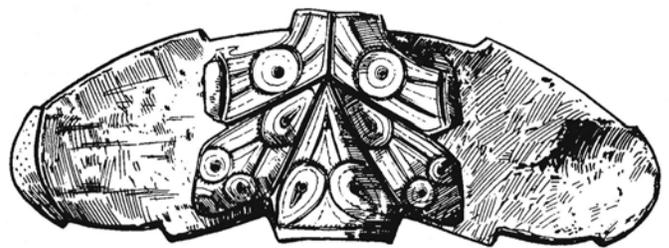
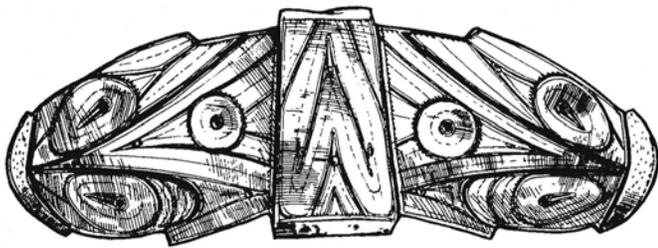


PROBLEMS OF ETHNIC HISTORY IN THE BERING SEA



THE EKVEN CEMETERY

By
Sergei A. Arutiunov and Dorian A. Sergeev

Newly Edited by
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SHARED BERINGIAN HERITAGE PROGRAM

Twelve to fifteen thousand years ago, Asia and North America were once joined by a massive “land bridge” in a region now popularly called “Beringia.” In order to promote the conservation of the unique natural history and cultural heritage of this region, the presidents of the United States and the Soviet Union (now Russia) endorsed in 1990 a proposal to establish of an international park in the Bering Strait area. The Shared Beringian Heritage Program of the National Park Service, established in 1991, thus recognizes and celebrates the contemporary and historic exchange of biological resources and cultural heritage in this region. The program seeks local resident and international participation in the preservation and understanding of natural resources and protected lands, and works to sustain the cultural vitality of Native peoples in the region. To these ends, the Beringia Program promotes the free communication and active cooperation between the people and governments of the United States and Russia with regard to Central Beringia.



ПРОГРАММА «ОБЪЕДИНЕННОЕ НАСЛЕДИЕ БЕРИНГИИ»

12 – 15 тысяч лет назад Азия и Северная Америка были связаны «сухопутным мостом» в районе, который теперь называют Берингия. В 1990 г. Президенты Советского Союза (ныне Россия) и Соединенных Штатов подписали соглашение о намерении создать международный парк в районе Берингова пролива с целью сохранения уникальной истории, природы и культурного наследия этого района. Программа «Объединенное наследие Берингии» Службы национальных парков США, организованная в 1991 г. отмечает и признает современный обмен биологическими ресурсами и культурным наследием этого региона. Цель программы – вовлечь местных жителей и международных участников в дело сохранения природных ресурсов и охраняемых территорий, а также в работу по поддержанию жизнеспособности культуры коренных народов этого района. Помимо этого, названная программа содействует свободному общению и активному сотрудничеству между народами и правительствами России и США по вопросам, касающимся Берингии.

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TRANSLATOR'S INTRODUCTION

This book was originally published as *Problemy etnicheskoi istorii Beringomor'ya (Ekvenskii mogil'nik)*. Moscow: Nauka. 1975. Several works cited by Arutiunov and Sergeev in this book are available in English. Where the authors quote English versions I have drawn the quotations from the English version.

The format of the book has been kept as much as possible like the original, that is, illustrations, tables, etc., have the same numbers in the translation as in the Russian version. Since the tables within the text of the original work were not numbered, though the ones at the end were, I have alphabetized the tables within the text in order to keep the numbers of the tables at the end as in the original.

The excavation grids were laid out at the Uelen site in the standard way, that is, alphabetically in one direction and numerically in the other. Since the Cyrillic alphabet has more letters than the Roman, I had to add letters. Please find the correspondences after the Abbreviations at the end of the Reference section. For those who read *Ancient Cultures of the Asiatic Eskimos: The Uelen Cemetery* (a prequel to the present book) by Arutiunov and Sergeev, be alerted that the alphabetical correspondences differ slightly between the two books.

With regard to Cyrillic, it should be noted that the north arrow in the illustrations retains the letter C, the Russian abbreviation for north.

By modern standards the excavation of cemeteries (without just cause) is not considered appropriate. These works dealing with the Uelen and Ekven cemeteries are not held up as a model for archaeological practices. However, the work was done and an enormous amount of valuable information on the early inhabitants of the Bering Strait region was recovered. To ignore these publications because the archaeological work doesn't meet modern conventions is to no one's benefit.

This volume has been somewhat modified by Professor Arutiunov. At his recommendation, Chapter 4 was deleted. As a result, the chapter numbers after Chapter 3 are out of sync with those in the original work. Professor Arutiunov has also kindly written an epilogue to this work.

I would like to thank Anna Gokhman for proofreading the translation, Marcia Veach for editing, Sue Roberts for doing the layout, and Julia Knowles for proofreading the final work. My special thanks go to Katerina Wessels of the Shared Beringian Heritage Program for the enormous amount of effort she puts into getting everything arranged, and Peter Richter and Robert Greenwood, also of the Shared Beringian Heritage Program, who made this project possible. Finally, we all owe the deepest gratitude to Academician Sergei Arutiunov for giving his permission to publish this landmark book in English.

Richard L. Bland

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PROLOGUE

The text published here is an abridged translation of the monograph by S. Arutiunov and D. Sergeev that can be regarded as a continuation of the earlier book *Ancient Cultures of Asiatic Eskimos*. The current volume bears the title *Problems of Ethnic History of the Bering Sea Area*. The former book was published in its original language in 1969 and the latter in 1975.

The two burial sites, Uelen and Ekven, are located on the Siberian side of the Bering Strait, at its northern and southern entrances, respectively, and are at a distance of only fifteen miles from each other. The Uelen site was excavated completely between 1957 and 1960. At the Ekven site the excavations are still continuing. This text covers only the results of excavations from 1961-1967 (189 burials), which are stored, together with the Uelen materials, at the Museum of Anthropology and Ethnography in St. Petersburg. Later excavations were conducted by the Museum of Oriental Art in Moscow, and the materials obtained are stored in that museum and have not been included in this translation.

While these later materials are still awaiting their complete publication, the two original monographs—recently translated into English—have become the most important source of knowledge about ancient cultures of the population in the Bering Strait area in the time span covering the first millennium B.C. through the first millennium A.D. They present an almost complete description of the world's largest collection of hunting tools, various utensils, and objects of art of ancient Bering Strait Eskimos found in well-dated, stratified burial complexes. Any student engaged in a study of the cultural evolution of the Eskimo maritime adaptation cannot have a complete picture of it without referring to these publications. Unfortunately, for more than two decades the absence of an English translation constituted a serious obstacle for access to this indispensable information. The publication of an English translation of these texts will make these data easily accessible to a much larger circle of scholars and students and thus greatly contribute to a broader and deeper knowledge of Eskimo prehistory.

Several parts of the original monograph have been omitted in this translation—a chapter bearing no relation to the archeological data and discussing the alleged vestiges of a clan structure among Asiatic (Yupik) Eskimos, a viewpoint quite outdated today, and a number of other paragraphs that repeat the outdated hypothesis of D. A. Sergeev about the purpose of the so-called “winged objects,” which later proved to be not a bow detail for kayaks but, as Henry Collins initially and correctly supposed, stabilizing counterweights for the rear part of a short harpoon propelled with a throwing board or atlatl. However, all chapters that contain factual information about the sites; their location and structural composition; descriptions of individual burials; interpretation and classification of various types of tools and utensils made of stone, ivory, antler, ceramics, and other materials; chronological correlations between variations of these types; and attempts at the analysis of ornamental patterns and interpretation of the meaning of carved ivory figurines, both anthropomorphic and zoomorphic, have been translated unabridged.

A deep gratitude is expressed to Ms. Barbara Crass who generously provided S. Arutiunov with initial draft translations of several chapters as early as 1996.

The initiative for excavating the archeological sites in the Bering Strait area belonged to an eminent Russian anthropologist, Professor Maxim Levin, who died in 1963, long before the publication of these materials. One of the authors, Dorian Sergeev, died in 1984. This translation was edited by the remaining author, Sergei Arutiunov, who in many cases made some necessary additions and explanations, without introducing significant changes to the original text.

The publication of this translation provides interested readers with a detailed description of two of the most important sites in the archeology of the Bering Strait area; descriptions and drawings of individual burials; illustrations showing all the relatively important items found in these burials; interpretations of many of these items and the ways they were supposedly used; and analysis of artistic,

symbolic, and ritual meaning of carved figurines, exquisitely ornamented objects, and pieces of art. It is important to notice that, as a rule, the excavations were carried on with the active participation of the native inhabitants of nearby villages, who provided valuable ethnographic information and their own interpretation of the purpose of the excavated objects.

In some cases, the authors provided scholarly interpretations of the ecological and cultural significance of various forms of tools and utensils and compared them with analogous features among neighboring and more remote cultures of the Eastern Asia and North America. The main value of the publication consists, however, in the fact that it introduces the reader to one of the largest and best-documented collections of exceptionally well-preserved material remains of ancient Eskimo culture, covering an uninterrupted sequence of nearly two millennia of cultural evolution through a number of stages and cultural variations, such as the Old Bering Sea culture, Okvik, Punuk, and Birnirk cultural complexes. Every subsequent student of Arctic prehistory will find in this publication a wealth of material for his or her own analysis, comparison, and interpretation. These are a few remarks that should probably be added to the English translation of the current monograph to update it.

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2006

PREFACE

The book being offered to the reader's attention is the second work in a series of publications on the ethnic history of the North Pacific conceived by the authors. It is thus the continuation and development of ideas set forth by the authors in the first book of this series *Ancient Cultures of the Asiatic Eskimos: The Uelen Cemetery* (Arutiunov and Sergeev 1969). The account is based on the results of excavations at the Ekven cemetery conducted by the authors from 1961 to 1970 and their comparison with other archaeological and ethnographic materials. In order to avoid repetition several questions of a general character presented in the introductory chapters of *The Uelen Cemetery* will not be touched upon here, and we refer the reader to those chapters as introductory for the whole series. Equally, in the structure of this book we tried to follow the schema that we laid out for the publication of *The Uelen Cemetery*. At the same time, the accumulation of new materials permitted many specific questions to be posed more broadly than in the preceding publication and though we examine especially questions of ethnic history of the Eskimo population of the early Bering Sea here, the logic of their analysis inevitably compelled us to touch on broader problems of ethnic history concerning the whole northwestern shore of the Pacific Ocean.

As in *The Uelen Cemetery*, the authors do not claim this book presents an exhaustive analysis of the materials being published. They try only to introduce them into scientific circulation and consider their task carried out if they succeed even tentatively in tracing the course of further comprehension of these materials. Unfortunately, the problem now before the authors is more difficult than at the publication of *The Uelen Cemetery*: they are faced with including materials of a much larger site—with about three times as many excavated burials as the Uelen cemetery—in a book of approximately the same size. In addition, in distinction from the Uelen cemetery, the materials are obviously still a long way from being complete. The authors have only the hope that, first, they succeeded in excavating and studying the basic, most representative part of the field of the burials of the Ekven cemetery, and second, that they selected as illustrations for publication the most characteristic objects from the bulk of the inventory obtained, which carries in itself the maximum historical-ethnographic information. Nevertheless, it should be remembered that, while almost all objects from the Uelen cemetery that represented any interest were included in the illustrations in the publication of the materials, here the authors were denied such a possibility, the objects represented in the illustrations of this book making up only a small, carefully selected part of huge collections preserved in the Museum of Anthropology and Ethnography in Leningrad.

Work on this book was divided in the following way: Chapters 1, 2, 4 (omitted in the English translation), 5, and 7, and the Conclusion were written by D. A. Sergeev; Chapters 3, 6, and 8 were written by S. A. Arutiunov and D. A. Sergeev. The schema of the evolution of harpoon heads was composed by S. A. Arutiunov and D. A. Sergeev. The table of distribution of types of harpoon heads was created by S. A. Arutiunov.

Drawings of the burials were made by A. A. Bogoslovskii, M. M. Mechev, and M. M. Sannikov. Illustrations of the archaeological finds were executed by artists Yu. S. Kuznetsov, M. M. Mechev, M. M. Sannikov, and T. L. Yuzepchuk.

Chapter 1

Problems of the Study of Ethnic History of the Northwest Coast of the Pacific Ocean

Archaeological-ethnographic study of the northwestern part of the Pacific Ocean basin began comparatively recently.

The Neolithic sites of these regions attest to the fact that the northwest coast of the Pacific Ocean was one of the places of formation of cultures of sea mammal hunting, which played a significant role both in opening up the Arctic and in the ethnic history of more southern regions, all the way to the Japanese Archipelago.

In this publication we will limit ourselves to an examination of those data which are connected with Neolithic sites that provide the possibility to trace the formation of economic and cultural traditions of the local population, which were preserved up to recently.

The illumination of these problems should begin, it seems to us, with extreme Northeast Asia—with Chukotka—where the Asiatic Eskimos now live, whose cultural roots go back to the early sites of the Bering Sea coast.

Archaeological investigations of these cultures began comparatively recently. However, by the first decades of the twentieth century there were collections in our museums of early Eskimo objects from the islands of Aion and Shalaurova and from Naukan (Dikov 1967a).

The first summary in Soviet literature of the archaeological data on the maritime antiquities of Chukotka—then still very sparse—was done at the end of the 1930s by A. P. Okladnikov, who distinguished three periods of development of early Eskimo culture: Old Bering Sea, Punuk, and Thule (Okladnikov 1939).

Somewhat later A. V. Machinskii published early Eskimo artifacts from the collections of D. A. Bettak and N. P. Borisov (Machinskii 1941).

Essential shifts in the study of early Eskimo cultures of Asia were noted after World War II when S. I. Rudenko directed an archaeological expedition in the Bering Strait region. The surface material collected by this expedition, as well as, though in lesser degree, excavated material from small test pits, was used by Rudenko as the basis for his book *Early Cultures of the Bering Sea and the Eskimo Problem*. The author named the culture Uelen-Okvik, after the site he discovered at Uelen. This culture, in his opinion, preceded the Okvik period (Rudenko 1972).

A year later Okladnikov discovered sites of the Birnirk type on the coast of the Arctic Ocean (Okladnikov 1947).

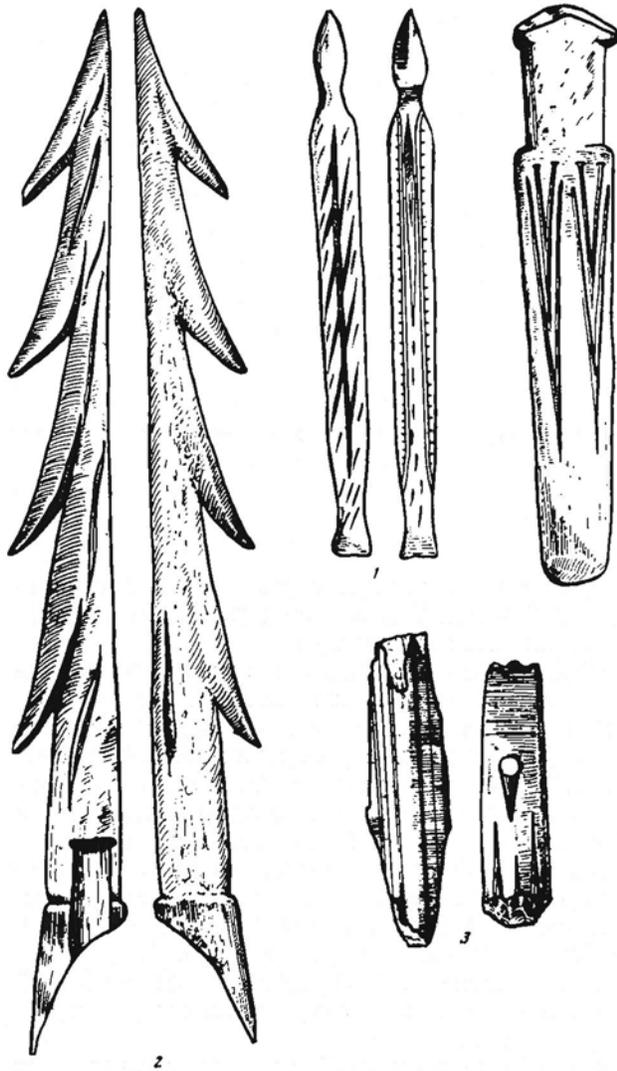


Figure 1. Objects from excavations at the Uelen site (excavations by D. A. Sergeev in 1965).

Later, similar excavations were conducted by Swedish and Japanese archaeologists (Nakayama 1934; Schnell 1932), and at the end of the 1920s by pioneers of culture construction in Kamchatka, E. P. Orlova and P. T. Novograblynykh, one of the representatives of the Itel'men intelligentsia (Orlova 1947). Dikov, citing this information in his huge review, correctly criticized the Japanese and Swedish investigators for poor documentation of the acquired collections (Dikov 1967a). On the whole, the works of this period provided little for the understanding of the history of Kamchatka since they were concerned only with its latest stages. Nevertheless, these same materials, which belong to the late Neolithic from Tar'in Bay near Petropavlovsk, later continued to appear before scholars (Lev 1935). Not until the 1960s,

In recent years, the study of early Bering Sea cultures has acquired a new, rich base as a result of investigations at the Uelen cemetery, which was discovered in 1955 by D. A. Sergeev and studied under the direction of M. G. Levin from 1957 to 1960 (Sergeev 1959), and the even larger site—Ekven cemetery—discovered in 1961 by Sergeev, which has been studied in significant part at present (Arutiunov et al. 1963).

These sites produced a vast quantity of archaeological material. Toggling harpoon heads alone, the chief tool of sea mammal hunting, which is the basis of Eskimo economy, amounted to 617 specimens. The physical materials provide a reliable base both for dating early Eskimo cultures and for determining their individual characteristics.

Both cemeteries belong to the Old Bering Sea culture, but in them are also represented objects from other cultures: Okvik, Birnirk, and Punuk. These cultures are also represented in pit houses at the early site of Ekven (Figs. 1, 2).

Some parts of the Uelen cemetery were excavated by N. N. Dikov (1967b) in 1956, 1958, and 1963. Several other sites were discovered and partially excavated by him (Dikov 1967c), including the Enmynynyn cemetery, as well as the Chinii (Sini) cemetery, discovered by Sergeev in 1961. As far as can be judged by the available publications, these sites belonged to the same cultures that were represented by materials from Uelen and Ekven cemeteries.

Archaeological investigations were begun in Kamchatka somewhat earlier than in Chukotka. Initially these were predominantly late, so-called prehistoric sites, investigated in 1910–1911 by W. I. Jochelson (1930).

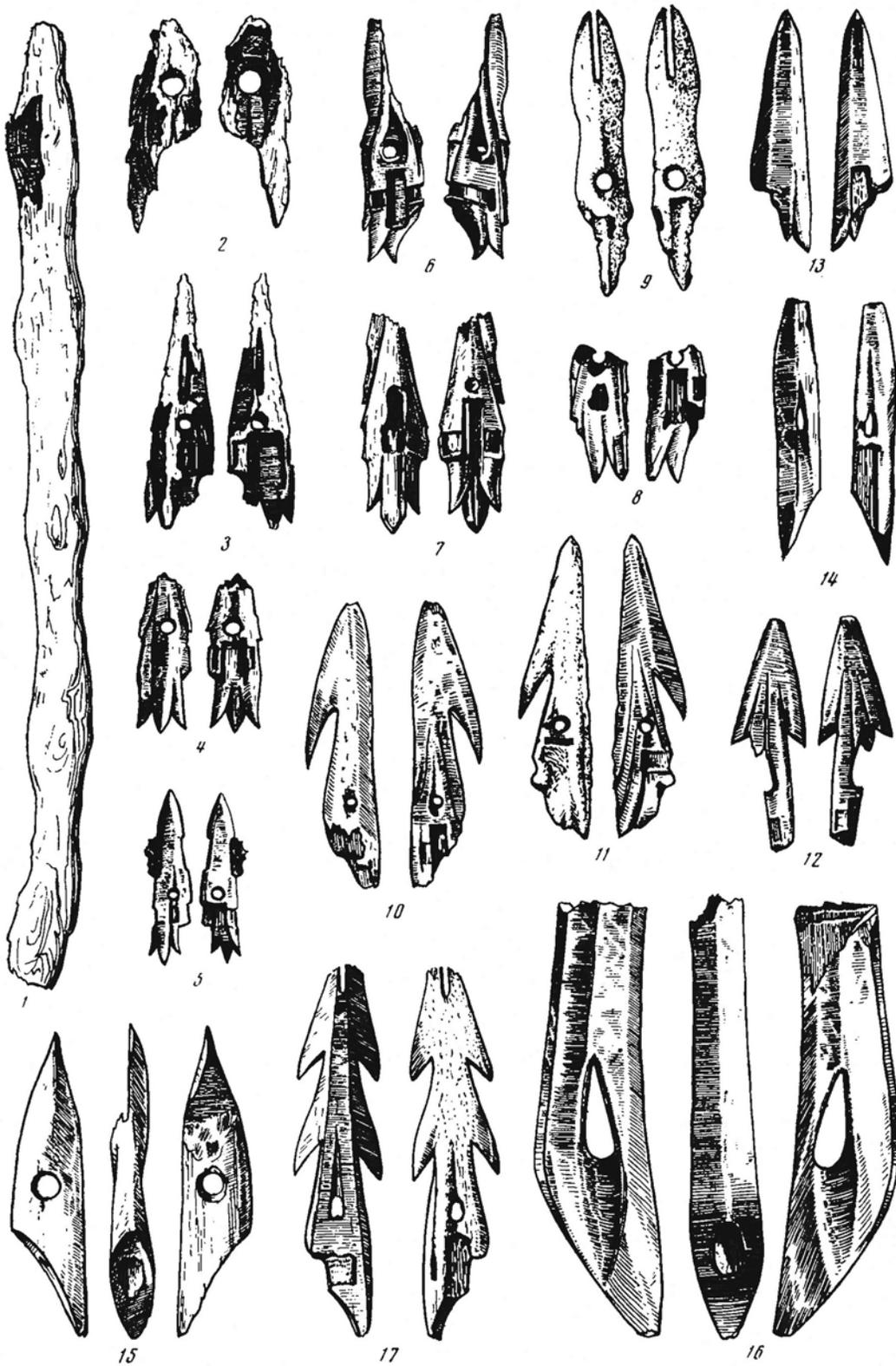


Figure 2. Objects found in the ruins of pit houses of the early Ekven site. 1—Item of walrus tusk with the remains of Old Bering Sea decoration; 2–17—Toggling harpoon heads.

as a result of excavations in Kamchatka subsequently conducted by Dikov, were several older sites discovered, the basis of which is a multi-component site on the shore of Ushki Lake in the Kamchatka River valley, where different stages are represented—from the Upper Paleolithic to the Late Neolithic. Especially interesting in these sites, as stated by the director of the excavations, is the similarity of the stone industry of the sites' Upper Paleolithic horizons with the industry on Anangula Island (Aleutian Islands) and Paleolithic sites of Alaska (Dikov 1967a).

For later times, approximately the second millennium B.C., points of similarity are noted again with Aleut and Eskimo traditions: shaped scrapers and knives, oblong ground adzes, labrets, and so on (Dikov 1964).

Sites of the Okhotsk coast at the beginning of the 1930s were initially investigated by M. G. Levin. He examined the Neolithic sites (sites of the ancestors of the Koryak) on the island of Zav'yalova (Ol'skii Island) (Okladnikov 1947).

Okladnikov's expedition worked in these places in 1946, the finds from which permitted the scholar to propose the hypothesis of a special Okhotsk homeland for the formation of a sea mammal hunting culture. Later, Old Koryak and Old Kerek sites were excavated by A. V. Belyaeva (Pytlyakov and Belyaeva 1957) and R. S. Vasil'evskii (1961).

Just as early mainland Beringia—and the Bering Strait that formed there later—were first the dry land and then sea routes between the Asian and American Arctics, the chain of the Kurile Islands and the islands of Sakhalin and Hokkaido that are closely connected to them were evidently the most favorable route for ethnic movement between the middle and northern parts of the Pacific basin.

Archaeological investigations in the Kuriles were begun by R. Torii in 1899. In 1929–1930 the Swedish expedition of S. Bergman worked in the Kuriles, and based on these materials I. Schnell described several sites. In the 1930s, O. Baba worked in the northern Kuriles. Later investigation of the early history of the Kurile Islands is connected with the works of R. V. Chubarova (Kozyreva) (Chubarova 1960; Dikov 1967a).

At the end of the nineteenth and beginning of the twentieth centuries archaeological collections were made on Sakhalin. The implementers were the Russian researchers I. S. Polyakov, L. Ya. Shternberg, and B. O. Pilsudskii. The works published by these authors chiefly concern the ethnography of Sakhalin, while the archaeological materials were not published.

From 1907 to 1940, on southern Sakhalin, excavations were rather widely conducted by Japanese archaeologists. An exhaustive bibliography of these works is given in an article by I. Masakazu (1963).

In the post-war years, archaeological excavations on Sakhalin have been conducted in large measure by R. V. Kozyreva, and the results are summed up in her book *Ancient Sakhalin* (Kozyreva 1967).

The region of Hokkaido Island has been archaeologically rather well studied by Japanese archaeologists, and there are several bibliographies based on these works (Befu et al. 1964; Okada et al. 1967).

The overwhelming majority of works based on the Neolithic of Hokkaido are dedicated to cultures of the Jomon circle and cultures close in form to them. We do not examine these cultures here, but rather limit ourselves only to the Okhotsk circle of cultures, which do not include such a vast body of literature (Nakamura 1955, 1960).

Thus, it can be said that rather vast material on the history of the northwest coast of the Pacific Ocean has been accumulated by science, which permits setting forth some hypotheses.

It is impossible within the framework of this survey to present all the points of view on the numerous sites and cultures of Northeast Asia, so we will limit ourselves to a discourse only on those suppositions that seem to us the most essential and probable.

It is beyond doubt that during the Paleolithic era the first wave, and probably several subsequent waves, of proto-Indians passed through Beringia. Through Jochelson's light hand it was for a long time believed that, of the peoples of Asia, the closest to the Indians were the Paleoasiatics—the Chukchi and Koryak—while the Eskimos were a wedge that intruded from outside and divided that age-old community (Jochelson 1926).

However, the investigations of G. F. Debets (1951) and M. G. Levin (1949) convincingly showed that from the point of view of physical anthropology the Eskimos are not at all a wedge between the Indians and the Paleoasiatics, but on the contrary are rather a connecting or intermediate link between them.

Thus, the most probable schema for the change of populations on the huge coasts of the northwestern part of the Pacific Ocean is this: In the Paleolithic were the proto-Indians, who were oriented toward America and could have formed several waves at different times in the settlement of America; later, there were ancestors of the Eskimos and their relatives the Aleuts (proto-Eskimo-Aleuts); and still later, in what is now viewed as the historical period, the early Paleoasiatics, ancestors of the present-day Chukchi and Itel'men.

However, speaking of the Eskimos as a people occupying an intermediate position between the Indians and the Paleoasiatics, one cannot help but note that all the latter are substantially closer in physical, anthropological, ethnographic, and perhaps even linguistic regard to the Eskimos than to the Indians. It is hardly possible to argue with the fact that the Eskimos are part of the circle of Asiatic Mongoloids and not American Mongoloids in their physical type. There follows the logical necessity to suppose a substantial geographic barrier and chronological break between the arrival in America of the Indians and the arrival of the ancestors of the Eskimos; the chronological break that existed between the movement of the ancestors of the Eskimos and the Chukchi and other Paleoasiatics, who followed them into the extreme Northeast, was not so significant. Evidently, the ancestors of the Indians who arrived in America were there in isolation and did not acquire the later-developed specific features of the Asiatic Mongoloids that are present among the Eskimos.

A barrier that might have contributed to this isolation could have been either the glaciation of the mountains in Alaska, which occurred in the Upper Paleolithic at the Pleistocene-Holocene boundary, or the disappearance of the dry land of Beringia and the formation of the Bering Strait close to the same time, which most probably occurred before the ancestors of the Eskimos arrived in this region. The few remains of the Indian rear guard, if it existed, was most probably assimilated without a trace by a large wave of proto-Eskimo-Aleuts.

In this plan it is possible to explain the obvious similarity between the stone industry of the Upper Paleolithic horizons at the Ushki site and the technical methods recorded at the Alaska Paleolithic sites of Kogruk and British Mountain that have been investigated in recent years, as well as at the site on the island of Anangula (Dikov 1967a), or the Ushki willow-leaf points and the American points of Lerma type. This similarity can be interpreted in two ways: either the Ushki finds in this layer should be considered sites of a population—related to the Indians—that remained in Asia, or they must be assigned to that time when the ancestors of the Eskimo-Aleuts had already begun to arrive on the American continent and the Aleutian Islands. In addition, it is possible, as S. P. Krasheninnikov (1949) has written, that the penetration of the ancestors of the Aleuts into the Aleutian Islands could have occurred not only along the northern shores of the Bering Sea, but also directly from Kamchatka through the Commander Islands. Of course, in this case the presence of a highly developed maritime technology would have to be accepted for the people of this period, and what is more, the chronological break between the date accepted by Dikov for the Ushki sites (twelfth millennium B.C.) and the dates of Anangula (fifth to sixth millennium B.C.) is too great. It is difficult to concede that penetration of the Eskimo-Aleuts into the eastern Bering Sea could have taken place so early.

In addition, it is also reasonable to object to making the dates obtained by so-called precision methods absolute: it should be considered that Kamchatka, the Aleutian Islands, and Alaska are a zone of volcanism, which naturally does not contribute to precision in radiocarbon analysis with the dating of early sites. These phenomena—volcanism and the tsunamis connected with it—possibly explain why no traces of the presence of humans are preserved in the Commander Islands, though it is fully possible that it occurred there. At least, this was the situation when the Russian original of this book was being written. However, more recent excavation by the late Vitalii Lenkov, apart from finding the remains of the winter camp of the ship-wrecked sailors of Commander Vitus Bering, have also discovered a few traces of some Neolithic settlers presence on the Bering Island, consisting of some stone tools, more or less similar to Neolithic industry of Kamchatka. (Lenkov's personal communication to Arutiunov).

It is possible that in connection with volcanic events the chronology of many sites was lowered by a significant degree. Here it is appropriate to remember that in the history of the study of the Bering Sea the dates of different cultures have been repeatedly subjected to reexamination toward a lesser antiquity: this is true of the Ipiutak, the Denbigh Complex, the Okvik finds, and in particular to Rudenko's proposed Uelen-Okvik stage. The materials from the Uelen site, which served as a basis for the construction of this stage, were initially dated to the end of the second and beginning of the first millennia B.C. (Rudenko 1972). Based on new data for the site, it belongs chronologically to the seventeenth to eighteenth centuries, that is, to that time when the Chukchi began to settle in the Eskimo village of Uelen and the process of assimilation of this earliest Eskimo village by the Chukchi was intensively begun. This is convincingly borne out by the data of both archaeology and folklore (Arutiunov and Sergeev 1966).

However, aside from how the question about the ethnic association and absolute dating of the earliest cultures of Kamchatka known to us will be resolved, there is perhaps no doubt now that the whole Asian coast of the Bering Sea, including Chukotka and Kamchatka, was settled for a long time before our era by ancestors of the Eskimos and Aleuts or tribes ethnically close to them. This is indicated by numerous data from toponymics, the general lexicon, and ethnography (Vdovin 1961). Dikov is indisputably right when he says that "the spread at this time in Kamchatka of the custom of decorating the lip with distinctive stone plugs, so-called labrets, point to the same direction of cultural and, most probable, ethnic connections" (Dikov 1964), just as with several other elements of material culture.

By contrast, Dikov's treatment of beads found in an Ushki burial as an indicator of Kamchatka-Indian connections (by analogy with wampum) can in no way be accepted as convincing, since such beads were already very widely known in the Upper Paleolithic and did not represent ethnic specificity: it is sufficient to remember the exceptional wealth of such beads in a burial excavated by O. N. Bader in the Vladimir District (Bader 1967).

Thus, it can be stated that for a long time before our era the western shores of the Bering Sea were settled by proto-Eskimo-Aleuts. Unfortunately, no sites are presently known in which it would be possible to trace the gradual development of the highly developed and specialized culture of sea mammal hunting characteristic of the Eskimos and Aleuts. We have at our disposal material that characterizes this culture in later stages—in the form of the early sites of Chukotka. This is for the first centuries B.C. and the first millennium of our era, when this culture is already present in fully developed form. Later sites characterize the culture of the developed Punuk and the so-called "pre-historic" period, up to the seventeenth century. But taken in aggregate, these sites provide such rich material that on that basis alone it is possible to undertake an attempt at a retrospective reconstruction of the preceding stages.

Such an attempt becomes possible because in the region being examined the cultural tradition has remained unbroken and continuous throughout the course of several millennia up to the present time. Owing to this, interpreting and extrapolating the past of the archaeological material is especially eased, since it takes on a living resonance in light of ethnographic data about the methods and characteristics of hunting, about social structure in the recent past, and so on. Drawing on ethnographic, folklore, and ethnolinguistic materials, which constantly find clear parallels in the archaeological sites of all stages of the early

Eskimo culture, provides a clear picture of the ethnographic history and cultural evolution of sea mammal hunters of Northeast Asia.

Toward this goal the authors have already dedicated several publications, including the materials from the Uelen cemetery. In this book we will introduce data on the Ekven cemetery into scientific circulation and make an attempt at some generalizations about new as well as about earlier published materials in the region of the early ethnic history of the subarctic part of the Pacific basin.

Chapter 2

Ekven Cemetery (Site Description)

As early as September 1960 we received information from the geologists working at Cape Verbluzhii (also shown as Cape Sphynx on some British and American maps) that they had found human bones and skulls on the surface in the Eilyukeu River region. In 1961 D. A. Sergeev examined the area between the river and Vetvisty Creek at Cape Verbluzhii near the ruins of Ekven village, situated on two hills 800 m from the sea. Sergeev found and excavated individual burials scattered over a large area and at a great distance from one another.

A topographical survey of the Ekven cemetery and the division of the site into quadrants were done in 1962. Four areas of excavation were identified (Fig. 3). One area was on the Western Hill, where the burials were marked with the designation Z, and the rows with letters A, B, C . . . to BB.¹ The second area was on the south slope of the Western Hill, where the burials were marked with the designation Z₁ and the rows with A₁, B₁, C₁ . . . to BB₁. The third area was on the Eastern Hill, where the burials were marked with the designation Z_b and the rows with A_b, B_b and so on; and the fourth area was on the north slope of the Eastern Hill and the burials were marked Z_c and the rows A_c, B_c, etc.

The stratigraphy of the Eastern and Western Hills differs. The soil of the Western Hill is a sandy clay near the surface; below that is an amorphous crust of weathered limestone that forms the rocky foundation of both hills. The soil of the Eastern Hill is mostly gravel, consisting of pieces of the same rock. These pieces of rock, which are scattered all over the hill, often contain traces of ancient organisms of possible paleontological interest. The crust of weathered limestone is a grey ash-like mass that can easily be ground into powder. The burial pits can be seen only rarely in such conditions, such as places where the sandy clay layer is very solid or where the pit was covered with a different soil type.

Permafrost lenses are very rare in the cemetery and in most cases the lower level of the grave is above the contemporary level of permafrost.

The Ekven cemetery is similar to the Uelen and is a local variant. This can be seen in the art objects and ornamentation.

The craniological material found at the cemetery showed very pronounced Eskimo dolichocranic traits.

A new type of burial was found during excavations in 1962–1967 in the Ekven cemetery. Besides the previously known extended skeletons, skeletons in flexed positions were found. These had not previously been seen in Eskimo cemeteries.

¹ Please find the Russian-Roman alphabet correspondences after the Abbreviations at the end of the Reference section.—*Trans.*

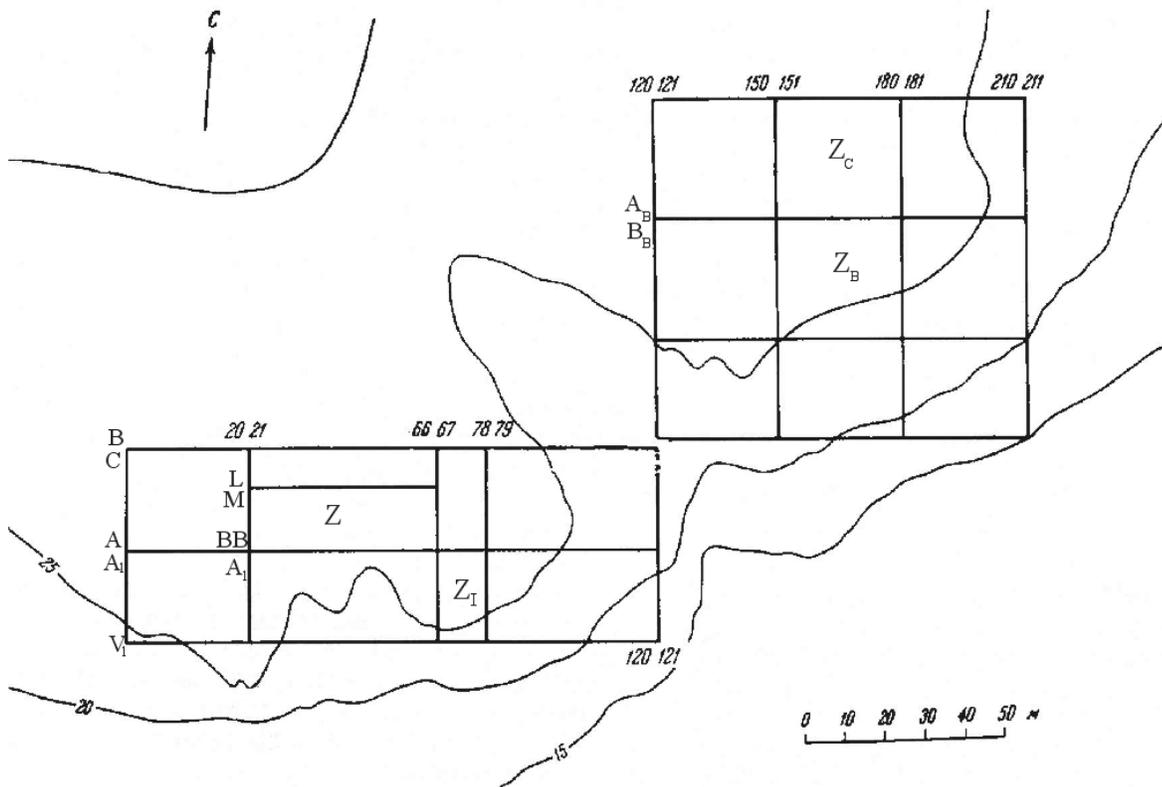


Figure 3. Layout of the field of excavation on the Western and Eastern Hills of the Ekven cemetery.

A large number of double and multiple burials were found. Some of those burials, for example Burial 21, were obviously damaged by a later burial. Along with the main skeleton, the bones of other individuals were found in some graves. This leads us to the conclusion that these burials were placed in areas with older burials and that the older skeletons were damaged during the later burials. Only some of the earlier bones remained in the new graves or were returned with the fill dirt.

The inventory of the Ekven cemetery consists of the same kinds of objects that were described in the paper on the Uelen cemetery. The same names and markers mentioned in that paper are used here. For example, the types of harpoon heads are indicated by the same formulae (a detailed discussion of those formulae is in the third chapter, which describes toggling harpoon heads only).

Individual fragments of human bones and various other objects can be found on the surface of the cemetery. A mattock was found in Quadrant V-161, a harpoon socket piece in N-169, a walrus-tusk bola in F₁-77, a harpoon foreshaft in J₁-63, a walrus-tusk item with holes in it in R-45, a bola in W-38, an offertory trough in H-49, a toggling harpoon head (2A2x2M3) in C₁-66, a toggling harpoon head (2A2y2M3) in E₁-67, another toggling harpoon head (2A2x2M3) and two bird bones in F₁-72, and a fragment of a slate point and fragments of pottery in L₁-79.

The following objects were found on the border of Quadrants W-35 and S-36 in the sod: a toggling harpoon head (1A1XP), a bola, an ice pick, two quartz pebbles, the lateral prong of a bird spear, and pottery fragments.

Twenty-seven bolas of walrus tusk and teeth were found in Quadrant L₁-80 at a depth of 0.2 m below the surface.

Two fragments of sandy slate and pieces of pottery were found in Quadrant G₁-73. The following objects were found in Quadrant G₁-74 under the sod at a depth of 0.20 m: a carved walrus-tusk figure, two sawed plates of walrus tusk, and 56 walrus-tusk and teeth bolas. Fragments of pottery were found in Quad L_b-172 at a depth of 0.25 m.

One hundred fifty two burials were excavated at Ekven cemetery during the period from 1961 to 1965. Another 37 burials were uncovered in 1967, thus making a total of 189 burials, included in this book. For technical reasons the results of later excavations of 1970 and 1974 could not be included in this book, although it was published only in 1975. The excavations of 1970-1974 have yielded burials 190-210.

Burial 1. Quadrants F₁-77, U₁-77. This burial was marked by whale scapulas on the surface. These scapulas were placed at the feet and head. The burial was located on the Western Hill with the head oriented to the north; the depth of the floor was 0.65 m. The anatomical order of the bones was mostly preserved. The skull was on the right side, the mandible broken. The skull and pelvis were crushed. Judging by the bones, this was a burial of an individual 14-15 years old. A dog mandible was found to the left of the skull. A walrus-tusk mattock was found near the mandible of the deceased. A slate knife with bone dowel was below the mattock. An arrowhead and a bone figurine were to the right of the forearm. Three fragments of a bird spear head were found level with the pelvis. Arrowheads were in the area of the right thigh and knee.

Burial 2. Quadrants V₁-76, 77. This burial was located on the Western Hill with the head oriented to the east; the depth of the floor was 0.40 m. The skeleton was in an extremely poor state of preservation: the skull and vertebrae were missing and the pelvis was crushed. A bone snow shovel was found in the skull area with an adze not far away. A harpoon foreshaft and a float plug were to the left of the left shin.

Burial 3. Quadrants T-34, 35; U-34, 35. This burial was located on the Western Hill and could be seen from the surface because of the whale scapulas that bordered the burial on the south and north. The head was oriented to the south; the skull was at a depth of 0.20 m and the feet at 0.35 m. The skeleton was in anatomical order with the skull on its base, turned to the left (Fig. 4). We should note that Burial 3



Figure 4. Burial 3.

was in the same structure with Burials 4–6, and had been placed directly over Burial 4; Burial 4 was over Burial 5. The following goods were found in Burial 3: an awl made of deer bone was to the right of the skeleton at shoulder level, with two animal bones placed below; a point of walrus tusk was found farther to the right. A cluster of objects was found to the left of the point near the right upper arm: two non-toggling harpoon heads, a whale bone item, a club, four bird-spear prongs, a toggling harpoon head (1A2x2P), and a harpoon blank. A “winged object” was lying near the wrist bones, and on the right side of the chest were a fragment of a bone shovel, a slate adze, a burin, and a flake.

Seven toggling harpoon heads (one each of 2A2XM4, 1A2y2P, 1BXM, 1BYM, 1A2XP, and two of 2A2y2M4), a harpoon socket piece, a bone article, an ice cleat, an article of walrus tusk, the handle of a flaking tool, a seal’s ousic (Eskimo term for gubernaculum or os penis), a fragment of the upper part of a walrus tusk, a bear tooth, and five unidentified flakes were in the thigh area; a bone spoon, a mouthpiece for a bow drill, two walrus-tusk pointed objects, two slate points, and a fragment of a slate knife were near the right knee; and a worked-bone item, a bola, a harpoon head (1A2x2P), a fragment of pottery, a piece of siliceous slate, a quartz pebble, a drill mouthpiece, three non-toggling harpoons, a walrus-tusk article, and a stone tool with an antler handle were located below. A toggling harpoon head (2A2XM4) was near the left thigh on the outside, and a foreshaft was near the left shin on the outside. The skeleton’s shins were covered with a whale scapula.

Burial 4. This burial was located on the Western Hill with the head oriented to the south. The depth of the floor was 0.30 m at the head and 0.35 m at the feet, with the skeleton under skeleton 3. The skull was lying on its base and was turned to the left side. The bones were in anatomical order with the hands in the abdominal area. An adze and an item of worked wood were found near the left forearm, with a harpoon head (1A2yP), a decorated item, and an arrowhead placed on the pelvis. A snow shovel was on the left thigh and a bone sleeve for the adze was under the shovel. Clubs, two fragments of bone, and a stone point were between the thighs. A stone adze with a bone sleeve and a walrus tooth were near the outside of the left knee. A fragment of a walrus-tusk tool and two sinkers were between the shins. A fragment of worked antler was near the outside of the right shin.

Burials 5–6 were located on the Western Hill below Burials 4 and 3. The depth of the floor at the skull of Burial 5 was 0.50 m, for Burial 6 it was 0.49 m. The depth of the floor at the feet of Burial 5 was 0.50 m and for Burial 6, it was 0.52 m. The orientation of Burial 5 was south; for Burial 6, it was north.

Skeleton 5 was supine, the skull crushed, the pelvis fragmented, and the left arm and part of the chest covered with the shin of skeleton 6. Probably because of the soil shift, the thighs and shins diverged. A considerable portion of the bones of both skeletons was mixed and the anatomical order in a number of areas was broken. The skull of skeleton 6 was lying on its base, and the bones of its upper arms were near the right knee of skeleton 5.

The inventory included a piece of siliceous stone in the abdominal area of skeleton 5; a broken walrus-tusk adze handle carved with zoomorphic images, a broken stone awl, and the handle of a flaking tool were between the thighs. A harpoon head (1A2XP), a foreshaft, a handle carved in the shape of a walrus head, an antler plate with a hole, nine walrus-tusk items, a club, and an arrowhead were between the knees; two pieces of slate, a stone tool, two fragments of slate knives, and a spoon made from a seal scapula were between the shins. A cluster of objects near the knee and left shin of skeleton 5 included three walrus-tusk bracelets, two slate knives—one with a bone handle and one with a wooden handle, a fragment of a slate knife, four sinkers, a broken walrus-tusk item, and a handle in the shape of an animal head.

Fragments of a pot and a fragment of bird bone were near the skull of skeleton 6; a mattock was to the left of the skull. Needles, an awl, and two slate articles were on the chest; walrus-tusk bracelets and a bone article were on the right upper arm. Two large needles were alongside the right upper arm.

A wooden platform was clearly visible in the bottom of the grave.

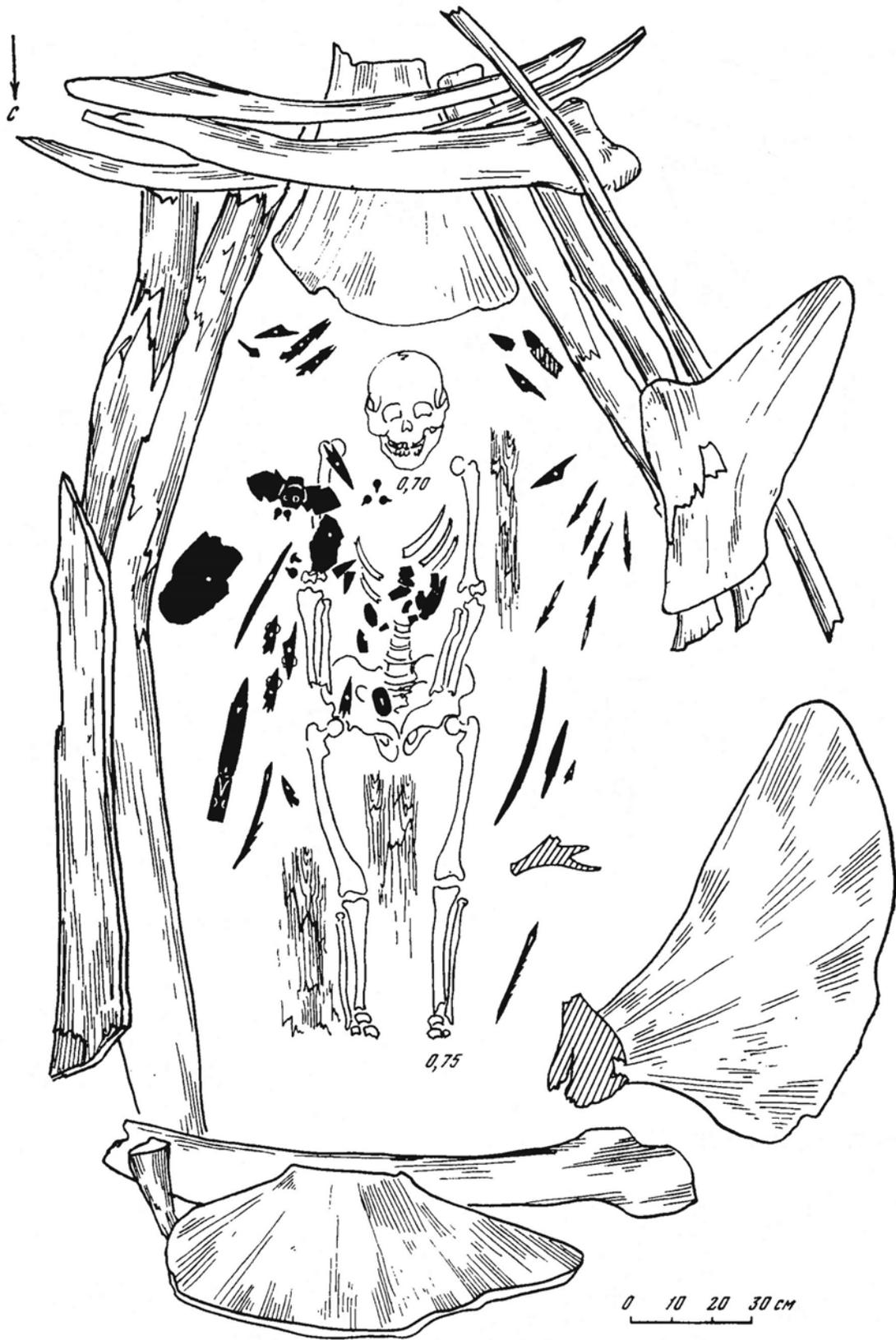


Figure 5. Burial 9.

Burial 7 was located in Quadrants X-44-46; Y- 44-46; Z-44-46 on the Western Hill. A whale scapula coming to the surface made it visible. The head of the grave was oriented to the south. The bones were in anatomical order; the skull was on its base. The depth of the floor was 0.50 m at the skull and 0.45 m at the feet. There were traces of wood above the burial and under the skeleton. A trough made of a deer shin was to the left of the skull, a bird bone was nearby, and three stone points were below. A slate slab was on the left shoulder and a fragment of a whetstone was below that slab. Traces of ochre were found to the right of the skull, with a bone arrowhead in the same place. A walrus-tusk mattock was near the right shoulder; fragments of slate knives were in the chest area; a point was near the forearm; and a decorated bow drill, a decorated walrus-tusk trough, and a figurine in the shape of a seal head were in the abdominal area. A burin handle in the shape of a bear head, a decorated burin handle, a walrus-tusk chain with trinkets, an ulu handle, an arrowhead, and a deer tooth were in the pelvic area. Two bird bones and a decorated trough of walrus tusk were near the right thigh; a trough scraper and a slate weapon were near the left thigh between the legs. A walrus-tusk bow drill with anthropo-zoomorphic decoration was near the feet. Decayed remains of bone needles were in the chest area.

There was a bone spoon above the burial at a depth of 0.20 m.

Burial 8 was located in Quadrants O-37, 38; P-37,38; Q-37,38 on the Western Hill. It was defined by whale scapulas rising to the surface. The head of the grave was oriented to the south. The depth of the floor was 0.30 m at the skull and 0.25 m at the feet. The skeleton was supine, its arms extended along the body, and the bones in anatomical order. The grave goods included fragments of two clay vessels located to the left of the skull. There was a cluster of objects between the skull and the vessels, consisting of a needle-shaped article, bracelets, a piece of worked bone, an anthropomorphic carving of walrus tusk, a miniature toggling harpoon head (1A2y2P), a toy adze handle, and an imitation of a clay pot made of walrus tusk (a toy?). An article that looks like a “winged object” was found near the back of the skull along with a miniature slate knife. A retouched siliceous flake was to the left of the left shoulder. A nail-shaped item was in the chest area and bone bracelets on the upper left arm. There was a cluster of slate tools to the left of the skeleton in the forearm area. Three walrus-tusk articles, the breast and long bones of a bird, two pieces of ochre, a fragment of a shell, a point, and a bone medallion with a carved image of a human face were near this cluster.

Burial 9 was located on the Western Hill. It was in the same structure as Burial 8, although deeper (Fig. 5). The grave was oriented to the south. The skeleton was supine and the bones were in anatomical order with the hands on the pelvis. The depth of the floor was 0.70 m at the skull and 0.75 m at the feet. The burial was covered with whale ribs. The walls of the grave were formed by whale jaws, ribs, and scapulas. There were wood remains above and below the burial. The inventory contained harpoon heads (1A2XP, 2A2XP, and 2 1BYM), a burin with a bone handle, a slate point, and a bone article at the sides of the skull. There were three nail-shaped articles below the skull in the chest area; a harpoon head (1A2y2P), a “winged object,” and a fragment of slate knife with a dowel were on the right shoulder bone; nail-shaped articles, a foreshaft, and a large slate knife with a rod were farther to the right; three harpoon heads (all 1A2yP) were near the right forearm; and a harpoon socket piece, the lateral prong of a bird spear, and a harpoon head (1A2-P) were in the area of the right thigh. There were slate tools and bone articles in the upper part of the abdomen. A harpoon head (1A2yP) and a small bone plate were on the pelvic bones. There were six lateral prongs of a bird spear and one toggling harpoon head (1BYM) in the left shoulder area; a foreshaft, an ice pick, and a harpoon head (2A2yM3) were in the left thigh area. There was a fragment of antler near the left knee, and a point of a bird spear and a snow shovel near the left shin.



Figure 6. Burials 10–11.

Burials 10–11. Quadrants T–23, 24; U–23, 24. These burials are located on the Western Hill and made noticeable by wall of vertically standing whale bones extending to the surface. There were two skeletons in the structure, which were parallel to each other (Fig. 6).

Skeleton 10 was oriented to the east; skeleton 11 to the west. The depth of the floor was 0.40 m at the skull of Burial 10, 0.36 m at the skull of Burial 11, 0.47 m at the feet of Burial 10, and 0.51 m at the feet of Burial 11. Skeleton 10 was supine; the skull was on its base. The state of preservation was poor, with the bones of the left arm missing.

There was a fragment of a bear's lower jaw to the east of the skull, an anthropomorphic bone carving to the right of the skull, and a "winged object" below. An ice pick was near the right shoulder; a slate knife with wooden handle, a bone dowel, and two foreshafts were below it; a harpoon socket piece, a point, and two toggling harpoon heads (2A2y2M3, 1BXM) were near the right thigh. There was a walrus-scapula snow shovel to the right of the cluster described above. A wooden article and another item inlaid with walrus tusk were near the right foot. A cluster of objects was to the left of the skull, consisting of a harpoon head (1A2XP), a slate ulu, five points, a fragment of a slate knife, an adze with an antler sleeve, two arctic fox skulls, a hare skull, a skull cap of a hare (?), the lateral prong of a bird spear, two clubs, an oblong bone item, 16 nail-shaped and two L-shaped items that served for inlaying wood, and two dowels (?). There were two nail-shaped items near the outside of the left thigh; a harpoon socket piece, a foreshaft, and a harpoon head (1BYM3) were above the thigh and right below the layer of decayed wood. There were two harpoon heads (2A2yM3, 1A2YM3) between the legs, and the remains of a decayed wooden floor and a bear pelt under the skeleton.

Skeleton 11 was supine, with the skull turned to one side. The skeleton was in a poor state of preservation. There was a snow shovel to the right of the skull; an adze near the right forearm; a harpoon head (1A2x2P), a fragment of a worked bone article, and an arrowhead near the hand. A slate point, two arrowheads with stone points, a fragment of worked bone, a harpoon head (1BYM3), and a trough scraper were near the outside of the right thigh. Eight arrowheads, a foreshaft, a burin shaped item, and a bone awl were in the area outside of the right knee. A large slate knife and a snow shovel were to the left of the skull; a piece of slate was near the mandible; a slate blank, an arrowhead, and a spoon made from a seal scapula were in the shoulder area; and a slate knife and six fragments of worked slate were below the spoon. Also in the shoulder area were a large number of bone needles, one point, four harpoon heads (2A2y2M3, three 1A2x2P), a drill mouthpiece, a spoon made from a seal scapula, a worked bone article, a walrus tooth, a fragment of a decorated object, a harpoon head fragment and a conical article; below them were an adze, a small stone point, four harpoon heads (two 1A1x2P, 1BXM, 1BYM), a boat hook head, a long bone, and an animal tooth. There was a cluster of small objects in the abdominal area: ten nail-shaped articles, some bone needles, two pieces of obsidian, an unidentified flake, a small slate point, a nail-shaped article carved with a human face, a fragment of walrus tusk, an article of antler and an article of walrus tusk. Between the thighs there were a flaking tool handle, a trinket in the form of a burin, a pointed article, a small shovel, three articles (towing toggles?), and a stone burin in a handle; below were a flaking tool handle, two ice cleats, bracelet fragments, a model kayak of walrus tusk, two walrus-tusk sinkers, a boat hook, and a worked item. Evidence of wood was found above and below the burial.

Burial 12 is located in Quadrants I_b-158, 159; J_b-158-160; K_b-159, 160 on the Eastern Hill. On the surface, the burial was marked with stone slabs that formed the wall of the grave and rose 3-4 cm above the sod. The grave pit was hollow on the surface. A fragmented child's skull was found at a depth of 0.15 m during the excavation. The head of the grave was oriented to the southeast. The depth of the skull was 0.30 m, the feet 0.66 m. The skull and chest were lying on a platform of logs (Fig. 7), with the lower portion of the skeleton on stone slabs. The skeleton was supine; the bones were in anatomical order. The burial had the following grave goods: a "winged object" and two worked-bone articles on the chest. Two boathook heads, a walrus-tusk plate, two lateral prongs of a bird spear, a fish point, two harpoon heads (both 1BYM), an arrowhead, and two walrus-tusk articles were to the right of the skeleton in the area of the shoulder and upper arm. Two slate knives, a harpoon head (2A2XM3), a foreshaft, and a walrus-tusk arrowhead were in the area of the forearm and wrist. There was a large slate knife in the right thigh area; below it were fragments of a slate knife and a siliceous slate point lying on fragments of a bone snow shovel. A wooden bow, a bow blank, and a wooden item were to the right of the fragmented snow shovel; an antler and a bone button were in the pelvic area, and three slate points and a harpoon socket piece were near the left thigh between the legs. Objects to the left of the skeleton were a fragment of a wooden throwing board, a "winged object" with a wooden pole in it, and a slate point. In the left thigh area were a slate point, a bone ring, a slate knife fragment, a large bone needle, two arrowheads, the lateral prong of a bird spear and a bushing (both of tusk). Below these were two arrowheads, a bushing,

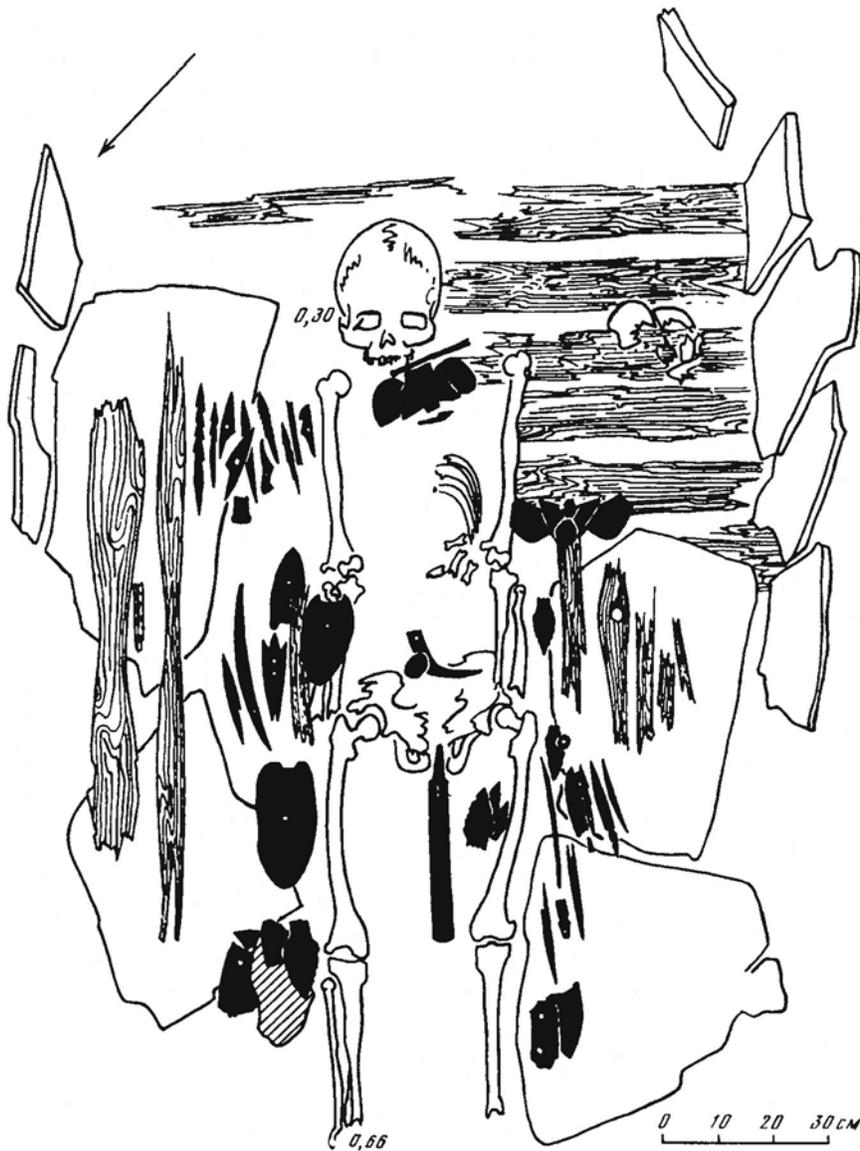


Figure 7. Burial 12.

and a trinket, all of bone. There were two fragments of slate knives near the left knee, one with two holes in it and one without any holes.

The logs of the floor were in permafrost. Among the wooden goods were the decayed remains of unidentifiable wooden objects. They were found above the permafrost level on both sides of the skeleton.

Burial 13 was located in Quadrants A_b-141-143 on the Eastern Hill bordered only at the foot by a (whale bone) wall. The head of the grave was oriented to the west. The burial depth of the skull was 0.10 m, and the feet were at 0.15 m. This was a double burial; the two skeletons were one above the other. The upper skeleton was lying on its back, the bones in anatomical order. The skull was missing but the mandible was there. The lower skeleton was smaller, and its bones were in a poor state of preservation. The skull was in relatively good condition and was lying on its base. The inventory included a bone spoon, a fragmented scapula of an animal, an adze, and two stone points above the mandible of the upper skeleton.

In the chest area of the upper skeleton was a harpoon head (1A2y2P) and a hollow shaped figure made of walrus tusk; lying on the right upper arm were two spear points and a fragment of a slate tool with a hole in it; and in the wrist area were five fragments of slate knives and a point.

There was a cluster of objects in the area of the right lower extremities, consisting of a bird breast-bone, a bone fragment, a bear canine, a fragment of the upper part of a walrus tusk, two walrus-tusk points, a sinker and plug for a float, two walrus-tusk clubs, a deer bone awl, a bone item, and a sinker under the awl. A club and a worked fragment of bone were to the right of the feet.

Objects to the right of the above cluster were an ice pick and thong fastener on top of a stone point; under these were a point, a fish spear point, the lateral prong of a bird spear, three clubs, a harpoon finger rest of walrus tusk, two walrus-tusk belt toggles—one large and one small, a walrus-tusk flaking tool, a walrus-tusk sinker, a walrus-tusk item, and a deer-bone awl. There were shin fragments from another individual and the following items located one meter east of the feet: mattocks, a toggle, a sinker, an article, and a plate, all of walrus tusk.

Burial 14 was located in Quadrants N₁-34, 35; P₁-35, 36 on the Western Hill, with the head oriented to the south. The south and southwest sides of the burial were bordered by a wall of whale bones and stones that were coming to the surface in some places. The depth of the skull was 0.37 m and the feet 0.57 m. The skull was lying on its base; the bones were in anatomical order. The grave had the following goods: three slate tools, a decorated button, shell fragments, four fragments of bone articles, a decorated mask, and a spindle-like item were found to the left of the skull. On the right collarbone were needles, needle blanks, a slate slab, a slate article, and a wooden article. Near the left forearm were a piece of sawed walrus tusk and a broken decorated ulu handle; on the left upper arm a bracelet; to the left of the thigh a deer long-bone and a trough made from deer bone; and to the right of the pelvis snow goggles.

Burial 15 was located in Quadrants W_b-152; 153; X_b-152, 153; Z_b-152, 153 on the Eastern Hill. Two vertical slabs of stone coming to the surface bordered the grave from east to west. Between these stones lay two whale jaws forming a cover for the burial. The head of the grave was oriented to the north.

Fragments of pottery and an article made of whale bone with concentric ornamentation were found level with the cover on the northwest. A decorated pail handle of walrus tusk was found at the south end at the same level. A cover of whale jaws rested on transversely placed whale ribs. The ribs bordered the burial from north to south, and the burial was under the cover. The skeleton was supine, the bones were in anatomical order, and the right hand was under the pelvis. The bones were in a poor state of preservation, and the skull was crushed. The depth of the skull was at 0.50 m and the feet at 0.45 m. The grave was filled with fine gravel. The grave goods included two harpoon heads (1A2XP, 2A2yM3) to the right of the skull; fragments of spoon handles made of antler to the left of the skull; and a mattock and bone clasp below. A long bone of a bird was under the left shoulder; pieces of ochre and one prong of a bird spear were to the left of the left thigh; and a carved bone article was near the left shin. A walrus ousic was near the right forearm, and bracelets, a walrus-figure amulet, a fragment of an ulu blade, and a walrus-tusk adze on the right upper arm. There was a trough scraper in the chest area.

A group of small objects under the skeleton in the vertebral area consisted of 13 stone points, a slate knife fragment, two duck amulets, a bone article, an article with zoomorphic decoration, and a medallion with the image of a tattooed human face. A mattock was between the thighs.

Burials 16–18 were located in Quadrants U-32, 33; V-32, 33; W-32, 33 on the Western Hill and within a wall (Fig. 8). The longitudinal axis of the burial ran from south to north. The skeletons were parallel to each other: skeleton 18 in the middle and oriented to the south; skeletons 16 and 17 located farther to the east and west of 18, respectively, both oriented to the north. All the skeletons were supine, with the bones in anatomical order but in a poor state of preservation. Skeleton 18 was missing a right shin, and part of the skull cap of 16 was crushed and displaced toward the left knee of 18. The depth of skulls 16 and 17 was 0.55 m, skull 18 was 0.65 m, and the feet of all three were at 0.80 m.



Figure 8. Burials 16, 17, 18.

Burial 16 held the remains of wood, a mattock, three prongs of a bird spear, five oblong articles of walrus tusk, and a fragment of a decorated antler plate near the skull. A float plug was near the right shoulder, a clasp and a figurine were below, a slate knife fragment was on the chest, and a snow shovel was on the pelvis.

In Burial 18 needle cases, a wooden article, an adze in an antler socket, a fragment of a slate knife with a hole in it, an ice pick, a harpoon head (1A2yP), the lateral prong of a bird spear, and a harpoon foreshaft were above the skull; a harpoon head (2A2XM3) and a prong of a bird spear were to the right of the skull; three harpoon heads (1A2XP, two 1BYM) were near the right collarbone and chest area; and bird bones, a slate tool fragment, a bushing, and two pieces of ochre were below. Two harpoon heads (1A2x2P, 1A2y2P) were to the left of the skull; one harpoon head (1A2XP) was below; and a harpoon foreshaft was in the shoulder and collarbone area. A compact cluster of objects was located on the left shoulder of 18 and the left thigh of 16 which contained 18 arrowheads with and without stone points, an ice pick, two harpoon heads (1A1y2P, 1BXM), four arrow points, one prong of a bird spear, and a carved item. Objects in the chest area of skeleton 18 were harpoon heads (1A2x2P), a worked item near the left forearm, four bear claws near the pelvis, an amulet with five animal faces under the lower backbone, ten spear points near the left thigh, shell fragments between the thighs, and a fish point and two fragments of a long-bone article near the left shin.

The burial goods found in Burial 17 were: a mattock and pieces of wood near the skull; a pail handle above (in the place of the missing shin of skeleton 18); three bone articles and a spoon above the left side of the skull; needles near the right shoulder; and three harpoon heads (2A2y2M3, two 1A2yP), a decorated pendant, an ermine skull, a slate point, two pieces of pyrite, an ulu in a bone handle with two wooden articles lying on the slate blade, a walrus tooth, a figurine of a duck, a bone article, a piece of rock crystal, and a small slate point in the chest area. In the pelvic area were two fragments of walrus tusk, pieces of walrus jaws, three miniature articles, fragments of a bracelet, and two slate tools. There was a group of slate tools (16) between the thighs. Remains of a wooden harpoon shaft with socket piece and foreshaft attached, and another foreshaft were found to the left of the right shoulder. An ulu handle in the shape of a bear was nearby. A fragment of a wooden article was near the left knee, and a “winged object” and other unidentified article were near the shin.

Burials 19–20 (Western Hill, Fig. 9). Quadrants V₁–77, 78; U₁–77. These graves could not be seen from the surface. Both of the skeletons were oriented to the south. The depth of skeleton 19 was 0.05 m at the skull and 0.42 m at the feet; skeleton 20 was 0.06 m at the skull and 0.45 m at the feet. Skeleton 19 was supine with its head down slope. The skull was lying on its base, looking to the north. The bones were in anatomical order. Both of the skeletons were in relatively good states of preservation. The right thigh of skeleton 20 was covered with the left thigh of skeleton 19. No structural elements were found in the burials. Because the bones of the two skeletons were mutually overlaid, the two burials should be considered one double burial. Grave goods near skeleton 19 were a piece of siliceous slate with evidence of retouching, located to the left of the mandible; two bone ulu handles under the slate piece; an animal jaw between the ulus and the mandible; and a slate slab with needles on it to the right of the mandible in the chest area. A deer bone fragment was near the inner side of the right forearm of skeleton 19, a whetstone was near the left forearm, an animal jaw was near the left shin, a mattock was near the outward side of the right knee, five bird bones were near the right forearm, and a decorated plate and ochre were under the skull.

Grave goods found near skeleton 20 were a piece of silicate and a rodent skull to the left of the skull, a slate knife fragment with a needle under it and a small mattock beside it on the chest, a knife handle between the thighs, a mattock on the left thigh, a piece of walrus tusk on the left shin, a piece of ochre on the inside of the left shin, and a slate knife fragment and a rodent skull under the pelvis.

Burial 21 was on the Western Hill in Quadrants S-31, T-31. This burial was a part of a complex of graves under a triangulation datum. It was bordered and partially covered with a whale jaw that came from the side wall of Burial 22. The grave could not be seen from the surface. Judging by the separated remains of the skeleton, the head of the grave was oriented to the south. Only the mandible remained of the skull. The depth of the mandible was 0.32 m. Besides the mandible and ribs only part of the long bones of the skeleton remained and were found under the whale jaw of the Burial 22 structure after it was removed. A vertical slate slab was found farther to the east of the skeletal fragments and was parallel to the skeleton.

The inventory included a walrus-tusk bracelet, a bracelet fragment, one prong of a bird spear, and a walrus-tusk hook found at a depth of 0.25 m much farther to the north from the mandible. A slate spear point and blank were below this cluster. There were arrowheads and a fragmented toggling harpoon head (2A2x2M3) on the whale jaw.

Burial 22. Western Hill. Quadrant S-30, T-30. Two whale skulls were coming to the surface and bordered the ends of this burial. The head of the grave was oriented to the south. Both the skull and feet were at a depth of 0.15 m. The skull was on its left side and fragmented. The skeleton was in a poor state of preservation, with the pelvis crushed and the fibulas under the femurs. During the excavation the skull of another individual was found near the back of the skull of the first skeleton. The other burial was located below Burial 22. One more skull that did not belong to any skeleton in this area was found near the south whale skull, and could have been brought there during the original excavation. A slate knife fragment and a mattock were found near the skull. A broken child's skull and a large fibula were found in the northeast corner of the grave. On the east, the burial was bordered by whale jaw.

