probably the skeleton of the lattice at the joint of the northern and southeastern lattices. There is evidence that larch bark formed part of the bark covering of the structure.

At first glance it would seem that the dwelling remains in the northern part of the excavation area were in a state of chaos. However, four accumulations of poles and layers of bark can be distinguished there. In the northeastern corner, most of Squares 9 and 18 was occupied by a lattice made of two poles (oriented nearly north-east) supporting the ends of several other poles. On the northern side lay six poles covered with bark spaced

forty centimeters apart; on the southern side, the poles lay haphazardly.

Another accumulation of poles covering Squares 16, 17, 25 and 26 resembled a herringbone pattern—rows of thin poles lay at an angle of 30 degrees on both sides of an east-west oriented pole. No bark was found here. Standing upside down between the poles in Square 16 was a small pot with a broken rim (Fig. 157:2). North of that feature, in Squares 15 and 24, was another pile consisting of two thick poles oriented northwest to southeast lying twelve meters apart with some thinner poles on top. In Squares 15 and 16, ten such poles lay in a fan-like pattern, their thinner ends converging at the base pole to which they could have been attached, forming a single construction with the poles of Square 24.

Squares 5, 14, 12, 13 and part of Square 22 were occupied by thick logs and wide (14 to 20 cm) strips of bark. In Squares 5 and 14, logs with the butt ends facing northeast cross a row of poles occupying Squares 12, 13 and 22 at right angles; the butt-ends of the latter poles point northwest. The strips of bark here were on top of the poles. Some strips of bark and fragments of poles from the northern wall of the excavation pit were charred and pieces of charcoal



151/ Bronze arrowheads from Staroye Barkhatovo I.

were found between them. The large size of the poles and strips of bark suggest that they were part of the dwelling wall. Strips of bark were also found in Squares 2 and 11. The opposite, southeastern corner of the excavation pit also contained thick logs and strips of bark that intersected at right angles.

The bases of four posts dug into the subsoil sand were found in the excavation pit, two of them west of the hearth: one (at the D-7 stake) 1.2 meters and the other (at the D-6 stake) 0.8 meter from the hearth. The upper part of the posts had rotted away. The first was 35 centimeters long with a diameter of 11 centimeters. It was dug to a depth of over 30 centimeters beneath the brownish floor layer of the dwelling. Its base was sharpened with two slashes on opposite sides. The slash is 15 centimeters long; the smooth surface suggests that each slash was made with a single sweeping stroke. Another similarly slashed northern post was 28 centimeters long and had a diameter of 8 centimeters. The remaining two posts were about 10 centimeters in diameter; one was placed 1.6 meters north of the hearth (East E-5 stake) and the other almost 5 meters east of it (at the I-7 stake). All the posts are structural elements that supported the roof and the walls of the dwelling. Originally there were probably more than four supporting posts. In some places the poles and the bark were lying in gray sand 2 to 5 centimeters and, less frequently, 10 centimeters above the brownish floor layer. This indicates that the sand accumulated after the dwelling was deserted, but before the pole structure collapsed.

Assuming that the hearth was in the center of the dwelling, that the thick logs and wide strips of bark exposed in the northern part of the excavation area formed its walls, and that the thin pole lattices lying around the hearth were parts of the roof, it is possible to tentatively reconstruct the dwelling.

Parts of the roof fell down almost vertically and, lying on the floor, formed, as it were, a projection of the roof; however, the walls could have fallen both inside the dwelling, covering parts of the roof

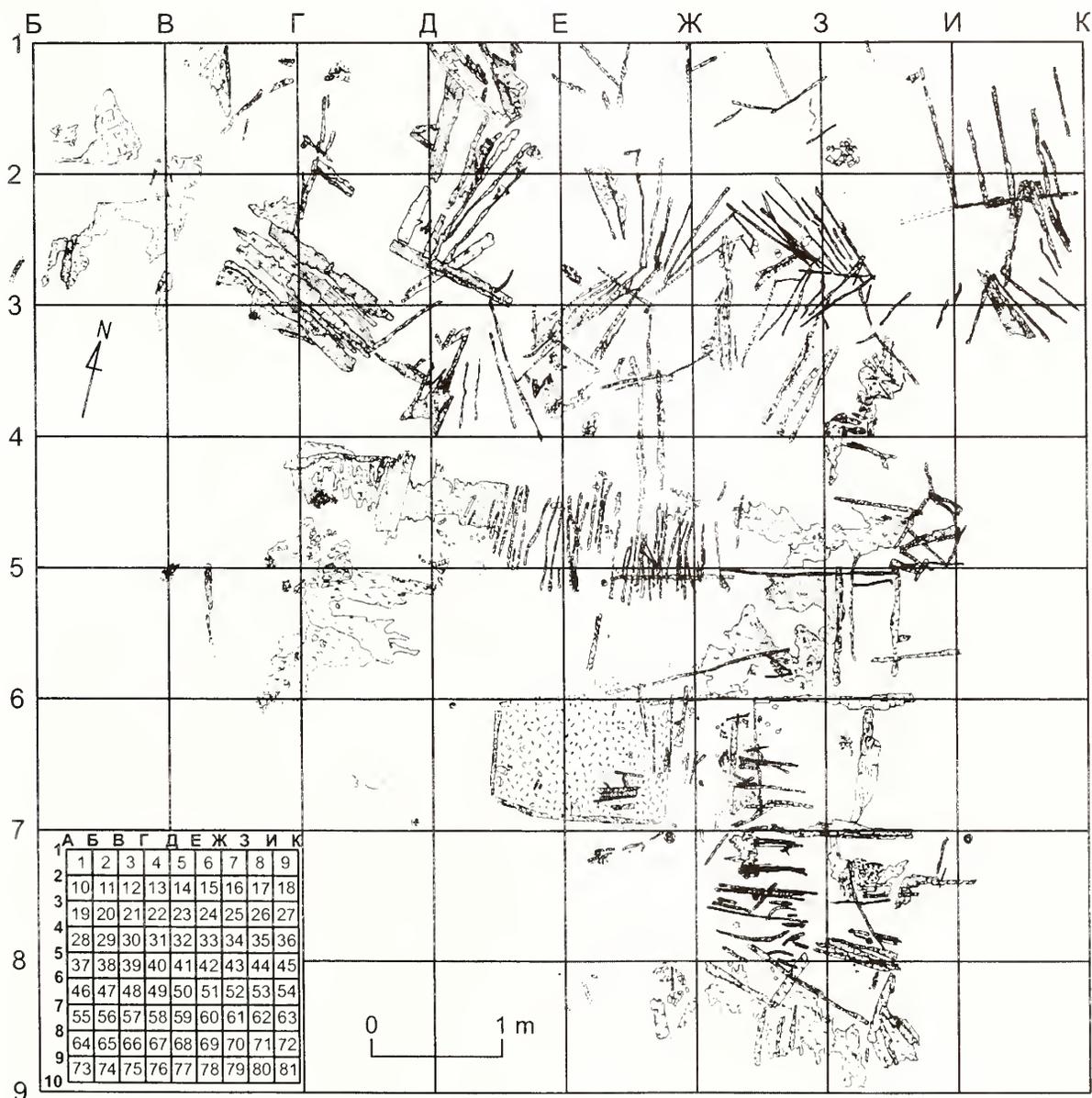
that had fallen down earlier, or sideways, possibly due to the wind. Indeed, the position of the poles in the northern part of the excavation area seems to indicate that the structures fell in a southeastern direction, which is quite natural since northwest winds predominate in the region. Part of the wall of the northern edge of the dwelling fell inside over some pots. The log structure exposed in the northeastern corner of the excavation area, in Squares 9 and 18, could have dropped outside the dwelling. Inside the dwelling were the logs in Squares 70 and 71, associated with the wall.

The distance between the center of the hearth and the end of the wall structures in the northern part of the excavation area is approximately ten meters. Therefore, the dwelling could have had a diameter of about twenty meters. Around the hearth, at a distance of 2.2 to 2.6 meters from its center, would have been the first row of posts, the second row being some six meters apart. The two rows were connected by thick poles covered with a dense layer of thinner poles and bark that formed the roof. Due to the greater height of the inner row of posts, the roof could have had a slight pitch. The outer row of posts were arranged in a hexagon, and the poles that connected them could support the log lattices that formed the walls. The wall structures were placed directly on the ground about four meters from the outer row of posts, the walls sloping at an angle of about 45 degrees. The lattice wall structures were covered with bark and possibly with reindeer hides. The hides could also have been used for covering the smoke hole. A dwelling of this kind could have had an area of 350 square meters.

No artifacts were found in the dwelling other than a wooden vessel in a poor state of preservation near the southeastern corner of the hearth, a cylindrical clay stand or leg, and numerous potsherds. There were few bone remains. As noted above, reindeer and fish bones from the hearth were in a poor state of preservation. Two reindeer mandibles lay next to the hearth, and a splintered reindeer cannon bone

was exposed in a square next to some small pieces of charcoal. In Square 35, among the haphazard accumulation of broken poles was a larch root; its end was sharpened with four axe slashes. In Square 26, a pile of larch (?) twigs lay under some poles and bark. Such twigs were used by aborigines of the Taymyr Peninsula for bedding.

In most cases pottery occurred as accumulations of fragments from a broken vessel. A total of ten accumulations were noted, generally under the poles. The small pot that stood upside down between the poles in Square 16 was intact. The large pot at the boundary of Squares 71 and 62 was shattered by the falling roof. Another pot that stood nearby in Square



-  - 1
-  - 2
-  - 3
-  - 4
-  - 5
-  - 6
-  - 7
-  - 8
-  - 9

152/ Map of the excavation of Dyuna III. Legend: 1 = poles; 2 = bark; 3 = postholes; 4 = rocks; 5 = sherd concentrations; 6 = twigs; 7 = charcoal; 8 = hearth; 9 = wooden vessel fragments.

62 was partly spared; it was filled with large pieces of charcoal and the impact was less destructive (Fig. 157:1). The charcoal in the pot provides the means to obtain a reliable absolute date. In all probability, the pot was used for heating or making smudge to deter insects.

Fragments of twenty-eight vessels were exposed in the excavation area, some in the eroded section where the dwelling remains were exposed. However, the fact that many vessels were broken when the dwelling collapsed indicates that they were left inside when the site was deserted. All the vessels are round bottomed and smooth surfaced and have a small amount of sand temper. They include a small bowl (rim diameter of 11.7 cm, height 7 cm) decorated with four pairs of horizontal lines with a row of small, slanting impressions in between. This ornamental design will be referred to below as a "filled band." Below, the ornament ends in a "fringe" of vertical comb impressions (Fig. 158:4, 5, 8). Two small undecorated pots or bowls with a diameter of about five centimeters (Fig. 158:6, 7) could have been toys. The other twenty-five vessels are pots with distinctly decorated necks.

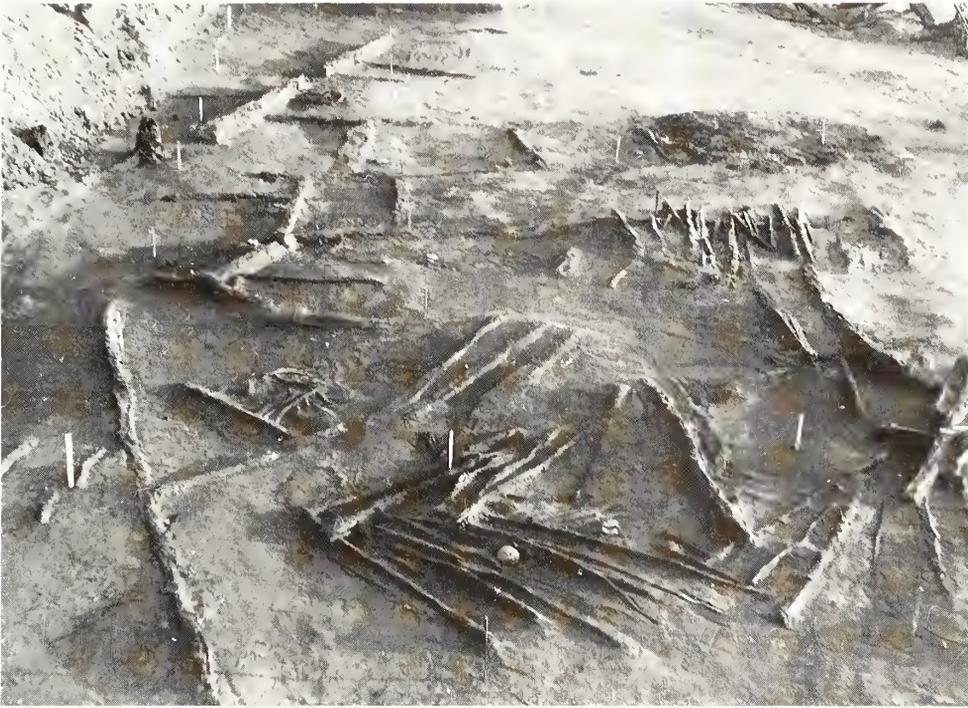
Four pots are of small size; two of those have been restored (Fig. 157:2). One, 11 centimeters high, has a rim diameter of 10 centimeters; the dimensions of the others are 12.4 and 13 centimeters. The rim diameters of the other two pots of that group are 14 and 19 centimeters (Figs. 159:1, 2; 160). The neck and shoulder ornamentation of two of the pots is similar to the design of the basin—the principal difference is in the addition of a band of pits beneath the rim. Two other vessels are ornamented with a band of interpenetrating triangles on the neck and beneath, on the shoulder, with triangular scallops and a "fringe" of vertical impressions in one case, and in the other, with a "filled band" and a "fringe." This ornamental pattern is typical of a group of thirteen large pots with a rim diameter between 22 and 30 centimeters. One of these has been restored; height and rim diameter both measure 28 centimeters.



153/ Detail of the excavation of Dyuna III; a layer containing the roots of larch trees covers the remains of the dwelling.

Judging by the dimensions of the restored vessels, the height of the other pots may have roughly coincided with the rim diameter.

The large vessels, like the smaller ones, had ornamentation on rim, neck, and shoulder; the body was left undecorated. The design consisted of comb impressions and pricks. An encircling row of pits, frequently grouped in pairs, was placed under the rim, which was thickened in some cases. The upper and outer rim edges were decorated with vertical or slanting comb impressions. Under the row of pits on the neck was the principal ornamental band bounded above and below by paired horizontal comb lines. Between the lines was usually a composition of interpenetrating triangles with separate small impressions, pricks or filled bands inside (Figs. 157:1, 160, 161, 162:1). Occasionally, the inner part of the band was occupied by a more intricate pattern consisting of filled bands (Figs. 159:4, 163, 164, 165:4, 5). In rare cases a filled band was placed under the principal



154/ Overview of the excavation of Dyuna III; note distribution of wooden remains of the dwelling. View looking south.



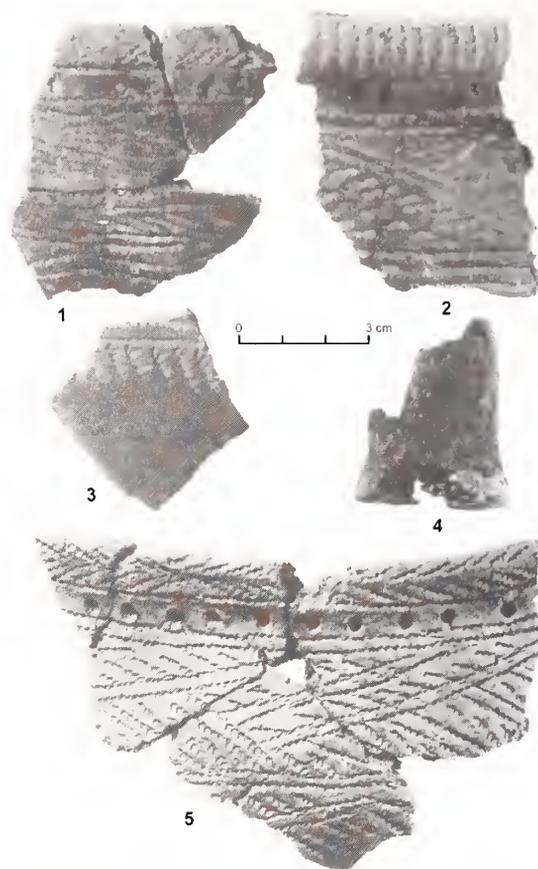
155/ Overview of the excavation of Dyuna III. View looking northwest.

belt, but more often the belt was in a frame of comb “fringe” or oblique columns of small, horizontal impressions or horizontal herringbone patterns or triangular scallops. Scalloped edges could end in a “fringe,” and in two cases their corners were marked with vertical comb impressions (Figs. 159:2; 162:2). Among this group of pots there are three vessels with simple ornamentation similar to that of the bowl and the small pots: a composition of horizontal comb lines with bands in between filled with vertical comb impressions (Figs. 166, 167). Despite the diversity of patterns, all the vessels from Dyuna III form a single typological group.

The type of pottery discovered on Taymyr Peninsula is unknown in the territories to the south and southeast, i.e., in Evenkia and Yakutia. Its decoration can be traced back to designs on Andronovo and Karasuk vessels and points to origins among the northern regions of West Siberia that neighbor Taymyr. There the tradition of comb ornamentation and paired pits prevailed since the Neolithic; specimens of pottery have been found with designs similar to patterns found on the Dyuna III vessels.

On the right bank of the Ob, in its lower reaches near Kushevatskiy is the settlement site of Vozhpay surveyed in 1925 by D.N. Redrikov. Part of the pottery material collected by Redrikov was published by V. N. Chernetsov. The specimens illustrated by Chernetsov have a line of pits under the rim and an ornamental band on the neck filled with horizontal herringbone designs, an oblique net, or interpenetrating triangles. The design was applied with comb stamps and occasionally with a pricked design bounding the figures. There is no fringe under the band, and the body of the vessels is undecorated.

This particular group of Vozhpay pottery is similar in ornamentation to the vessels from Dyuna III. Chernetsov identified that pottery as a special Vozhpay group belonging to the Orontur stage and transitory to the later Kintusov stage in the cultural evolution of the Lower Ob region. According to Chernetsov, such pottery was in existence “appar-



156/ Typical sherds and ceramic cylinder (no. 4) from Dyuna III.

ently, during the greater part of the ninth century A.D.” (Chernetsov 1953b:200). Chernetsov classified the vessels from the Barsoff Gorodok cemetery with Vozhpay pottery. The cemetery was excavated in 1891 by F. Martin and published by T. Arne (1935). Pointing to certain local features of the pottery from the burial ground, Chernetsov maintained that it closely resembled Vozhpay ware and was partly contemporaneous with it.

Examination of the pottery from Barsoff Gorodok cemetery shows that most of the specimens differ markedly from the wares of both Vozhpay and Dyuna III. The vessels are of assorted shapes and decoration sometimes covers the bodies of the pots. The patterns utilize bracket-like, serpentine, and other stamps characteristic of pottery from the regions east of the northern and central Urals, which may be associated with ancient Ob Ugrian tribes, the forefa-

thers of the Khanty and the Mansi. At the same time, some pots are similar in form to the vessels from Dyuna III and have a row of pits under the rim and on the neck, a belt ornament filled with a horizontal herringbone, obliquely placed comb impressions, and interpenetrating triangles. Pits beneath the rim are occasionally grouped in pairs (Arne 1935:figs. 72, 88a, b, 93, 104, 148, 149, 156; for similar vessels without pits, see figs. 94, 152, 157, 163). A characteristic feature not present in Vozhpay pottery is a “fringe” under the decorative band formed by vertical or obliquely placed comb impressions or pricked lines. Occasionally, the “fringe” has a more intricate configuration. Such features bridge the gap between the vessels from Barsoff Gorodok and Dyuna III.

The entire burial ground is dated to between the eighth and twelfth century A.D. Most of the graves that contain vessels comparable to the Dyuna III pottery lack artifacts that would furnish a way to date them. However, Grave 81 yielded a complex of objects that can be used to date the feature. The complex consists of a buckle with a bear figure and cross-shaped buttons (Arne 1935:figs. 145, 147). Based on the buttons, Arne correlated Grave 81 with Grave 61, which he dated to the tenth century based on the bracelet found there (Arne 1935:75).