The inventory included a bone article on the chest; an antler article and a pottery fragment below; one prong of a bird spear, a toggling harpoon head (1Ay2P), and a bola to the right of the skeleton; two ice picks, an antler article, and a pottery fragment to the right of the femur; a large walrus-tusk mattock farther to the northwest of the feet; and a large slate knife to the right of the missing right shoulder.



Figure 9. Burials 19-20.

Burial 23. Located on the Western Hill in Quadrant F₁-59, this grave could not be seen from the surface. The head was oriented to the northeast. The depth of the skull and feet was 0.50 m. The skull was on its right side, the torso supine, the pelvis turned, and the knees flexed and brought to the abdomen.

The inventory included a curved bone article to the north of the skull; an antler article with holes in it near the right shoulder bone; a slate knife on the neck; a bola of walrus tusk near the forearm; and a small walrus tusk near the left knee.

Burial 24 was on the Western Hill in Quadrants P₁-73, 74; Q₁-73, 74. The head of the grave was oriented to the northeast, the depth was 0.55 m at the skull and 0.60 m at the feet. The skull was lying on its base, the bones were in anatomical order. The arms were bent on the chest. A walrus-tusk article was to the left of the skull, a rodent skull was on the pelvis.

Burial 25 was in Quadrants N₁-79, 80 on the Western Hill, with the grave head oriented to the east. Both the skull and the feet were at a depth of 0.25 m. The skull was lying on its base, the skeleton supine, and the bones in anatomical order. The hands were under the pelvis. The legs were parallel to each other, the knee joints extended to 15 cm. Objects found in the grave were a needle fragment on the chest; an ulu handle in the shape of a walrus head, a blade, and a slate knife fragment on the pelvis; and an awl between the shins.

Burial 26 was on the Western Hill and occupied Quadrants M₁-81, 82, with the head of the grave oriented to the east. The depth of the skull was 0.28 m and the feet 0.29 m. The skull was on its left side. The shoulder bones were lying along the chest, the left upper arm bones were under the left shoulder bone, and the right upper arm bones were in the abdominal area. The backbone was broken and had shifted down along the slope of the hill. The legs were flexed at the knees.

The inventory included a walrus-tusk bola near the mandible and a pottery fragment on the chest.

Burial 27 (a double burial—A, B) was located on the Western Hill at Quadrants O₁-77, 78; P₁-77, 78. The head of skeleton 27A was oriented to the east, with the skull on its base looking toward the north. The legs were bent at the knees and pressed to the abdomen. The skull depth of skeleton 27A was 0.15 m. The skull of skeleton 27B was oriented to the west with the bones in anatomical order, and the depth of the skull was 0.10 m. The legs of skeleton 27B were covered by skeleton 27A.

A non-toggling harpoon head was found near the skull of skeleton A and a fragment of a prong and a slate knife fragment were found near skeleton 27B.

Burial 28 was located on the Western Hill in Quadrants P₁-76, 77, with the head of the grave oriented to the east-northeast. The depth of the skull was 0.12 m and the feet 0.45 m. The skull was on its left side. The skeleton was supine, the bones in anatomical order, and the hands under the pelvis.

Grave goods found along with the skeleton were a carved ulu handle to the right of the skull, an arrowhead on the left collarbone, a toggling harpoon head (2A2y2M3) with an open socket on the chest, a small stone axe and an antler burin handle on the right side of the pelvis, and two harpoon heads (2A2x2M3) between the thighs. During the removal of the skeleton a scraper made on a flake was found under the pelvis (right side).

Burial 29 was located on the Western Hill in Quadrants O₁-72-74, with the grave oriented to the east. The depth of the skull was 0.50 m, the feet at 0.70 m. The skull was fragmented and the mandible missing. The skeleton was supine, the bones had shifted, and the forearm bones were disarticulated. The pelvis and the backbone were broken into disarticulated pieces.

The inventory included a cluster of objects found on the right scapula: a slate knife, a fragment of a slate knife with a hole in it, an ulu with an antler handle, and many needles. A trinket, a worked wooden fragment, and an Arctic fox jaw were found to the left of the pelvis; a pebble was lying on the backbone; a walrus-tusk bracelet fragment was on the right knee; three pendants with holes in them and one without,

an arrowhead, a dowel, a bushing, a fragment of a bird spear, a bone article, a fragmented stone item, and a cluster of bird bones were found near and under the left knee.

Burial 30 was in Quadrants M₁-71, 72 on the Western Hill. The grave was oriented to the east. The depth of the skull was 0.40 m, the feet 0.45 m. The skull was on its right side with its mandible missing. The skeleton was supine and in anatomical order. The legs were bent in at the knees. The right hand was under the pelvis, the left one on the abdomen.

The inventory included a loon beak on the chest; a slate knife and walrus-tusk bola near the right knee; and a harpoon ice pick nearby.

Burial 31 was on the Western Hill in Quadrants O₁-67, 68. This grave had no structure. The head of the grave was oriented to the west with the depth of the skull at 0.25 m, the feet at 0.55 m. The chest and pelvis were supine, the legs flexed at the knees. The right arm and left shoulder bones were missing. The grave goods found were a slate spear point near the mandible, a hollow bone drinking tube near the left upper arm, a bird breastbone on the left side of the pelvis, and four bolas and a blunt arrowhead between the thigh and shin.

Burial 32 was on the Western Hill in Quadrants N₁-69, 70; O₁-69, 70. The head of the grave was oriented to the northeast. The skull was at a depth of 0.75 m, the feet at 0.80 m. The skull lay on its back, the skeleton was supine, extended, and in anatomical order with the right forearm bones missing. The inventory included two siliceous flakes, a red pebble, and a bow drill made of animal bone, all lying between the ribs.

Burial 33 was located on the Western Hill in Quadrants N₁-77, 78, with the head oriented to the west. There were no walls associated with the grave. The depth of both the skull and feet was 0.60 m. The skull was lying on its left side and was missing the mandible. The arms were bent, hands on chest, and knees pressed against the abdomen. The grave goods found were two prongs of a bird spear on the left forearm, a knife fragment on the left knee, a plug on the right thigh, a walrus-tusk article near the right forearm, and ochre between the right thigh and shin near the knee.

Burial 34 was on the Western Hill in Quadrants U-50; V-49, 50. The grave could be seen on the surface due to the whale rib emerging from the ground. The head of the grave was oriented to the northeast. The skull was at a depth of 0.12 m, the feet at 0.24 m. It was a child's burial, with the skull and skeleton crushed. The bones of the left shin were missing. Skeleton 34 was lying on the chest of skeleton 35, which was directly underneath. Grave goods found in Burial 34 were fragments of a slate knife, a rodent skull, and an item of flint with traces of retouch near the right shoulder, as well as a piece of rock crystal under the chest.

Burial 35. This burial was located on the Western Hill in Quadrants T-49, 50; U-48-50; V-48-50; W-48, 49. The grave was oriented to the northeast, and like Burial 34 located directly above, Burial 35 could be seen from the surface due to the already-mentioned whale rib. The depth of the skull was 0.25 m, the feet 0.35 m. The skeleton was supine, the skull lying on its base. The left hand was on the pelvis, the right one beneath. Grave goods found were a bow drill with an awl and two small boat hooks on it near the back of the skull, two harpoon heads (A2x2M3, 2A2y2M3) to the right of the skull, and a bird breastbone and a decorated article on the face. Two awls made from animal ribs, a flaking tool, a walrus-tusk club, bone articles, a stone tool with an antler handle, a piece of crystal, two stone tools, stone tool blanks, a stone tool fragment with traces of grinding, and an unidentified flake were to the left of the skull. A slate knife with a dowel and an axe with an antler handle were near the right shoulder. A walrus-tusk article was on the pelvis, a rodent jaw was between the knees, and a green stone tool and 13 more unidentified flakes were near the right knee.

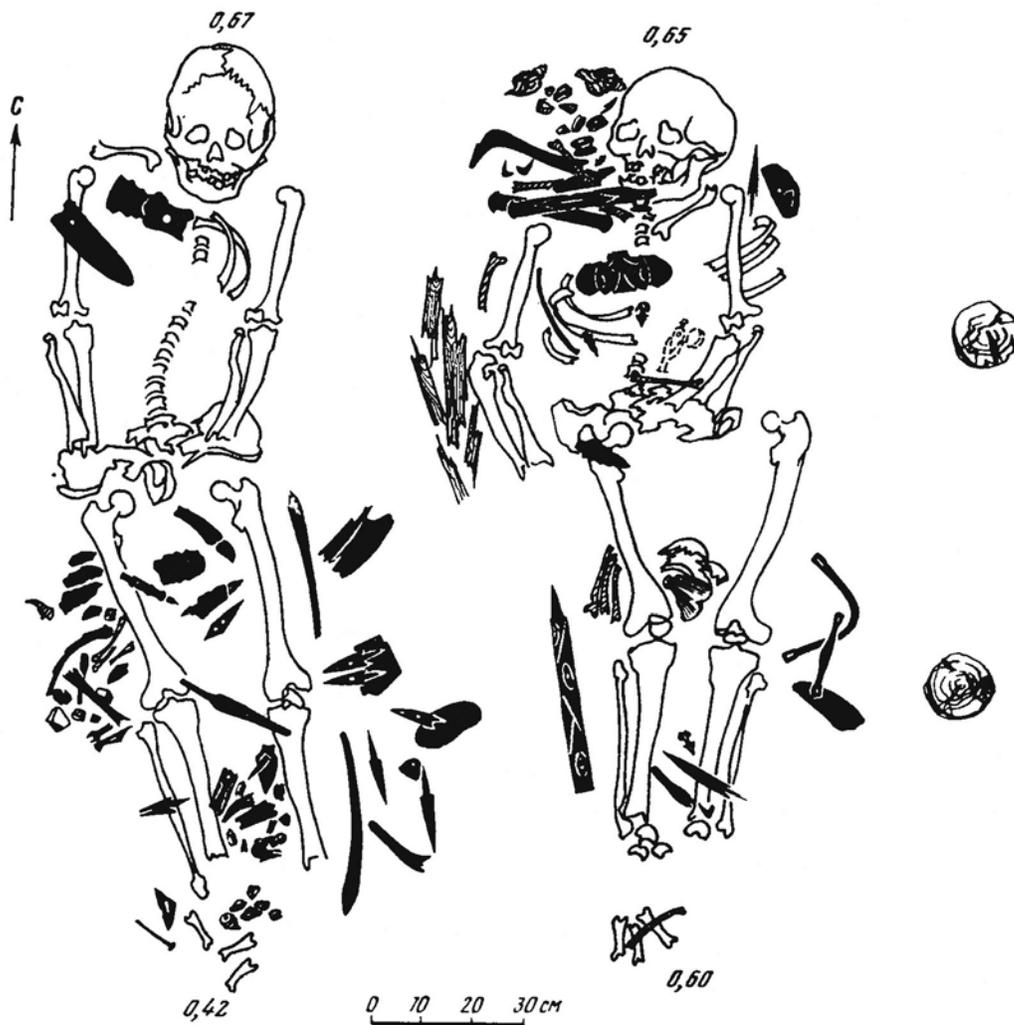


Figure 10. Burials 37–38.

During the removal of the skeleton a walrus-tusk pendant, three needles, and a stone axe were found in the chest area. A cluster of objects was found 0.80 m to the north of the pelvis at a depth of 0.32 m. The cluster consisted of a toggling harpoon head (1A1x2M), an arrowhead, two walrus-tusk items, three stone tools with antler handles, a flake of walrus tusk, point blanks, and a fragment of a stone knife with a hole.

Burial 36 was located on the Western Hill in Quadrant O₁-76. The depth of the floor was 1.05 m. Fragments of a child's skull and skeleton were found. The grave was oriented to the north and bordered by a structure of two whale ribs standing parallel that were covered by another rib and were at a depth of 0.35 to 0.60 m. No grave goods were found.

Burials 37–38 were located on the Western Hill (Fig. 10) in Quadrants U₁-77, V₁-77 (Burial 37); U₁-78, V₁-78 (Burial 38). Burial 37 was covered by Burial 20, and Burial 38 by Burial 19. The heads of these graves were oriented to the north. The depth of skeleton 37's skull was 0.67 m, the feet 0.42 m; for

skeleton 38, the skull was 0.65 m and the feet at 0.50 m. The skull of skeleton 37 was lying on its base, the skeleton supine, the bones in anatomical order, and the hands on the pelvis. Skeleton 38 was in nearly the same position with the left hand in the abdominal area and the right one parallel to the torso. The remains of log shoring were at the sides of the grave.

The grave goods found in Burial 37 were an axe in a sleeve on the chest; a knife with a dowel on the right shoulder; a harpoon foreshaft and an ulu to the left of the left thigh with two toggling harpoon heads (2A2x2M3) on a broken stone below; two ice picks, a harpoon foreshaft, a harpoon finger rest, and a piece of antler to the left of the shins; and a piece of pumice stone and a closed socket harpoon head (1BXM3) to the left of the previous group of goods. Two tools of siliceous slate, two unidentified flakes, a rodent jaw, four pieces of crystal, an awl made from an animal rib, a fragment of a shell, an obsidian flake, three bird bones, an animal bone, a hollow bone, a piece of walrus tusk, a fragment of worked walrus tusk, and a small boat hook were found to the right of the right thigh. A blunt arrowhead was near the shin, two stone tools with antler handles, a walrus-tusk figure, a harpoon blank (2A2x4M3), and an adze blank were between the thighs; a slate article was near the right knee; and a point, a slate tool, three antler sleeves, a tool made of jasper, three pieces of crystal, a piece of obsidian, two siliceous flakes, and a walrus-tusk figurine of a man were between the shins. Ochre, a shell fragment, a clasp, and a bird bone were near the feet.

Two shells, a button, a small arrowhead, two plugs for *pykh-pykh* [a float?], a drill mouthpiece, a tool with an antler handle, a graphite piece, three pieces of coal, a piece of ochre, three bird bones, a curved antler tool, a decorated pendant, and a small antler shovel were to the right of the skull in Burial 38. Two nail-shaped articles were under that cluster to the right of the skull. Below this complex was a bird bone. To the left of the skull were an arrowhead and a fragment of a slate knife with a hole in it and an unidentified flake on it. A “winged object,” a rodent skull, a long walrus-tusk article, another unidentified flake, and a bird bone were on the chest; a spear point was on the right thigh; and three bird bones and a harpoon socket piece were on the outside of the right thigh. Two bow drills and a slate knife fragment were to the left of the knee. A fragment of a child’s skull and an animal bone were between the thighs. An arrowhead was on the left shin; a rodent skull, a piece of walrus tusk, and a star-shaped item were between the shins, with a bird bone below, near the feet.

During the excavations a decorated article and a plug for a *pykh-pykh* were found on the chest.

Burial 39 (double burial—A, B). These burials were in Quadrants M₁₋₇₇, 78; N₁₋₇₇, 78 on the Western Hill. Skeleton A was oriented to the east-northeast. Skeleton B was oriented to the west-southwest and was lying close to skeleton A but farther to the south.

The two skulls of Burial 40 (A, B) were found below and between the skull of skeleton B and the knees of skeleton A during the excavations of Burial 39. The skulls of both skeletons of Burial 39 were at a depth of 0.45 m, the feet at 0.50 m. The skull of skeleton 39A was on its base covering the shins of skeleton 40A. The pelvis and right forearm bones of skeleton 39A covered the pelvis of skeleton 40A.

Skeleton 39A was lying supine, the bones in anatomical order with the hands on the pelvis. Skeleton 39B was supine, the torso, pelvis, and upper extremities—hands on pelvis—in anatomical order and covered with a partially broken whale scapula. The bones of the lower extremities of skeleton 39B were displaced; the thigh bones were displaced to the left of the skeleton and turned over, the right shin and feet bones were missing, and the left fibula had been moved away from the right. A shoulder bone from a different individual was found on the whale scapula which covered the torso of skeleton 39B.

The grave goods included a large slate knife with holes in it and an arrowhead to the left of the skull of skeleton 39A; a blunt arrowhead was a bit farther away; an arrowhead, a fragment of a slate end blade, and a siliceous end blade were found near the right shoulder; an arrowhead with a fragment of a point was under the skull; three arrowheads were near the right shoulder bone; an oblong bone article and seven bird bones were on the chest; and a slate knife was under the pelvis. An arrow was found on the

whale scapula that covered skeleton 39B. The butt end of a walrus ousic covered the left thigh of skeleton 39A while the other end was under the whale scapula.

A hollow drinking bone and a plug were found to the right of skull 39B. A slate knife was on the face of the skull, two scrapers made of a siliceous-like stone were near the left shoulder, a bola was near the right shoulder, and a walrus-tusk mattock was on the chest. A small walrus scapula shovel covered the displaced femur of skeleton 39B. Snow goggles were near the shin bone.

Burial 40 (A double burial—A, B) was on the Western Hill in Quadrants M₁–77, 78. The grave was oriented west-southwest. The skull depth of the upper skeleton 40A was at 0.55 m, and the feet at 0.60 m. Skull depth for skeleton 40B was at 0.65 m, feet at 0.70 m. Both skeletons were lying supine, the bones were in anatomical order, and the skulls were on their right sides. The right femur of skeleton 40A was covered by a fragment of the pelvis of another individual. The pelvis of 40B was covered by the femur of another individual. These fragmented remains of a third individual were covered with the right shoulder bones, scapula, and collarbone of skeleton 39A. The shins of 40A were covered with the upper arm bones and ribs of another individual. The remains of the other individual were covered by the skull of skeleton 39A.

Grave goods with skeleton 40A included a burin with a bone handle, found on the chest. A similar burin covered the skull of skeleton 40B, which was located below. An awl was found near the right forearm above the chest of skeleton 40B. A bone arrowhead was inside by the left knee, a blunt arrowhead and a slate knife with a bone handle were near the right shin, and many bolas and the bone of an animal were near the feet.

Objects found to the left of skeleton 40B after the removal of skeleton 40A were a walrus scapula snow shovel near the left thigh; the shovel's wooden handle with eight walrus-tusk nail-shaped inserts, six open socket toggling harpoon heads (2A2M3, 1A2YP, 1A2XP, three 2A2x2M3), and a small dowel were lying on the shovel with a seal scapula above; and a small oblong bone shovel, a long harpoon fore-shaft, a harpoon head (1BXM3), a blank, and a harpoon head blank were to the left of the pelvis. A wide snow shovel with a piece of pumice on it, three burins in bone handles, two harpoon heads (2A2x2M3, 1BXM3), a piece of ochre, a flake of walrus tusk, two oblong antler objects, a small walrus-tusk plug, a spear point, an adze, and two small stone tools with signs of retouching were near the left shoulder. A long-bone shovel was near the skull, the edges lying on two walrus vertebrae. A harpoon head with a broken barb (2A2M3c/1–1), a bird bone, a drill mouthpiece, a small arrowhead, a carved dowel, and a bone handle were lying on the shovel.

A seal scapula was leaning against the cluster of objects. Three walrus-tusk articles were near the skull, an adze was under the mandible, a slate point was on the chest in the heart area, and five pieces of ground ochre were between the thighs.

Burial 41 was on the Western Hill in Quadrants L₁–74, 75, with the grave oriented to the southwest. The skull was at a depth of 0.40 m and the feet at 0.45 m. The skull was on its left side, the torso was on its back, the arms were flexed at the elbows, the knees pressed up against the elbows, and the feet were on the pelvis. No grave goods were found.

Burial 42 was on the Western Hill in Quadrants K₁–75, 76. The head was oriented to the southwest. The skull was at a depth of 0.55 m, the feet at 0.75 m. The skull was on its left side. The skeleton was supine, the bones were in anatomical order, hands on pelvis, and the lower extremities extended to such an extent that the patellae were separated from the femurs and the lower leg bones. Two sled runners were found farther to the south at a level of 0.40 m.

The inventory included a small piece of ochre on the skull; a bird mandible fragment, part of the handle of an engraved tool, a toggling harpoon head (1A2M3c/1–1), a curved bone awl, a button, two oval plugs, the basal fragment of a harpoon head (2A2x2M3), a spear point, a retouched point, a side

point for a harpoon, an obsidian scraper, and two partially ground flakes were to the left of the skull; and three arrowheads, an oval plug, two harpoon heads (1BXM3), two fragmented points, and a bone article inserted in a painted piece of wood, were on the chest. A slate flake, a piece of ochre, and a slate slab with eight ground points lying on it were in the abdominal area with two spear points farther to the left. A spear point and the remains of a wooden pole were lying by the forearm. Two arrowheads and a harpoon head with two line holes (2A2x2M3) were on the pelvis; five closed-socket harpoon heads (four 1BXM3, 1BYM3) and two antler blanks were below. A tubular handle with snow goggles on top of it was between the thighs; an arrowhead, an ice pick, and a slate flake were below. A long harpoon foreshaft was on the shins and a snow shovel was under the feet. On the outside of the right thigh were ten ground slate flakes, a carved burin handle, a carved dowel, part of a bird mandible, a blunt arrowhead, three pieces of quartz, a miniature arrowhead, a small foreshaft, a piece of ochre, a long tubular handle, a point, an antler burin handle, an open-socket harpoon head (1A1XP), a small bola, a pendant of walrus tusk, the center prong of a bird spear, a blunt arrowhead, and a sawed piece of walrus tusk. All these objects were covered with a snow shovel. Below these objects were three lateral prongs of a bird spear, three arrowheads, another two arrowheads above these objects, and the decayed remains of wooden poles and split tubular bones that could be similar to the tubular handles mentioned above.

After the skeleton was removed, pendants made from the tusk of a baby walrus, an arrowhead, a harpoon head with two line holes (2A2xM3c(1)), and a bone shovel were discovered under the ribs in the heart area.

Burial 43 was on the Eastern Hill in Quadrants H_b-177, 178; I_b-177, 178. From the outside, the burial was bordered by a whale scapula. From the west, the burial was bordered with vertical slate slabs. The burial was covered with whale ribs, three of which were lying across the burial, with another three lying perpendicular to the first three. Two slate slabs were placed on the structure. The head of the grave was oriented to the south-southeast. The skull was at a depth of 0.44 m, the feet at 0.55 m. The skull was on its left side, fragmented, and facing west. The bones of the skeleton were in anatomical order with the hands on the pelvis, but in a very poor state of preservation. The bottom of the grave was covered with slate slabs in the torso area.

The whole inventory was concentrated mainly in the area outside of the right shin of the individual and consisted of two spindle-shaped items, an animal rib, a bird bone, two prongs of a bird spear, a thin foreshaft, an amulet in the shape of a walrus head, a needle case decorated with zoomorphic motifs and including needles, and a "winged object." A mattock was found near the right thigh, a slate knife fragment with a hole in it was near the left shoulder, and bird bones were found between the thighs, on the chest, and near the right shoulder.

Burial 44 was located on the Eastern Hill in Quadrants V_b-169, 170; W_b-169, 170; X_b-169, 170. The west side of the grave was bordered by a whale rib that could be seen on the surface. The upper parts of the skeletons in Burial 44 are oriented toward the south. The burial is on the southern slope of the hill, which is rather steep here. Thus, the position of both skeletons is not horizontal, but rather the chests and clavicles of both skeletons are much lower than the pelvises and legs. Skeleton A is essentially superimposed on skeleton B, but since the skull of B is separated from the rest of the skeleton it happens to lie at a considerably shallower depth than the skull of A. The depth of the skull of the upper skeleton 44A was 0.77 m, the lower skeleton 44B was 0.24 m, and the feet 0.35 and 0.37 m, respectively. Skull 44A was lying on its bottom looking toward the west. Skull 44B was lying with the base up. The mandible of 44B was much lower than the skull and was lying on the collarbones of skeleton 44B, under the vertebrae of skeleton 44A. Both of the skeletons were, for the most part, in anatomical order, though the left shin bones of skeleton 44B were displaced. As noted, the skull of skeleton 44B was displaced and south of the skeleton and mandible. The pelvis of skeleton 44B was under the knees of skeleton 44A. The right thigh bone of a third individual was found to the right of the right shoulder bone of skeleton 44A.

The inventory was in groups. Near the outside of the shin of the lower skeleton (44B) were five harpoon foreshafts, a flake of walrus tusk, six nail-shaped items, a fragment of a small walrus-tusk item, a fragment of a walrus-tusk button, a hook for hanging, a walrus-tusk drill mouthpiece with the carved image of a polar bear, a fragment of a decorated plate, and a slate point blank. To the left of the right shin were two drill mouthpieces with polar bear images and two awls. Below the cluster near the foot were five harpoon heads (1A1XP, 2A2y2M4, 2A2yM3, 1A2x2P, 1BYM), two slate point blanks, and a seal-scapula spoon. The cluster found to the left of the left shin of the lower skeleton contained three slate points, a foreshaft, a pail handle, and 12 arrowheads. Another cluster under the left thigh of the lower skeleton had a needle case and five toggling harpoon heads (2A2y2P, 2A2M3, 2A2XP, two 2A2y2M3). A group of items to the right of the shins of the upper skeleton (44A) consisted of two central and eight lateral prongs of a bird spear, a button, an awl, a worked piece of walrus tusk, and a spear point. An upper group contained a needle case, fragments of a wooden vessel, a pottery fragment, a bola, a harpoon head (1A1yP), and two clasps.

Another complex was on the chest of the upper skeleton and consisted of a flaking tool, a trough-scraper, a claw and tooth from a bear, a bola, and a small slate knife; on the pelvis were a shovel, a flat bone item, a bird breast, and two slate tools; near the right shoulder were a small handle, a mattock, two harpoon heads (1A2y2P, 1BYM), bird bones, and a bola. The group had an unidentified long item and a “finger ring” between the thighs of the upper skeleton; fragments of a shovel were on the shins; and bone flakes and two point blanks were between the shins.

Removal of the lower skeleton revealed the following objects: fragments of three bone plates with holes in them, two slate knife fragments, and a bola under the pelvis; a nail-shaped article in the abdominal area; a fragment of a bone burin handle, three harpoon heads (1A2x2P, two 1BYM), a foreshaft, three bone rods, a bone awl, and a bear tooth under the ribs; a massive harpoon head (1BXM) under the mandible; five slate spear heads under the left shoulder; and an adze under the right shoulder.

Burial 45 (A double burial—A, B) was located on the Eastern Hill in Quadrants L_b-178; M_b-178, 179; N_b-178, 179. The head of the grave was oriented to the south. The depth of the skull of skeleton 45A was at 0.65 m, the feet at 0.78 m; for skeleton 45B, the skull was at 0.59 m, and the feet at 0.75 m. Skeleton 45A was supine and in general anatomical order, with the skull on its right side, and the right arm missing. Skeleton 45B was extremely fragmented, there being only the skull and part of the long bones. The skull was lying on its right side. The burial was bordered by a whale jaw on the west side.

The inventory included a grater/polisher with zoomorphic and anthropomorphic decorations and a slate knife near skeleton 45A south of the skull; a mattock was near the right shoulder; a toggling harpoon head (2A2XM4), a boat hook, one prong of a bird spear, and four arrowheads were near the right thigh. To the left of the pelvis were a bow drill, a needle case, two long-bone items, a clasp, a boat hook, three bone rods, two arrowheads, an animal long-bone, and a harpoon head (1BYM). Fragments of a large slate knife were found below the chest under the wooden flooring. Two fragments of slate knives and pottery fragments were found to the right of the skull of skeleton 45B. Objects found to the right of the right shin were two pendants, a nail-shaped item, a fragment of walrus tusk, a walrus-tusk toggle, two mattocks, a fragment of worked tusk, one prong of a bird spear, an awl, two slate flakes, an arrow point of siliceous stone, and an antler item. A sharp, pointed article of walrus tusk was near the feet.

Burial 46 was located on the Eastern Hill. It was a triple burial (A, B, C) in Quadrants D_b-176; E_b-175-177; F_b-176. The head of the grave was oriented to the south-southeast. From the outside, the grave was marked by a border of whale rib. During the excavation it was discovered that the foot of the grave was bordered with a vertically standing whale scapula. The depth of the upper skull 46A was 0.18 m, the feet 0.18 m. The skull was crushed. Three skeletons were lying one on the other, extended, the bones in anatomical order. Skull 46B was on its base and was partially crushed. Skull 46C was on its left side in a good state of preservation.

The inventory included an arrowhead on the chest of skeleton 46A; another arrowhead near the left forearm; a foreshaft and a slate knife near the right shoulder; a bola on the left side of the pelvis, a bone dagger on the right; a foreshaft, two long sharp-ended bone items, and three massive fish spears on the shin.

Two snow shovels were under the skull of skeleton 46B; fragments of pottery, a slate knife, two prongs of a bird spear, and the basal part of a barb were to the right of the skull; and a bone item was between the knees.

An adze in a sleeve and a wedge were found on the pelvis of skeleton 46B; a harpoon socket piece and a foreshaft were near the left shoulder bone. A cluster of items near the skull consisted of two points, two ground spear points (one large, one small), three slate tool fragments, two long-bone articles, and a carved button to the right of the skull. Bone snow goggles, a long-bone item, three prongs of a bird spear, and a slate knife with a hole in it were under the mandible; the remains of a clay vessel were under the knife.

Burial 47 was in Quadrants R₁-76, 77 on the Western Hill. The skeleton was lying extended and supine, the bones in anatomical order with the hands in the pelvic area. The left foot bones were under the right ones. The depth of the skull was 0.28 m, the feet 0.30 m.

Grave goods consisted of an open socket harpoon head (2A2xM3) to the right of the right shoulder and a fish spear on the chest. A shovel fragment, three bird bones, and a harpoon foreshaft were to the right of the thigh. A cluster of items near the back of the skull included a poorly preserved harpoon head (1A2x2P), a flat article with holes in it, a bushing, two round walrus-tusk items, two clubs, an awl made from a tubular bone, four walrus-tusk blanks, a walrus-tusk flake, a curved-bone article, a point, three lateral insets for a harpoon, a crystal prism, five pieces of obsidian, a whetstone fragment, three ground pieces of ochre, a miniature scraper, fourteen unidentified flakes, three pieces of quartz, and five pieces of pumice. A snow shovel fragment was found 0.25 m east of that cluster.

Burial 48 was on the Western Hill in Quadrants Q₁-76, 77. The depth of the skull was 0.10 m and the feet 0.25 m. The head of the grave was oriented to the southwest, and the skull was lying on its base looking east. The skeleton was supine and the bones in anatomical order.

The inventory included a bola to the left of the chest, a walrus-tusk bow drill fragment to the left of the left thigh, and a walrus-tusk awl to the right of the right shin.

Burial 49 (A complex burial—A, B, C, D) was located on the Western Hill in Quadrants S-30, T-30, U-30, in the same spot as Burial 22. After the removal of Burial 22 the walls became clear. There were whale skulls on the south and north ends of the grave, several vertical slate slabs, and the jaw of a bowhead whale were on the east; a rib from a bowhead whale was on the west. Burial 49 was separated from Burial 22 by a wooden floor. A very complicated picture evolved during the excavation. Three skulls were the first things to be found in the grave. Burial 49A (upper skeleton) was oriented to the south, with the skull at a depth of 0.30 m, and the feet at 0.50 m. The skull was on its base, facing north.

The skeleton was basically unbroken, mostly in anatomical order, and supine. The hands were in the pelvic area. The right leg was slightly displaced and the thigh not articulated. Skeleton 49B was lying below skeleton 49A and farther to the east. The skull was broken, the skeleton extended and supine. The depth of the skull was 0.42 m, and the feet 0.48 m. The hands were in the pelvic area. The long-bones were in an unsatisfactory state of preservation. Skeleton 49C was revealed after the removal of skeleton 49A and the decayed wooden layer under 49A. Skull 49C was on its left side with its back to the south. The mandible was articulated. The skeleton was extended and supine. The depth of the skull was 0.45 m, the feet 0.53 m. The hands were in the pelvic area. The bones of the skeleton were in a poor state of preservation. The right pelvic bone of 49C was lying on the epiphysis of the thigh of skeleton 49B. The right side of skeleton 49C partially covered the bones of 49B. The left shin bone of 49C was lying on a whale

rib that bordered the west side of the grave. Skeleton 49D was under skeleton 49C, with a wooden layer between them. The skull of 49D was at a depth of 0.58 m, with the feet at 0.67 m. A thick mass of decayed organic material, probably fur, was in the chest and skull area of skeleton 49D. The grave was oriented to the south. The skull was on its base, facing north, and well preserved with the mandible articulated. The skeleton was extended and supine. The left shin and part of the thigh were under the large whale bone that bordered the west side of the burial. A wooden layer on top of slate slabs was under the skeleton.

The inventory included fragments of pottery to the left of skull 49A; a harpoon socket piece, two nail-shaped items, three slate points, a broken point, slate knife fragments, and two harpoon heads (1A2x2P, 1A2y2P) were to the left of the pelvis. Two harpoon foreshafts, fragments of burned pottery, a slate point, slate tool fragments, a mattock, a wound pin, an article of walrus tusk, and a harpoon head (1BYM) were below the cluster described above. A bird bone drinking tube was discovered under the pelvis during removal of the skeleton.

Grave goods with skeleton 49B were an article of walrus tusk on the chest; a slate knife fragment to the right of the skull; a pottery fragment outside of the right shoulder; two pieces of ochre, a polished tool, and articles of walrus tusk in the abdominal area near the right pelvic bone; a “winged object” and a bola near the forearm; and a harpoon socket piece, a walrus-tusk article, a shell, and three harpoon heads (2A2XM4, 1BYM, 1A2XP) near and under the right thigh. A harpoon foreshaft and bone shovel fragments were below the above-mentioned articles. A fragment of a bird spear, a mouthpiece for a drill, 13 arrowheads, six siliceous arrow points, one obsidian arrow point, and a fragmented antler adze sleeve were between the thighs. Two pieces of ochre were between the shins, and a plug and three pieces of a bird spear were near the left forearm.

Skeleton 49C had two boathook heads near the back of the skull; a “winged object” near the left shoulder; an ulu handle, four points, and a bird spear point were under the “winged object.” Two nail-shaped articles and a walrus tooth were near the left upper arm. Three points were on the chest; two pottery fragments, six spear points, and an animal scapula fragment were between the thighs.

The objects found with skeleton 49D were a bow drill, a whetstone, an ulu handle in the shape of a walrus head, a pendant, a pendant with a trinket, a button, a piece of jasper, six pieces of ochre, and two pottery fragments to the left and under the skull; needles on the chest; a slate knife fragment on the right of the chest; and a needle case in the shape of a man and a piece of ochre under the right pelvis. Under the pelvis, to the left, were a pendant and a shell; on the pelvis were two bird bones; and near the right foot was a fragment of ochre. A cluster of items found under the large whale bone to the left of the thigh included a spear point, an arrowhead, three ulu blades, a stone tool, six slate flakes, a piece of ochre, a boat hook, an ulu knife handle, a decorated item, and two bird bones. Fragments of a walrus-tusk trough were under the skull. There was a mattock near the left forearm under the whale bone. An ice pick was above skeleton 49D in the pelvic area, but below skeleton 49C. Traces of a wooden layer were to the right of the burial.

Burial 50 was in Quadrants S₁-77, 78; T₁-77 on the Western Hill. The depth of the skull was 0.25 m, the feet 0.35 m. The skull was oriented to the northeast and lying on its base, a bit turned to the right, facing northwest. The skeleton was extended and supine. The arms were bent in at the elbows, the hands in the abdominal area.

Fragments of a rodent skull and a walrus-tusk flake were found to the left of the skull.

Burial 51 was in Quadrants P_b-157; Q_b-157, 158; R_b-158 on the Eastern Hill. The grave was oriented to the north-northwest. Whale scapulas bordered the burial on the north and west. The depth of the skull was 0.35 m, and the feet 0.35 m. The skull was lying on its base. The skeleton was extended and supine. The bones were in anatomical order, with the hands in the pelvic area. The skeleton lay on slate slabs. Decayed remains of wood were found on stone slabs.

The inventory included a boat hook to the right of the skull; four slate adzes, ochre, an axe, an adze, an antler adze head blank, and a walrus-tusk fragment either near or on the right thigh. Two boathooks and a fragment of a walrus-tusk article were to the left of the left shoulder. A fragmented adze sleeve was near the left hand. Near the left thigh were a harpoon head (1A2x2P), a boathook, a button, a top, a seal scapula spoon, a walrus-tusk flake, a toggle, a harpoon head blank, an awl, two walrus-tusk articles with thick edges, and a flaking tool. A bow drill was between the shins.

Burial 52 was in Quadrants N_b-159, 160; O_b-159, 160; P_b-159, 160; Q_b-159, 160 on the Eastern Hill. The sides of the grave were marked on the surface with whale bones and part of a slate slab. The burial was bordered with a whale rib and scapula on the north, a whale mandible on the west, a rib on the south, and two vertical slate slabs on the east.

It was a double burial (A and B). The head of skeleton 52A was oriented to the south. The skull was on its left side at a depth of 0.57 m, the feet at 0.23 m. The skeleton was extended and supine, the bones in anatomical order. Skeleton 52B was under skeleton 52A, its head oriented to the north. The bones of the right upper arm, right pelvis, and part of the right thigh of skeleton 52B were covered with a large slate slab. Skeleton 52B was lying extended and supine. The pelvis and left thigh bone of another individual were on the chest of 52B. A child's mandible was near the left radius of skeleton 52A. A skull from another individual was near the skull of skeleton 52B. Three separate thigh bones were below that skull. Besides these extra bones, during the excavations of the burial two fibulas, two shoulder bones, upper arm bones, and hand bones were found scattered about randomly.

The inventory included a bola and a fragment of an article of walrus tusk under the mandible of 52A. An ice pick and walrus-tusk sleeve were near the right clavicle. An adze in a sleeve and a harpoon head (1BYM) were near the right knee; an adze in a sleeve, a slate knife, a "winged object," a drill mouthpiece, and a harpoon foreshaft were near the left shin. Near the left thigh were a harpoon socket piece, a foreshaft, two harpoon heads (1A2XP, 1A2x2P), four spear points, a needle case, two walrus teeth, fragments of unidentified items, and one prong of a bird spear. The skull of 52B was covered with a shovel; two harpoon heads (1A2yP) were near the skull; and an ulu blade and a burin were near the right thigh. A mattock was lying above the skull of the third individual. The end of the mattock was under the shoulder bone of a whale.

Burial 53 was on the Eastern Hill in Quadrants U_b-172; V_b-171-173; W_b-172, 173. From the surface the grave could be made out by the whale scapula that rose five centimeters above the sod, standing vertically and bordering the burial from the south. From the north, the grave was marked with another whale scapula that did not come to the surface. Burial 53 was a double burial—(A and B). Both of the skeletons were oriented to the south, and placed one on top of the other. The upper skeleton, 53A, had a skull and mandible in a very good state of preservation. The depth of the skull was 0.49 m, and the feet 0.47 m. The skull was on its back facing up. The skeleton was supine with the bones in general anatomical order, only the bones of the shins being displaced. No floor was located between 53A and 53B. Skeleton 53B did not have a skull. The skeleton was in anatomical order and supine, though the bones of the shins were displaced a little. Clear signs of the remains of a wooden floor were under skeleton 53B. Sea pebbles were found in various places in the grave. The grave goods of Burials 53A and 53B were common to both burials because there was no floor between them, although most of the goods were concentrated with Burial 53A.

Grave goods found under the bone snow shovel in the chest and forearm area of skeleton 53A were a toggling harpoon head (1A2y2P), a hook for hanging, two awls, a burin handle, two walrus-tusk tool fragments, two long-bone articles, a slate knife fragment, and three slate flakes. Objects below the cluster under the large snow shovel were a closed-socket harpoon head (1BXM2), the lateral prong of a bird spear, a boathook, a blunt arrowhead, an awl, a bone article, a walrus-tusk tool fragment, a slate point, a siliceous stone point, a slate tool fragment, and a bone fragment.

Objects found to the left of the cluster in the abdominal and pelvic areas were four whetstones, an antler handle for an engraving tool, two walrus-tusk articles with holes in them, an ulu blade blank, two slate flakes, a slate tool, and two central prongs of a bird spear. A slate ulu blade blank was found near the chest. Objects found near the outside of the left forearm were a harpoon head (1A2y2P), an arrowhead, and a fragmented harpoon socket piece. Near the outside of the left thigh were a sawed walrus tusk, a large walrus-tusk needle, and a harpoon foreshaft.

Near the left thigh bones of Burials 53A and 53B were a “winged object,” three lateral prongs of a bird spear, three arrowheads, a bone article with a projection, an ice pick, and a part of a walrus-tusk engraving tool. Between the shins of 53A and 53B were five arrowheads, the lateral prong of a bird spear, a harpoon foreshaft, a bone article, an antler sleeve, and a sawed walrus tusk.

Grave goods found with 53B were three articles of walrus tusk, a harpoon foreshaft, and a harpoon head (1AIyPP) near the right shoulder and on the chest; and fragments of an animal skull to the right of the forearm. Two harpoon heads (1AIp2P, 1A2XP) were to the left of the shoulder in the chest area, a slate knife was on the vertebrae, an antler sleeve with a stone inset, and a worked antler were on the right side of the pelvis. An awl made from a broken harpoon head was on the right femur; a bushing, an ice pick, and a point were under the right femur. A fragment of a slate tool, a piece of polished ochre, a harpoon head (1A2y2P), and a piece of an engraving tool handle were to the left, above the pelvis in the stomach area. A harpoon fragment was found to the left of the pelvis.

Burial 54 was located on the Eastern Hill in Quadrants N_b-174, 175; O_b-174, 175; P_b-174, 175. Fragments of a skull and a number of objects were lying partially on the surface in Quadrant N_b-174. Those goods, which seemed older than the rest of the inventory at the Ekven cemetery, were a statue of a bear (Fig 78:8), a seal scapula with holes in it, two bolas, an ice cleat, a toy “winged object,” an L-shaped object with holes in it, and an end blade. Individual human bones and small objects were scattered everywhere in the cemetery, so the cluster of goods was not identified as a separate burial.

Burial 54 was revealed after the removal of the sod layer. It was oriented to the south. The depth of the skull was 0.20 m, the feet 0.50 m. The skull was on its left side. A fragment of a walrus mandible was south of the skull. The skeleton was extended and supine, the bones in anatomical order.

The following inventory was found in this burial: a bow drill, a decorated walrus-tusk pail handle, a mattock, an ice pick, a harpoon head (1A2y2P), a needle case, two bone articles, and a bone plate were to the south of the skull. Two antler articles and a slate knife fragment were found in the chest area. Fragments of bracelets and a harpoon head (1A2y2P) were near the inside of the right upper arm; a mattock and a “winged object” were near the left upper arm. Between the thighs were a harpoon socket piece, a harpoon head (1A2y2P), three prongs of a bird spear, and 10 arrowheads with stone end blades. A harpoon head (1A2-2P), a bushing, a walrus-tusk nail-shaped article, an article with holes in it made from a seal scapula, a small siliceous stone point, a fragment of sawed stone, and a piece of ochre were under the skull.

Burial 55 was on the Eastern Hill in Quadrants N_b-175, 176; O_b-175, 176; P_b-175, 176. During excavations, it was discovered that this burial was bordered on the south by a whale rib. The depth of the skull was 0.35 m, the feet 0.39 m. The grave was oriented to the south. The skull was fragmented; the disarticulated bones of the skeleton, though in anatomical order, were broken and displaced to the east. A skull from another individual was to the right of the thigh bones.

The objects in the grave consisted of a harpoon head (1A2y2P), a walrus-tusk article, a toy sled runner, a small harpoon head (1BXM), an article with spiral relief, sawed pieces of transparent stone, a carved item, and four pendants made of animal teeth to the right of the skull. Near the right shin were a harpoon foreshaft, two harpoon heads (1A2x2P, 1A1y2P), two ornamented spindle-like items, an unidentified flake, ochre, a piece of a pebble, a bracelet fragment, a bird bone, and two fragments of flat bone articles. Near the left shin was a pile of bird bones. Under the pelvis were two ulu fragments, a whetstone,

two harpoon heads (1A2XP, 1A2y2P), ochre, a pile of bracelets (whole and broken), a fragment of an unidentified article, two pendants, a decorated arrow, five animal-tooth pendants, a bone bushing, a walrus-tusk flake, a needle-case with needles inside, an awl, and three sections of a chain; near the pelvis and below the above-mentioned items were a harpoon head (1A2x2P) and a trinket with a flower motif.

Burial 56 was located on the Eastern Hill in Quadrants T_b-152, 153; U_b-152, 153. A whale scapula lying horizontally was discovered after the removal of the sod layer. A cluster of goods under the scapula were lying very close to each other without any order. These included five harpoon heads (two 1A2XP, 1A2y2P, 1A2x2P, 1BXM), three foreshafts, four arrowheads, a walrus-tusk point, a fragment of a mattock, four fragmented walrus-tusk awls, three animal bone awls, four walrus-tusk articles very similar to the awls, two clubs, and two articles with both ends sharpened. A beater made of whale bone was found below the cluster.

Another cluster was under the first one and contained a drill mouthpiece, a whetstone fragment, a slate knife fragment, and walrus teeth lying on a broad snow shovel and covered with a narrow shovel.

Other goods were below the second cluster and included an ice pick, a harpoon head (2A2XP), a bird bone, a walrus-tusk awl, a boathook head, and a whole boathook that consisted of three fragments, a bone handle, and a point.

Some decomposed wood was found. The highest point of the whale scapula was 0.50 m below the surface; the lowest layer of objects was at 0.75 m.

Burial 57 (Fig. 11) was in Quadrants BB-37-39; A₁-87, 88 on the Western Hill. The head of the grave was oriented to the west-southwest. The depth of the skull was 0.35 m below the sod layer, the shins 0.35 m, and the feet 0.40 m. A large slate slab was above the burial in the area of the chest, pelvis, and feet. The slab was not visible on the surface. The west edge of the slab covered the whale rib that was lying across the thigh bones. The south end of the rib rose 0.10 meter above the surface of the sod layer.

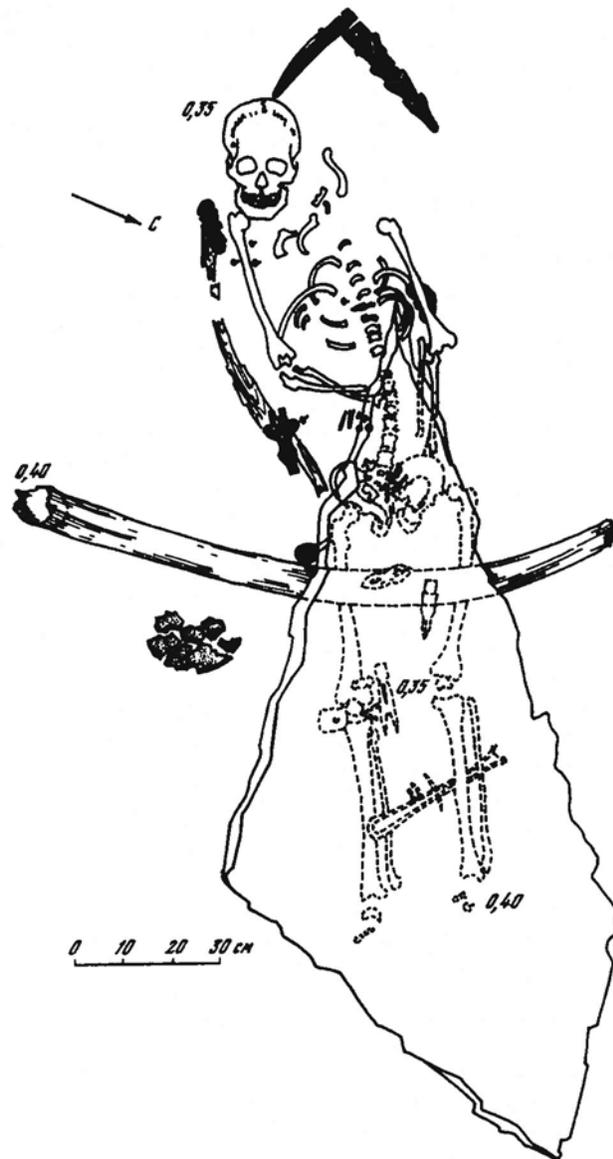


Figure 11. Burial 57.

The skeleton was in a poor state of preservation but mainly in anatomical order, though the bones of the chest and shoulder region were displaced. The skeleton was supine, and the hands were in the pelvic area. The skull was on its base, facing east.

The inventory found in the grave was a mattock with a carved walrus-tusk handle to the left of the back of the skull; a “winged object” near the right shoulder; and a carved object and a nail-shaped article near the right forearm. An unfinished “winged object” was under the left shoulder bone; wood remains lay along the right side and had nail-shaped inserts in the right shoulder area; an L-shaped article, an arrow point and a siliceous flake were in the chest area. In the right abdominal area were a small sleeve, an arrowhead, two small walrus-tusk wedges, and an L-shaped article. On the pelvis were a fragment of pottery, the end blade of an arrow, two pieces of ocher, a fragment of a deer bone, bird bones, and the skull and ribs of a child. Under the pelvis was a nail-shaped item; a bone spoon was near the right thigh; and south of the spoon were fragments of a pottery vessel. Snow goggles and a harpoon socket piece were between the thighs. A fragmented slate knife with a hole in it, two bird bones, a walrus-tusk fragment, and an item in the shape of a fish were under the right knee. A harpoon socket piece, an awl, an offertory trough made from deer long-bone, and bird bones were between the shins.

Burial 58 was in Quadrants J₁-79, 80; K₁-79, 80 on the Western Hill, with the head of the grave oriented to the west. The depth of the skull was 0.11 m, the pelvis 0.24 m, and the shins and feet 0.43 m. The skeleton was supine and in anatomical order, although extended. The grave could not be seen on the surface and no grave goods were found.

Burial 59 was in Quadrants X-48, 49; Y- 48, 49; Z-48, 49 on the Western Hill. Fragments of a child’s skull and a walrus ousic were above the burial. They were coming to the surface and were in a poor state of preservation. The head of the grave was oriented to the north. The depth of the skull was 0.47 m, the feet were at 0.37 m. The skull was on its left side; the mandible on its base. The skeleton was lying on its left side, with the left arm extended, the right arm flexed at the elbow, and the hands in the pelvic section on the east side. The legs were slightly flexed at the knees.

The inventory included a fragmented snow shovel with a bone point beneath it on the feet of the skeleton. A “winged object” was lying farther to the west of the skull. Two sled runners and an L-shaped article with traces of wood were lying along the right shoulder near the “winged object.” A pail handle decorated with zoomorphic motifs was on the right scapula, and a harpoon socket piece on the right forearm. A cluster of goods to the east of the skull contained a piece of ochre, a walrus-tusk flake, two sawed antler pieces, three teeth, a fragment of a drill mouthpiece, a walrus-tusk sleeve, three small pieces of walrus tusk, an animal-rib pressure flaker, two quartz flakes, two siliceous flakes, three slate flakes, and sawed and unsawed antler fragments. Lying on the left shoulder were a bone carving of a bear head, a club, an antler adze sleeve, an adze blank, a slice of walrus tusk, and a piece of slate. A walrus-tusk article was under the chest.

Burial 60 was in Quadrant I₁-68 on the Western Hill. The skull was oriented to the north and at a depth of 0.30 m; the right foot was at 0.65 m, and the left foot at 0.48 m. The skeleton was covered lengthwise with a whale rib, with its west end 0.03 m above the surface. Whale bones were coming to the surface both south and north of the burial. The skeleton was lying on its right side, and the bones were in anatomical order. The skull was crushed. The shoulder and thigh bones were removed from the sockets. The shins were displaced.

Grave goods at the site included a walrus-tusk boathook in the right scapular region; an ulu handle on the chest; a boathook, a spindle-shaped item, and several needles in the abdominal area; a button on the pelvis; and a trough scraper under the right knee. A button and a gasket were between the right shin bones; and a decorated walrus-tusk article was above the right knee. Among the lithic items, a fragmented slate knife and two slate flakes were in the abdominal cavity, and a whetstone was near the epiphysis of the right femur. An imprint of wood and humus were under the skeleton. A stone point with evidence of

retouching and a miniature walrus-tusk zoomorphic carving were discovered in the humus under the ribs after the removal of the skeleton. A worked animal long-bone was in the pelvic region.

[No **Burial 61** is described—*Trans.*]

Burial 62 (Fig. 12) was in Quadrants G₁-67, 68; H₁-67, 68 on the Western Hill. The skull was oriented to the east and at a depth of 0.40 m, with the pelvis at 0.55 m. A wall of whale ribs bordered the sides of the burial to the south, west, and north; a whale scapula bordered the east side. The end of the rib on the southeast corner of the grave was 0.02 m above the surface.

The skull in this burial was on its right side, the torso was supine, and the extremities were flexed at the joints and pressed against the torso. The inventory included a compound antler handle with L-shaped holes in it, a slate knife blank, an oblong antler item, and a walrus-tusk toggle on the chest; a bone spear holder and a rodent mandible on the right scapula; and two small animal bones near the left clavicle.

Burial 63 was on the Western Hill in Quadrants C₁-67, 68. The skull was oriented to the east, and at a depth of 0.47 m, the feet were at 0.60 m. The skull was lying on its base, with the skeleton extended and supine.

The inventory included a “winged object” near the skull; a stone arrow point on the right side of the chest; a slate knife on the left side of the abdomen; a carved article on the pelvis; walrus-tusk arrowheads, some retaining the stone end blades; and a single point on the left side of the left forearm. To the left of the pelvis were two harpoon heads (1A1XP), an arrow, five small slate points, and fragments of slate tools. On the upper left thigh were fragmented snow goggles; along the left thigh were a harpoon socket piece with some wood remains attached, six harpoon heads (four 2A2x2M3, 2A2y2M3, 1A2XP), two arrowheads, a bone pressure-flaker, a fragment of an oblong walrus-tusk item, two plugs, a fragment of a miniature item, a top-shaped item, sandstone whetstones, several fragmented slate points, two unidentified flakes, and a piece of ochre. Near the outside of the left shin were a whetstone, an ice pick, and shell fragments. Between the knees and thighs were a slate tool, a carved figure, a piece of a walrus-tusk item, and several nail-shaped items, four of which were made of wood. Two nail-shaped articles and a bone plate with holes in it were between the shins. Four oblong walrus-tusk items were on the outside of the right shin.

Burial 64 was located in Quadrants G₁-69, 70 on the Western Hill. The grave was oriented to the west. The skull was at a depth of 0.56 m, the remaining skeleton at 0.66 m. Burial 64 was discovered after

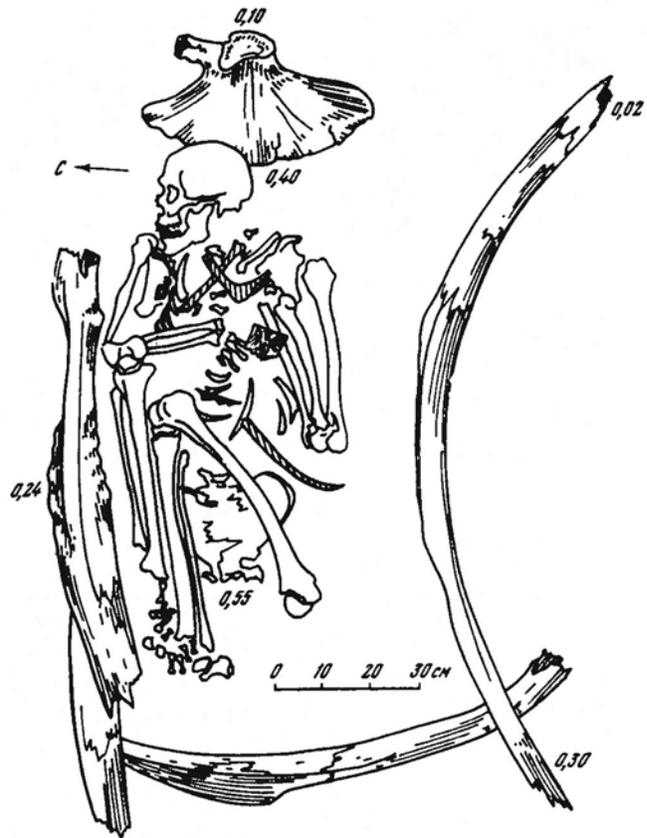


Figure 12. Burial 62.

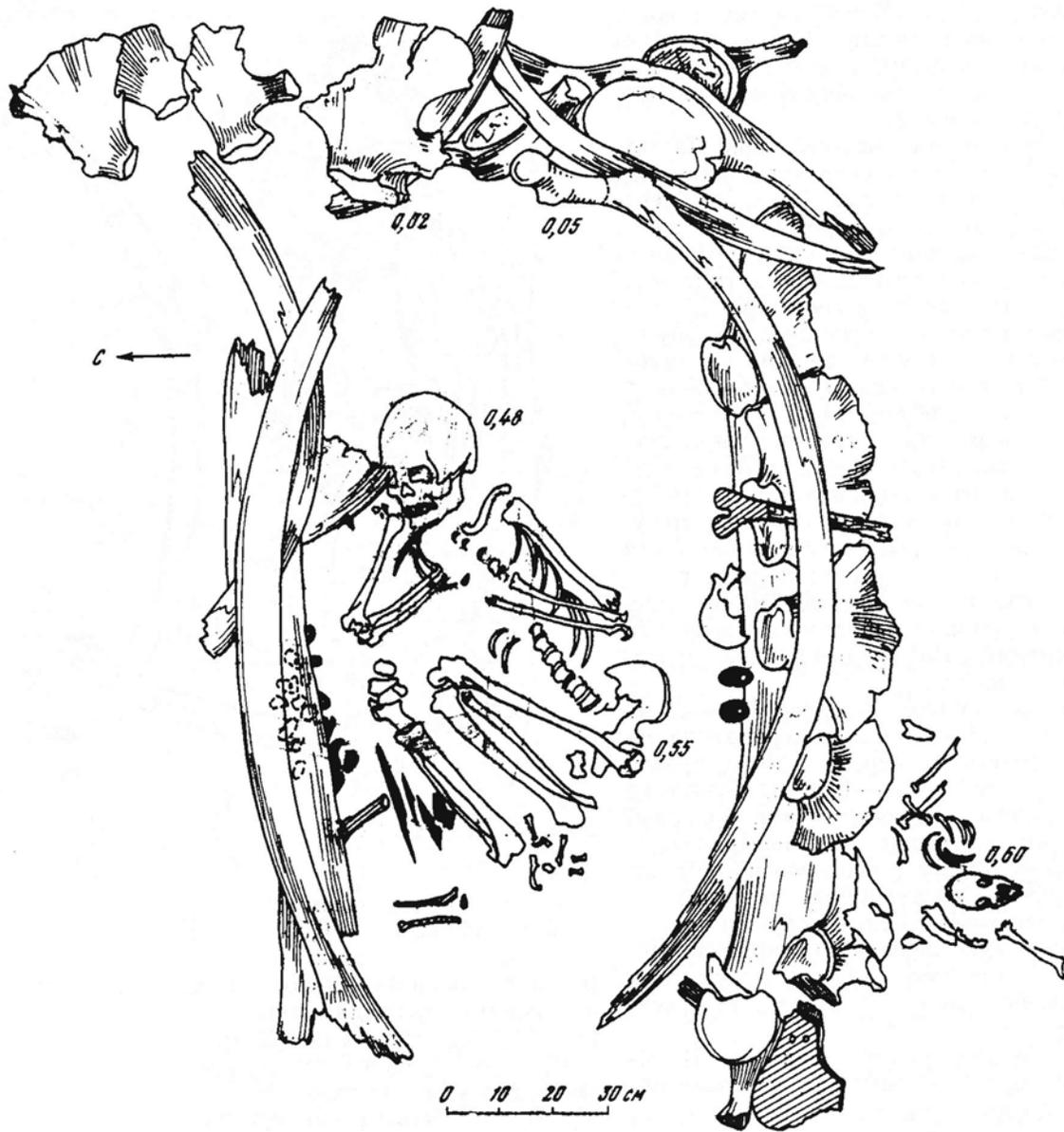


Figure 13. Burial 65.

the removal of Burials 62 and 63, and was under the whale rib bordering the north side of Burial 62. The skeleton was fragmented and in a poor state of preservation. The skull was on its right side and belonged to a child. No grave goods were found.

Burial 65 (Fig. 13) was in Quadrants C₁-59-61; D₁-59-61 on the Western Hill. The skull was oriented to the east and was at a depth of 0.48 m, with the pelvis at 0.55 m. The grave had walls of assorted whale bones on the north, south, and east sides. Some of the bones were beginning to appear on the surface, protruding as much as 0.05 m above it. A fragmented Arctic fox skeleton and assorted bones of various birds and animals were to the south of the burial. These were at a depth of 0.60 m. The skeleton was supine. The skull was on its base, arms flexed at the elbows, and hands on the chest. The legs were flexed at the knees and pressed against the abdomen. Among the inventory were an oblong walrus-tusk

item and a stone tool located near the mandible. On the outside of the right forearm were a piece of ochre, a walrus-tusk buckle blank, many pendants of walrus tusk, bear canines, and bear claws. Similar pendants were found under the ribs, near the feet, and south of the pelvis. On the outside of the right shin were a baby walrus tusk, a harpoon head (1A2XP), a stone tool, a harpoon foreshaft, an arrowhead, an awl, small animal bones, and a rodent skull. A skull fragment from another individual, and a snow shovel with holes in it and the remains of the wooden handle were found in the south wall of the grave.

Burial 66 was on the Western Hill in Quadrants J₁-69, 70; K₁-69, 70. The skull was oriented to the northeast at a depth of 0.30 m, with the pelvis and feet at 0.45 m. The grave had walls of whale ribs and mandibles on the northeast and southeast. The skull was on its base, the torso on its back. The arms were flexed at the elbows, the hands in the abdominal area. The legs were flexed at the knees and diverged to the right. The bones of the right leg were fragmented. The inventory included a harpoon head (1A2XP) near the right shoulder; a rodent skull, piece of ochre, and two stone tools to the left of the feet. A harpoon foreshaft was under the south wall of the grave.

Burial 67 was in Quadrants J₁-73, 74; K₁-73 on the Western Hill. The grave was oriented to the east-northeast. The skull depth was 0.30 m, the pelvis 0.35 m, the knees 0.40 m, and the feet 0.55 m. The skull was on its base, the skeleton extended, supine, and fragmented. The bones of the left arm, right upper arm, and lower back were missing.

Among the inventory were two pieces of ochre, an offertory trough made of deer long-bone, and several slate point blanks. A walrus tusk was on the chest, and a fragment of a decorated buckle and an animal bone were between the knees. A walrus-tusk article was found north of the shins. A separate cluster of goods was northeast of the skull at a depth of 0.45 m and consisted of two harpoon heads (1AIXx2P, 1BYM), a stone harpoon side blade, a slate adze, a piece of ochre, a piece of graphite, and pieces of transparent stone. A group of objects from Burial 68 was later found below these goods.

Burial 68 (Figure 14) was in Quadrants I₁-73-75 on the Western Hill. It was oriented to the east, with the skull at a depth of 0.70 m, and the feet at 0.75 m.

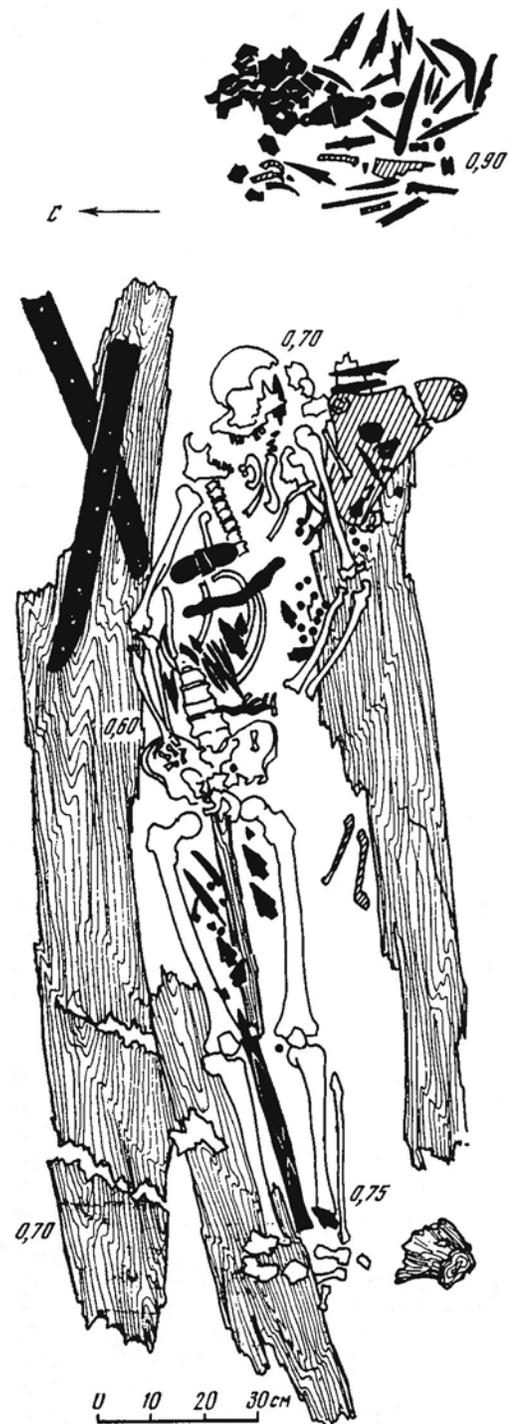


Figure 14. Burial 68.

The walls and a floor of the grave were made of large pieces of wood. The skull was crushed, the bones of the torso disarticulated, and the legs extended.

The inventory included a cluster of artifacts east of the skull at a depth of 0.90 m that consisted of one blank, five harpoon head blanks (2A2x2M3, three 1BXM3, 1BYM3), a fragment of a toggle, a “winged object,” an ice pick, three antler burin handles, walrus-tusk plugs, antler fragments, a walrus-tusk carving, a harpoon foreshaft, a walrus-tusk point, a pressure flaker made of a rib, shovel fragments, eight fragments of different bone articles, a finely retouched siliceous point, a piece of ochre, a piece of sandstone, a piece of quartzite, two pieces of smoky quartz, and many unidentified flakes and fragmented stone tools. Two walrus-tusk sled runners were to the right of the skull; a “winged object” was on the chest; two stone points, five arrowheads, four small points for arrows, and two blunt arrowheads were below the chest. A harpoon head (2A2x2M3) was on the skull; to the left were another harpoon head (1A2XP) and a harpoon head blank (1BXM3). A fragmented bone plate with walrus-tusk plugs, four slate flakes, and an arrowhead with a tubular bone on it were below the previous objects. A piece of ochre and a mouthpiece were nearby. In the left arm area were nail-shaped objects set in traces of wood, several other nail-shaped objects, two plugs, and two spear points. A bow drill was on the ribs. A buckle and nail-shaped items were on the left side of the pelvis; two bird bones were to the south of the thighs. Four slate points, an arrow point, an L-shaped article, a walrus-tusk article, a top-shaped item, a bone toggle, two plugs, a nail-shaped article, and a complex harpoon socket piece were between the thighs. A point was on the left shin.

The remains of a decayed bow, a harpoon head (2A2x2M3), a plug, a walrus-tusk item, and two nail-shaped articles were found among the wooden planks north of the skeleton.

Burial 69 was located on the Western Hill in Quadrants H₁-70, 71. The skull was oriented to the east and was at a depth of 0.25 m, the skeleton at 0.38 m. A wall of whale bones to the north of the burial was beginning to surface and was visible 0.06 m above the sod. The burial belonged to a child, the skull and especially the skeleton were fragmented; the skull was crushed, the mandible missing. Only several vertebrae and part of the ribs remained from the skeleton.

The inventory included a bone mouthpiece to the south of the ribs and a fragment of a wooden plate at the west corner of the grave.

Burial 70 was on the Western Hill in Quadrant E₁-70. The skull was oriented to the west and was at a depth of 0.39 m, with the pelvis at 0.50 m. The skull was on its left side, the skeleton supine. The legs were flexed at the knees and pressed against the abdomen. A skull fragment from another individual was located to the south of skeleton 70. Thin layers of decayed wood, humus, and pieces of birch bark were above the burial at a depth of 0.12–0.23 m.

The inventory included a walrus-tusk object and a shell article near the right shoulder, and a strip of birch bark west of the feet above the burial.

Burial 71 was on the Western Hill in Quadrants W-18, 19, with the head oriented to the east. The skull was at a depth of 0.60 m, the feet at 0.80 m. Whale ribs were at the head and foot of the burial; a whale mandible and the remains of a decayed wooden cover were lying along the burial on the south side. The skull was crushed. The skeleton was in a poor state of preservation, with the bones extended. Decayed wood was found under the skeleton.

Among the inventory were a mattock, a burin in an antler handle, needles, a decorated pail handle, and a decorated article of walrus tusk near the skull; a fragment of walrus tusk was near the right forearm. Fragments of slate tools, needles, and a decorated walrus-tusk hairpin were on the chest and abdomen; two bone articles and pieces of ochre were below the skeleton. Two miniature slate points, a piece of quartzite, a decorated walrus-tusk handle, and three hollow bones were between the thighs; ochre was between the shins.

Burial 72 was on the Western Hill in Quadrants H-75, 76. The skull, oriented to the west-southwest, was at a depth of +0.02 m and could be seen above the sod. The shoulder section was at a depth of 0.18 m, the pelvis at 0.21 m. The skeleton was supine and flexed, the skull was lying on its base, and the pelvic bones were fragmented and displaced. The arms were flexed at the elbows; the hands were on the chest. The legs were flexed at the knees and pressed against the abdomen. Decayed wood remains were to the right of the skeleton. No grave goods were found.

Burial 73 was on the Western Hill in Quadrants E₁-73-74, with the head oriented to the east. The skull was at a depth of 0.18 m, the feet at 0.45 m. An oval wall of whale ribs, vertebrae, and scapula was around the burial. This wall protruded in places up to 0.15 m above the surface. The skull was on its base, though turned a little to the right side. The arms were flexed at the elbows, the hands near the mandible. The legs were bent and diverged to the right. The skeleton was fragmented: the left radius, left shin, and part of the vertebrae and pelvis were missing.

The inventory included three fragments of slate tools, an animal tooth, and a hollow bone near the knees.

Burial 74 (Fig. 15) was on the Western Hill in Quadrant J₁-90, 91; K₁-90, 91. The head was oriented to the southwest. The skull was at a depth of 0.28 m, the feet at 0.37 m. The burial was covered lengthwise with wooden slabs, under which were three whale ribs lying across it. The ends of the ribs could be seen on the surface (up to 0.20 m above). The skeleton was extended and supine, the arms flexed at the elbows and placed on the chest.

No grave goods were found with the burial, although the following were found above the burial at a depth of 0.10 m below the sod level: a whetstone, a harpoon head (2A2xM3), and a bird bone.

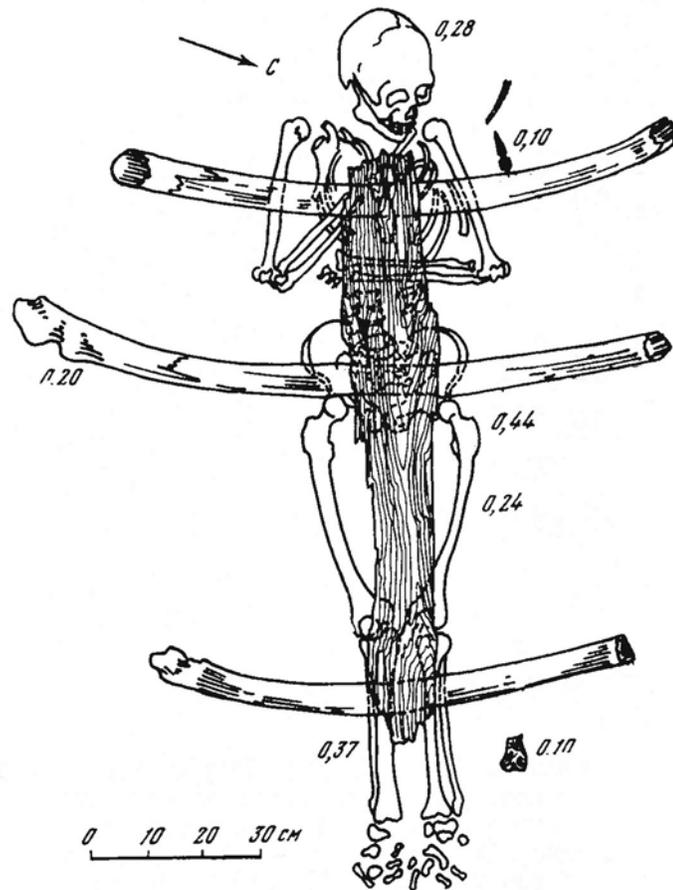


Figure 15. Burial 74.

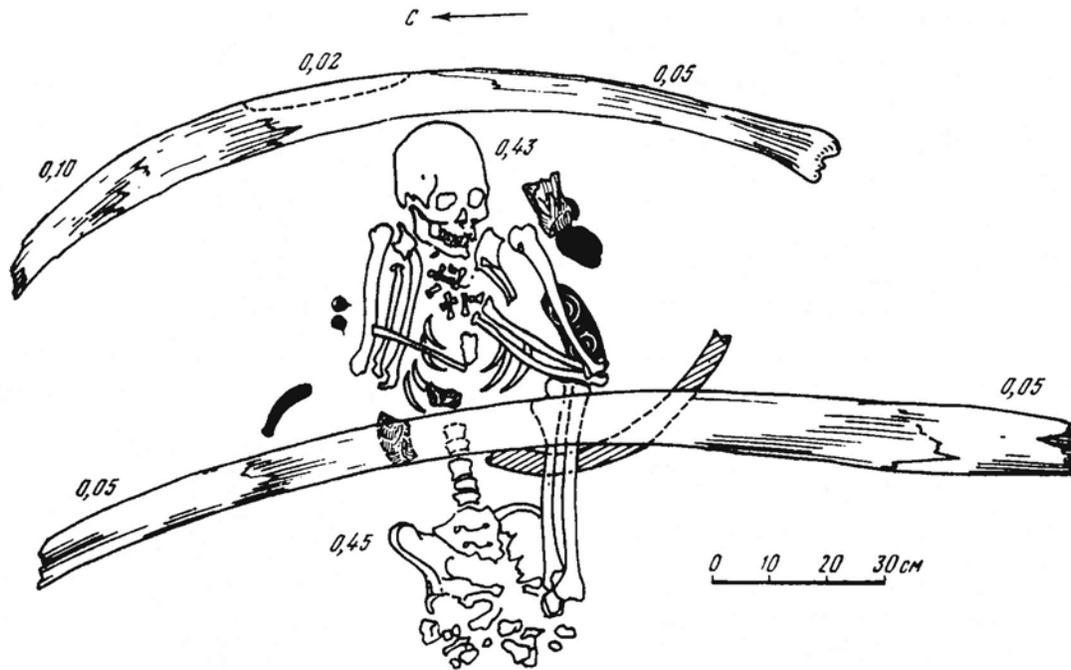


Figure 16. Burial 75.

Burial 75 (Figure 16) was on the Western Hill in Quadrants P₁-65; Q₁-65, with the head oriented to the east. The skull was at a depth of 0.43 m, the feet at 0.45 m. The burial was covered with two whale ribs, one of which extended 0.02 m above the surface. The skeleton was supine, with the skull on its base facing west. The arms were flexed at the elbows and placed on the chest, the pelvis was crushed. The left leg was flexed at the knee and pressed against the abdomen, and the right leg was missing.

The inventory included a slate knife with three needles under it and a walrus-tusk offertory trough near it by the left shoulder. A decorated walrus-tusk item was under the left forearm; a walrus rib was under the legs. A wooden bow drill, a whetstone, and a slate knife fragment were on the chest. A bone article and two rodent skulls were to the right of the skeleton.

Burial 76 was on the Western Hill in Quadrant K₁-49, 50; L₁-49, 50; M₁-49, 50, with the head oriented to the east-northeast. The skull was at a depth of 0.20 m, the feet at 0.55 m. The burial was covered with a large whale bone that served as the north part of a wall. Some parts of the wall were protruding up to 0.12 m above the surface of the turf. The skull was crushed. The skeleton was fragmented, the torso supine. The arms were flexed at the elbows, with the hands near the mandible. The legs were flexed at the knees and pressed against the abdomen. The grave goods included a piece of pyrite, fragments of slate tools, the remains of a wooden vessel bottom, and bird bones to the south of the skull. A fragment of a walrus-tusk article, a walrus-tusk mattock, and five bear claws were near the left thigh. A hollow bone and four slate tool fragments were near the pelvis.

Burial 77 was on the Western Hill in Quadrants H₁-42, 43; I₁-42, 43. The head was oriented to the east. The skull was at a depth of 0.42 m, the pelvis and feet at 0.45 m. The burial was partially bordered and covered with whale ribs and scapula in the foot area. Part of that wall had surfaced to 0.03 to 0.30 m above sod level. The skull was lying on its right side, the skeleton supine. The arms were flexed at the elbows and pressed against the collarbones. The legs were flexed at the knees and diverged to the right. The inventory included two bolas, a piece of ochre, a pottery fragment, and a bone fragment to the right of the pelvis.

Burial 78 was on the Western Hill in Quadrants T-36-38; U-36-38, with the head oriented to the east. The skull was at a depth of 0.28 m, the feet at 0.32 m. The skull lying on its base and covered with a whale scapula. The skeleton was supine, the arms on the chest. The left leg was flexed at the knee and covered the right one. An ulu handle was found on the whale scapula covering the skull; a harpoon head (2A2x2M3), a walrus-tusk nail-shaped item, and a bird bone were to the right of the pelvis. Burial 83 was discovered after the skeleton 78 was removed.

Burial 79 was on the Western Hill in Quadrants AA-83, 84; BB-83, 84. The head was oriented to the east-northeast. The skeleton was at a depth of 0.2 m and badly fragmented, with the bones displaced, and the skull missing. A wall of small whale bones was at the northwest edge of the grave and rose 0.08 m above the surface.

Grave goods included a sled runner to the north of the burial with one end 0.06 m above the surface. Four bolas, a fragment of a slate knife, and the ousic of a seal were in the neck area. A bone awl and a bola were near the left shoulder, an animal bone was under the right thigh; a toe-bone drill mouthpiece, and a group of bolas were under the pelvis.

Burial 80 was on the Western Hill in Quadrants H₁-93, 94; I₁-93, 94, with the head oriented to the north. The skull was at a depth of 0.10 m, the feet at 0.30 m. A wall consisting of a piece of whale jaw and a scapula was near the head of the grave. The skeleton was covered lengthwise by a wooden block, and two whale ribs with their ends under the wooden block covered the thighs and shins. All the bones of the group had ends extending above the ground surface as much as 0.03 to 0.15 m.

The skeleton was supine, the skull on its base. No grave goods were found.

Burial 81 was on the Western Hill in Quadrants C₁-47, 48, with the head oriented to the west. The skull was at a depth of 0.23 m, the feet at 0.48 m. A whale rib, part of which extended 0.02 m above the surface, covered the left shin of the skeleton. The skull and feet were covered by whale scapulas. Decayed wood remains were lying along the burial.

The skull was on its left side, the skeleton supine and extended, the arms flexed at the elbows and pressed against the abdomen. Fragments of ceramics were found to the right of the skull.

Burial 82 was on the Western Hill in Quadrants W-53, 54; X-53, 54. The head was oriented to the northeast with the skull 0.02 m above the surface. The feet were at a depth of 0.10 m. The skull was on its base, and the mandible was displaced. The torso was supine and the skeleton fragmented. The arms were flexed at the elbows, with the hands near the clavicles. The legs were flexed at the knees and pressed against the abdomen.

The inventory included a slate flake on the chest, a decorated buckle near the left knee, a pebble, and a pottery fragment to the right of the pelvis.

Burial 83 was located directly under Burial 78 on the Western Hill in Quadrants T-36, 37; U-37. The upper part of the skeleton was oriented to the north. The clavicles were at a depth of 0.65 m, the feet at 0.58 m. The skull was missing. The skeleton was supine, badly fragmented, and not in anatomical order. A fragment of a pelvis and the radius of another individual were in the pelvic section of the burial. A separate skull was found above the foot bones at a depth of 0.13 m.

A decayed wooden floor was under the skeleton. The inventory contained harpoon foreshafts, a socket piece, and three harpoon heads (1PXM3) in the left shoulder area. An arrowhead with a stone point and a bone flaking tool were along the bones of the left thigh; three articles of walrus tusk were on the inside of the thigh. A foreshaft was found near the left shin; a flaking tool on the knee; and a harpoon head (1A1XP), a bone spoon, a blunt arrow, an awl, a slate javelin head, and a bone article were in the right side of the pelvic region. An ice pick was found near the right shin.

Burial 84 was on the Western Hill on the border of Quadrants X-53, Y-53, with the head oriented to the west. The skull was at a depth of 0.28 m, the bones of the skeleton at 0.3 m. The burial was that of a child. The skull was crushed and the skeleton fragmented. A piece of whale bone was near the head of the grave.

The inventory was all made of walrus tusk and included a decorated offertory trough, a decorated sculpture, the carved heads of a duckling and a baby walrus, two buttons with animal heads, and a decorated walrus figurine, all near the foot of the burial.

Burial 85 was on the Western Hill in Quadrants AA-25, BB-25. The head was oriented to the southeast. The skull and the right shin were 0.02 m above the surface. Deepest were the feet at 0.15 m below the surface. A whale rib was in the north section of the burial near the skull. The end of the rib extended 0.05 m above the surface. At the south end was a whale mandible that extended 0.02 m above the surface.

The skull was lying on its base, its mandible displaced. The skeleton was supine and extended, with its right side lying on the large whale scapula at a depth of 0.12 m.

The following objects were found: under the skull were fragments of pottery with a cluster of rock crystals and a bird bone on it. Two prongs of a bird spear were to the right of the skull; a bear canine, fragments of slate knives, and a chalcedony flake were to the left of the skull. Three spear prongs were near the right forearm. A trough scraper and a walrus-tusk button were to the right of the pelvis. An ice pick was found on the outside of the right shin. Fragments of a slate tool were near the feet. The central prong of a bird spear and bird bones were near the right shoulder. On the outside of the left leg bones were six prongs of a bird spear, slate tool fragments, a bone, an unidentified flake, two quartz pebbles, three quartzite flakes, a bear claw, and a shell fragment. Two slate tool blanks, four small walrus-tusk plates, fragments of an animal scapula, burned bone, and four bolas were below the objects described above and near the left shin. A walrus-tusk wedge was inserted into the thickened part of the whale scapula that was under the skeleton.

Burial 86 was on the Western Hill in Quadrants P-51; O-51. The upper part of the skeleton was oriented to the northeast. The ribs were at a depth of 0.08 m, the feet at 0.12 m. The burial was that of a child. The skull was missing; the skeleton was fragmented, extended, and supine. A wall consisting of separate whale bones stretched from north to east. The bones were partially exposed up to 0.05 m above the surface. A toy harpoon socket piece was to the left of the pelvis.

Burial 87 was on the Western Hill in Quadrants V-57, 58; W-57, 58. It was covered by a number of whale bones that extended as much as 0.4 m above the surface, under which was a child's skeleton. The head of the skeleton was oriented to the northeast. The skull was at a depth of 0.14 m, the pelvis and feet at 0.30 m. The skull was lying on its base, the skeleton supine. The arms were extended along the torso, the legs slightly flexed. The skeleton was fragmented.

The grave goods found were a slate tool fragment near the left shoulder and two prongs of a bird spear lying along the bones of the left arm.

Burial 88 was on the Western Hill in Quadrants V-26-28; W-26-28, with the head oriented to the west. The skull was at a depth of 0.65 m, the feet at 0.72 m. The skull was crushed and fragmented, the skeleton was extended and in a very poor state of preservation. A whale rib was to the west of the

skeleton, and wood fibers were on its left side. Traces of polar bear-skin bedding were found under the skeleton.

Fragments of a child's skull were found to the right of the skull. A cluster of grave goods was above the skeleton in the foot area of the grave consisting of fragments of a wooden vessel, an antler handle for a burin, an antler bow for a drill, a walrus-tusk article, a button blank, a walrus-tusk figurine, a walrus-tusk fragment, three oblong bone pieces, two walrus teeth, and two pieces of ochre. A walrus tusk was above the feet at a depth of 0.15 to 0.40 m. Another cluster of grave goods was found on the same level as the skeleton near the back of the skull and contained two siliceous stone tool fragments, a shell fragment, a walrus-tusk flake, a decorated article, two walrus-tusk bracelets, and a button in the shape of an ermine head. Two ulus, one with a shaped handle, needle blanks, and a mattock were found to the left of the skull. Two nail-shaped and one club-shaped articles of walrus tusk were near the left thigh.

Burial 89 was on the Eastern Hill in Quadrants B_b-188, 189; C_b-188, 189; D_b-188, 189. The grave head was oriented to the north-northeast. The skull was at a depth of 0.08 m, the feet at 0.15 m. The skull was on its base, with the skeleton supine. The arms were flexed at the elbows, with the hands on the clavicles. Some of the bones were displaced and fragmented. Pottery fragments were found to the right of the skull.

Burial 90 was on the Eastern Hill in Quadrants W_c-151, 152; X_c-151, 152, with the grave oriented to the northeast. The skull was at a depth of 0.25 m, the feet at 0.35 m. The skeleton was supine and in anatomical order, with the upper arms on the chest. Whale ribs bordered the burial on the south and north, with the ribs projecting up to 0.06 m above the surface. The skull was covered with a whale scapula, the feet with a whale vertebra. No grave goods were found. Traces of a wooden floor were found along with the skeleton.

Burial 91 was on the Eastern Hill in Quadrants G_b-149, 150. The grave was oriented to the southwest and was at a depth of 0.15 m. The burial was that of a child. The skull was crushed, the skeleton incomplete and in a poor state of preservation. A large whale scapula covered the burial with the joint section extending 0.02 m above the surface. Two fragments of whale bone bordered the burial on the north. A walrus scapula was found under the joint section of the whale scapula.

Burial 92 (Fig. 17) was located on the Eastern Hill in Quadrants O_b-173; P_b-173; N_b-173. The grave was oriented to the south. The shallowest depth of the skull was 0.15 m; the feet were at 0.25 m. A whale rib and scapula bordered the burial on the south and protruded up to 0.15 m above the surface. Whale bone bordered the grave on the west and partially covered the burial. Two whale mandibles were part of the wall of Burial 102 and had their ends under the aforementioned whale bone of Burial 92.

Burial 92 was a triple burial. The chest and pelvic bones of all the skeletons were turned around. All three skeletons were extended with some of the bones displaced and fragmented. Two skulls and the mandible of the third were in a satisfactory state of preservation. The third skeleton was the smallest. The skull of the middle-sized skeleton, which was located on the middle level, was lying on its base facing north. The skull of the lowest and largest skeleton was displaced to the south and facing east. Fragments of a skull cover were found farther to the south of the skulls (perhaps belonging to the upper skeleton). The foot bones were partially placed on the whale vertebra.

Grave goods found with the burial were a fragment of a tubular animal bone between the skulls and the central prong of a bird spear near the right forearm of the lower skeleton. A cluster of objects were present to the north of the skeletons' feet on the east side. These included a decorated ice pick, two fish spear points, a harpoon socket piece, a toggling harpoon head (1A2y2P), nine prongs of a bird spear, a "winged object," a decorated walrus-tusk article, a float plug with a hole in it, an awl fragment, four walrus-tusk dowels, an animal tooth, a walrus tooth, a miniature socket-piece, a snow shovel fragment, a toe-bone mouthpiece, a fragmented slate point with a hole in it, a slate tool blank, and a piece of transparent rock.

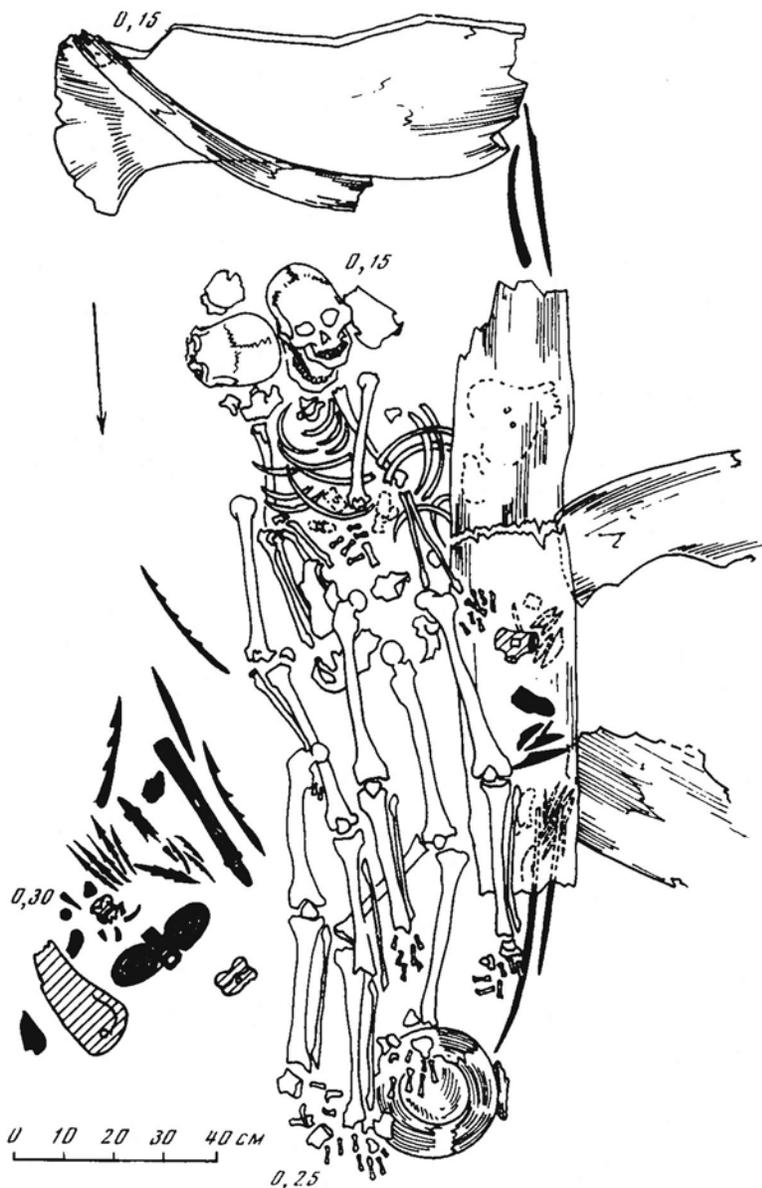


Figure 17. Burial 92.

southwest. The skull was on its base at a depth of 0.21 m, the feet at 0.32 m. The skull diverged slightly to the right. The skeleton was supine, extended, and with the bones in anatomical order. The arms were pressed against the chest. The skull was covered with a whale scapula, the skeleton covered with a wooden block. Two whale ribs were lying across the skeleton on its shins and clavicle and were also covered with the same wooden block. The last rib had one of the ends protruding 0.15 m above the surface. A bone bow for a drill was near the right clavicle.

A harpoon foreshaft and a mattock were found in the southwest corner of the wall. A snow shovel, a fragment of a slate knife, and slate flakes were under the west bone wall. The objects found under the north end of that bone were a harpoon foreshaft, a walrus-tusk spear, a harpoon finger rest, a harpoon head (1A1y2P), an animal tooth, an antler shovel, three arrowheads, three wound plugs, a decorated antler burin handle, a slate tool fragment, an unidentified flake, seven stone spear points, and pottery fragments.

Goods farther to the south were two harpoon heads (1BYM), an unidentified flake, a sleeve, another identified flake with traces of flake removal, a slate spear point, an arrow fragment, and a bird bone. Three harpoon heads (1A1XP, 1A2XP, 1BYM) and a walrus-tusk awl fragment were lying on indicated bone wall. An adze and an adze sleeve with a wedge in it were also found. Objects revealed after the lower skeleton was removed were a buckle, an awl made from a long-bone, and slate flakes.

Burial 93 was on the Eastern Hill in Quadrants R_c-106, 107; S_c-106, 107, with the grave oriented to the

Burial 94 was located on the Eastern Hill in Quadrants F_b-159, G_b-159. The grave was oriented to the southeast. The skull was at a depth of 0.10 m, the feet at 0.20 m. The skull was crushed, the torso supine. The forearms were bent perpendicular to the shoulders and diverged to the left. The legs were flexed at the knees and diverged to the right. The inventory included a piece of ochre to the right of the skull; a prong from a bird spear, a bola, a bone article, a flake of walrus tusk, and pottery fragments to the left of the skull. Burial 94 was in the wall of another burial (99-100), which was located at a deeper level.

Burial 95 was on the Eastern Hill in Quadrants P_b-171, 172; Q_b-171, 172; R_b-171, 172. The grave was oriented to the north with nothing appearing on the surface. The burial was surrounded by a wall of whale mandibles. The skull was at a depth of 0.60 m, the feet at 0.75 m. The skull was crushed. The skeleton was supine and extended, with the bones in anatomical order. Besides the whale mandibles, the skeleton was bordered by a wall of slate slabs and was lying on a decayed polar bear pelt. The remains of a wooden floor were lying on more slate slabs.

The grave goods found near the back of the skull were a cluster of bird bones, a snow shovel fragment with three toggling harpoon heads lying on it (two 2A2x2M3, 1A2XP), a prong from a bird spear, a wound pin, a drum handle, and four end blades. To the right of the skull and right arm bones were two harpoon heads (1BXM, 1BYM), the latter with a fragment of an end blade, foreshafts of these harpoon heads, three fragments of a harpoon head (2A2x2M3), a blank for a large harpoon head (2A2XM3), two small harpoon heads (2A2y2M3), three medium-sized harpoon heads (2A2y2M3), one harpoon head with a closed socket (1BXM), a harpoon head with an unfinished hole in it (2A2XM3), a fragment of an awl made from an animal rib, two nail-shaped objects, a toe-bone mouthpiece for a drill, a burin in a handle, an ice pick, an ice cleat, a fragment of a harpoon head (1BYM), a spoon/shovel, a button, three fragments of arrowheads, three bone sticks, fragments of an antler, a bear canine, a bird bone, five pieces of sandstone, eight stone tools, two pieces of ochre, a pebble with signs of working, twelve stone flakes, a slate tool fragment, and a blank of siliceous slate.

Three bone items were found between the thighs. A harpoon foreshaft, four slate flakes, and a walrus-tusk mask were lying along the left thigh. Farther to the left were two harpoon heads with closed sockets (1BYM), fragments of three harpoon heads (2A2y2M3), a button, an adze sleeve, a harpoon socket piece, a flaker made from an animal rib, fifteen arrowheads, an arrowhead with an end blade, an arrowhead fragment, fragments of walrus-tusk items, two arrowhead fragments, a walrus-tusk flake, a fragment of a bone article, eight end blades, and one fragmented end blade. Two boathooks were near the left shin. An ice pick and a prong from a bird spear were near the feet. A snow shovel fragment, a mattock, and a pail handle were farther south of the feet.

Objects found after the removal of the pelt and wooden floor were a “winged object,” a dowel, an antler fragment, a walrus-tusk flake, a shaft fragment, and a fragment of a wooden article. A bird sternum was found on the bones making up the west side of the wall, and a broken bone spoon and a snow shovel were on the east side of the wall.

Burial 96 was located on the Eastern Hill in Quadrants N_b-171; O_b-171, 172. It was a badly fragmented child’s burial. The grave was oriented to the east. The skeleton was at a depth of 0.15 m. The skull was crushed and displaced to the east. The skeleton was supine and slightly flexed. The left arm was covered with a whale scapula, and the burial was bordered by a whale mandible to the south. The jaw was also part of the wall of Burial 102. A separate skull, which projected 0.01 m above the surface, was lying on the jaw. Bones from two adult individuals were found farther to the west of skeleton 96 at a depth of 0.15 m under the sod. The bones had no order.

The inventory included two walrus-tusk flakes and a slate tool fragment near the skull and pottery fragments farther to the east. Under the whale bone that bordered the child’s skeleton on the south and covered the left arm bones and part of the pelvis were a slate knife fragment, a fragment of a walrus-tusk mouthpiece, a flake of walrus tusk, and a foreshaft.

Burial 97 (Figure 18) was a double burial in Quadrants G_b-157, 158; H_b-157, 158 on the Eastern Hill. It was located within the wall of Burial 99-100 and covered the latter. One of the skeletons was lying on the other. The upper skeleton (97A) was smaller than the other (97B). Both skeletons were oriented to the south.

The skull of 97A was crushed; the mandible and several fragments of the skull cap were at a depth of 0.22 m, the feet at 0.36 m. The skeleton was extended, with the bones in a poor state of preservation and not in anatomical order.

Skeleton 97B did not have a skull. The upper section of the skeleton was at a depth of 0.33 m, the feet at 0.39 m. The skeleton was lying supine; the bones of the right arm and the left radius were missing. The pelvis was turned over and fragmented. The knees of 97B were lying directly on the skull of Burial 100.

Two separate skulls were found near the edge of the south wall, east of the skeletons of Burial 97. The skull that was closer to the skeletons was lying on a fragment of whale vertebra at a depth of 0.24 m. The farther skull had no mandible and was at a depth of 0.22 m.

Another skull was lying on the whale bones of the north wall at a depth of 0.19 m. The mandible was next to the skull.

The grave goods were a harpoon head (2A2XP), a shaped walrus-tusk handle fragment, two walrus-tusk barbed items, a bola, and two slate flakes to the southeast of the skeletons. Southwest of the chest section were six prongs of a bird spear, a nail-shaped item, a walrus tooth with a bored hole, five antler barbed points, a fragment of a slate knife with a hole in it, and four end blades, one of them split. A harpoon head (1A2y2P) was on the left side of the pelvis of the lower skeleton. Two antler snowbeaters were lying on the leg bones of both skeletons.

A foreshaft, an ice pick, and three prongs of a bird spear were found in the northwest corner of the wall on the inside. An adze in an antler sleeve was found outside the southwest corner of the wall at a depth of 0.45 m. An antler article, a walrus tooth, a flake of walrus tusk, and a bird bone were in the southeast part of the wall.

Burial 98 was on the Eastern Hill in Quadrants M_b-171; N_b-171; O_b-171. The head of the grave was oriented to the south-southeast. The skull was at a depth of 0.27 m, the feet at 0.35 m. The skull was on its base, turned toward the left. The skeleton was supine and extended, with the bones in general anatomical order although in a poor state of preservation. A small slate slab bordered the burial near the back of the head. The right forearm covered the northern-most bone of the wall of Burial 102.

Grave goods were an offertory trough to the right of the skull; a toggling harpoon head (1A2y2P), a long-bone awl, a bone spoon, and an animal scapula fragment near the right shoulder and arm. Near the left femur were four prongs of a bird spear, a toggling harpoon head (1A2y2P), a comb with an anthropomorphic image, a round button with an anthropomorphic image, and an oblong button. A fragmented knife, a bone plate with holes in it, and a fragment of a miniature fish spear were between the femurs. Under the right femur was a walrus-tusk mattock; between the shins were two fragments of slate tools, a bead, an awl, a walrus-tusk pail handle, an animal bone, and a walrus-tusk lateral prong from a bird spear.

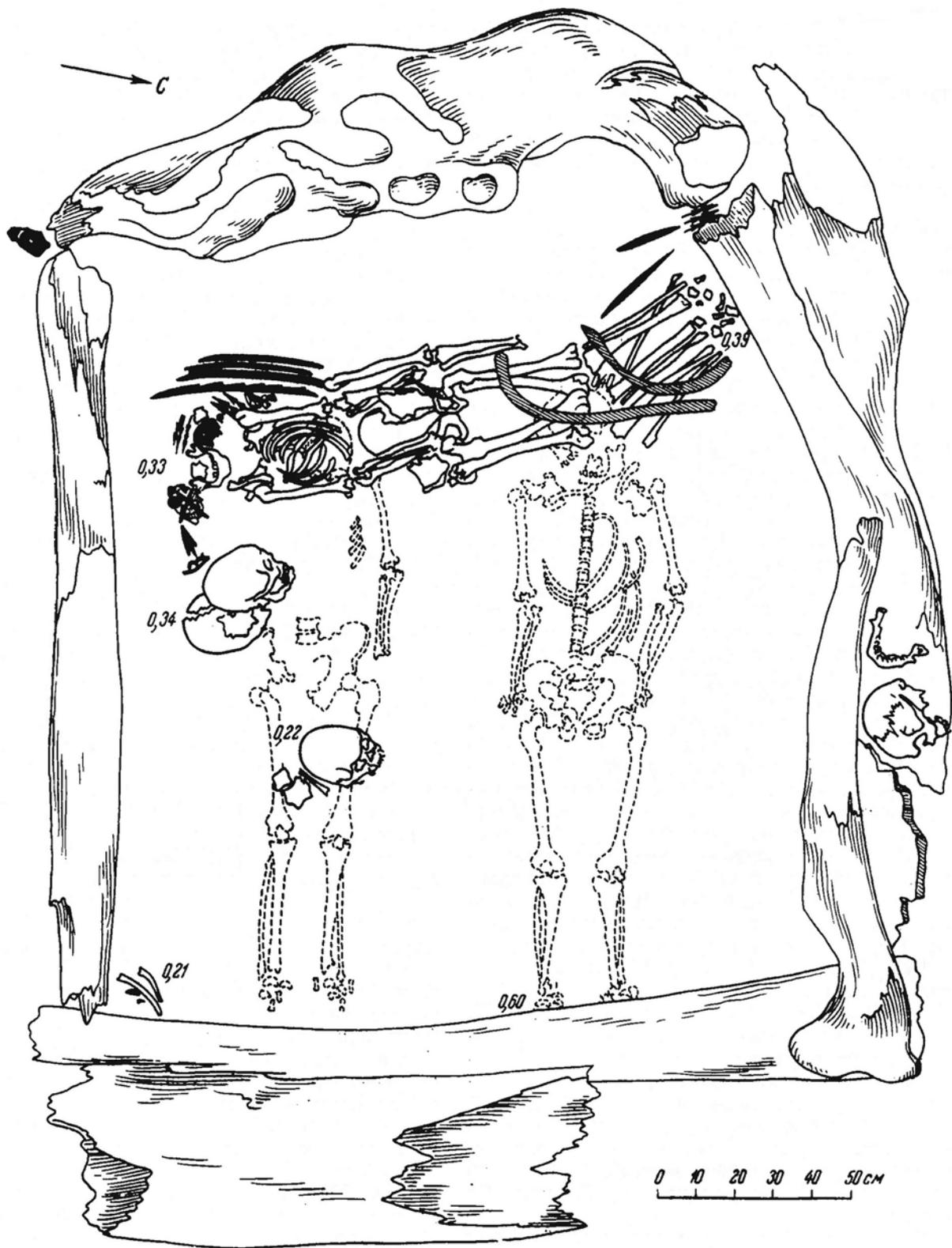


Figure 18. Burial 97.

Burials 99–100 (Figure 19) was located on the Eastern Hill in Quadrants E_b-157–160; F_b-157–160; G_b-157–160; H_b-157–160. A whale skull created a wall on the west side of the burial near the head, and whale mandibles formed a rectangular frame for the grave. The whale skull extended 0.3 m above the surface. The rest of the bones were below the surface. The burial was covered with Burials 94 and 97 in the same structure.

Burial 99 was lying on the south side of the wall and was oriented to the west. The skull was at a depth of 0.35 m, the feet at 0.60 m. The skull was on its base facing east. The skeleton was extended and supine. The facial portion of the skull, the clavicles, and the chest were covered with a slate slab, while the right hand was covered with whale bone from the wall.

The skull of Burial 100 was at a depth of 0.40 m, the feet at 0.60 m. The head of the skeleton was oriented to the west. The skull was on its right side facing south. The skeleton was extended and supine.

Grave goods in Burial 99 were fragments of a wooden vessel and a piece of pottery near the back of the skull; and a wooden mattock handle and walrus-tusk mattock lying on a wooden cutting board (for cutting skins) under the skull. Near the board were a walrus-tusk offertory trough, fragmented wooden articles, the wooden bottom of a birch-bark container with the decayed remains of baleen, and one prong of a bird spear. A carved article with ornamentation was found near the skull. In the chest and abdominal section were fragments of slate tools, a round article of slate, an ulu with the remains of a wooden handle, a slate knife with a hole in it, and one prong of a bird spear. A fragment of a walrus tusk and a toe-bone mouthpiece were found in the pelvic area. A piece of ochre, a decorated button, and a burin in an antler handle were located to the south of the right arm bones. A fragment of a bone shovel and a pendant made of green stone were on the right thigh, and a fragment of a walrus-tusk bracelet was on the left wrist. Two walrus-tusk flakes were near the outside of the right shin.

Grave goods in Burial 100 were a fragment of ochre and a wooden spear thrower to the west of the skull. To the right of the skull, near the right arm bones, were a fastener, a stone adze in an antler sleeve with a wooden handle, two wooden handles, a large harpoon head (1BYM), a foreshaft, a large stone adze, a walrus-tusk buckle, a wooden bottom from a birch-bark container, two slate end blades, three fragments of slate tools, and an animal scapula fragment; on the scapula were two small harpoon heads (1A2x2P, 1A2y2P), an awl, a round slate slab, a wooden float, two bone articles, a toe-bone mouthpiece, and a fragment from a wooden handle. An ice pick was near the right knee. Near the left clavicle were five slate points; four arrowheads and a wooden article were near the right clavicle. A walrus-tusk pressure flaker and a shaped item were on the right elbow. A decorated button was on the lower part of the backbone. Three walrus-tusk fasteners and a slate knife with a hole in it were between the femurs. Two fragments of wooden articles were found to the left of the skull. Four javelins—three with stone points—a bear tooth pendant, and two obsidian points were to the left of the left shoulder. A float fragment was near the pelvis; four bone items, two adzes, five stone points, two slate blanks, and a slate slab were found near the left femur. Two large harpoon heads (1BYM) were near the left knee.

North of the skeleton near the whale-bone wall were a wooden bow shaft, seven arrow shafts, a javelin shaft, nine arrowheads (two with end blades), two end blades, eight floats, a fragment of a wooden bar for starting a fire with a drill, a wooden plug, an unknown wooden article, a fragment from another unknown wooden article, four oar fragments, a wooden club, a baidar part, three stone spear points, a decorated walrus-tusk article, more fragments of bone and wooden articles, pieces of wood, a slate blank, a carved walrus-tusk hook, fasteners, a wooden bowl containing two stone spear points, and a wooden tray. On the wooden tray were a boathook, two pointed items of walrus tusk, a bear claw, a walrus-tusk flake, a cigar-shaped piece of wood, a fragment of wood with traces of fire drilling, and a bird sternum.

An adze sleeve was found in the northeast corner of the grave. Isolated pottery fragments were found on the outside of the north wall.



Figure 19. Burials 99-100.

Burial 101 was on the Eastern Hill in Quadrants L_b-173; M_b-173, with the head oriented to the south. The skull was at a depth of 0.50 m, the feet at 0.25 m. The grave had a whale rib wall on the south and slate slab on the west.

The skull was lying on its right side facing east. The skeleton was extended and supine with the bones in anatomical order. The knees of skeleton 101 covered the skull and chest bones of skeleton 103, which was in the same quadrants and lay directly under skeleton 101.

The inventory included two toggling harpoon heads (2A2y2M3, 1A2XP) to the right of the skull; a foreshaft, an adze in an antler sleeve, and a pressure flaker to the left of the skull; one prong of a bird spear was to the left of the pelvis and a fragment from a slate knife with a hole in it was on the abdomen.

Burial 102 was in Quadrants N_b-171,172; O_b-171, 172 on the Eastern Hill. The grave was oriented to the west. Walls of whale mandibles, discovered during the excavations of Burials 92 and 96, were at the south and north ends. A layer of slate slabs was inside the mandibles. The remains of a wooden floor and bedding were above the skeleton. The skull was at a depth of 0.60 m, the feet at 0.70 m. The skull was lying on its base, facing east. The skeleton was lying extended and supine. A toggling harpoon head (1BYM) and a harpoon foreshaft were found near the south wall at a depth of 0.30 m.

Grave goods found at the same depth as the skeleton were two harpoon heads (1BYM, 1A2XP), a decorated figure, a sandstone whetstone, a wooden item with bone inlay, a decorated walrus-tusk item with a carved handle, a walrus-tusk ulu handle carved into the image of walrus heads, a walrus-tusk item with an image of a polar bear head, a scraper, a retouched flake, a slate ulu blade, a piece of crystal, and a bracelet fragment near the back of the head. Goods found to the right of the skull were bird bones, a decorated walrus-tusk trough, an unknown item, and a walrus-tusk spool fragment. Fragments of a wooden vessel were found near the right shoulder. A large slate knife with holes in it and bracelet fragments were found on the pelvis. A walrus-tusk mattock, two wooden handles, and pottery fragments were to the south of the pelvis outside the slate slab layer. An animal scapula shovel was on the left femur. Two wooden container bottoms with decayed baleen sides were near the feet (these were restored in St. Petersburg). The wooden handle of a staff carved into the image of a seal was found under the skeleton in the chest area.

Burial 103 was on the Eastern Hill in Quadrants L_b-173; M_b-173. This burial lies directly under Burial 101, which was interred later and almost completely ruined the skeleton of 103. The skull was at a depth of 0.26 m, maximal depth of the skeleton was 0.40 m. The skull was on its left side, facing south. The remaining bones were disarticulated and jumbled. The mandible was to the south of the skull.

The inventory included two harpoon heads (2A2y2M3, 1BXM), a spoon-shovel, a fragment of an article with holes in it (No. 4), a walrus-tusk flake, and an antler adze sleeve to the south of the mandible. Objects found to the north of the skull after its removal were an arrowhead, a spear point, and a bone awl. One prong of a bird spear and a miniature walrus-tusk socket piece were found to the east.

Burial 104 was on the Eastern Hill in Quadrant N_b-171, with the upper part of the skeleton oriented to the northeast. The skeleton was at a depth of 0.51 m and was covered with the foot bones of skeleton 98. The skull was missing, and the skeleton was disarticulated. The skeleton was probably prone and flexed on the bedding of slate slabs and whale bone. A whale rib was located to the north of the burial and extended 0.20 m above the surface.

The inventory included the central prong of a bird spear, a trinket, and a bone awl in the chest area.

Burial 105 was on the Eastern Hill in Quadrant L_b-173. The remains of the skeleton were lying at a depth of 0.65 m, directly under Burials 101 and 103. The later interments almost completely ruined skeleton 105. The body was probably oriented from east to west, judging by the bedding of slate slabs.

The inventory included a harpoon head (2A2x2M3), a miniature socket piece, a bear claw, and fragments of a carved bone shovel.

Burial 106 was on the Western Hill in Quadrants B-961-963. The grave was oriented to the east. The skull was at a depth of 0.33 m, the feet at 0.18 m. Part of a whale scapula and two rib fragments were visible above the surface. The skull was covered with whale scapula, which had pottery fragments on it. The skull was on its base, the skeleton supine. The left hand was in the chest area, the right hand near the mandible. The legs were extended, the pelvis disarticulated. Traces of a wooden floor were found above in the leg area. A snow shovel made from an animal scapula was near the pelvis. Shell fragments were to the left of the skull.

Burial 107 was on the Western Hill in Quadrants O₁-5, 6; P₁-5, 6. The upper portion of the skeleton was oriented to the northeast. The grave had a whale backbone and two ribs, which could be seen extending 0.15 m above the surface. The skull was not found. The disarticulated bones were at a depth of 0.20 m. Part of the lower extremities were not found. The inventory included a bone awl, a worked tubular bone, and a retouched arrowhead.

Burial 108 was on the Western Hill in Quadrants W₁-20, 21; X₁-20, 22, with the grave oriented to the northeast. The skull was at a depth of 0.15 m, the bones at 0.20 m. Whale ribs could be traced projecting up to 0.10 m above the surface. The skull was crushed and lying on its base. Some vertebral and forearm bones were found. The remains of a foot and a mandible of another individual were in the pelvis area.

The burial was covered with fragments of whale mandibles. A piece of a whale rib with holes in it was found south of the skeleton. The inventory included a bone point fragment, a bone bow drill, and a slate blank.

Burial 109 was on the Western Hill in Quadrants B₁-27, 28; C₁-27, 28, with the grave oriented to the west. The skull was at a depth of 0.50 m, the feet at 0.60 m, and the pelvis at 0.50 m. The skeleton was supine, the skull on its right side. The arms were extended along the torso, the left one flexed at the elbow. The pelvis was fragmented, and the leg bones were extended.

The inventory included ochre, a toe-bone mouthpiece, a siliceous slate scraper for cleaning pelts, and a bow drill near the skull; a slate knife fragment was near the pelvis. Between the femurs were a walrus-tusk fragment and a ground slate flake; and near the feet were a scraper, an offertory trough, and an awl. An ulu and a fragment of a bone engraving tool were on the chest.

Burial 110 was on the Western Hill in Quadrants P-42, Q-42, with the grave oriented to the east-northeast. The skull was at a depth of 0.05 m, the pelvis at 0.05 m, and the feet at 0.08 m. The skeleton was flexed and supine and the skull was on its right side. The legs were flexed and diverged to the right. The left arm was flexed at the elbow with the hand near the mandible.

The inventory included an ulu and a slate ulu blade blank near the skull, a fragment of a slate knife with a hole in it on the right shoulder, and a whale rib pressure flaker to the north of the skull.

Burial 111 was on the Western Hill in Quadrants Q-47, 48; R-47; S-47, with the grave oriented to the east-northeast. The skull was at a depth of 0.03 m and lying on its right side, the mandible was displaced. The bones of the extremities were missing, leaving only the pelvis, the feet, and ribs. The other bones must have been removed and/or disturbed by Arctic foxes. The inventory included a worked walrus tooth and a walrus-tusk vessel handle south of the skull. A slate tool blank was near the mandible; the lateral point of a bird spear was among the pelvic bones. Traces of decayed wood and a broken pottery vessel in the form of an earthen mass were found 1.0 m west of the burial.

Burial 112 was on the Western Hill in Quadrants Q-48, 49; and R-48. The skeleton was extremely fragmented and looked as though the pile of bones had been pulled out in a southerly direction. A skull of

an adult and a fragment of a child's skull were in the middle of the pile. The minimum depth was 0.16 m, the maximum was 0.32 m.

Grave goods included a bone arrowhead in the north section of the grave under the shin bones and two similar arrowheads found to the west of the skull. Lateral barbs from a bird spear were around the skull. South of the skull were a walrus-tusk sleeve and three slate end blades. A bone drinking tube, a pottery fragment, an animal scapula shovel with holes in it, two sled runners, and a bone needle were in the south section of the grave. In the southeast portion of the grave two toggling harpoon heads (2A2y2M3) were found after the removal of the main part of the skeleton.

Burial 113 was a double burial (A and B) in Quadrants E₁-28, 30; F₁-28-30 on the Western Hill, with the grave oriented to the east. The upper skeleton 113A was lying directly over the lower one. Both of the skeletons were supine, the bones in anatomical order, and the hands placed under the pelvis.

The skull of the upper skeleton was at a depth of 0.45 m, while that of the lower skeleton was at 0.55 m. The feet of both skeletons were at 0.4 m, and the knees of both skeletons were partially disarticulated and out of line. A portion of a pelvis and the heel bone of another individual were lying on the chest of the upper skeleton.

Part of a whale vertebra was lying on the surface at the head of the grave, extending 0.10 m above surface level. The foot of the grave was lined with a stone slab, the edge of which could be seen at the surface level. The burial was covered with whale scapulas. The southernmost scapula extended 0.10 m above the surface; the rest of the scapulas had their ends deep in the soil (down to 0.55 m).

Grave goods found with the burial to the left of the feet were two L-shaped inserts, a pendant with traces of decoration, a stone point, seven bone arrowheads, three lateral points of a bird spear, ice picks, and harpoon foreshafts. To the right of the feet were the central point of a bird spear, a blank for a clasp, three harpoon heads (1BYM3, 1A2y2P, and 1A2XP), a bone point fragment, a stone javelin head, and three lateral points of a bird spear. To the left of the skeleton, in the arm area, were found three lateral prongs of a bird spear, three harpoon heads (one 1B1M, two 1A1y2P), a harpoon foreshaft, and a slate point fragment. A long-bone fragment, a drilled bear canine, a bola, a fragment of a bone article, a decorated mouthpiece, a slate point, a fragmented slate knife, and a retouched point were near the skulls.

Burial 114 was on the Western Hill in Quadrants N₁-34,35; O₁-34,35, with the grave oriented to the northeast. This burial was that of a child and was covered with whale bones extending as much as 0.06 m above the surface. The skull was at a depth of 0.20 m, the feet at 0.25 m. The skeleton was supine; the skull was crushed. The grave goods consisted of a bola and a decorated plate.

Burial 115 was on the Western Hill in Quadrants S-41, T-41, with the upper portion of the skeleton oriented to the northeast. The skull was not found; the skeleton was lying supine under the sod. The ankles extended 0.05 m above the surface; the pelvis was at a depth of 0.15 m, and the cervical vertebrae 0.05 m below the surface. The leg bones were turned to the right and flexed at the knees. The arms were flexed at the elbows, with the hands on the clavicles. Grave goods consisted of a stone scraper near the neck; six very poorly preserved harpoon heads (three 1BYM, two 1A2y2P and one 1A2XP), two lateral points of a bird spear, a slate knife, and a bow drill to the right of the pelvis.

Burial 116 was on the Western Hill in Quadrants T-40, S-40, with the upper portion of the skeleton oriented to the northeast. All the bones were at a depth of 0.12-0.16 m. The skull was missing and the skeleton badly fragmented. The legs were flexed at the knees and turned to the right. The grave goods consisted of three club-shaped articles in the northeast section, and a spoon made from a scapula and a bola in the southeast section.

Burial 117 was on the Western Hill in Quadrants P-41, Q-41 with the feet oriented to the south. The skull was at a depth of 0.30 m, the feet at 0.40 m. The skeleton was badly fragmented.

The anatomical order was probably ruined during the burial of Burial 110, which was located directly above Burial 117. A harpoon foreshaft was found in the grave.

Burial 118 was on the Western Hill in Quadrants O₁-37, 38; P₁-37, 38, with the grave oriented to the northeast. This burial was that of a child, with the skull at a depth of 0.20 m, and the feet at 0.25 m. The burial was covered with a layer of whale bones, which had crushed the skeleton and now extended above the surface as much as 0.06 m. The skeleton was supine; the legs flexed at the knees and bent to the right. A slate knife blank was found in the grave.

Burial 119 was on the Western Hill in Quadrant V-97, 98; W-97, 98, with the grave oriented to the southwest. The skull was at a depth of 0.02 m, the feet at 0.05 m, and the pelvis at 0.10 m. The skeleton had whale ribs near the head and feet and a deer skull over the pelvic area, all of which extended as much as 0.05 m above the surface. The skeleton was supine and generally in anatomical order with the skull on its base. The arms were flexed at the elbows with the hands on the chest. No grave goods were found.

Burial 120 was on the Western Hill in Quadrants Y- 92-94; Z-92-94; AA-92-94, with the grave oriented to the southwest. This burial was bordered on the sides with whale jaws and ribs that extended up to 0.10 m above the surface. The skull was at a depth of 0.05 m, the feet at 0.15 m. The skeleton was disarticulated and extremely fragmented. Grave goods consisted of a slate knife on the chest and a snow shovel fragment near the feet.

Burial 121 was on the Western Hill in Quadrants S-40; T-40. The grave must have been ruined by Burial 116, which was located above it. Skeleton 121 had only bones from the left extremities. The upper portion of the skeleton was oriented north-northeast, with the burial at a depth of 0.35 m. Grave goods included 11 nail-shaped inserts in the remains of wood, four slate end blades, a javelin head, five harpoon heads (three 2A2y2M3, one 2A2x2M3 and one 1A2XP), a ceramic fragment, scapula shovels, a snow shovel, a mattock, and five club-shaped articles. Three similar articles were found and marked as belonging to Burial 116, but judging from the level of discovery, they probably belonged to Burial 121.

Burial 122 was on the Western Hill in Quadrants S-41, T-41. This burial was covered by Burial 115 (Figs. 161, 162), with the grave oriented to the north-northeast. The skull was at a depth of 0.50 m, the feet at 0.60 m. The skeleton was in basic anatomical order, though the bones of the right upper arm were displaced. The inventory included a slate ulu blade, on which were needles, and a club-shaped article on the chest; a toggle clasp and ulu near the lower right arm; and a slate knife fragment and bird bones between the femurs. Four nail-shaped inserts, a harpoon head (1AM), and a bola were found at a depth of 0.15 m to the northeast of the skeleton.

Burial 123 was on the Western Hill in Quadrants R₁-47, 48; S₁-47, 48, with the grave oriented to the east. Whale bones placed near the head of the skeleton extended up to 0.15 m above the surface. The skull was on its right side at a depth of 0.45 m, the feet at 0.70 m. The skeleton was supine, with the legs flexed at the knees and pressed against the abdomen. The inventory included a decorated plate to the right of the skull, a harpoon head (1A2YP) to the right of the mandible, and another harpoon head (1A2Pc(1-1)) to the left of the pelvis. A cluster of objects associated with the harpoon head near the pelvis consisted of three lateral points of a bird spear, a small point, an arrowhead, and a bird beak.

Burial 124 was on the Western Hill in Quadrants T-26, 27. The grave was oriented to the southeast. The skull was at a depth of 0.05 m, the feet at 0.10 m. The skeleton was supine, the skull crushed, and the mandible and bones of the upper extremities missing. The skeleton was damaged during the installation of a triangulation datum, as one of the poles was put into the grave. Only one button was found near the skull.

Burial 125 was on the Western Hill in Quadrants V-21, 22; W-22; X-21, 22, with the grave oriented to the northwest. The skull was at a depth of 0.50 m, the feet at 0.65 m. The skull was on its base

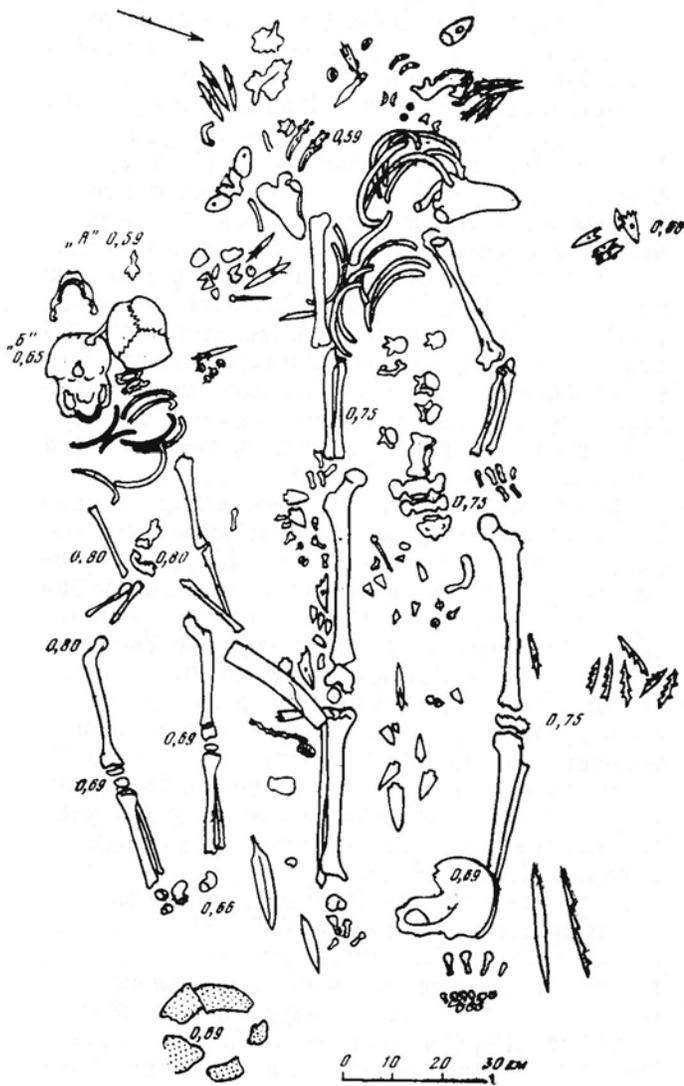


Figure 20. Burial 130.

and the skeleton in anatomical order. The left hand was on the pelvis, the right was under it. Grave goods in the upper portion of the grave were slate knives, a set of needles, a bracelet fragment, a scapula spoon, a pointed article, a retouched end blade, a bone end blade, two spear points, three arrowheads, and boathooks. In the lower portion of the grave near the feet were four large harpoon foreshafts, a whale-bone article, a long shaped article, a fork-shaped article, the lateral point of a bird spear, a burin with a handle, a harpoon head (1BXM2), an awl, and three slate knife blanks. Near the knees were a scraper, a miniature adze handle, three carvings of swimming birds, a spindle-shaped fragment, and a fragment of a harpoon head (1A1Pc(0-1)). A decorated mouthpiece was found to the right of the shins, fragments of long bones were between the femurs, and ceramic fragments and a whetstone were to the west of the skull. A mattock was near the right forearm, and a whale-bone item was near the left shoulder.

Burial 126 was on the Western Hill in Quadrants B-23, 24; D-23, 24. The grave was visible from the surface due to the whale bones that covered the burial. These bones extended up to 0.10 m above the surface. The grave was oriented to the east, with the skeleton at a depth of 0.10 m. The skeleton was extremely fragmented, and its skull was missing. Near the cervical vertebrae were two lateral points of a bird spear, three tubular bone awls, a flint flake, a piece of red ochre, and a piece of yellow ochre. A harpoon head (1A2y2P) was farther south. Near the pelvis were a harpoon head (1A2Pc(1-1)), a scraper with traces of retouching, a fragment of an article with a hole in it, and a long-bone fragment.

Burial 127 was on the Western Hill in Quadrants Q₁-44, 45; R₁-44, 45, with the grave oriented to the north. The skull was at a depth of 0.45 m, the feet at 0.10 m. The skeleton was fragmented, and the anatomical order was significantly damaged. The skeleton was supine, with its legs flexed and diverged to the left. The skull and bones of the upper extremities were displaced. The knees were at a depth of 0.10 m, the feet at 0.2 m, and the pelvis at 0.3 m. This burial was covered by a layer of whale bones that extended up to 0.15 m above the surface. The inventory was mainly concentrated to the left of the pelvis and consisted of a ceramic stamp, a slate knife, a javelin head, a bola, and a bear claw.

Burial 128 was on the Western Hill in Quadrants M-49, 50; N-49, 50. The grave was oriented to the northeast and surrounded by whalebones that extended up to 0.05 m above the surface. The skeleton was disarticulated and crushed. The skull was fragmented and extended 0.05 m above the surface. The

left femur was protruding above the surface to a level of 0.20 m, while the bones of the right leg and the left shin were at a depth of 0.20 m. The legs were flexed at the knees and diverged to the right. The hands were on the clavicles.

The inventory consisted of two harpoon heads (1A1XP, 1A1x2P) to the left of the ribs.

Burial 129 was on the Western Hill in Quadrants Z-26-28; AA-26-28, with the grave oriented to the north-northeast. Whale bones bordered the burial to the south and extended above the surface up to 0.15 m. The skeleton was disarticulated and extremely broken. The bones and skull of another individual were also found. The skull of the better preserved individual was at a depth of 0.25 m, while the other skull was located farther to the south at a depth of 0.50 m. The skeletons' legs were located in the west portion of the grave at a depth of 0.30-0.35 m, but one femur was displaced to the east border of the grave and was protruding 0.10 m above the surface.

Grave goods included two harpoon heads (1A1XP, 1BYM), with a third one a bit to the south (1A2XP), and three lateral points of a bird spear near the skull. Another point of a bird spear was in the southwest portion of the grave. A needle case was near the first skull. A bola was found near the second skull, lying to the south of the first one. An awl, a harpoon rest, a bushing, and a walrus-tusk article were near the needle case. A harpoon foreshaft was near the left shoulder close to the skull. A harpoon foreshaft was along the vertebra north of the sacrum. An ice pick was in the south portion of the grave on the femur; a small harpoon foreshaft and an awl were between the femur and the bird spear mentioned above. A walrus-tusk wedge was near the southern skull and not far from the bola. A mattock was found in the central portion of the grave at a depth of 0.32 m.

Burial 130 (Fig. 20) was on the Western Hill in Quadrants G₁-28; E₁-29, 30; F₁-28-30. This was a double burial with the skeletons lying parallel to each other and oriented to the west-southwest. Burial 130 was covered by Burial 113, which was oriented in the opposite direction (Fig. 21). The skeletons of Burial 130 were extended and supine (judging by the bones of the extremities). The remaining bones were disarticulated and scattered. Both of the skulls were lying together in the upper portion of southern skeleton 130B. The mandibles were lying close to each other in the upper portion but were separated from the skeletons. One of the pelvic bones was displaced toward the feet of northern skeleton 130A. The feet of both skeletons were at a depth of 0.60-0.69 m; the knees of 130A at 0.79 m and of 130B at 0.69 m. The epiphyses of 130A's femurs were at 0.75 m, 130B's were at 0.80 m. Both of the skulls were at 0.59-0.65 m.

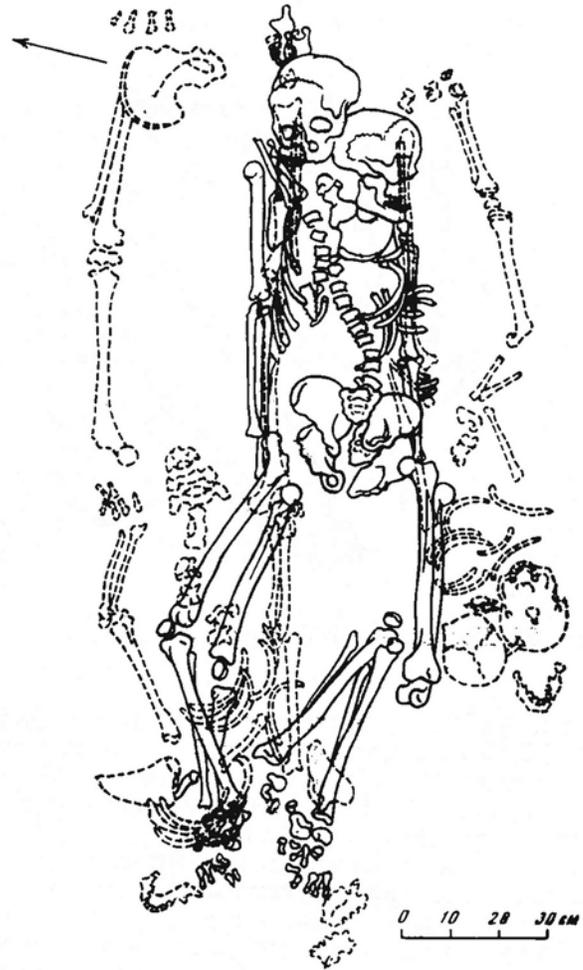


Figure 21. Correlation of Burials 113 and 130.

The burial had a rich inventory of grave goods. Ceramic fragments were near the feet of skeleton 130B, an adze sleeve was in the northwest corner of the grave, and two ice picks were between the feet of the skeletons. In the thigh area of skeleton 130A were three harpoon heads (1A2XP, 1BXM2, 1BYM3), an arrowhead, a pail handle fragment, a bone rod, a top-shaped button, a club-shaped article, a bird beak, a bone awl, a float plug, a javelin head, a shaped insert, a walrus-tusk flake, a thin awl, a bushing, a decorated bushing, a nail-shaped insert, a small sleeve, six retouched end blades, three ground points, and a thin oblong ivory plate. This plate initially (in the original Russian version) had been erroneously identified as a plate of armour. However subsequent similar finds in situ have demonstrated that in fact objects of this type served as strengthening or ornamental superimposed plates sewn upon a leather belt, forming a kind or a part of some hoop. On the upper part of the same skeleton were a “winged object,” a harpoon head (2A2y2M3), and a number of several various zoomorphic and abstract ornamental ivory pieces, which obviously had been initially superimposed and sewn upon a hunter’s wooden visor. A richly decorated visor with ornaments more or less of the same shape, though in a rather different style, can be seen in Nelson’s collections from “Eskimos of the Bering Strait.” These small ornamental details of a visor included two oblong zoomorphic plates, a piece with baleen insets, two buttons with baleen insets, two plain plate pieces, two leaf-shaped pieces, two buttons, a nail-shaped insert and an L-shaped insert. All these objects formed a cluster above the scapulas of the skeleton.

Five harpoon heads (four 2A2y2M3, and one 2A2XM3) were north of the scapulas on the left side of the grave at some distance from the left shoulder bone. East of the harpoon heads on the outside of the left leg bones of skeleton 130A were an arrowhead, and six lateral barbs of a bird spear. The central prong of a bird spear, a harpoon foreshaft, and a nail-shaped insert were to the east on the left side of the feet. Eight polished end blades were found to the northwest of both skulls. Next to them were two arrowheads. A group of three other arrowheads was close by, to the west of the “winged object.” Another group of four arrowheads was near the mandible of skeleton 130A.

A cluster of objects associated with the polished end blades contained an obsidian burin in a sleeve, a bird figurine, a club-shaped article, a harpoon rest, needles, an adze, a bow drill, a quartz pebble, and two nail-shaped inserts.

Objects near the shins of skeleton 130A were a zoomorphic sleeve, a needle, an arrowhead, three nail-shaped inserts, a scapula spoon, five javelin points, a retouched point, and an end blade. Objects found under the skeletons after their removal were spear points, an arrowhead, two fish hooks, and five nail-shaped inserts. A piece of ochre was found near the feet of skeleton 130A.

Burial 131 was on the Eastern Hill in Quadrants K_c-158,159; L_c-158, 159. Whale bones at the site protruded up to 0.10 m above the surface. The maximum depth was only 0.10 which means that the bones were lying just barely within the sod layer.

Due to the shallowness of the grave, only skull fragments and a pelvic bone were found, at depths of 0.15 m and 0.05 m, respectively. A fragment of an article with a hole was near the pelvic bone.

Burial 132 was on the Eastern Hill in Quadrants L_b-170-171, with the grave oriented to the east. The skull was at a depth of 0.25 m, the feet at 0.35 m. The skeleton was supine, the skull on its left side, and the right leg extended at the knee joint.

The inventory included a mattock and a pail handle near the right shoulder; a harpoon head (2A2-2M3), a trough scraper, an adze, a scraper, a slate ulu blade, a comb with anthropomorphic carvings, a set of needles, a bird bone, an ochre flake, and a fragmented slate knife between the bones of the left arm and the chest. A spindle-shaped item was near the left knee, and a large fragmented slate knife was near the right forearm.



Figure 22. Burial 133 (feature).

Burial 133 (Fig. 22) was on the Eastern Hill in Quadrants L_b-167, 168; M_b-167-169. Whale bone at this site was visible on the surface. The end of a whale rib that had been placed almost vertically in the foot area extended 0.35 m above the sod layer. The joint of the whale scapula that covered the burial extended 0.10 m above the sod. Two massive whale mandibles bordered the skeleton on the sides and were propped up and supplemented by small slate slabs on the inside. Whale ribs were near the head and feet of the skeleton. A whale scapula was lying on the whale mandibles and covered the skeleton. The grave was oriented to the northwest, with the skull at a depth of 0.10 m, and the feet at 0.45 m. The skull was on its base, the torso supine, the skeleton displaced and turned to the right. The pelvis was disarticulated. The left upper arm covered the chest, and the bones of the left leg were displaced to the right. The right arm bones were under the ribs.

Grave goods included a “winged object” and three harpoon heads (2A2y2M3) to the north of the skull, a large broken slate knife with holes in it lying along the left upper arm. Four nail-shaped inserts and two L-shaped inserts were in the decayed wooden handle of that knife. A harpoon socket piece, an ice pick, an awl made from a scapula, and a scapula spoon were found near the shins. A bear canine and a sandstone slab were near the knee, and two other slabs were above the pelvis. Objects to the right of the skeleton in the abdominal area were a spear point, two awls, a walrus tooth, a bushing, a flint flake, a flake of walrus tusk, a green pebble, a quartz pebble, a scraper, and an adze.

A cluster of objects found under the lower ribs and pelvis after the removal of the skeleton consisted of a ceramic fragment, a harpoon head (1A2XP), a walrus tooth, a foreshaft, an awl, a flint flake, ground points, retouched points, and a point with a split base.

Burial 134 was on the Eastern Hill in Quadrants C_b-157, 158; D_b-157, 158. A whale skull was in the grave and was protruding 0.30 m above the sod. Whale ribs at this site were at a depth of 0.20–0.30 m and bordered the burial on three sides. The main skeleton must have been oriented to the northwest, though the anatomical order of the skeleton was completely ruined, and the bones were spread around and mixed with the bones of other individuals. For example, three mandibles were found in the grave. The inventory was spread all over the burial and was at the same depth as the bones (0.15–0.35 m). The inventory included a shell, a mattock, two bow drills, two bolas, the lateral point of a bird spear, a spindle-shaped article, a mattock fragment, a snow shovel, a trough scraper, a bone burin, a walrus tooth, a ceramic fragment, and six fragments of slate knives.

Burial 135 was on the Eastern Hill in Quadrants Q_c-174–176; R_c-174–176; S_c-174–176. On the top of the grave, a whale rib covering rose up to 0.40 m above the surface. The bones of at least two individuals were found in the grave, their skeletons disarticulated and spread around the grave at a depth of 0.15–0.30 m. The skulls were missing. Grave goods included ochre, a mattock, an ice pick, a bow drill, an antler pail handle, four worked long bones, lateral points of a bird spear, arrowheads, an antler article, a walrus-tusk point, slate knives, bolas, a quartz flake, two awls, an adze, and three harpoon heads (2A2x2M3, 1A2y2P, 1A2yPc(0–1)).

Objects found under the large whale bone in the southwest corner of the burial after the removal of the skeletal remains were a spindle-shaped article, a needle case, a three-faceted walrus-tusk article, a scraper made on a flake, a piece of ochre, and a walrus tooth.

Burials 136–137 were on the Eastern Hill in Quadrants R_b-167–169; Q_b-167–169. They were united by a common wall of whale bone and stone, which was at a depth of 0.18–0.30 m, so could not be seen from the surface. Burial 136 must have been oriented to the east. The skull was missing, and the mandible was displaced toward the bone wall to the north. The anatomical order of the skeleton was badly damaged. Burial 136 was at a depth of 0.40–0.45 m and was concentrated for the most part in the south section of the wall.

Burial 137 was in the north section of the wall. The skull was oriented to the west and on its base at a depth of 0.40 m. The bones of the skeleton were at a depth of 0.50 m, fragmented, poorly preserved, and not in anatomical order. The grave had a wooden floor.

Grave goods found in Burial 136 were an ochre fragment, an antler mattock handle, a snow shovel fragment, a large foreshaft, part of a bow, a scapula spoon, an adze sleeve, a ceramic fragment, a bone handle fragment, three arrowheads, five walrus-tusk flakes, a bone awl, a bone stick, a bear canine, a boathook, an end blade, a harpoon head (1A2XP), and an L-shaped article. A piece of ochre was found under the whale backbone that bordered the east side of the grave.

Grave goods found in Burial 137 were a decorated plate, a decorated antler article, a jet flake, a burin sleeve, a comb, two necklace clasps, a snow shovel fragment, a wooden article, a wooden button, a bone ulu handle, an antler ulu handle, a shell, a mattock, and a bone button. All these items were located

in the skull area of the skeleton. Three nail-shaped inserts were found farther to the east of the wooden floor.

Three lateral points of a bird spear were found northwest of the skull. The lateral point of a bird spear, an arrow head, and an end blade were near the right forearm. A harpoon head (2A2x2M3) was deposited to the north of the left scapula. A decorated plate, a bird figurine, and two thin bracelet fragments were found among the ribs. Fine objects were found south of and under the skull, including bushings, an offering trough, a trough scraper, a thick bracelet fragment, walrus-tusk flakes, a small burin sleeve, an unfinished button, several walrus-tusk chips, a fragment of a small bone article, two bone points, a flint flake, an adze fragment, a scraper, a decorated plate/pendant, a fragment of ochre, a spoon, a spoon handle fragment, two fragments of a slate knife, and a ground burin.

A large cluster of objects was found in the western portion of the grave under the large whale bone that bordered the north end of the grave. This cluster consisted of a toy kayak, a knife handle shaped like a walrus, a ceramic stamp, an adze, a wound pin, a fastener, antler handles, polar bear molar, slate knives, fragments of plates with holes in them, walrus teeth, sinkers, ceramic fragments, ochre fragments, a pyrite fragment, walrus-tusk flakes, nail-shaped inserts, an ulu handle, a walrus-tusk article, a walrus-tusk point, a harpoon head (1BXM), zoomorphic buttons, a fragment of a walrus-tusk trough, and an end blade.

Burial 138 was on the Eastern Hill in Quadrant J_b-171, with the grave oriented to the west. The skull was at a depth of 0.27 m, the feet at 0.48 m. The skull was on its left side and fragmented. The skeleton was disarticulated and the bones crushed. The inventory included a seal scapula with a bola on it, a fragmented slate knife, and an adze near the skull. A set of needles, a decorated walrus-tusk flake, and two bone rods were found below the skull, in the neck area. South of the back of the skull was a walrus-tusk flake.

Burial 139 was on the Eastern Hill in Quadrants H_b-169, 170; I_b-169, 170; J_b-169, 170. The grave had a whale bone in the north section that was visible above the surface, the end protruding 0.05 m above the sod. Whale bones and massive slate slabs, all at a depth of 0.10–0.35 m, outlined the grave. The grave held several skeletons.

Skeleton 139A was near the west edge along a large slate slab and was oriented to the south-southeast. The skull was at a depth of 0.25 m, the feet at 0.27 m.

Skeleton 139B was lying parallel to skeleton 139A but was farther to the east. The skull was oriented to the south-southeast also. The skull was at a depth of 0.20 m, the feet at 0.15 m. Skeleton 139C was lying directly under skeleton 139B and was oriented to the south-southeast as well. They were located on the same axis, though the main anatomical points of 139C were displaced along the axis to the north-northwest by at least 0.5 m. The skull of 139C was at a depth of 0.30 m under the vertebrae of skeleton 139B. The feet of skeleton 139C, found at a depth of 0.25 m, were located north of the feet of skeleton 139B and were discovered during the excavation of the latter.

Skeleton 139D was directly under skeleton 139A and was oriented in the opposite direction, north-northwest. The upper portion of skeleton 139D was under the pelvis of 139A at a depth of 0.37 m. The feet of 139D were at a depth of 0.37 m and were under a slate slab that formed the headstone for skeleton 139A. The skull of 139D had rolled to the side, was crushed, and the fragments were below the pelvis of 139B at a depth of 0.39 m.

All the skeletons were quite fragmented and their anatomical order was partially disturbed, especially their lower extremities.

Skeleton 139A was extended, with the skull of skeleton 139B lying on its chest, under the left shoulder bone, and its legs flexed and bent to the left. Skeleton 139C was extended, the hands were under the pelvis, and the skull was on its right side. Skeleton 139D was also extended.

The inventory was spread around the entire burial and could not be identified as belonging to any one individual. Therefore, the goods will be described as several complexes.

Objects found outside the borders of the grave and to the south were a snow shovel, a belt buckle blank, a trough scraper, and a harpoon head (2A2y2M3).

Among the pelvic bones near skeleton 139C were a spindle shaped article, a harpoon head (1BYM), and two pieces of ochre. Three slate knife fragments were near the skull of 139C. Objects found near the feet of skeleton 139C after 139B was removed were an ice pick, a harpoon head (1A–2P), and an antler pail handle. Objects near the forearm of skeleton 139B were a zoomorphic toggle, an article depicting the head of an Arctic fox, another article depicting a walrus head, and a third article depicting a bear head, an unfastener for knots, an ochre fragment, a walrus-tusk flake, and a plug. Objects found to the right of skeleton 139B were a ceramic fragment, a bow reinforcer, a mattock, a toe-bone drill rest, a fore-shaft, a harpoon head (2A2y2M3), an arrowhead, a piece of ochre, a sawed piece of bone, an antler handle, a fragmented fishing-spear-shaped arrowhead, and a piece of quartzite.

Bone and skull fragments belonging to an infant were found in the north corner of the grave at a depth of 0.15 m. Objects found between those bone and skull fragments and the feet of skeleton 139A were pieces of a ceramic vessel, fragments of a wooden vessel, a pail handle, a piece of a bow drill, a siliceous stone flake, a flaked javelin point, a polished javelin point, a fragment of another javelin point, a large ground burin made of jasper, two nailed-shaped objects, a bushing, a piece of ochre, and a fragment of a bone article. Objects located farther up on the legs of 139A were bird bone awls, a broken sawed piece of antler with a bored hole in it, two spear points, an adze blank, an end blade, and a flake.

Objects found between the skulls and chest bones of skeletons 139A and 139B were an adze, an adze sleeve, a rodent tooth, two harpoon heads (1A2y2P, 1A2XP), an arrowhead, a fragment of a tubular item, an ochre fragment, a slate knife, javelin heads, retouched end blades, bear claws, a ground slate end blade, and eight slate point blanks.