The buttons, however, are of widespread occurrence both territorially and chronologically (Khlobystin and Ovsianikov 1973). Buckles with bear figures were attributed by Chernetsov to the Orontur stage, dated to the sixth through ninth century. Thus, the type of pottery under consideration may be placed within a chronological framework of the ninth and tenth centuries. The dates for Vozhpay and for burials at the Barsoff Gorodok cemetery containing pottery of the Vozhpay type are in agreement with the dates for the Dyuna III finds as determined through analysis of the hearth charcoal: 1050 ± 50 B.P. (LE 1105), i.e., A.D. 900 (uncorrected).

The similarities between the pottery of these three widely separated, contemporaneous sites in northwest Siberia and the Taymyr Peninsula suggest that a distinctive culture was in existence in the ninth century in the territory between the lower reaches of the Ob and the Yenisey within the Nadym, Pur, and Taz Basins. Material from West Siberian regions lying farther south may elucidate the sources of that culture. Sites in the Vakh-Vasyugan reach of the Middle Ob are the closest analogs to Vozhpay sites to the north, Dyuna III in particular. On the Vakh River, a small amount of Vozhpay pottery was found in Horizon I of the Bolshoi Laryak occupation site. Along with fragments with interpenetrating triangles typical of Vozhpay ware were remains of a pot with bands of vertical comb-stamp impressions divided by a drawn comb line, a motif characteristic of Neolithic and Bronze Age pottery. Vessels with ornamentation resembling Vozhpay pots were also found at the Bolshoi Laryak settlement (Posrednikov 1969:84, table 33:8-11; 1973a:89, 90, table 4:1-3, 7-12). Some of these specimens are distinguished by the use of pricked designs and by a slight ridge-like thickening beneath the rim edge.

Among the pottery attributed to the Bronze Age is a vessel with an ornament (Posrednikov 1973a: table 3:11) that may be regarded as an early form of the Vozhpay type. A ridge-like thickening under the rim edge is also typical of the Vozhpay pots from



157/ Refitted vessels from Dyuna III.

the Vasyugan area, at the Tukh-Emtor occupation site and the neighboring Tukh-Emtor IV settlement (Kiriushin 1976:table X). The Tukh-Emtor vessels, like the Bolshoi Laryak sherds of Vozhpay pottery, have peculiarities of ornamentation that distinguish them from the Vozhpay ware of the north. Such distinctive features result from the use of horizontal zigzags on the rims, as well as horizontal herringbone patterns on and under the rims and in the “fringe” at the bottom of the decorative zone.

The peculiarities listed above provide the basis for identifying the sites in question as a distinctive Vakh-Vasyugan variant of the Vozhpay culture. Although the Vozhpay sites in the Middle Ob-Irtysh region manifest certain peculiar decorative features that distinguish them from the northern Vozhpay sites, such features are not significant enough to preclude combining all of these sites into a single culture. It was probably from the Vakh-Vasyugan reach of the Ob, via the rivers flowing from the Siberian highlands, that in the ninth century the Vakh-Vasyugan culture spread to the polar regions of West Siberia and into Taymyr.

Following Chernetsov’s example, some investigators regarded Vozhpay pottery from the Ob-Irtysh region as a late variant of Orontur ware; sites containing such pottery were attributed to the ancient Ugrians—the Khanty, to be more precise (Kiriushin 1976:29; Mogilnikov 1965:279, 280). The problematic relationship between Vozhpay and Orontur pottery will be discussed below. Kiriushin’s conclusion that the Tukh-Emtor occupation site belonged to the ancient Khanty, based on the fact that the Khanty residing nearby associate the site with their ancestors, appears to me to be unjustified. There are cases of local inhabitants considering archaeological sites to be alien and unrelated to them because the artifacts differ from present-day articles, even though the sites were left by their remote but direct ancestors. On the other hand, new settlers may assume that the ancient sites in the area belonged to their forefathers. This phenomenon can also be explained

by assimilation of an aboriginal population by the new arrivals.

N.V. Fedorova suggests that it is erroneous to identify archaeological cultures on the basis of pottery decoration since cultural unity prevailed throughout the Ob-Irtysh Basin in the first millennium A.D., which manifested itself primarily in the decoration of pottery with local variants gradually blending into each other. Three periods in the evolution of pottery can be identified in the framework of that homogeneous zone; Orontur ware, including Vozhpay, was developing on the basis of figure-stamp ceramics of the Karym stage (Fedorova 1978).

The cultural unity noted by Fedorova is characteristic not only of the first millennium A.D.—such cultural homogeneity may be identified in earlier stages as well and not only in the region under review—but also in other territories, for example, the cultural uniformity of pit-comb ware that prevailed in the Neolithic in much of the European territory of the USSR from the tundra to the forest-steppe zone.

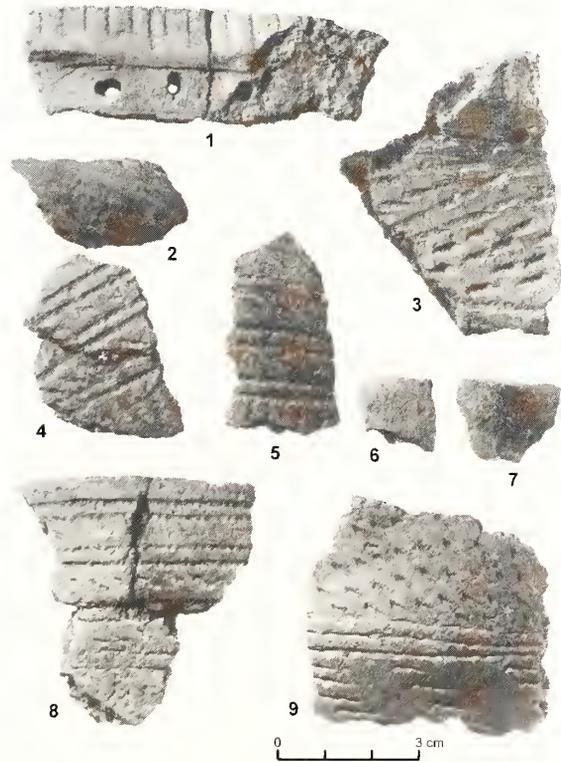
A number of chronologically successive periods of cultural uniformity have been identified in East Siberia on the basis of the wide occurrence of netted, cord-impressed, waffle-ribbed, and ridged pottery. Local variants of culturally unified regions often blend smoothly into one another and are sometimes indistinguishable. At the interfaces of these zones of cultural uniformity are combinations of design features characteristic of neighboring zones.

With the accumulation of knowledge, archaeologists increasingly find evidence of cultural continuity, both territorial and chronological. At the present stage of development of archaeological science, this continuity poses considerable difficulties for the identification of local, ethnically related cultures. There are a number of reasons for cultural continuity, the principal one being interethnic integration and cultural influence. Interethnic integration accounts for continuity between culturally unified regions. The existence of cultural unity is mainly determined by cultural influences involving communities with

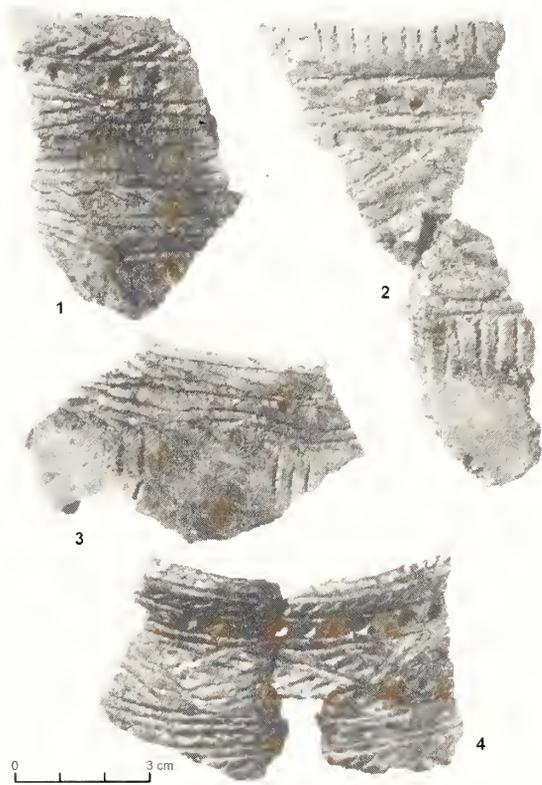
close relationships. The spreading within a region of cultural unity of distinctive types of pottery may be explained as a trend. As with current fashions nowadays, trends can extend over a number of culturally unified regions and assume archaeological significance as chronological indicators. Whenever distinct local variants can be identified within a culturally unified region and defined on the basis of pottery decoration, a local “unity” can be distinguished that was created by social relations within society. A local “unity” may be a local variant of culture, but if it manifests some distinctive features inherited from the past and differentiating it from other local variants, the inference would be that the local variant is associated with an ethnic group that maintains its traditions.

Regarding the problem of how Vozhpay pottery fits into contemporaneous ceramic complexes of the Ob and the Irtysh Basins, I would point to the inappropriate use of the term “Orontur” as applied to Vozhpay ware. At the outset, Chernetsov dif-

ferentiated Vozhpay pottery from Orontur, which he distinguished on the basis of materials from the Us-Tolt and Orontur occupation sites in the Konda Basin. The Konda is a left-bank tributary of the Lower Irtysh. Based on decoration, Us-Tolt and Orontur wares are attributable to the same trend, i.e., to the Orontur stage, as Vozhpay pottery. At the same time, due to the ridges on it, Orontur pottery more



158/ Sherds from Dyuna III.



159/ Sherds from Dyuna III.

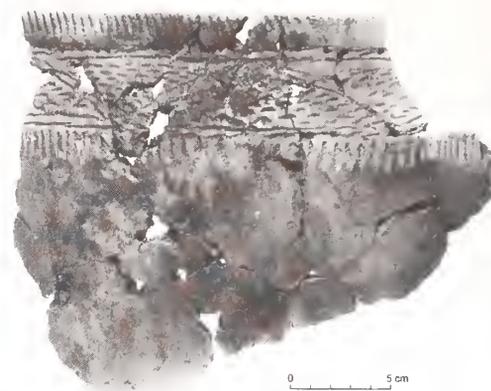


160/ Refitted portion of vessel from Dyuna III.

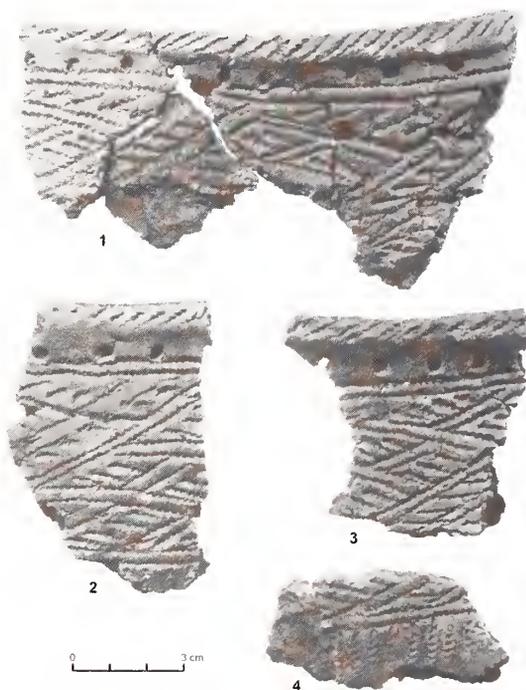
closely resembles the Vakh-Vasyugan variant than the ceramic complexes of Vozhpay and Dyuna III. However, Tynsk pottery, identified by V. D. Viktorova, manifests greater similarities to Orontur pottery of the Konda Basin (Viktorova 1970:264–266, table II:11, 12). Tynsk-type sites are characterized by vessels with high straight necks, incised ridges, figure stamps, angular and crescent indentations, and “pearls,” or bulges inside the pot that result from decorative pits made on the outer surface. Continuity in decoration can be traced between Konda and Tavda sites and earlier Karym and Tuman sites.

A number of decorative elements may be accounted for by the greater age of the sites as compared to those of the Vozhpay. However, no Vozhpay ceramics have been found on the left bank of the Lower Irtysh. Therefore, Konda and Tavda sites may be classified as a local Orontur-Tynsk variant with traditions of figure-stamp pottery that differ from those of Vozhpay.

Pots similar in ornamentation to Vozhpay ware are occasionally encountered among the ceramic complexes of the ninth through thirteenth century in the forest zone of the Irtysh Basin, specifically at the Novonikolsk IV occupation site (Mogilnikov 1964; 1968:figs. 2:2, 10) and the Novonikolsk burial ground. However, the majority of these complexes consist of vessels decorated with vertical comb zigzags as well as oval, diamond-shaped and angular stamps. The pearls, or bulges, and the cord impressions are ornamental elements they have in common with the Orontur vessels from the Konda Basin and with the ceramics of the Tavda and Tura sites, respectively. The latter sites date to between the first and second millennium (Viktorova 1968). Although in vessel shape and scallop ornamentation, the pottery from the Irtysh forest zone resembles Vozhpay ware, it is beyond the Vozhpay culture region and is much closer to the vessels from the Tobol Basin. Specimens resembling Vozhpay pots are suggestive of contacts with the populations of the Vasyugan area.



161/ Refitted portion of vessel from Dyuna III.



162/ Typical sherds from Dyuna III.

At the end of the first millennium A.D., the trend toward more complex ornamentation that manifested itself in the appearance of a special decorative zone on the necks of vessels that is filled with zigzags, rhomboid designs or interpenetrating triangles, as well as in a fringe and scallops beneath the zone, prevailed throughout the forest zone of West Siberia. However, in different regions the decoration varied in keeping with existing traditions.

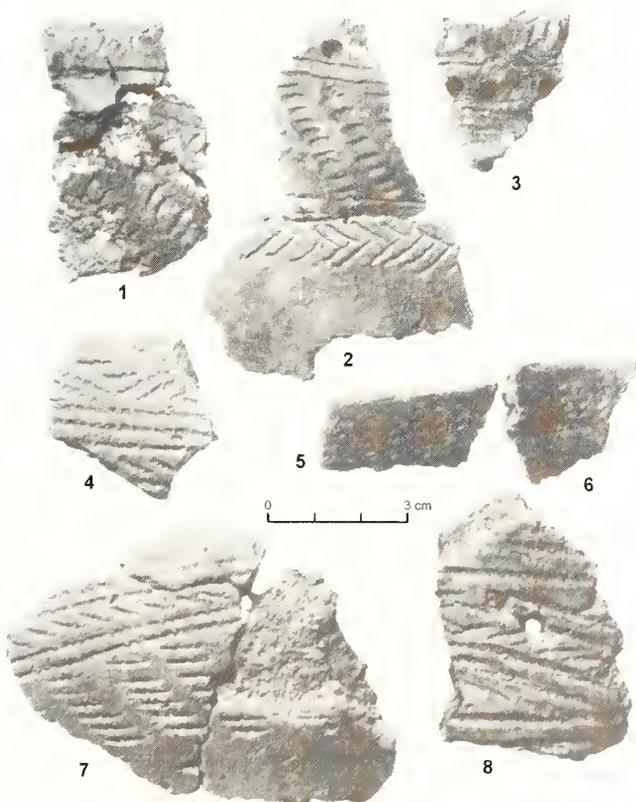
According to Chernetsov, the use of stamped impressions was the salient decorative feature of



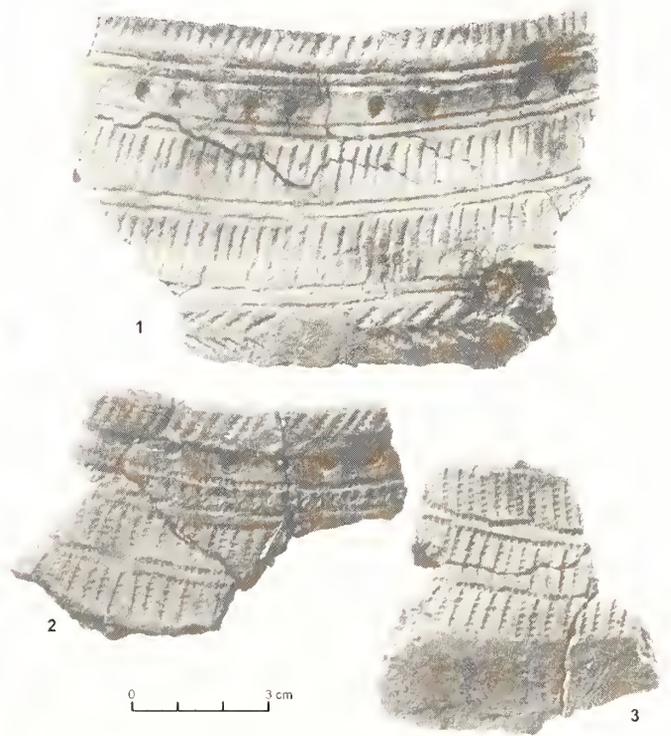
163/ Typical sherds from Dyuna III.



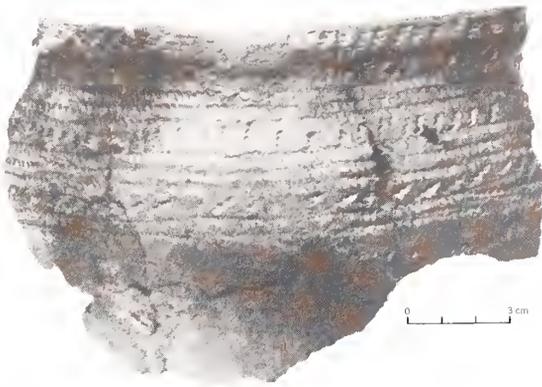
164/ Refitted portion of vessel from Dyuna III.



165/ Sherds from Dyuna III.



166/ Vessel rims from Dyuna III.



167/ *Vessel rim from Dyuna III.*

the Lower Ob culture. Even when stamped patterns were no longer utilized for ceramic decoration, they continued to be used in the production of birch-bark utensils by the Ob Ugrians, the Khanty, and the Mansi (Chernetsov 1953a:69, 70).

The association of figure-stamped pottery with the ancient Ugrians is recognized by the majority of archaeologists working in West Siberia. The wide distribution of such pottery in West Siberia in the middle and second half of the first millennium A.D. was in all probability due to the settlement of Ugrian ethnic groups in new territories and to the extension of their cultural influence on Samoyedic speakers. Therefore the Orontur vessels found in the original territory of Ugrian habitation may be regarded as Ugrian ware.

We are coming now to the problem of the sources of Vozhpay pottery. In the center of the Middle Ob region, at the boundary between the Tomsk and Narym districts, is the Relka cemetery, a thoroughly studied site dated from the sixth through the eighth century (Chindina 1977). L. A. Chindina identified two types of pottery that coexisted at the cemetery: the Relka type, characterized by plain comb impressions; and the Malget type, decorated with various figure stamps (Chindina 1977:61–64, 114).

Comparison of the two types suggests that they are associated with different traditions. Whereas the Malget type is related to Ugrian figure-stamp pottery, the sources of the Relka type are apparently rooted

in the local Bronze Age cultures. On the whole, the cemetery represents the culture of the ancient Selkup (Chindina 1977:137–140), and in all likelihood the combination of the two types of pottery reflects the process of fusion of Ugrian and Samoyedic cultural components that accompanied the formation of the Selkup ethnic group, or the Ostyako-Samoyeds, as they were called in the past.

Vozhpay pottery resembles the Relka type, which is evident upon comparison of the vessels (Chindina 1977:figs. 12, 13, 28:3, 36). Early Vozhpay pottery may have been a ware from the sixth or seventh century related to the Relka ceramics, i.e., associated with the aboriginal cultures of the Ob-Irtysh interfluvial. As for a relationship with the comb-pit types—Vozhpay pots have designs with twin pits and interpenetrating triangles filled with pricked elements that resemble the pits in the triangular and diamond-shaped designs on vessels of the Late Bronze Age of the region.