Objects found to the left of skeleton 139A under the slate slab were two foreshafts, one larger than the other, a mattock, a large slate knife with a hole in it, a walrus tooth, a ground burin, a bushing, a small sleeve, javelin points, and a trough scraper (closer to the skull). Objects found to the south of the skulls of skeletons 139A and 139B and between them were two claw-shaped objects made of rodent teeth, a ceramic fragment, three harpoon heads (1BYM, 1A2y2P, 2A2XP), a ritual trough made from a long bone, and a large offertory trough made of walrus tusk.

Objects found under skeletons 139B and 139C after their removal and among the stones and whale bones of the northeast wall were a bow drill, two fragments of red clay ceramics, and two fragments of black clay ceramics.

Burial 140 was on the Eastern Hill in Quadrants M_b–161–163; N_b–162, 163; O_b–161–163; P–161–163, with the grave oriented to the north. No indication of the grave was visible on the surface. The grave was rectangular and bordered by whale mandibles, which were placed on walls of slate slabs (Fig. 23) on the north, west, and south sides. The east wall consisted only of slate slabs. The bones in the feature were at a depth of 0.3–0.5 m, the slate slabs at 0.01–0.35 m. A floor of decayed wooden blocks was under a layer of soil at a depth of 0.50–0.80 m. The blocks had damaged the skeleton (Fig. 24), which was lying on a floor of slate slabs. It was supine and in a very poor state of preservation (Fig. 25). The skull was crushed, though the anatomical order was not badly disfigured. The small right tibia was displaced to the south of the feet; the mandible of another individual was found to the west of the feet under the wall. The skull was at a depth of 0.70 m, the feet at 0.90 m.

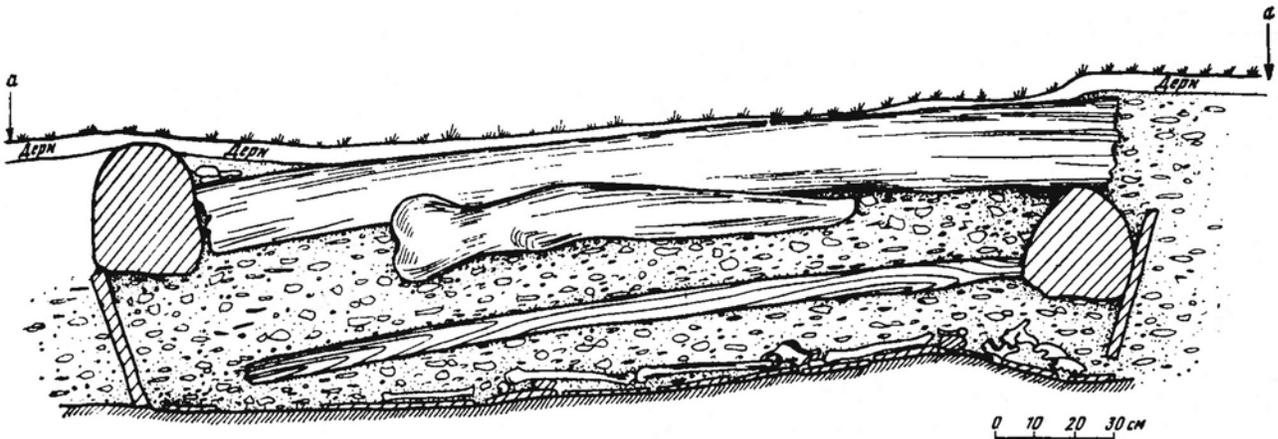


Figure 23. Burial 140 (section).

The inventory included a shell and an end blade near the skull. A walrus-tusk sacrificial point, a trough scraper, a small zoomorphic pendant, and a trough made from a deer leg bone were near the extra mandible. Objects found near the right shoulder were broken snow goggles, a spoon, a bone bushing, a segment of chain with a trinket, and a walrus-tusk awl. Objects near the wrist were bracelet fragments, a burin sleeve with a segment of chain, an end blade, three javelin points, a burin-adze, an ulu handle, and arrowheads. Near the mandible and cervical vertebrae were a burin and an adze. Objects found to the east of the skull were egg-shaped and spherical buttons and a decorated plate/pendant. In the chest area were a burin handle and a bone handle. A toe-bone drill rest was found near the left knee. A large broken slate ulu blade was found near the left forearm; fragments of similar blades were between the femurs. Objects found near the upper portion of the chest, by the right shoulder, were a piece of ochre, a ground tool similar to a burin, adze blanks, and blanks for javelin points. A mattock was to the right of the right forearm. A deer leg trough was found in the east wall. Remains of broken ceramic vessels were found northeast of the skull, near the feet, and in the southeast corner of the grave (those remains looked like a soil mass).

Burial 141 was on the Eastern Hill in Quadrants S₆-167-169. The burial was bordered with slate slabs on the south, east, and west. A piece of whale mandible was near the east edge of the grave.

The skeleton was lying extended and supine with the bones in anatomical order. The grave was oriented to the west. The skull was at a depth of 0.35 m, the feet at 0.45 m.

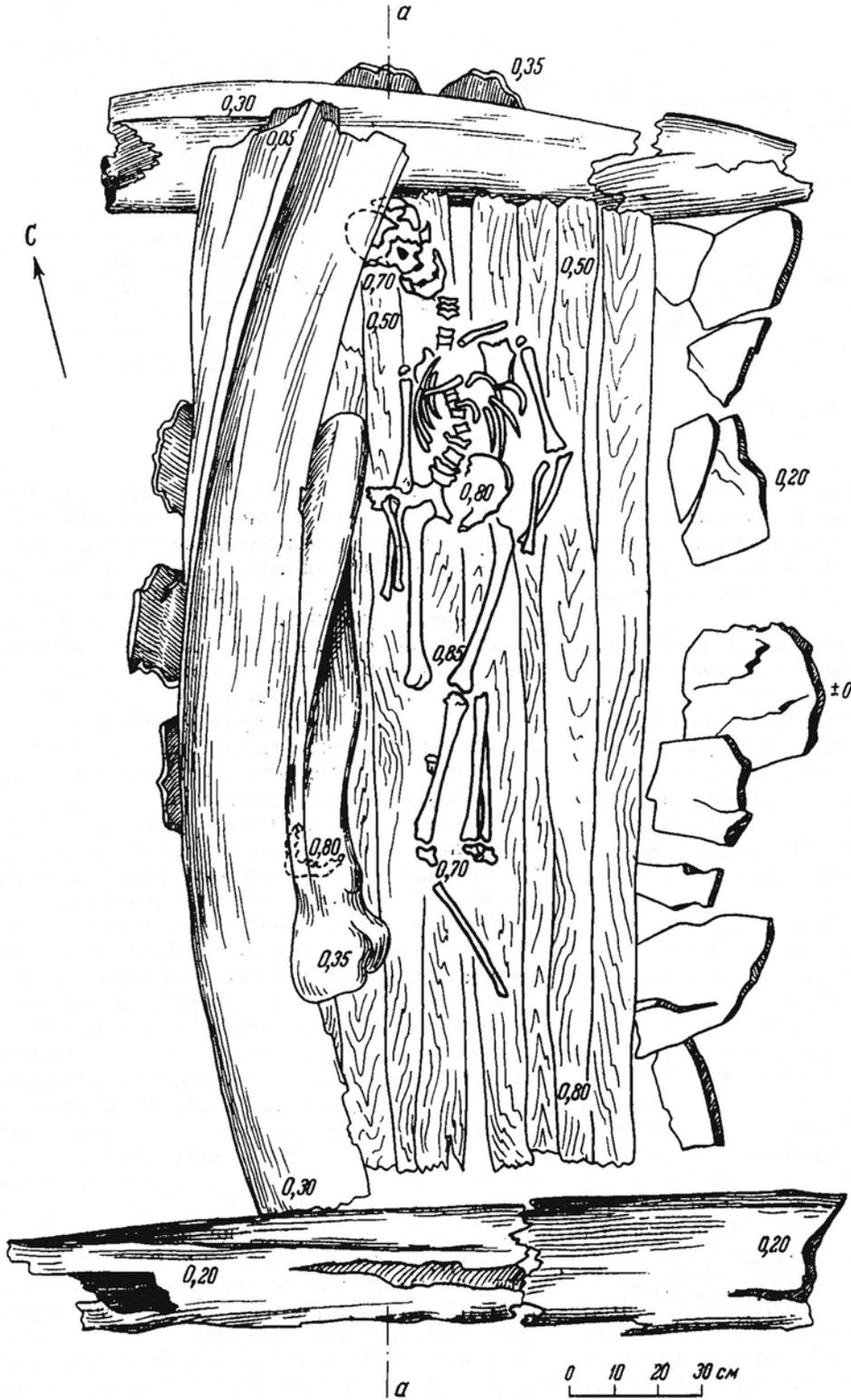


Figure 24. Burial 140 (feature).

The following inventory was found: In the lower section of the grave were a walrus-tusk point, eight harpoon heads (two 2A2x2M3, three 2A2y2M3, 2A2XP, 1A2XP, 2BXM2), a harpoon socket piece, a bone point, two fish hooks, a fish spear point, a pail handle, a walrus-tusk spoon, a scapula spoon, an arrowhead, a large foreshaft, a bone point, an article made from a seal rib, a belt buckle, a bone awl, three nail-shaped inserts, a large slate knife with dowel, a smaller slate knife, and two spear points.

Objects found in the upper portion of the grave were a “winged object,” five arrowheads with end blades, two insets (for a bow string) found on the ends of a decayed bow shaft, a harpoon head (2A2XM3), 13 bone arrowheads, an unfastener for knots, a thin bone point, a double-sided bone point, a wound plug, a zoomorphic article, a button, a nail-shaped insert, and an insert-wedge. Objects lying beside the “winged object” were five ground-slate end blades, two scrapers made on flakes, two end blades for arrows, a decorated antler article two L-shaped inserts, a slate knife fragment, and a slate knife with a hole in it. Besides the large objects shown in the illustration, the majority of small objects were in a group located near the left shoulder of the skeleton.

A spear point and a blank for another point were on the chest. An adze blank, a bracelet fragment, and a sleeve were near the left forearm. An ice pick and a harpoon head (1BYM) were found under the bones of the skull between the wall plates after the removal of the skeleton.

Burial 142 was on the Eastern Hill in Quadrants A_b-175, 176 (the burial was actually on the border of the quadrants). The grave had no structural elements. The fragmented skeleton of an infant was oriented to the west. The skull was at a depth of 0.30 m, the feet at 0.35 m. No artifacts were found.

Burial 143 was on the Eastern Hill in Quadrants V_b-166, 167; W_b-166, 167; X_b-166, 167. The end of a whale scapula projected 0.05 m above the surface bordering the burial on the north, near the feet. The east border was marked by square slate slabs. A whale scapula and a piece of whale mandible were near the head of the grave.

Several skeletons were in this grave. The lowest skeleton, Burial 147, was found last. Under the designation “Burial 143” were two complete (143A and 143B) and one partial (143C) skeletons.

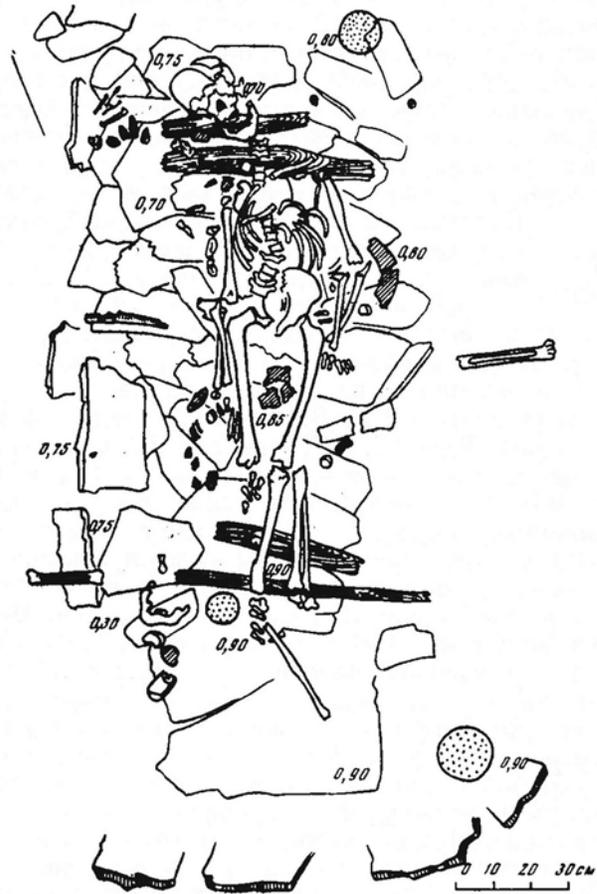


Figure 25. Burial 140 (skeleton).

Separate human bones (possibly belonging to skeleton 143C) were found in various areas of the grave. All of the skeletons were extended and supine. Skeleton 143A was oriented to the south, was quite fragmented, and was not in anatomical order. The skull was at a depth of 0.01 m (covered only by a thin layer of moss), the feet at 0.12 m. The skull of another individual was lying on 143A's chest at a depth of 0.05 m. Probably one of the two skulls belonged to skeleton 143C, but because of the poor state of preservation this was difficult to determine. The skull of skeleton 143B was found during the excavation of 143A, near the latter's right shoulder. The skull was at a depth of 0.10 m, the feet at 0.18 m. The preservation and anatomical order were satisfactory, although the skull was crushed. Skeleton C lay along the left side (west) of the torso of skeleton 143B. Only the arm and chest bones, the upper portion of the vertebra, and the mandible remained of skeleton 143C.

The inventory included a ceramic fragment near the back of skull 143A; a harpoon head with an end blade (1A2XP) was in front of the face; three other harpoon heads (two 1BYM and 1A2y2P) were to the left of the femurs of 143A. A fragment of a child's skull and two lateral points of a bird spear were to the right of the femurs. Nearby was an ice pick, with another ice pick and an isolated mandible near the right shin of 143A. In the area of the barely preserved pelvis were a scraper on a flake, pieces of ochre, a toe-bone drill rest, L-shaped article, and two worked bear canines.

A slate knife with a hole in it was found between the skulls. A large snow shovel was to the north of the fragment of the child's skull and to the south of the separately lying mandible. A small scapula shovel was near the epiphysis of the left femur and the left wrist. An antler shovel was found near the foot of the grave. Two sled runners (one fragmented) were to the south of the shovel found along the shins.

The inventory of 143A was at a depth of not more than 0.20 m. Below that, at a level of 0.18–0.25 m were the grave goods of 143B: the central point of a bird spear was to the right of the pelvis, and on the ribs near the right shoulder was a whale bone knife used to clean pelts. A harpoon socket piece was along the right shin. A decorated hook and needle case were between the thigh bones. A slate knife was near the feet. Objects found among the pelvic bones were a slate knife fragment, a wound plug, a pendant made from a dog canine, a piece of ochre, and a small bone point. Two small sleeves were between the shins. A wedge of a "winged object," four L-shaped articles, and a bushing were between the ribs. An adze sleeve was to the right of the pelvis. A spindle-shaped article was under the pelvic bones. A harpoon head (1A2y2P) was to the left of the pelvis; another harpoon head (2A2XM3) was near the right shoulder bone of 143B. Three harpoon heads (2A2XP, 1BYM, 1A2y2P), and five ground slate points were near the epiphysis of the right femur of 143B. A large and compact pile of small objects was on the pelvis between the femur and shins of 143B. The objects were a button with the image of a flower, a siliceous flake, a spear point, unfasteners for knots, a complexly shaped pendant, a small fragmented needle case, and twenty four nail-shaped inserts with holes in their heads. Two nail-shaped inserts with zoomorphic design were near the skull. A large bone point with lateral slots was lying along the right femur. A mattock was found under the right femur after its removal. A set of bear claws was under the pelvic bones. Two arrowheads with end blades and five pointed-bone arrowheads were under the left half of the pelvic bones. Two large harpoon foreshafts were lying along the right shoulder.

Burial 144 was on the Eastern Hill in Quadrants O_b-166, 167; P_b-166,167. The grave was not visible from the surface. A flooring of separate slate slabs and some traces of wood were found at a depth of 0.70 m. The skeleton was extended and supine with the skull oriented to the west. The hands were on the pelvis, and anatomical order was preserved. The skull was at a depth of 0.60 m, the feet at 0.60 m, and the pelvis at 0.85 m.

The inventory included a bow drill near the left knee and a bone frog-shaped amulet on the cervical vertebrae below the mandible. A broken figurine of a bear was near the right clavicle; farther right, on the right shoulder, was the broken handle of a pressure flaker. A club-shaped walrus-tusk article and a cut piece of walrus tusk were between the femurs. A cut walrus rib was to the right of the femurs. An oval item with an incision was near the back of the skull and five arrowheads were near the left forearm. A

boathook barb and four walrus teeth were between the femurs. A javelin head and a bone awl were near the right shoulder. Three wound pins were near the right forearm and a rhomboid insert was under the ribs. A bone spoon was near the right ankle. An end blade with a split base and a small bone dowel with a hole in it were among the foot bones. A two-piece carved burin handle was under the right femur. Four buttons were found north of the skull on a slate slab. A decorated antler burin handle was near the left femur. A stone burin with an antler handle was between the knees. A whetstone was near the epiphysis of the right femur and the bones of the wrist. Objects found on the left side of the ribs and near the left shoulder were pieces of ochre, a round bone rod, and a prismatic bone rod. An ulu was on the sternum. Objects found in the east part of the grave near the feet at a depth of 0.50 m below surface were a bird sternum with a bone hook under it, a piece of antler, and a stone adze in an antler and wood handle.

Burial 145 was on the Eastern Hill in Quadrants L_b-165, 166; M_b-165, 166 and had a border of whale ribs that extended up to 0.07 m above the surface. Other bones and stones from the border were at a depth of 0.05–0.10 m below the surface. The lower edge of the whale mandible in the north wall was lying on a wooden floor at a depth of 0.15–0.25 m. The rectangular area of the floor was absolutely empty—there were neither bones nor grave goods.

Four polar bear skulls, supported by slate slabs, were against the north wall. An infant's skeleton was found between the bear skulls and the whale mandible. The skeleton was at a depth of 0.30 m and had been crushed by the mandible. Close to the skeleton were a harpoon head (1A2y2P), two teeth, and a trough scraper.

Burial 146 was on the Eastern Hill in Quadrants O_b-165, P_b-165. A stone slab near the head of the grave could be seen on the surface. Slate slabs formed the floor of the grave. The head of the skeleton was oriented to the north. The skull and feet were at a depth of 0.05 m, the pelvis at 0.10 m.

The skeleton was fragmented and the anatomical order badly disordered. The mandible and the skull were displaced to opposite sides of the cervical vertebrae, the bones of both arms were displaced to the right of the torso. The bones of the lower legs were lifted and almost parallel to the femurs. The skeleton originally must have been lying supine, with the extremities raised above the level of the torso. The inventory included a mattock fragment near the right shoulder, a whetstone and a quartz pebble near the head of the grave, a small hook, a set of needles, and a bracelet on the chest. A bird figurine was near the left clavicle and five nail-shaped inserts were located farther to the north of the figurine, almost by the skull. Ceramic fragments were near the feet, and a small spoon was near the lumbar vertebrae. A spindle-shaped article and a bone point were near the mandible; a javelin head and an endpoint were near the left upper ribs.

Burial 147 was on the Eastern Hill in Quadrants V_b-166, 167; W_b-166, 167; X_b-166, 167 and was located within and directly below Burial 143.

The grave was at a depth of 0.40 m and divided into parts. The skeleton was in a poor state of preservation and was fragmented, but the anatomical order of the bones was preserved. The skeleton was supine, with the skull oriented to the south. The hands were near the femurs. Inventory found with the burial included a ceramic fragment and fragments of the bottoms of birch-bark containers with the remains of baleen near the head of the grave. Three slate knives were on the left side of the skeleton near the femur and the skull. A bow drill was near the left femur. An adze sleeve was near the left knee. A walrus-tusk flake, a harpoon foreshaft, a harpoon socket piece, and a sawed piece of tubular bone were near the feet. An unfastener for knots, a bone point, a bone awl, a shell fragment, and an end blade were in the left portion of the pelvis. An arrowhead was near the left shoulder. A trough scraper and a whetstone fragment were near the skull, close to the mandible. A bird-bone tube, a trinket, and a decorated burin handle were near the epiphysis of the left femur. A fragmented bracelet was on the left forearm near the wrist. Small fragments of a child's skull and ribs were found near the left femur, north of the fingers of the left hand.

Burial 148 was on the Eastern Hill in Quadrants U_b-167, 168, with the grave oriented to the west. The skull was not found. The mandible was at a depth of 0.30 m, and the feet at 0.27 m. No structural elements were found in the grave. The skeleton was fragmented and the anatomical order poorly preserved. The inventory included a piece of birch bark near the left clavicle. Two snow shovels in a poor state of preservation were found to the right of the pelvis and femurs. A long bow drill was on the upper portion of the thighs. A large antler bushing was near the left shoulder and a bone tube was near the wrist, to the right of the pelvis. A pail handle was near the mandible. A harpoon foreshaft was near the left pelvic bone. An ice pick, a miniature sleeve, and fragments of the central point of a bird spear were to the south of the mandible. A harpoon head (2A2XP) was found farther west. A javelin head was under a cervical vertebra and a plug was lying to the south of the backbone in the chest area. A slate knife was found under the snow shovel after the shovel was removed. A bone article was found among the hand bones.

Burial 149 was on the Eastern Hill in Quadrants P_b-164; Q_b-164, with the grave oriented to the north-northeast. Only the vertebral column was well preserved. The anatomical order of the rest of the bones was completely destroyed. The skull and most of the skeletal bones were missing, but the remainder of the skeleton was at a depth of 0.25–0.48 m. The average depth of the southern portion of the skeleton was 0.30 m, the northern portion was at 0.35 m.

The inventory included a polar bear skull found in the upper portion of the skeleton, above the mandible, at a depth of 0.18 m. Ceramic fragments were lying close to the skull at a depth of 0.48 m. A cluster of stone objects was found to the west of the bear skull and included three fragmented slate points, three adzes, a scraper, an end blade, and a whetstone. Objects found to the south of the bear skull were two broken javelin points, a piece of ochre, a small sleeve, a walrus-tusk article, and a harpoon head (2A2XP). A piece of ochre and three fragments of slate points were to the south of the vertebrae, which happened to lie separately from the rest of the bones.

Burial 150 was on the Eastern Hill in Quadrants S_b-165, 166; T_b-165, 166. Whale bones bordering the grave on its south side protruded as much as 0.05 m above the turf. The north side also had whale bones at a depth of 0.10–0.15 m. The skeleton was lying supine on a wooden block floor. The skull was oriented to the northwest and was at a depth of 0.10 m, the feet were at 0.15 m. The skull and mandible of another individual were found at a depth of 0.15 m, near the feet of the main skeleton.

The inventory included the handle of a pressure flaker with anthropomorphic designs, found near the feet. Two harpoon heads (1A2x2P) and three fragments of slate tools were near the right shin. Adzes, one in a sleeve, were near the right knee. An awl and a button were between the knees. An adze sleeve broken into two parts was found to the left of the left femur. Slate knife fragments and a burin in a sleeve were near the right elbow joint. A burin made from a flaky stone was to the right of the pelvis. A handle with zoomorphic decorations and fragments of a figurine were to the right of the skull. Ochre, three lateral points of a bird spear (one of the points was broken) and two wound pins were near the back of the skull. A slate article, a burin made of green stone, and ceramic fragments were to the west of the skull. A bow drill and an end blade were near the forehead. Bear claws were on the right knee. Objects located under the right shin and near the feet were two cut pieces of bone, a knife dowel, a walrus-tusk flake, a walrus tooth, a small whetstone, and a pebble flake. A bracelet was near the left knee.

Burial 151 was on the Eastern Hill in Quadrants S_b-165, 166; T_b-165, 166. This burial was located east of and parallel to Burial 150. Both of the burials shared the same walls. The skeleton in Burial 151 was supine and in a poor state of preservation. The skull was oriented to the northwest and was at a depth of 0.35 m, the feet at 0.33 m.

The inventory included two fragments of slate tools near the back of the skull. A large bow drill was found farther west. Three arrow heads and a whetstone were located just behind the bow drill. A bone plate with holes in it, a needle case, and another badly preserved article with a hole in it were near the left temple. A bone shovel was found among the cervical vertebrae. Fragments of slate blanks, a

mattock, and a trough made from a deer shin were to the east of the chest. A large bow drill, a small bow drill, and a fragment of a deer shin trough were lying along the left femur. A large shovel with a fragmented javelin head with ochre and fasteners on it were to the left of the shins. A slate knife fragment, a pendant made from a bear tooth, a walrus-tusk flake, and a seal bone were lying near the shovel.

A fragmented snow shovel was in the north corner of the grave, under the bone border.

A long sled runner was lying along the left shin. Objects found near the separately placed skull were a bow drill, an unfastener for knots, two lateral points of a bird spear and an awl made from a tubular bone.

Burial 152 was on the Eastern Hill in the same Quadrants as for Burial 151 and lay directly beneath it. A wooden floor was under Burial 152. The burial must have been damaged during the placement of the burials above it (150–151), which were later burials. Only a few leg bones and skull fragments of the skeleton were left and were under the femurs and lower legs of Burial 151 at a depth of 0.60 m. The following objects were found at the same level: a piece of ochre and a ceramic fragment in the north part of the grave and a long sawed walrus tusk lying along the lower leg bones. A harpoon head (1BXM) and a nail-shaped insert were found in the south portion of the grave. A sawed piece of walrus tusk was near the end of the shin. East of the lower legs were a nail-shaped insert, two sinkers, a piece of ochre, a small sleeve, a whetstone, two thin whetstones, a slate knife fragment, a javelin head fragment, a broad end blade, and a flint flake. A button and a fish spear point were found under the shin after it was removed. Carved snow goggles were found to the north of these objects on the wooden floor block.

Burial 153 was on the Eastern Hill in Quadrants JK_b–166–167. Only the left femur of the skeleton remained, and was found at a depth of 0.15 m. Two walrus-tusk sled runners were found farther south at a depth of 0.30 m. Objects found in Quadrant K–167 to the west of the femur were a Birnirk harpoon head (1A2xPCO–1), an awl, a bracelet, an adze sleeve and an adze, and a harpoon head (1A2XP). A decorated article and a flake of green stone were also found here.

Burial 154 (Figs. 26–27) was on the Eastern Hill in Quadrants JK_b–161–163. This burial had a whale scapula border that extended up to 0.05 m above the surface. The burial was bordered on the north by two slate slabs and the whale scapula. The south wall consisted of two mandibles from a bowhead whale and slate slabs. Whale ribs and slate slabs were at the east and west walls of the grave. The burial was covered with decayed wood at a depth of 0.60–0.68 m, with the head of the grave oriented to the west. The skeleton was supine, the skull crushed. The arms were lying along the torso, with the left hand under the pelvis. The legs were extended and parallel to each other.

The skull was at a depth of 0.80 m, the pelvis at 0.78 m, the feet at 1.0 m. The skeleton had been placed on a wooden platform that was lying on the slate slabs. Permafrost lenses of ice made the excavation complicated and were found near the feet and in the north section of the grave. The ice preserved the wooden articles and the remains of a polar bear fur. The skull was in a poor state of preservation. It was crushed, and the mandible was broken.

The inventory of this burial was very rich. Objects found east of and below the skull were two fragmented vessels of baleen, three wooden vessel bottoms, and ceramic fragments. A decorated walrus-tusk hook and a walrus-tusk bear figure were lying on one wooden vessel. A bracelet and a decorated article were found under a vessel. A stone adze and shells were found to the left of the skull. A walrus-tusk mattock and two siliceous flakes were on the left shoulder and chest. A decorated miniature socket piece with a fragment of a wooden vessel under it was below the elbow. A trough scraper containing needle fragments and an end blade was near the elbow. Below these objects, on a slab, were an ulu handle, a shaped clasp, another walrus-tusk ulu handle decorated with zoomorphic designs, and a shaped article. A bear figurine and another walrus-tusk article were near the left hand.



Figure 26. Burial 154 (feature).

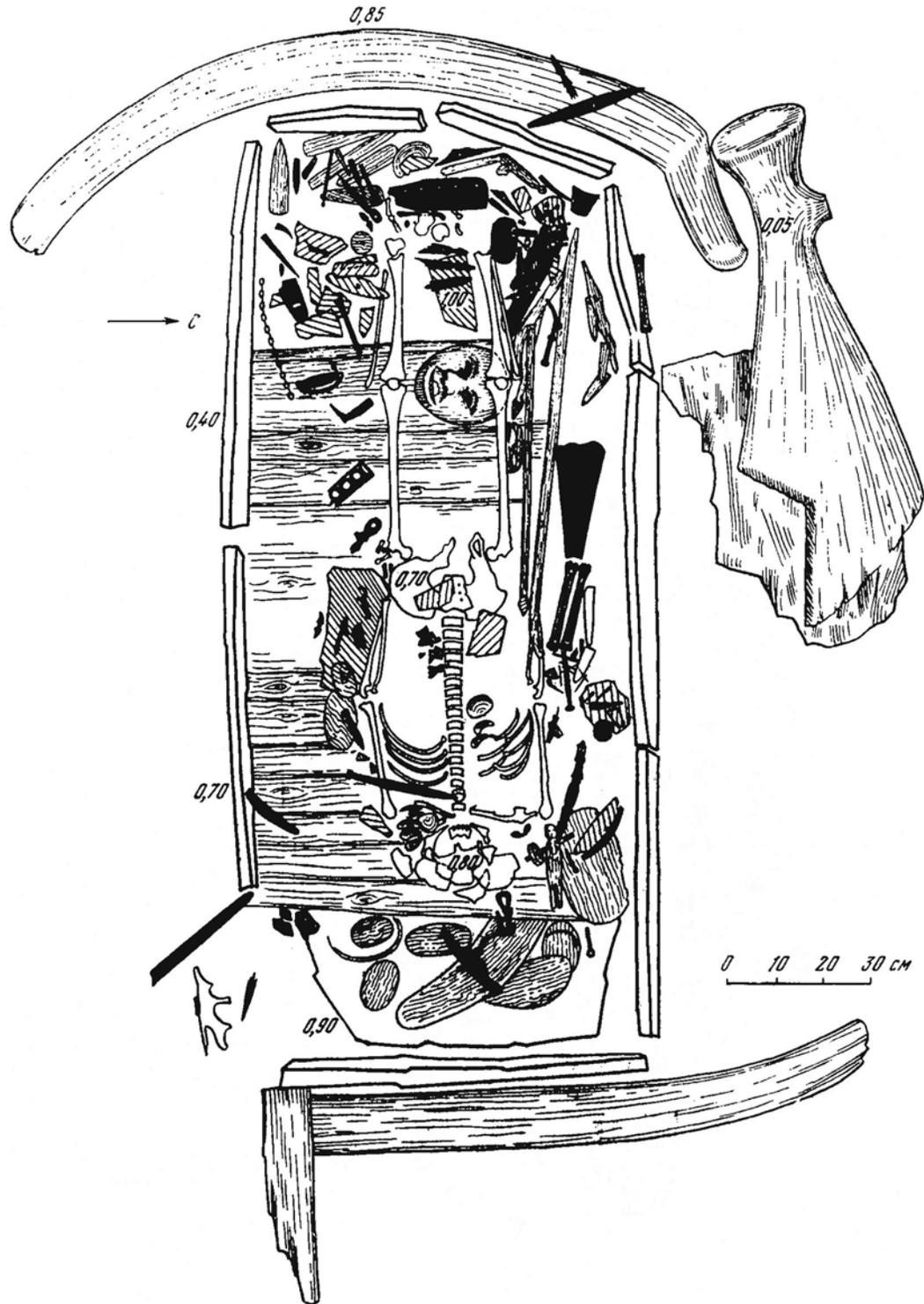


Figure 27. Burial 154 (skeleton).

The walrus-tusk image of a man's leg was near the outside of the knee. Next to the leg were a chain made of a single piece of walrus tusk and a ulu handle decorated. Stone tools lying along the left shin included an adze, a slate ulu with a hole in it, a whetstone, a spear point, slate flakes, fragments of slate tools, siliceous slate tool blanks, end blades, a walrus-tusk hook, an adze sleeve, a fragment of a poorly preserved tusk, a bone, and a claw.

Objects found on the left side of the legs were a wooden article (oval, with a hole), three floats, a button, an arrow, and walrus-tusk fragments.

Objects near the feet were a whetstone, a bone fragment, a stone slab fragment, a harpoon head (1BIM, broken), a drum handle, a pottery stamp (made from a broken sled runner *kanrak* of walrus tusk).

A kayak model and a harpoon head (1A2x2P) were in the northeast portion of the grave on the whale rib and at a depth of 0.65 m.

A harpoon head and a fragment of a polar bear mandible were in the southeast portion of the grave.

Objects found to the right of the skull were an ulu with a wooden handle, a decorated article, a wooden article, and a wooden figurine of a woman. All these objects were lying on a wooden vessel bottom. Walrus-tusk buttons were near the mandible and a pail handle was near the shoulder. Objects found near the forearm were an arrowhead, slate tool fragments, a bird bone awl, a walrus-tusk flake, two needles, four walrus-tusk pointed articles, a slate knife fragment, two wooden floats, an adze, a slate slab, a harpoon head (1A2Y2P), and three stone articles with traces of grinding. Two troughs made of deer shin were lying along the forearm. Fragments of slate tools, an unidentified flake, an awl, and a piece of ochre were on the chest.

A javelin shaft with a stone point, a staff, and two floats were lying along the femur. Fragmented wooden goggles were near the femur. A wooden mask with inserted eyes and teeth of walrus tusk was under the right knee. Objects found near the knee were a javelin with a point, two handles, a harpoon head (1A2Y2P), a spear point, an arrowhead, a trough scraper, a pottery stamp, a sleeve containing a walrus-tusk charm, a needle-shaped article, a stone burin, a harpoon head blank, a slate knife fragment, a seal-scapula spoon with ochre on it, and a bone with three holes in it.

Objects found between the feet were a whetstone with a hole in it, three harpoon heads (2A2y2M3, 2A2XM3, and 1BXM), a trough, a nail-shaped article, a pressure flaker, a fragment of walrus scapula, an antler burin sleeve, an awl made from a tubular bone, an article of walrus tusk, an awl, an arrow fragment, the miniature head of a bird spear, another bird spear head, a pointed article of walrus tusk, an end blade fragment, walrus-tusk wedges, a toe-bone drill rest, a float, a wooden article, a wooden handle, perforated tooth, an unperforated tooth, a tooth with two perforations, a walrus-tusk item, an animal tooth, a slate flake, ochre, a wooden rod (a shaft for starting fire with a drill), a burin handle, a fragment of a walrus-tusk article, three tubular bones, a fragment of a wooden vessel, a fragment of a wooden article, a crystal, a stone blank, a wooden board for pelt processing (under the skeleton's chest), three toggles, a fragment of a decorated article, and buttons carved with animal images.

Burial 155–156 was on the Eastern Hill in Quadrants FGH_b–165–166. This grave was oriented to the south and was not visible on the surface. It was a double burial of a man and a woman. The skull of skeleton 155 was at a depth of 0.50 m, the pelvis at 0.20 m, and the feet at 0.18 m. The skull of skeleton 156 was at a depth of 0.50 m, the pelvis at 0.22 m, and the knees at 0.20 m. Both of the skulls were displaced and tipped over. The skull of the woman's burial (155) was on its base, the mandible lying beside the skull. The skull of Burial 156 was lying on its right side with the face to the east-northeast. The skeletons were supine and in anatomical order, although skeleton 156 did not have a left lower leg or foot. The lower legs of 155 diverged to the left, the arms were extended, and the hands were under the pelvis. The right hand of skeleton 156 was under the pelvis, the left hand on top of the pelvis. A separate skull and

mandible of a third individual were near the skull of 155. The separate bones of a child were found under the lower legs of both skeletons, at a depth of 0.15–0.10 m.

The inventory included a walrus-tusk bushing on the chest of 155. Four lateral barbs (prongs) of a bird spear, a peg, a walrus-tusk article, a walrus-tusk wedge, a harpoon foreshaft, a bola, and a bear tooth were to the right of the shoulder. Two harpoon heads (1A2XP), fragments of slate tools, and a fragment of a vertebra with a hole in it were near the forearm. A mattock, a javelin point, and a needle case were on the lumbar vertebrae. Arrows, an unidentified article, and bones were under the pelvis. Objects found between the ribs were two slate articles, a harpoon head (1BYM), an article of walrus tusk, a fragment of a walrus-tusk article, an antler shovel, and a bushing for a bladder float. Objects found near the knees were fragments of bird spears, bird bones, and a decorated walrus-tusk ritual drill rest. Objects near the feet were a stamp for pottery, a trough scraper, snow goggles, three prongs, a sacrificial vessel, and an awl. Four slate blanks were to the left of the chest.

Objects found with Burial 156 were a javelin head, a seal scapula, and four siliceous tools to the left of the skull. Three spear points were on the chest. An adze, snow goggles, and a harpoon head for hunting whale (broken) were to the right of the pelvis. A bird sternum, an arrow, a harpoon head (1A2XP), a small point, a zoomorphic article, and a wound pin were found to the left of the shoulder. Prongs for a bird spear and an animal bone were found on the pelvis. Objects under the left femur were the central prong of a bird spear, harpoon heads (1A2y2P, 1A2XP), an adze, wound pins, and walrus-tusk articles. The head of a harpoon used for whaling (unusual in form and unfinished) was to the right of the pelvis, near the femur. A zoomorphic article was in the place where the lower left leg should have been. Buttons of green stone were on the pelvis. Bird spears were found after the removal of the skeletons, and were located right under the pelvis of skeleton 156. A shaped article of walrus tusk, ochre, and the central prong of a bird spear were found near the feet. The following objects were discovered after the removal of the skeleton: a flint flake, a slate flake, an awl fragment, three more bone articles, a piece of tubular bone, a fragment of a rib, a spear point, and a ceramic fragment.

Burial 157 was on the Eastern Hill in Quadrants FGH_b 165, 166, with the grave oriented to the south-southeast. The skull projected up to 0.02 m above the sod layer, and the right side of the pelvis also extended above the surface, up to 0.05 m above the sod layer. The feet were at a depth of 0.05 m. The skeleton was lying supine, with the bones in anatomical order. The skull was on its right side, the left half was broken. The arms were extended, with the hands near the pelvis. The right femur was missing.

The inventory included ceramic fragments near the back of the skull; a fragment of an oval object, an awl, a fragmented “winged object,” and two slate tools to the left of the skull; a slate point on the chest; a slate knife, a harpoon head (1BYM), two nail-shaped objects, and walrus-tusk articles were in the abdominal area. Two fish points (central prongs?) were to the left of the left forearm and hand, a harpoon socket piece was near the left femur, and a walrus-tusk sleeve was near the left knee. Three fragments of slate tools with flint flake on them, an awl, and a small awl were to the right of the skull. Slate slabs were to the right of the elbow. Ochre and a bone point were on the inside of the elbow. Three slate slabs were to the right of the pelvis. A “winged object” and a nail-shaped article were in the anatomical position of the right femur. Objects found near the right lower leg were two arrowheads with end blades, an arrowhead without an end blade, a harpoon foreshaft, four spear points, a small slate point, a small obsidian point, five walrus teeth, two nail-shaped objects, a bear canine, a wound plug, two pieces of sawed walrus tusk, a nail-shaped object, and three walrus-tusk fragments.

Burial 158 was on the Eastern Hill in Quadrants XY_c–174, 175, with the grave oriented to the north-northwest. The right side of the grave was bordered with whale bones. The skull was on its base, facing southwest, at a depth of 0.30 m, with the pelvis at 0.50–0.60 m. The skeleton was flexed and supine, the legs flexed at the knees. The left arm was bent in at the elbow, with the hand on the collarbone. The right arm was missing.

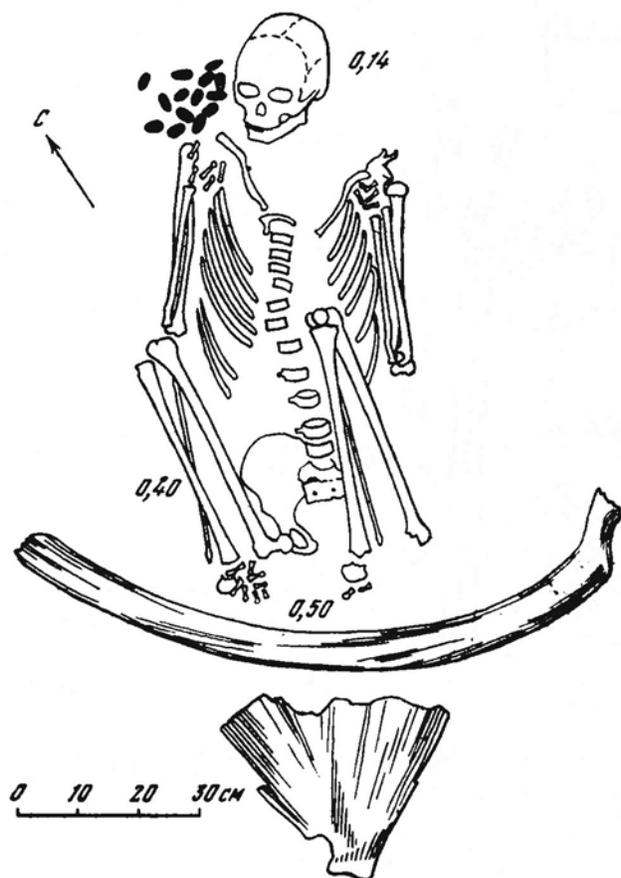


Figure 28. Burial 159.

The inventory included a scraper trough near the right foot. A woman's knife handle was to the left of the left elbow. A bola, a needle case, and a needle were to the right of the skull.

Burial 159 (Fig. 28) was on the Eastern Hill in Quadrant WX_c-170, 171, with the grave oriented to the north-northwest. This grave revealed nothing on the surface. Its south side was bordered by whale ribs and a scapula fragment. The skeleton was flexed and supine, with the skull on its base. The skull was at a depth of 0.14 m, the pelvis at 0.40–0.50 m. The arms were flexed at the elbows, the hands in the collarbone area. The skeleton and skull were in a good state of preservation. The pelvis was displaced and crushed.

Nineteen walrus-teeth bolas were in the grave, all located to the right of the skull by the right shoulder.

Burial 160 was on the Eastern Hill in Quadrants DE_b, 172, 173 and had whale bones bordering the west and south sides. These bones were visible on the surface. The skull and isolated bones of the skeleton were found at a depth of 0.23 m. The skull was on its base, facing east. A slate slab (a part of the structure) was near the back of the skull. The lower leg and foot were to the right of the skull. A fragment of the other lower leg, several ribs, and vertebrae were found to the west of the skull.

The inventory consisted of an antler fragment, a walrus ousic and a slate tool fragment.

Burial 161–162 (Fig. 29) was on the Eastern Hill in Quadrant JI_b, 160, 161. This grave was oriented to the south and was a double burial located right beside the wall of Burial 12, which was excavated in 1961. The north side of the burial borders Burial 99–100, which was found in 1953. A large slate slab was on the south edge of Burial 161–162. Three slate slabs were on the west side. Slate slabs and a whale mandible were on the north edge of the grave. Nothing was on the east side.

Skeleton 161 was lying supine. The skull was at a depth of 0.40 m, the pelvis at 0.35 m and feet at 0.50 m. The hands were on the pelvis, and the legs were parted at the knees. The right shoulder and ribs were missing. Wood remains were found under the skeleton. Burial 161 had the following inventory: two adzes in antler sleeves and an adze blank to the right of the skull. A harpoon head (1BYM), a small slate point, and a fragment of a slate knife with a hole in it were near the pelvis. Two walrus-tusk hooks, an ice pick for a harpoon, and the lateral prong of a bird spear were to the right of the right shin. Three harpoon heads (1A2XP, 1A2y2P, 2A2XP) were between the knees. Six arrowheads, a foreshaft, a fragment of a wooden article, and a miniature ice pick were to the right of the knee.

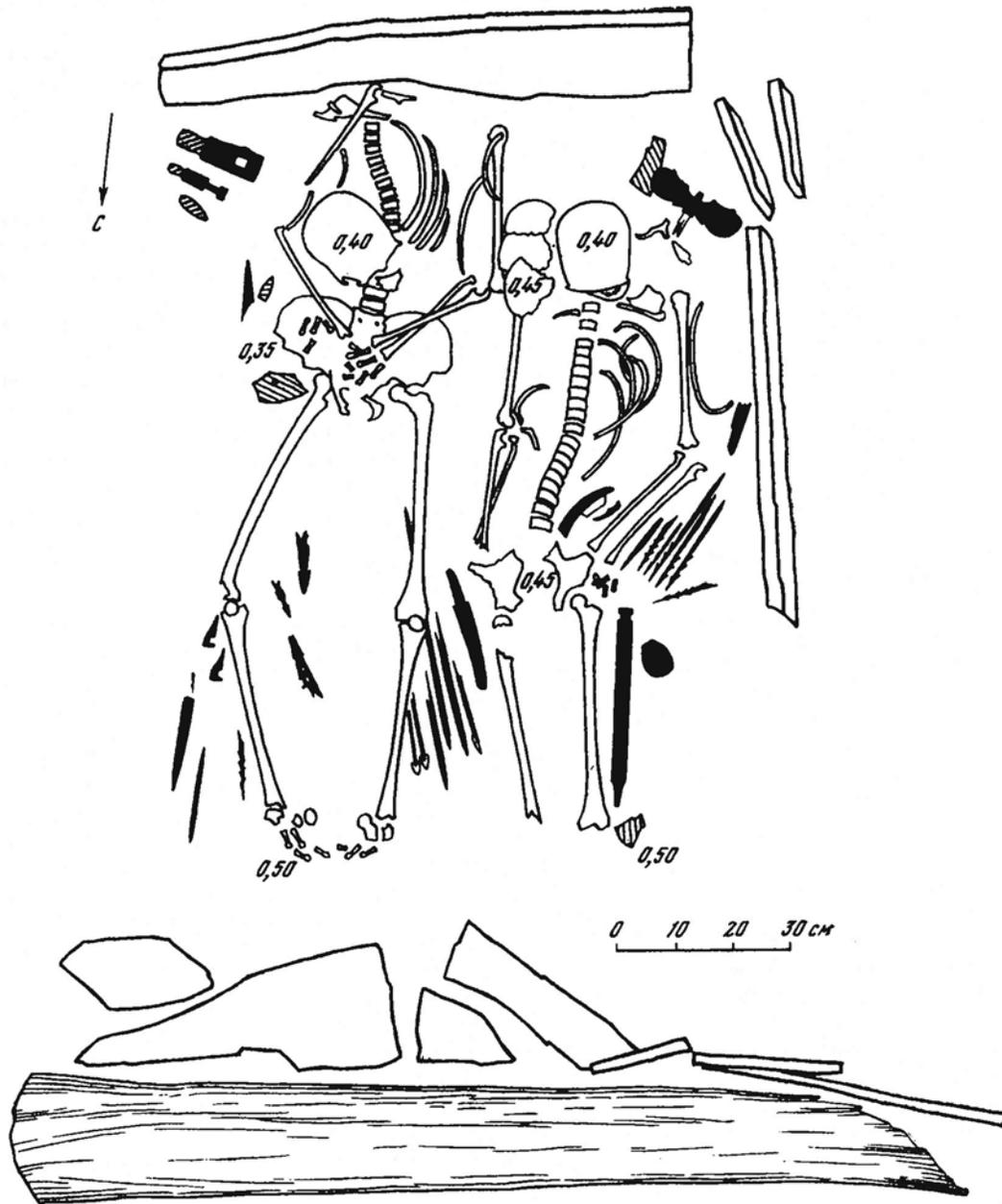


Figure 29. Burials 161–162.

Burial 162 was located to the east of Burial 161. The skull was at a depth of 0.40 m, the pelvis at 0.45 m, and the knees at 0.50 m. The skull was fragmented and displaced to the upper part of the chest. The skeleton was supine and in a poor state of preservation. Both lower legs were missing. Fragments of a child's skull were to the right of the main skull. The inventory included a slate knife fragment and a "winged object" to the left of the skull, small slate points near the shoulder, and a fragment of an antler item near the elbow. Objects found to the left of the pelvis included six bird spears, a nail-shaped item, and a pointed walrus-tusk article with a hole in it. Objects found near the left thigh were a harpoon socket piece, a spoon made from a seal scapula, a slate tool fragment, an ulu fragment in an antler handle,

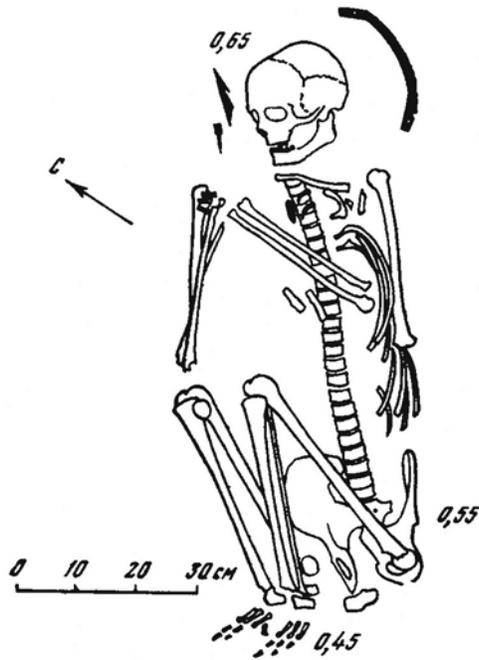


Figure 30. Burial 163.

needles, a hook, and a fragment of an antler item. A walrus-tusk mattock was found to the right of the pelvis. A harpoon foreshaft was near the left hand.

Burial 163 (Figure 30) was on the Western Hill in Quadrants KL_b-36-38, with the grave oriented west-northwest. The skull was at a depth of 0.65 m, the pelvis at 0.65 m, and the feet at 0.45 m. The skull was on its right side, facing west. The torso was supine, with the legs flexed at the knees and diverged to the right. The arms were flexed at the elbows.

The inventory included an antler bow drill to the left of the skull. Two claws and a fragment of a walrus tusk were on the chest. A Birnirk-type harpoon head (1A1PCO-1) was to the right of the skull, along with an item of walrus tusk and a walrus tooth.

Burial 164 was on the Western Hill in Quadrants FGH_b 35, 36, with the grave oriented to the west-southwest. The skull was at a depth of 0.25 m, the pelvis at 0.40 m, and the knees at 0.40 m. The skull was crushed. The skeleton was in general anatomical order. The legs were flexed at the knees and diverged to the right. It was a child's burial. No artifacts were found.

Burial 165 was on the Western Hill in Quadrants EF_b 33, 34, with the grave oriented to the north. The skull was at a depth of 0.35 m, the feet at 0.40 m. The north side of the grave had a border made up of a whale rib and a scapula. The skull from this burial was extremely fragmented, with the face turned to the west. The skeleton was supine and in a poor state of preservation. The legs were flexed at the knees and pressed against the abdomen. The arms were flexed at the elbows, hands on the chest.

The inventory consisted of two awls near the mandible.

Burial 166 was on the Eastern Hill. It was located within the structure of Burials 161-162, and directly under Burial 161. The skeleton was supine, with the skull missing. The hands were under the pelvis, the knees were parted a bit. The grave was oriented to the south. The collarbones were found at a depth of 0.48 m, the pelvis at 0.40 m, and the feet at 0.55 m.

The upper portion of the skeleton was lying on a wooden floor. The inventory included a small end blade to the left of the shoulder and an antler article with a stone insert (shaped like a man) on the inside of the left shoulder. A pointed item of walrus tusk was near the right femur. Objects found between the ribs and the knee area were a toe-bone rest for a drill and three hooks. Ceramics were found farther to the south of the skeleton.

Burial 167 was on the Eastern Hill in Quadrants BB_cA_b 167, 168, with the grave oriented to the east-northeast. The skull was at a depth of 0.06 m, the pelvis at 0.25 m, and the feet at 0.30 m. This burial was bordered by whale scapulas, which were located near the foot and head of the grave and could be seen on the surface. The skull had been placed on the whale scapula, the feet were on a stone slab. The skeleton was supine, with the hands under the pelvis. The skull was lying on its base, facing west. The legs were parallel to each other. Two small whale scapulas were found to the right and the left of the skeleton.

The inventory included a walrus-tusk article and a bushing to the right of the skull. An adze, a spear point, and slate tool fragments were found in the same spot. Three prongs, an ice pick, a peg, and

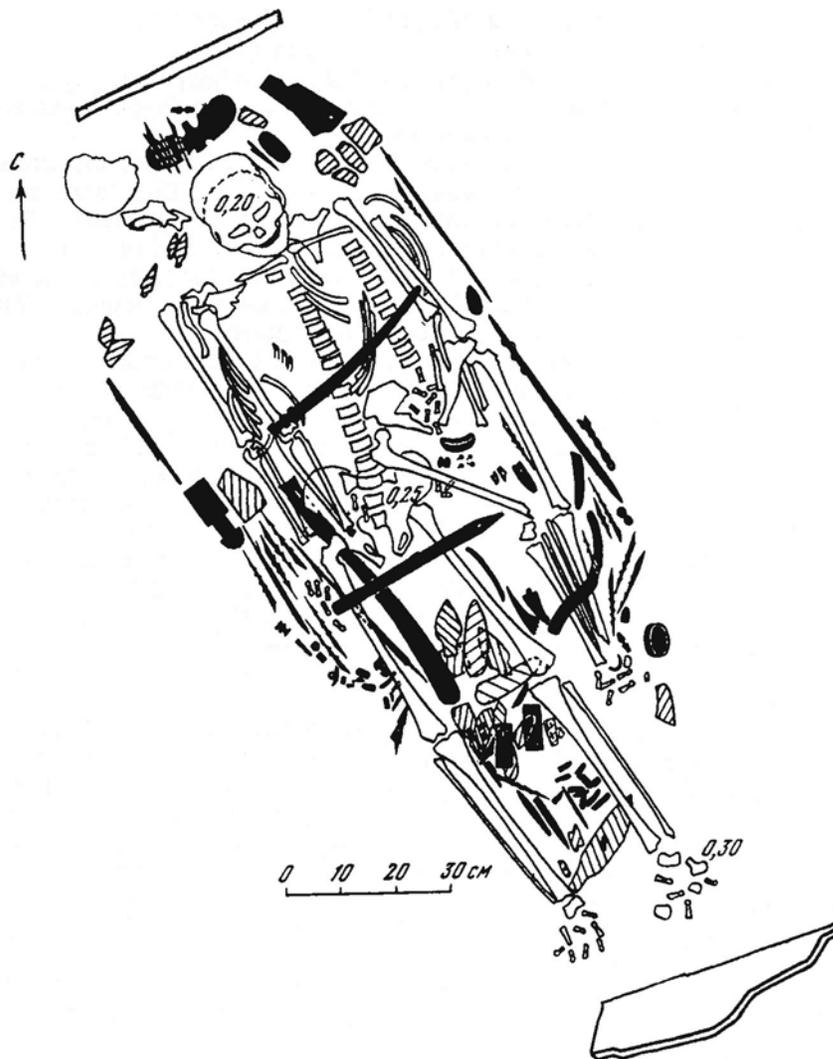


Figure 31. Burials 168–169.

a harpoon head (1BYM) were to the left of the skull. Near the forearm were 11 bolas. A decorated buckle was on the abdomen. Four harpoon heads (A1y2P, 1A1XP, and 2A2yPCO–1) were between the thighs. A harpoon head (1A2XP) was to the right of the right femur. A walrus-tusk article was near the left femur on the inside. Two stone sinkers were to the left of the pelvis near the left femur.

Burial 168–169 (Fig. 31) was a double burial on the Eastern Hill in Quadrants EF_b–163, 164, with the grave oriented to the north-northwest. The skeletons were lying one on the other. The lower skeleton (168) was lying supine with the bones in anatomical order. The skull was on its base. The pelvis was divided, with the hands under the pelvis.

The chest and pelvis of the upper skeleton (169, a woman's) covered the chest and left arm of the man's skeleton (168). The lower leg bones were found to the left of the femur of 168. The woman's skeleton was in a very poor state of preservation, though it was in anatomical order. The skull of 169 protruded 0.03 m above the surface. It was broken and displaced to the side (to the right of 168). The skull of 168 was at a depth of 0.20 m, the pelvis at 0.25 m, and the feet at 0.30 m. The grave had slate slabs at the head and foot.

The objects near the back of skull 168 were a “winged object,” a fastener, a harpoon head (2A2y2M3), a prong of a bird spear, a pointed article of walrus tusk, two adzes, a walrus-tusk fragment, an oval piece of walrus tusk, a fragment of an animal’s scapula, and ceramic fragments.

A mattock was on the chest of 169. One lateral and one central prong of a bird spear were to the left of the skeletons. A bola was near the elbow. Objects found near the left femur were a walrus-tusk javelin with lateral stone insets, and a decorated walrus-tusk article. Objects found near the knee were a walrus-tusk ulu handle with zoomorphic decorations, six lateral prongs, a walrus-tusk bola, a walrus-tusk button, a trough scraper, a button, a broken socket, and a fragmented slate knife. A curved antler was found on the shins, a slate knife was under the knees. An antler article and an animal mandible were to the right of the knees. Objects found between the ribs of Burial 169 were the lateral prong of a bird spear, a clasp, two fragments of walrus tusk, a large walrus-tusk bola, four walrus-tusk earrings, and a trough scraper.

Two small slate javelin points, a slate tool fragment, and a whetstone were to the right of the skull of Burial 168. An arrowhead with a small end blade, a slate knife fragment, a walrus-tusk sleeve fragment, four lateral prongs, and an arrowhead with an end blade were to the right of the right hand. A walrus-ousic with a stone ax were under the pelvis. Objects found to the right of the thigh were two lateral prongs of a bird spear, ochre, a walrus-tusk article, a clasp, three articles of walrus tusk, nine teeth, a piece of walrus tusk, a fragment of a bone, a punch, a piece of a walrus-tusk article, a fragment of a decorated walrus-tusk article, and two harpoon heads (1A1YP, 1A1YP). A harpoon socket piece was on the femurs of 168. Three spear points, a pumice stone, a whetstone, and an adze were between the femurs. Objects found between the knees were an adze blank, a burin, a lateral inset with retouch, birch bark, two ice cleats, four tubular bone awls, two walrus-tusk awls, animal teeth, pebbles, a whetstone, and two miniature walrus-tusk heads. A walrus-tusk plug with a hole for inflating a bladder and three slate slabs were to the right of the right femur. The central prong of a bird spear was under the right femur. Objects found after the removal of the skeleton were two lateral prongs, a wound pin, pieces of ochre, flakes with traces of retouch, an oval pebble, a fragment of a walrus-tusk article with a hole in it, broken-off pieces of walrus tusk, a walrus-tusk flake, a sawed walrus tooth, a claw, and five bone articles.

Burial 170–171 was a double burial on the Eastern Hill in Quadrants EF_b–163. Slate slabs bordered the grave on the north and south; the west edge was marked by a log. Burial 170 was oriented to the north, with the skull at a depth of 0.72 m, the pelvis at 0.68 m, and the feet at 0.75 m. The skull was crushed, the skeleton supine. The left forearm was missing, and the right forearm was broken. The pelvis of 171 was lying on the pelvis of 170.

Burial 171 (a woman’s) was oriented to the south. The skull was at a depth of 0.69 m, the feet at 0.75 m. The skull was crushed, and the left forearm bones broken. The skeleton was supine and partially covered a man’s (170).

The inventory found with 170 were five harpoon heads (2A2XM3, 1BXM, two 1A2XP, 1BYM), a harpoon-head blank, a toe-bone drill rest, two pieces of ochre, two walrus-tusk articles, three harpoon foreshafts, the central prong of a bird spear (fish spear?), two harpoon ice picks, and a harpoon rest near the skull. Objects found to the right of the skull were an adze, a burin, a fragment of a slate end blade, an arrowhead, three slate tool fragments, and a seal scapula. Objects found on the chest of the skeleton were an arrowhead with an end blade, another arrowhead with an end blade (the end blade was broken), four more arrowheads, two walrus-tusk articles, and two adze sleeves.

Objects found to the left of the pelvis were a fragment of an antler article, an antler burin handle, a tusk of a yearling walrus, an ulu, a burin made of greenish stone, a burin blank, and three wooden floats. A rattle was found under the left thigh. A “winged object” was between the femurs. A walrus-tusk article was between the lower legs. Objects found to the left of the left lower leg were a harpoon head (1BYM), a wound pin, a toe-bone drill rest, two walrus-tusk hooks, a walrus-tusk article, and a small shovel with holes in it.

Two harpoon heads (1A2XP, 1A2y2P) and a fragmented slate knife with a hole in it were to the left of the lower right leg. Objects under the right femur were javelin shafts, a piece of birch bark, two adzes in sleeves, a harpoon head for whaling (1BYM), and the handle of a flesher.

Objects located to the left of the skeleton were two fragments of wooden tools, another wooden article, a slate end blade, another end blade, a fragment of an end blade, a fragment of a slate knife with a hole in it, a knife blank, two slate flakes, a walrus-tusk fragment, a shell, a harpoon socket piece, a fore-shaft, and a walrus-tusk pointed article.

Burial 171 had a mattock near the skull and a slate knife and whetstone on the chest.

Burial 172 was on the Western Hill in Quadrants HI-19, 20, with the grave oriented to the east-northeast. The skull was at a depth of 0.45 m, the pelvis at 0.55 m, the head of the right femur at 0.92 m, and the feet at 0.21 m. The skull was on its base. The right forearm bones were displaced. The pelvis was crushed, with the legs flexed at the knees and diverged to the right. The backbone was broken and some of the vertebrae were missing. The jaw of another individual was found near the feet of the main skeleton.

The grave had a whale bone on its northwest side that was visible on the surface. A whale scapula was found on the south border of the grave, and that scapula could be seen on the surface, as well. The grave contained no artifacts.

Burial 173 was on the Western Hill in Quadrants LM-9. The skeletal remains comprised the bones of one leg, a fragment of the pelvis, and several ribs. The bones were found at a depth of 0.40 m. Objects found to the south of the bones at a depth of 0.38 m were a “winged object” (broken), the fragmented head of a harpoon (1A2XP), birch bark, and a walrus-tusk article with two holes in it.

Burial 174 was on the Western Hill in Quadrants LM-7, 8. This burial was located directly next to Burial 173. The skull was crushed. The depth of the skull bed was 0.25 m; the feet were at 0.12 m, the pelvis at 0.10 m.

This grave was oriented to the east-northeast. The skeleton was supine and fragmented, and its shoulder bones and left shin bone were missing. The remains of a child’s skeleton were lying parallel to the skeleton, which was in a poor state of preservation. The inventory included four fragments of slate tools, a walrus-tusk flake, a quadrilateral article of bone, an unidentified sleeve, a fish spear, and a harpoon-head blank (1A2y2P) near the skull. An arrow and four bolas were near the mandible. Two lateral prongs and one central prong of a bird spear were to the left of the shoulder.

Two lateral prongs of a bird spear were to the right of the skeleton. Four fragments of walrus-tusk articles were near the right femur. A trough scraper, a harpoon head (1A2y2P), a button, a bushing, a toe-bone drill rest, and an animal tooth were between the femurs.

Burial 175 was on the Western Hill in Quadrants BC-16, 17. This grave had a border of whale bones that was visible on the surface. A whale rib was on the north side, two whale ribs on the east, and a whale scapula on the west. The grave was oriented to the east. The skeleton was flexed. The skull was not found. The mandible was at a depth of 0.42 m, the pelvis and the feet at 0.20 m. No artifacts were found.

Burial 176 was a child’s burial. This burial, located in the same enclosure with Burial 177-178, was on the Eastern Hill in Quadrants AAB_B-166 and was oriented to the west. The skull was not found. The upper portion of the skeleton was at a depth of 0.40 m, the pelvis at 0.50 m, and the feet at 0.25 m.

The skeleton was lying supine with its hands on its pelvis. Articles found to the right of the skeleton were an item of decorated walrus tusk with three holes in it, two bolas, a piece of pyrite, two lateral prongs of a bird spear, a fragment of a bird spear prong, a slate end blade, and fragments of slate tools. Objects found near the right shin were a harpoon rest made of walrus tusk with four images of a man’s face, a float plug, and a fragment of an ornamented clasp of walrus tusk.

Burial 177 was on the Eastern Hill in Quadrants ZAABB_b-165-167. This burial was located north of Burial 176. A whale scapula that was covering part of the skull protruded up to 0.10 m above the surface. The scapula was placed on a mandible that bordered the head of Burials 176-178. A whale rib was near the foot of Burial 177 and was also visible on the surface, extending 0.15 m above it.

The skull was on its base at a depth of 0.20 m, the pelvis 0.70 m, and the feet 0.20 m. The hands were on the pelvis, which was lying deep and had the left side covered with a whale scapula. The shins were located 0.20 m farther away from the femurs. The left shin was under the whale bone. No artifacts were found.

Burial 178 was located in the same Quadrants as Burial 177. The skull was on its right side, the skeleton was supine, the legs were parallel to each other. The skull was at a depth of 0.30 m, the pelvis at 0.40 m, the knees at 0.15 m, and the feet at 0.20 m. The bones of the right upper arm were not found. The chest was covered with two whale scapulas piled one on top of the other. The second whale scapula was covering the right femur of Burial 178 and the left part of the pelvis of Burial 177. No artifacts were found.

Burial 179 was in Quadrants QR-166-168 on the Eastern Hill. Whale bones protruded up to 0.05 m above the turf, forming an oval around the grave on the east, west, and south sides. The north portion consisted of fragments of whale bone that projected 0.10 m above the surface. Slate slabs were also part of the north portion. The bones were at a depth of 0.10 m. The following human remains were found in the grave: an adult jaw, a scapula, a small fibula, a rib, and fragments of a child's skeleton (ribs, and some of the vertebrae). Judging by the burial and the child's bones, the grave was oriented to the west. No artifacts were found.

Burial 180 was on the Eastern Hill in Quadrant PQ_c-166-168, with the grave oriented to the west. The skull was not found. The skeleton was supine, poorly preserved, and badly damaged. The scapulas were at a depth of 0.15 m, the pelvis at 0.15 m, and the feet at 0.20 m. The lower legs were covered with a whale scapula that extended up to 0.10 m above the surface. Skeletal bones consisted of the left arm, scapula, right shoulder bone, fragmented pelvis, and leg bones. Fragments of the pelvis and lower leg of another individual were found to the left of the left shoulder of the main skeleton. Fragments of whale bones were at the southwest edge of the grave. A bird spear point was found near the scapula of the skeleton.

Burial 181 was on the Eastern Hill in Quadrants NOP_c-166-168, with the grave oriented to the east. Two stones formed a wall on the west side of the grave. The skull was not found. The remaining skeletal bones were at a depth of 0.10 m, and consisted of arm bones, the femurs, a collarbone, several vertebrae, and fragments of ribs. The inventory included the lateral prong (broken) of a bird spear near the right knee and a walrus-tusk awl near the right elbow.

Burial 182 (Fig. 32) shared the same structure as Burials 183 and 184. It was on the Eastern Hill in Quadrants GHI_b-161, 162. The walls consisted of slate slabs on the north, east, and south sides. Whale bones joined the slabs in the north and south walls. The graves were oriented to the south and bordered the double Burial 161 and 162 on the west.

Burials 182 and 184 had the upper portions of the skeletons lying on the whale mandible that was the south border of Burial 183.

The skull of 182 was at a depth of 0.35 m, the pelvis at 0.30 m, and the feet at 0.36 m. The skull was on its left side, the skeleton supine, the hands under the pelvis, and the feet parallel to each other. Skeleton 182's pelvis was lying on the left portion of the chest of 183, its knees covered the pelvis of 183, and its shins were on the right femur of 183. The left shoulder bone of 182 was covered by an animal scapula, and its skull was displaced 0.20 m away from the skeleton. The skeleton was poorly preserved.

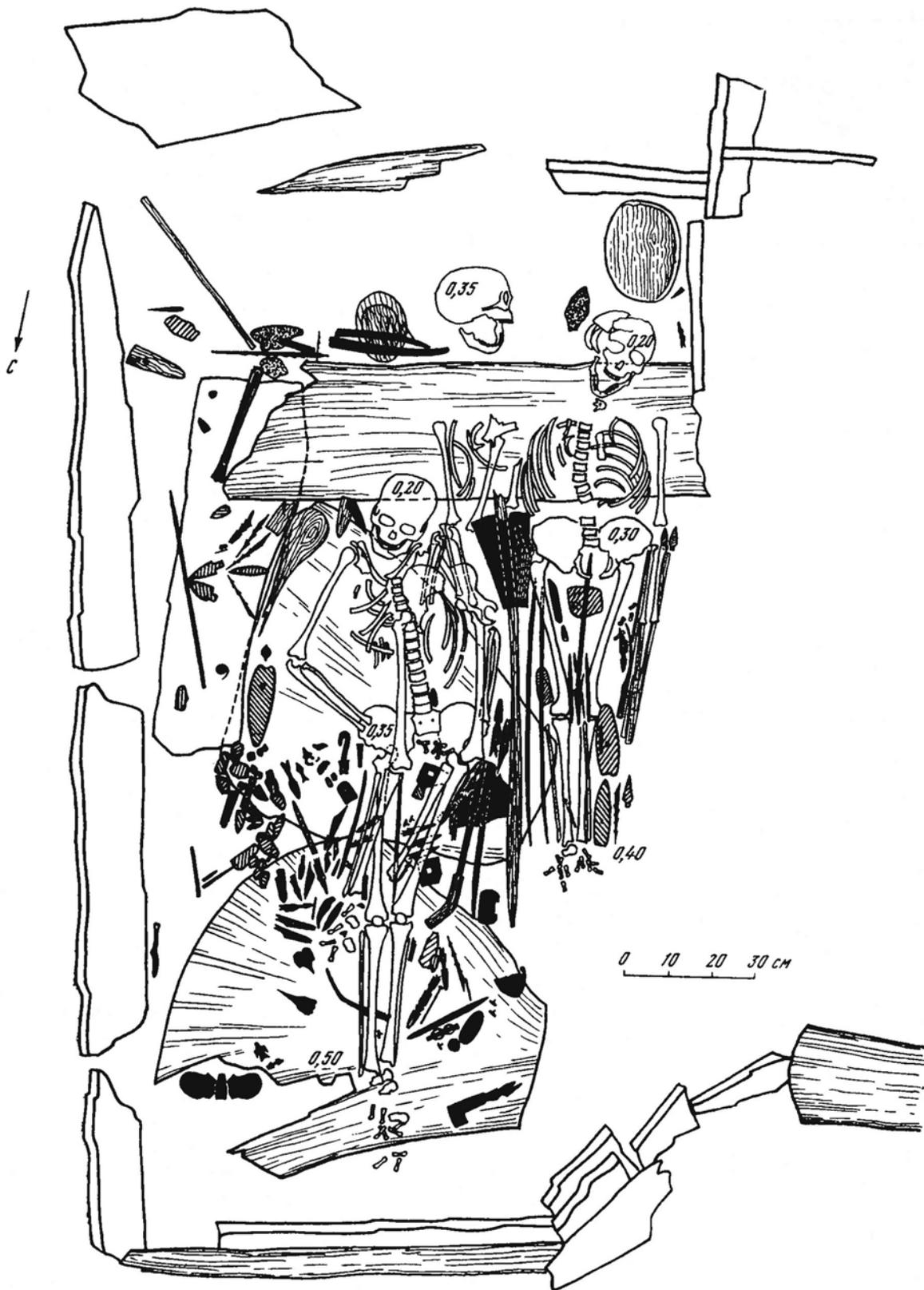


Figure 32. Burials 182, 183, 184.

The inventory found near the back of the skull were two mattocks, two wooden vessel bottoms under the mattocks, a prong of a bird spear on the mattocks; farther to the west were ceramic fragments, fragments of a wooden saucer, two walrus-tusk articles, a wooden handle fragment, the central prong of a bird spear, a miniature walrus-tusk sleeve, a slate knife fragment, a deer bone trough, a javelin point fragment, two prongs of a bird spear, an arrow head, a hook, a wooden handle, and an animal scapula.

Burial 183 was in the same quadrants as 182, being directly under it. The skull of 183 was on its base, the skeleton was supine and extended. The hands were on the pelvis. The skull was at a depth of 0.20 m, the pelvis at 0.35 m, and the feet at 0.50 m. The skeleton was lying on two whale scapulas.