The persistence of that tradition was most clearly exemplified by a pot from the seventeenth-century Tiskinsk cemetery of the Selkup (Chindina 1975: tables 6, 9) as well as by vessels from the Turgaisk occupation site and the Kustovsk cemetery (Chindina 1970:table II:1, 4, 5). Thus, Vozhpay pottery displays characteristics that linked it to ancient Selkup ware and with sites with comb-pit ceramics from the late second millennium B.C. that were widespread in the eastern part of West Siberia from the Middle Irtysh to the polar regions and associated with ancient Samoyedic speakers (Khlobystin 1969b:134, 1979a; Kosarev 1964:13, 1972:91, 1974:103, 154). Later on, based on these sites, the Elovo (twelfth through tenth century B.C.), the Molchanovo (ninth through fifth century B.C.), and the Kulai (fifth century B.C. through fifth century A.D.) cultures developed on the Middle Ob, which are considered ethnically heterogeneous but retained a Samoyedic substrate.

To what extent the medieval Late Samoyedic-speaking population of the Middle Ob region maintained traditions rooted in the Bronze Age is an

unanswered question. However, the integration of comb-pit and figure-stamp pottery traditions that was taking place in that region of West Siberia in the fifth century A.D. mirrored the centuries-old process of cultural unification of the Samoyedic-speaking and Ugrian ethnic groups. Viewed in this context, Vozhpay pottery appears to be a successor of the aboriginal Samoyedic traditions. I have suggested that the Samus tradition was also within the sphere of Samoyedic culture (Khlobystin 1969b), based on the comb-pit pottery from the Samus IV settlement, which was formerly regarded as part of Samus culture but afterwards identified as Early Elovo ware (Posrednikov 1970, 1972, 1973b). Sites with Vozhpay pottery represent a local culture that developed in the Ob-Irtysh region and spread down the Middle Ob and the rivers flowing from the Siberian highlands to the regions of West Siberia beyond the Arctic Circle and to the western part of Taymyr. The northward migration of the population representing that culture might have been caused by the penetration of the Turks and ancient Khanty as well as by the emergence of the Selkup.

Since the existence of the Vozhpay culture in Northwest Siberia (ninth through tenth century) immediately preceded the presence of Samoyedic speakers here in the eleventh century recorded in the ancient chronicle "The Tale of Temporary Years" [*Povest vremennykh let*] (Adrianova 1950:167, 197), the appearance of the Vozhpay culture beyond the Arctic Circle may be linked to the last wave of Samoyedic-speakers, who were the direct ancestors of the Nenets and Enets.

Thus, the existence of Dyuna III, a Vozhpay culture settlement on the Pyasina River, in the ninth and tenth centuries attests to the arrival of a Samoyedic-speaking population, most likely the Enets, in western Taymyr. Descendants of the newly arrived groups merged with the aborigines and gave rise to "Pyasidskaya Samoyed." Thus the Samoyedization of the indigenous population of the Pyasina Basin occurred before the seventeenth century and may be

related to the forefathers of the Enets, as asserted by Dolgikh (1952:44).

Two more aspects of the problem of the penetration of Samoyedic-speaking peoples beyond the Arctic Circle exist. First, no pottery later than that of Vozhpay is known in the West Siberian regions beyond the Arctic Circle that can be associated with the ancestors of the Nenets and Enets. In all probability, the transition to tundra reindeer herding and a mobile way of life put an end to earthenware production. Vozhpay pottery showed no development on the Taymyr Peninsula either and there are no traces of its influence on Ust-Polovinka ware, a later pottery type on the peninsula. The reasons are apparently the same as noted above; however, the disappearance of ceramics precludes tracing the integration of imported and local cultures. Nevertheless, a certain continuity may be detected between pottery designs of the Vozhpay culture and the designs on clothing and other material culture of the Nganasan.

Second, the lack of Vozhpay pottery on the Bolshezemelskaya and Malozemelskaya tundras would seem to indicate that the Nenets arrived there in an aceramic condition. However, these tundra regions have never been investigated by archaeologists and the available archaeological material was collected from ruined dwelling sites where pottery was poorly preserved. Among the pottery of the early Anan'ino period collected at the ruined occupation site of Schelyabozh II, in the polar reaches of the Pechora, V. I. Kanivets identified sherds with a vessel neck decorated with comb impressions that formed an oblique band. Triangular design fields were filled with nail-shaped comb-stamp indentations (Kanivets 1974:55, fig. 27:16). [The vessel in question is highly fragmented and the designs are difficult to distinguish —*Ed.*] Beneath the comb line at the bottom edge of the decorative band was a fringe-like pattern. This vessel resembles Vozhpay pottery in all its particulars. Conceivably, the vessel is the first evidence of the penetration of the Vozhpay culture to the far northeast of the European territory of the USSR.



168/ Honyaku Turdagin, elderly Nganasan hunter and artist from the village of Ust-Avam, western Taymyr, 1997. He wears a traditional Nganasan reindeer parka and headdress and is shooting a bow made of decorated antler. Photographer John Ziker.

Early Economic and Social Development of Taymyr



In colonizing the polar region, human communities adapted to the environment primarily through cultural change. Culture is a complex and multifunctional system; however two of its main objectives deserve special mention. Russian philosopher of culture Eduard S. Markarian once stated that culture “performs its functions in two principal aspects: in the aspect of the interplay between society (as a collective subject of action) and the physical environment, and in the aspect of interrelations of human individuals proper, by suitably regulating, coordinating, and directing their actions towards achieving certain socially significant goals” (1969:30).

By studying human history through traces of human activity, archaeology deals primarily with the evolution of culture through chronological types. Such types reflect the lifeways of societies as they adapted to ecological conditions. Although the archaeologist has at his or her disposal very fragmentary components of past cultures, the purpose of archaeological study is to utilize all available material as fully as possible to model past cultural and historical systems.

Initially, attempts to model social relations in ancient societies were made by archaeologists drawing on ethnographic evidence of contemporary tribal (or, as they were once called, “primitive”) peoples. Until now, such evidence has remained an important source for reconstructions, with almost all archaeologists availing themselves of ethnographic terms. However, the accelerating accumulation of archaeo-

logical evidence now provides an independent source for the study of past cultures. For example, material obtained from excavated burial grounds does not always relate directly to ethnographic observations.

Contemporary groups of tribal hunters, gatherers and fishers, or those practicing simple forms of agriculture or cattle breeding and therefore regarded as “primitive,” manifest a multitude of social structures. Depending on physiographic conditions, one and the same economic system may be associated with different forms of social organization. In the Neolithic, for example, there were many forms of social organization, which I have discussed elsewhere (Khlobystin 1972a). It is obvious that many “primitive” social systems have not survived to the present time.

An archaeological source of information on social organization, meager as it may be, must be free of *a priori* introduced ethnographic assumptions. However, assumptions must be made in order to verify the validity of conclusions drawn from archaeological material. In reconstructing ancient social structure, a critical approach is needed at each of its three stages: in drawing conclusions about economy and social structure from archaeological material (determining to what extent the material may be used for a specific purpose); in drawing ethnographic analogies (determining which are consistent with archaeological data); and in synthesizing final conclusions (identifying contradictions between archaeological and ethnographic evidence and their possible interpretation). Special attention

needs to be given to ecology since it is at the root of the relationship between the physical environment, economic activity, and social structure.

In modeling the social system of ancient societies, ethnographic analogies should be selected on the basis of similar environmental conditions. It is still better if use is made of material relating to ethnic groups supposedly descended from such communities, for such ethnic groups may retain traces of a more ancient social structure. Economic and social modeling on the basis of archaeological material in the Arctic has advantages over similar reconstructions based on archaeological finds from other regions of North Eurasia, since in the polar regions reconstructions can be more readily correlated with appropriate ethnographic evidence. The indigenous inhabitants of the Arctic have retained in their economy and mode of life many traits rooted deeply in the past.

In this region with a very rigorous climate, ecological changes were taking place that were most conspicuous at the end of the Sub-Boreal period, a time of marked deforestation and expansion of the tundra zone. Ancient arctic peoples were in contact with their southern neighbors, who exerted cultural influence. In elucidating the changes in the economy and social system of the peoples of the Far North and in differentiating those changes according to their historical determinants, strong emphasis should be placed on investigating sites of different epochs in remote polar regions and comparing the findings with corresponding ethnographic material collected from the indigenous inhabitants.

Of interest in this context is the comparison of the economy and social system of the Nganasan of northern Taymyr with the economic and social observations resulting from the work of the Polar Expedition. The expedition investigated culturally and chronologically different sites, which makes it possible to review the data with reference to long-term historical and cultural change. I shall use the material obtained by the expedition as a source of

information on the economy, mode of life, and social organization of the ancient inhabitants of Taymyr, giving first a general survey of their manifestations at various stages of their history and then dealing with some specific aspects of economy, spiritual life, and social structure.

Settlement Patterns and Social Organization

Judging from the osteological material found in occupation deposits throughout the entire prehistory of Taymyr, the economy of these ancient societies was based primarily on wild reindeer [caribou] hunting, supplemented by bird hunting. Fishing certainly also occurred during the Bronze Age. Bones of small fish have been found at the Ymiyakhtakh dwelling site of Abylaakh I, in different cultural layers at Ust-Polovinka, and at Dyuna III. Taymyr inhabitants may also have fished during the Palaeolithic, but no evidence has been discovered thus far. In contrast to the taiga regions of Siberia lying farther south, no net sinkers or fishing hooks have been found at the sites in the Taymyr region. The fragments of a bone harpoon found in Dwelling I at Ust-Polovinka of the Pyasina culture comes from a tool for catching large fish. We can only presume that weirs, traps, and nets were also used for small fish. Small nets could have been utilized with pebble sinkers similar to those found at Maimeche IV.

Andrei A. Popov (1948:45) noted that the historical Avam and Vadeev tribes of the Taymyr Nganasan, who were primarily hunters, spared little time for fishing, which requires a more settled way of life. Similarly, fishing was of minor importance to the ancient population of Taymyr; they relied upon hunting wild reindeer [caribou], which supplied both food and skins, vital necessities in the North. Fishing was a last resort, when no meat could be obtained. At the end of the first and in the early part of the second millennium A.D., decorations shaped like fish were common in West Siberia, on the Taz River in particular (Khlobystin and Ovsiannikov 1973:252). However,

they failed to appear on the Taymyr Peninsula, although other West Siberian metal decorations were used by the ancestors of the Nganasan, and the custom of wearing such objects has survived to this day. This lends support to the inference that the economy of the ancestors of the Nganasan depended on fishing to a lesser degree than did the ancient Ob Ugrian people.

The vital role played by wild reindeer or caribou hunting is indicated by the composition of tools intended mainly for hunting and butchering. The usual finds at the sites are arrowheads and scrapers for dressing hides. No large points suitable for use as spearheads occur at the sites, and points that could have been used as javelins rarely occur. Naturally, the conclusion is that hunting with bow and arrows was predominant. However, it is possible that spears were in use, as noted by Simchenko (1976:107). The sole spearhead comes from the Lake Dyupkun area where, since Mesolithic times, taiga-type vegetation has dominated and, therefore, moose (*Alces alces*) and bear hunting requiring heavier weapons could be pursued.

Caribou hunting determined the location of temporary dwelling sites. The majority of permanent settlements or sites repeatedly used by members of different cultures are concentrated on the banks of large rivers near the seasonal migration routes of caribou herds. Thus, the greatest number of dwelling sites on the Pyasina River were in the area between the Polovinka and Chernaya streams. On the Kheta River, a large group of occupation sites was discovered on the right bank between the former village of Polkino, where the Kheta meanders in a southeasterly direction, and the mouth of the Maimeche River. Numerous dwelling sites are located on the right bank of the Khatanga River between the mouths of the Malaya Balakhnya and Popigay rivers. (The banks of the Khatanga downstream from the Popigay remain unsurveyed.) At the above-mentioned places on the Pyasina and the Kheta, I myself watched large herds of caribou swimming across the rivers in late August.

According to the indigenous residents of the village of Novorybnoe, in the recent past, after freeze-up, large caribou herds crossed the Khatanga River on their way south at a place where a cluster of sites has been discovered. This information is in agreement with observations on wild reindeer migration routes in Taymyr reported by Geller and Borzhnov (1975). As a rule, herds keep to their established routes in spring and autumn, rarely diverging from their customary paths. The routes taken by the herds are determined by the topography and hydrography of the region. The location of ancient sites on present migration routes proves that such routes have remained unchanged since time immemorial, at least since the end of the third millennium B.C. when the forest formations on the Taymyr Peninsula were being replaced by tundra and new ecological conditions were developing. In all likelihood this was the time when the Taymyr tundra caribou population was emerging.

The distribution of sites over the river network suggests the possible existence of two population groups—southern and northern. This hypothesis requires investigation of archaeological sites on the Upper Taymyra River. According to the information supplied by Dolgikh and by some Nganasan, there are a number of ancient sites on the right, southern, shore of the Upper Taymyra River between the mouths of the Gorbitya and Logata rivers at the southward turn of the river. In autumn, returning to the south, caribou swim across the river to the right bank, making it a rewarding place to hunt. Most of the sites on the Kheta River are situated on the southern bank. On the Dudypta and Novaya rivers in the Upper Taymyr–Kheta interfluvial, some sites were discovered on the northern banks where caribou come out during spring migrations. Some small sites are located in the interfluvial area.

The northern population group may have hunted on the Upper Taymyra River in the autumn and wintered there. In spring they would move south to the Dudypta and the Novaya rivers where they met herds

of caribou moving north to escape the flies. The southern groups hunted in autumn and wintered on the Kheta and Khatanga rivers. In the summer, small groups occupied the interfluvial areas, presumably hunting for single caribou and molting geese. This phenomenon could be observed as late as the early twentieth century among the Nganasan reindeer herders, who formed the northern group, and the Dolgan making their seasonal moves farther south (Dolgikh 1963:95).

In the Mesolithic and Early Neolithic when the area was dominated by forest vegetation, sites were not so closely linked to large rivers and points where caribou herds crossed them. The location of Tagenar VI, Lantoshka II, Glubokoe I, and some other sites of that period away from present migration routes may be explained by the use of other hunting methods, one of which was stalking. Such methods were also employed in later times as indicated by temporary camps on lakes and small streams where large-scale hunting was impossible. Such sites are located in places frequented by small herds ranging over the tundra. In the vicinity of Lake Labaz, a number of sites were discovered on a narrow divide between the lakes used by caribou in bypassing the lakes. The place abounds in paths trodden by caribou over the years.

There were few sites on the lakes in the Putorana Mountains, and on the torrential rivers flowing out of the lakes no traces of any ancient settlements were found at all. Those lakes and rivers are good fisheries, but caribou hunting here is difficult, as the herds graze on plateau summits.

The oldest Mesolithic sites of Taymyr yielded small quantities of artifacts distributed over limited areas. For example, at Tagenar VI, with its undisturbed cultural layer, there were traces of human activity around a fire. Two hundred and eighty-nine tools, blades, and other artifacts, including tiny flakes, were found within an area of some forty square meters. One hundred and three artifacts were recovered from the cultural layer at Pyasina I; considering that some

of the finds had been displaced down the talus slope, the area of their distribution is estimated to be 20 square meters.

At the other Mesolithic sites, correlations between the number of finds and their distribution area are more reliable because the artifacts were discovered on sizeable wind-eroded spots. The correlations are as follows: at Pyasina IV, seventy objects on 40 to 50 square meters; at Lantoshka II, twenty-seven objects on 150 square meters; at Point 1 of Pyasina III, fifteen objects on 10 to 15 square meters; and at Point 2, thirty-one objects on 15 to 20 square meters. All this evidence indicates that these were temporary sites used by small groups with a mobile way of life. Judging from the faunal remains at Tagenar VI, they were primarily caribou and bird hunters. The hunters' equipment included bows and arrows as well as light composite hunting and game-processing tools.

The Early Neolithic inhabitants of the Taymyr Peninsula continued to live the life of mobile hunters organized in small groups. Their sites, such as the lower layers of Abylaakh I and Glubokoe I, are small in area and have few traces of activity. The appearance of pottery does not indicate a sedentary way of life, as the pots were small and would not have hindered movement. There was only one broken pot at each of the sites. Obviously, pottery was not in wide use. In the Early Neolithic, as in Mesolithic times, Taymyr hunters camped in summer in temporary dwellings—the expansion of forest vegetation was a favorable factor—and in winter, they lived in seasonal semi-subterranean sod houses. In shape and composition, tools are similar to Mesolithic artifacts and occur rarely at sites.

The folklore of the historical Enets and Nganasan people includes a series of myths and stories about the distant past. One of the myths opens with the words: "At first men had only bows" (Dolgikh 1976:153). Such stories are called *derechu* by the Enets and *dyurume* or *khyunsere dyurume* by Nganasan, meaning "old accounts." In some *dyurume* or *derechu*, the main character is a hunter, *morinde* or

morinchi in Nganasan and *morede* in Enets (Dolgikh 1961, 1976). Hunters sought caribou by stalking or battue (barricade or ambush hunting) techniques.

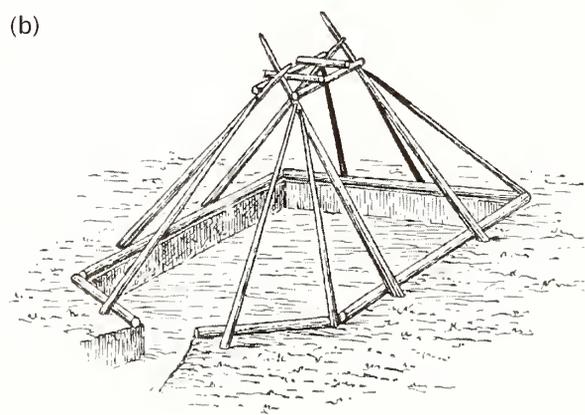
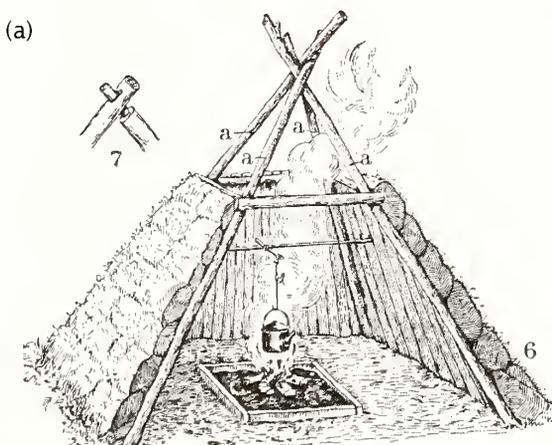
The hunter's group, according to traditional folklore, usually consisted of a two-generation family; sometimes another family joined it for collective hunting. The dwelling of the hunter was a small portable tent (*choom*), which could be moved on a sledge, or a stationary structure with a conical shape, built of poles made of tree trunks and covered with moss (Fig. 169a). Presumably, the lifeway of *morinde* was much the same as that of the Mesolithic and Early Neolithic inhabitants of the Taymyr Peninsula. Nganasan and Enets culture has partially retained the traditions of the pre-reindeer herding period.

I once saw the remains of a dwelling apparently similar to a permanent *morinde* structure at the Developed Neolithic Maimeche I site [many Russian archaeologists adhere to a tripartite division of the Neolithic into Early, Developed, and Late —Ed.]. The site is located on a small projecting spot on a high terrace. The cultural layer covered an area of 50 to 60 square meters. A few meters from the edge of the terrace was a round pit measuring 1.3 to 1.5 meters in diameter with fairly low, steep walls. It may be interpreted as the foundation of a semi-subterranean dwelling, a *golomo*-type structure or, as the Nganasan

call it, *mou sia koru* ("ground hole house") or *satu ma* ("mud *choom*" or "earthen *choom*"; Fig. 169b).

During their work in the Kheta River basin, members of the Polar Expedition repeatedly encountered deserted or dilapidated *golomos*. In 1967, on the Tagenar River, I saw a ruined *golomo* that was barely two meters in diameter. On the Kheta River, near the Boyarka settlement and upstream from Katyryk village in the Polkino area, as well as in other places, there are larger deserted *golomos* with diameters of up to 3.5 meters. Most of the *golomos* are located on high banks and on level ground cleared of turf in an environment reminiscent of the Maimeche I site. As a rule they had no hearth pits. I saw a *golomo* with a pit like the one at Maimeche I on the Avam River downstream from the present village of Ust-Avam. It was built by a Dolgan named Afanasy Sokhatin, born in 1899. Sokhatin occupied the house for several years. In 1969, he told me that "it is a very warm dwelling. Down the Kheta many such structures were built in the past and they are still there. Our forefathers used to build in this way." More often than not, such structures were erected near fishing sites, such as deep lakes that never freeze to the bottom.