The inventory in Burial 183 included a cluster of objects to the right of the skeleton on a slate slab featuring two prongs of a bird spear, a stone javelin point, a slate tool fragment, a harpoon head (1BXM), a walrus-tusk article (perhaps a sinker), two walrus teeth, two spear points, a burin made from greenish stone, a bird spear prong, a harpoon foreshaft, a siliceous stone flake with traces of spalling, and a fragment of birch bark. Objects near the right forearm were a fishing sinker, a slate knife with a dowel, a fragment of a rattle, and a wooden float fragment. Objects to the right of the pelvis were a stone burin, two pieces of graphite, a walrus-tusk trinket, a walrus-tusk sleeve, a fragmented walrus-tusk necklace fastener, two walrus-tusk amulets depicting a whale, a decorated walrus-tusk burin sleeve, a scapula fragment, and four harpoon heads (1A2y2P, 1BXM, 1BYM, and 1A2y2P). Other objects in the same area were a harpoon head blank, two hooks, a top-shaped article of walrus tusk, a fragment of a walrus-tusk article, a rodent tooth, and two deer shin awls. A pressure flaker and a nail-shaped object were under the right shin. Objects found near the northwest border, between the whale scapula and a slate slab, were a walrus-tusk knife sleeve, a “winged object,” a comb fragment (the teeth were broken), and a belt buckle. Items to the left of the skeleton were two bear teeth, a harpoon foreshaft, two antler sleeves for burins, a fragment of a wooden article, a miniature wooden article, a walrus-tusk item with two holes in it, another walrus-tusk item, two bone articles, three adzes, three burins, a spear point blank, four slate tool blanks, three fragments of slate tools, some unidentified flakes, two pieces of graphite, pieces of ochre, an adze in an antler sleeve, another antler adze sleeve, a burin in an antler sleeve, two open socket harpoon heads (2A2XP, 1A2y2P), a closed socket harpoon head (1BXM), three lateral prongs of a bird spear, three nail-shaped objects, a walrus-tusk button, two small slate points, fragments of slate blades, a seal scapula spoon with four holes in it, a spoon fragment, a walrus-tusk article, fragments of walrus-tusk articles, and a fragment of a wooden handle.

Objects found to the left of the left lower leg were a needle case, a walrus-tusk trough, a stone sinker, an adze, an end blade, an end blade blank, three nail-shaped objects, a fragment of a spoon made from a scapula, a walrus-tusk point, a wound pin, the lateral prong of a bird spear with two holes in it, a claw, a harpoon ice pick, a harpoon head (2A2XM4), a fragment of a harpoon head, and a harpoon-head blank (1A2y2P). Objects found between the thighs were a harpoon head (1A2y2), a hook, an awl made from a walrus tusk, and a flake of walrus tusk.

Objects found to the east of the skeleton were a wooden bow shaft fragment, a walrus-tusk article, arrowheads, a deer leg bone trough, an antler plate, a walrus-tusk pressure flaker, a point, a harpoon foreshaft, two walrus-tusk points, a walrus-tusk buckle, a whetstone, two end blades, a flake, a wooden handle fragment, fragments of a walrus scapula snow shovel, and a harpoon foreshaft.

Burial 184 was located west of Burial 183 on the border of Quadrants GHI_b-161, 162. The skeleton was supine, with both of its scapulas missing. The right shoulder was broken. The skull was displaced and crushed and at a depth of 0.20 m, the pelvis at 0.30 m, and the feet at 0.40 m.

The inventory included a harpoon head (1A2y2B) to the left of the skull and a ceramic fragment to the right. Near the left femur were fragmented javelin shafts, two small slate points, a harpoon head (1A2y2P), and an antler article. A large slate knife with a hole in it, a spear point, another slate knife with a hole in it, four prongs of a bird spear, a harpoon head (1A2y2P), a harpoon-head blank (1A2y2P), a

fragment of a slate point, slate tool fragments, and two hooks were near the knee. An antler article was between the shins. Along the right shin were a walrus-tusk point; a fragment from a scapula with a hole in it was near the right foot; and two sawed pieces of walrus tusk were along the femur. A whetstone was on the right knee. Between the thighs were a harpoon head (1BYM), a peg, four arrowheads, an antler shovel, a slate tool fragment, two pieces of ochre, and a small point of siliceous stone.

Objects to the right of the right leg were an unidentified flake, a pointed wooden article, an arrow-head fragment, an antler part of a bow used for attaching the bow string (could be part of the inventory of Burial 183), a nail-shaped object, a harpoon head (1A2XP), two oblong antler articles, a walrus-tusk point, a bird bone with a cut mark, a wooden article with six walrus-tusk nail-shaped inserts, a wooden bowl fragment, and a walrus-tusk bear figure.

Burial 185 was located to the west of Burials 182–184 on the Eastern Hill. Burial 185 and Burials 186–188 form one cluster of graves and are in Quadrants HI_b–161, 162. This burial complex borders Burial 184 on the east and Burial 186 on the west. The south and east sides of Burials 185–188 share walls with Burials 184 and 186. The walls of Burials 161–162 and 166 border Burials 185–188 on the north.

Burial 185 was oriented to the south. The skeleton was supine, and the skull was missing. An isolated skull was found to the south of the burial at a depth of 0.36 m and must have belonged to skeleton 185. Burial 185, with its hands on its pelvis, was lying directly on top of Burial 187.

The inventory included a slate knife with a dowel near the right lower leg; a stamp for ceramics under the feet; a mattock along the right femur; and a bird spear and a wound pin in the chest area. Artifacts found near the left knee include a whetstone, an arrowhead, three awls, a bird spear, a harpoon-head blank, two antler sleeves for burins, a toe-bone drill rest, a miniature walrus-tusk article that resembles an arrow, a spear point, snow goggles, a bone shovel, a round bone item with a hole in it, a harpoon head (1A2XP), a miniature walrus-tusk sleeve, a hook, a walrus-tusk pointed article, a fragment of a walrus-tusk wedge, a fragment of an antler article with a hole in it, an unidentified flake, slate tool fragments, and a fragment of a slate knife with a hole in it. To the right of the right shoulder on the outside of the wall were a wooden vessel and a wooden bottom for a vessel that had the lateral prong of a bird spear on top of it.

Burial 186 was located to the west of Burial 185. The skull was crushed and the pelvis broken. The right radius was missing. The skeleton was supine with the arms extended along the torso. The skull was at a depth of 0.35 m, the pelvis at 0.30 m, and the feet at 0.35 m. The right femur of Burial 186 covered the left scapula of Burial 187, which was located underneath Burial 185.

The inventory included a mattock and a prong of a bird spear to the right of the skull. A prong of a bird spear and two towing toggles were in the chest area. A piece of sawed walrus tusk with holes in it was near the left shoulder. Slate tool fragments, five walrus-tusk wound pins, and an antler article were in the abdominal area. Artifacts to the left of the pelvis were three stone spear points, an adze, a sharpener, the central prong of a bird spear, an ice pick, and an antler article. A necklace clasp, a walrus-tusk pointed article, a harpoon foreshaft fragment, and a harpoon head (1A2XP) were under the left femur.

Items found to the left of the left knee were the central prong of a bird spear, a harpoon socket piece, an adze, a sleeve, more adzes, and a mattock.

Burial 187 was under Burial 185. The left scapula, collarbone, and arm bones of skeleton 187 were visible under skeleton 185. Skeleton 187's pelvis was located to the north of the pelvis of 185, its abdominal area was covered by the pelvis of 185, and its right femur was under the right femur of 185.

The skeleton of 187 was supine, with the skull and right shoulder bone missing. The legs were extended. The feet were placed on a walrus scapula at a depth of 0.50 m.

The inventory included a harpoon socket piece to the left of the pelvis. Objects between the femurs were a bear formed from walrus tusk, a harpoon head (1A2y2P), a shaped hook ornamented with inlay, a round walrus-tusk article, and walrus-tusk snow goggles. Four animal claws and a harpoon head (1A1y2P) were near the left hand. Three prongs of a bird spear and fragments of ceramics were to the left of the left scapula.

Burial 188 was underneath Burial 187. The bones of the right side of 188 could be seen under skeleton 187. The skull of 188 was crushed and at a depth of 0.42 m, the pelvis was at a depth of 0.45 m and the feet at 0.50 m. The bones were in a poor state of preservation, with the pelvis crushed, and the hand bones missing. A wound plug was found near the pelvis.

The inventory found after the removal of both skeleton 187 and 188 could have belonged to either individual. It consisted of a walrus-tusk flake, an arrowhead with an obsidian end blade, an arrowhead with a siliceous stone end blade, two arrows, two end blades, a cluster of arrowheads, a decorated oblong article, fragments of walrus-tusk articles, an engraving instrument made of walrus tusk, a miniature head made of walrus tusk, an article fragment of walrus tusk, two claws, a snow shovel, a wooden bow fragment, a shaft fragment, another walrus-tusk article, a float, and ceramics.

Burial 189 (Fig. 33) was on the Eastern Hill in Quadrants ZAA-163, 164, with the grave oriented to the south. The south, west, and east sides of the grave were bordered with whale bones. The skull was at a depth of 0.48 m, the pelvis at 0.45 m, and the feet at 0.52 m. The skull was on its base, facing north. The skeleton was supine and in anatomical order. The legs were extended. The arms were flexed at the elbows and the hands were in the abdominal area.

The inventory was as follows: to the left of the skull were a ceramic fragment, a pebble, a walrus-tusk toggle, two pegs, a bola, a walrus-tusk-shaped article, a bushing, birch bark, and two pebbles. To the left of the shoulder were four bolas, two pebbles, a spear point made of slate, and a slate slab with a miniature harpoon on it. A bola was on the left scapula. A cluster of objects was to the left of the left shoulder bone and consisted of six harpoon heads (1A1PCO-1, 1A2YP, 1A2XP), a compound burin sleeve, a fragmented bone awl, three prongs of a bird spear, a toe-bone drill rest, three bolas, three animal mandibles, a slate tool fragment, two adzes, a knife, the central prong of a bird spear, three lateral prongs, a button, a scapula fragment with a hole in it, and fragments of walrus-tusk articles.

It took five field seasons to excavate the 189 burials in the Ekven cemetery. In 1961, 18 burials were found, three of which were on the Eastern Hill. Of the 38 burials excavated in 1962 (nos. 19-56), 10 were on the Eastern Hill; 49 burials were excavated in 1963 (nos. 57-105), 16 on the Eastern Hill; and 47 burials were excavated in 1965 (nos. 106-152), 22 on the Eastern Hill. No excavations were executed in 1964 or 1966. Of the 37 burials excavated in 1967, 30 of them were on the Eastern Hill.

A total of 81 burials were on the Eastern Hill.

On the Western Hill, 108 burials were found and excavated. Harpoon heads were found in 42 of them, and 51 of the burials on the Eastern Hill had harpoon heads. Overall, 93 burials had harpoon heads.

The total number of objects found was 5,597. In 1961, 704 objects were found; 1,083 in 1962; 1,428 in 1963; 1,158 in 1965; and 1,224 in 1967. All the objects found in the cemetery are in the Museum of Anthropology and Ethnography of the Science Academy of the USSR in Leningrad (now St. Petersburg in Russia). Four hundred nine toggling harpoon heads that could be of great interest for the determination and indication of chronology, economic trends, and evolutionary ways of ancient Eskimo cultures were found. A lot of the artifacts found in the cemetery were subdivided into groups. Now we can draw conclusions by comparing different complexes of the inventory (see the Table on pages 102-107).

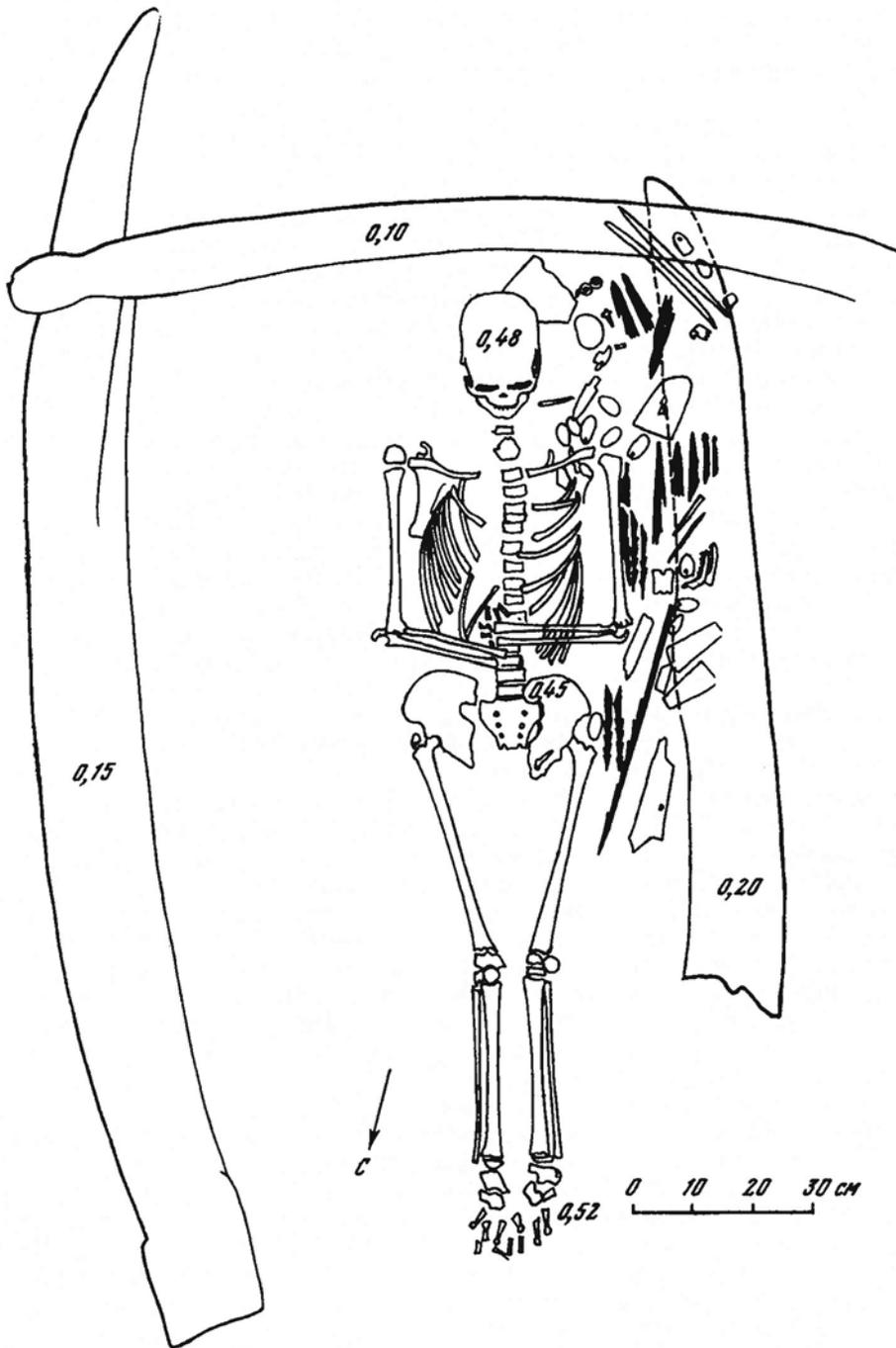


Figure 33. Burial 189.

Chapter 3

Analysis of the Correlation of the Formalized Series of Toggling Harpoon Heads from Early Eskimo Cemeteries in Chukotka

The typology of toggling harpoon heads has for a long time attracted the attention of researchers. This is not surprising since the typology and structural features of harpoon heads has been used as the basis for dating and periodizing early Eskimo cultures (Arutiunov and Sergeev 1966; Levin and Sergeev 1960).

During the course of later investigations, data from radiocarbon analysis established more precise dating for some early Eskimo cultures.

Beginning in the second quarter of the twentieth century significant archaeological excavations began to be conducted on the islands in the Bering Strait and the region of the eastern Bering Sea. Foreign archaeologists studying this or that site have provided in their publications, usually simultaneously with the site description, the typological characteristics of the toggling harpoon heads they found. The sites discovered in Alaska belong to individual chronological stages of Eskimo culture, while multi-component sites, simultaneously representing almost all early cultures of the Bering Sea known to scholars, have presently not been found in the American Arctic.

Early Eskimo cultures were most fully represented in the excavations of H. Collins on St. Lawrence Island. Here, in five sites 417 toggling harpoon heads were found, along with a variety of other archaeological material. Collins subdivided these heads into 36 different types. In trying to show the evolutionary development of harpoon heads (with open sockets), the author divided them according to certain chronological stages: these were primarily the Old Bering Sea culture, a culture combining elements of Old Bering Sea and early Punuk, early Punuk, Punuk, late Punuk, Proto-Historic, and Modern (Collins 1937).

This classification of early Eskimo harpoon heads is the most detailed, but like any other classification, it is to a significant degree provisional. In addition, toggling harpoon heads that belong to the Okvik, Birnirk, and Ipiutak cultures are not reflected in it. The Ipiutak specifically, in distinction from the other cultures enumerated here, but like the Dorset culture, is assigned by researchers to the era of Paleoeskimo cultures (Dolgikh 1964:80).

Larsen and Rainey (1948) published a monograph about excavations at the Ipiutak site, which they, along with J. Giddings, discovered in 1939 on Point Hope. Apart from arguments regarding whether Ipiutak is an Eskimo culture, the date of this culture is also not entirely clear. It is evident that Ipiutak culture did not appear earlier than 500 B.C. (Fainberg 1964:27). Radiocarbon analysis of its antler arrowheads gives a date of 200 B.C. (Rainey 1958:59). At Ipiutak, 159 toggling harpoon heads were found, which were divided into four types (Rainey 1958:68–73). These heads were assigned primarily to seal hunting.

They have one hole for the line,² an open or closed socket for the foreshaft, and would have been equipped with an end blade or lateral insets. Thus, the first type is characterized by an open socket and lateral insets located parallel to the line hole. The second type would have been equipped with an end blade set perpendicular to the line hole, and the socket for the foreshaft is closed. The third type is miniature harpoons. As the authors note, they can also be assigned to the second type, but they differ from harpoons of that type by virtue of their small size. Only five heads belong to the fourth type. They are short and broad, with an open socket, and would have been equipped with an end blade placed perpendicular to the line hole.

Thus, the typology of harpoon heads proposed by Larson and Rainey belongs exclusively to the Ipiutak culture. The typological characteristics proposed by Rainey for the Okvik culture are also confined to a specific locality (Rainey 1941).

In resolving the question of dating Bering Sea cultures based on the typology of toggling harpoon heads, it is especially necessary to dwell on the question of where the early Eskimo culture of sea mammal hunting was formed.

The proposition that the ancestors of the Eskimos arrived in the extreme Northeast from Asia and later settled both along the coast of the Bering Sea and the Bering Strait, and into Canada and Greenland, seems to us the most accurate. The Eskimos made up one of the last waves of migrants from Asia to America. The settlement of the American continent by Indian tribes occurred substantially earlier, evidently primarily in the Mesolithic era.

Archaeologists have found cooking remains in the form of shell middens on both the Asiatic and American coasts of the Pacific Ocean. On the Asiatic coast, shell middens extend to the northern regions of the Sea of Okhotsk. It's important to note that these cooking remains are dated much later than the shell middens discovered in America. However, there is the possibility that shell middens of the Okhotsk coast belong to the period when the most recent ethnic groups arrived in the Northeast. These ancestors of the Eskimos, who arrived substantially later on the coast of the Bering Sea, certainly could not exist in the severe Arctic conditions just on collections of mollusks. Besides, a large distribution of edible mollusks is not characteristic for this northern Pacific region.

The ancestors of the Eskimos arrived in extreme Northeast Asia substantially later than the formation of the Bering Strait, when all the conditions were already formed under which the remarkable culture of sea mammal hunting began to develop.

Arriving on the coast of the Bering Strait, the ancestors of the Eskimos encountered the richest of walrus rookeries. It was hunting at these rookeries that began the development and precision of sea mammal hunting, the basic tool of which subsequently became the toggling harpoon. With the introduction of walrus hunting, first on the shore at rookeries in the fall and then at ice haul-outs in spring and the beginning of summer, the development of hunting with harpoons began. Hunting on the shore at rookeries and at ice haul-outs did not require a complicated harpoon complex. The spearing of walruses was done with a pike or lance. Gradually, with the transition to hunting walruses in the open water and in the ice, a method of hunting using the toggling harpoon began to be developed and perfected.

Toggling harpoon heads intended for hunting walruses have been known in Chukotka since Old Bering Sea-Okvik times. The significance of walrus hunting in the economic life of the population of the Bering Sea is difficult to overestimate, having provided the local population with its principal foodstuff over the course of centuries. As a result of this long experience, the Eskimos learned to use the products of walrus hunting in a wide variety of ways. As food, it was used both in its raw state and as a

² At Ipiutak only one harpoon head was found with two holes for the line. It is decorated in Okvik style (Larsen and Rainey 1948:Pl. 5:16).

product preserved for the long winter (Sergeev 1963:77–81). The hide of the walrus was used to cover the baidaras (kayaks and umiaks), as well as in creating a variety of thongs and other necessities. The most varied tools were made from walrus tusks, in particular, tools for sea mammal hunting. Among the harpoon heads created by the Old Bering Sea Eskimos, the vast majority were made of walrus tusk. The most typical harpoon head for this group is that with an open socket, two line holes, a triple symmetrical spur, and two lateral stone blades (insets). These blades could be placed either parallel to the plane of the line holes or perpendicular to it (types 1x and 1y, according to Collins). The Old Bering Sea stage is already notable for the striking variety in the structure of its harpoon heads. Here we encounter lateral insets and end blades, as well as different methods of forming the basal spur, the line holes, and several other structural details.

A formal-structural typology of this variety of heads affords an opportunity to reconstruct the line of evolution of this tool. The idea of hunting walrus as initially being carried out with spears in rookeries is indirectly corroborated through the analysis of the structural features of Old Bering Sea harpoons, which were equipped with lateral stone blades. Bone and wood constructions equipped with microlithic lateral insets were widely used in many regions of the world and this technique goes back to deep antiquity—even to the Mesolithic and Upper Paleolithic eras. Toggling harpoon heads with lateral insets in their front part are reminiscent of the flat blade of a bone dagger or spear, fitted on the sides with flint insets. It is possible that the early Eskimos, arriving on the shore of the Bering Sea and having encountered walrus rookeries there, conducted slaughters of these animals with spears outfitted with microlithic insets. Undoubtedly, early Eskimos were also familiar with large stone spears, but long heads, and bones with microlithic insets were more suitable and effective for the slaughter of walruses. Therefore, it is entirely probable that by equipping harpoon heads with lateral insets the Eskimos continued the tradition of the Mesolithic technique of inset microliths. However, the comparatively small sizes of toggling harpoon heads permitted the number of insets in this tool to be reduced to a total of only one pair.

Thus, in the evolution of the series (Fig. 34), it seems to us that the flat form of head with lateral flint insets came first. In it we see the continuation of Upper Paleolithic and Mesolithic traditions of microlithic inset tools, spear heads, and knives. It should be noted that knives and spears with continuous cutting edges, and bone lances with isolated insets, though distant from each other, continued to exist in the Old Bering Sea stage. In earlier times the use of such lances for stabbing walruses at rookeries could have influenced the formation of the toggling harpoon with lateral insets.

A subsequent stage of evolution was the arrangement of insets in a plane parallel to the line hole, which improved the killing quality of the harpoon by providing more reliable penetration into the body of the animal.

Accidental breaks of the basal spur, with which it is possible to use the head with one hole instead of two, gave rise to new forms of heads, of which the transition to heads with a closed socket has already been noted.

Finally, analogous with darts and arrowheads, harpoon heads began to be equipped not only with lateral insets, but also end blades.

Another line of evolution goes back to the heads of barbed leisters (fish spears) and non-toggling harpoons. The union of structural elements of the barbed non-toggling harpoon and the Old Bering Sea toggling harpoon with lateral insets resulted in the creation of the type of head characteristic of the later Old Eskimo Birnirk culture (approximately seventh century A.D.).

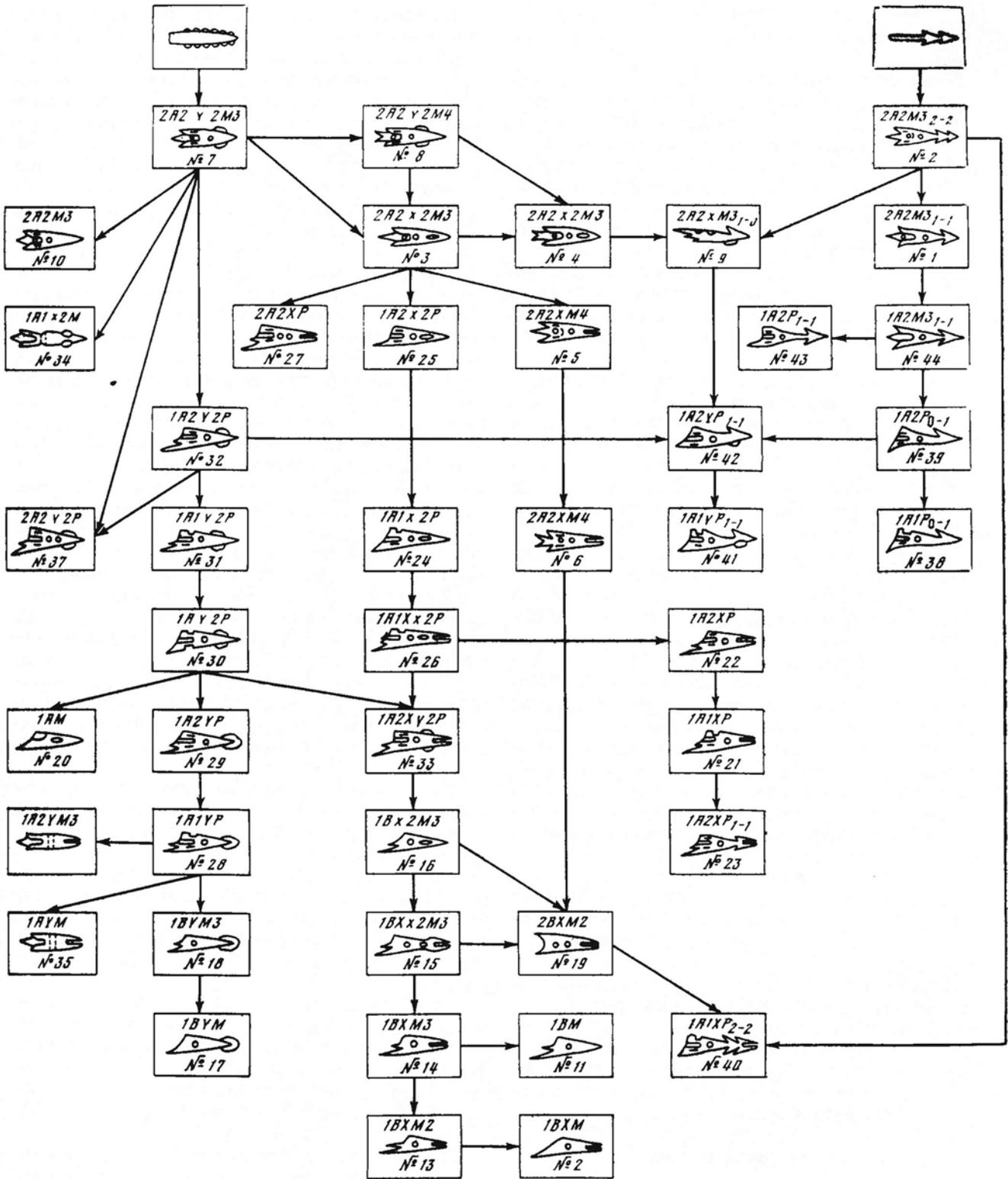


Figure 34. Evolution of harpoon head types.

It is important to note that in the North Pacific Ocean toggling harpoon heads were widespread only where the sea permits hunting on water covered with floating ice. This was Chukotka, the Okhotsk coast, Sakhalin, and northern Hokkaido. In other places where there is practically no floating ice, as for example in the Aleutian Islands, or where the ice cover is complete and hunting is possible only in small air holes, as in the high latitudes of the coast of the Arctic Ocean, toggling harpoons were not widespread and either the early forms of non-toggling harpoons were used or the Birnirk forms similar to them.

The use of toggling harpoons in regions of floating ice or polynyas (openings in the ice) can be explained by the fact that with hunting along the edge or in floating ice the harpooned animal tries to go under the ice. Obviously, the basal end of the non-toggling harpoon with the attached line protruding from the animal's body can be easily broken on the submerged part of the ice. Under these conditions it was essential to use a toggling head that could be deeply embedded in the tissues of the animal, with only the flexible line remaining outside the body.

By Old Bering Sea times, heads with a closed socket and an end blade were used together with harpoon heads with an open socket for the foreshaft. Harpoon heads with a complex asymmetrical spur, characteristic of the Okvik type, are, it seems to us, the sought-after improvement in the development of the toggling harpoon within the framework of the long-lived Old Bering Sea period.

The question of explaining the long coexistence of forms of heads, which emerged at different times, as will be shown below, can be resolved using statistical analysis of their distribution.

The materials of the early Eskimo culture of the Bering Sea that are known to us from archaeological excavations belong to that time when that culture, with all the variety of its local and chronological variants, was already fully developed. At this chronological stage, the main distribution of early Eskimo culture is the Bering Sea region, including the significant expanses of the islands and along the shores of the Bering Sea and Bering Strait, both on the Asiatic and the American coasts.

In Chukotka, meanwhile, early archaeological sites belonging to the time of the origin and development of this culture are unknown, although sites where its primary features are still in the process of formation can be traced. The so-called Neo-Eskimo culture known to us in the Bering Sea region chronologically embraces a period of a little more than the last twenty centuries. However, it should be stressed once more that the earliest Old Bering Sea culture, dating to the first centuries of our era, is a highly developed culture, undoubtedly already possessing a multi-century history. This proposition is corroborated by the survival of Paleolithic and Early Neolithic traditions of design in the material culture of Old Bering Sea times.

The early Eskimo cemeteries of the western Bering Sea excavated in recent years have provided new materials for refining the question of periodization of archaeological sites and cultures of the early Eskimos spanning the last two thousand years.

In the materials from the Uelen³ and Ekven⁴ cemeteries, a large variety of types of harpoon heads was found, which reflects technical attempts toward a type with greater precision.

The early residents of Bering Sea used the most varied types of toggling harpoons for hunting until they fully developed the variant of toggling harpoon with a closed socket, end blade, and single line hole, that is, the type of toggling harpoon that is well known and still used today.

For purposes of schematic classification of all possible types of these heads in the publication of the *Early Cultures of the Asiatic Eskimos* (Arutiunov and Sergeev 1969:68–71), we worked out a formula for

³ In the Uelen cemetery, 183 toggling harpoon heads were found.

⁴ In the Ekven cemetery, not yet completely excavated, 409 toggling harpoon heads have been found.

toggling harpoon heads that includes the following basic elements in its construction: 1) the number of line holes; 2) an open or closed socket for the foreshaft; 3) the number of slots for the girdle of the socket; 4) the presence of an end blade and lateral insets and their arrangement relative to the plane of the line holes; 5) the character of the spurs; 6) the presence or absence of large lateral barbs.

In the formula, the first figure "1" or "2" reflects the number of line holes; the letter following this designates the form of socket for the foreshaft: "A" for an open socket, "B" for a closed socket. If there are slots for the girdle, then their number is reflected by the number following this letter. If the head is equipped with blades placed in the same plane with the line hole, this is reflected by the letter "x," and if the planes are perpendicular, the letter is "y," that is, just as in Collins's classification. However, in order to differentiate the end blades from the lateral insets, the former are designated by a large letter, the second by a small one. The presence of two lateral insets is reflected by a number that follows the last letter designation. An asymmetrical spur is designated by the letter P and a symmetrical one by the letter M. If there are several barbs on the spurs, this is designated by a number that follows the letter M. Finally, the presence of large lateral barbs is denoted by the letter C at the end of the formula and by a number designating the number of barbs on one and the other sides of the harpoon head.

Toggling harpoon heads, characteristic for all stages of development of the culture of the early Eskimos in the Bering Sea region, are separated into four basic groups.

The first group is characterized by two line holes, an open socket for the foreshaft, and a symmetrical spur. This group is typical for the early Old Bering Sea form and is reflected by the formula 2A2-M (Fig. 35).

The second group includes heads with one line hole and a closed socket for the foreshaft. These heads are identified in all stages. But in basic, defined form they are representative of Punuk times. The formula for these heads begins with 1B (Figs. 40, 41, 42).

The third type includes heads with one line hole, an open socket for the foreshaft, and an asymmetrical spur. This group can be viewed in the evolutionary plan as transitional between the first and second stages, though chronologically its existence extends into all stages. Its formula begins with 1A (Figs. 37-39).

To the fourth group belong barbed heads of the Birnirk type. Their formula characteristically ends with (0-1) (Figs. 43: 7-14).

Harpoon heads of the classic Old Bering Sea form (the first group) preceded the appearance of the characteristic forms for Okvik types of the third group.

Earlier we published a suggested outline of the evolution of the different forms of toggling harpoons with the description of materials from the Uelen cemetery. Here we only briefly note the basic stages of that proposed evolutionary scheme. Beginning with the head of type 2A2y2M3, similar to the microlithic inset knife, and its close variant 2A2y2M4, evolution runs along both the "Y" and "X" series with an asymmetrical head 1A2, 1A1, and 1A, and with the appearance of the closed socket, toward 1B.

Another series goes back genetically to barbed leisters and, in combination with schemas of the first series, provides different formulas with the indices C(2-2), C(1-1), C(1-0), and C(0-1) (Fig. 34).

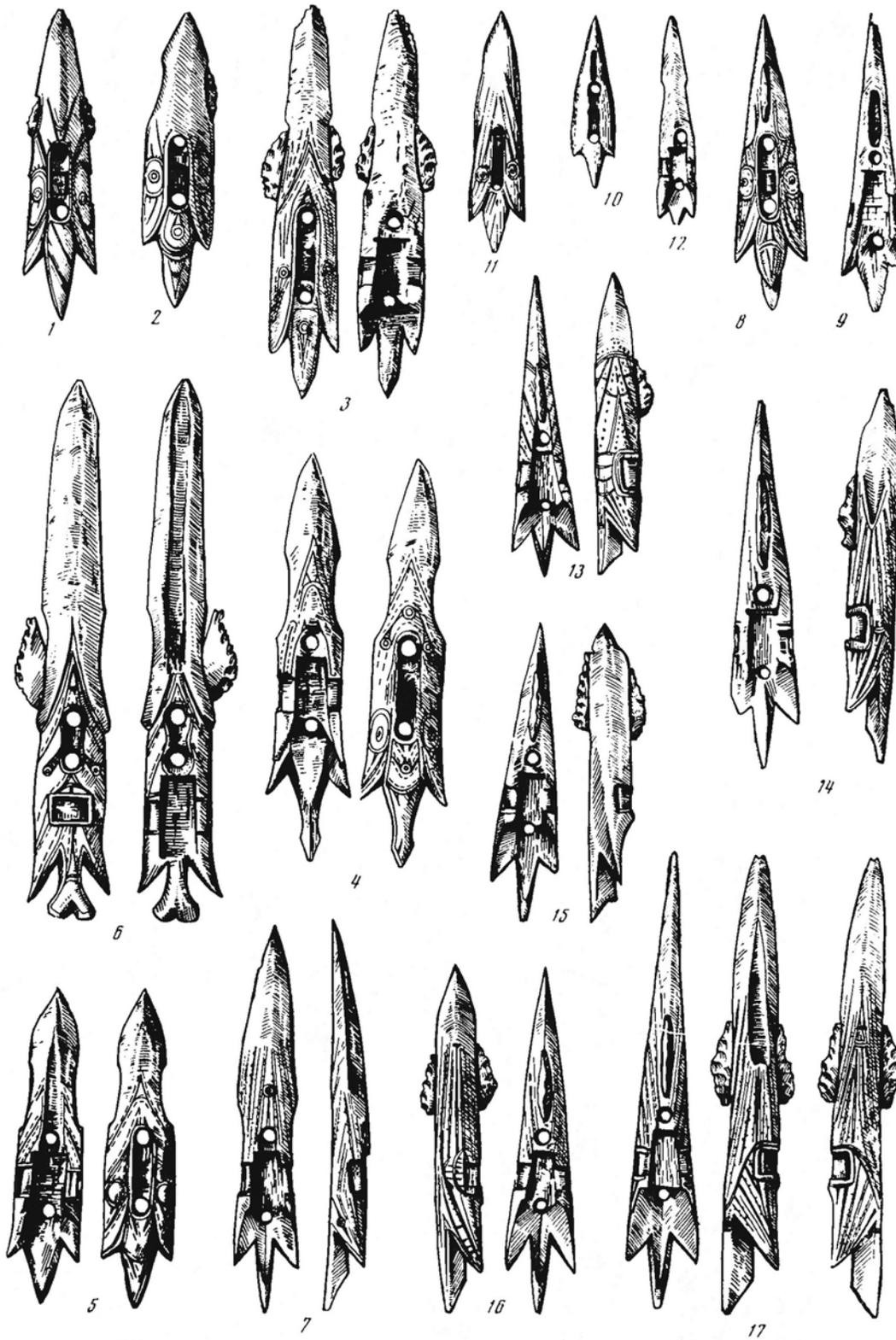


Figure 35. Harpoon heads ($\frac{1}{2}$ natural size). Type 7: 1—from Burial 141; 2—from Burial 133; 3-5—from Burial 44. Type 8: 6—from Burial 44. Type 10: 7—from Burial 40. Type 3: 8—from Burial 121; 9—from Burial 135; 10, 11—from Burial 28; 12—from Burial 182; 13-17—from Burial 40.

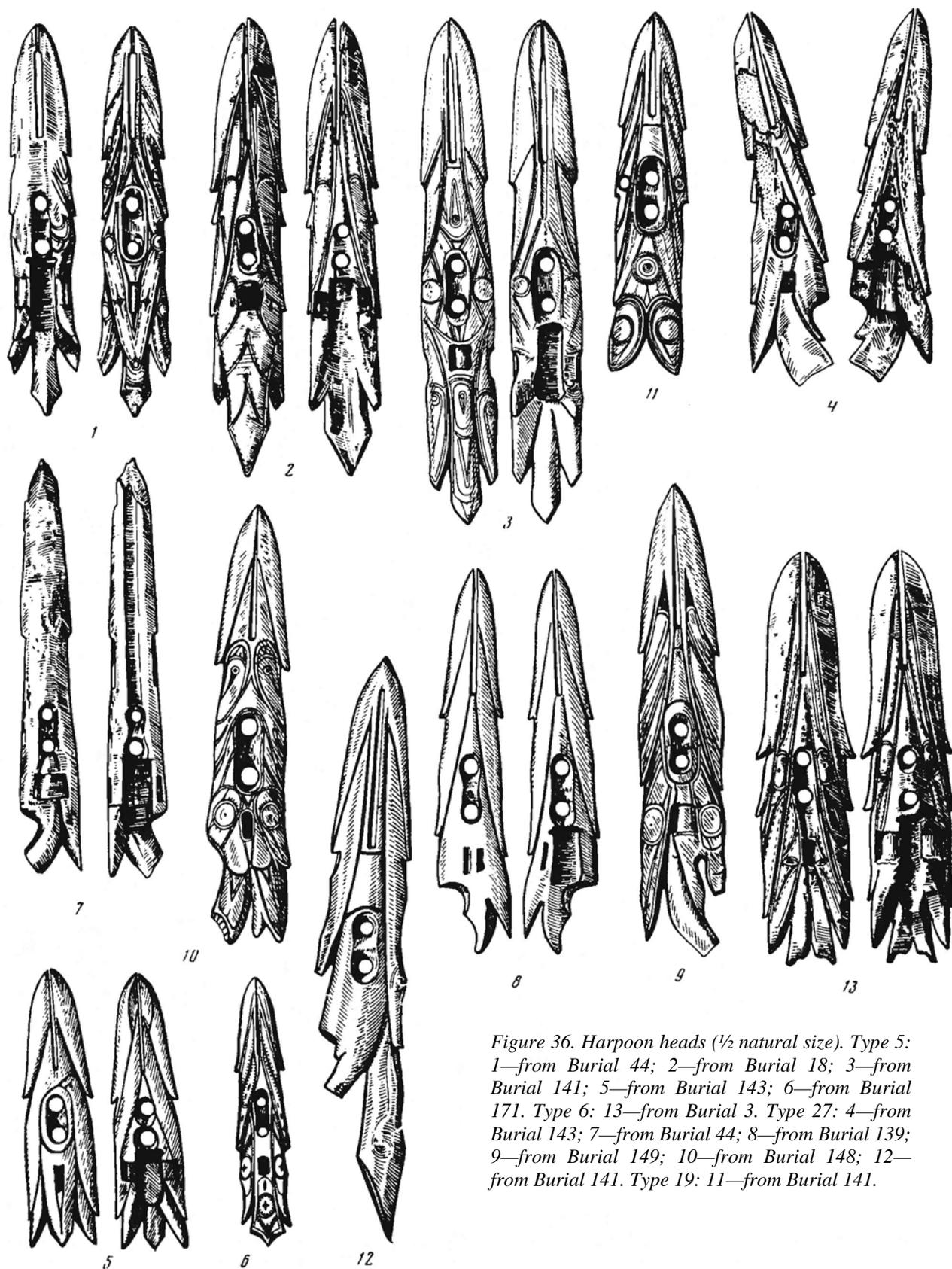


Figure 36. Harpoon heads ($\frac{1}{2}$ natural size). Type 5: 1—from Burial 44; 2—from Burial 18; 3—from Burial 141; 5—from Burial 143; 6—from Burial 171. Type 6: 13—from Burial 3. Type 27: 4—from Burial 143; 7—from Burial 44; 8—from Burial 139; 9—from Burial 149; 10—from Burial 148; 12—from Burial 141. Type 19: 11—from Burial 141.

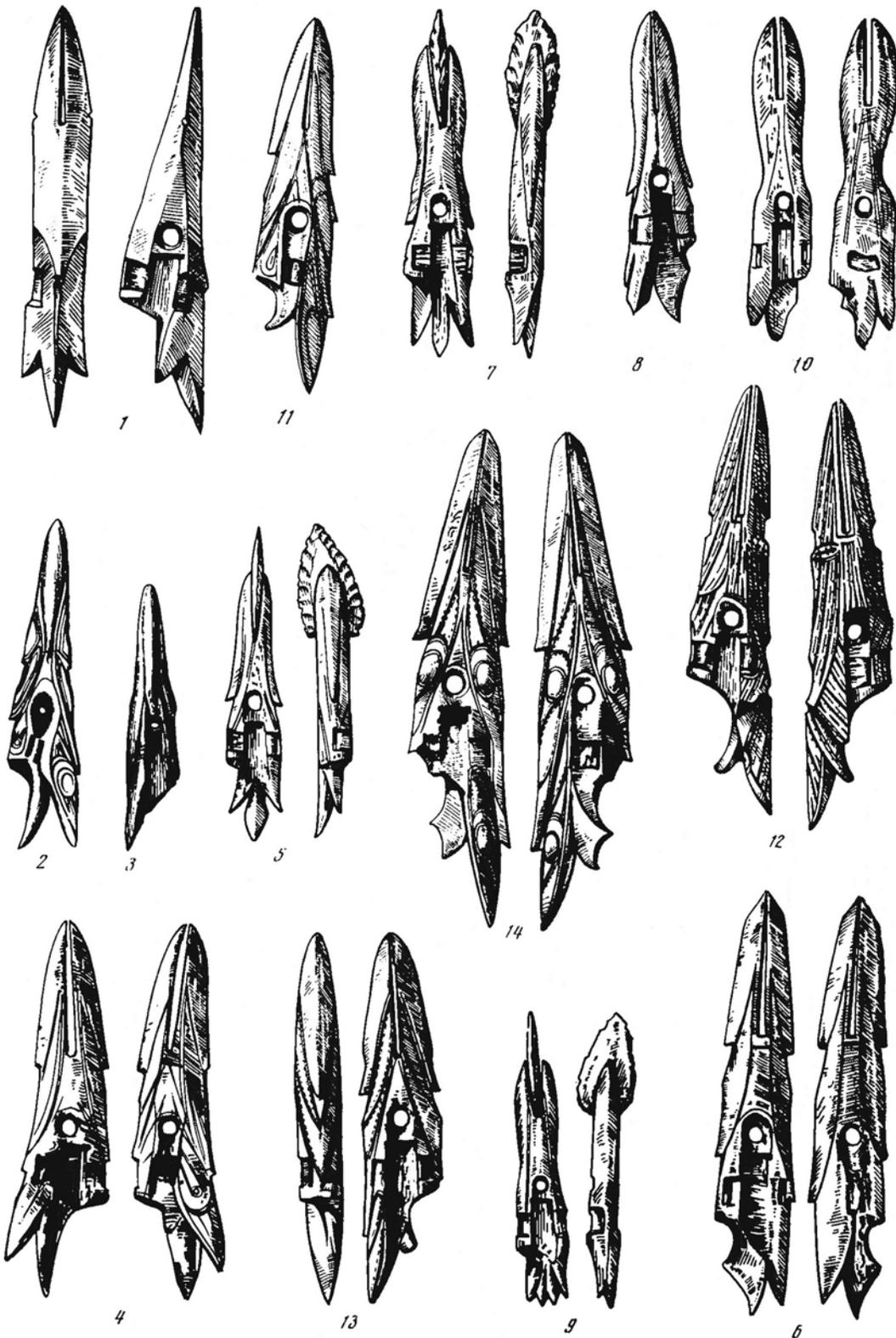


Figure 37. Harpoon heads (1/2 natural size). Type 29: 1—from Burial 40; 2—from Burial 53; 3—from Burial 189. Type 22: 4—from Burial 102; 5—from Burial 40; 6—from Burial 143; 7—from Burial 167; 8—from Burial 113; 9—from Burial 189; 10—from Burial 129; 11—from Burial 139; 12—from Burial 40; 13, 14—from Burial 18.

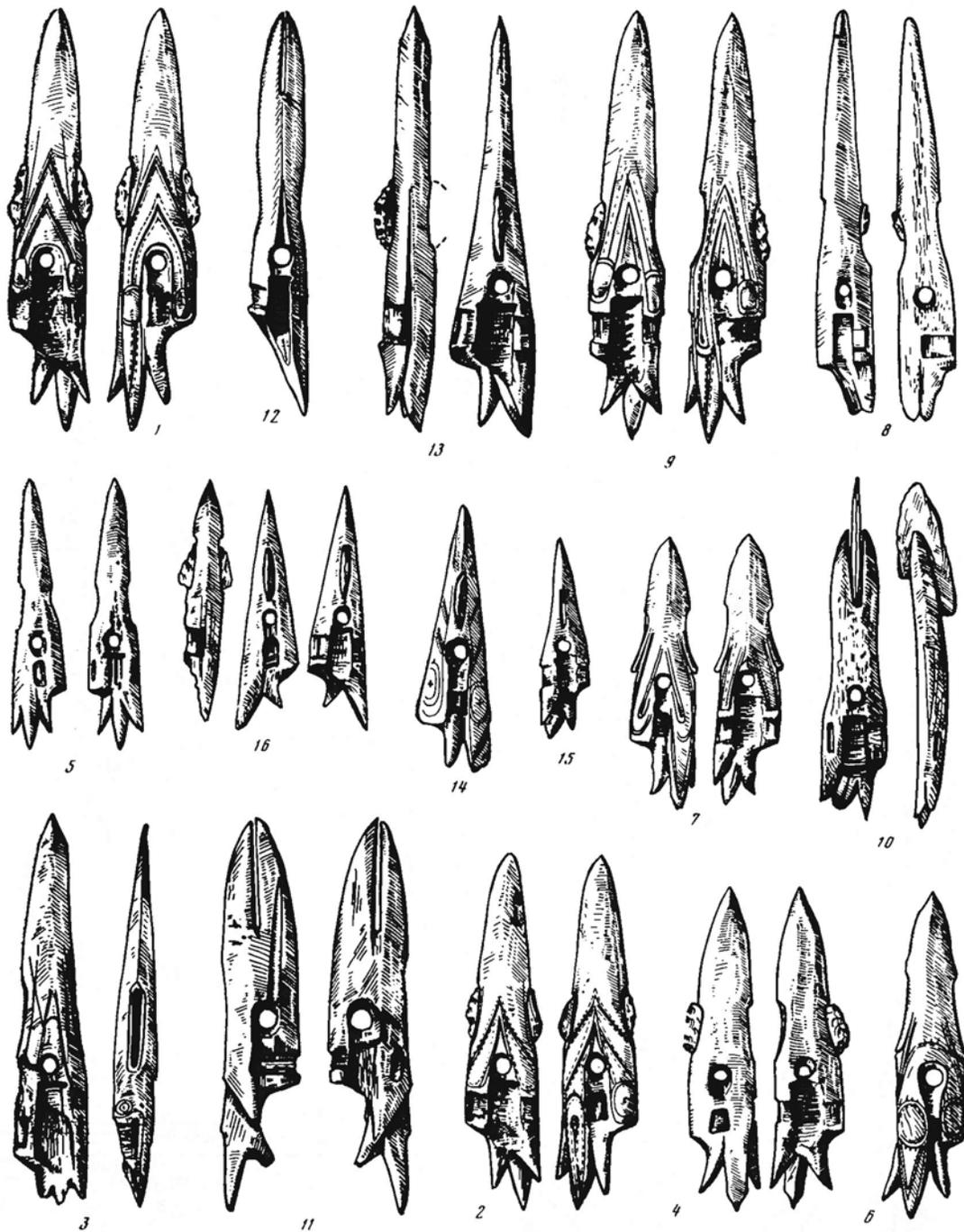


Figure 38. Harpoon heads ($\frac{1}{2}$ natural size). Type 32: 1, 2, 4—*from Burial 18*; 3—*from Burial 126*; 5—*from Burial 139*; 6—*from Burial 44*; 7—*from Burial 4*. Type 31: 8—*from Burial 44*; 9—*from Burial 18*. Type 21: 10—*from Burial 129*; 11—*from Burial 42*; 12—*from Burial 128*. Type 25: 13—*from Burial 44*; 14—*from Burial 150*; 15—*from Burial 18*; 16—*from Burial 146*.

The cited typological characteristics of toggling harpoon heads of Bering Sea cultures can be supplemented in each of the four groups by several subtypes, inasmuch as individual heads may have and do have minor structural differences. This can be most clearly traced in the first group, since here there are individual, entirely unique specimens of toggling harpoon heads without lateral insets, in place of which lateral barbs were made. These harpoons have two line holes, an open socket for the foreshaft, and a symmetrical spur. However, the lateral barbs make them similar (in the upper part) to heads of non-toggling harpoons-leisters of the Upper Paleolithic era. In this we undoubtedly see survivals of very early traditions (Fig. 34: 1–2).

To be more precise in typing and dating toggling harpoon heads, more than just the formal typological features must be considered. It is also necessary to determine what kind of animal was hunted (seal, bearded seal, sea lion, walrus, beluga, whale, and so on) and with which type of head. For example, the size of the harpoon head from the Old Bering Sea Ekven cemetery contributes to the determination that whale hunting began as early as the Old Bering Sea period, and that some large harpoon heads used on walruses were simultaneously used with success during the development of whaling, long before Punuk times.⁵

The significance of ecological factors⁶ for solving the question of the origin of the maritime hunting economy in the North Pacific Ocean was noted by Chester Chard (1965).

An important point in the absence on the harpoon head of clearly diagnostic structural features or indisputably datable decoration might be the number and form of the line holes. In early Bering Sea times (the first group), these holes were created by boring from opposite sides and are round.

In later stages the line holes acquired oval outlines, which can be especially clearly seen in Punuk times. Birnirk and particularly late Punuk harpoon heads might have triangular line holes.

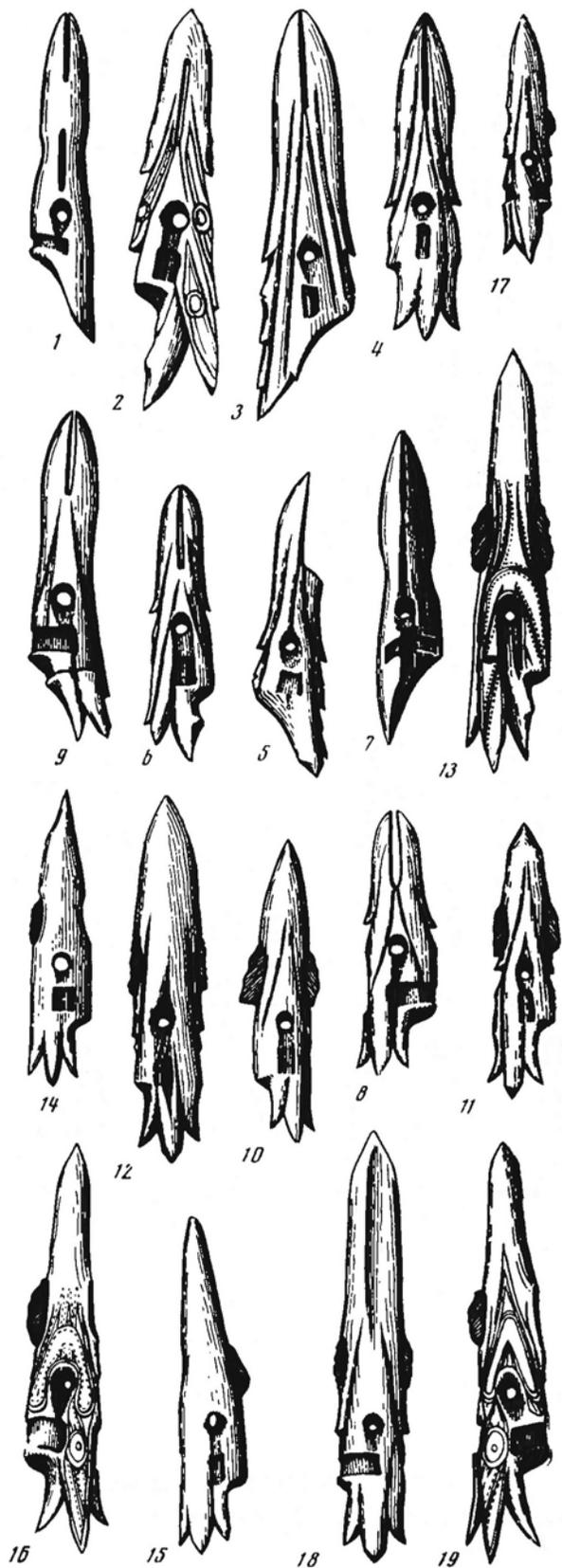
Of great significance for determining the dates of harpoon heads is the technique of equipping them with lateral insets and especially end blades. End blades were made in the earlier stages from siliceous stone and worked by percussion flaking and retouching. Later, end blades were cut from slate and worked by grinding.

Using the aforementioned typology of toggling harpoon heads to type harpoon heads from Ipiutak, it is immediately evident that the latter are not like the former, earlier group. Consequently, only one typological characteristic of toggling harpoon heads offers the possibility of assigning Ipiutak heads to a later time than classic Old Bering Sea. Such dating of harpoon heads of the Ipiutak culture does not contradict the proposition that the Ipiutak people were acquainted with bloomery (forge) iron (Rainey 1958:59), which they obtained in small quantities from Siberia. The presence of iron in this Paleo-Eskimo culture does not indicate it is of greater antiquity than the Old Bering Sea culture. Generally speaking, when dating Ipiutak it is a good idea to keep in mind a statement by Froelich Rainey, one of its first discoverers and investigators, who writes that “the age of the Ipiutak site and Paleo-Eskimo culture on the whole is still an unsolved question” (Rainey 1958:58–59).

Concerning the ethnic association of the Ipiutak people, we are in accord with L. A. Fainberg, “that Ipiutak was developed during the course of territorial expansion of the earliest Eskimo tribes . . . and appeared as one of the local forms of culture of the migrating Eskimos” (Fainberg 1964a:28).

⁵ One such Old Bering Sea whaling head is published in Arutiunov et al. (1963:65, Fig. 2:6).

⁶ In this plan, we once more emphasize the role of the permanent seasonal walrus rookeries for the initiation and development of sea mammal hunting in the earliest stages, still unknown to archaeologists, of the culture of the Bering Sea.



As we see it, some structural features and decoration found on the Ipiutak harpoons corroborate the local character of Ipiutak culture. However, the genesis of this culture has to be sought not in the eastern but in the western Bering Sea.

In conclusion, it should be said that the typological characteristics of toggling harpoon heads proposed for Bering Sea cultures may also be used analogously in the study of toggling harpoon heads of other more southern regions of the Pacific Ocean.

The most interesting in this regard is the Okhotsk culture, which was oriented toward sea mammal hunting and has been combined with the early Eskimo culture of the Bering Sea by some researchers (Vasil'evskii 1966:131).

The Ekven cemetery, like the Ipiutak and Uelen cemeteries, is largely the site of a single local variant of early Eskimo culture, but because it was formed over many centuries, burials of later stages were also found in it along with those of the Old Bering Sea culture. By all appearances the early Ekven people were extremely close to the early Uelen people. This is entirely natural since the distance between the two villages is no more than 35–40 km. Nevertheless, even with the closeness of these two sites some differences can be traced. Qualitative differences, such as the presence in the Ekven cemetery of certain types of objects—in this case harpoon heads—that are absent at Uelen, were not so numerous. Much more significant, in our view, are quantitative differences, consisting of the difference in percentage correlations between certain types of these heads. Such a difference is observed, for example, in the proportional relations of the X and Y array in the 2A2 series.

Figure 39. Harpoon heads (1/2 natural size). Type 26: 1—from Burial 67. Type 22: 2—from Burial 53; 3—from Burial 167; 4—from Burial 155; 5—from Burial 173; 6—from Burial 92; 7—from Burial 66. Type 21: 8—from Burial 92; 9—from Burial 189. Type 32: 10—from Burial 155; 11—from Burial 13; 12—from Burial 100. Type 31: 16—from Burial 53; 17—from Burial 92; 18—from Burial 167; 19—from Burial 53.

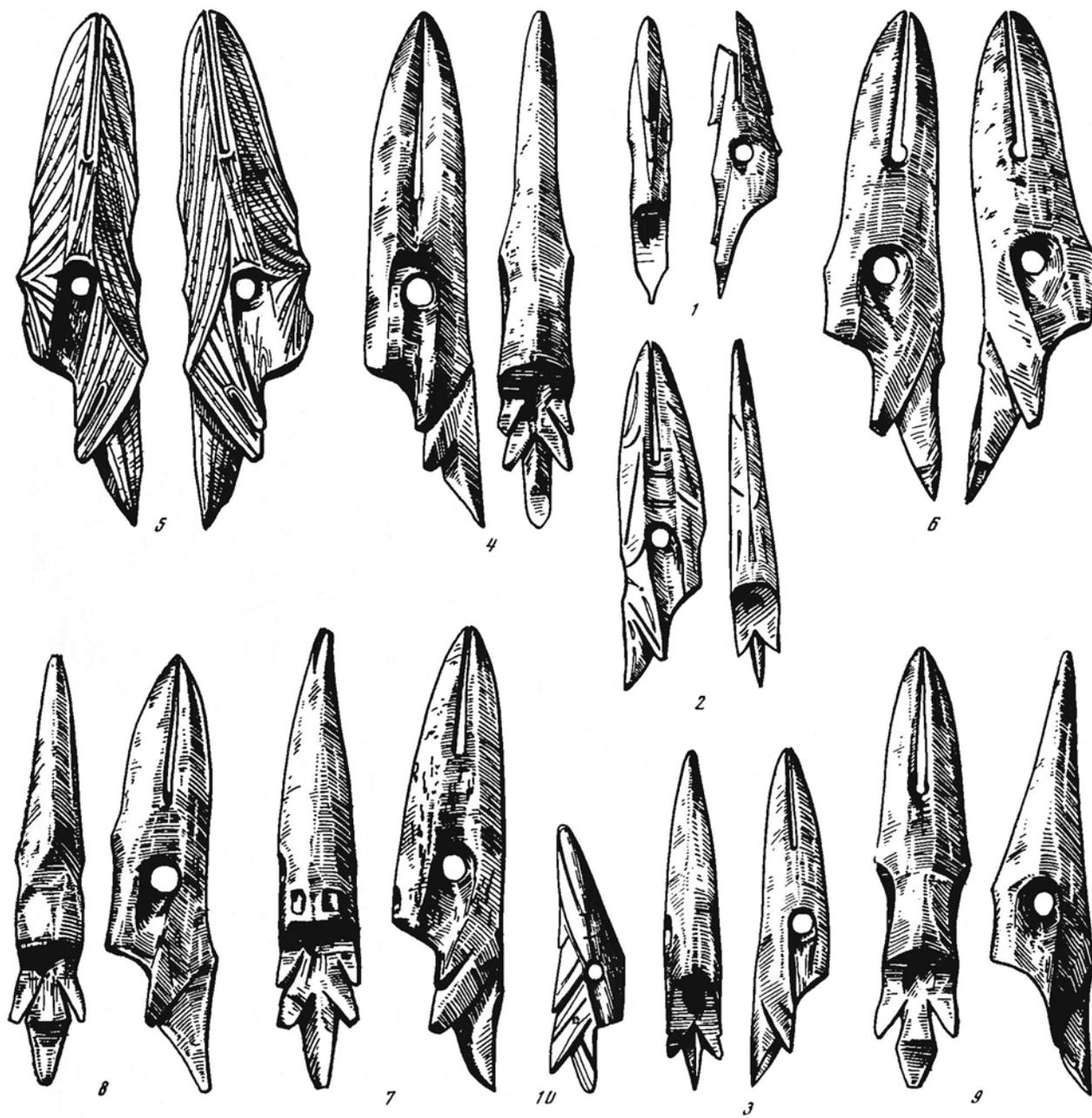


Figure 40. Harpoon heads (3/5 natural size). Type 14: 1—from Burial 18; 2, 3—from Burial 40; 4—8—from Burial 42. Type 18: 9—from Burial 42; 10—from Burial 28.

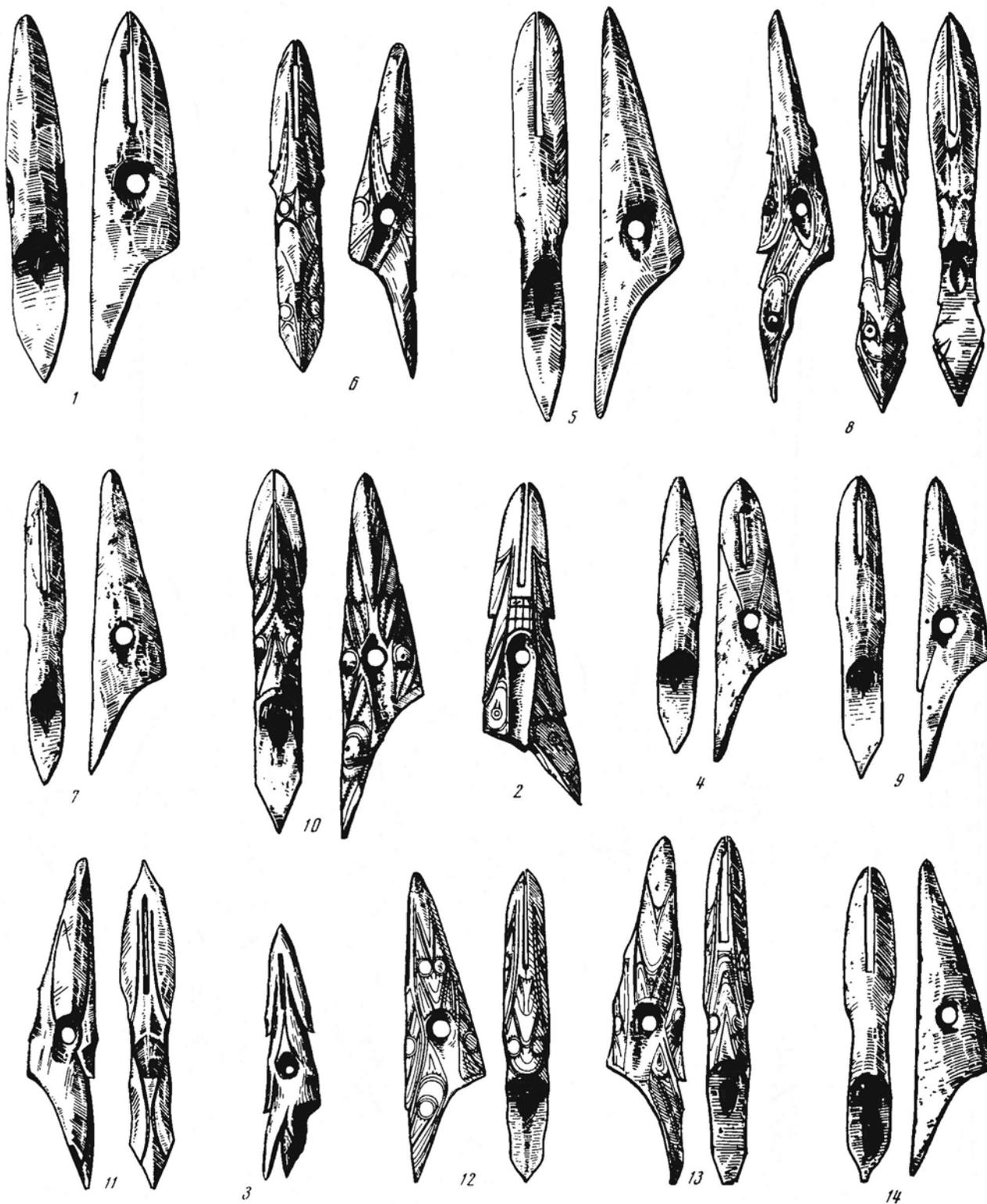


Figure 41. Harpoon heads (1/2 natural size). Type 12: 1—from Burial 44; 2—from Burial 152; 3—from Burial 53; 4—from Burial 3. Type 17: 5—from Burial 3; 6, 7—from Burial 18; 8–11—from Burial 44; 12—from Burial 141; 13, 14—from Burial 102.

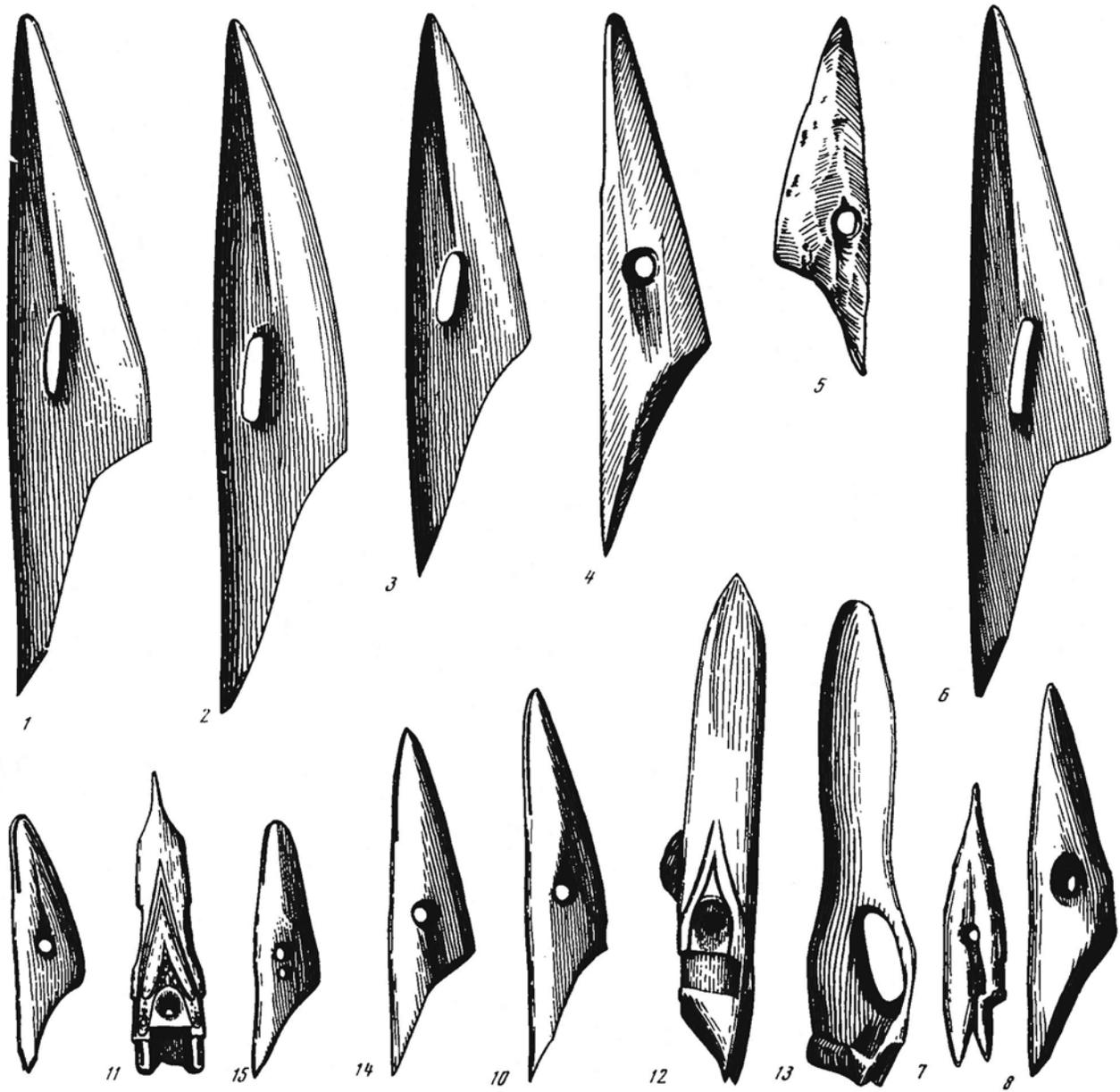


Figure 42. Harpoon heads ($\frac{1}{2}$ natural size). Type 17: 1–3—from Burial 100; 4—from Burial 139; 5—from Burial 171; 6—from Burial 129; 7—from Burial 102; 8, 9—from Burial 92; 10—from Burial 171. Fragments and blanks: 11, 12—from Burial 53; 13, 14—from Burial 155; 15—from Burial 67.

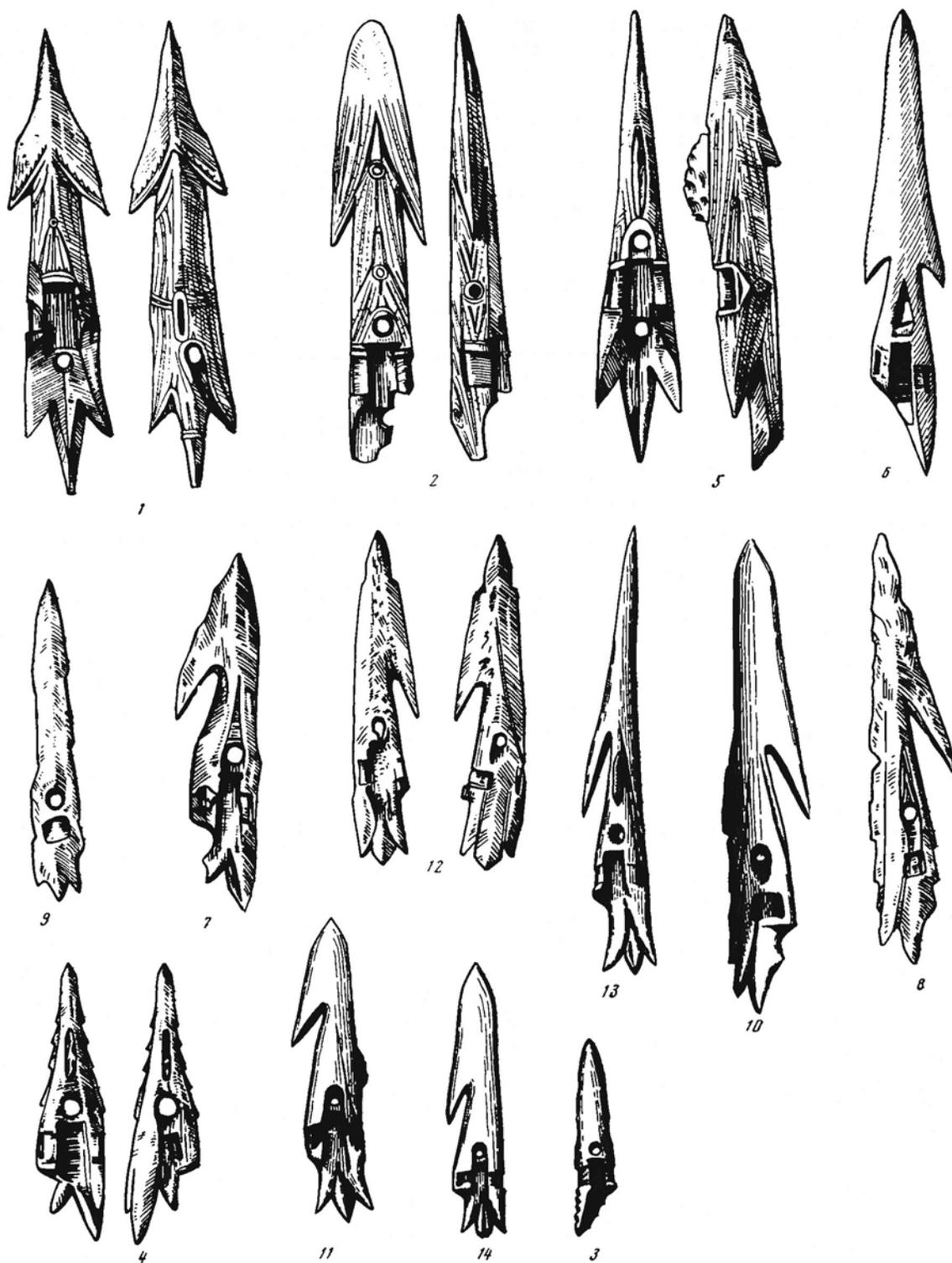


Figure 43. Harpoon heads (3/5 natural size). 1—Type 44, from Burial 42; 2—Type 1, from Burial 40; 3—Type 30, from Burial 22; 4—Type 28, from Burial 44; 5—Type 9, from Burial 42; 6—Type 43, from Burial 23; 7—Type 39, from Burial 126; 8—Type 42, from Burial 135; 9—Type 32, from Burial 135; 10—Type 42, from Burial 167; 11—Type 42, from Burial 153; 12—Type 42, from Burial 189; 13—Type 38, from Burial 189; 14—Type 39, from Burial 189..

As can be seen in Table 1, at Uelen for the 17 heads of type 2A2y2M3 there are 30 heads of type 2A2x2M3. At the Ekven cemetery for the 42 heads of type 2A2y2M3 there are 34 heads of type 2A2x2M3. Thus, whereas at Uelen series X predominates in this group, at Ekven, by contrast, series Y is more numerous. Of the series 2A2X at Uelen there are a total of three specimens in 38 burials, while at Ekven there are 15 specimens in 88 burials, that is, they are encountered here twice as often.

End blades of type Y are generally unknown in group 2A2. In the other series, where a choice between modifications X and Y is possible, we observe a preponderance of the modification Y over modification X in the Ekven material, whereas for Uelen the reverse correlation is characteristic.

In an example of heads with closed sockets, we can see that type 1BXM3 in Uelen predominates (23 heads). There are seven cases of other variants of group 1B in modification X, while there are a total of 21 heads in modification Y. By contrast, in the Ekven cemetery there are 16 heads of type 1BXM3 and 18 heads of type 1BXM, with 51 heads of type 1BYM and seven heads of type 1BYM3, that is, modification Y predominates.

The question of the compatibility of the heads belonging to the series and modifications shown above bears examination.

It is very evident that types 2A2x2 and 2A2y2 coexist in a large number of cases in burials of both the Western and Eastern Hills of the Ekven cemetery, as well as in the Uelen cemetery. Nevertheless, there is a difference in proportional correlation of these types of heads between the Western and Eastern Hills of the Ekven cemetery. On the Western Hill, for every 23 heads of type 2A2x2M3 found in burials, there are 19 heads of type 2A2y2M3, and on the Eastern Hill for every nine heads of type 2A2x2M3, there are 20 heads of type 2A2—2M3.

In series with closed sockets, modifications 1BX and 1BY are also entirely compatible, and all these heads are no less freely combined with heads of group 2A2 of both modifications. Consequently, it is possible to conclude that both groups and both modifications within each group coexisted widely at one and the same time and in one and the same community.

However, an entirely different picture is obtained when comparing heads of group 1B by the type of spur, that is, when comparing the indices M and M3. First of all, on the Eastern Hill, where there are eight heads of type 1BXM and 26 heads of type 1BYM, not one head of type 1BXM3 or 1BYM3 was encountered in four seasons of fieldwork.

On the Western Hill, spurs were encountered of the same and other variants. All seven heads of 1BYM3 found in the Ekven cemetery came from a single burial on the Western Hill. Heads of type 1BYM are rather numerous there, though not in the same degree as on the Eastern Hill: in twice as many graves of the Western Hill 15 specimens were found. While 16 heads of type 1BXM3 were found, there were only four of type 1BXM.

Another very essential circumstance is added to this difference in distribution of spurs M and M3: neither in the Uelen nor the Ekven cemetery are these two variants of spurs found together in a single grave.

Of the 265 burials we excavated in the two cemeteries, a combination of spurs of types M and M3 were encountered in only three cases. These were Burial 22 (1958) in the Uelen cemetery and Burials 10–11 and 113 on the Western Hill of the Ekven cemetery. This circumstance leads to the supposition that, in these cases, heads with different types of spurs were originally used by different individuals, who later entered into a marital relationship or some other close social connection.

Ekven Cemetery (Excavations of 1961–1967).

1958							1959																	
17	20	22	24	26	Quad C-6	Quad F-6	1955 trench backdirt	2-3	4	5	6	7	8	9	10	15	16	17	18	18a	22	23	Z-16, A-BB-11	Trench backdirt
		1					1			1							1			1				
		4					1			1					1					5				
		1	1				1			1											2	2		
										1									5		1		3	
		2	1								1			1										
														1										
		3					1	3				1				3	2	1	1	1		1	4	
1								1	1							1							1	
	1	3												3				1	1	1				1
				1																	1			1
						1																1		1
							1					1								2				1
		2									4													
1	1	17	3	1	1	1	4	1	2	1	3	6	1	6	2	4	2	2	9	13	4	10	7	3
54							4	93																

It is possible that variations in the form of spurs M and M3 on the heads of series 1B reflect the association of their owners to various clan or phraternal groups in the population of early Ekven villages. This question will be investigated in more detail in Chapter 4, which is especially dedicated to questions of clan structure of the Asiatic Eskimos.

In the third group, which has formulas beginning with 1A, heads very close to 1A1XP and 1A2XP types are quite widespread. There are many of them both in the Uelen cemetery (25 specimens) and the Ekven cemetery (68 specimens). It is notable that these heads are usually encountered singly—or occasionally as two specimens—in one burial and in combination with several heads of other types. A very widespread type in the Ekven cemetery is 1A2y2P (68 specimens), though in the Uelen cemetery this and similar heads are represented only by isolated finds. This type of head is encountered at Ekven as two or three or even as many as six specimens in one burial, as well as in various combinations with other types.

The fourth group, comprising only a very few in number, is represented by barbed heads of the Birnirk type, the formula for which is C (0–1). They are accompanied by heads of series 1A2, which is devoid of barbs. This series is practically unknown in combination with 2A2. An isolated burial with such a combination (Burial 135) on the Eastern Hill of the Ekven cemetery is not typical, since it bears obvious traces of damage and remodeling.

The correlations of the number and combinations of various types of heads indicated above allow for some considerations in the form of a working hypothesis.

Concerning the correlation of types 2A2x2 and 2A2y2 with the materials available from the Uelen cemetery, we have already noted the known structural advantages of type 2A2–2 over the presumably earlier type 2A2y2. At the same time, this last type also has some advantages. Being broad and flat, such a head, though requiring somewhat less effort to be thrust into the body of an animal, provided a relatively firm attachment. Evidently, the advantages of type 2A2y2M3 were of special value for the residents of early Ekven, where such harpoons are encountered much more often than at Uelen. The fact is that Uelen is located in the northern part of the Bering Strait, while Ekven is in the south—on the shore of the Pacific Ocean. Correspondingly, there is a substantially different ice regime in the latter: open water is more common and, even when ice is present, there are usually also broad areas of ice-free water.

In a comparison of the materials from the Uelen and Ekven cemeteries it can be ascertained that, if at Ekven the arrangement of the insets perpendicular to the line holes numerically predominates over the arrangement of insets in the plane parallel with the holes, at Uelen the reverse occurrence can be observed. This can be explained by the fact that the ice regime at Uelen is more severe than at Ekven and, therefore, heavier forms of harpoons, for which heads with insets parallel to the line holes were better adapted, were more widespread there. These heavier and more massive harpoons with strong massive heads and shafts, used at close range, were required for hunting on the ice at Uelen.

Among the Ekven harpoons, heads of a lighter type predominate, because in open water the harpoon had to be thrown a greater distance.

With less force to the blow, the flat knife-like head of series Y, easily penetrating the body of an animal and creating a wide, bleeding wound, was more expedient.

These nuances of the natural conditions at two such closely situated villages may explain the paradoxical fact that the correlations of the series X and Y at these sites are opposite.

The same rules are observed in variations of the arrangement of the end blades. Only with the appearance in recent times of iron blades was there full unification of head forms. Up to that point, even comparatively small variations in the micro-climate, in hunted fauna, and in other ecological factors influenced the selection and correlation of these forms.

Upon examining the illustrations of harpoons, the frequency of cases of coexistence in one burial of several different types of heads is quite striking. After becoming familiar with these heads, it is possible to conclude that they were intended for hunting different animals. Among these heads, type 1BYM is the most favorable for hunting walrus with their thick and strong hides. There are often several of them in a single burial, which fully conforms to the leading role of walrus-hunting in the economy of the Eskimos. At the same time, the long but narrow heads of type 1A2XP were also generally very widespread in burials in combination with other types. But there is almost always only one specimen per burial. They are intended for hunting animals with more easily pierced skin, such as bearded seals and especially belugas. Hunting these animals was secondary, despite their prevalence, so correspondingly, there is rarely more than one specimen of this type in a burial.

Heads of type 1A2y2P, on the other hand, like heads of type 1B, are often encountered in groups of two or three or even six specimens in a single burial. If heads of group 1B were intended basically for hunting walrus, heads of type 1A2y2P are small and undoubtedly intended for hunting small pinnipeds, especially seals. Seal hunting was very significant in the lives of the Eskimos and, based on importance, can be placed second after walrus hunting. Until the appearance in the tundra of deer herding and the development of trade between the nomadic and the coastal population, seal skins served as the basic material for all possible kinds of clothing, and the meat and oil were an important supplementary food, in particular during periods of shortage of walrus meat. Therefore, the large number of harpoon heads for seals in the Ekven burials is very natural. In addition, there are a number of other variants of this group, which are also intended for hunting seals.

At first glance it may seem strange that in the neighboring Uelen cemetery harpoon heads of type 1A2y2P are represented only by isolated finds. But with analysis of the natural conditions of the coast in the vicinity of the villages of Uelen and Ekven, this discrepancy is easy to explain. At Uelen the ice cover on the sea forms substantially earlier and breaks up later than on the Ekven coast. On the other hand, at Uelen there is a large lagoon permanently connected with the sea, which has an abundance of seals. This creates favorable conditions for catching seals in nets, which was widespread at Uelen up to comparatively recent times when it was replaced by extensive use of firearms. In the vicinity of Ekven, the period of ice-free water was substantially longer, as also was the possibility of hunting at the edge of the shore-fast ice. The lagoons in the vicinity of Ekven were not large, so did not attract seals. Therefore, setting nets for them in the region of Ekven was difficult to carry out and in general seals could be taken only at the edge of the shore-fast ice or at sea from a kayak.

Of special interest are unique types of heads, each of which is represented by only one specimen. These are 2A2xM3c (1-0) (Burial 42), 2BXM2 (Burial 139), and 1A2M3c (1-0) (Burial 42). In Burial 42, two of the unique heads were found together. The appearance of individual, unusual, distinctive heads, along with established traditional types, attests to the unbroken drive of creative ideas for constructing harpoons among the early hunters, and of the presence of active experimenters, always leading the search for new, more effective forms of hunting tools.

Occupying a special place in the series of heads with open sockets are those of type 2A2XP, first discovered in the Ekven cemetery, but absent from the Uelen cemetery. Structurally, they occupy an intermediate position between series 2A2-M and series 1A2-P, and evidently emerged during the course of experiments to strengthen the structure of the latter series by enlarging the head and by returning to a double line hole. All these heads are quite large. They were found in nine burials with one specimen each, except in one case (Burial 44) where one was found together with the closely related head 2A2y2P, with no more of the latter being found anywhere. The dimensions of these heads make a compelling case that they were intended for hunting whales and were created in a search for structural forms that would permit a combination of deep penetration of the harpoon head in the body of the animal with the complete turn of the harpoon in order to bear the burden of the floats attached to the line. The double hole had the added effect of having the loop of the line that was fastened to the harpoon head enlarge the wound and hold it open, thus increasing the bleeding (Fig. 36:7-12).

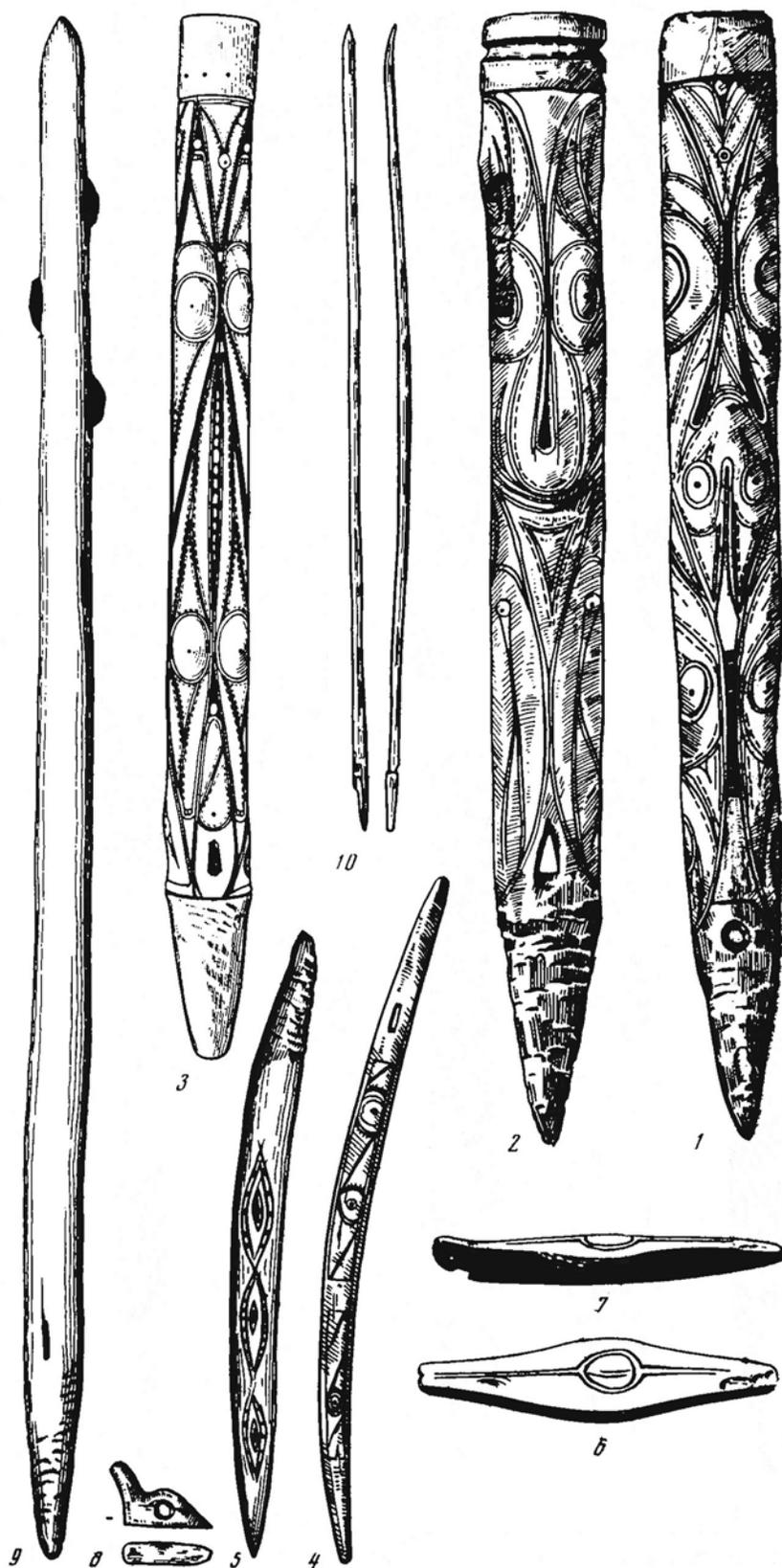


Figure 44. Details of hunting equipment (1/2 natural size). 1, 2—Shaft heads, from Burial 52; 3—Shaft heads, from Burial 92; 4—Harpoon foreshaft, from Burial 125; 5—Ice pick, from Burial 92; 6, 7—Model kayak, from Burial 137; 8—Finger rest, from Burial 92; 9—Lance, from Burial 92 (reduced six times).

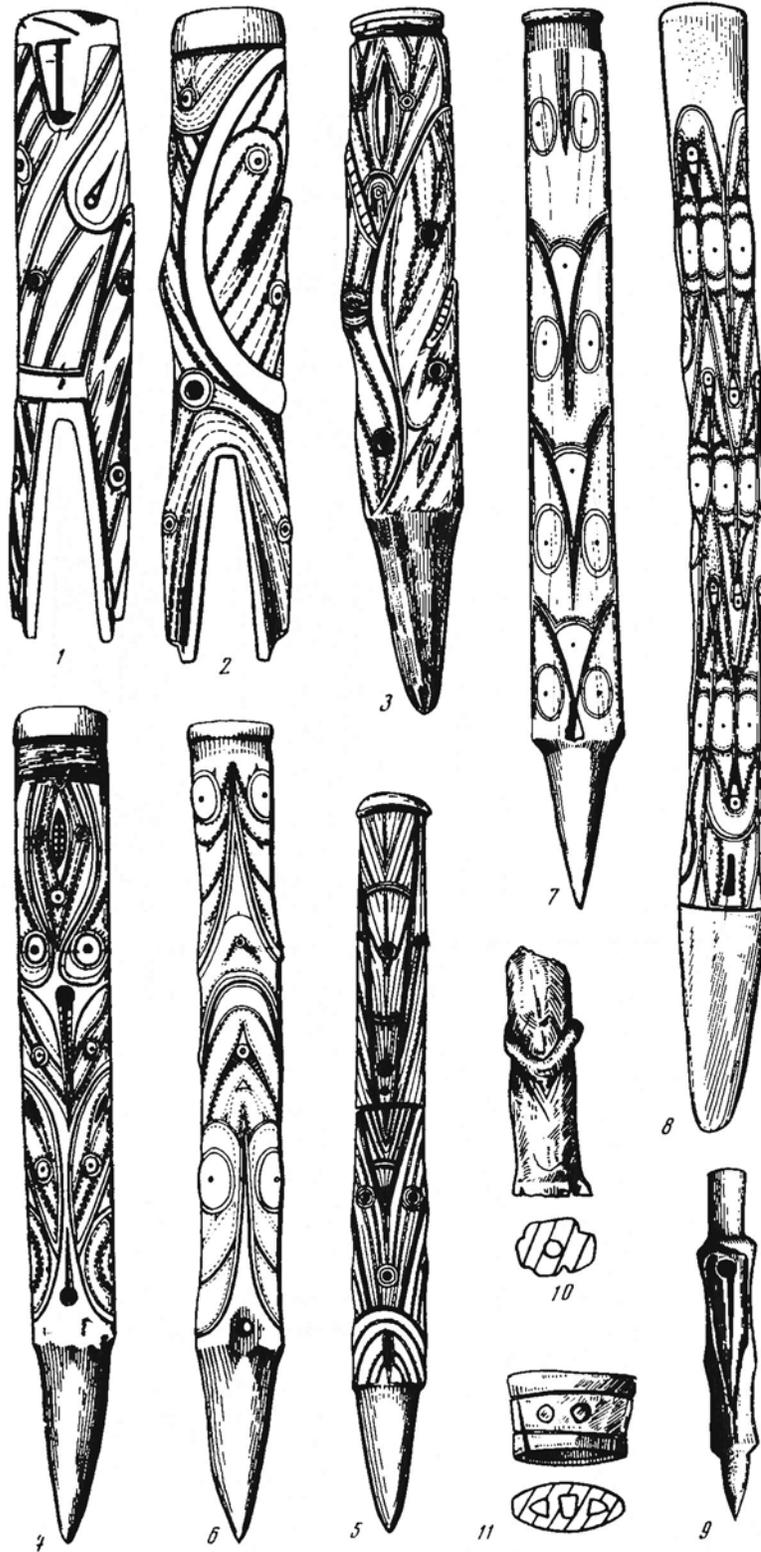


Figure 45. Harpoon shaft heads (1/3 natural size). 1—from Burial 141; 2—from Burial 133; 3—from Burial 95; 4—from Burial 53; 5—from Burial 83; 6—from Burial 143; 7—from Burial 161; 8—from Burial 157; 9—from Burial 37; 10, 11—from Burial 92.

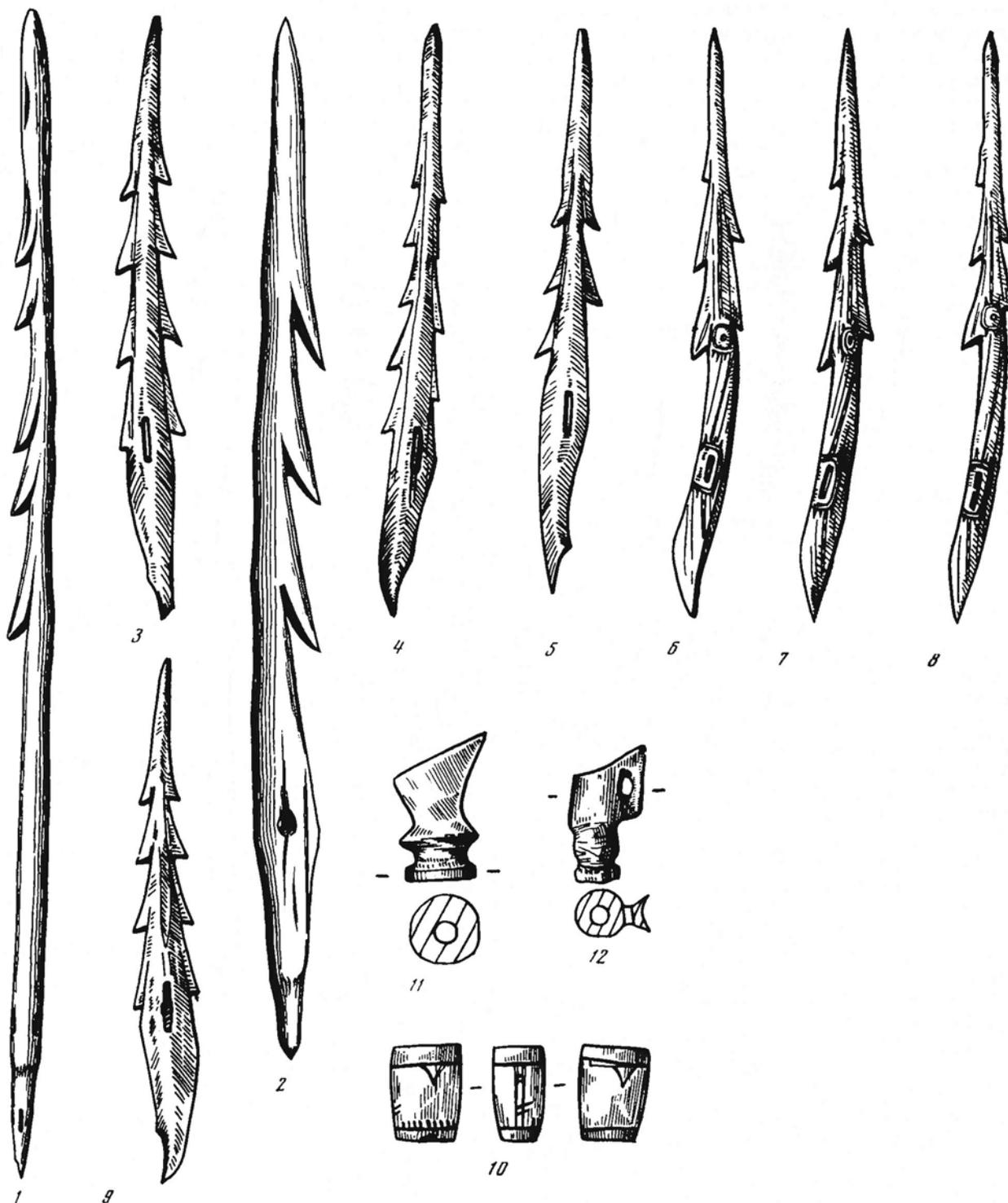


Figure 46. Details of fish spears. Central prongs (2/3 natural size): 1—from Burial 168; 2—from Burial 170. Lateral prongs: 3-6—from Burial 168; 7-9—from Burial 137. Couplings or mouthpieces: 10—from Burial 139; 11—from Burial 13; 12—from Burial 62.

However, such construction had significant shortfalls: the open socket was less dependable than the closed socket when the head penetrated the body of the animal, and the comparatively thin crosspiece between the two line holes could break under the force of the load when the line was strained. Interestingly, this second shortfall is also peculiar to the head of type 2BXM2 (with a closed socket), found in Burial 141 together with a head of type 2A2XP. In the end, all these forms of whaling heads with double line holes did not withstand the competition with the series 1B form, the earliest of which was found in Burials 10–11, and which subsequently remained the only form of head for hunting whales.

The discussion above characterizes the Ekven cemetery as a site that evolved within the Old Bering Sea culture. All forms of heads may have had Old Bering Sea design and, therefore, be integrated in the burials with classic Old Bering Sea forms of series 2A2.

It is also interesting to compare materials from the Ekven cemetery with two other early forms of the Old Bering Sea culture, that is, with Ipiutak and Okvik sites.

Investigators of Ipiutak divided the harpoon heads they found, as mentioned above, into four types. The first type corresponds to our formula 1A1x2P, the second type to 1BYM3, the third type to 1Bx2M3, and the fourth type to 1A1YP.

Among Ekven finds are more than a few heads of type 1BYM3 (Burials 10, 11, 28, 68, 113, 130). Based on decoration and form, the head from Burial 130 is more reminiscent of Ipiutak heads of this group than are others. However, for the most part this is a very widespread type found in different cultures.

Type 1Bx2M3 is represented by a single head at the Uelen cemetery in Burial 15 (1969). With its thin body, elongated form, arrangement of insets, and constriction at the line hole, it is strongly reminiscent of Ipiutak heads. However, an essential difference is the shape of the spur. Three other harpoon heads found in this burial, as well as a “winged object,” fit entirely within the Okvik category of forms.

The first and fourth types of Ipiutak heads belong to group 1A in our system. Meriting attention is the fact that within the framework of this group all the characteristic Ipiutak forms are exhibited in subgroup 1A1, as are the Okvik forms of this group. From the point of view of evolution, construction of form 1A1 (that is, with one slot for the girdle of the socket) is seen as a subsequent development of the initial form 1A2.

Four heads of type 1A1x2P, corresponding to the first Ipiutak type, were encountered in the Ekven cemetery (in Burials 11, 128, and 141). The 1A1x2P head from Burial 11 is very close in form to Ipiutak heads, but here it was found accompanied by five 1A2x2P heads, which is not typical for Ipiutak.

Types C, D, and E, distinguished by Rainey at the Okvik site, agree in their formula to Ipiutak types 4, 2, and 1, respectively, differing only in proportions and decoration.

Seven heads of type 1BYM3, found at the Ekven cemetery, may be compared with the Okvik type D. This comparison shows that the contours of the Ekven heads differ strongly from those of the Okvik, and their conical bullet-shape has little in common with the somewhat ornate curve of the Okvik heads.

Okvik type A can be compared with Ekven heads 1A1XP. A total of eight such heads were found at Ekven (seven of them in burials—Burials 42, 63, 92, 128, 129). The head from Burial 129, as from Burial 92, clearly belongs to the Birnirk circle of forms, based on the contours. Two heads from Burial 63 lack decoration, but in the same burial is a type 1A2XP head, which is covered with decoration very closely resembling that of Okvik. It is also reminiscent of Okvik by its method of forming the spur. The shape of the “winged object” from this same burial also reveals some shifts from classic Old Bering Sea toward Okvik. On the other hand, heads of series 2A2 in Burial 63 are typical Old Bering Sea in shape, but at the same time it is possible to see in them some Okvik features.

Heads of 1A1XP from Burial 83 lack decoration, but three heads of type 1BXM3 found together with them are very much analogous both in form and decoration to Okvik heads of group B.

Heads of type 1BXM3 were also found in Burials 37, 40, 42, and 68. They are almost all very similar to Okvik forms, and simultaneously, they were all found accompanied by Old Bering Sea heads of group 2A2.

Accordingly, in the Ekven cemetery, just as at Uelen, we are able to find only very conjecturally some weak echoes of connections with Ipiutak. By contrast, the Okvik forms can be traced in the Ekven materials very clearly, and no less clearly an unbroken connection of Okvik forms with those of late Old Bering Sea appears in these materials. Considering that at Ipiutak isolated artifacts of the Okvik circle of forms were found and that the majority of types of heads from Ipiutak and Okvik agree in their formal characteristics, all these cultures can be considered simply as separate local variants of one large early Eskimo cultural tradition, which embraced a vast territory around the Bering Strait. Within this, the center of Okvik culture was located on islands in the Bering Strait, the center of the Old Bering Sea culture was on the Asiatic coast, and the center of the Ipiutak culture was in Alaska. Therefore, direct connections and eventual unification of the Okvik culture with Old Bering Sea, on the one hand, and Ipiutak, on the other, were substantially greater than direct connections between Old Bering Sea and Ipiutak.

It is entirely possible that the points of greatest flowering of these different, separated variants of early Eskimo culture did not correspond in time and that the blossoming of the Okvik culture belongs to a later time than that of the Ipiutak culture, whereas the Old Bering Sea culture extended over a very substantial amount of time. However, there is no doubt that it was during some period of time approximately corresponding to the middle period of the Old Bering Sea culture that all these variants existed simultaneously. Different types of harpoon heads that coexist in the Ekven cemetery, using our constructed schema of evolution (Fig. 34), have different degrees of antiquity. In this regard, form 2A2, characteristic for the Old Bering Sea culture, must have the greatest antiquity. Form 1A1, characteristic for Ipiutak, emerged somewhat later. Finally, those that emerged most recently obviously have to be considered Okvik variants of these forms.

Thus, based on the time of the appearance of all three cultures, Old Bering Sea is the oldest. In the early and middle stages of its development it coexisted with the Ipiutak culture, which developed a little later, and in the middle and late stages, it coexisted with the Okvik culture.

As this complex of early Eskimo cultures matured, they gradually changed into a later circle of forms known as the Birnirk and Punuk cultures.

In the Ipiutak region, the Birnirk culture is represented by harpoon heads from burials at Tigara. Heads very much identical to those at Tigara were also identified at Ekven: these are heads of type 1A1XP from Burials 128 and 129, as well as several other similar heads. Still more heads of the characteristic Birnirk type are represented in Burials 125 and 126—formula 1A2PC (0–1). In this regard, it is notable that the quest for barbed forms of heads began during the Old Bering Sea stage, which is evident by the unique heads found in Burial 42, as noted above. Interestingly, these also have, along with Old Bering Sea, clearly expressed Okvik features. The origin of such barbed forms can be traced in many burials of the Old Bering Sea culture and goes back, in our opinion, to leister-like heads of non-toggling harpoons, which is reflected in the cited schema (Fig. 34).

The genesis of early Punuk forms based on those of the late Old Bering Sea can be traced even more clearly in the materials from the Ekven cemetery. The massive harpoon from Burial 10–11 (1BYM3) is undoubtedly a precursor to the large Punuk whaling harpoons. Typical Punuk harpoons with the same formula were found in Burial 100. On the other hand, the small heads 1A2x2P and 1A2y2P found in the same burial belong to the most widespread types in Ekven and are encountered in many classic Old Bering Sea burials.

Burial 123 also dates to the Punuk period. Of the two heads found in it, one fits by formula into type 1A2XP—numerous at Ekven—but has Punuk decoration. The other, with its formula 1A2P (1–1), belongs to forms common in both the Punuk and Thule cultures. Concerning this, the rite of interring Burial 100 within a framework of large whale bones can be traced in the Ekven cemetery to much earlier burials, for example, Burials 9, 10–11, 49, 140, and others. The interment rite for Burial 123 includes placing the body in a flexed position.

It is possible that the comparatively small number of flexed burials in the Ekven cemetery belong to later arrivals, with somewhat different tribal affiliations. But basically the Ekven cemetery, like the Uelen, represents the site of a single culture and single tribal affiliation, which was formed and developed over the course of a long time. Unfortunately, we do not know where and how the people who built the Uelen cemetery lived. It is possible that their houses were destroyed by the sea, which repeatedly changed the configuration of the Uelen spit. The Uelen site, located not far from the cemetery, and the ruins of a house excavated in it, belong to an entirely different culture, evidently of a substantially later period than the cemetery (Arutiunov and Sergeev 1966:75–78).

The Ekven complex of sites was preserved more fully than the Uelen. Here the ruins of these early houses were found, stretching along the shore over an extent of more than 350 m. Partially covered pit houses, forming low oval mounds, were located several tens of meters from the shoreline pit houses. These ruins, which had not been washed away by the sea, were overgrown with sod. No siding or roofing materials were found on them. These large pit houses were similar in dimensions and configuration to prehistoric house ruins in Sirenik village. According to oral histories, the large size of the Sirenik houses was associated with the existence at that time of large patriclan groups. Economic life (production and hunting) was carried out within the framework of these groups, with the primary production units—the umiak teams—formed on the basis of clan relations. It is possible that the large Ekven pit houses reflect a similar level of social organization. It is even more interesting that the Sirenik pit houses, and the traditions connected with them, belong chronologically to the late Punuk and prehistoric times. Meanwhile, in the Ekven pit houses, alongside materials of these late periods are objects of material culture dating to substantially earlier times (Fig. 2).

Based on the water-ice regime and the wealth of sea mammals, the Ekven shore is a very favorable hunting region, where even now the residents, often coming from rather distant villages, continue to hunt. Therefore, it is not surprising that in the region of the Ekven coast, objects of the material culture from different historical epochs were found, from late Bering Sea to Birnirk and Punuk. It is most probable that the ruins of the houses found there can be dated to the end of Old Bering Sea and Birnirk cultures. Besides this, mention should be made that Old Bering Sea and Birnirk objects in the debris from houses washed out by the sea are completely analogous to corresponding materials from the cemetery. Thus, both these sites (the house and the cemetery) were created in substantial part by one and the same population.

Regarding the abovementioned assumption about the character of the social structure of the residents at the early settlement of Ekven, this is not contradicted by the discovery of numerous cases of paired burials of men and women and even one man and two women in the Ekven (as at the Uelen) cemetery.

In 1965, surface material was collected from a layer of permafrost that had been intensively washed by stormy surf. This material came from the ruins of large early houses (*nyulyu*) of the Ekven site located along the shore. The inventory washed by the sea from the Ekven *nyulyu* has in substantial part something in common with objects found in the early Eskimo houses eroded by the sea at Kivak. And the inventory of both the Ekven and Kivak *nyulyu* are similar to the inventory of the Ekven burials. Among the objects found are slate knives, adzes, sockets for adzes, sled runners of walrus tusk, scraper-scoops and scoops from deer shanks, bolas, lateral barbs from bird spears, vessels of baleen, and a whole series of other objects connected with sea mammal hunting and domestic use. However, these objects can not al-

ways be precisely dated in connection with the stability and succession of their forms over the extent of several stages of Eskimo culture. The objects being dated are chiefly toggling harpoon heads found in a dwelling, the typology and decoration of which were well developed, allowing assignment to one or another early Eskimo culture. It is clear from them that the collections in the debris from the *nynlyu* represent the remains of not one, but rather several historical periods.

A total of 25 toggling harpoon heads were found, if blanks and fragments of such are also considered. One fragment of a harpoon with a closed socket, one line hole, and a symmetrically shaped spur was covered by a classic Old Bering Sea decoration of rounded lines with strokes and barbs (Fig. 2:2). Other heads were typically Birnirk in form. Also represented was a head associated with a later time. This head is similar to the head of the Thule II type and, as is well known, the Thule culture ended with the onset of the modern and late prehistoric cultures (Fig. 2:16).

Another harpoon head in this group had an open socket, holes for the girdle, one line hole, and two holes located perpendicular to the slot for the lateral insets, and should be dated to the period of the Bering Sea culture. It has a triple asymmetrical spur (Fig. 2:3) and large-eyed Old Bering Sea decoration, but is less careful one than on the first harpoon. A miniature harpoon, constructed similarly to the one previously described (Fig. 2:5), was also found, with the only difference being that its lateral insets are arranged in the plane perpendicular to the line hole.

One of the harpoon fragments (Fig. 2:4) is structurally identical to the harpoon in Figure 2:5. It differs only by having sockets formed with serrations for the lateral insets and by the traces of Okvik style decoration.

Another fragment of a blank (Fig. 2:7) is especially valuable, since clearly visible on it are, first, the sequence of preparation of the tool, and second, the direct transition from late Bering Sea-Okvik heads to Birnirk forms. The socket is open, the spur tripled, and in this instance, paired holes for the socket girdle have been carved. The lateral holes are perpendicular to the line hole and are formed, as in the previous case, with serrations. A flint inset was preserved in one hole. On the side of the socket is a line hole in the manner generally accepted as characteristic for Birnirk, that is, the drilling was done without any preparation as it were. On the side opposite the socket is an oval depression that joins the cut for the girdle. In this depression, but above the hole for the socket girdle, the line hole had to be drilled. A similar technique of arrangement for the drilling of line holes is confirmation of the preservation of some Old Bering Sea traditions in later times. It should also be noted that, though the blank was fragmented, the side opposite the hole for the lateral inset undoubtedly had a large barb since the slant of the harpoon was greater here than on the side equipped with an inset.

Harpoons in Figure 2:10, 11 are typical of the Birnirk form in all their qualities.

Harpoon heads in Figure 2:6, 9 are close in form to that of the late Bering Sea period, but are lacking decoration and therefore are more difficult to classify.

For the first time in many years the abundant collection of harpoons was supplemented by a head of unusual type: in distinction from the preceding harpoons it was made of antler. By its form—open socket, one hole for the socket girdle, asymmetrical spur, and one line hole—the lower part of this head is close to Birnirk and late Bering Sea forms. However, its line hole is stretched and has almost a triangular form. Two pairs of one-under-the-other lateral barbs are reminiscent of early Old Bering Sea forms.⁷ But, in spite of the seeming similarity, these types are entirely separate chronologically, since it is possible to trace the slot for the end blade, parallel to the plane of the line hole, in the harpoon head being described. Precisely the same head is assigned by Collins to type IV(a)X and is dated to Punuk.

⁷ For example, the harpoon head from the Uelen cemetery that we published in 1963 is formed in the same way in its upper part. See Arutiunov et al. 1963:59, Fig. 2a.

From what has been stated it follows that the complex of Ekven houses was created over a long period of time that embraced different stages of early Eskimo culture, and this was in significant part simultaneous with the development of the cemetery, as well as having been built by the same people.

Chapter 4

The Specifics of the Inventories Found in the Ekven Cemetery

The Ekven cemetery is an epic memorial to a developed tribal system. There are no obvious distinctions in social class noticeable among the people who created this memorial. But there were some individual differences, including differences in terms of property ownership. Significant differences in the amount and types of grave goods occur between otherwise similar graves. Along with simple, architecturally meager graves with or without extremely poor-quality grave goods, there are those that have an abundant and uniquely ornamented inventory.

The rich graves are often very complex constructions with bedding, floors, and walls of stones, logs, and whale bones. Many of them are double or even triple burials. Such differentiation in the character of the burials must have reflected a differentiation in the social position and individual qualities of the people. Those who had rich grave goods were most likely good hunters who were famous for their strength, skills, and luck in hunting. Or they might have been craftsmen who made different items not only for personal and family use but also for the needs of the entire tribal group (for example, ritual objects, large baidaras (umiaks), etc.).

Finally, they could have been old people who were highly respected among the tribe and who had great knowledge, for example, tribal elders, shamans, experts in weather, etc.

In the following pages, we will discuss inventories that were outstanding by their wealth or their specific composition. Analyzing these complexes will help us discover information about the social roles of the buried individuals and about the general appearance of Eskimo society.

Double Burial 10–11 has one of the most distinctive classical Old Bering Sea appearances (Fig. 6) and is representative of the early period in the history of the cemetery. (A precise description of the grave's inventory with notes about the character of the burial, the construction, and other peculiarities is given in Chapter 2 of this book).

Burial 10–11 belonged to sea-animal hunters. Sixteen toggling harpoons were found in the grave.

Taking into consideration the fact that in most graves only one or two (or occasionally three or four) harpoon heads were found, we can argue that the men in Burial 10–11 were very important to tribal hunting. This is most likely the reason why the grave was so ornate, surrounded with stone plates and whale bones, and had a wooden floor with a bear pelt. The polar bear mandible must have been an honorary trophy, as not many hunters could kill such a huge beast using only a stone spear. Also, it was unusual to find skulls or mandibles of polar bears in graves at the Ekven cemetery.

Firearms came into use at the end of the eighteenth and beginning of the nineteenth centuries. This made polar bear hunting easier and less dangerous, thereby explaining why polar bear skulls became a more common component of later burials of hunters (up to the twentieth century).

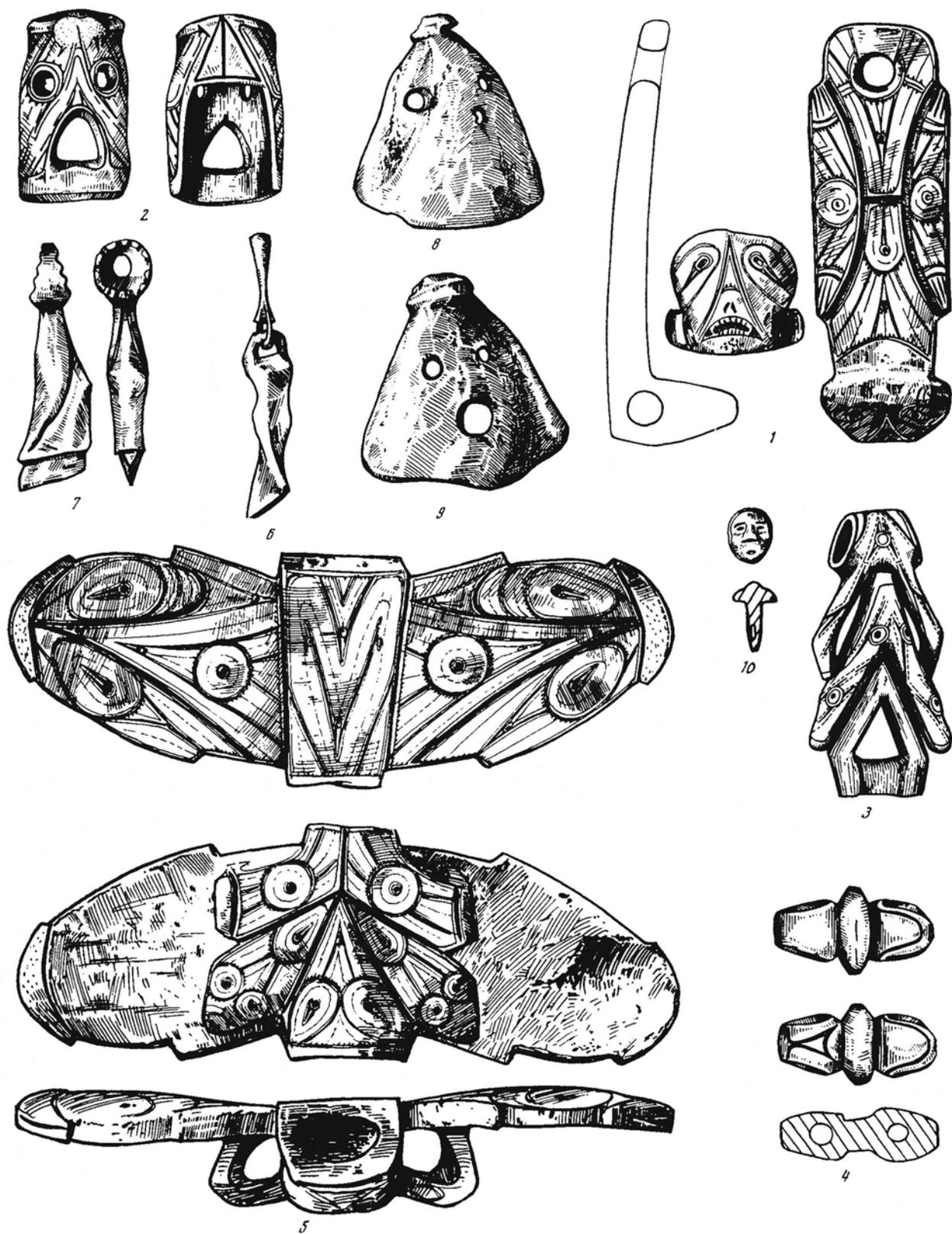


Figure 47. Objects from Burials 10-11 (3/5 actual size). 1-4—Towing hook and toggles; 5—"Winged object"; 6, 7—Chisel; 8, 9—Bone spoons; 10—Ornamental plug.

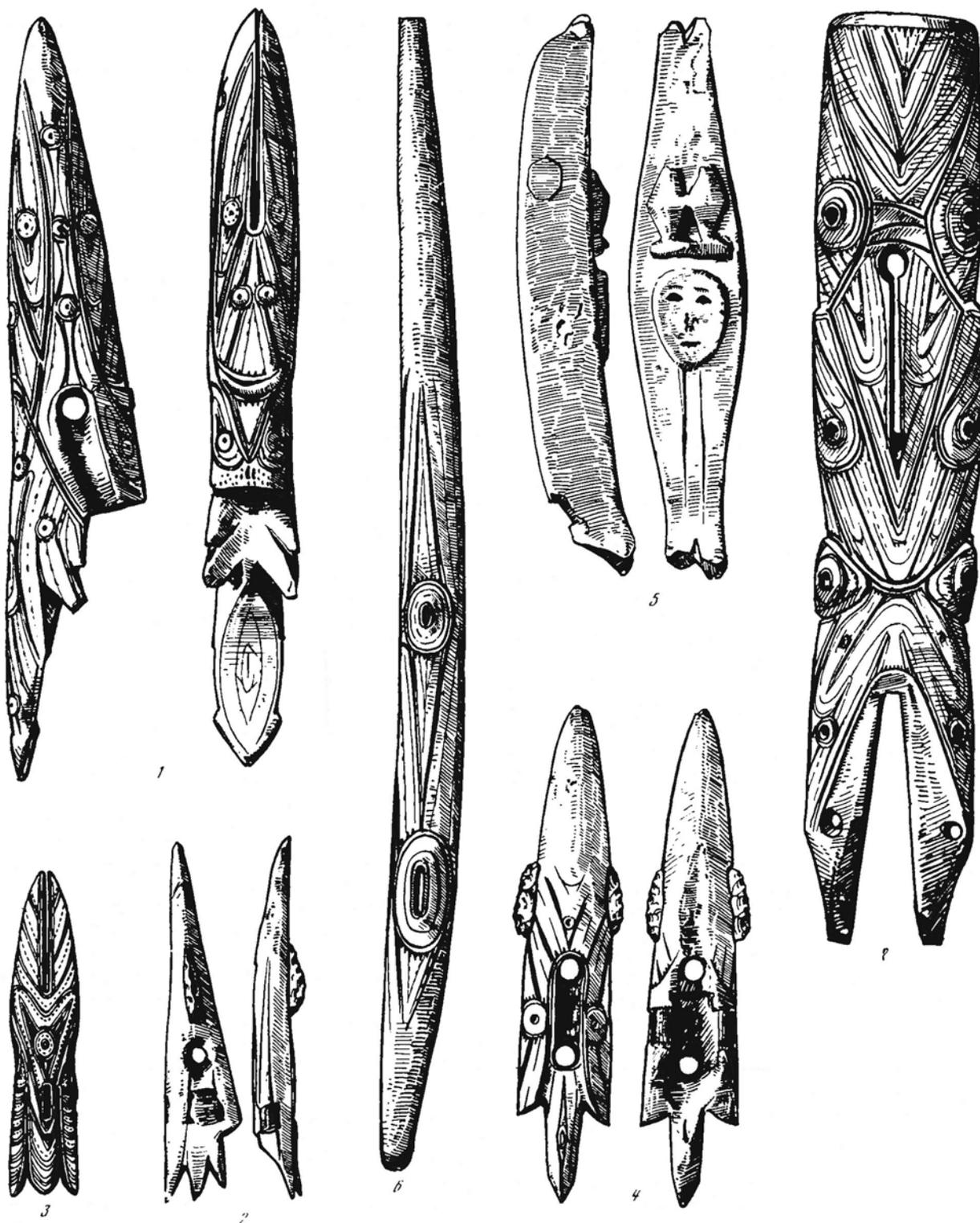


Figure 48. Harpoon Complex from Burials 10–11 (2/3 actual size). 1–4—Harpoon heads; 5—Kayak model; 6—Harpoon foreshaft; 7—Socket piece.

Burial 10–11 was the first in which a model of a kayak was unearthed (Fig. 48). It also had a classical Bering Sea “winged object” (Fig. 47). Hunting for small pinnipeds during the lifetime of these hunters was done not only with light harpoons from kayaks, but also from umiaks (baidars) designed for hunting whales. The reason we can say this is that a massive harpoon head with a closed socket, such as was used for whaling, was first discovered in Burial 10–11 (Fig. 48). Along with the harpoon were a harpoon fore-shaft and a heavy socket piece.

The whole complex was decorated with Bering-Sea type ornamentation.

Three towing toggles for transporting slain seals on the ice were found in Burial 10–11 (Arutiunov and Sergeev 1969:144–451).

Burial 9 obviously also belonged to a great hunter (Fig. 5). Just as in the previous one, this grave was carefully constructed of whale scapulas, mandibles, and ribs. The grave also had a wooden floor and cover.

Judging by the ornamentation on the harpoon heads, shaft socket piece, and “winged object”, Burial 9 was built more recently than Burial 10–11, that is, in the developed and late Bering Sea period (Fig 49).

Most burials in the Ekven cemetery belong to that period.

Quite a while after Burial 9 was completed, when the cover and the contents of the grave settled and formed a hollow in the soil, that hollow and the protruding walls were used for another burial. Burial 8 was a woman’s. Children’s toys and fine objects such as a miniature harpoon head, a button with the image of a face, and two figurines of walrus tusk—a miniature mattock handle and a miniature ceramic vessel—were the most interesting objects in the inventory (Fig. 50). According to ethnographic data, children used miniature harpoon heads as toys for games that imitated hunting. For example, when a walrus liver was brought into the house, boys “harpooned” it. Possibly the grave belonged to a woman who was expecting a child.

Judging by the inventory, Burial 7 also belonged to a woman. Along with common tools associated with women’s work, elements of a hunting kit were found. According to ethnographic data, women frequently took part in hunting.

Burial 7 was unusual and distinct from others because of the great number of vessels found. Troughs made from deer tibias and two richly ornamented vessels of walrus tusk were found along with the usual household objects (Fig. 52), such as spoons and a trough scraper (these were used for processing intestines). Troughs and vessels were the offertory containers used for “watering” (giving a drink to) the slain animals. The large vessel could have been used for offering and appeasing bowhead whales, a custom which was followed up until recent times. The wife or mother of a hunter who had been the first to harpoon a bowhead whale brought fresh water to the animal after it had been towed to shore. It was a ritual of “reconciliation” with a slain animal.

The vessel was richly ornamented and made of walrus tusk. The handle was shaped like a sea animal and was covered with Old Bering Sea motifs.

Similar offertory troughs with handles in the shape of animal heads were still used in the 1920s by the Nivkhi of the Lower Amur and Sakhalin. Those troughs were not made of walrus tusk but of wood. The Nivkhi, as the Eskimos, made ritual offerings to animals they killed. The ritual of offering fresh water to slain seals is preserved by the old people even now. The Eskimo tradition was for the young son of a hunter to give the water to the animal. This meant that the child had “made friends” with the spirit of the animal that had been killed.

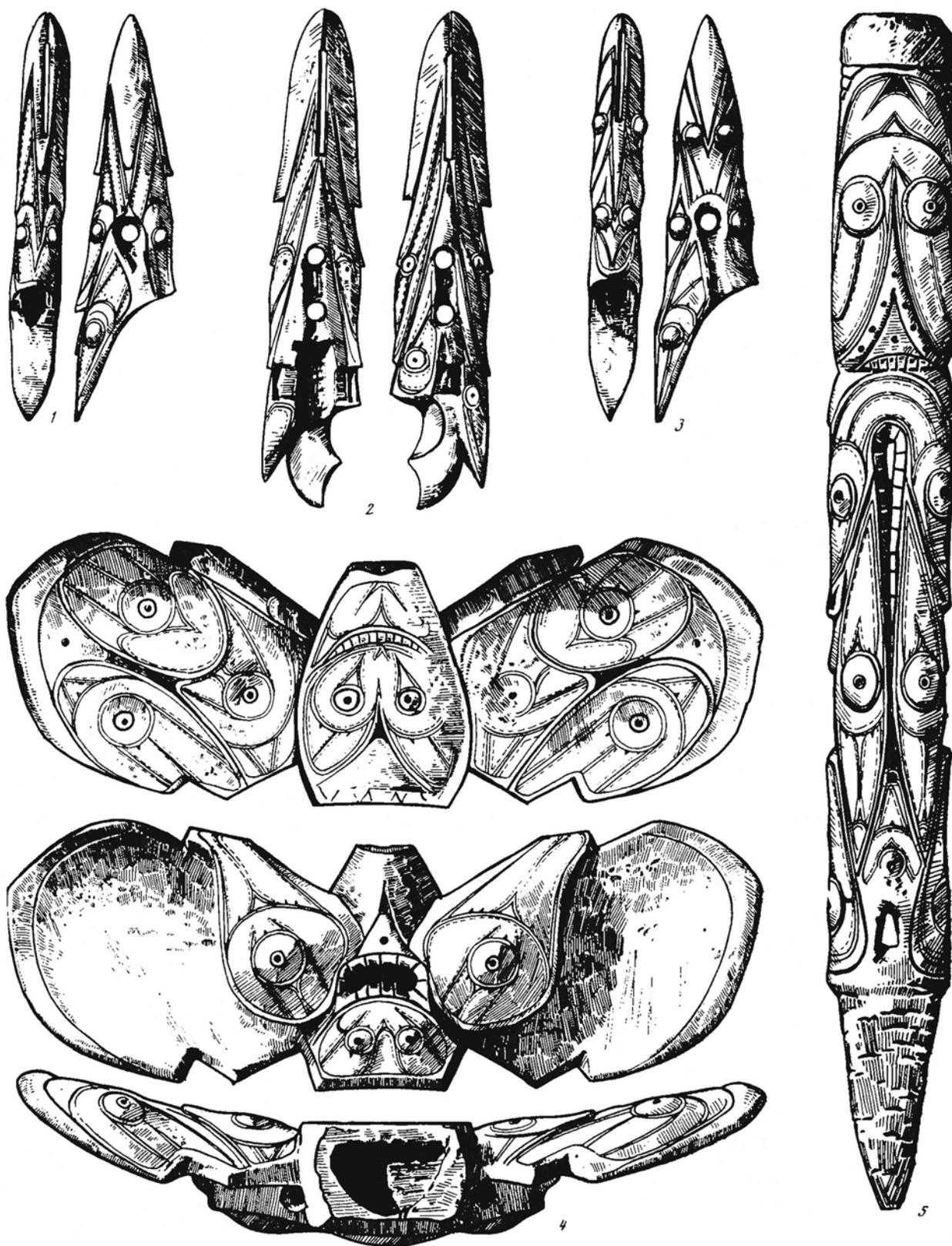


Figure 49. Inventory from Burial 9 (3/5 actual size). 1-3—Harpoon heads; 4—"Winged object"; 5—Socket piece.

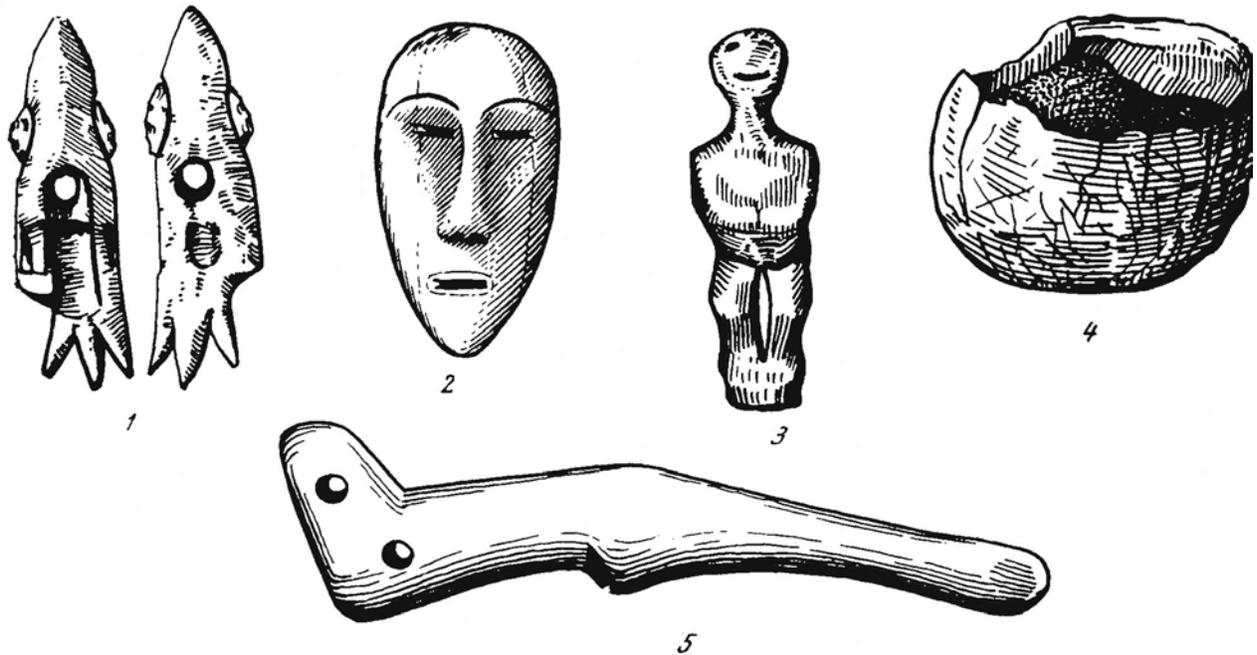


Figure 50. Inventory from Burial 8 (actual size). 1—Miniature harpoon head; 2—Button; 3—Ivory statue; 4—Miniature vessel; 5—Miniature mattock or adze handle.

Offering water to slain animals was not the only similarity between the hunting rituals of Eskimos and Nivkhi. The worship of the killer whale as a helper in hunting large sea mammals was not only characteristic of the Eskimo and coastal Chukchi but also of the Nivkhi. This leads us to assume that these similarities are neither accidental nor convergent. They probably reflect a common origin for genetic links in the formation of both cultures. Those links must have been formed during a period when the territories of these groups were closer to each other.

The Amur peoples used the ornamental motif of a mask formed by concentric circles, very similar to the curved line motif used by people of Old Bering Sea. Separate elements of that motif can be found among the Tlingit of the Northwest Coast of North America.

Examples of such ornamental motifs are presented in this work. Among these types of images represented in Burial 9 are the images of sea-mammal heads on the handle of a large vessel, on the side wall of a small vessel, and on a small ornamented drill rest (Fig. 52:5). This way of depicting the mask image is one of several different stylistic methods used by the early Eskimo people. Images of the human face and the head of mammals on a bow drill (Fig. 52:4) were more realistic. Using these motifs as examples, we can trace the remains of very early and distinct ethnic and cultural links. The image of a human face with one squinted eye is not random. Such a pattern is repeated in Eskimo art again and again. And it may not be a coincidence that a similar kind of image was rather common in a very distant region—in the art of the Indians of Central America.



Figure 51. Inventory of Burial 14 (actual size). 1—Snow goggles; 2—Mask goggles; 3—Fragmented ulu handle; 4—Button; 5, 6—Spindle-shaped articles.

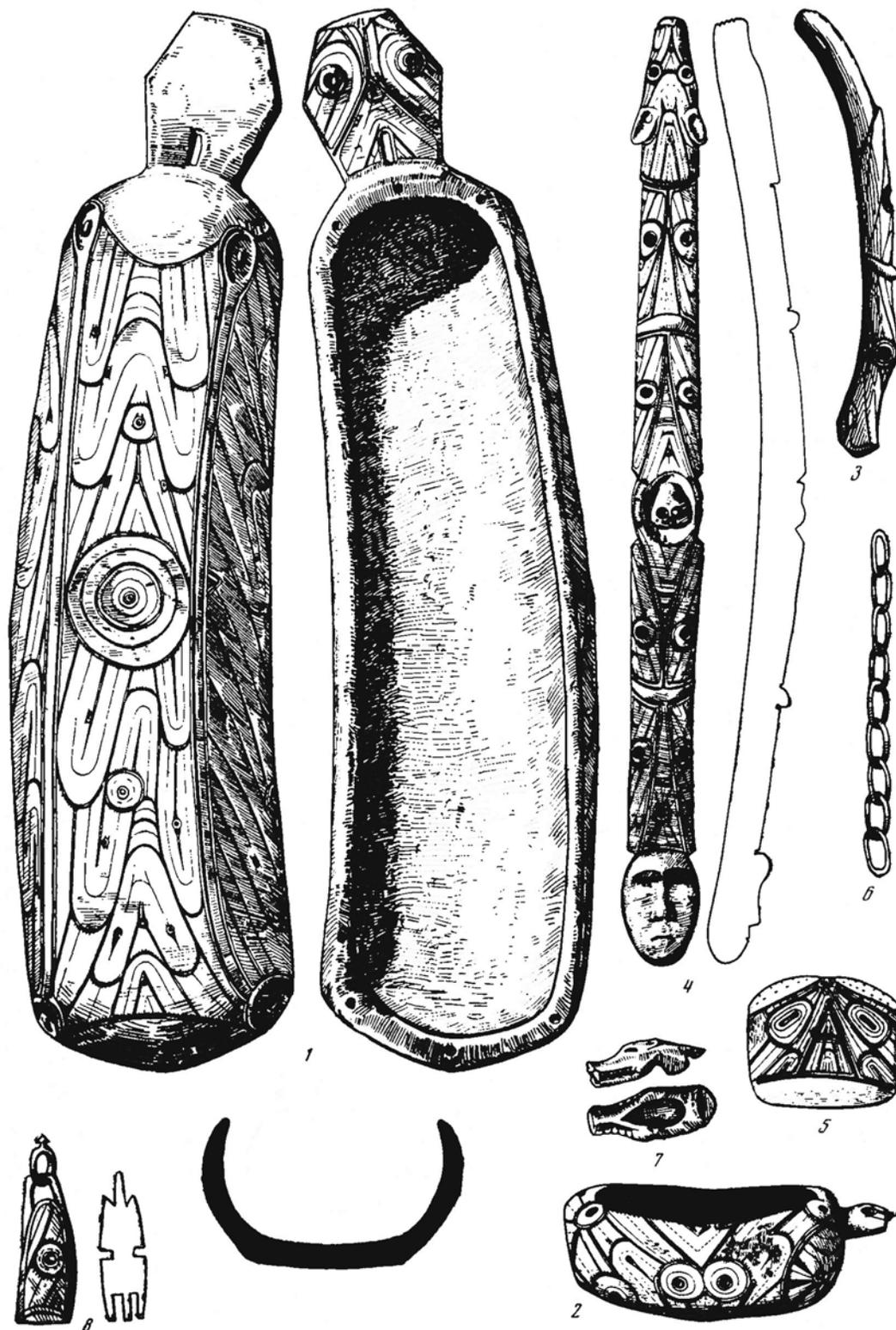


Figure 52. Inventory of Burial 7 (1/2 actual size). 1—Large offertory trough; 2—Small offertory trough; 3—Pail handle; 4—Bow from a bow drill; 5—Drill mouthpiece; 6—Ivory chain; 7—Carved bear head; 8—Chisel handle.

We have already noted that metal was familiar to the Old Bering Sea people. For example, a walrus tusk chain was found in Burial 9. In a previous work, we reported that metal chains served as models for bone chains (Arutiunov and Sergeev 1969:160). Metal chains likely came to the Eskimo from the southern parts of the Pacific coast.

This may illustrate the fact that the cultural contacts of the Eskimos with southern regions, such as the Sea of Japan basin and the Amur River region, have two implications. First of all, this ancient genetic contact explains the common elements of these cultures; and secondly, it reflects cultural contacts and borrowing.

(Later, in excavating Ekven burial 204 in 1974 an almost inch-long iron blade was found. The spectral analysis proved it to be a man-made iron, probably from China).

Judging by the ornamentation, Burial 7— belonged to the developed Old Bering Sea period. Burial 14—that of a woman—could also be dated to the same period. The left arm of the dead women in both Burials 7 and 14 were adorned with bone bracelets. Objects that helped to determine the age of Burial 7 were carved bars of walrus tusk and snow goggles (Fig. 51). The snow goggles were made in an unusual manner: the eye slots were round in shape, rather than the usual oblong. Another pair of snow goggles was made in the usual manner, if sparsely ornamented, but the thickness was uncommon. These goggles may have been used as a visor. They must have been placed separately into the grave, because they were positioned away from the main complex of goods that are usual for a woman's burial.

A fragmented handle from a woman's ulu had separate elements of Bering Sea ornamentation in the form of arcs with inward facing notches. Elements of open-work carving that are useful as well as decorative were also on the handle. Blood and animal fat could flow through these carved holes during the butchering of a sea mammal.

This knife handle was very similar to the handle found in the Uelen cemetery, Burial 5 (59), which was of the same age as Burial 7 in the Ekven cemetery.

The double male Burial 37–38 was chronologically very close to Burials 5 and 7. The Old Bering Sea forms of toggling harpoons and a “winged object” helped to indicate its age.

We noted a mixture of cultures in the Ekven cemetery, where predominantly Old Bering Sea traditions were combined with imported Okvik features. This mixing was illustrated in Burials 37–38 not only in the ornamentation (Fig. 53) but also by the types of objects, for example, a harpoon socket piece used during summer hunting in the open water.

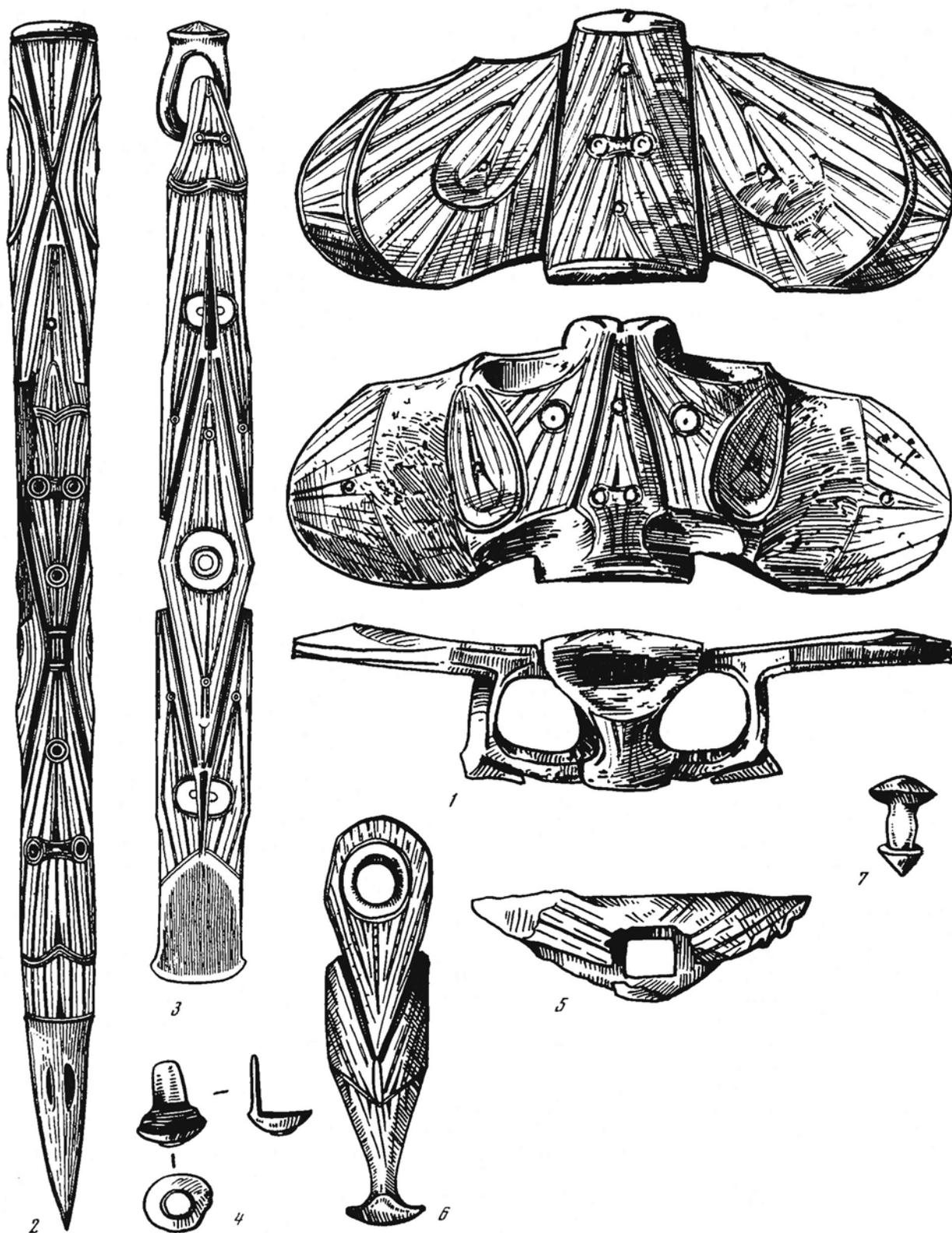


Figure 53. Ornamented Articles from Burials 37-38 (3/4 actual size). 1—"Winged object"; 2—Harpoon foreshaft; 3—Handle; 4—Ornamented insertion; 5—Button made from a long-bone; 6—Ornamented article; 7—Peg from object #6.

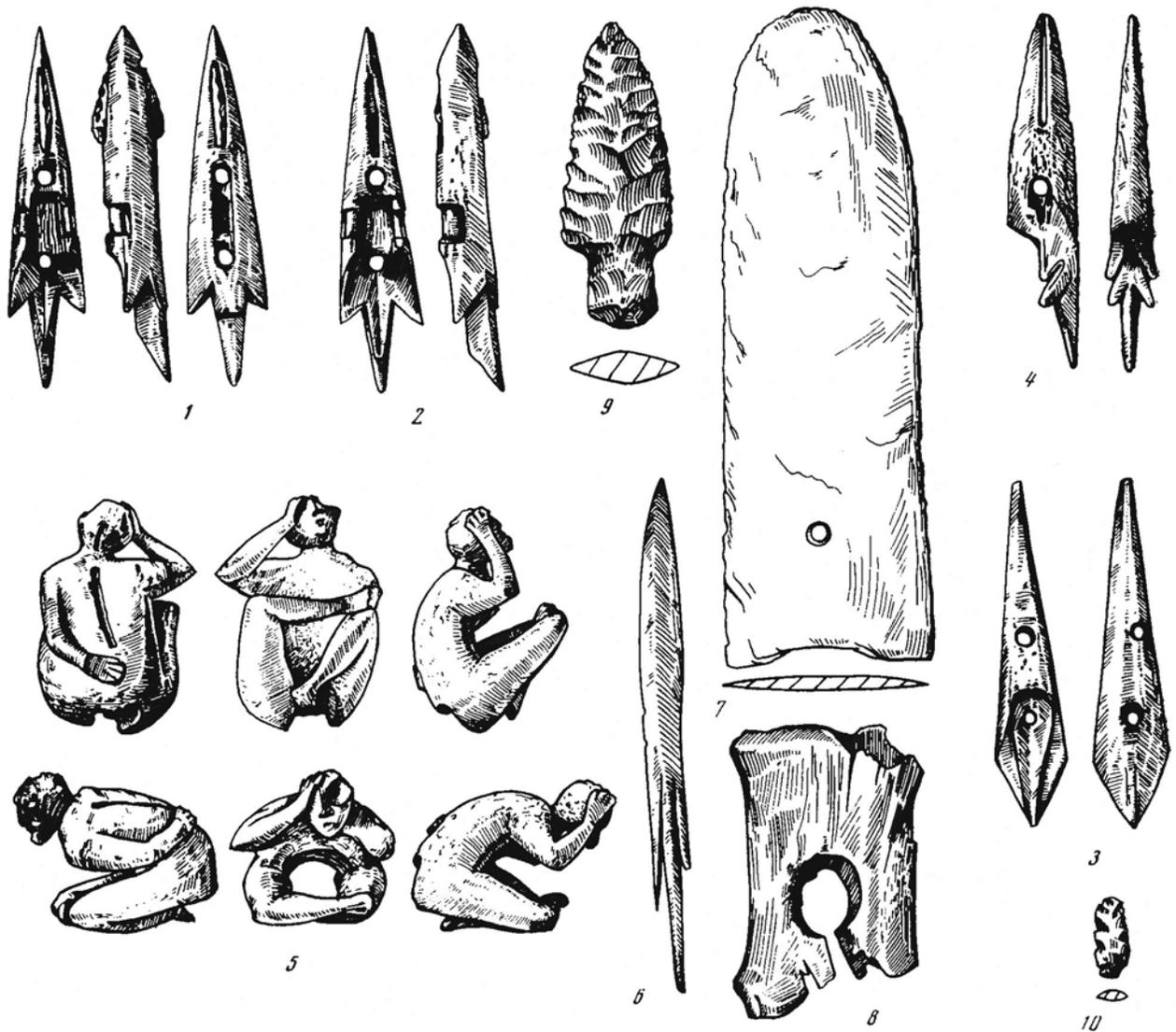


Figure 54. Articles from Burials 37–38. (1/2 actual size). 1–4—Harpoon heads; 5—Dancer statue; 6—Arrowhead; 7—Schistose knife; 8—Adze handle; 9—Spear point; 10—Silicon side point for harpoon head.