Sokhatin's *golomo*, which is no longer preserved, was a typical structure of the kind described here. The *golomo* had an oval pit that narrowed toward the



169/ Reconstructions of Native Siberian dwellings: (a) Choom-style winter dwelling (Levin and Potapov 1961:208, fig. 6); (b) frame of the *golomo*-style dwelling (Levin and Potapov 1961:223, fig. 2).

exit and faced east. The greatest diameters of the pit were 3.1 and 3.4 meters and the greatest depth, where a fire was made, was 0.4 meters. At the rear and side walls was a step-like banquette, 0.2 meters high, supporting six logs with boards laid on them, so that opposite the entrance and on the sides were three plank beds. Fifty-eight larch trunks formed a cone over the pit, with the butt ends resting on the ground around the pit. The cone frame consisted of four trunks about 2.6 meters in length. At the top of the one that stood to the left of the entrance was a slot holding the hewn top of the trunk resting on the opposite edge of the pit. Two other trunks leaned against the joint, their ends shaped to secure a better fit. These four trunks were the main supporting elements of the structure.

About 20 centimeters below the joint, the trunks were fastened together with cross-pieces forming a quadrangle. Sixty centimeters lower were three more cross-pieces. On the side of a cross-piece was a pole with a hook to hang a pot or a tea kettle over the fire. Leaning against the upper cross-pieces were the other trunks placed close to one another with butt-ends around the pit and forming the *golomo* walls. A smoke hole was left between the upper cross-pieces. An opening 0.7 meters wide at the bottom and 0.45 meters at the top was left between the stakes to serve as a doorway. The side posts over the entrance were connected by cross-pieces that boarded up the opening above the door. A threshold made of a thick trunk kept the pit wall from crumbling. In ancient times the entrance was presumably closed with a hide. This particular *golomo* had a plank door upholstered with a reindeer skin and opened from the inside. There was a small window to the right of the entrance. The outside cone of the *golomo* was covered with pieces of turf laid grass-side down along the posts. The turf layer was thicker at the base of the structure. The height of the *golomo* was 1.7 meters above ground and 2.1 meters inside. A man of middle stature could stand erect at the plank-beds. Such a dwelling could house a family of six people. Indeed, Sokhatin's

golomo had some innovations but, basically, its construction was profoundly traditional.

The dwelling at Maimeche I must have been fundamentally similar to Sokhatin's *golomo*, and its pit corresponded to the hearth pit of the *golomo* I observed. The true size of the Maimeche house, allowing for the plank beds, could be as much as three meters in diameter, or seven square meters. The lower part of the pit had a layer of thin charcoal lenses that alternated with loam, which could have formed as a result of the seasonal occupation of the dwelling.

Fragments of at least six pots of the same type were found at the site. Some of the vessels were large, which made it difficult to carry them, and apparently they were left at the site when it was vacated. The season when the dwelling was in use may be ascertained from the following facts: polished tools were made at the site from flinty slate pebbles encountered on the tow path along the banks of the Kheta River near the site. The tow path is free of water in August. Thus, inhabitants could have collected pebbles at the end of summer and worked them during the winter. The fact that the dwelling was vacated in the summer is also indicated by loam bands in the pit fill. Such bands could form as a result of the crumbling and washed-in earth from the turf cover of the dwelling, which could not have occurred during the winter. If the dwelling had been in use in summer, when the pit was being filled with loam, the latter would have been mixed with charcoal particles from the fire.

Maimeche I and IV are located on the right bank of the Kheta River where caribou herds return from the north in autumn. Apparently, inhabitants of these sites, after hunting caribou, wintered here in semi-permanent dwellings, made tools, and led a more mobile way of life during the spring and summer. The group that inhabited the dwelling was small, but economically independent based on the following: the site was repeatedly visited for years; the broken pots are few in number; and the site area allowed for only one dwelling that housed no more than five to seven people.

All the above concerning Maimeche I also applies to Maimeche IV, except that Maimeche IV probably had no pit. The two sites could hardly have been in use at the same time. The distance between them is not far enough to suggest that they could be occupied by two independent groups, but was too great for the groups to be united by a common economy. There are spots between the sites convenient for erecting dwellings, as evidenced by two settlements (Maimeche II and III) discovered here that are associated with other cultures. Maimeche I and IV may have been occupied sequentially by the same group of hunters exploiting the area.

Among the folklore notes of Dolgikh (1952:82, 83; 1974:48) and Gurvich (1977:157–162) are legends about the so-called Mayat, an ancient ethnic group that lived in the Khatanga, Anabar and Olenek Basins. The Mayat were probably associated with the group called the Vanyad [or Vanadyr in the early Russian records (Dolgikh 1952, 1962:235–244) —*Ed.*]. The Vanyad were reportedly the Tungus of Yukagir origin, who later became part of the Vadeev Nganasan tribe (Dolgikh 1952, 1974). The Mayat were hunters who took caribou at their river crossings; they practiced barricade hunting and used traps. Caribou were collectively hunted and the meat was placed in a store or concealed in a pit in the ground. Near the store the Mayat would build a semi-subterranean *golomo* where they lived during the winter. *Golomos* were located one day's walk from each other. The material culture of that legendary people is in some respects at variance with archaeological evidence. For instance, the Mayat reportedly had no knowledge of ceramics, although pottery of different time periods was found in the region they inhabited. According to folklore, the Mayat had no nets; they caught fish with weirs in the streams and scooped the catch onto the bank.

The relationship between the size of dwellings and settlements and the number of their inhabitants is of great importance for estimating the number and composition of Taymyr's ancient groups. The type of dwelling is determined by both ecological and social

factors; there is no uniform "quota" of floor space that could be assigned to each member of a group. Floor space varies with ecological conditions and economic strategies. Moreover, it depends upon material availability and house-building traditions.

Unfortunately, there is no ethnographic evidence of the number of people that occupied separate *golomos*, though mention is made in folklore of a *golomo* housing a two-generation family. We may make use of the data on the number of dwellers in a traditional reindeer herder's *choom* since its size, on average, corresponds to that of the *golomo*, taking into account the length of posts used in building these two types of similar dwellings. In contrast to the *golomo*, every time a *choom* is set up, its floor area may change due to the pitch of the posts. According to the data given by Popov (1948:79), a Nganasan *choom* could range from 2.5 to 9 meters in diameter; its floor area thus measured between 5 and 60 square meters. I usually encountered *chooms* of about 4 meters in diameter (approximately 13 square meters); these *chooms* housed from two to eleven people, including children. The usual number appears to have been six to seven people. On average, there were 3 to 3.5 square meters of floor space for each inhabitant. I encountered cases when the *choom* was occupied by one or two families as separate economic units. However, these were hunter-fisher groups. The *choom* of Nganasan reindeer herders could house from two to five families (Popov 1948:84). Dolgikh (1974:27) observed that there were also large *chooms* that each accommodated four families of five to six people—up to twenty-five inhabitants total. The occupation of one *choom* by several families may be explained by the need to have a large number of herders, by the irksome task of transporting and setting up many *chooms* due to frequent moves, and by the difficulty of finding fuel for several separate hearths in the tundra.

Based on the data on both small and extended aboriginal families in the seventeenth-century records collected by Dolgikh (1974), small families of up

to eight people, were encountered among hunters and fishers possessing small reindeer herds. As a rule, such families occupied separate *chooms*. Large families, as well as groups of several families that occupied one *choom*, were common among people owning larger herds. Small group size may also be inferred from the epic legends of the Nenets (Kupriianova 1965). According to our observations, dwellings at Maimeche I and at Mesolithic and Neolithic sites, not only in Taymyr but throughout the Arctic from the White Sea to Chukotka, belonged to small groups. Small families, as independent economic units, were probably typical of arctic hunter-fishers. Such small families consisting of a husband and wife, two or more children, and members of an older generation, or between five and eight people in all, were economic units capable of an independent existence. This kind of family could have occupied the small structure on a site like Maimeche I.

Societies consisting of such families were adapted for living under rigorous conditions, exploiting the natural resources of the wide expanses of the Arctic. Such societies were in existence during the Bronze and Iron Ages as well, until the appearance of a pastoral economy based on large-scale reindeer herding. Breeding and herding, as well as fishing and sea-mammal hunting, required collective effort, promoted consolidation of families and increases in family size. The available archaeological material on the Palaeolithic in Taymyr does not indicate that communal hunting occurred.

The earliest sites of the Bronze Age are associated with the Ymiyakhtakh culture and Abylaakh I, conspicuous for its size and the abundance of artifacts due to its location on the fall caribou migration route. While excavating the site in late August and early September, we could see large herds of caribou crossing the Kheta River near the site and following the valleys of the Abylaakh River and the stream on which the site promontory lies. The caribou slowly passed by us as we hid just a few meters away. Indeed, hunting in this season could have been

rewarding even with basic weapons. A large number of animals could be caught by putting up a fence in the upper part of the stream valley. Inhabitants of the nearby village of Katyryk hunted caribou by shooting the animals from boats when the reindeer were swimming across the river.

We were not surprised to find large concentrations of rotting organics in the cultural layer where bone and antler accumulations had formed. The presence of about sixty heavily worn scrapers proves that many hides had been dressed at the site. This evidence suggests that the main trade of the site inhabitants was the hunting of migrating caribou. Apparently, they chose the site for their camp in a secluded place in the interior of the promontory, hidden from the river crossed by caribou herds, rather than at its point. The density of materials in the cultural layer and traces of chronologically different hearths prove that the site was used repeatedly, rather than for only one season. Presumably, the dwellings were built on the ground; no traces of pits were encountered. Just as the inhabitants of the Maimeche sites could produce stone tools after laying in a store of food after autumn hunting, so too could the inhabitants of Abylaakh turn to bronze casting after caribou hunting.

There are also Ymiyakhtakh sites with small occupation areas and few artifacts located away from caribou migration routes, such as Zayachya, Kholodnaya II, and Paiturma IV. In all likelihood they were temporary occupations belonging to small groups that hunted individual caribou during the summer. Pyasina V, with two artifact accumulations, could be a seasonal settlement used on an annual basis. Artifact accumulations measuring 15,030 square meters in area were found at the Kylkai and Ivanovskaya sites. On the wind-eroded surface of Ivanovskaya, three accumulations were discovered stretching in rows along the edge of an ancient bank rising 3 to 4.5 meters above the tundra. The accumulations were associated with charcoal and charred hearth stones spaced 15 to 20 meters apart. The accumulations at Pyasina V, Kylkai, and Ivanovskaya are conceivably

traces of surface dwellings, probably dating to different periods. However, if contemporaneous, they bear witness to some small groups joining forces for collective seasonal hunting.

Such small and mobile communities of ancient tundra hunters were probably emerging after the completion of the tundra formation process and the appearance of permanent caribou migration routes. Indeed, the joining of families also occurred in the Palaeolithic, but was due to other factors. Small families could not exist permanently separated from one another. They had to come into temporary contact in order to contract marriages, carry out joint subsistence activities, and fight enemies. An important factor promoting alliance was mutual assistance: families finding themselves in trouble due to unsuccessful hunting or to the loss of a hunter could join the family of a more successful man, most likely a relative. Such social and economic relationships among small families within a given territory resulted in the emergence of a distinctive social body that was neither clan nor tribe, and which we can call a sort of incipient ethnic group.

Within these little independent communities, most probably represented by small families, specific social relationships were developing. Provision of subsistence needs was the concern of one or two men, whereas treatment of the catch, housekeeping duties, and the care of children were the tasks of women. The clear-cut distribution of these equally important duties according to gender roles and responsibilities gave no social advantages to either half of society. The small family facilitated a bilateral definition of kinship; fatherhood was of strictly social origin, based on the treatment of children as part of a certain hunter's household. The bilateral character of the Nganasan exogamous clan system is interpreted as a transitional form from the unilateral maternal to the unilateral paternal system, which arose as a result of changes in the economic structure, i.e., the development of reindeer herding (Gurvich and Dolgikh 1970:210).

We believe that the small family structure was characteristic of the Nganasan in the past, as is demonstrated by both archaeological and ethnographic evidence; the latter indicates that large families are associated with the development of reindeer herding (Dolgikh 1974). Thus, the phenomenon of the Nganasan bilateral kinship system may be explained as the preservation of an old social structure that originated during a period of smaller families. Simchenko (1976:193, 386) argued that small social units (families or groups of families) of Taymyr caribou hunters in the past, some of Nganasan ancestry, were dispersed over a large territory and that their temporary associations were unstable.

The appearance of bronze casting on the Taymyr Peninsula, ascertained on the basis of material from Ymiyakhtakh sites, brought about changes in the economic relations among ancient groups. Such changes must have been particularly pronounced among members of Pyasina and Malokorenninsk culture groups, where bronze casting was well developed. In modeling their way of life, I examine the possibility that traditions introduced by their ancestors from West Siberia were preserved.

One of these traditions concerns the construction of dwellings that differ from those of ancient and modern ethnic groups of the Taymyr Peninsula—round *choom*-like structures that are characteristic of ancient dwellings from West Siberia. At a Pyasina culture settlement at the mouth of the Polovinka River, quadrangular-shaped pits of four dwellings were found. The three fairly well-preserved pits measured 22, 23, and 27 square meters. In order to determine the number of inhabitants of one such dwelling, we shall assume that the average floor area allotted to each dweller was 3.5 square meters, while acknowledging that the occupants of rectangular, West Siberian dwellings could have had a different space "quota." Each semi-subterranean dwelling could have housed five to six people—a small family. This does not necessarily mean that the population of the settlement consisted of four families totaling

twenty to twenty-five people, as there is no reliable evidence that all of the dwellings were occupied simultaneously. However, the arrangement of the structures in a certain order, with roughly equal distances between them, suggests that it was a settlement, rather than a series of individual dwellings that existed at different points in time.

House I at the Polovinka site was probably built before the other structures, was occupied for a longer time, and was destroyed by fire. Its floor stratigraphy was similar to that of Maimeche I and attests to its seasonal occupation. The presence of nine broken pots, represented mostly by sherds, and the large size of some of the vessels, suggest that the house was used for a number of years. The dwelling resembles a structure used by Cherkaskul bronze casters excavated east of the South Ural Mountains (Khlobystin 1976:12-15, 46) in size, number of dwellers engaged in bronze casting, and even in the location of the broken vessels and the destruction of the dwelling by fire.

The less numerous finds from the other dwellings suggest that they were occupied for a shorter period of time and were deserted. At some time, all three of the deserted houses may have been occupied, in which case the population of the settlement was about twenty people. There were bronze casters and smiths among them who produced large numbers of metal objects. At the same time, the inhabitants hunted and fished. The existence of such a large group could be due in part to the exchange of metal objects for hunting spoils. No copper ore or native copper has been discovered near the mouth of the Polovinka; no traces of smelting have been found at the settlement either. The metal was probably obtained through exchange or was smelted by the Polovinka inhabitants themselves somewhere nearby. For this purpose, some or all of the inhabitants had to leave their settlement for the summer and return to the mouth of the Polovinka River in autumn when the caribou migration began in order to lay in a store of food for the winter.

The presence of vessels for melting metal and of bronze drops inside the dwellings supports the inference that bronze objects were manufactured during the winter. Most of the finds associated with bronze casting come from Dwelling I. Judging by the number of spouts, there were no less than twelve large crucibles there. The finds included at least three crucibles from Dwelling II, fragments of two vessels for melting and ladling bronze from Dwelling III, and thirty-four crucibles from Dwelling IV. Three meters east of Dwelling I there were traces of a fire where fragments of three crucibles were uncovered. Clearly, Dwelling I was the main work area of the bronze casters.

The abundant evidence of bronze-casting activity at Ust-Polovinka makes it expedient to discuss in some detail the development of metalwork on the Taymyr Peninsula. However, in concluding the section dealing with settlements as sources of information on the size and lifeways of their population, I shall first describe Iron Age sites. With the exception of Dyuna III, there are no large Iron Age settlements.

The sites in question are small in size with few artifacts. No traces of stationary dwellings have been discovered so far, although structures of the *golomo* type must have been in existence. As with sites from earlier periods, Iron Age sites were discovered both on caribou migration routes and away from them. On the whole, they have the same features as short-term occupation sites dating to the Late Neolithic and the Bronze Age. Therefore, we can say with reasonable confidence that Iron Age settlements belonged to small groups of caribou hunters who also depended on fish and waterfowl. They led a semi-sedentary, seasonal way of life.

The later Iron Age inhabitants of Taymyr preserved many economic traditions and the social structure of earlier societies. The economic and social conservatism of the people was due to the fact that, despite cultural innovations such as the appearance of iron and possibly of early forms of reindeer herding, their mode of life was governed by the same

environmental conditions that had prevailed during the Late Neolithic and the Bronze Age. The optimal economic strategies for such conditions had been devised during the Neolithic and were pursued by the inhabitants of the region until they reached a turning point in their subsistence activities due to the transition to large-scale reindeer herding.

Ancient hunting groups of the Taymyr Peninsula with a mobile way of life needed boats for crossing rivers where they hunted caribou swimming across streams or lakes with spears and, to a lesser degree, for fishing. The boats had to be light and easy to carry, move on a sledge, or drag over snow. However, in the tundra and forest-tundra there are no trees suitable for making dugouts, so what kind of boats could they use?

Bits of pitch were encountered in large quantities on wind-eroded spots in the cultural layers of Ust-Polovinka. Pieces of pitch were found at Pyasina I together with thin-ridged Ust-Polovinka-type pottery at Pyasina III, Pyasina IV, and Kapkannaya II. These finds date within a wide range: from the mid-first millennium B.C. to the eleventh century A.D. Most of the pieces are thin slices of pitch with birch-bark impressions on one side. Impressions of hair, probably from a caribou pelt, remain on one of the pieces. Some have small triangular ridges. Other pieces preserve impressions of seams with traces of thick “thread”—most likely caribou sinew. Pitch was used for sealing up chinks and covering seams of woodwork, leather, and birch-bark objects, and possibly utensils. Its major application was in caulking birch-bark and leather boats. Boats made of hides were in wide use by inhabitants of the circumpolar region, the Nganasan included (Simchenko 1976:135–151).

Bronze Casting on the Taymyr Peninsula

Since the early bronze-casting finds on the Taymyr Peninsula are associated with Ymiyakhtakh sites, metalworking skills may have initially come from the Lena River Basin, where Ymiyakhtakh burial complexes containing bronze artifacts have been discovered.

However, no traces of a bronze industry have been discovered so far in Yakutia [Sakha Republic]. The only exception is the Stary Siktyakh site located in the arctic reaches of the Lena River where Okladnikov (1946:85–90) found two flat-bottomed crucibles and droplets of bronze in the charred remains of a hearth. The oval crucibles had flat bosses on the edge opposite the spout, which served as handles. The same layer contained Ymiyakhtakh artifacts.

Mochanov and Fedoseeva have expressed the opinion that the Ymiyakhtakh tradition was a Late Neolithic culture. They associate the beginning of the Bronze Age in Yakutia with the Ust-Mil culture. Flat-bottomed crucibles with long thin handles have been discovered on some Ust-Mil sites. If bronze-casting technology did not reach the Arctic via South Yakutia, then it must have arrived via Evenkia [the Yenisey River Basin]. However, no early sites with evidence of bronze casting have been discovered in Evenkia, either. Similarities between the Seim-type celts of the Taymyr Peninsula and those from the Trans-Baikal region suggest that this part of south-central Siberia was the source of the bronze-casting technology that penetrated Taymyr and the arctic regions of Yakutia, via Evenkia and, possibly, northwest Yakutia. East Yakutia would thus remain on the fringes of the developing metal industry.

The Ymiyakhtakh culture appears to have developed just as the Glazkovo tradition did: from the Neolithic, it passed into a period when bronze-casting skills developed. In some regions, this transition may not have taken place until the development of the Ust-Mil tradition; Ymiyakhtakh people may have retained a Neolithic lifeway due to the lack of suitable local copper ores or because of their failure to obtain the metal from their neighbors through exchange.