In a sculptured figurine, the above-mentioned half-closed eye motif is encountered (Fig. 54). One can see the realism and precise depiction of the natural form and proportions of the human body in the dynamic and expressive figurine. Conventionally, disproportion in the depiction of the human body was more common in Eskimo art. Judging by the hole carved in the groin area of the torso, the figurine must have been the end piece for a staff or baton. The slot in the back area must have been used for attaching additional ornaments made of soft material, such as fur. Burial 37–38 was located directly under another double burial. Burial 19–20 was a women’s double burial (Fig. 9) and was oriented to the south. The men’s skeletons in Burial 37–38 were oriented to the north. Interestingly, the man’s skeleton in triple Burial 16–17–18 (Figure 8) was oriented to the south while the women’s skeletons to his left and right were oriented to the north. The custom of orienting the skeletons of multiple burials in different directions was also found in other graves in the Ekven cemetery (Burials 5–6, 39 A and B, and 52).

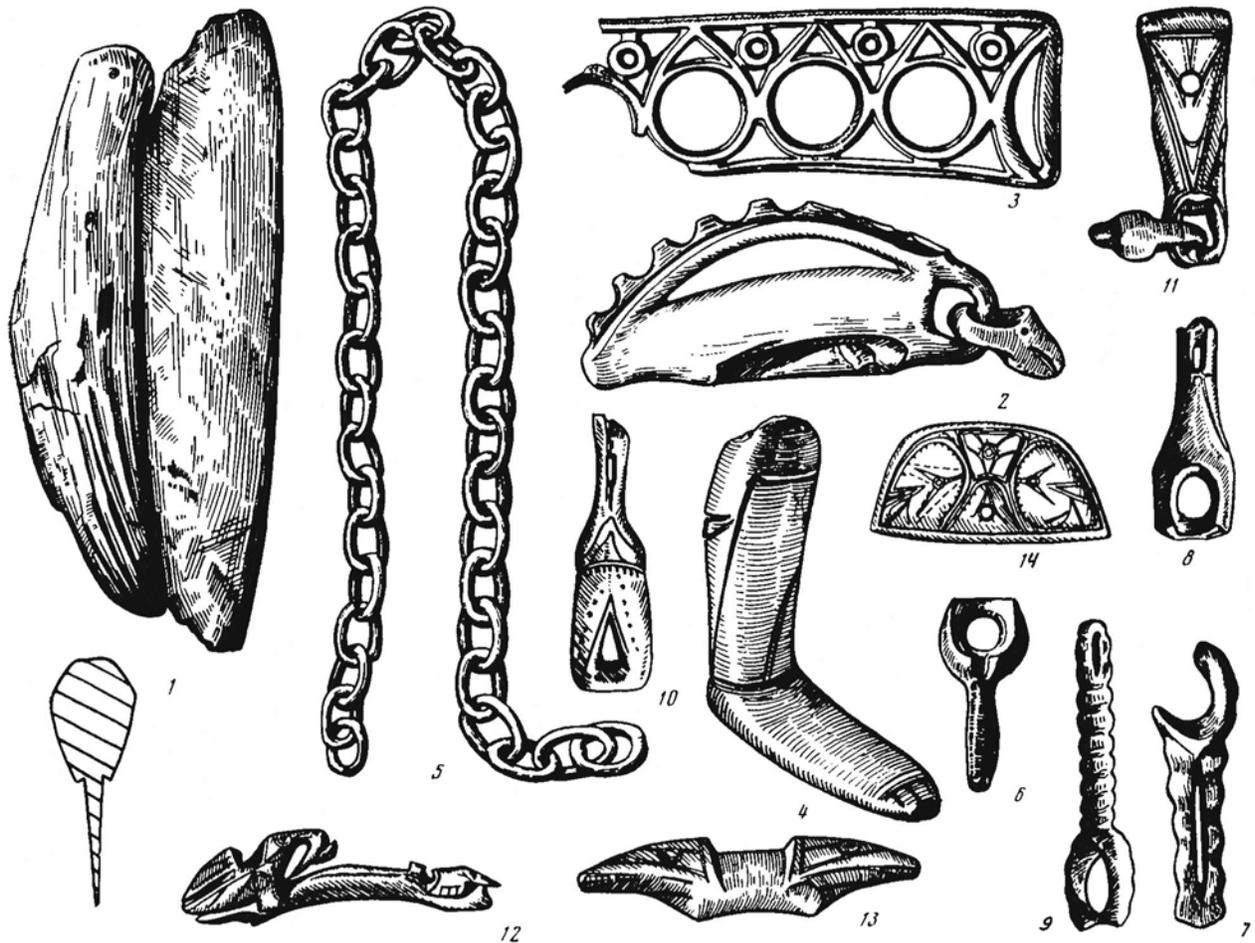


Figure 55. Inventory from Burial 154 (3/5 actual size). 1—Ulu with wooden handle; 2—Bone ulu handle; 3—Open-worked pail handle; 4—Carved “foot in a boot”; 5—Ivory chain; 6–10—Fastenings for necklaces; 11—Ivory chisel; 12—Zoomorphic item; 13—Button; 14—Mouthpiece.

The fact that there were so many double and multiple burials in the Ekven cemetery could be explained by a number of considerations.

The fact that there are two individuals in one grave does not always mean that they were buried at the same time. In cases where the burials are divided by a layer of soil or a wooden floor, we can conclude that one individual was placed in that grave later than the other. These two individuals could have been close relatives. But in most cases, the conditions of the burial indicate that the individuals were placed in the grave simultaneously.

When we see two hunters in one grave, we can assume that these people died simultaneously in an accident, for example, they may have froze and died during a snowstorm.

Also, in arctic conditions and using primitive tools, it might not be possible to dig a pit in all seasons of the year. We do not know what happened to those who died in the winter. They may have been brought to the cemetery and covered with stones and whale bones, possibly so wild animals would not

handle them, or perhaps for religious reasons, as people were afraid of the spirits of the dead. When summer came and the soil thawed out, they would bury those people with rituals in pit burials. The stones and bones that had covered the corpses were used in the graves.

In cases where several people died in winter—close relatives or members of the same tribe—they could have been buried in a common grave.

Evidence exists that people who committed suicide after the death of a loved one, such as a mother after the death of her only son, a wife after the death of her husband and even a husband after the death of a beloved wife, could have been buried in the same grave with the other deceased person. Finally, there is the possibility—very disputable but possible—that the double or multiple burials reflected a custom of patriarchal slavery. Slaves could be killed or forced to commit suicide and buried along with their masters. Such a thought occurred when looking at the position of the corpses in Burial 27 A and B. The pelvis and legs of skeleton A, which were extended (a common practice for people of the Bering Sea Coast), were covered with skeleton B which was flexed. Before the burial the body was forced into the pose with the legs flexed at the knees and pressed against the abdomen. This position leaves no doubt that this person was tied up before being buried.

The same skeletal position has been found in the cemeteries of the early Aleuts and Eskimos of southern Alaska. The flexed skeletons in the Ekven cemetery possibly belong to people who originated in the southern regions of the North Pacific coast of Alaska.

Single burials with flexed skeletons were also found in the Ekven cemetery. Although there were not many of those they were distinct from the general group of relatively homogeneous burials. Few grave goods were found associated with such burials. Rarely were toggling harpoon heads of the Birnirk type found with them; prongs of bird spear points were more common.

Most burials in the Ekven cemetery illustrate the gradual continuous evolution from classical and late forms of the Old Bering Sea tradition to the early and developed forms of Punuk. No evidence exists to assume that there was a period between those two stages when the coast of the Bering Sea was populated by people with different cultural traditions. That is why the most plausible theory is that the flexed skeletons belonged to people of other tribes who were a part of the main native society.

The assumption that the early Eskimos and Aleuts had patriarchal slavery does not contradict our idea about the aboriginal organization of their society. According to the ethnographic data, slavery existed among the Chukchi and Eskimo in the eighteenth and nineteenth centuries (Bogoras 1934:176–178.). Slaves could be people who were taken prisoners or those who were given into slavery by another tribe for murdering a member of that tribe.

In double burials where there were male and female skeletons lying parallel to each other, the male skeleton was central and the female skeleton was placed near or on top of the male, as it was in Burial 46 A, B, and C. In that grave, there were two female skeletons lying on a male skeleton.

These graves seem to imply some kind of subordination of women to men. On the other hand, single burials of women provide evidence of their high social status in the tribal group of Ekven, as is illustrated by Burial 154 (Fig. 27). The complexity and care with which the grave structure, the bedding, and the floor were made put this burial on a par with the richest male graves (Fig. 26). The inventory from Burial 154 is exceptionally rich, consisting of 166 objects. Among them were household tools that could be found in every Eskimo home: needles, ulus, a board for processing pelts, baleen vessels, a wooden plate for food, etc. Along with the typical woman's knife with a wooden handle and stone blade (Fig. 55:1), there was an ulu handle made of walrus tusk and carved into a very unusual shape (Fig. 55:2). Eight nodes were on the handle (three were broken off). According to ethnographic data, the number of nodes on the handle of an ulu represented the number of bowhead whales killed by the woman's husband.

It is obvious that the husband of this woman was a very experienced and lucky hunter who was highly respected by the tribe.

The best hunter usually played the main role in the different religious rituals connected with hunting ceremonies. He was viewed as the one who preserved the traditions of the tribe. It was such a hunter and his wife who performed the ritual of “reconciliation” with the slain bowhead whale during the feast of the “field.” The woman who was in Burial 154 was very old and probably, after the death of her husband, had taken over his role as the keeper of tribal traditions and the head of religious ceremonies. A number of cult objects among the grave goods attests to that. For example, the ulu described above was decorated with a raven’s head, the Sea Woman “mistress of the sea” was carved on the hook (Fig. 56:1) (for details, see Chapter 6), and a mask had an image of “the host of the earth” (Fig. 94). These were all the main gods of the Eskimo pantheon. Incidentally, a zoomorphically carved toggle for the transportation of animals killed in the winter could be a totem sign of the tribe (Fig. 56:3). This burial was of a woman who became the keeper of the tribal rituals. It is possible that other objects also have religious meaning, such as the open-work handle of walrus tusk for a ritual vessel, the figure of a polar bear, the wooden female figure with a protruding belly, and the walrus tusk carving of a human foot (Fig. 55:4). Different fastenings for necklaces (Fig. 55), ornamented ulu handles, a chain of walrus tusk, wooden snow goggles (Fig. 56:7), and other items were also found. Many of the walrus tusk objects were covered with Old Bering Sea ornamentation. The toggling harpoon head (Fig. 56:5) and miniature harpoon socket piece prove that Burial 154 dates back to the developed Old Bering Sea period.

Burial 35 was the same age or even older. Nearly all the burials of that period are characterized by a specific complex of grave goods. Different tools for processing walrus tusk and stone were found along with typical Old Bering Sea toggling harpoon heads with lateral insets (Fig. 51:1–3, Burial 35). These tools included burins (Fig. 58:4–5), adzes (Fig. 58:8, 9), a pressure flaker, a bow-drill, and many other objects. The production of different walrus tusk and stone tools was probably very important during the life of the dead man. It is possible that he made harpoon heads similar to those found in the grave not only for himself but also for other people.

The grave goods of Burial 63 belonged to a male hunter. A large number of harpoon heads for seal, bearded seal, and walrus; a heavy and massive harpoon shaft socket piece (Fig. 59:14); and an ice pick show us that sea hunting was very important for this man. It is possible that the large harpoon head could have been used in hunting whale and beluga (Fig. 59:6). Its size is not much smaller than the whale harpoon head found in Burial 10–11, but the former has an open socket for a foreshaft.

This burial also featured snow goggles used while hunting that had round holes for the eyes (Fig. 60:20). Also, a “winged object” was found which, together with the harpoon heads, helped to determine the age of this burial and led to opportunities to date many different arrowheads (Fig. 60). Laurel-leaf shaped arrowheads and arrowheads with carefully retouched stone end blades were found. Many different blunt arrowheads for hunting birds and fur-bearing mammals were also found.

The man in double Burial 130 was a hunter and a warrior (Fig. 20). The other skeleton in the same grave was small and belonged to a young woman. Few of grave goods in the grave were near the woman, only fragments of a clay vessel near her feet. Very rich goods were near the main (male) skeleton, comprising 114 different objects. For the most part they were the tools of sea-mammal hunting and land hunting, including heads of harpoons, arrows, bird spears, javelins, and spears. Arrows, javelins, and spears should be treated not only as hunting gear but also as possible weapons of war. A walrus ivory plate found in this grave was initially believed to be a plate of armor, but later similar plates were found as features of a hoop sewn upon a rather broad leather belt. That plate was broken and later fixed, probably during the lifetime of the deceased. The broken parts were tied together with thongs that were threaded through holes made for that purpose.

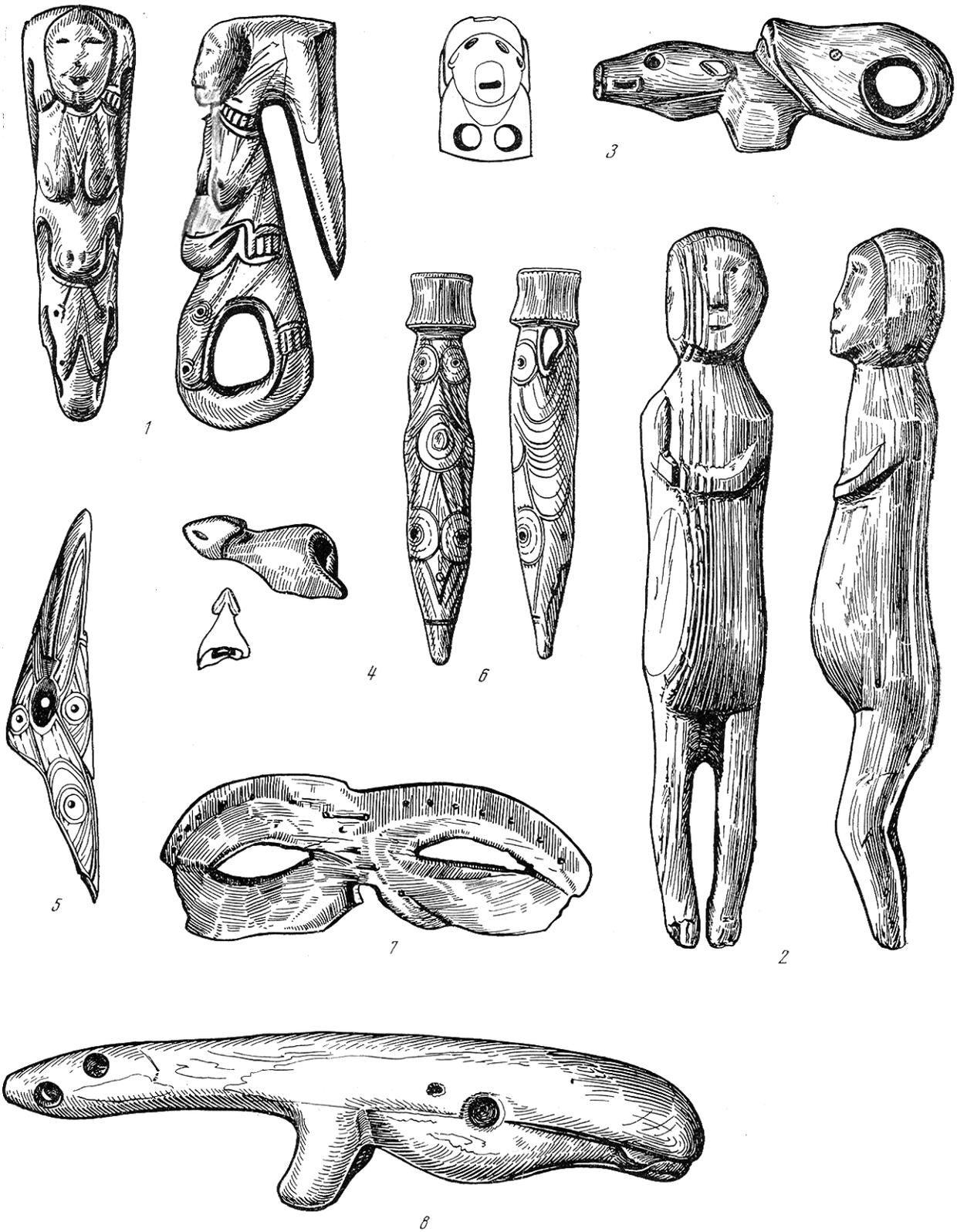


Figure 56. Inventory from Burial 154 (2/3 actual size). 1—Towing hook; 2—Wooden figurine; 3—Toggle; 4—Arctic fox head; 5—Harpoon head; 6—Miniature harpoon foreshaft; 7—Snow goggles; 8—Bear carving.

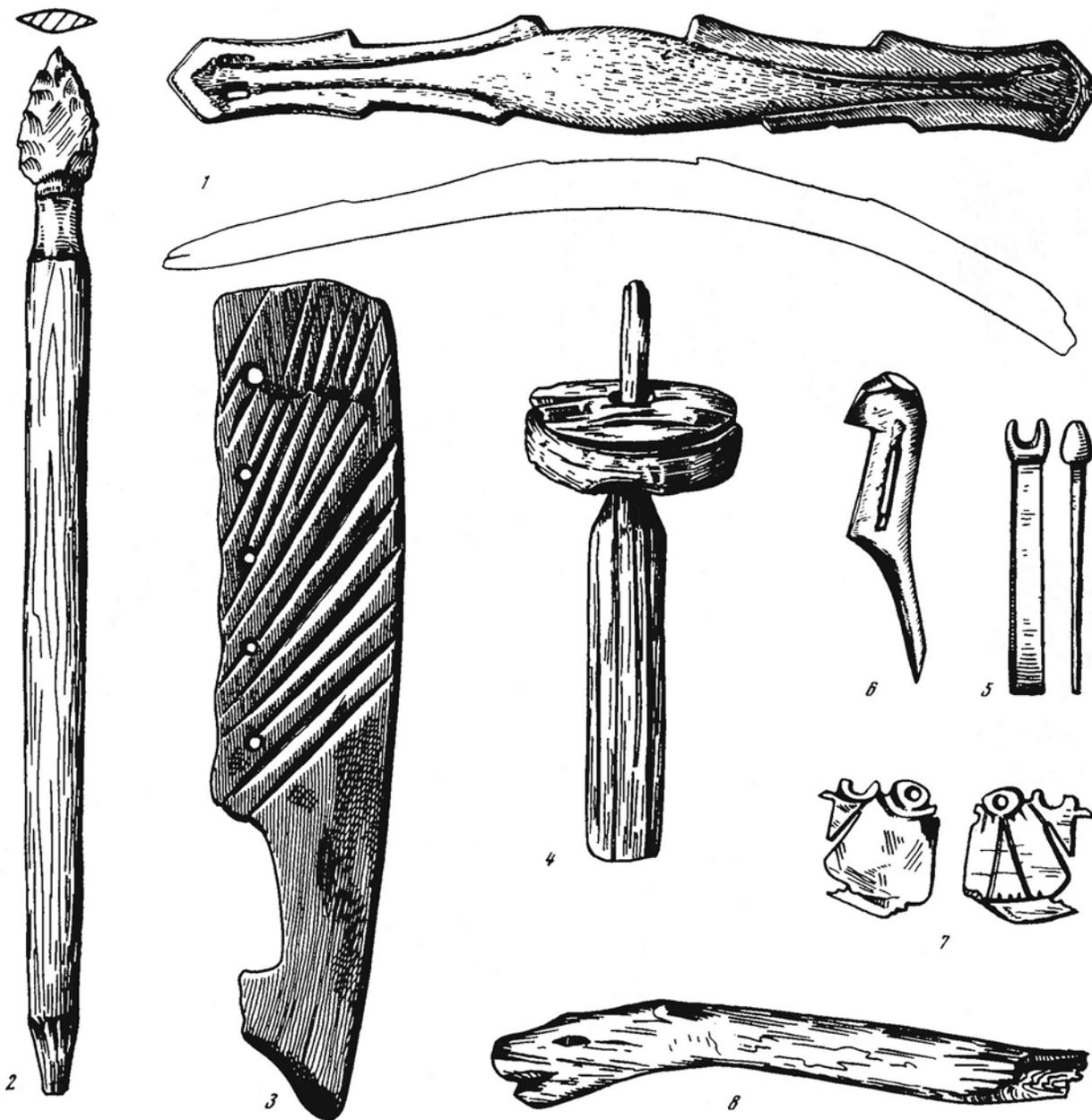


Figure 57. Inventory from Burial 154 (2/3 actual size). 1—Pail handle; 2—Javelin; 3—Ceramic stamp; 4—Wooden article; 5—Bone dowel; 6—Boat hook; 7—Fragment of carved plate; 8—Wooden handle.

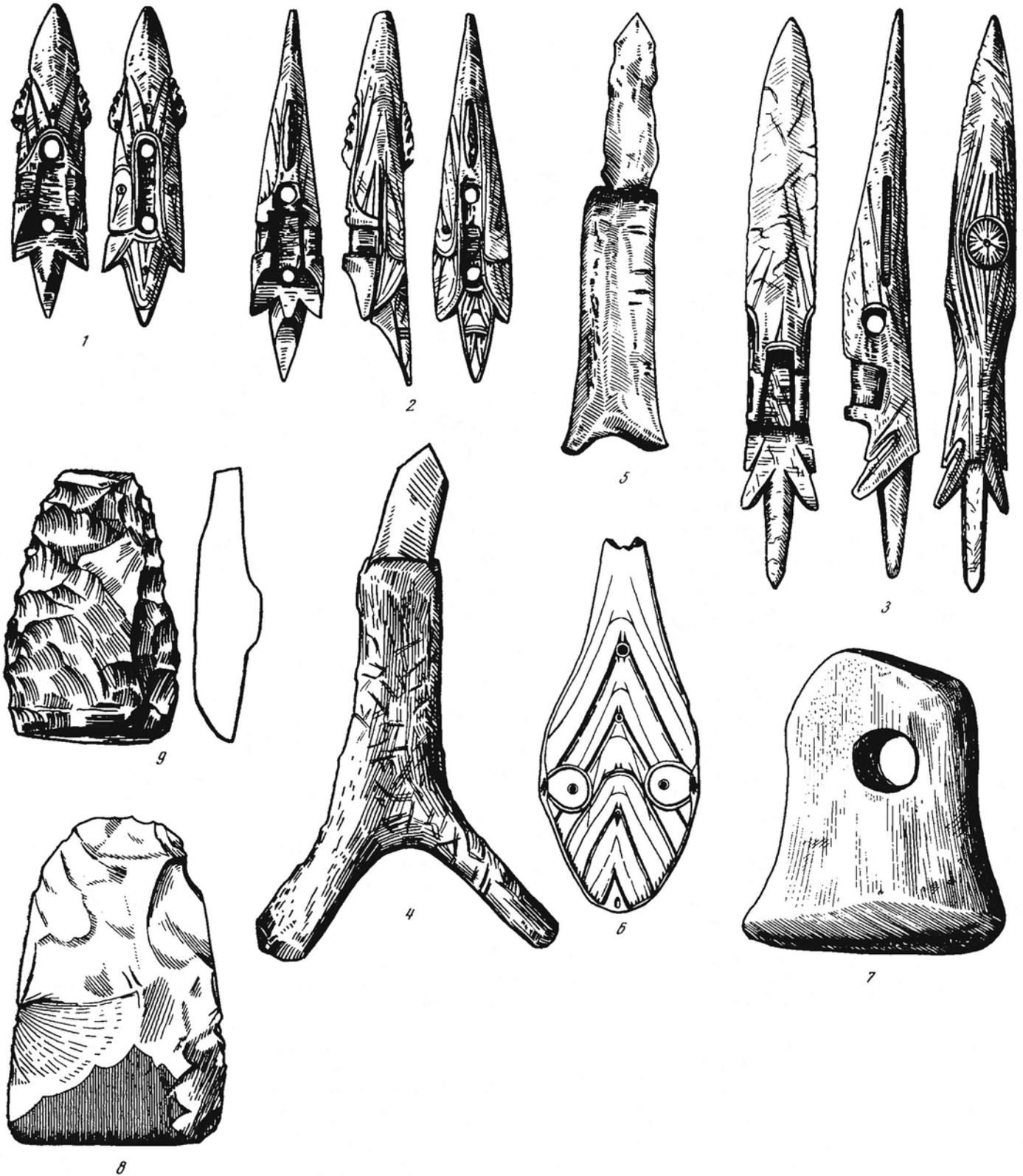


Figure 58. Inventory from Burial 35 (2/3 actual size). 1-3—Harpoon heads; 4, 5—Chisels; 6—Ornamented article; 7—Adze handle; 8, 9—Adzes.

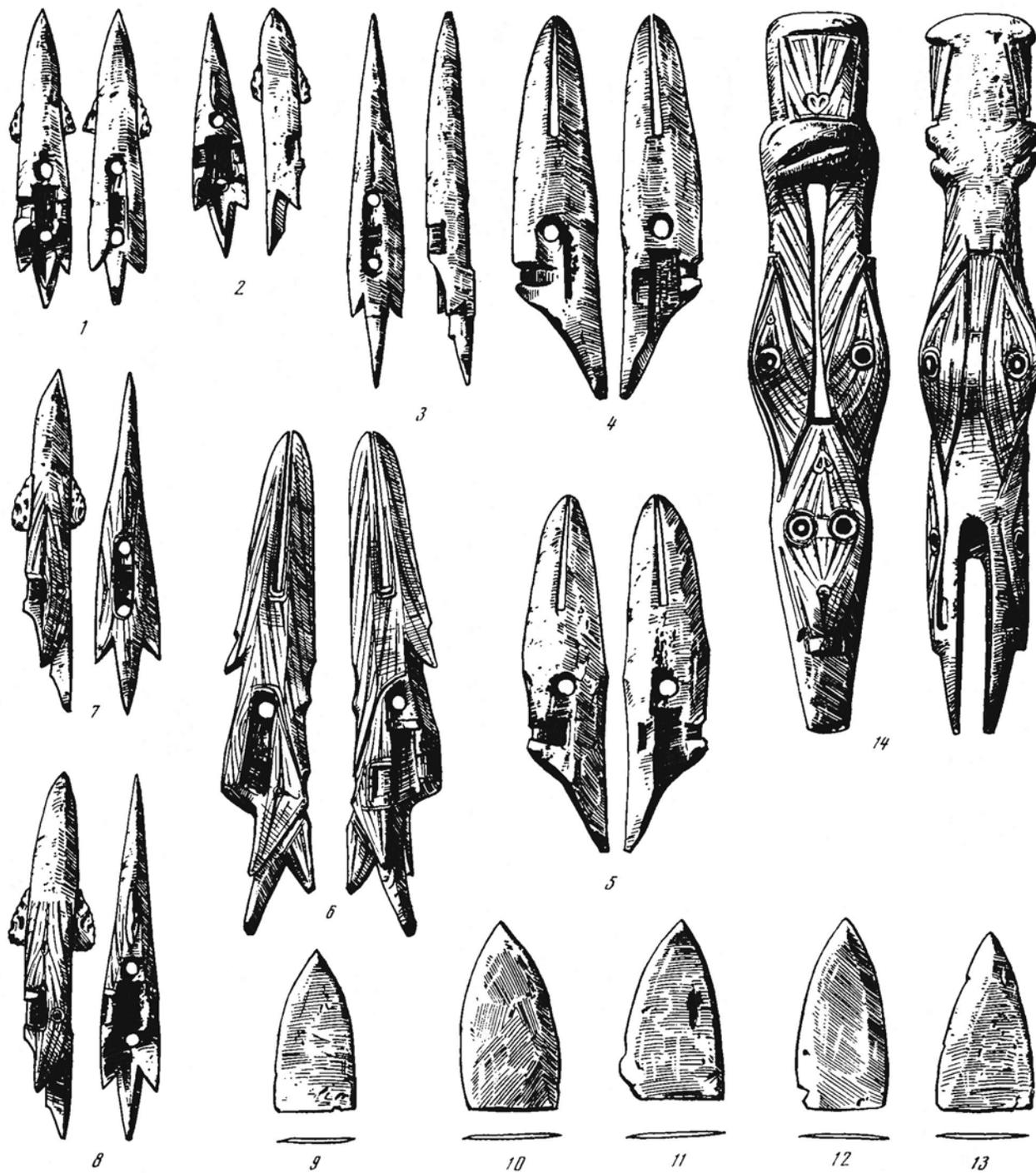


Figure 59. Harpoon complex from Burial 63 (1/2 actual size). 1-8—Harpoon heads; 9-13—End blades for harpoon heads; 14—Harpoon socket piece.

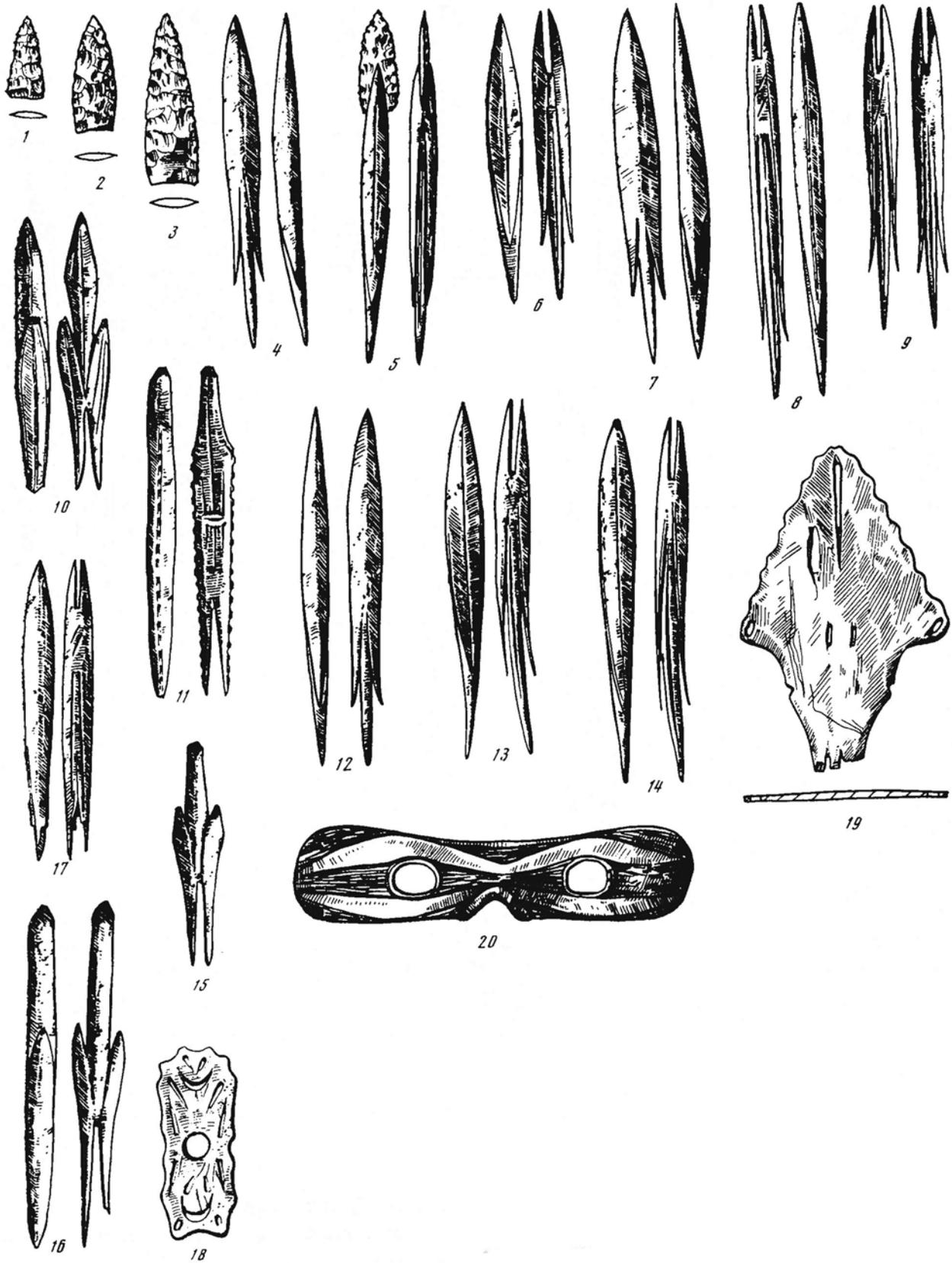


Figure 60. Arrowheads and other objects from Burial 63 (1/2 actual size). 1-3—End blades for arrowheads; 4-17—Arrowheads; 18-19—Plates, mouthpieces; 20—Snow goggles.

A number of ornamented walrus tusk plates with baleen inlay were found near the head of the grave. All the plates were in pairs with the exception of one, which was the most massive and convex (Fig. 61:1). Judging by their location and the slots in the plates, they were attached to a headdress (a richly decorated visor). Twin plates were probably placed symmetrically and an odd one was placed in the center. The Aleuts as well as some Yupik Eskimos, used to decorate their headdresses with carved plates, figurines, and beads still in the end of nineteenth century. Such wooden hats were used while hunting in kayaks. They protected the eyes against the splash of the waves and the sun's blinding rays.

Nine toggling harpoon heads were in the grave. The harpoon heads were decorated the same way as the "winged object" and other zoomorphic items, with typical Old Bering Sea decorations. Only one harpoon head among those nine had a different shape and design. That harpoon head is more typical of Okvik (Fig. 61:9).

Burial complex 182–188 is believed to have the largest number of skeletons found in a single complex (Fig. 32). Seven individuals were buried on a small plot of land. The structure was of a complex configuration, which framed the grave. The same type of structure was under the skeletons and was made of stone plates, whale scapulas, and whale mandibles. All the skeletons were placed in the grave simultaneously, though we can clearly distinguish two separate complexes: eastern (Burials 182–184) and western (Burials 185–188).

There was a rich inventory in all seven graves. The total of 376 objects gives us an idea of the material and spiritual culture of the people who lived during the end of the developed and beginning of late Old Bering Sea. This complex is much more recent than Burial 130, as seen from the shape of the "winged object" (Fig. 62) and the shape of the 31 harpoon heads.

These objects demonstrate the trends of structural development during the early Punuk stage. The objects shown in Figures 62–63 give only a partial indication of the richness of these burials.

Burial 55 dates to the same period. The ornamented plate has the same motifs (Fig. 64): eye-like circles and punctate curves similar to those found on the "winged object" and on the hook from Burial 183 (Fig. 62). The patterns of ornamentation are a continuation of the Old Bering Sea tradition, where decorations became larger and simpler, and less detailed. Only part of this plate is covered with engravings.

Those were the tendencies that would lead to the simple ornamental style of the Punuk period.

Two small items from Burial 183 (Fig. 62:11) and Burial 55 (Fig. 64:8) were even more interesting. The decoration on those objects was very different in principle from Old Bering Sea period ornamentation, which was based on zoomorphic motifs. Here we can also see the appearance of a very rare form of design: four petal flowers ("quatrefoils").

These design elements would experience a much longer existence than the curvilinear zoomorphic forms that were gradually disappearing.

Flower patterns are present in Chukchi and Eskimo embroidery even today, and now we can see that the art of embroidery developed among those people long ago, and not just as a response to modern influences. These patterns have at least 1,500 years of history. This long history is a feature of the more complex narrative forms found in the folklore. That is also illustrated by the ceramic stamp found in Burial 45. Some peculiarities exist in the inventory of this burial that make it very similar to Burial 183 (Fig. 62:1–2), i.e., the harpoon head has a fourth symmetrical spur and the spur is carved to resemble the flippers of an animal.

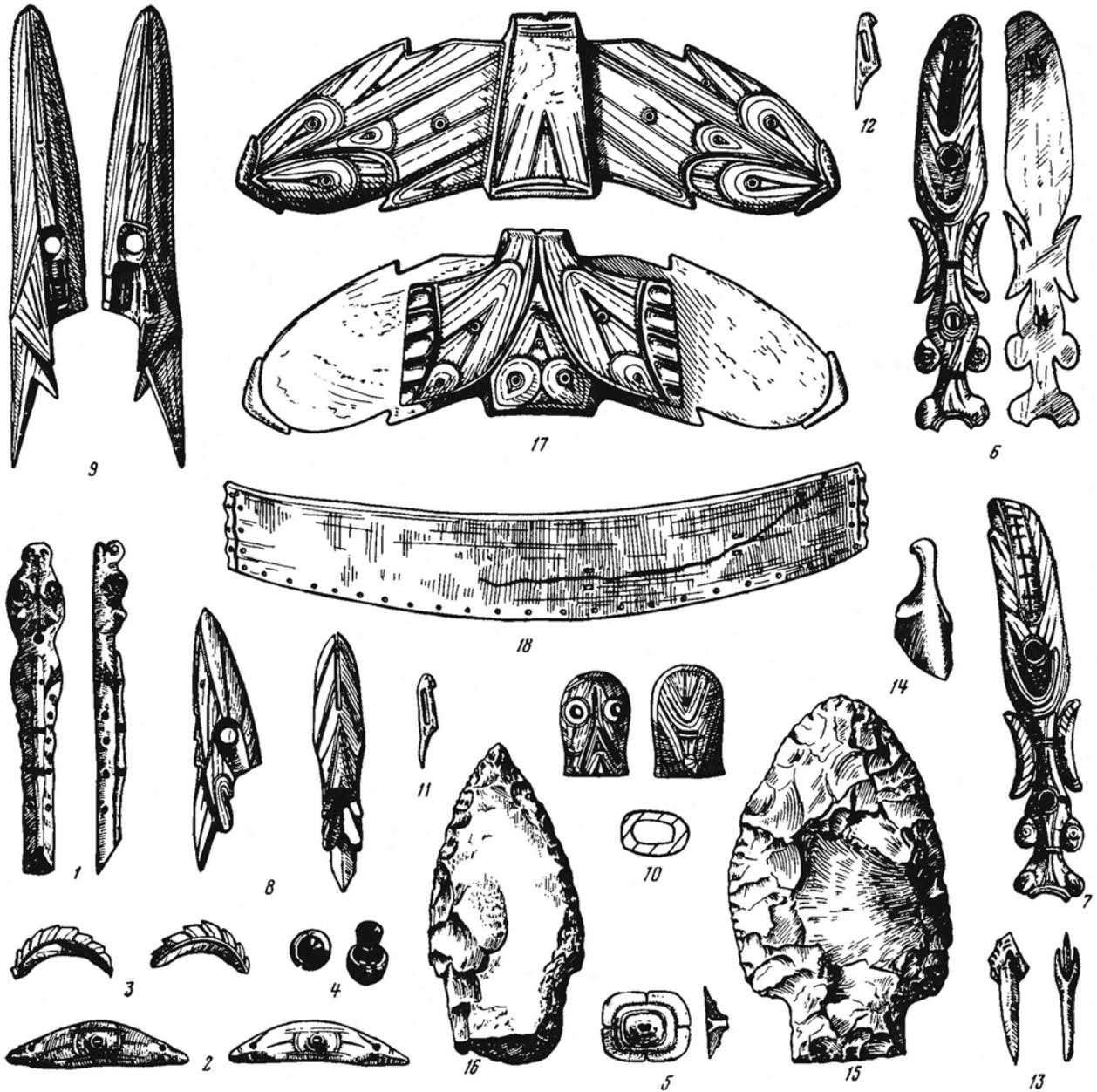


Figure 61. Inventory of Burial 130 (1/2 actual size). 1–7—Decoration plates and figurines for a visor; 8, 9—Harpoon head; 10—“Attachment” in shape of bear head; 11, 12—Details for fishing hooks; 13—Arrowhead (?); 14—Image of bird; 15, 16—Spear points; 17—“Winged objects”; 18—Plate for a belt hoop.

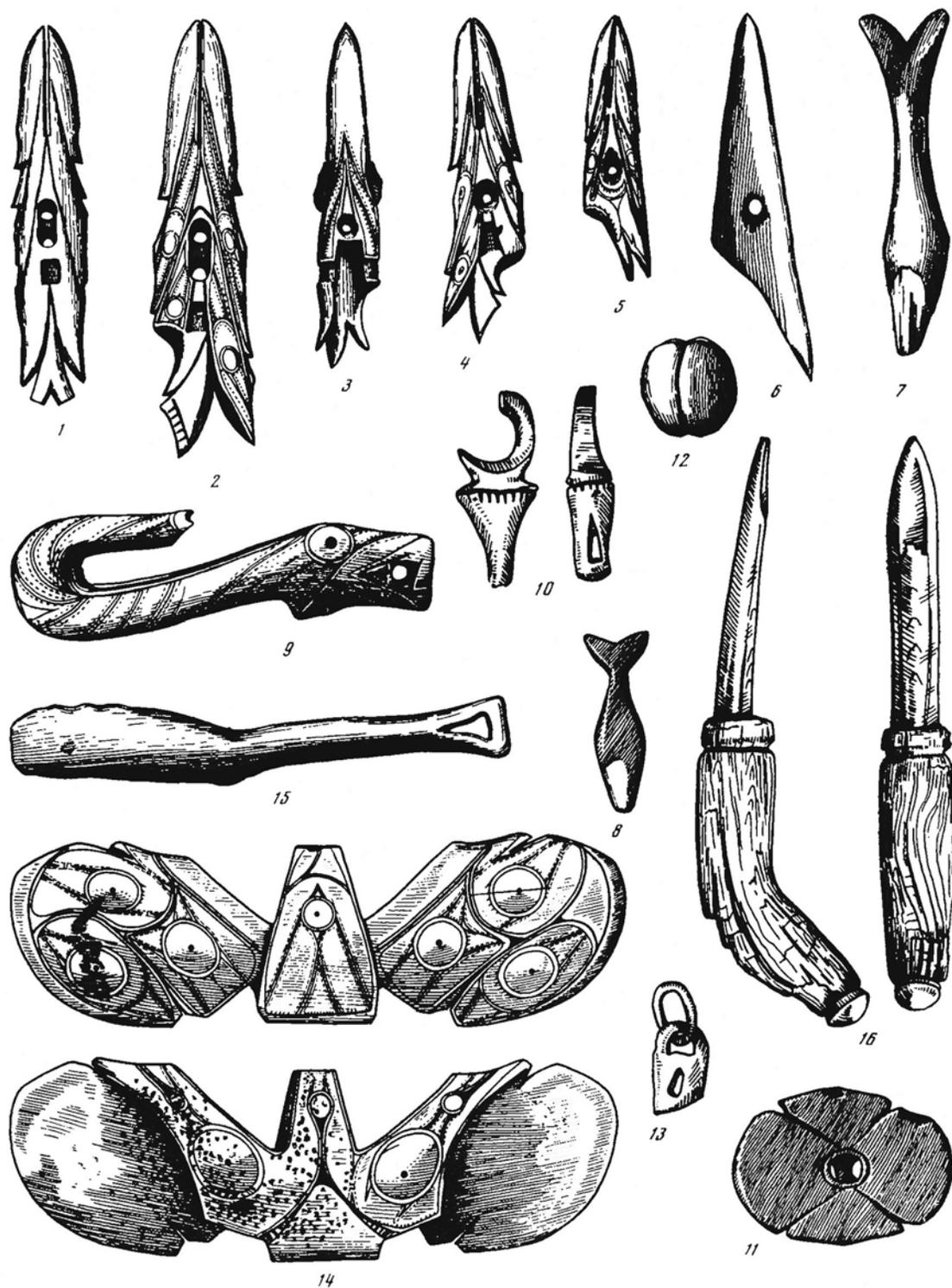


Figure 62. Inventory of Burials 183-184. (1/3 actual size). 1-6—Harpoon heads; 7, 8—Whale images; 9—Hook; 10—Fastening for pendants; 11—Button; 12—Sinker; 13—Trinket/pendant; 14—“Winged object”; 15—Knife handle; 16—Flaking tool.

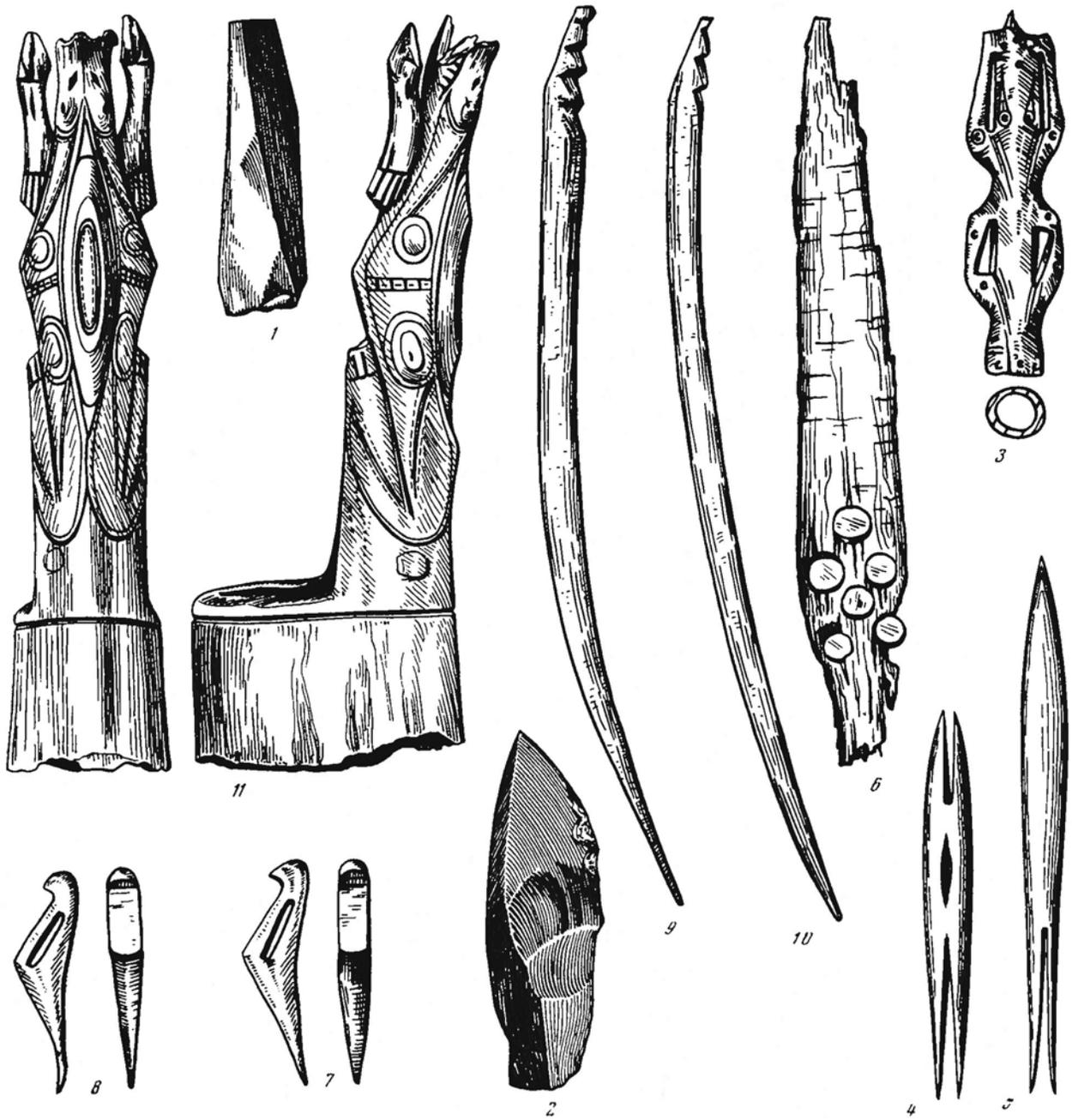


Figure 63. Inventory of Burials 183–184 (2/3 actual size). 1, 2—Stone chisels; 3—Needle-case; 4, 5—Arrowheads; 6—Fragment of spear thrower, “atl-atl”; 7, 8—Hooks for side prongs of complex fishing spear [leister?]; 9, 10—Part of side prongs of a complex spear; 11—Zoomorphic article.

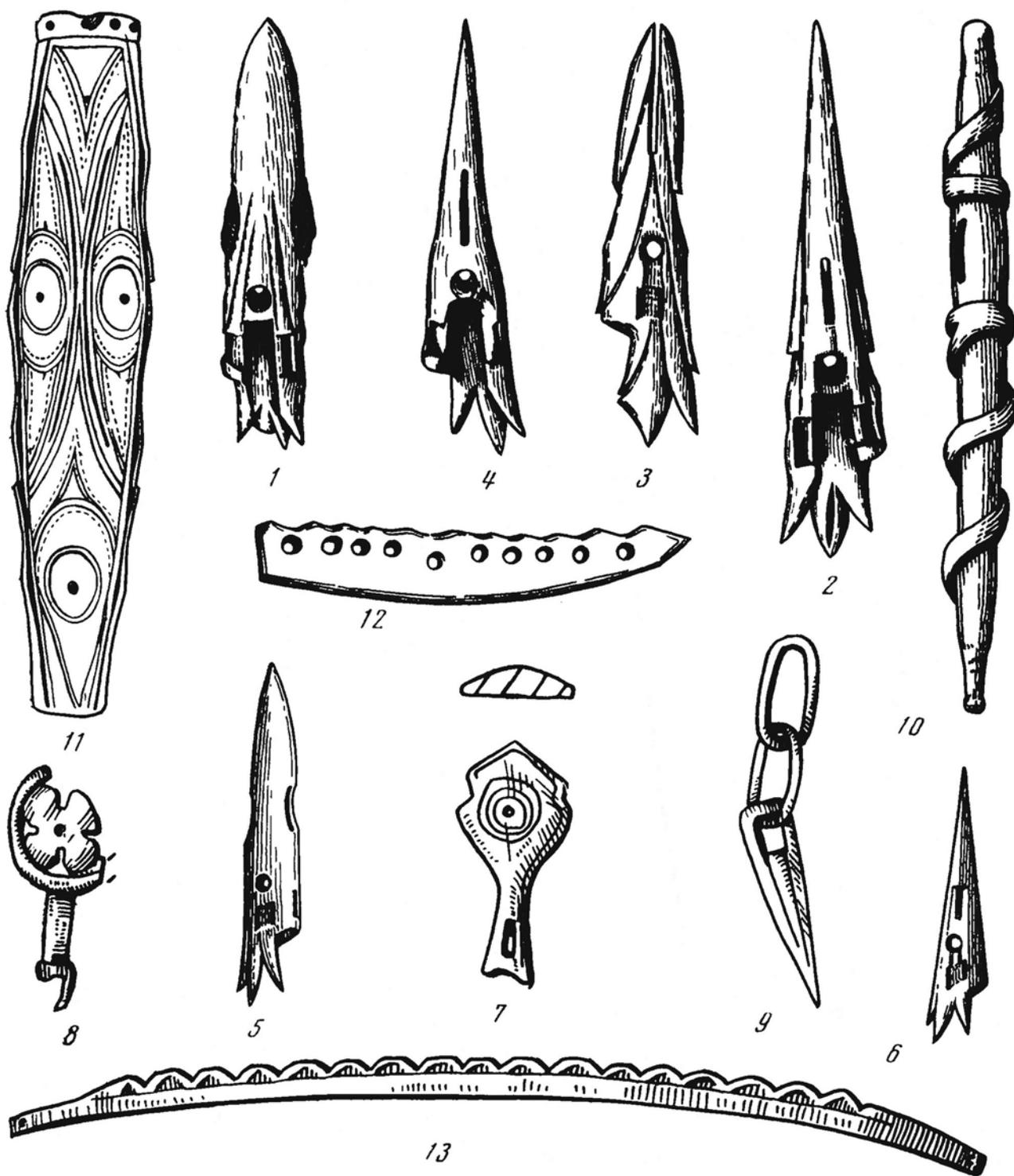


Figure 64. Inventory of Burial 55 (2/3 actual size). 1-6—Harpoon heads; 7, 8—Decorations; 9—Trinket with chain; 10—Spiral-shaped article (peg?); 11—Ornamented plate; 12—Model of runner “kanrack”; 13—Bracelet.

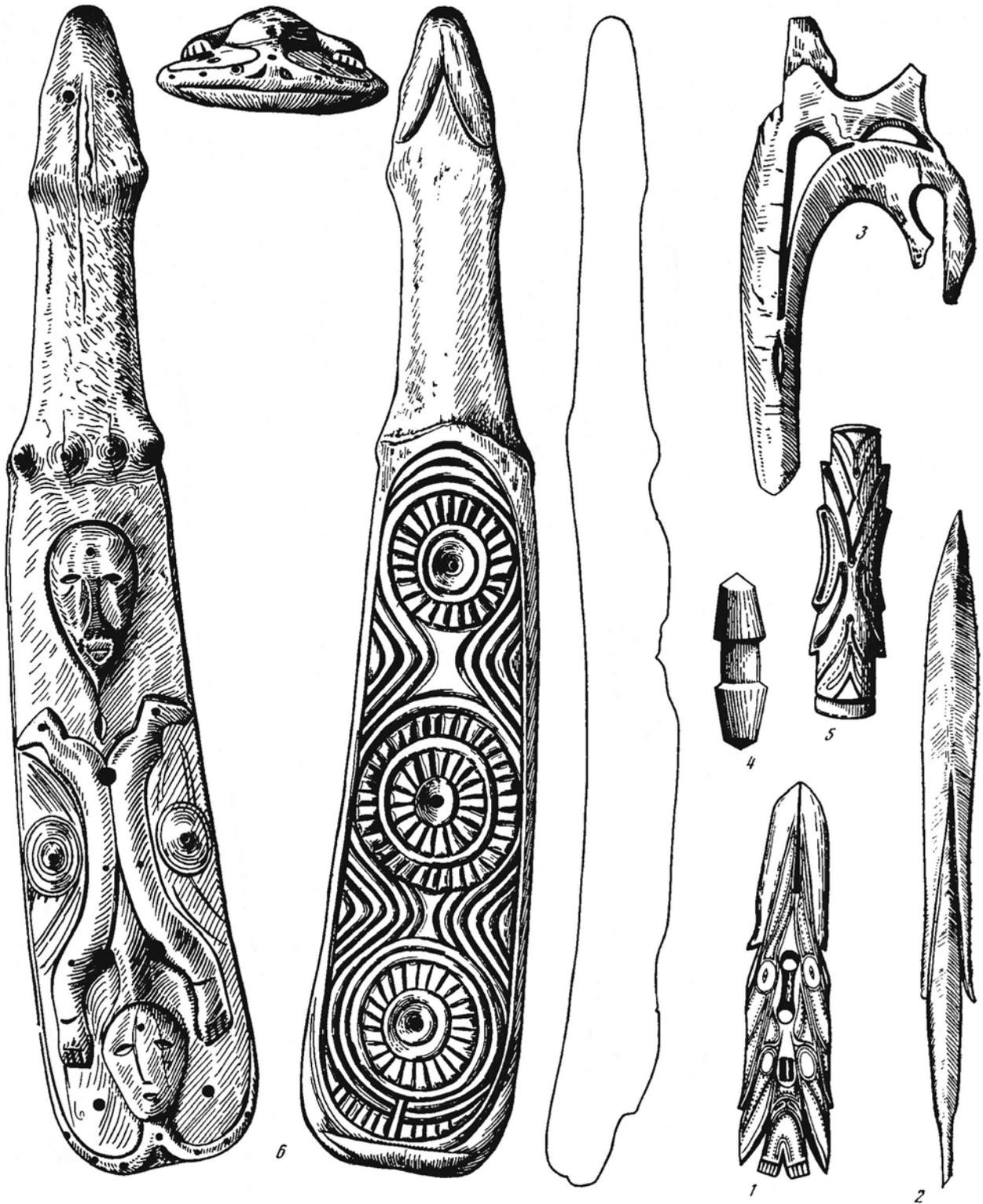


Figure 65. Inventory of Burial 45 (3/5 actual size). 1—Harpoon head; 2—Arrowhead; 3—Fragment of open-worked article; 4—Button; 5—Needle-case; 6—Ceramic stamp.

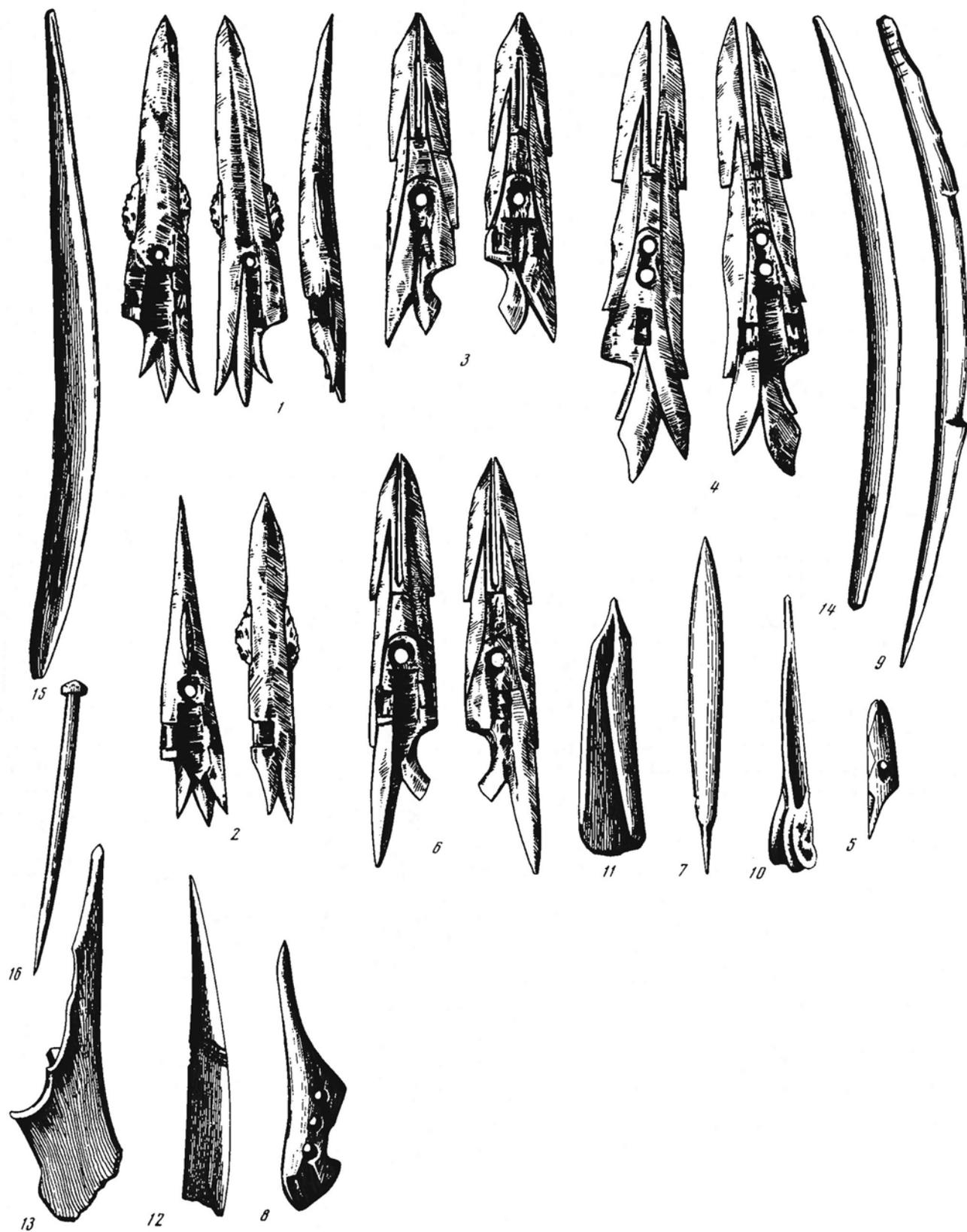


Figure 66. Inventory of Burial 56 (1/2 actual size). 1-6—Harpoon heads; 7—Arrowhead; 8—Boat hook; 9—Fish spear prong; 10—Awl made from a joint; 11—Awl from a long-bone; 12—Ivory awl; 13—Awl made from deer bone; 14, 15—Harpoon foreshafts; 16—Wound plug.

The ceramic stamp has a complex composition (Fig. 65), including faces, a human figure, and sea-mammal faces. The meaning of these images could be deciphered with the help of the Eskimo legend that is described in Chapter 6, but here we will only say that the meaning of the picture on the stamp would be clear to those familiar with the tribe's legend. This image might be regarded as the beginning of a pictographic writing system that had an auxiliary function. Such images were used as slides in illustrating the speech of a storyteller, that is, the storyteller showed the stamp during the telling of the legend.

Burial 45 was a double one (male and female). Women were the ones who made ceramics, but the stamp found in this burial was lying near the man's skeleton. Perhaps the stamp, like the legend, was the property of the entire tribe. The woman who entered the family as a wife and came from another tribe could use the tool but could not own the tool. In the grave, the stamp was placed near the man, because he was the one to keep and pass on the tribal traditions and customs.

Burial 56 might serve as an example of the long continuity of ritual customs. In fact, the grave was not for a person, but for a large complex of hunting equipment that was piled in a hollow and covered with a whale scapula (Fig. 66).

Until almost the twentieth century the Eskimos of the Bering Strait region had a custom of burying the equipment of a hunter who perished at sea.

So, the above-described complex of hunting equipment was, then, a cenotaph. There were six toggling harpoon heads, harpoon foreshafts, arrows, and other objects. This burial had one peculiarity—a large number of different awls made from walrus tusk, the joint part of a tubular bone, the central portion of a tubular bone, and distal leg bones of deer.

We can observe the gradual change from the Old Bering Sea tradition throughout the cemetery. The change is reflected in the harpoon heads and arrowheads of Burial 56, especially in some arrowheads that featured a simple laurel-leaf shape with one small notch in the base. This form is similar to that of the Punuk tradition. Such arrowheads are uncommon in the Ekven cemetery.

Other burials had arrowheads with forms more characteristic of the Old Bering Sea tradition: they had two or more side notches and retouched stone end blades. The microliths inserted in the harpoon head found in Burials 161–162 were an example of the old microlithic technique (Fig. 67:1). Such a technique, best preserved in harpoon heads with lateral insets, was also found in other hunting tools. A spear from Burial 168–169 had the same type of microlithic insets (Fig. 44).

A great variety of blunt arrowheads were found, which were used for hunting birds and small fur-bearing mammals. These heads were richly ornamented.

The ornamentation found on the arrowheads with end blades was less elaborate. Although there were markings on some of them, these markings could be interpreted to be property marks (Fig. 67:4–6).

The typology of the end blades of the arrowheads is very interesting. The shape and form are very similar to those used by Indians and some Eskimo people of North America. These had a split basal end and sometimes they narrowed, which gave the end blade a fish shape (Fig. 68:2). Other end blades, with an oval or laurel-leaf shape, were similar to the style used by people of the Ipiutak tradition (Bandi 1969:55–56; Harp 1964:37).

Knife construction showed even greater variation among cultural traditions. Along with the common, elongated oval, and pointed, ground-slate knives, there were others that had a dagger shape and were similar to retouched spear points, but bigger (Fig. 68:12). The dagger-shaped and elongated, pointed knives were only made of stone or bone (Fig. 68:15). The bone dagger-shaped knife had a distinct central convexity, which is an indication that it was patterned after a metal knife. Such patterning could have come to early Eskimos from the coastal regions where stone knives patterned after metal knives were known as far back as the first millennium B.C. (Fig. 68:17).

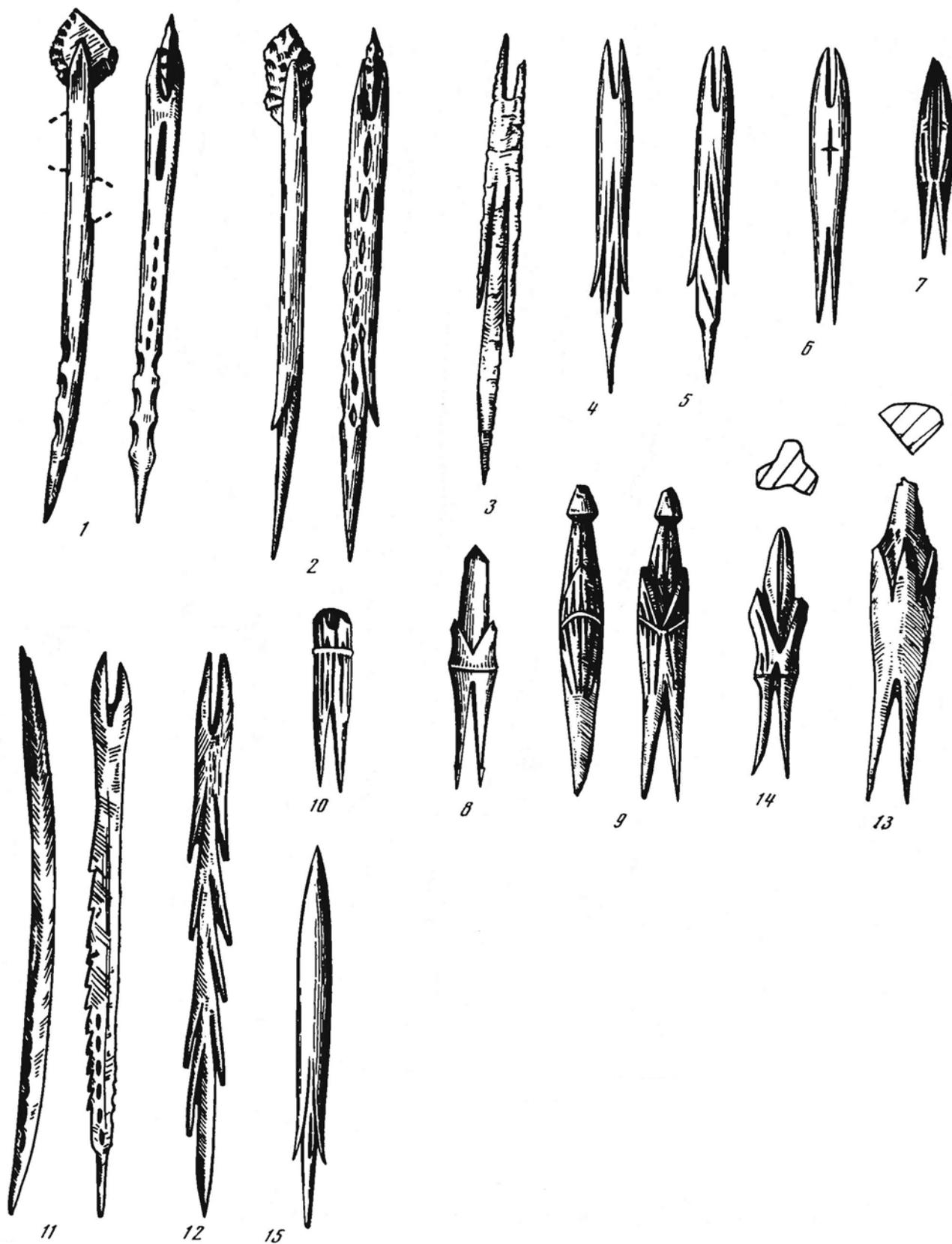


Figure 67. Arrowheads (3/5 actual size). 1—Burial 161; 2—Burial 187; 3—Burial 28; 4, 5—Burial 44; 6—Burial 139; 7—Burial 42; 8—Burial 40; 9—Burial 68; 10—Burial 42; 11—Burial 161; 12—Burial 140; 13—Burial 83; 14—Burial 68; 15—Burial 42.

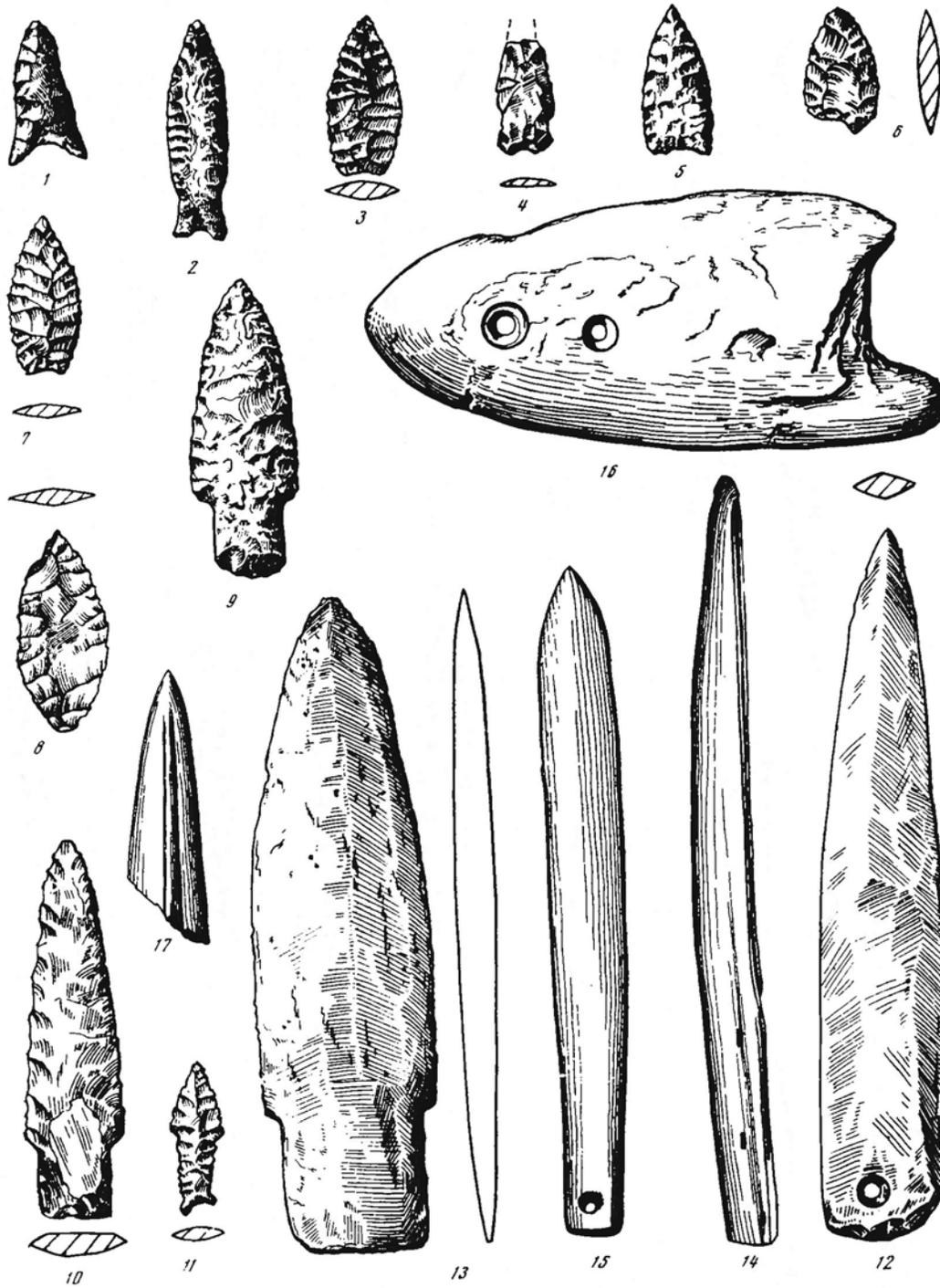


Figure 68. End blades and knives (1/2 actual size). 1—Burial 133; 2—Burial 144; 3—Burial 71; 4—7—Burial 15; 8—Burial 143; 9, 10—Burial 157; 11—Burial 141; 12—Burial 99; 13—Burial 31; 14, 15—Burial 143; 16—Burial 139; 17—Burial 108.