Was the Ymiyakhtakh culture a uniform tradition during the expansion of the bronze industry? A variant of Ymiyakhtakh culture, or even a separate tradition within the Ymiyakhtakh cultural and historical community may be distinguished in the Taymyr Peninsula and polar regions of Yakutia—more so as

the presence of local bronze casting eliminates the possibility that Taymyr sites containing waffle pottery date to the Neolithic. Sites in Taymyr, as with other arctic sites with waffle pottery, lack vessels with the incised ornamentation that is typical of Ymiyakhtakh tundra zone sites.

The development of the prehistoric metal industry in the Taymyr polar region was due to local resources—rich copper ore deposits in the southern portion of the peninsula that were easily accessible. Thanks to work by geologists O.A. Diuzhikov and V.A. Fedorenko (Diuzhikov et al. 1974), we can characterize the principal deposits that could have served as raw material sources for ancient metallurgists. The Norilsk I deposits are located in the northern part of Mount Rudnaya; they comprise a series of rich chalcopyrite veins up to ten meters thick and containing as much as 20% copper and 5% nickel. Located north of these veins is the Sotnikovskoe deposit of oxidized ores formed by argillaceous and carbonaceous clay slate saturated with malachite, azurite, and chalcopyrite admixtures; this deposit contains 0.32–0.41% copper and 0.16–0.31% nickel (Rozhkov 1933).

In recent years, large stratified deposits of native copper have been discovered on the Kharaelakh Plateau associated with limestone seams up to five or six meters thick that occur in tuffaceous horizons of volcanic strata or at points of contact between tuff and basalt. Some of the copper-containing horizons stretch for dozens of kilometers (Diuzhikov 1973; Diuzhikov et al. 1974). The copper content in some places is close to 1%. One to five kilo specimens of native copper occur in some horizons. A specimen found on the Ondodomi River weighs about twenty-four kilos. The copper content of the native metal is 99.43 to 99.65%.

Scattered small deposits of native copper were noted east of the Kharaelakh Plateau as far as the Maimeche River Basin. This virtually unexplored territory may also have large deposits. The Sukharikha deposit of chalcocite ores in the Igarka River

area consists of a series of nested bodies of sulfides measuring up to 1.2 by 2.5 meters thick with a copper content of about 40%. The ores also contain silver—up to 200 or 300 grams per ton—and are low in lead and zinc.

Bronze objects and casting drops from the sites of Abylaakh I, Malaya Korennaya I, and the Ust-Polovinka settlement were analyzed at the Laboratory of Archaeological Technology of the Leningrad Branch of the Institute of Archaeology; spectral analysis was conducted at the laboratories of two other institutions. The materials were compared and then correlated with the results of analysis of the ore deposits. Bronze was alloyed with different materials at different sites. Tin was used at Abylaakh I, but arsenic and antimony at Malaya Korennaya I. The alloys at these two neighboring sites differ considerably in bismuth content. These variations may be due to chronological and cultural differences between the sites. The differences could also be due to the distances between the sites and ore deposits. Significant disparities are occasionally noted in the alloy composition of materials from the same complex. This is apparently due to the use of ores from different deposits, re-melting articles that were no longer usable, both locally produced and imported, and utilization of different additives in order to obtain alloys of various grades.

Specimens from Ust-Polovinka have an abnormally high gold content, 0.01 to 0.05%. The gold was probably not contributed by the alloying elements because their volume was quite small. The copper ore is probably the source. Nickel content of 0.2 to 0.5% suggests that the alloys contain copper from the Norilsk deposits. The ores from Norilsk I do not have a substantial gold component. Diuzhikov and Fedorenko (Diuzhikov et al. 1974) are of the opinion that the metal comes from an unknown deposit of native copper and advocate geological survey in the vicinity of Ust-Polovinka.

Many bronze specimens from Ust-Polovinka and Malaya Korennaya I have a high nickel content

(0.5–1.5%), as high as that of the blister copper now produced from Norilsk ores (0.8–0.9%). Such alloys were made using copper from the deposits of Norilsk I. There were also bronze objects from both Ust-Polovinka and Malaya Korennaya I that contained scarcely any nickel, while the specimens from Abylaakh I had no appreciable nickel content at all.

This analysis indicates ancient utilization of ores other than those from the Norilsk deposits. The inhabitants of Abylaakh could have been using the small copper deposits in the eastern part of Taymyr. Utilization of copper from the Sukharikha chalcosin-bornite ores is unlikely given the distant location of the deposit. Instead, native copper from the northern part of the Middle Siberian Plateau may have been used; the silver content of this copper deposit is comparable to that of the analyzed specimens. Support for this idea comes from the composition of Specimen 19 from Malaya Korennaya I; analysis indicates practically pure copper which, like the native copper of Arylakh, has very few impurities.

At least three groups of elements can be identified in the alloys: tin; arsenic and antimony; bismuth and lead. Arsenic and antimony probably came from the northern Taymyr Peninsula on the Tareya River. Tin could be obtained from the Indigirka River Basin where ore veins and placers contain cassiterite deposits. Lead and bismuth were available from the Urals or the southern part of Central Siberia. Large deposits of lead are located in the Yenisey region. The use of metals from distant sources proves that Siberian bronze casters had established ties throughout the Taymyr polar region.

The expansion of the Ymiyakhtakh culture in the region between the Taymyr Peninsula and the Indigirka River Basin apparently facilitated exchange relations and, as a result, Ymiyakhtakh people could obtain tin and the inhabitants of the Indigirka and intermediate regions were supplied with copper. Noteworthy is the location of the Stary Siktyakh site in northern Yakutia, with its bronze-casting workshop halfway between Taymyr and the Indigirka River.

This is why the Abylaakh casters could use tin as an admixture in such high concentrations (7.8%) and the resulting alloys were high quality. Higher tin content may lead to liquation and segregation of the alloy on cooling.

Arsenic and antimony use is characteristic of the Pyasina bronze-casting center. The use of such admixtures may be due to both cultural and historical factors, such as the development of metalworking skills and the use of a greater variety of admixtures, depending on the function of the articles, as well as to the lack of connections with the Indigirka tin deposits and the existing traditional links with West Siberian cultures.

Chernykh (1967) refined the terms for archaeological “center” or “metalworking node” and delimited the ancient mining and metalworking areas of the [former] USSR. There is reason to add one more mining and metalworking region to his classification: the Taymyr Peninsula, with the Pyasina River and Taymyr–Northern Yakutia nodes. The Taymyr–Yakutia node was clearly associated with the Ymiyakhtakh culture and was probably founded upon using the Taymyr copper deposits and the Indigirka River tin deposits. Distinctive local objects were produced, e.g., a casting matrix with an anthropomorphic figure. Both clay and stone molds were in use. Small, flat-bottomed crucibles with handles on the side opposite the spout were used for melting and ladling the metal.

The Pyasina metal industry node was associated with the Pyasina and Malaya Korennaya cultures. Sources were ore and native copper deposits in the northwestern part of the Middle Siberian Plateau and, possibly, arsenic and antimony ores from the Tareya River Basin. Fragments of crucibles were frequently encountered at the Pyasina River sites and were abundant at Ust-Polovinka. A rather thriftless attitude to abundant metal is suggested by the numerous drops and pieces of bronze, and also by the presence of a large bronze ingot (weighing 73.1 grams) made of twisted thread-like filings that were cut from a finished product and thrown away.

Comparison of the crucibles from Abylaakh I and Ust-Polovinka suggests that there was an increase in the production of bronze by the mid-first millennium B.C. Whereas an Abylaakh I crucible could hold about fifteen cubic centimeters of melted metal, the average capacity of crucibles at Ust-Polovinka was 120 cubic centimeters. Dwelling I at Ust-Polovinka contained at least twelve crucibles. Assuming that each was used just once, the amount of bronze produced was at least 1440 cubic centimeters, or about fourteen kilos. This amount would have been enough to make 1400 arrowheads, or 1160 awls, or 700 knife hafts similar to those found at the site. With a Seim-type celt weighing on average 250 grams, fifty-six celts could have been manufactured. These calculations give a rough idea of the volume of bronze output of a site that consisted of just a single dwelling. The total output for the entire occupation of the Pyasina site at the mouth of the Polovinka River was about four times greater.

Flat- and round-bottomed crucibles that differ markedly in shape from the East Siberia finds have analogies in West Siberia. In the middle reaches of the Ob River, at the Malget and Tukh-Emtor I and IV sites that date to the close of the second and the early part of the first millennium B.C., there were crucibles (Kiriushin and Maloletko 1979:102, fig. 16) identical to the round-bottomed crucibles of Ust-Polovinka. They differed only in their smaller size. Collection Number 3626 gathered by I.S. Znamenski and now stored at the National Museum of Finland in Helsinki contains two flat-bottomed melting pots (Numbers 68 and 69), identified as West Siberian in origin and closely resembling in shape and size the Ust-Polovinka crucibles. Smaller flat-bottomed melting pots were found during excavations of the Early Iron Age site at Mount Barsova (Barsovaya Gora) in the Surgut region of the Ob Basin. This is further evidence of the connection of the Pyasina culture with West Siberian traditions and of the southwestern origin of its metal industry.

Bronze objects were cast in clay molds that were broken when removing the finished article. A clay core, a mushroom-shaped rounded bar, was found that was inserted into a celt mold to shape the internal cavity. Preserved in the core is a filling channel with two branching channels containing metal residues (Fig. 84:1). A metal cast from Dwelling I, which structurally resembles the channels of the clay core, was apparently formed as a by-product of casting a celt. Judging by the rounded shape of the core, the celts, like those of the Seim type, had rounded sockets.

The collection of ritual objects of the late Dolgan shaman A. N. Suslov from the village of Potapovo, now at the Tomsk Regional Museum (Collection Number 4004/Ze GIK), contains a string of amulets and other cult objects thought to bring hunting luck. It includes a patinated bronze celt with a piece of wood or resin inside. The celt, hexahedral in cross-section, has a rounded socket, and the blade is broken off. The length of the artifact is 14 centimeters; width is 4.3 centimeters, and the walls are about 1 millimeter thick. There is a ridge on the lateral rib near the socket, like that on the Baikal-type celts. This artifact is identified as a sheath; indeed, it resembles a sheath made of a folded copper sheet, similar to those used by Taymyr hunters until today. However, as far as we know, sheaths were not produced by casting. Possibly, the use of the artifact, which I regard as similar to celts produced by bronze casters of the Pyasina tradition, was forgotten and then re-interpreted by later users. There is an old legend of the Yenisey River Enets people published by Dolgikh (1962:110, 111) about finding an ancient copper axe near the village of Potapovo that became a ritual object.

With the exception of the tetrahedral awl, common in the Late Bronze and Early Iron Ages, the Ust-Polovinka bronze objects are unique. Their variability, the highly skilled execution, the complexity of the alloys, and the use of iron all indicate an advanced metal industry pointing to the presence among Ust-Polovinka's inhabitants of skilled smiths. In all

likelihood, they produced metal objects not just for their own needs but also for exchange. In fact, the Ust-Polovinka site may be defined as a center of small-scale production of bronze objects intended for barter similar to the Cherkaskul bronze-casting workshop Lipovaya Kur'ya (Khlobystin 1976:48).

Even with the available copper deposits, bronze casting could not develop on the Taymyr Peninsula under the primitive-communal system because of the small size of the population and, consequently, a restricted market, to say nothing of the difficulties of providing food for a large number of smelters and casters excluded from daily hunting activities. Thus the subsistence economy hindered the development of a metal industry. It was only large-scale reindeer herding that could have contributed to the boom of bronze metallurgy, but it emerged on the Taymyr Peninsula only in the second half of the second millennium A.D., and by this time enough metal was being supplied by neighboring indigenous groups.

At both Abylaakh and Ust-Polovinka, metal articles were produced in association with ritual practice. Bronze casters made ritual objects primarily for their own use, performing rites presumably concerned with their work. In spite of the declining metal industry and the state of Nganasan smithcraft noted by Popov (1948:72) at the beginning of the twentieth century, the Nganasan were reputedly the best blacksmiths on Taymyr and preserved traces of rituals related to metalworking. There is a story by the Nganasan shaman Dyukhadie Kosterkin of how he became a shaman. A critical part of the story is related to a blacksmith who acted as one of the masters or deities, *nguo*, and who literally forged a good shaman out of Dyukhadie (Popov 1936:90–93). Judging by the story, the anvil, *dedisys* in Nganasan, was a cult object.

Dyukhadie's son, Demnime Kosterkin, also a shaman, told Gracheva in 1971 how he was turned into a shaman. He was forged by one of the principal deities whose name was "Stone-Father-Head" and who had all

the attributes of a blacksmith (Gracheva, 1971 field diary, MAE Archives, Collection K-I, Inventory 2, No. 978, pp. 42–44). The connection between metallurgy and shamanism has been noted in many Siberian ethnic groups, the Yenisey Tungus in particular (Rychkov 1917:58). The stories of Nganasan shamans contain plots or motifs adopted from the Tungus, who contributed to the formation of the Nganasan.

The ancient metalworkers of the Taymyr Peninsula probably attached particular importance to fire. The Nganasan never threw bones into a fire (Gracheva 1977:222); however, charred bones do occur in the ash deposits of Abylaakh and Ust-Polovinka. Quite frequently small bones are encountered stuck to the edges of crucibles. Bone charcoal, which conserves heat, would probably be heaped on crucibles containing molten metal. The association of bones with fires for melting metal in Yakutia was also noted by Okladnikov (1946:86; 1950b:92, 93, 104).

The casting of an anthropomorphic figurine at Abylaakh from a then-scarce metal was no less socially important to the craftsmen than the manufacture of implements. The fact that the figurine has no definite attributes indicates that its owner could endow it with needed virtues. Apparently, its function was similar to that of the Nganasan sacred figurine, or *koika*, imbued with the ability to act of its own will (Gracheva 1977:218; Popov 1959). At the same time, a *koika* was an object of reverence.

Of interest is the "eye" plate from Ust-Polovinka, which I consider to be a ritual object. One of the requisite details of shaman's dress is a cap with a fringe that covers the face and blindfolds the shaman. All the caps in the collections of the MAE in St. Petersburg, the Tomsk Regional Museum, and the Krasnoyarsk Regional Museum, as well as those that I saw worn by the Kosterkin Nganasan shaman family, had beads, rings or plates sewn on them that signified the "shaman's eyes." The Enets used to put a bandage over the shaman's eyes; the bandage contained images of the shaman's "eyes

of the soul" capable of seeing what was going on in the other world (Prokof'ieva 1971:15, fig. 4). In all likelihood, the plate found at Ust-Polovinka served that particular purpose.

When performing their rites, Nganasan shamans sometimes used wooden masks, two of which were found in 1971 by members of the Polar Expedition near the village of Ust-Avam and were described by Gracheva. In place of eyes, the masks have bulging copper plates. Since in all probability the masks were intended to cover the shaman's face, their "eyes" fulfilled the same function as those on the caps.

The artifact could have served still another function if interpreted as an eye. Some ancient peoples of Siberia and the Urals put a special mask with eyes over the face of the dead. Occasionally such "eyes" were made of metal. The Nganasan retain this custom. In excavating two seventeenth-century children's graves on the Golchikha River, I found beads in the eye sockets of the skulls, apparently from the "masks" that had covered the faces. The artifact from Ust-Polovinka may have served the same purpose, although the context is different.

An antler beater was discovered at Abylaakh I, together with a mold for casting a figurine, which lends credence to the view that the object is a ritual drum beater.

The propinquity of shamanic attributes of the objects found in association with bronze casting and interpreted as ritual items intended for communication with spirits raises a series of questions concerning the development of shamanism among the ancient ethnic groups of North Siberia. The archaeological evidence, especially that of certain burial complexes investigated by Okladnikov (1955b:344-352; 1976:10), suggests that many traits characteristic of shamanism existed among the peoples of Siberia since very early times.

The complexity of ritual practice requires special investigation with extensive recourse to archaeological and ethnographic evidence; thus, I confine myself only to providing some new perspectives, for

example, on the Nganasan fire ritual, with its special emphasis on the female part of a community: to what extent was this a woman's ritual when fire served the needs of bronze casting?

Another fascinating problem concerns the relationship between representational imagery and the rituals of ancient and contemporary peoples of the North, the Taymyr Peninsula in particular. Besides the ornaments on vessels and the finds associated with bronze casting, the only evidence of that kind is the representation on a pot from Pyasina IV (Fig. 141). Pots with representational imagery are rare in East Siberia and have been found only in the Trans-Baikal region. They depict anthropomorphic creatures (Okladnikov 1971b; Savel'ev and Goriunova 1971); snakes combined, as in the case of our find, with representations of crosses (Petri 1916); and fish and birds, apparently ducks (Khoroshikh 1960). The extreme scarcity of such pots suggests that they were ritual utensils—the pot from Pyasina IV may be such an object.

The Origins of Reindeer Herding in Western Siberia and Taymyr

The impressive size of the house structure at Dyuna III (ca. 350 square meters) and the large number of pots found in it require a different approach to the problem of economy and household size than that used in modeling the social organization of ancient Taymyr hunters. The occupants of the Dyuna III dwelling belonged to the Vozhpay culture, which dates from the ninth through tenth centuries A.D. They belonged to an ancient ethnic group that in all likelihood later gave rise to the historical Nenets and Enets. The inhabitants of the site were probably familiar with forest-type reindeer herding. This assumption is based on the fact that the Vozhpay tradition extended to the territory inhabited by the ancient Samodian people before they shifted from forest to tundra reindeer herding, as well as on evidence from the structure itself. [In his Russian theses and other publications, Khlobystin used the

scientific term *Samodiitsy*, which we transliterate here as Samodians in order to distinguish prehistoric Samoyedic-speaking people of Siberia from the historical 'Samoyeds' of the early Russian records, who are currently known as the Nenets (formerly Samoyed proper), Enets (formerly Yenisey Samoyed), Nganasan (Tavg Samoyed), and Selkup (formerly Ostyak-Samoyed) —*Ed.*]

Three mandibles of young reindeer were found in the dwelling. As hunters always prefer a larger game animal, while cattle-breeders usually slaughter youngsters, and unless the three young reindeer were wild prey, the evidence supports the assumption that the occupants of the dwelling had a herd of reindeer. The need to pasture and guard a reindeer herd on a territory belonging to a hunting population necessitated integration of men in a large community, which may account for the large size of the Dyuna III dwelling. The possibility of keeping reindeer together with people in one structure should not be overlooked. The size of the dwelling and the presence of some structural elements, possibly enclosures and smudge-pots, support this conclusion.

The large pot with charcoal found in the house might have been used to produce smudge [to keep flies and other insects away]. The keeping of reindeer in dwelling-like structures is characteristic of historical forest reindeer herders, such as the Khanty, Nenets, and Enets of West Siberia (Lukina 1979:113, 114; Vasil'ev 1962). We observed similar practices during our excavations in the Tagerar River Basin and at the mouth of the Boganida River in the forest-tundra part of Taymyr. The Pyasina River area where the Dyuna III site was located was part of the forest-tundra zone where the pasturing methods developed in the taiga zone could be used. In all likelihood the custom of setting up structures with smudge-pots where reindeer could be sheltered from mosquitoes originated in the old practice of people and reindeer sharing a dwelling. If this was the case with the Dyuna III structure, the household could have consisted of twenty to thirty people.

The discovery of sites such as Dyuna III highlights the problem of the origins and development of reindeer herding in the tundra zone of Western and Central Siberia. The so-called 'Samoyedic' (Samodian) type of large-scale reindeer herding is now practiced in this region and is characterized by long seasonal migrations of herds that are guarded using dogs and reindeer sledges. On the Taymyr Peninsula, the herds-men use saddle reindeer, a characteristic feature of the traditional Dolgan herding tradition and a variant of the Tungus (Oroch) type of reindeer herding.

The questions of when and where various types of reindeer herding came into existence and how to model initial reindeer domestication are dealt with in numerous publications thoroughly reviewed by S. I. Vainshtein (1970, 1971, 1972:99–125). Gracheva and I have also discussed the origin and development of reindeer herding in the Siberian and European tundra zone using archaeological and ethnographic material, folklore, and written records (Khlobystin and Gracheva 1974). Igor Krupnik (1975, 1976, 1993), who generally endorsed my ecological approach to the development of reindeer breeding in the Eurasian tundra zone, was somewhat inaccurate in outlining the principles behind my approach, which I discuss below.

The hypothesis that the Sayan-Altay region was an early center of reindeer domestication and herding is the one most generally accepted (Bogoras-Tan 1933; Hatt 1919; Laufer 1917; Skalon 1956; for a detailed review see Vainshtein 1970, 1971, 1972). Images of reindeer seen in the Bolshaya Boyarskaya, Maydashenskaya and Tepseyskaya rock paintings are usually interpreted as clear archaeological evidence of domesticated reindeer breeding by the people of the ancient Tagar or Tashtyk cultures of South Siberia (Devlet 1976; Kyzlasov 1952, 1960:184).

However, Ermolova (1979:135) presents persuasive arguments against such an interpretation of one of the Bolshaya Boyarskaya compositions as an image of a domestic reindeer herd driven by herds-men toward a settlement. In her opinion the composition

depicts a battue [concealment or barricade] hunt for roe deer. Indisputable evidence of early reindeer herding in South Siberia is the sculptures of bridled reindeer found in the burial vaults of the Tashtyk culture dated to the first centuries A.D. (Kyzlasov 1952, 1960:132-134, 183, 184). According to the well-known Fisher and Kastren hypothesis of the 1800s, which is supported by some contemporary linguists and ethnologists, the Samoyedic-speaking ancestors of today's Nenets, Enets, Nganasan, and Selkup peoples migrated to northern Siberia from the Sayan Uplands, bringing with them forest pack-and-saddle reindeer herding. According to Khomich (1966:37), the northward movement of the ancient Samodian tribes began in the first or second century A.D. and proceeded in several waves until the end of the first millennium. The only route that those ancient Samodian reindeer herders could take to West Siberia lay in the Tomsk-Chulyum interfluvial, since the steppe expanses west and east lacked adequate reindeer habitat. However, the Tomsk-Chulyum interfluvial may not be entirely appropriate for migrating reindeer herds either.

Another possibility is that as early as the Neolithic, some Samoyedic-speaking [early Samodian] communities were already established in the forest regions of West Siberia. At least some archaeologists argue for their existence there based on archaeological evidence (Kosarev 1964, 1974; Okladnikov 1948, 1957). I share the view that the pit-comb pottery sites of the second millennium B.C. actually belonged to these early Samodian groups. I also believe that the presence of pit-comb pottery in ancient sites along the Lower Ob and the Taz rivers attests to the initial colonization of Northwest Siberia by Samoyedic-speaking migrants as early as the second millennium B.C. (Khlobystin 1969b, 1979a).

The early Samodian inhabitants of Southwest Siberia in the second millennium B.C. had contact with cattle-breeding cultures. Their contacts with the Andronovo population resulted in the emergence of hybrid cultures, including the Suzgun and Elovo

archaeological cultures in the southern forest zone. These contacts could have contributed to the shift of the early Samodian people to cattle breeding and subsequently to reindeer herding. The movements of cattle-breeding people of the Andronovo and Tagar cultures and, particularly of the early Turkic-speaking groups in the Tomsk-Chulyum interfluvial led to the fragmentation of the ancient Samodian community in the steppe and forest zones. As a result, some Samodian groups then retreated to the mountainous Sayan regions farther south. This view on the origins of the early Samodian reindeer herders in the Sayan Mountains was strongly supported by Chernetsov (1963:411). Clearly, the two hypotheses outlined above are mutually exclusive; the extensive distribution of the early Samoyedic-speaking people in the Neolithic and the Bronze Age eliminates the southern Sayan Mountains region as the place where Siberian reindeer herding originated.

In his monograph devoted to the formation of the northern Samoyedic-speaking ethnic groups in Siberia (the Nenets, Enets, and Nganasan), Vasil'ev (1979) asserts that in the early part of the first millennium A.D. various Samoyedic-speaking communities inhabited the forest-steppe regions on the vast expanses from the eastern spurs of the Urals to the Sayan Uplands in south-central Siberia. Vasil'ev identifies three stages in the gradual movement of those early Samoyedic-speaking populations to the North. He dates the earliest Samodian migration to the second through fourth centuries A.D., associating it with the appearance in the polar region of the ancestors of the tundra Nenets. The subsequent two stages, dated to the ninth and thirteenth centuries, were related to the migration of the ancestors of the forest Nenets and Enets (Vasil'ev 1979:224).

Russian archaeologists and ethnologists are unanimous in assuming that it was the forest pack-saddle type of reindeer herding that the early Samodian groups introduced to the North. However, there is reason to believe that they were familiar with sledge reindeer herding as well. One of the

rock paintings in South Siberia (Uibat, Kyzyl-Khaya) depicts a horse harnessed to a sleigh resembling a reindeer sledge (Devlet 1976:table XIV; Savenkov 1910:table VIII). Next to it are representations of Scythian-type cauldrons on a tall tray apparently associated with the sledge, which suggests that the composition should be dated to Tagar-Tashtyk times. The early hunters of the European North and the regions east of the Urals, including West Siberia, had both single- and double-runner sledges, the remains of which have been found in peat bogs. The earliest date to the Mesolithic; others date to the Neolithic and the Bronze Age. Fragments of a two-runner sledge with straight stays were found in the lower layer of Section 6 of the Gorbunovsky peat deposit as well as in the Shigir peat bog (Eding 1929:fig.1:7; curated at the Ekaterinburg Regional Museum). The sledge design could be used for both reindeer and dogsleds.

The highly developed dog breeding culture, with dogs used for transportation, has reportedly been in existence in West Siberian polar regions since at least the end of the first millennium B.C. This is proven by intricately shaped parts of a dog harness and the sculptured representation of a harnessed dog found at the famous Ust-Poluy site in the Lower Ob River valley (Moshinskaia 1953:84, 101, table VI). In the Siberian tundra regions, reindeer herding is far more rewarding than dog breeding. As a result the latter developed only at certain favorable locations such as Ust-Poluy, whereas the principal role played by the dog was that of a helper to reindeer herders and hunters. Nevertheless, early residents of the tundra zone obviously possessed the skills required for making sledges and harnesses that could be used by the Samodian people in their transition to sledge reindeer herding.

At the time the early Samodian people arrived in the northern reaches of Siberia—if we accept Vasil'ev's dating and assumptions—local inhabitants evidently already practiced some sort of simple reindeer herding (Vasil'ev 1979:62, 65). I share this

assumption. Finds from Ust-Poluy dated to the last centuries of the first millennium B.C. include reindeer headbands made of bone that were probably made for domestic reindeer used as decoys (Moshinskaia 1953:78–80, table IV). The ample ethnographic and folklore material collected among the Nganasan, Enets, eastern Yenisey Nenets, and Saami indicate the widespread use of tame reindeer as decoys in the hunt for wild reindeer [or caribou]. There is some evidence that this hunting method was in use before the appearance of tundra reindeer herding. Simchenko (1976:96–101) furnishes convincing proof that this mode of hunting was devised by early arctic caribou hunters. Also, the emergence of reindeer herding in the polar regions, irrespective of the influence of the early Samodian people from the Sayan Uplands in South Siberia, is clearly demonstrated by the existence of reindeer herds and reindeer decoys among the Saami, as reported to the English king Alfred the Great by the Norman Oter (Ottar) (Nordenskiöld 1881:48) as early as the ninth century A.D. This took place much earlier than the ancestors of today's Saami could have established direct contact with the ancestors of the Samoyedic-speaking Siberian peoples such as the Nenets and Enets.

Cattle-breeding skills could have been brought first to the northern section of West Siberia late in the Bronze Age with the expansion of the forest cultures from the middle Ob River Basin; these skills could have given rise to the development of early reindeer herding. However, it is more likely that northern tundra hunters obtained reindeer decoys as a result of episodic taming of the calves of wild reindeer. A decoy reindeer could be then used for transporting killed prey by dragging it on a reindeer hide (Dolgikh 1964:79; Luk'ianchenko 1971:74). Such tame reindeer could also be harnessed to a trough-shaped sledge or a light boat that later became a sled similar to the historical Saami *kerezha*.

Thus, by the first millennium A.D. local residents of the Northwest Siberian tundra zone had already developed some components that subsequently

formed part of the sledge reindeer herding culture of the historic northern Samoyedic-speaking peoples, such as the Nenets, Enets, and Nganasan. The Samodian migrants to the polar regions supplemented those initial components with their developing herding skills. In the open, flat expanses of the forest-tundra ecotone, the mobility of both caribou and domesticated reindeer increases and their gregariousness becomes more manifest (Baskin 1970:52, 53). Thus, the domestic reindeer herds could be larger, but they also required constant guarding. As a result, guard dogs played greater roles and the herdsmen needed some sort of conveyance. In the flat barren country, this brought about the transition to reindeer sled guarding. The need for the herdsman to be constantly with the herd was one of the reasons for increasing the number of herdsmen and the size of the herding community. Under forest-tundra conditions, the foundations were laid for the development of the historically-known "Samoyed" type of reindeer herding economy; however, long seasonal migrations typical of this economy emerged later, as domestic herds expanded into the broad open reaches of the barren tundra.

Both historical and ecological factors were responsible for the development of tundra reindeer breeding in Northwest Siberia. The climatic change that began in the third millennium B.C. and the deforestation of the Arctic resulted in the expansion of the tundra zone, which, by the early second millennium B.C. had reached roughly its modern extent. The expansion of the zone favored the growth of the tundra populations of caribou. However, according to climatological, glaciological, and palynological evidence, for the last two thousand years, there were warmer climatic conditions due to a rise in winter temperatures and higher humidity. Under warmer conditions, snow cover increased in thickness, whereas repeated fall and winter thawing often led to the ground being covered with ice-crust. Snow cover of more than half a meter is considered a handicap to reindeer pasturing (Baskin 1970:84, 92); these conditions made it

difficult for reindeer to access ground vegetation under heavy snow. Presumably, these warmer conditions were responsible for decreases in the tundra reindeer populations. Climatic warming affected forest and forest-tundra populations of reindeer to a far lesser degree; it is no surprise that these were the areas where Samoyedic-type reindeer herding was developing.

In many respects, the relations between populations of wild and domestic reindeer are characterized by biological antagonism [see Syroechkovskii 1975 —*Ed.*]. The decrease in the wild reindeer population in the tundra zone facilitated use of their pastures by early reindeer herders. Herders could have moved to the tundra areas when there was less danger of their domestic herds being lured away by the migrating caribou. In all likelihood the migrants had small herds of domesticated reindeer that were used mainly for transportation and for hunting caribou. This early type of reindeer breeding, primarily for transportation and hunting use, was quite distinct from the indigenous reindeer-herding economy known from later records.

Decoy and sled reindeer were few in number and were slaughtered for food only in the event of famine (Laptev 1851:44). Thus, tame reindeer were used for production rather than for consumption, which, in my opinion, is the key threshold in a transition to a true food-producing economy.

Upon entering the expanses of the West Siberian tundra zone and mixing with its earlier residents, the Samodian people adopted some features of local subsistence strategies. I believe that the bearers of the Vozhpay culture represented that early Samodian wave. They switched to long seasonal migrations, following the herds of tundra caribou, but also using their domesticated reindeer as transportation animals [this is similar to the subsistence pattern later defined by Krupnik (1993) as "late hunters" —*Ed.*]. Access to productive tundra pastures triggered fast growth of domestic reindeer stocks as herds gradually occupied pastures that were formerly used by

wild reindeer. The replacement of a large-size breed of forest reindeer with the much smaller tundra breed followed suit. It could have taken place in two ways: by mixing with the herds of local reindeer, the decoy animals included, and, possibly, by morphological changes of the introduced forest reindeer under tundra conditions.

The early reindeer-herding communities that moved to the tundra zone were fairly large, whereas the aboriginal residents used to live in small groups. The latter, according to our Taymyr evidence, used to aggregate only for a short time during caribou hunting at river crossings. The large groups of new arrivals who used transport reindeer herding could thus easily overcome the scattered bands of tundra aborigines. However, the two populations eventually established economic and marital ties that led to the gradual incorporation of the indigenous tundra residents into the more advanced economy of the Samodians and to further expansion and development of reindeer herding practices.

The incorporation of the pre-Samodian population of the tundra zone into the historical Samoyedic-speaking groups, such as the Nenets, Enets, and Nganasan, is the subject of debate (e.g., Dolgikh 1952, 1970b; Khomich 1966; Lashuk 1958; Simchenko 1976; Vasil'ev 1979). This process may have lasted for a long time, as indicated by traces of sixteenth-century aboriginal coastal culture found by Chernetsov near Cape Khaen-Sale on northern Yamal Peninsula (Chernetsov 1935) and the narrative of French traveler de la Martinière from the mid-seventeenth century (de la Martinière 1912). In all probability, the first to be assimilated were the tundra hunters whose subsistence economy and lifestyle was heavily dependent upon caribou populations. Their adoption of reindeer herding from the Samodian ancestors of the Nenets and Enets, along with their language and culture, attests to the dominant role played by the Samodian reindeer economy.

On Taymyr, the ancestors of the Western Nganasan, the first to come into contact with

Samoyedic-speaking reindeer herders, started their own herds of domestic reindeer much earlier than groups farther east. Their herds were also larger, as revealed by historical records of the early 1900s—probably due to their established ties with the easternmost Yenisey Nenets, who were accomplished reindeer herders.

Preservation of large wild reindeer herds on the Taymyr Peninsula enabled the Nganasan to use their domestic reindeer mainly for transportation. Those having more reindeer could choose more distant but better caribou hunting grounds (Popov 1948:68). According to Popov's data, in 1938 a Nganasan family with a herd of fifty reindeer was considered to be poor, because it could hardly make ends meet during a long seasonal trek (Popov 1948:55). The role of traditional caribou hunting among the Nganasan led to the continued existence of small bands of hunters and the preservation of some forms of social organization.

The practice of sled reindeer herding may also have reached Taymyr from the east. The Nganasan legends collected by Gracheva in 1972 tell of the *Syupsya*, the "invaders" of folklore who came to the eastern part of the peninsula and who were rich sled reindeer herders. According to Nganasan stories, the Nganasan were eager to marry the *Syupsya* people, particularly by making them their sons-in-law. The legends indicate that the *Syupsya* had large reindeer and sledges that differed from the Samoyedic design: vertical stanchions with wide runners.

According to historical Russian sources, in the seventeenth century, the larger Nenets-owned herds in the tundra zone comprised about one hundred reindeer, but in the eighteenth century, thousand-head herds appeared (Khomich 1966:51). Krupnik (1976) has also reported on rapidly increasing herd size among the Nenets from the sixteenth through the eighteenth centuries [see Krupnik 1993:160–184]. Large-herd reindeer economies apparently originated in the central zone of Samodian reindeer herding, i.e., among the Siberian tundra Nenets. According

to Vasilii Zuev, who visited the area in the 1770s "A rich man [among the Reindeer Nenets] would have a herd of up to three thousand draught reindeer... and a multitude of yet unbroken [reindeer] are ranging in herds across the tundra" (1947:32). The Nenets were then actively migrating across the tundra from Northwest Siberia to the west and east in search of new pastures for their herds.

An increase in the size of reindeer herds enhanced the role of the herd owner and promoted the formation of independent families and the dismemberment of the clans (Gurvich and Dolgikh 1970:181). The greater importance of the herd owner is vividly reflected in Nenets folklore. Although the recording of Nenets folklore is of fairly recent origin (initiated by Mathias A. Kastren in the 1850s), the Nenets oral tradition has preserved many memories of the seventeenth century and even earlier. The characters in the Nenets legends were unfamiliar with the use of firearms and wore chain mail. In *Epic Songs of the Nenets*, published by Kupriianova (1965), there are stories about rich and poor kinsmen as well as about the "master of the camp," whose personal *choom* towers above the others in the camp, and about relentless wars for the possession of reindeer herds. The owners of large herds were known to have several wives and slaves. Uniting around such large herd owners were kinsmen with small herds and families that had no reindeer, who then served as herdsmen to the rich and were an exploited part of the population. The large-scale Samoyedic-type reindeer economy of the historical Nenets became not only the principal subsistence strategy and productive economy, but also a source of wealth.

The transition to sled reindeer herding affected many facets of material culture. For instance, seasonal dwellings were replaced with movable *chooms*; ceramic ware was no longer in use; and outer skin clothing was made longer, more suitable for riding in a sledge.

By providing a reliable source of food for tundra inhabitants, reindeer herding promoted marked

population growth. According to seventeenth-century Russian tax records, there were 4670 "Obdorsk Samoyeds," i.e., Nenets, living in the Lower Ob River region (Dolgikh 1960:76) compared to some 1400 Nenets in the European Arctic (1970b:22). According to the 1959 census, about 14,000 tundra Nenets resided in the Yamal-Nenets Autonomous Area [which is roughly equivalent to the area of the Obdorsk Samoyedic-speakers] and some 5000 in the Nenets Autonomous Area of the Russian Arctic (Khomich 1966:19). Thus, the size of the overall Nenets population had increased more than threefold over 300 years.

Other indigenous ethnic groups of North Siberia that, unlike the Nenets, retained their terrestrial or sea-mammal hunting economies, could not match such impressive population growth. For example, the Nganasan population remained almost unchanged, numbering roughly one thousand people. The population of another Siberian caribou-hunting group, the Yukagir, was reduced by the late 1800s to one-fourth of their previous number. The population of sea mammal-hunting Eskimo and Itelmen fishers also declined. To a large extent these population declines were due to their assimilation by other indigenous groups with more developed economies. Referring to the data on the Tungus, Dolgikh wrote that "different parts of an ethnic group representing different subsistence types had different destinies" (Dolgikh 1960:615). Based on the estimated size of the caribou population in the Eurasian Arctic, Simchenko (1976:84) calculated that before the inhabitants of the tundra zone took up reindeer herding and sea mammal hunting they totaled only about 10,000 to 11,000 people. Comparison of this figure with the size of the historical Nenets population alone shows how significant the transition to reindeer breeding was for indigenous population growth.

The reindeer herding economy in the Eurasian Arctic, or at least, in the western section from the Taymyr Peninsula west into northern Scandinavia,

eventually evolved into various regional sub-types based upon local ecology and historical conditions. As of the early twentieth century, three major sub-types could be identified. Type 1 prevailed in the Taymyr region where along with reindeer herding, the Native subsistence economy was primarily focused on wild reindeer hunting, which satisfied most subsistence needs. Type 2 was distributed from the northern reaches of West Siberia and northeastern (European) Russia; it was characterized by large-scale reindeer herding of the Samoyedic type. Type 3 was represented by Saami (Lapp) reindeer herding on the

Kola Peninsula. Carried on in the forest-tundra zone, Type 3 preserved certain traits of forest reindeer herding and primarily focused on meeting transportation needs.

To summarize, only the Samoyedic-type reindeer breeding of the Nenets attained the level of a true food-producing economy; this was clearly reflected in Nenets social structure. However, the reindeer herding of the Taymyr people and of the Kola Saami (Lapp) was at the initial stage of the transition to such an economy and retained elements of the hunting and fishing economic system.



170/ Khlobystin's field camp on the Yugor Peninsula, facing Vaygach Island, 1987. The Early Medieval site excavated by Khlobystin is located on the shore of Yugorsky Shar strait, between the Barents and Kara seas. Photographer Vladimir Pitulko.

Conclusions

As illustrated by surveys and discoveries by Russian archaeologists during the last few decades, climatic factors did not prevent Palaeolithic mammoth hunters from penetrating certain regions of the Eurasian Arctic and Subarctic zones (i.e., along the Lower Pechora Valley, in Northern Yakutia, and Northeast Siberia) in late glacial times, during the Kokorevo and Taymyr interstadials (Bølling and Allerød). However, permanent population of the Eurasian polar regions occurred only in the Mesolithic between the seventh and fifth millennium B.C. as a result of climatic amelioration beginning in the Early Holocene.

With the milder climate, forest vegetation boundaries shifted northward and inland tundra was greatly reduced during the Climatic Optimum. The Eurasian polar region was then colonized from the south by populations of various cultures, such as Suomusjarvi and Fosna, which gave rise to the Komsa tradition in northern Scandinavia and on the Kola Peninsula. Farther eastward, the Volga-Oka and Ural cultures penetrated to the north of the Archangel Province [northernmost portion of European Russia —*Ed.*]; and people of the Sumnagin tradition populated the East Siberian Arctic and Chukotka. At the same time, descendants of the early groups that settled in the southern portion of Northeast Siberia during the Palaeolithic may also have colonized the region.

The settlement of Taymyr occurred relatively late, during the fifth millennium B.C., as a result of

the northward migration of the Sumnagin population via the Olenek and the Anabar River basins. In all likelihood, during the Mesolithic and Early Neolithic periods, Northwest Siberia was sparsely populated due to the great expanses of marshland in the Atlantic Period. The Mesolithic population of the Arctic served as a foundation for the development of subsequent ethnic formations, including the contemporary indigenous peoples of the Far North.

The beginning of the Neolithic is marked by the appearance of ceramic ware. The recurrent influx of new populations from the neighboring regions to the south brought cultural elements that were adopted by the aboriginal population as a result of contact. Similar cultural transformations were occurring during the Metal Period. Based on the study of archaeological sites of the Eurasian Arctic, I have come to the conclusion that circumpolar culture was not of Ural origin (Khlobystin 1973b:65; 1975; see also Gurina and Khlobystin 1975:410). Alekseev (1975) reached similar conclusions on the basis of physical anthropological evidence.

Archaeological investigations have shown that starting in the Neolithic, Taymyr was the site of complex contacts between two different regions—West and East Siberia. Based on their lithic assemblages, Early Neolithic sites in Taymyr are associated with the earlier Mesolithic culture. The presence of net pottery characteristic of the East Siberian Early Neolithic indicates adoption of this technology from

Evenkia and Yakutia. In this case, the Mesolithic–Neolithic transition corresponded to the processes of formation of the earlier Neolithic cultures to the south, where pottery-making skills expanded from several original centers of associated Mesolithic traditions, usually through adoption of technology rather than via migration.

During the second millennium B.C., the Belkachi culture of the Late Neolithic with its corded ware penetrated the Taymyr Peninsula from Yakutia. Its influence on local traditions resulted in the emergence of the Maimeche culture in the eastern part of the peninsula. Maimeche net pottery employs decorative techniques of the Belkachi culture. Of particular interest is the custom of wearing lip ornaments (labrets). Similar ornaments were recorded for the Late Neolithic of the Kamchatka Peninsula and also for historical ethnic groups of the North Pacific coast. Thus, it appears that the tradition of wearing labrets existed among the Mesolithic and,



171/ A small 'islet' of the full-grown larch forest (*Larix gmelinii*) along the Lower Avam River, western Taymyr, 2001. Local people usually call such islets of trees within the forest-tundra landscape *ary-mas* (literally 'northern forest'). The most famous *ary-mas* is located along the Novaya River in Central Taymyr, at about 73°N; it is the world's northernmost piece of standing forest above the arctic treeline. Photographer John Ziker.

probably, Palaeolithic populations of East Siberia, who brought it to both the Taymyr Peninsula and the North Pacific region.

Late in the third millennium B.C., the Baikite culture, characterized by pottery decorated with linear-prick patterns, extended from Evenkia to the western part of the Taymyr Peninsula. Its appearance in the Yenisey River basin is a manifestation of West Siberian cultures spreading eastward along the right-bank tributaries of the Yenisey River, the Angara included, to the Lake Baikal area, which resulted in the emergence of distinctively new cultures. In all probability, the expansion of West Siberian cultural traditions resulted from the movement of ethnic groups of the Ural-Siberian community, possibly the ancient Samodians.

In the second millennium B.C., the greater part of East Siberia was the province of the Ymiyakhtakh cultural community, characterized by distinctive waffle pottery. In the last quarter of the second millennium B.C., waffle pottery groups infiltrated the Taymyr Peninsula. A variant of the Ymiyakhtakh cultural community was formed in the region, which apparently incorporated part of the peninsula's aboriginal population.

The deposits of copper on the peninsula and of tin in the Indigirka River valley farther eastward enabled Taymyr and Lower Lena Ymiyakhtakh groups to begin manufacturing bronze in the twelfth century B.C. The Lake Baikal area was the center from which the bronze industry reached the Taymyr and polar regions of Yakutia [Sakha Republic] via Evenkia and possibly West Yakutia. The Ymiyakhtakh population of East Yakutia could have remained a Late Neolithic culture. The waffle pottery groups advanced westward via Taymyr through the tundra and forest-tundra zones as far as Scandinavia. Their movement is demonstrated by waffle pottery dating to the late second and early first millennium B.C. and found in the southern part of the Yamal Peninsula, in the Bolshezemel'skaya tundra, on the Kola Peninsula, in northern Finland and on the Atlantic coast of

Norway. Waffle pottery was also spreading eastward, to Chukotka and Alaska. It is the circumpolar tradition with the widest distribution. Through migration, waffle pottery groups came into contact with local populations, which could have resulted in the appearance of common elements in the cultures of different ethnic groups of the Arctic.

One of the traditions encountered by the Taymyr Ymyiakhtakh population on their way westward belonged to the descendants of the Baikit culture living along the Pyasina River. The Pyasina culture developed here in the first half of the first millennium B.C.; Pyasina pottery combined waffle, Baikit and other types of West Siberian ceramic traditions. Contact between Ymyiakhtakh and West Siberian populations probably gave rise to the ancient Yukagir community. Some of the Ymyiakhtakh groups may have been ancestral to the historical Yukagir. Since the words for “copper” have a common root in the Yukagir and Samoyedic languages, but those for “iron” are different, the end of contacts between the Samodian and the Yukagir communities may be dated to prior to the wide distribution of iron in East Siberian cultures, i.e., about two thousand years ago. Early Yukagir and Samodian ties could have been severed due to alien groups that were probably ancestral to the historical Ket people.

The influence of the West Siberian cultures on the Pyasina tradition manifested itself in the development of an advanced metal industry. The discovery of an iron tool, the oldest in the Arctic, associated with the Pyasina tradition suggests that Pyasina dates to the Early Iron Age. The manufacture of bronze objects depended upon local and imported raw materials. It is possible to distinguish, on the basis of the Ymyiakhtakh and Pyasina bronze-casting workshops, the ancient “Taymyr” mining and metallurgical region, with its two separate centers, in the Pyasina River/ Lake area and in northwestern Yakutia. However, the level of local economies, based on mobile hunting and fishing,

precluded further development of bronze casting on the Taymyr Peninsula.

The direct successor to the Pyasina tradition in the western part of the peninsula was the Malaya Korennaya culture, which dates from the late first millennium B.C. to the first centuries A.D. Groups of sites from the first to early second millennium A.D. can be distinguished in the Taymyr arctic region by different types of pottery characterized by East Siberian technology and ornamentation, such as Tagenar, Boyarka I and II, and Ust-Polovinka. Ust Polovinka thin-walled ware decorated with thin applied ridges, and dated to the tenth through twelfth century A.D., is the final type of pottery to appear on Taymyr. In subsequent centuries, the production of ceramic vessels in the Taymyr polar region, as in many other parts of Siberia, was discontinued.

Taymyr pottery from the first and second millennia A.D. is similar to types found at Iron Age sites in Yakutia. There are strong similarities between Boyarka II and Siktyakh, Tagenar and Sangar, Ust-Polovinka and Chebedal types on the Taymyr Peninsula and in Yakutia, respectively, as well as in Evenkia. Apparently these types reflect the existence in East Siberia of various ethnic groups of different origins. The Sangar and Siktyakh types with comb and pit ornamentation evidently preserved traditions imported from West Siberia, which suggests that their makers were coming from the ancient Yukagiric-speaking groups. Chebedal ware, decorated with thin applied ridges and similar to pottery from the Lake Baikal region, displays characteristics that associate it with the Amur and Trans-Baikal areas. The Amur and Trans-Baikal regions appear to be the centers from which groups, possibly the ancient Tungus, were expanding into East Siberia. The appearance of the Boyarka and Ust-Polovinka types of pottery in the Taymyr polar region may thus be associated with the infiltration of ancient Yukagir and Tungus groups, respectively. The Samodian ethnic element, closely related to the Yukagiric, appears to correspond to the Pyasina tradition and the Malaya Korennaya culture that supplanted it.

Between the ninth and the tenth centuries A.D., a new population appeared in the western part of the Taymyr Peninsula and brought with it a distinctive cultural form: the Vozhpay culture. Vozhpay sites have been discovered in the Middle Ob Valley in West Siberia; from here, the Vozhpay culture reached higher latitudes, via the Ob-Yenisey interfluvial, and spread out from the western part of Taymyr to the Ob Valley and probably the Lower Pechora Valley. As some written sources mention the presence in the eleventh century of Samoyedic-speaking people in Northwest Siberia [*'Samoyed'* or *'Samoyad'* in early Russian chronicles —*Ed.*], there is good reason to believe that the Vozhpay cultural community was ancestral to the historical Nenets and Enets. The Vozhpay population represented one of the final waves of Samodian migration to the Arctic.

Associated with the first wave are Kols (Taz) type sites that date to the end of the second and first half of the first millennium B.C. These sites were discovered in the lower reaches of the Ob and the Taz rivers, are comparable to the pit-comb ware cultures of the Middle Ob Valley and have been associated with ancient Samodian groups by some investigators. The penetration of Taymyr by the Vozhpay culture marked the arrival of the Samodian



172/ *Abandoned Nganasan camp along the Avam River, western Taymyr, 2001. Photographer John Ziker.*

population, which was involved in the later formation of the historical Nganasan people.

The wide distribution of Ust-Polovinka pottery on Taymyr in the twelfth through thirteenth centuries indicates the “Tungusization” of the aboriginal tundra population. Taymyr sites of the fourteenth through sixteenth century contain no pottery. It nevertheless is possible to correlate archaeological evidence of the evolution of ancient cultures with ethnohistoric data on the origin of the ethnic alliances from the seventeenth and eighteenth centuries, which contributed directly to the formation of the Nganasan. There is good agreement between the inferences made from archaeological and ethnographic evidence. Thus, the origin of the so-called “Kurak” and the “Pyasida” Samoyeds [of Russian sources from the 1600s —*Ed.*] appear to be associated with the Vozhpay culture, whereas Tungus-speaking ethnic groups were probably associated with Ust-Polovinka pottery. Local cultural development was probably associated with the groups that Russians called “Tavgi” (Tavg) and “Tidiris” in seventeenth-century historical accounts; their ancestors may have included the Ust-Cherninsk, Pyasina, and Maimeche cultural communities. Thus, despite the complexity of their formation, today’s Nganasan are truly the direct descendants of the ancient Mesolithic population of the Taymyr Peninsula.

Throughout their long history, the inhabitants of the Taymyr Peninsula were primarily caribou/wild reindeer hunters. Their way of life and subsistence strategy necessitated small, economically independent groups composed of small families. Scattered over a vast territory, these bands established marital networks and short-term economic alliances. Such relationships were critical to the emergence of social units within a given territory—a kind of early ethnic group that may be termed an “ethnoid.” This way of life persisted until the appearance of a food producing economy in Taymyr based upon large-scale reindeer herding, which eventually led to the formation of large family groups.

Archaeological investigation of the Eurasian Arctic sheds light on an obscure page in human history dealing with colonization of the northern fringe of the *oecumene*. Far from being unconnected to the cultural and historical processes that took place in regions farther south, the ancient peoples of the circumpolar region made distinctive contributions to the development of culture. Even at the initial stages of the colonization of the forbidding lands of the High Arctic, these peoples created cultures best

suited to their extreme environment. Subsequent cultural developments took account of the achievements of the aboriginal population, which explains a certain conservatism of arctic cultures.

Such are the conclusions that I have arrived at on the basis of my study of the archaeological record of the Eurasian Arctic, of the numerous Taymyr sites that figure prominently within it, and of the archaeological evidence of adjacent regions and data from related disciplines.



173/ Leonid Khlobystin (center) lectures at the Belyi Nos polar station, Yugor Peninsula, during his 1985 summer survey in the Russian Arctic. Photographer Aleksandr Gorchukov.

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174/ Leonid P. Khlobystin rests in a hunting cabin in the abandoned village of Khabarovo, Kara Sea coast, in summer 1984. Ink drawing by Evgenii Zaitsev. IIMK Archives, St. Petersburg, File P-I, no.1294, sheet 38.

Appendix 1: Publications of Leonid P. Khlobystin

1961

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1962

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1964

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Obmen v epokhu neolita i bronzy (po materialam arkhologii Sibiri) (Exchange in the Neolithic and Bronze Ages, Based upon Siberian Archeological Materials). In *Obmen i tovgovlia v drevnikh obshchestvakh*. Pp. 9–12. Leningrad.

Poselenie razvitogo neolita Maimeche I i ego mesto v neolite Vostochnoi Sibiri (The Developed Neolithic Settlement of Maimeche I and its Place in the Neolithic of Eastern Siberia). *Kratkie soobshcheniia Instituta arkhologii AN SSSR* 131:99–106. Moscow and Leningrad.

Problemy sotsiologii neolita Severnoi Evrazii (Sociological Problems in the Study of the Neolithic of Northern Eurasia). In *Okhotniki, sobirатели, rybolovy*. Aleksei M. Reshetov, ed. Pp. 26–42. Leningrad: Nauka Publishing House.

Raboty Zapoliarnogo otriada na Taimyre (The Work of the Polar Expedition in Taymyr). In *Arkhologicheskie otkrytiia 1971 goda*. B. A. Rybakov, ed. Co-authored with Galina N. Gracheva. Pp. 296–7. Moscow: Nauka Publishing House.

Zaselenie Arktiki (The Peopling of the Arctic). In *Tezisy dokladov na sessii i plenumakh, posviashchennykh itogam polevykh issledovaniia v 1971*. Pp. 32–36. Co-authored with Nina N. Gurina. Moscow: Institute of Archeology.

1973

Drevneishie pamiatniki Zapadnogo Taimyra (The Earliest Sites of Western Taymyr). *Kratkie soobshcheniia Instituta arkhologii AN SSSR* 137:89–95. Moscow and Leningrad.

Drevnie kul'tury Taimyra i krupnye etnicheskie obshchnosti Sibiri (The Ancient Cultures of Taymyr and Large Ethnic Communities of Siberia). In *Proiskhozhdenie aborigenov Sibiri i ikh iazykov*.

E. G. Bekker, et al., eds. Pp. 163–6. Tomsk: Tomsk University Publications.

Drevniia "iuvelirnaia masterskaia" v Zapadnosibirskom Zapoliarie (An Ancient "Jewelry Workshop" in the West Siberian Polar Region). In *Problemy arkhologii Urala i Sibiri*. V. N. Chernetsov and A. P. Smirnov, eds. Co-authored with Oleg V. Ovsyannikov. Pp. 248–57. Moscow: Nauka Publishing House.

Krainii Severo-Vostok Evropeiskoi chasti SSSR v epokhu neolita i rannei bronzy (The Extreme Northeast of the European USSR in the Neolithic and Early Bronze Ages). *Materialy i issledovaniia po arkhologii SSSR* 172:54–65. Moscow: Nauka Publishing House.

Novye dannye o drevnostiakh Taimyra (New Data on Taymyr Antiquities). In *Arkhologicheskie otkrytiia 1972 goda*. B. A. Rybakov, ed. Co-authored with Galina N. Gracheva. Pp. 244–5. Moscow: Nauka Publishing House.

O drevnem zaselenii Arktiki (On the Ancient Colonization of the Arctic). *Kratkie soobshcheniia Instituta arkhologii AN SSSR* 136:11–6. Moscow and Leningrad.

Osnovnye etapy razvitiia prirody i kul'tury drevnikh obshchestv v Sibirskoi Arktike (Stages in the Development of Nature and Culture of Ancient Societies in the Siberian Arctic). In *Vsesoiuznyi simpozium Pervobytnyi chelovek, ego materialnaia kultura i prirodnaia sreda v pleistotsene i golotsene (paleolit i neolit)*. *Tezisy dokladov*. A. A. Velichko, ed. Co-authored with Galina M. Levkovskaia. Pp. 91–4. Moscow.

Review of "Arkhologicheskoe izuchenie Srednei Azii" Ed. I. T. Kruglikova. Co-authored with Genady A. Koshelenko. *Sovetskaia arkhologiya* 1:298–301.

1974

Poiavlenie olenevodstva v tundrovoi zone Evropy, Zapadnoi i Srednei Sibiri (The Appearance of Reindeer Breeding in the Tundra Zone of Europe, Western, and Central Siberia). In *Tezisy dokladov konferentsii "Formy perekhoda ot prisvayvayushchego khoziaistva k proizvodiaschemu i osobennosti razvitiia obshchestvennogo stroia"*. Co-authored with Galina N. Gracheva. Pp. 81–6. Moscow: Institute of Archeology.

Raboty na poluostrove Taimyr (Fieldwork on the Taymyr Peninsula). In *Arkhologicheskie otkrytiia 1973 goda*. B. A. Rybakov, ed. Co-authored with Albert N. Melentiev and Svetlana V. Studzitskaia. Pp. 229–30. Moscow: Nauka Publishing House.

Rol' sotsial'nogo i ekologicheskogo faktorov v razvitiia arkticheskikh kul'tur Evrazii (The Role of Social and Ecological Factors in the Development

- of the Arctic Cultures of Eurasia). In *Pervobytnyi chelovek, ego materialnaia kultura i prirodnaia sreda v pleistotsene i golotsene*. I. P. Gerasimov, ed. Co-authored with Galina M. Levkovskaia. Pp. 235–42. Moscow: Institute of Geography AN SSSR.
- Review of V. M. Masson "Poselenie Dzheitun (Problema stanovleniia proizvodiashechei ekonomiki)," *Sovetskaia arkheologiiia* 1:300–2.
- Zhilishche i ego ekologicheskaiia obuslovlennost' (The Dwelling as an Ecologically Determined Phenomenon). In *Rekonstruktsiia drevnikh obshchestvennykh otnoshenii po arkheologicheskim materialam zhilishch i poselenii*. V. M. Masson, ed. Pp. 22–5. Leningrad: Nauka Publishing House.
- 1975**
- Drevnie bronzoliteishchiki Sibirskogo Zapoliaria (Ancient Bronze-Casting Masters in the Siberian Polar Region). In *Noveishie otkrytiia sovetskikh arkheologov* 1:97–9. V. D. Baran, ed. Kiev.
- O khoziaistvennom ispolzovanii dikogo severnogo olenia naseleniem Taimyra (On the Economic Use of Wild Reindeer by the People of Taymyr). In *Dikii severnyi olen' v SSSR*. E. E. Syroechkovskii, ed. Co-authored with Galina N. Gracheva. Pp. 249–51. Moscow: Sovetskaia Rossiia.
- Pamiatniki Sibirskogo Zapoliaria i ikh sootnoshenie s kulturami taezhnoi zony (The Sites of the Siberian Polar Region and Their Relationship to the Sites of the Taiga Zone). In *Sootnoshenie drevnikh kultur Sibiri s kulturami sopredelnykh territorii*. A. P. Derevianko, ed. Pp. 100–10. Novosibirsk: Nauka Publishing House.
- Raboty Zapoliarnoi ekspeditsii (Fieldwork of the Polar Expedition). In *Arkheologicheskie otkrytiia 1974 goda*. B. A. Rybakov, ed. Co-authored with Galina N. Gracheva and Svetlana V. Studzitskaia. Pp. 239–40. Moscow: Nauka Publishing House.
- Zaselenie Arctiki (The Peopling of the Arctic). In *Pamiatniki kultury. Noveishie otkrytiia. Ezhegodnik, 1974 g.* Co-authored with Nina N. Gurina. Pp. 404–11. Moscow.
- 1976**
- Drevnie pamiatniki na zapade plato Putorana (Ancient Sites in the Western Putorana Plateau). *Kratkie soobshcheniia Instituta arkheologii AN SSSR* 147:62–67. Co-authored with Svetlana V. Studzitskaia.
- Ekonomicheskie i sotsialnye aspekty razvitiia drevnih obshchestv Taimyra (Economic and Social Aspects of the Development of Ancient Societies of Taymyr). In *Iz istorii Sibiri* 21:111–20. Tomsk: Tomsk University Publications.
- Poselenie Lipovaia Kur'ia v Iuzhnom Zaural'e (The Settlement of Lipovaya Kuria in the Southern Trans-Ural Region). Leningrad: Nauka Publishing House.
- 1977**
- Raboty na severe Zapadnoi Sibiri (Fieldwork in Northern West Siberia). In *Arkheologicheskie otkrytiia 1976 goda*. B. A. Rybakov, ed. P. 249. Moscow: Nauka Publishing House.
- 1978**
- Razvedochnye raboty na r. Kureike (Surveying the Kureika River). In *Arkheologicheskie otkrytiia 1977 goda*. B. A. Rybakov, ed. Pp. 281–2. Moscow: Nauka Publishing House.
- Vozrast i sootnoshenie neoliticheskikh kultur Vostochnoi Sibiri (Chronology and Relationship of the Neolithic Cultures of East Siberia). *Kratkie soobshcheniia Instituta arkheologii AN SSSR* 153:93–9. Moscow.
- 1979**
- Ob etnicheskoi prinadlezhnosti arkheologicheskikh pamiatnikov epokhi rannego metalla na severe Zapadnoi Sibiri (On the Ethnic Affiliation of the Early Metal Period Archeological Sites in Northern West Siberia). In *Voprosy finno-ugrovedeniia. Tezisy dokladov XVI Vsesoiuznoi konferentsii finno-ugrovedov*. P. 50. Syktyvkar.
- Raboty v basseine r. Kondy (Fieldwork in the Konda River Basin). In *Arkheologicheskie otkrytiia 1978 goda*. B. A. Rybakov, ed. Pp. 279–80. Moscow: Nauka Publishing House.
- 1981**
- Drevnie metallurgi Taimyra (Ancient Metallurgists of Taymyr). *Zapoliarnaya pravda* 152. Norilsk.
- Proiskhozhdenie nganasanov po arkheologicheskim dannym (The Origins of the Nganasan in Light of Archeological Data). In *Metodologicheskie aspekty arkheologicheskikh i etnograficheskikh issledovaniia v Zapadnoi Sibiri*. L. M. Pletneva, ed. Pp. 102–5. Tomsk: Tomsk University Publications.
- Raskopki na r. Sumpan'e (Excavations on the Sumpanya River). In *Arkheologicheskie otkrytiia 1980 goda*. B. A. Rybakov, ed. Pp. 219–20. Moscow: Nauka Publishing House.
- Traditsii i innovatsii v drevnikh kulturakh severa Sibiri (Traditions and Innovations in Ancient Cultures of Northern Siberia). In *Preemstvennost' i innovatsii v razvitiia drevnikh kul'tur*. V. M. Masson and V. N. Boriaz, eds. Pp. 80–4. Leningrad: Nauka Publishing House.

Voprosy metodiki ispolzovaniia dannykh ethografii v arkheologicheskikh issledovaniakh (Methodological Issues in Using Ethnographic Data in Archeological Studies). In *Metodologicheskie aspekty arkheologicheskikh i etnograficheskikh issledovaniy v Zapadnoi Sibiri* L. M. Pletneva, ed. Co-authored with Galina N. Gracheva. Pp. 134–8. Tomsk: Tomsk University Publications.

Review of N. N. Dikov. *Arkheologicheskie pamiatniki Kamchatki, Chukotki i verkhnei Kolymy: Azia na styke s Amerikoi v drevnosti* and *Drevnie kultury Severo-Vostochnoi Azii: Azia na styke s Amerikoi v drevnosti*. Co-authored with Pavel I. Boriskovskii. *Sovetskaia arkheologia* 1:314–8. Moscow.

1982

Drevniaia istoriia Taimyrskogo Zapoliar'ia i voprosy formirovaniia kul'tur Severa Evrazii (Ancient History of Taymyr and the Formation of North Eurasian Cultures). Abstract of the full doctorate (doctor of sciences) dissertation. Moscow: Institute of Archeology.

Initial Settlement of the Eurasian Polar Area. In *Tezisy dokladov XI Kongressa INQUA*. Vol. 1. A. G. Korneeva, ed. P. 158. Moscow.

Okhota v Taimyrskom Zapoliarie (po arkheologicheskim materialam) (Hunting in Ancient Taymyr, as Based upon Archeological Materials). In *Tezisy dokladov XI Kongressa INQUA*. Vol. 3. N. Iu. Sorokina, ed. Co-authored with Iurii I. Simchenko. Pp. 285–6. Moscow: Nauka Publishing House.

1983

Novye issledovaniia v taimyrskom Zapoliarie (New Surveys in Taymyr). In *Arkheologicheskie otkrytiia 1981 goda*. B. A. Rybakov, ed. Pp. 234–5. Moscow: Nauka Publishing House.

1984

Exchange in the Neolithic and Bronze Age in the Forest Belt of the USSR. *Isko* 4:60–3. Helsinki.

Economic Exploration of Wild Reindeer by the People of Taymyr. In *Wild Reindeer of the Soviet Union*. E. E. Syroechkovskii, ed. Co-authored with Galina N. Gracheva. Pp. 243–5. New Delhi: Oxonian Press.

Neoliticheskoe poselenie Sump'an'ia IV v basseine Kondy (The Neolithic Settlement of Sumpanya IV in the Konda River Basin). In *Voprosy arkheologii Urala* 17:32–44. Co-authored with Valentina T. Kovaleva and Elena A. Ustinova.

1985

Issledovaniia po r. Nizhniaia Tunguska (Surveys along the Lower Tunguska River). In *Arkheo-*

logicheskie otkrytiia 1983 goda. B. A. Rybakov, ed. P. 247. Moscow: Nauka Publishing House.

Otrazhenie ekologicheskikh faktorov i etnicheskikh pokazatelei v sredstvakh peredvizheniia samodiiskikh narodov (Ecological and Ethnic Factors as Reflected in the Movement of the Samodian People). In *Areal'nye issledovaniia v iazykoznanii i etnografii*. M. A. Borodina and S. I. Bruk, eds. Co-authored with Galina N. Gracheva. P. 55. Ufa: BF AN SSSR.

Pogrebenie idola na ozere Labaz (Vostochnyi Taymyr) (The Burial of an Idol on Lake Labaz, Eastern Taymyr). In *Mirovozzrenie narodov Zapadnoi Sibiri po arkheologicheskim i etnograficheskim dannym*. E. L. L'vova and E. A. Vasil'ev, eds. Co-authored with Galina N. Gracheva and Svetlana V. Studitskaia. Pp. 51–4. Tomsk: Tomsk University Publications.

Radiouglerodnye daty neoliticheskikh pamiatnikov r. Sump'an'i (Radiocarbon Dates for the Neolithic Sites on the Sumpanya River). In *Geokhronologiiia chetvertichnogo perioda. Tezisy dokladov Vsesoiuznoi konferentsii*. Ia.-M. K. Punning, ed. Co-authored with Iurii N. Markov. P. 86. Tallinn.

1986

Bronzovyi vek Taimyra (The Bronze Age of Taymyr). *Vokrug sveta* 3:26–8. Moscow.

Raboty Mezenskogo otriada (Fieldwork of the Mezen Team). In *Arkheologicheskie otkrytiia 1984 goda*. B. A. Rybakov, ed. Co-authored with I. V. Gavrilova. Pp. 5–6. Moscow: Nauka Publishing House.

Raboty na o. Vaigach i Iugorskom poluostrove (Fieldwork on Vaigach Island and on the Yugor Peninsula). In *Arkheologicheskie otkrytiia 1984 goda*. B. A. Rybakov, ed. Pp. 32–3. Moscow: Nauka Publishing House.

Raskopki na r. Sump'an'ia (Excavations on the Sumpanya River). Co-authored with L. Ia. Krizhevskaiia. In *Arkheologicheskie otkrytiia 1984 goda*. B. A. Rybakov, ed. Pp. 12–3. Moscow: Nauka Publishing House.

Sever Zapadnoi Sibiri v epokhu bronzy (Northern West Siberia in the Bronze Age). *Kratkie soobshcheniia Instituta arkheologii AN SSSR* 185:43–50. Co-authored with Leonid P. Lashuk. Moscow.

1987

Bronzovyi vek Vostochnoi Sibiri (The Bronze Age of East Siberia). In *Epokha bronzy lesnoi polosy SSSR*. O. N. Bader, D. A. Krajinov, and M. F. Kosarev, eds. *Arkheologia SSSR* 8:327–44. Moscow: Nauka Publishing House.

Nakhodki bliz g. Salehard (Findings from the Vicinity of the City of Salekhard). *Kratkie soobshcheniia Instituta arkheologii AN SSSR* 189:108–11. Moscow.

Novye otkrytiia na Severo-Vostoke Evropy (New Discoveries in Northeastern Europe). In *Zadachi sovetskoi arkheologii v svete reshenii XXVII s'ezda KPSS. Tezisy dokladov Vsesoiuznoi konferentsii*. V. P. Shilov, ed. Pp. 13–4. Moscow.

Raboty v Arkhangel'skom Zapoliarie (Fieldwork in the Arkhangel'sk Polar Region). In *Arkheologicheskie otkrytiia 1985 goda*. B. A. Rybakov, ed. Pp. 40–2. Moscow: Nauka Publishing House.

1988

Issledovaniia Zapoliarnoi ekspeditsii (Surveys of the Polar Expedition). In *Arkheologicheskie otkrytiia 1986 goda*. B. A. Rybakov, ed. Co-authored with Irina V. Vereshchagina and Vladimir Ia. Shumkin. Pp. 41–5. Moscow: Nauka Publishing House.

1990

200 let arkticheskoi arkheologii (200 Years of Arctic Archeology). *Kratkie soobshcheniia Instituta arkheologii AN SSSR* 200:3–8. Moscow and Leningrad.

Drevnie sviatilishcha ostrova Vaigach (Ancient Shrines of Vaigach Island). In *Pamiatnikovedenie. Problemy izucheniia istoriko-kulturnoi sredy Arktiki*. P. V. Boiarskii, ed. Pp. 120–35. Moscow.

Kul'tury Zapadnogo Taimyra i ikh prirodnoe okruzenie (po materialam mnogoslainogo poseleniia Ust-Polovinka) (Cultures of West Taymyr and Their Environmental Setting, Based upon Materials from the Stratified Site of Ust-Polovinka). Co-authored with Galina M. Levkovskaia. *Kratkie soobshcheniia Instituta arkheologii AN SSSR* 200:77–83.

1993

Drevnee poselenie primorskikh okhotnikov Karpova Guba na o. Vaigach (The Ancient Sea Hunter Settlement of Karpova Guba on Vaigach Island). In *Materialy po arkheologii Evropeiskogo Severo-Vostoka* 12. Co-authored with Vladimir V. Pitulko and Andrei K. Stanyukovich. Pp. 99–115. Svytyvkar.

Satyginskii tip keramiki Zapadnoi Sibiri (Satygin-type Pottery in Western Siberia). In *Ad Polus*. G. N. Gracheva, ed. Pp. 29–36. St. Petersburg.

Sviatilishcha Vaigacha (Shrines of Vaigach Island). In *Ad Polus*. G. N. Gracheva, ed. Pp. 15–17. St. Petersburg.

Taimyrskie kul'tury i problema zaseleniia Vostochnoi Sibiri (Cultures of Taymyr and the Peopling of East Siberia). Co-authored with Galina N. Gracheva. In *Ad Polus*. G. N. Gracheva, ed. Pp. 37–8. St. Petersburg.

Vozhpaiskaia kul'tura na Zapadnom Taimyre i voprosy eie etnicheskoi prinadlezhnosti (The Vozhpay Culture of Western Taymyr and the Question of its Ethnic Affiliation). In *Ad Polus*. G. N. Gracheva, ed. Pp. 19–28. St. Petersburg.

Voprosy poiavleniia olenevodstva u narodov Evropeiskogo i Zapadno-Sibirskogo Zapoliaria (The Appearance of Reindeer Breeding among the Peoples of the European and West Siberian Arctic). In *Ad Polus*. G. N. Gracheva, ed. Pp. 111–118. St. Petersburg.

1996

Mnogoslainoe poselenie Mys Vhodnoi (The Stratified Site at Mys Vkhodnoy). In *Drevnosti Russkogo Severa* 1. A. N. Bashenkin and V. Ia. Shumkin, eds. Co-authored with Vladimir Ia. Shumkin and Vladimir V. Pitulko. Pp. 123–133. Vologda.

Neolit Zabaikalia (The Neolithic of the Trans-Baikal Region). In *Neolit Severnoi Evrazii*. S. V. Oshibkina, ed. Co-authored with Mikhail V. Konstantinov. *Arkheologiya*, vol. 3. Pp. 306–10. Moscow: Nauka Publishing House.

Vostochnaia Sibir' i Dalniii Vostok (East Siberia and the Far East). In *Neolit Severnoi Evrazii*. S. V. Oshibkina, ed. Pp. 270–329. Moscow: Nauka Publishing House.

1998

Drevniaia istoriia Taimyrskogo Zapoliar'ia i voprosy formirovaniia kul'tur Severa Evrazii (Ancient History of Taymyr and the Formation of North Eurasian Cultures). V. V. Pitulko and V. Ia. Shumkin, eds. St. Petersburg: Dmitry Bulanin Publishing House.

Appendix 2: Suggested Readings

Major Books and Articles on Prehistoric Cultures, Environment, and Indigenous People of Northern Eurasia Published after 1990

COMPILED BY VLADIMIR PITULKO
AND IGOR KRUPNIK

Afanas'eva, Galina M.

1990 *Traditsionnaia sistema vosproizvodstva nganasan (Problemy reproduksii obosoblenykh poluliatsii) (Traditional Breeding System of the Nganasan: Issues in Reproduction of Human Isolates)*. Moscow: Institute of Ethnography, USSR Academy of Sciences. Vols. 1-3.

Anderson, David G.

2000 *Identity and Ecology in Arctic Siberia: The Number One Reindeer Brigade*. Oxford: Oxford University Press.

Anderson, Patricia, and Anatoly V. Lozhkin, eds.

2002 *Late Quaternary Vegetation and Climate of Siberia and Russian Far East (Palynological and Radiocarbon Database)*. Magadan: Northeast Science Center.

Andreev, Andrei A., P.E. Tarasov, V.A.

Klimanov, M. Melles, O.M. Lisitsyna, and

H.-W. Hubberten

2004 Vegetation and Climate Changes around the Lama Lake, Taymyr Peninsula, Russia during the Late Pleistocene and Holocene. *Quaternary International* 122:69-84.

Andreev, Andrei A., Christine Siegert, Vladimir A.

Klimanov, Aleksandr Yu. Derevyagin, Galina N.

Shilova, and Martin Melles

2002 Late Pleistocene and Holocene Vegetation and Climate on the Taymyr Lowland, Northern Siberia. *Quaternary Research* 57:13-50.

Baskin, Leonid M.

2000 Reindeer Husbandry/Hunting in Russia in the Past, Present, and Future. *Polar Research* 19(1):23-29.

2005 Khlobystin, Leonid. In *Encyclopedia of the Arctic*, vol. 2. Mark Nutall, ed. Pp. 1083-85.

Bolshiiyanov, Dmitrii Iu., and Viacheslav M.

Makeev

1995 *Arkhipelag Severnaia Zemlia: Oledenenie, istoriya razvitiya prirodnoi sredy (Severnaya Zemlya Archipelag: Glaciation and Environmental*

History). St. Peterburg: Gidrometeoizdat Publishing House.

Clyden S. L., L. C. Cwynar, and G. M. MacDonald

1996 Stomate and Pollen Content of Lake Surface Sediments across the Tree Line on the Taymyr Peninsula, Siberia. *Canadian Journal of Botany* 74:1008-15.

Clyden S. L., L. C. Cwynar, G. M. MacDonald, and A. A. Velichko

1997 Holocene Pollen and Stomate from a Forest Site on the Taymyr Peninsula, Siberia. *Arctic and Alpine Research* 29:327-33.

Dikov, Nikolai N.

1993 *Aziia na styke s Amerikoi v drevnosti (kamennyi vek Chukotskogo poluoostrova) (Asia Joining America in Antiquity. The Stone Age of the Chukchi Peninsula)*. St. Petersburg: Nauka Publishing House. English edition: *Asia at the Juncture with America in Antiquity*. Translated by Richard Bland. Anchorage: National Park Service, 1997.

Fedorova, Natalia V., ed.

1998 "Ushedshie v kholmy." *Kul'tura naseleniia poberezhii severo-zapadnogo lamala v zheleznom veke (Gone Into the Hills. Culture of the North-western Yamal Coast Population in the Iron Age)*. Ekaterinburg: Ekaterinburg Publishing House.

Fedorova, Natalia V.

2000 Olen', sobaka, kulaiskii fenomen i legenda o sikhirtia (Reindeer, the Dog, the Kulay Phenomenon, and the Legend of the Sikhirtia). In *Drevnosti lamala 1*. A. V. Golovnev, ed. Pp. 54-66. Ekaterinburg and Salekhard: The Ural Branch of the Russian Academy of Sciences.

Fedorova, Natalya and William W. Fitzhugh

1998 Ancient Legacy of Yamal. In *Zhivoi lamal/Living Yamal*. Igor Krupnik and Natalya Narinskaya, eds. Pp. 50-5. Moscow: Sovetskii Sport Publishing.

Fitzhugh, William W.

1997 Searching for the Grail: Virtual Archeology in Yamal and Circumpolar Theory. In *Fifty Years*

- of Arctic Research. *Anthropological Studies from Greenland to Siberia*. R. Gilberg and H. C. Gulløv, eds. Pp. 99–118. *Publications of the National Museum. Ethnographical Series* 18. Copenhagen: National Museum of Denmark.
- 1998 Ancient Times: Yamal among Prehistoric Circumpolar Cultures. In *Zhivoi Iamal/Living Yamal*. Igor Krupnik and Natalya Narinskaya, eds. Pp. 42–9. Moscow: Sovetskii Sport Publishing.
- 2002 Yamal to Greenland: Global Connections in Circumpolar Archaeology. In *Archeology: The Widening Debate*. B. Cunliffe, W. Davies, and C. Renfrew, eds. Oxford: Oxford University Press for the British Academy.
- Forsyth, James**
- 1992 *A History of the Peoples of Siberia. Russia's North Asian Colony 1581–1990*. Cambridge: Cambridge University Press (several sections focused on the peoples of Northern Siberia).
- Giria, Evgeni Y., and Vladimir V. Pitulko**
- 1994 High Arctic Mesolithic Industry of Zhokhov Island: Inset Tools and Knapping Technology. *Arctic Anthropology* 31(2):31–44.
- Goebel, Ted, Michael R. Waters, and Margarita Dikova**
- 2003 The Archaeology of Ushki Lake, Kamchatka, and the Pleistocene Peopling of the Americas. *Science* 301:501–05.
- Golovnev, Andrei V.**
- 1995 *Govoriashchie kul'tury. Traditsii samodiitsev i ugrov (Talking Cultures. Samoyed and Ugrian Traditions)*. Ekaterinburg: The Ural Branch of the Russian Academy of Sciences.
- 1999 The Nia (Nganasan). In *The Cambridge Encyclopedia of Hunters and Gatherers*. R. B. Lee and R. Daly, eds. Pp. 166–70. Cambridge: Cambridge University Press.
- 2004 *Kochevniki tundry. Nentsy i ikh fol'klor (The Nomads of the Tundra. The Nenets and Their Folklore)*. Ekaterinburg: The Ural Branch of the Russian Academy of Sciences.
- Golovnev, Andrei V., and Gail Osherenko**
- 1999 *Siberian Survival: The Nenets and Their Story*. Ithaca: Cornell University Press.
- Gracheva, Galina N.**
- 1993 K proiskhozhdeniiu tundrovogo olenevodstva (On the Origins of Tundra Reindeer Breeding). In *Ad Polus*. Pamiati L. P. Khlobystina and G. N. Gracheva, eds. Pp. 119–21. St. Petersburg: Farn.
- 1994 Nganasan. In *Encyclopedia of World Cultures. Vol. VI: Russia and Eurasia/China*. P. Friedrich and N. Diamond, eds. Pp. 280–83. Boston: G.K. Hall.
- Gracheva, Galina N., and V. I. Timofeev**
- 1993 K portretu issledovatel'ia (Remembering L.P. Khlobystin). In *Ad Polus*. Pamiati L. P. Khlobystina and G. N. Gracheva, eds. Pp. 7–10. St. Petersburg: Farn.
- Gradinarov, Iurii, ed.**
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