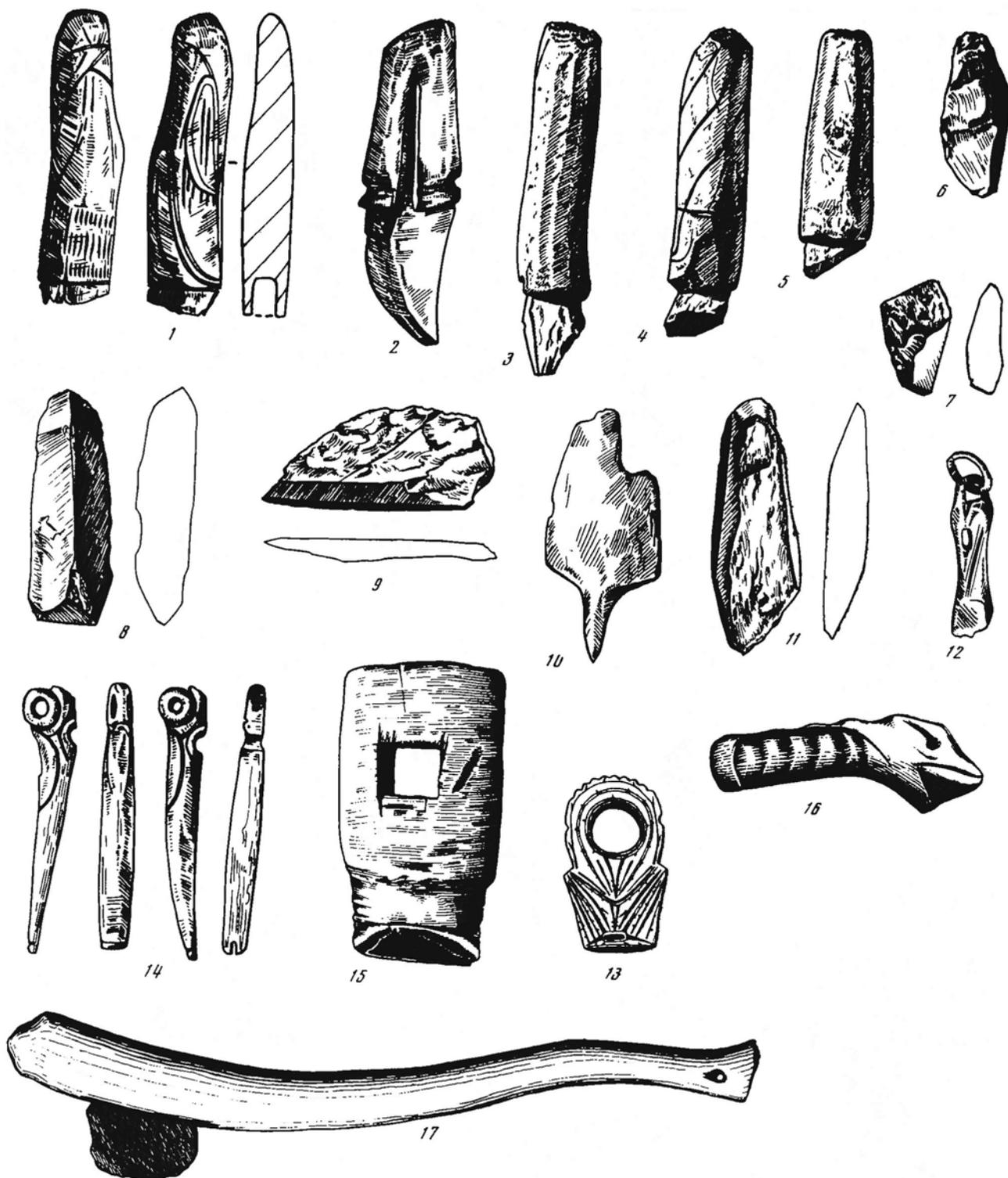


Figure 69. Chisels and handles (1/2 actual size). 1—Burial 92; 2—Burial 40; 3—Burial 144; 4—Burial 150; 5—Burial 125; 6—Burial 150; 7—Burial 139; 8—Burial 140; 9—Burial 150; 10—Burial 5; 11—Burial 150; 12—Burial 49; 13—Burial 42; 14—Burial 142; 15—Burial 170; 16—Burial 137; 17—Burial 168 (1/4 actual size).

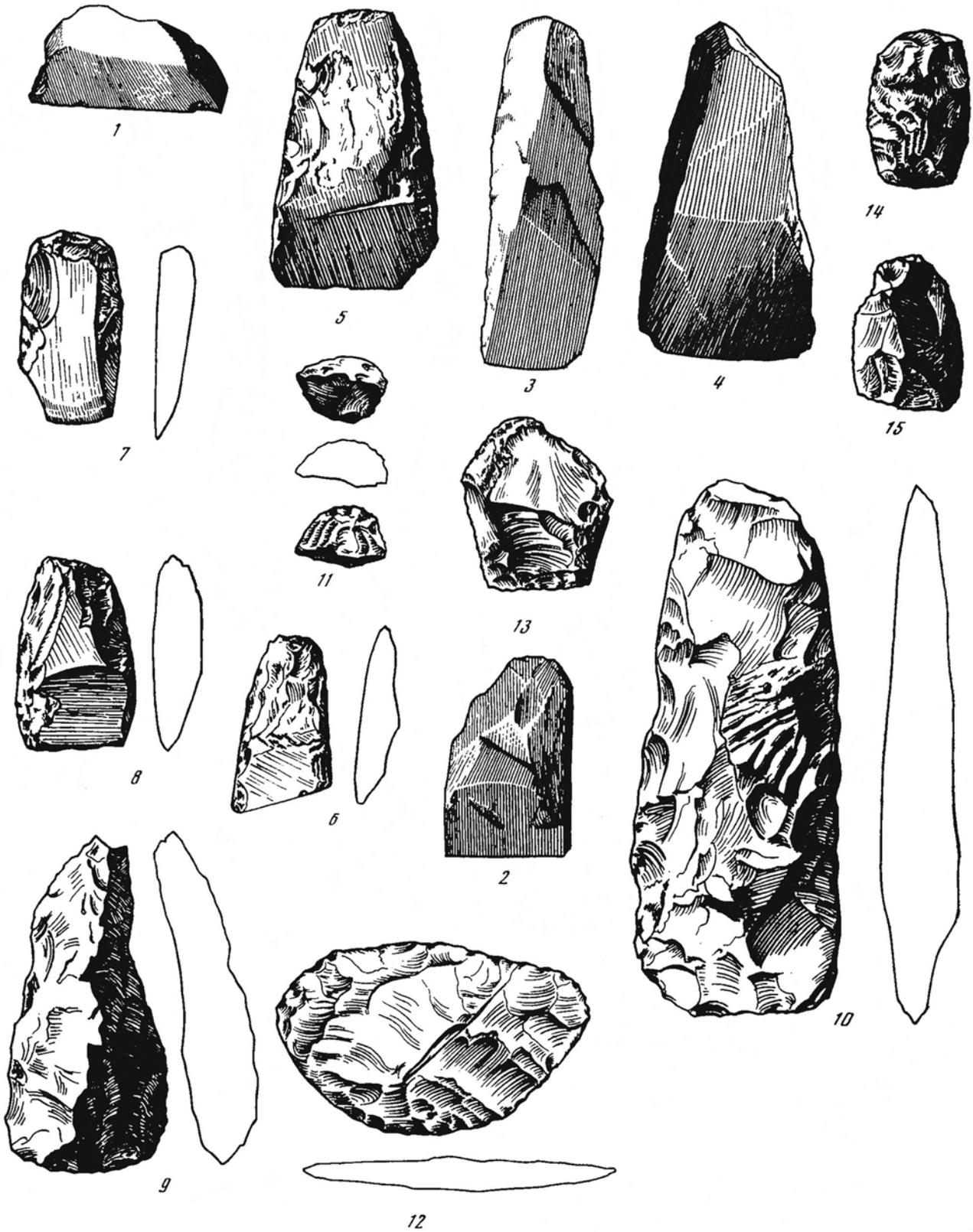


Figure 70. Scrapers and adzes. (3/5 actual size). 1—Burial 189; 2—Burial 139; 3—Burial 165; 4—Burial 168; 5, 6—Burial 150; 7—Burial 140; 8—Burial 133; 9—Burial 137; 10—Burial 141; 11—Burial 126; 12—Burial 101; 13—Burial 135; 14—Burial 143; 15—Burial 141.

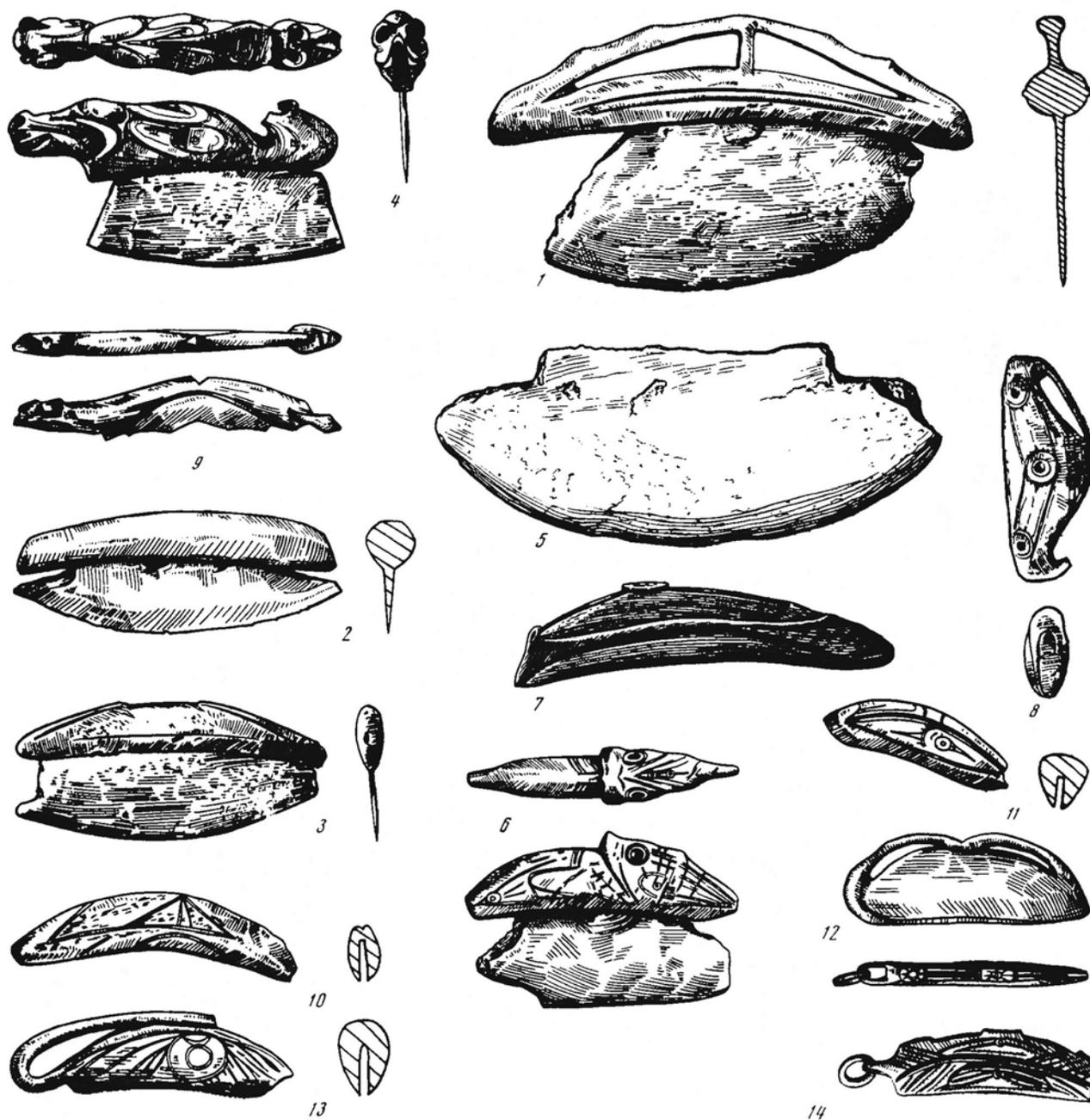


Figure 71. Ulus (1/2 actual size). 1—Burial 17; 2—Burial 29; 3, 4—Burial 88; 5—Burial 144; 6—Burial 25; 7—Burial 168; 8—Burial 102; 9—Burial 68; 10, 11—Burial 137; 12—Burial 49; 13—Burial 140; 14—Burial 28.

Along with these late forms of knives in the Ekven cemetery were the remains of the old microlithic tradition. The microlithic tradition was seen more frequently than just with the insets in the harpoon heads, spear heads, and arrowheads. It was also seen in another manner of attaching microliths. These microliths could be inserted in a single row in a groove on one side of an instrument, forming an unbroken cutting edge (Fig. 68:14).

There were many different adzes (ground and percussion flaked), scrapers, burin, and engraving tools in the Ekven cemetery (Figs. 69–70). Many of these tools had antler and bone handles. The burin handle depicted in the drawing was used for holding a metal blade (Fig. 69:15). Another such engraving tool with an iron burin was found earlier in the Uelen cemetery and dates back to the Old Bering Sea period.

Special attention should be given to a fighting axe that was very similar to the Indian tomahawk, and had a handle made from a walrus ousic.

Many different ulu knives were found among women's grave goods. The sizes differ, as some were used for processing animals, while others were used to remove fat from the hide and cut the fat for rendering. The size of the blade and style of the handle depended on the ulu's intended use. There were ulus for cooking purposes, for cutting skins and for other purposes.

The handles of the ulus were often decorated with carvings or ornamentation. Sometimes the handle imitated the head or even entire body of an animal (Fig. 71). Even today, Eskimo women living in the regions from Chukot Peninsula to Greenland use ulus, though the stone blade has been replaced with steel or iron blades.

Ceramic stamps are also part of a woman's grave goods (Fig. 72). Sometimes the stamps were decorated with complex carved patterns, for example, the stamp from Burial 45 (Fig. 65). The handles of these instruments were decorated with animal heads, such as a polar bear head (Burial 45), the tail of a sea mammal (Fig. 72, Burial 155), or a man's face (Figs. 65 and 72).

In some cases, the handles are plain and without any ornamentation. And the stamp found in Burial 145 had a handle with special hollows for fingers. Similar finger grooves are frequently found on the adze handles and throwing boards of the Aleuts.

Usually the worked side of a stamp has carved concentric circles and semicircles. These designs were then stamped into wet clay that was being made into a vessel. Fragments of ceramics with such imprints were found in some graves (Figures 73: 9, 10).

Sometimes the pattern on a stamp consists of simple parallel incisions (Fig. 57). The stamp found in Burial 154 was made from a fragment of a sled runner (*kanrak*), which may explain the unusual pattern. All the stamps found in the graves were made from walrus tusk.



Figure 72. Stamps for ceramics. (1/2 actual size). 1—Burial 146; 2—Burial 155; 3—Burial 15; 4—Burial 127; 5—Burial 75 (1/3 actual size).

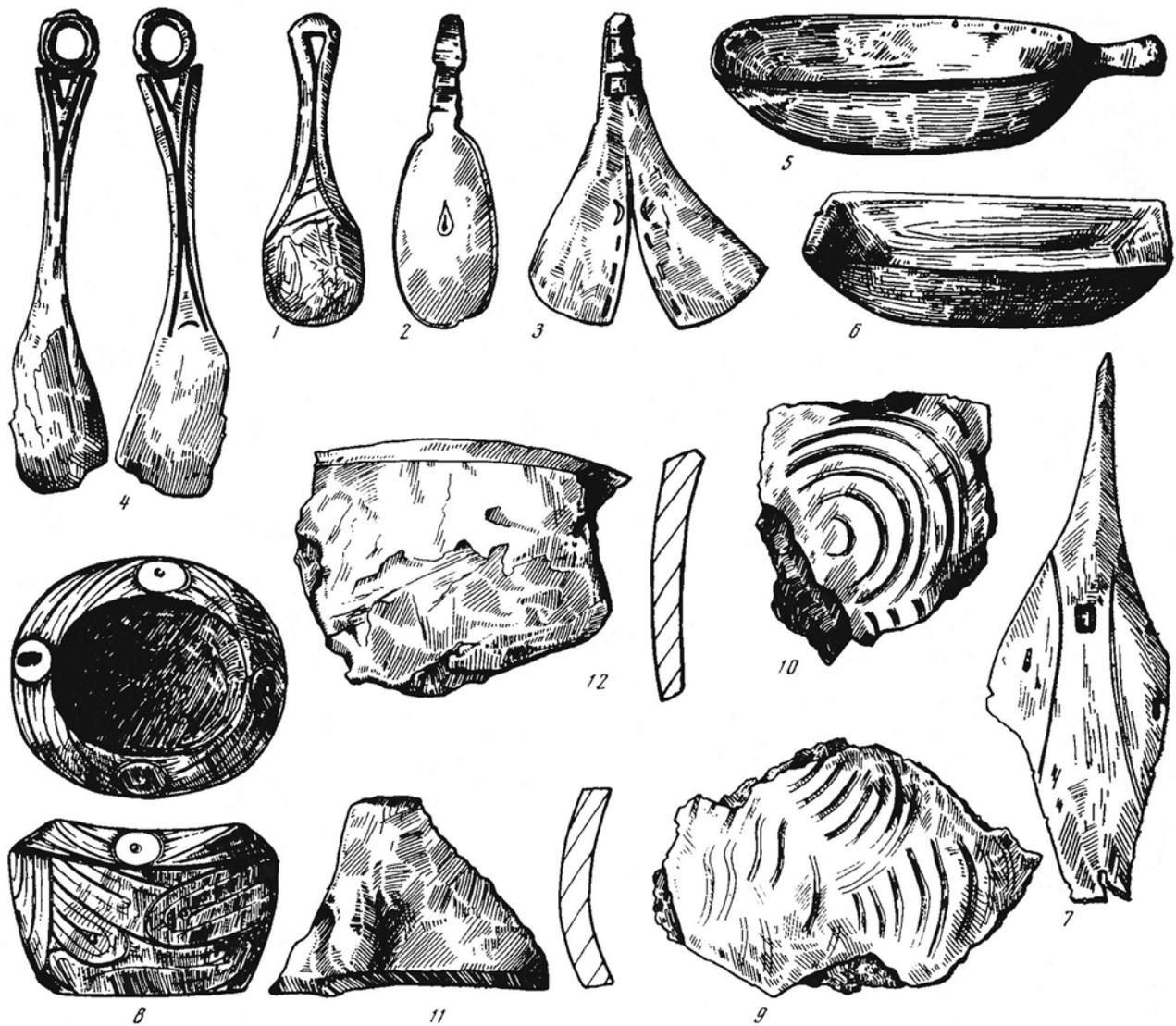


Figure 73. Spoons and vessels (1/2 actual size). 1—Burial 140; 2—Burial 83; 3—Burial 65; 4—Burial 137; 5—Burial 98; 6—Burial 132; 7—Burial 144; 8—Burial 102; 9–11—Ceramics from Burial 100; 12—Ceramics from Burial 8.

Different bone spoons, shovels, and troughs were also part of a woman's grave goods (Fig. 73).

Needle cases that were found in some graves are also associated with women (Fig. 74). Bone needles were very fragile and had to be contained in special needle cases. The construction of the needle case was always the same—a hollow tube and a long piece of thin, soft leather that had needles piercing it pulled into the tube. A stopper was on the end of the leather strip, which closed the bottom of the needle case.

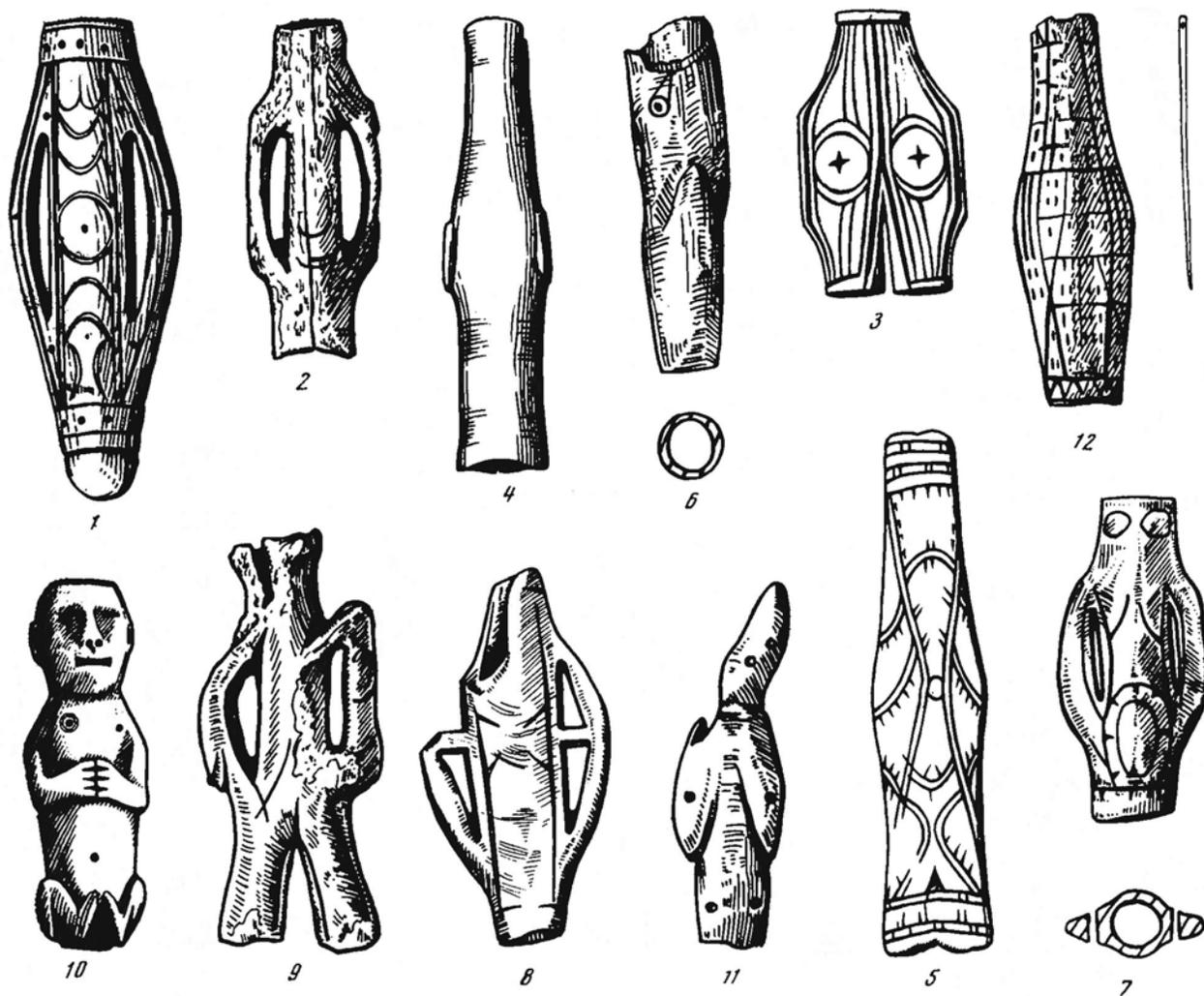


Figure 74. Needle cases (3/4 actual size). 1—Burial 155; 2—Burial 135; 3, 4—Burial 44; 5—Burial 158; 6—Burial 139; 7—Burial 18; 8—Burial 52; 9—Burial 143; 10—Burial 49; 11—Burial 43; 12—Burial 129.

The most common type of needle case was a tube with lateral wings. The ornamentation of a needle case can help determine the age of a burial if there are no other datable objects. Sometimes the needle cases had zoomorphic or anthropomorphic shapes (Fig. 74:10).

The ornamentation and decoration of the needle cases, though varied, were strictly limited by the functional shape of the object. The same is not true with other elements of women's tools, such as pail handles. These vessels themselves were not preserved, perhaps because they were made of perishable material such as leather, thin wood, or baleen.

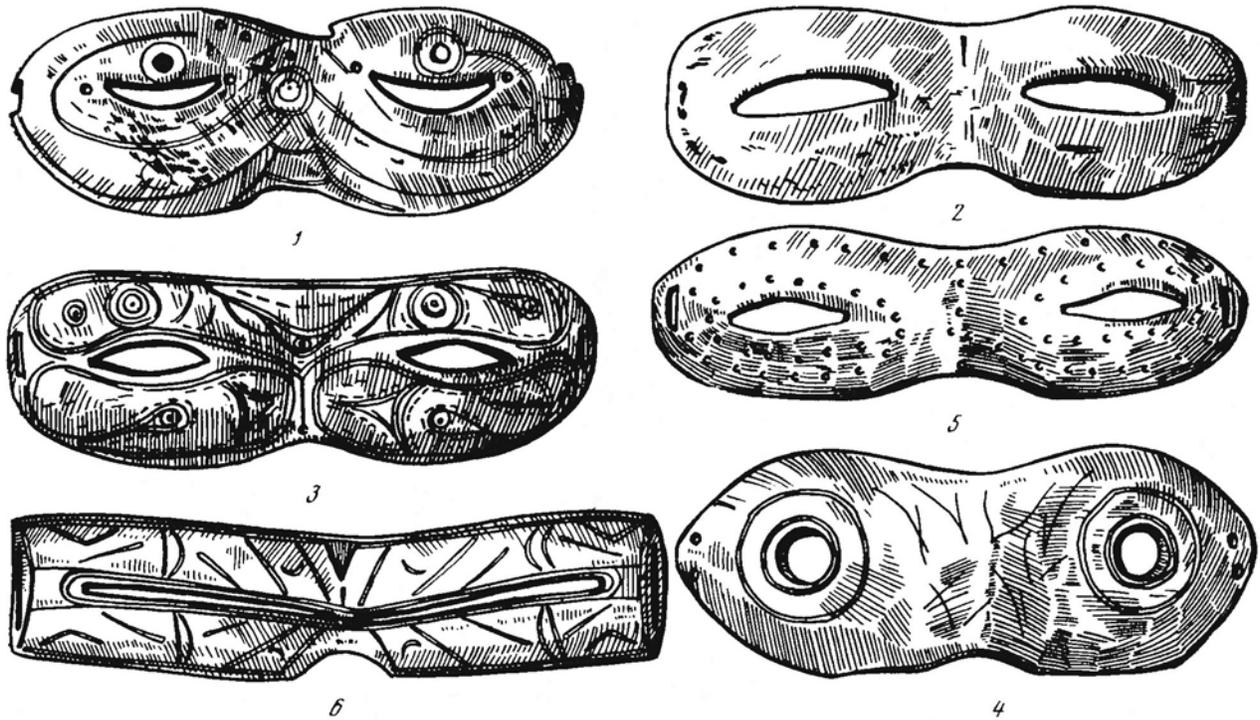


Figure 75. Snow goggles (2/3 actual size). 1—Burial 140; 2—Burial 185; 3—Burial 155; 4—Burial 187; 5—Burial 155; 6—Burial 35.

Judging by the small size and rich ornamentation of some handles, the vessels, at least in some cases, had a ritual meaning. Vessels with more massive handles were used in household life.

A handle for a pail is not a very complicated device, which is why it allowed the freedom for variation in decoration. Some of these variations are presented in Figure 76. There are also specimens of handles with a fastening on only one side. One of these was made of walrus tusk (Fig. 76:6), and another was made of antler (Figure 76:16). Yet another wooden handle (Fig. 76:17) must have served as a drum handle, since baleen remains are still in the very place the handle was attached to the drum.

The ornamentation on snow goggles also varied (Fig. 75). Within the same grave, we find goggles with very complicated patterns of the Old Bering Sea tradition and goggles with a simple row of dots (Burial 175). Sometimes there is no decoration at all on the goggles.

The forms of the goggles vary, too (oval, semi-oval, oblong, rectangular), with many different shapes for eye holes (oblong, laurel-leaf shaped, half moon, round).

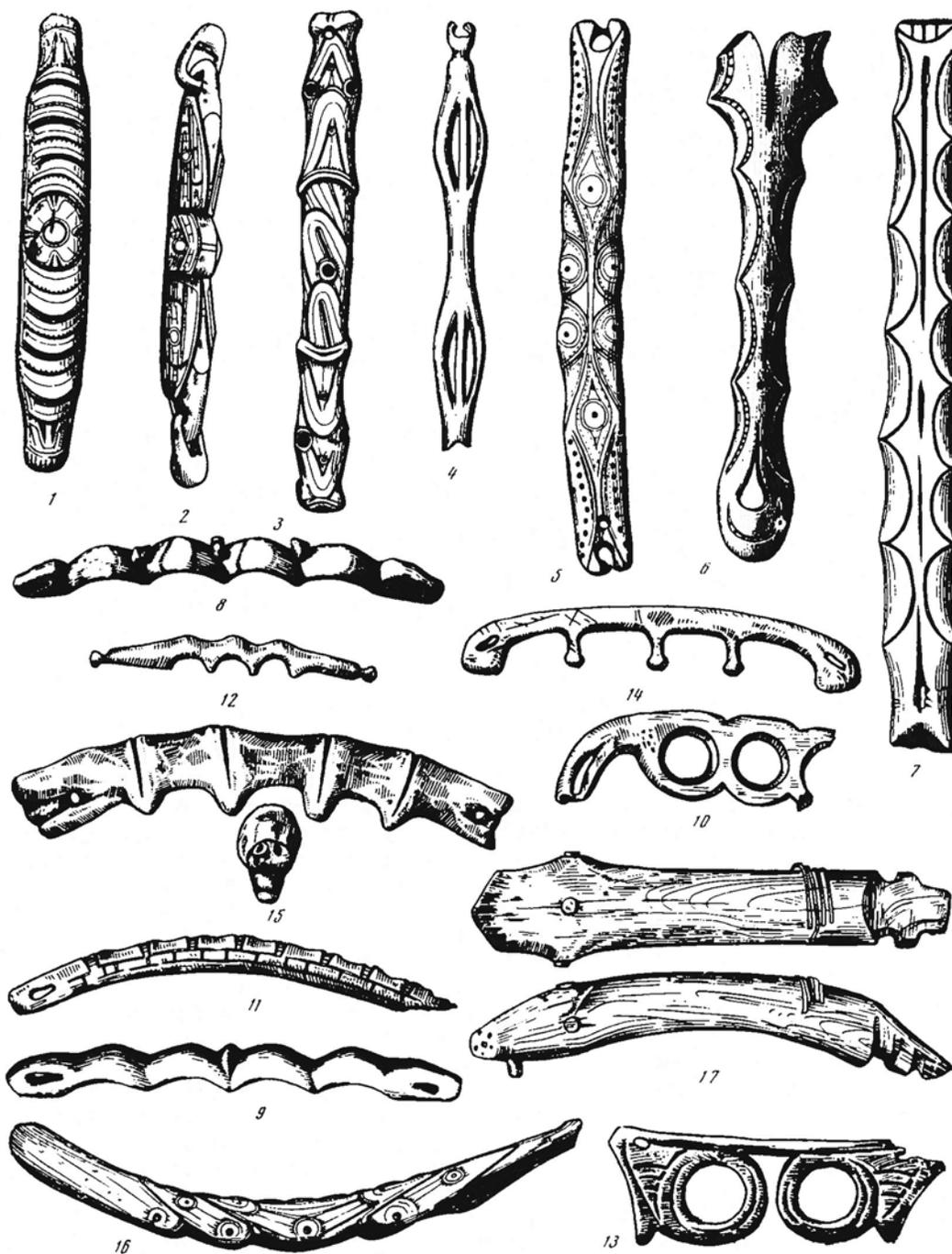


Figure 76. Vessel handles (1/2 actual size). 1—Burial 71; 2—Burial 15; 3—Burial 59; 4—Burial 65; 5—Burial 54; 6—Burial 168; 7—Burial 139; 8—Burial 141; 9—Burial 95; 10—Burial 97; 11—Burial 144; 12—Burial 139; 13—Burial 102; 14—Burial 111; 15—Burial 15; 16—Burial 137; 17—Burial 95.

It is very difficult to differentiate between hunting gear, household tools, and objects that have only aesthetic purposes in the Old Bering Sea culture. Usually all three are combined in a single object. In some cases, it was the usefulness of the tool that was more vital, in other cases it was more important as a piece of art, although it might still be used as a tool in the household. Some of the articles might be purely decorative, although in that case we cannot omit the possibility that they had some secret ritual and magical meaning. Plates were found that must have been sewn on clothing or used as pendants. Some articles of walrus tusk were used as decorative inlays for wooden items, often for women's jewelry, fasteners, necklaces, bracelets, etc. (Fig. 82).

Some buttons, amulets, harpoon rests, towing toggles, burin handles, knife handles, and staff heads (Figs. 77–82) are real masterpieces of miniature art.

Many utensils were adorned with zoomorphic or anthropomorphic shapes (Fig. 78).

The lower portion of one large, massive walrus-tusk hook looks like the mouth of a sea mammal (Fig. 78:1). The bone drum handle from Burial 57 was decorated with walrus heads (Fig. 78:3). A towing toggle found in Burial 139 was made in the image of a seal with an outstretched head and flippers extended behind (Fig. 78:2).

A massive hook for transporting a whale or for setting a sail was found in Burial 100 and had both zoomorphic and anthropomorphic features (Fig. 78:5). Outlines of a spread-out bear pelt were on the sides of the hook, which dates to the early Punuk tradition, though such ornamentation was used even earlier, in the Old Bering Sea period. Besides the image of the polar bear figure and head, there were three drill rests (two of them in side view, very stylized), but we can see the polar bear with its mouth open, and its paws hidden under its torso (Fig. 79:5).

Polar bear heads usually decorated the handles of mattocks (Fig. 79:8), adzes, and drill rests (Fig. 79:9).

Very often an image of a bear head is accompanied by carved images of walrus heads, seal heads, and other mammals' heads.

Drill rests for starting fires were sometimes decorated with sculpted images of polar bear heads. Based on data from informants, they used special round (ritual) drill rests similar to the one found in Burial 155 (Fig. 79:2) for starting the fire for the spring sun festival.

When they were starting a fire for a sacred feast, a male hunter was clad in a special white raincoat made from walrus intestines hardened in the frost.

Special combs (Figs. 78 and 80) for “combing” grass were connected with fortune telling. The upper part of one comb handle looks like a seated man (similar figures have been found on Aleut hats from the beginning of the nineteenth century). Such combs were used for combing grass for boot insoles. If the hunter was away from the village for a very long time or was late returning from a hunt on the ice, the women combed some grass thoroughly and placed it in new boots. In the evening they hung the boots in the corner of the house, and in the morning they looked to see how the inner sole laid. If the inner sole had remained unchanged the hunter was safe; if the shape had changed the relatives knew that something had happened to the man. This custom continued unchanged until the beginning of the twentieth century.

Not all the objects found in these burials have clear explanations of their purpose and function. There aren't even any explanations in folklore or ethnographic descriptions of rituals and customs.

Among the objects that remain a puzzle to us are a walrus-tusk sculpted image of a frog in Burial 144 (Fig. 80:11). The fact that the image of a frog was found in an ancient Bering Strait cemetery leads us to assume that an Eskimo may have managed to travel far enough south to reach regions where frogs live.

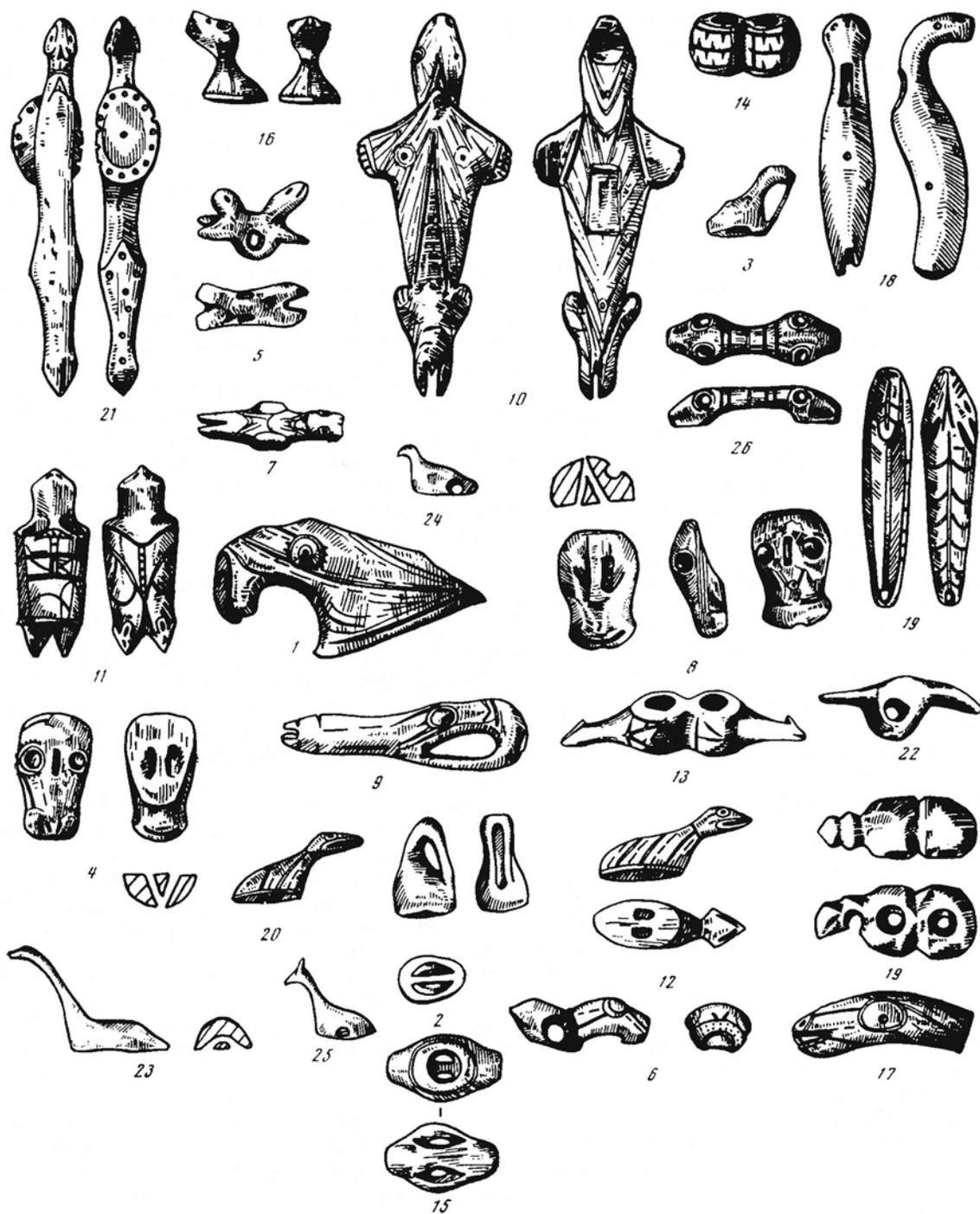


Figure 77. Small zoomorphic articles (clasps, trinkets, pendants). (3/4 actual size). 1—Burial 137; 2—Burial 43; 3—Burial 140; 4—Burial 137; 5—Burial 141; 6—Burial 15; 7—Burial 139; 8—Burial 137; 9—Burial 5; 10—Burial 102; 11—Burial 155; 12—Burial 139; 13—Burial 136; 14—Burial 186; 15—Burial 139; 16—Burial 88; 17—Burial 71; 18—Burial 5; 19—Burial 189; 20—Burial 125; 21—Burial 125; 22—Burial 168; 23—Burial 15; 24—Burial 15; 25—Burial 17; 26—Burial 141.

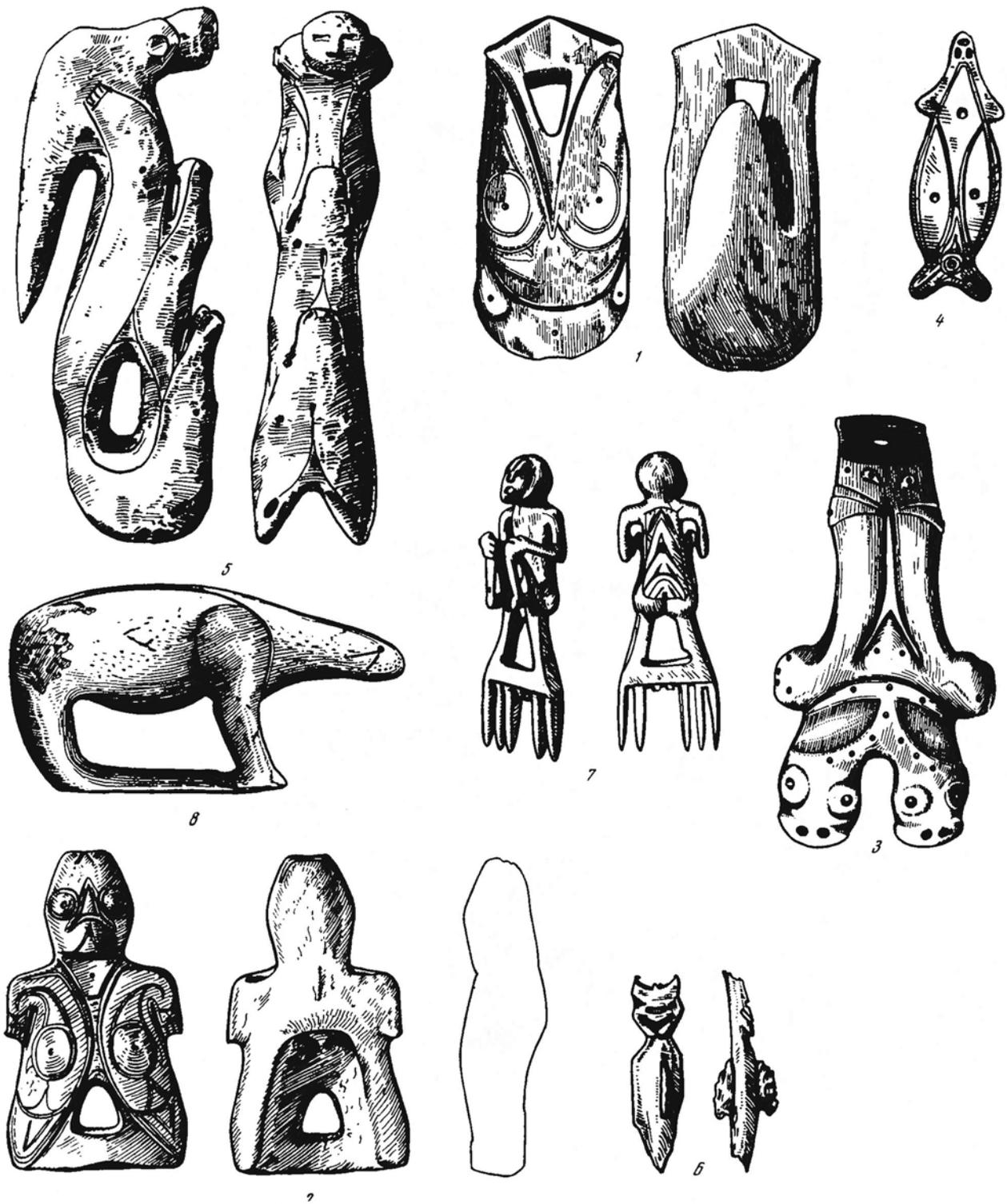


Figure 78. Anthropomorphic carvings (3/5 actual size). 1—Burial 143; 2—Burial 139; 3—Burial 57; 4—Burial 57; 5—Burial 100; 6—Burial 166; 7—Burial 132; 8—Image of bear from quadrant O_B-174.

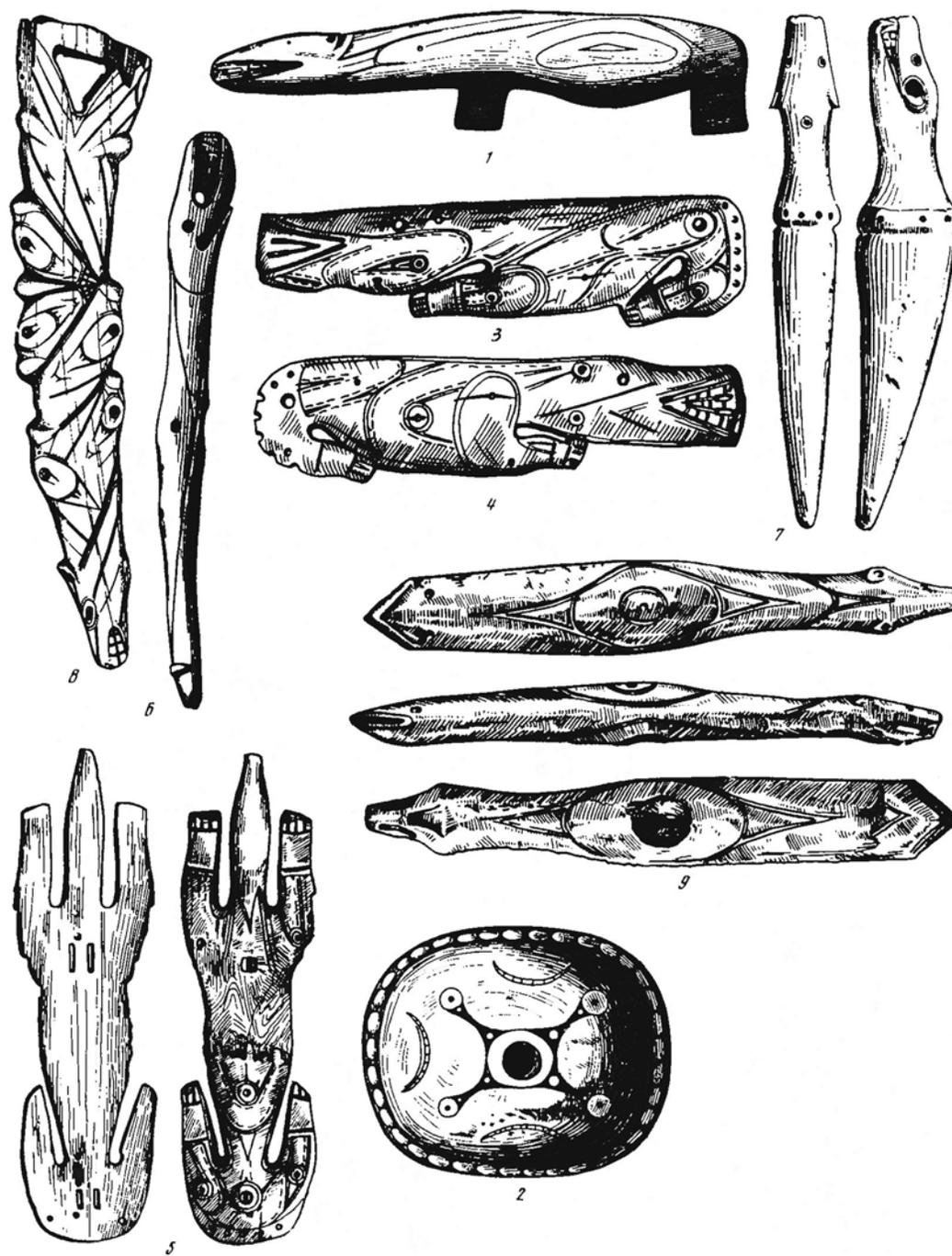


Figure 79. Bear images and drill mouthpieces (1/2 actual size). 1—Burial 187; 2—Burial 155; 3–5—Burial 44; 6—Burial 125; 7—Burial 102; 8—Burial 57; 9—Burial 52.



Figure 80. Small anthropozoomorphic images, amulets, buttons (3/5 actual size). 1—Burial 17; 2—Burial 144; 3—Burial 141; 4—Burial 13; 5—Burial 176; 6—Burial 98; 7—Burial 98; 8—Burial 15; 9—Burial 18; 10—Burial 15; 11—Burial 144; 12—Burial 189; 13—Burial 143; 14—Burial 144; 15—Burial 51; 16—Burial 17; 17—Burial 168; 18—Burial 141; 19—Burial 51; 20—Burial 82.

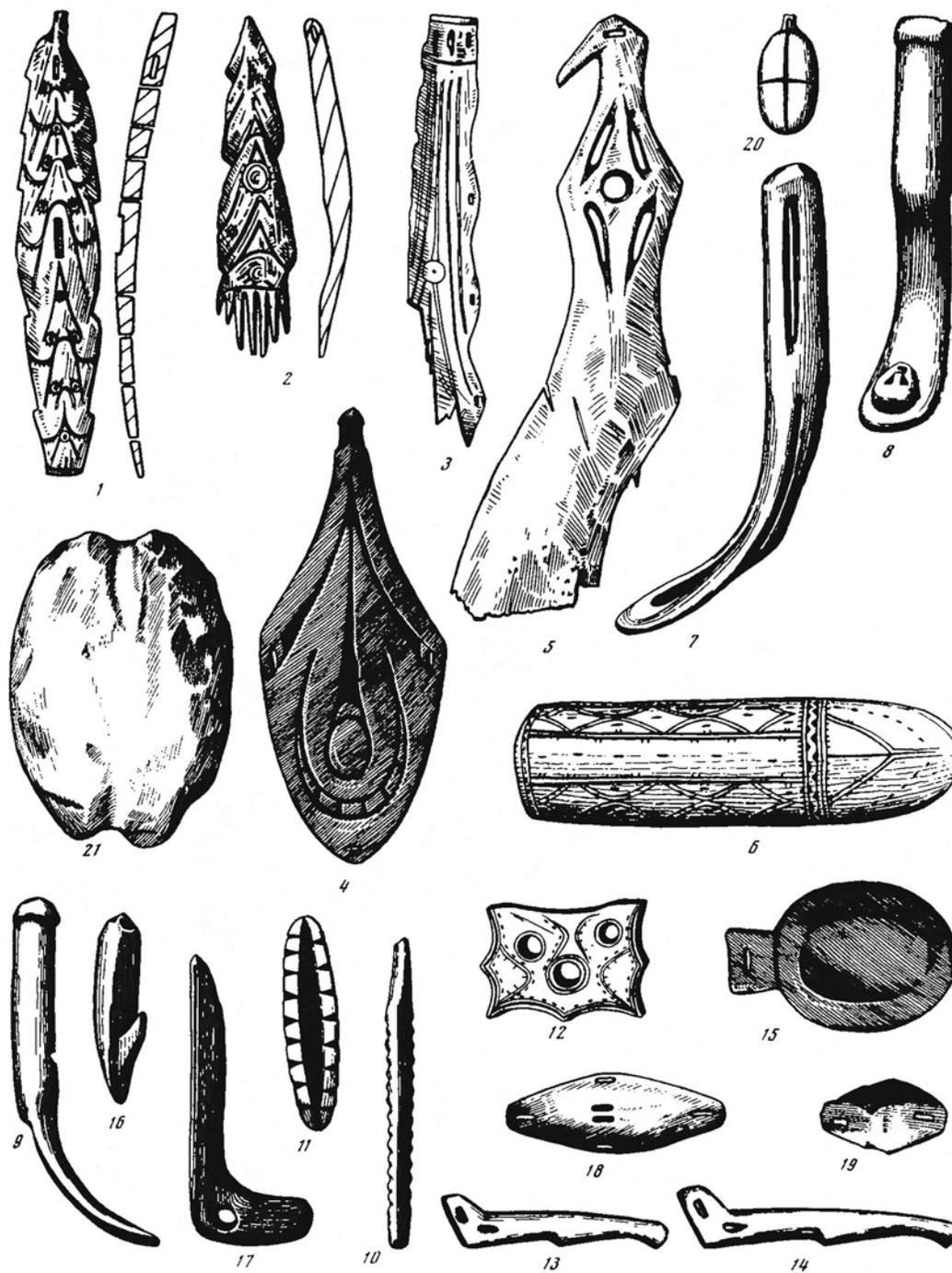


Figure 81. Carved plates, press handles, sinkers (1/3 actual size). 1—Burial 137; 2—Burial 137; 3—Burial 123; 4—Burial 100; 5—Burial 105; 6—Burial 114; 7—Burial 18; 8—Burial 50; 9—Burial 35; 10—Burial 97; 11—Burial 144; 12—Burial 176; 13, 14—Burial 125; 15—Burial 187; 16—Burial 144; 17—Burial 23; 18, 19—Burial 125; 20—Burial 5; 21—Burial 167.



Figure 82. Ornamented plates, pendants, insertions (1/2 actual size). 1-3—Burial 29; 5—Burial 168; 4, 6-9 — Burial 154; 10—Burial 187; 11—Burial 140; 12—Burial 42; 13, 14—Burial 113; 15—Burial 140; 16—Burial 71; 17—Burial 49; 18—Burial 113; 19—Burial 15; 20—Burial 44; 21—Burial 137; 22—Burial 102; 23—Burial 187; 24—Burial 17; 25—Burial 88; 26—Burial 67; 27—Burial 153; 28—Burial 102; 29—Burial 95; 30—Burial 29.

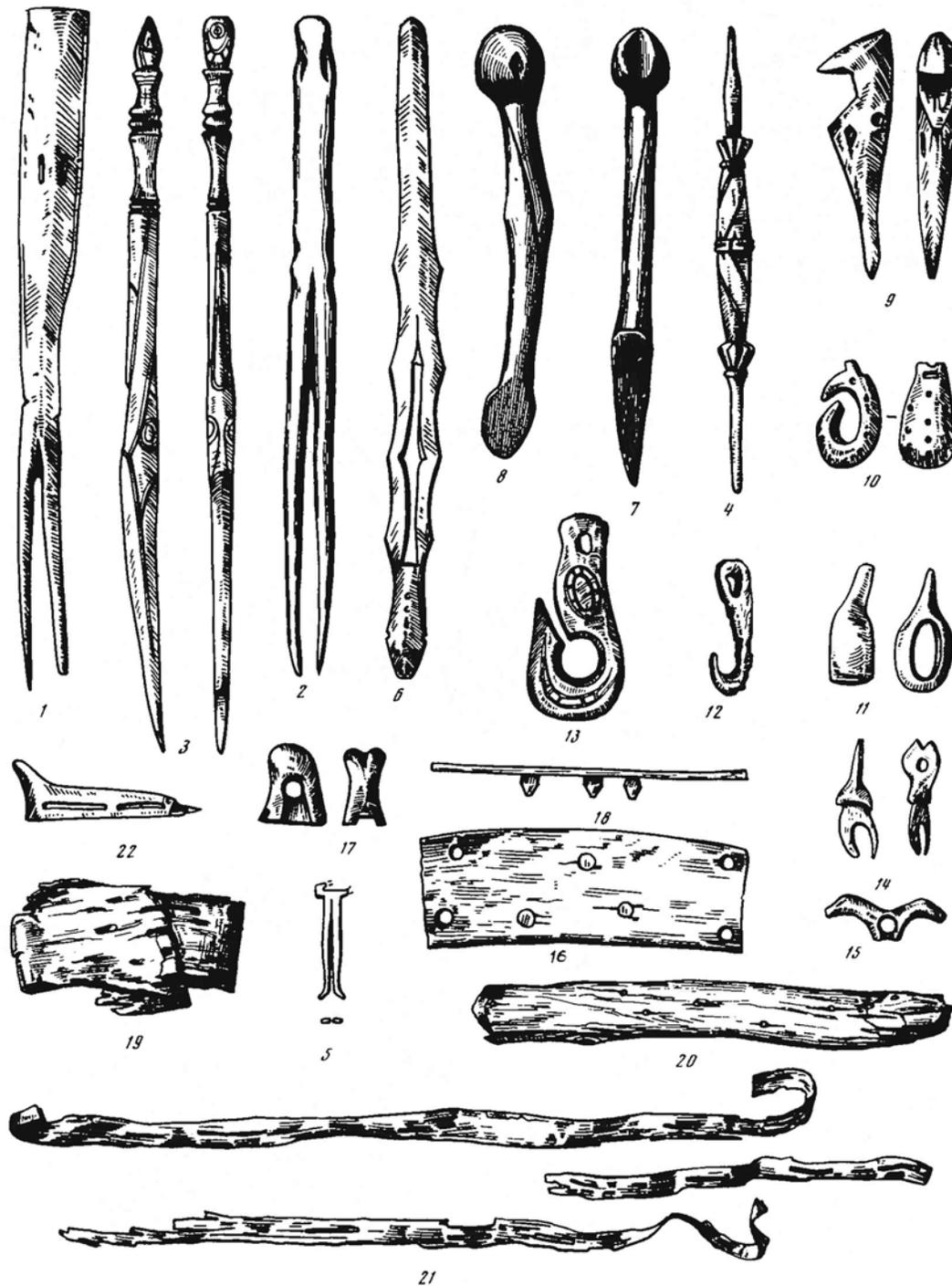


Figure 83. Points, hooks, Strange (unidentified) objects (1/2 actual size). 1—Burial 125; 2—Burial 173; 3—Burial 125; 4—Burial 132; 5—Burial 158; 6—Burial 155; 7, 8—Burial 51; 9—Burial 161; 10—Burial 167; 11—Burial 44; 12—Burial 146; 13—Burial 187; 14—Burial 147; 15—Burial 61; 16—finger-rest from Burial 13; 17—finger-rest Burial 129; 18—Ice creeper from Burial 169; 19—Birch bark from Burial 169; 20—Wooden handle from Burial 170; 21—Birch bark from Burial 173.

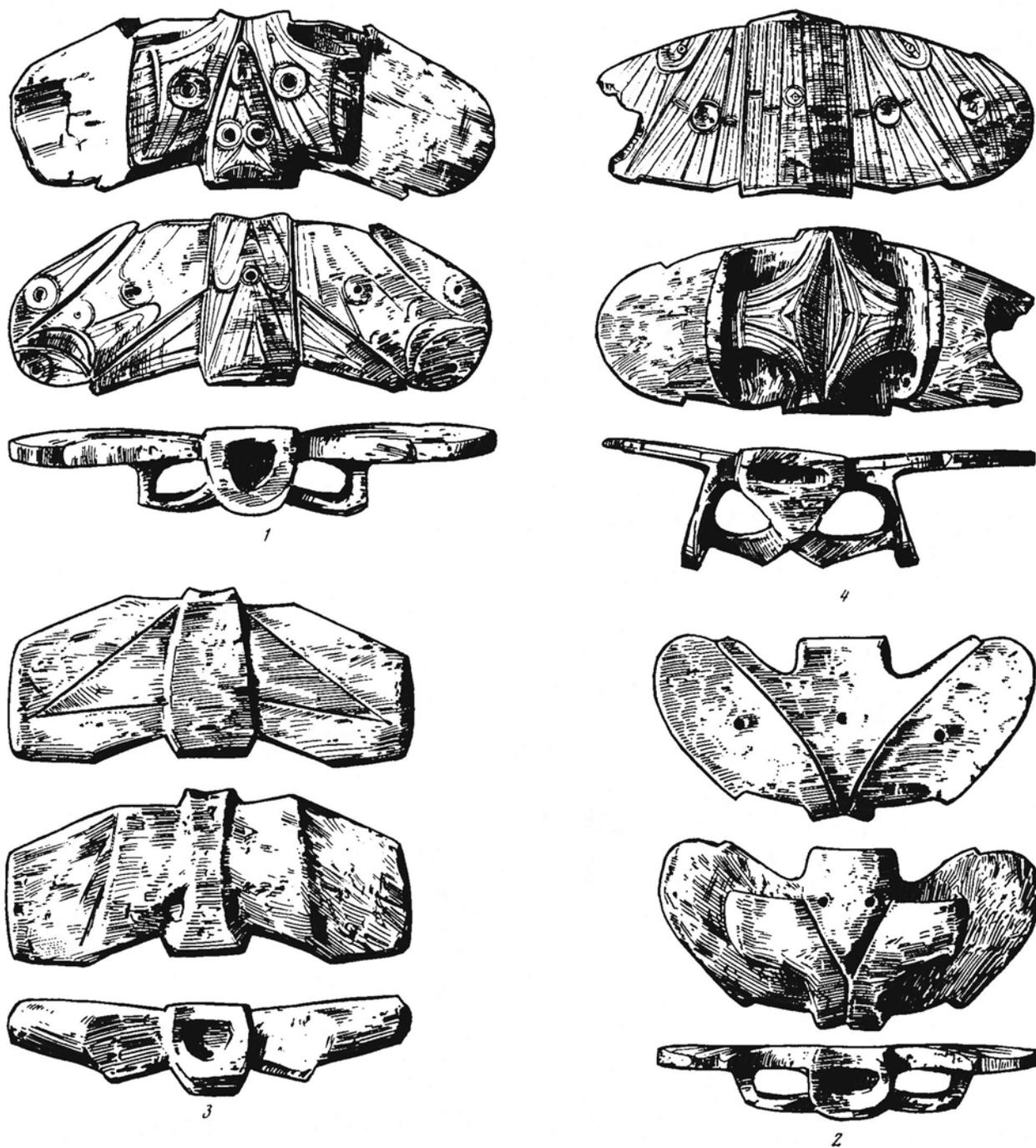


Figure 84. "Winged objects" of Type A with deflected back wings (1/2 actual size). 1, 2 —Burial 57; 3—Burial 59; 4—Burial 63.

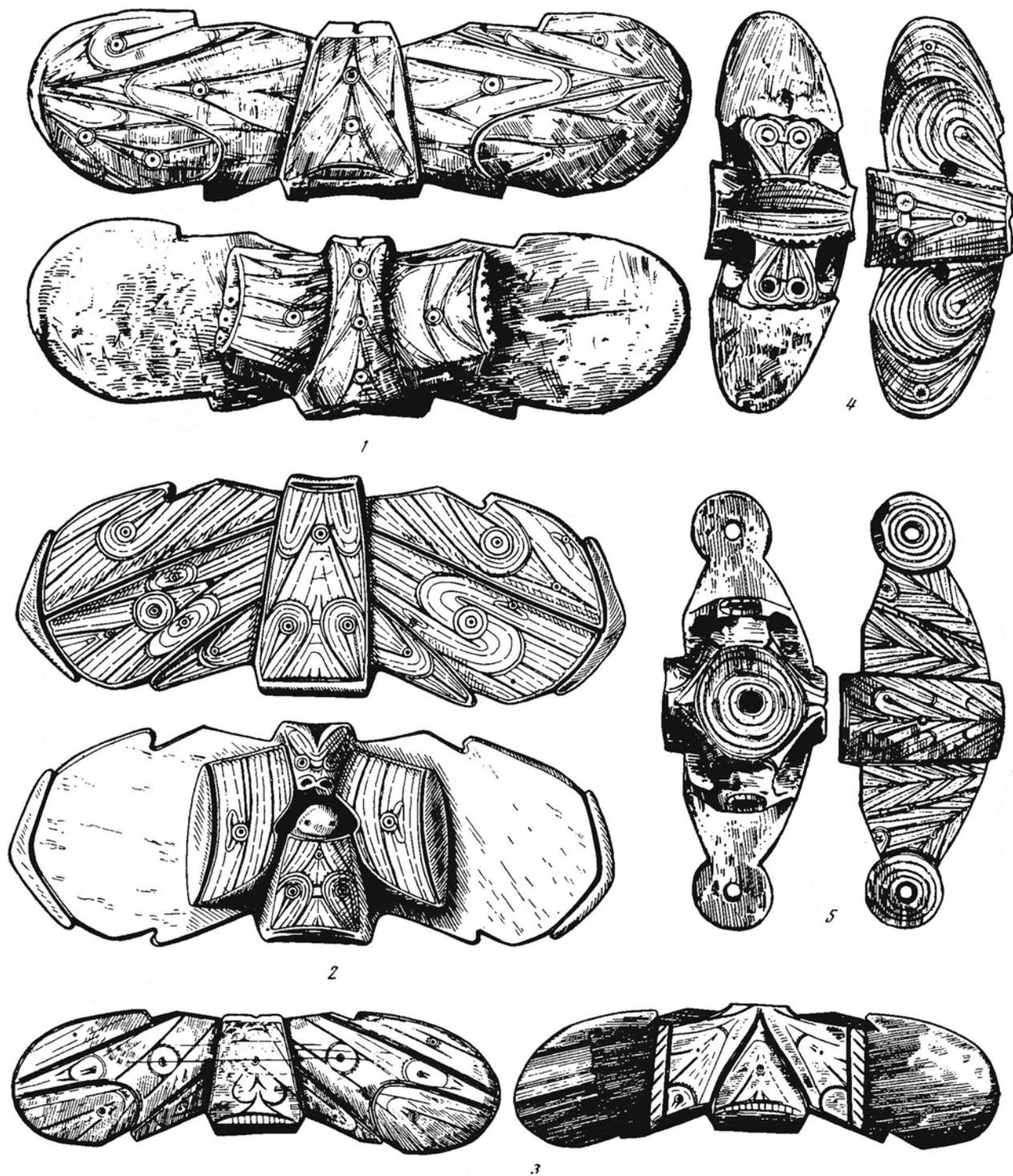


Figure 85. "Winged objects" Type A with almost perpendicular axis wings (1/2 actual size). 1—Burial 95; 2—Burial 133; 3—Burial 141; 4, 5—Burial 68.

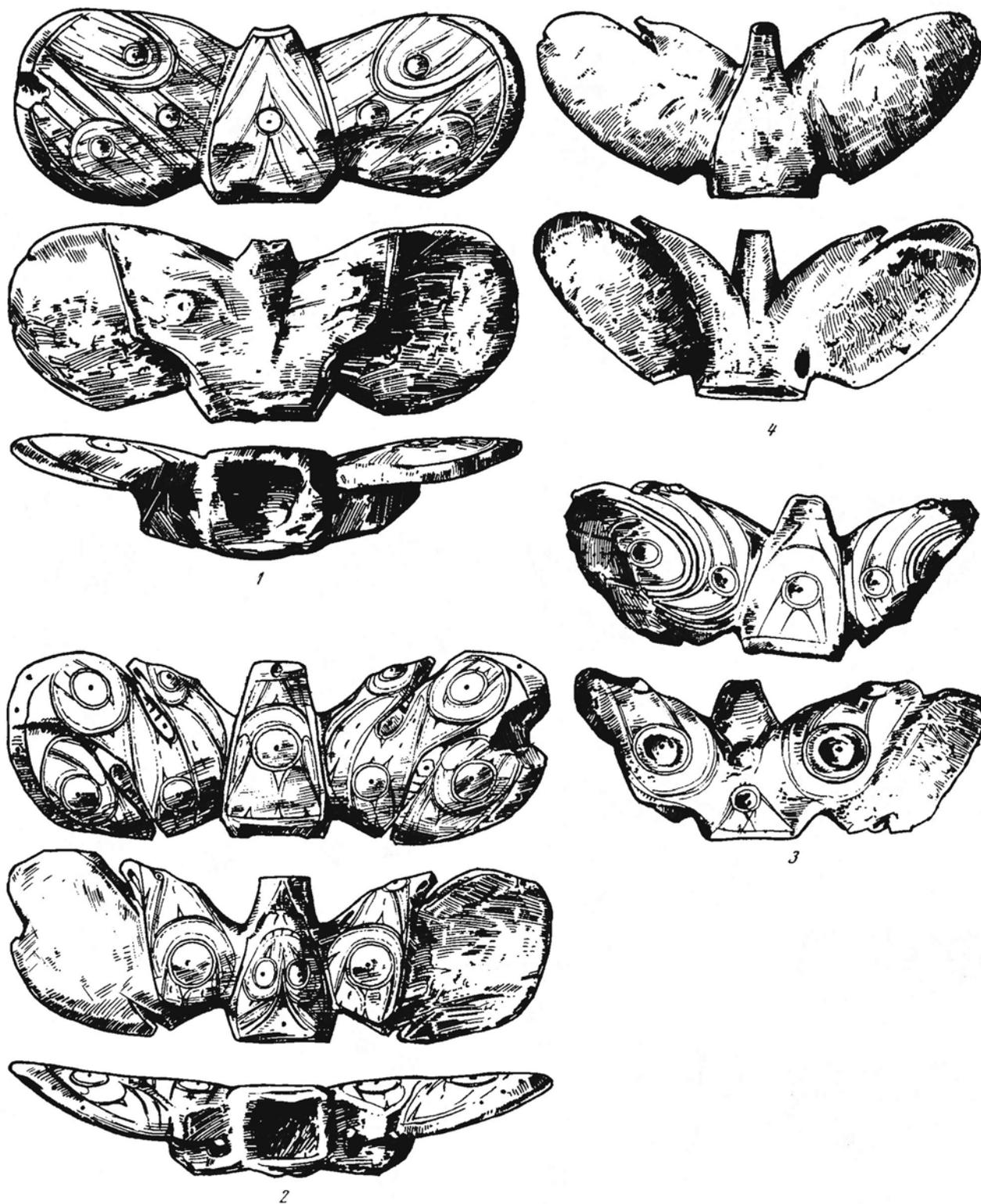


Figure 86. "Winged objects" Type B—Early massive variant (1/2 actual size). 1—Burial 12; 2—Burial 71; 3—Burial 43; 4—Burial 3.

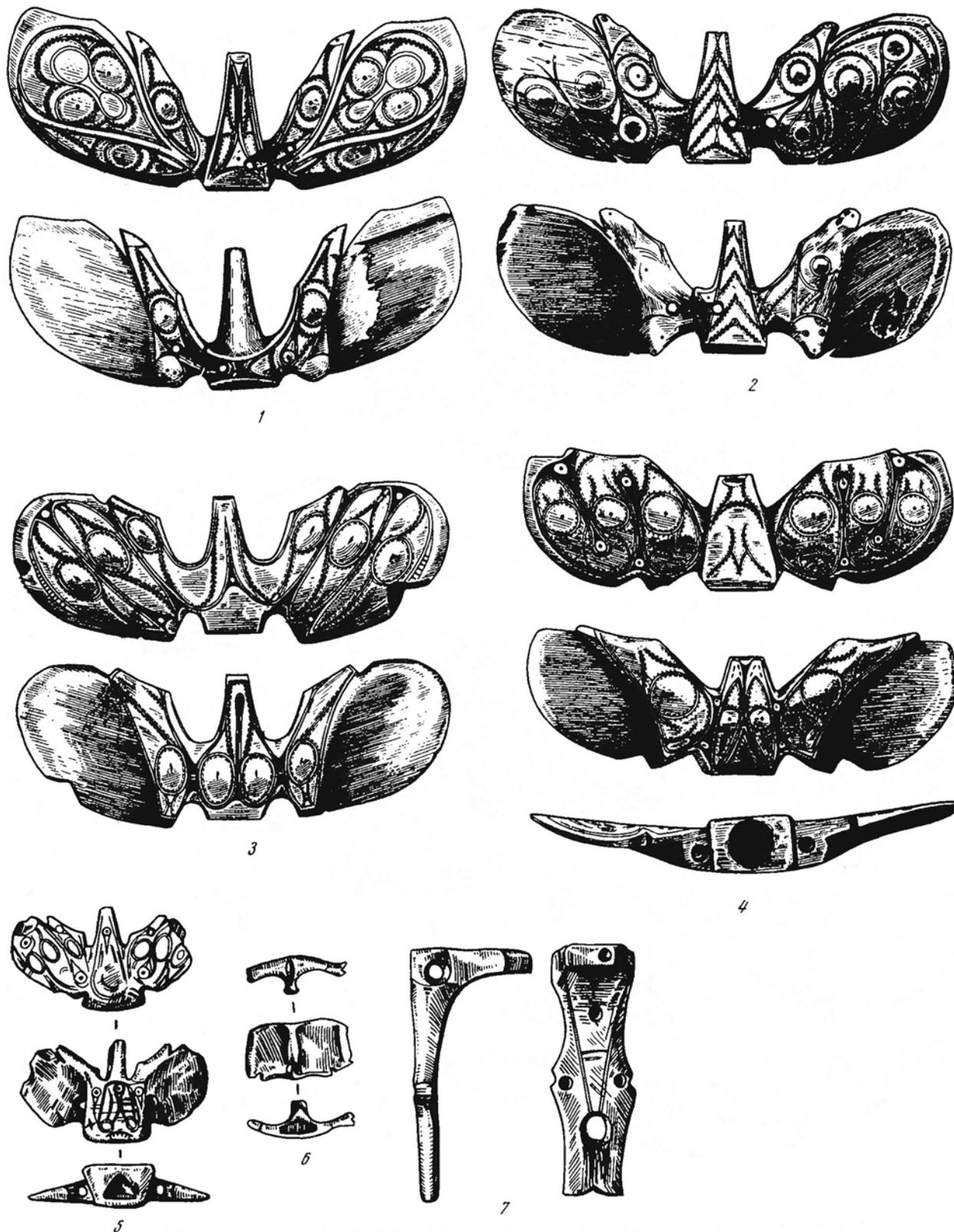


Figure 87. "Winged objects" Type B—Late degraded variant, basis for Punuk "three teeth." (1/3 actual size). 1—Burial 173; 2—Burial 157; 3—Burial 168; 4—Burial 161; 5—Burial 157; 6—Miniature model from quadrant O_B-174; 7—^a -shaped article from the same quadrant.

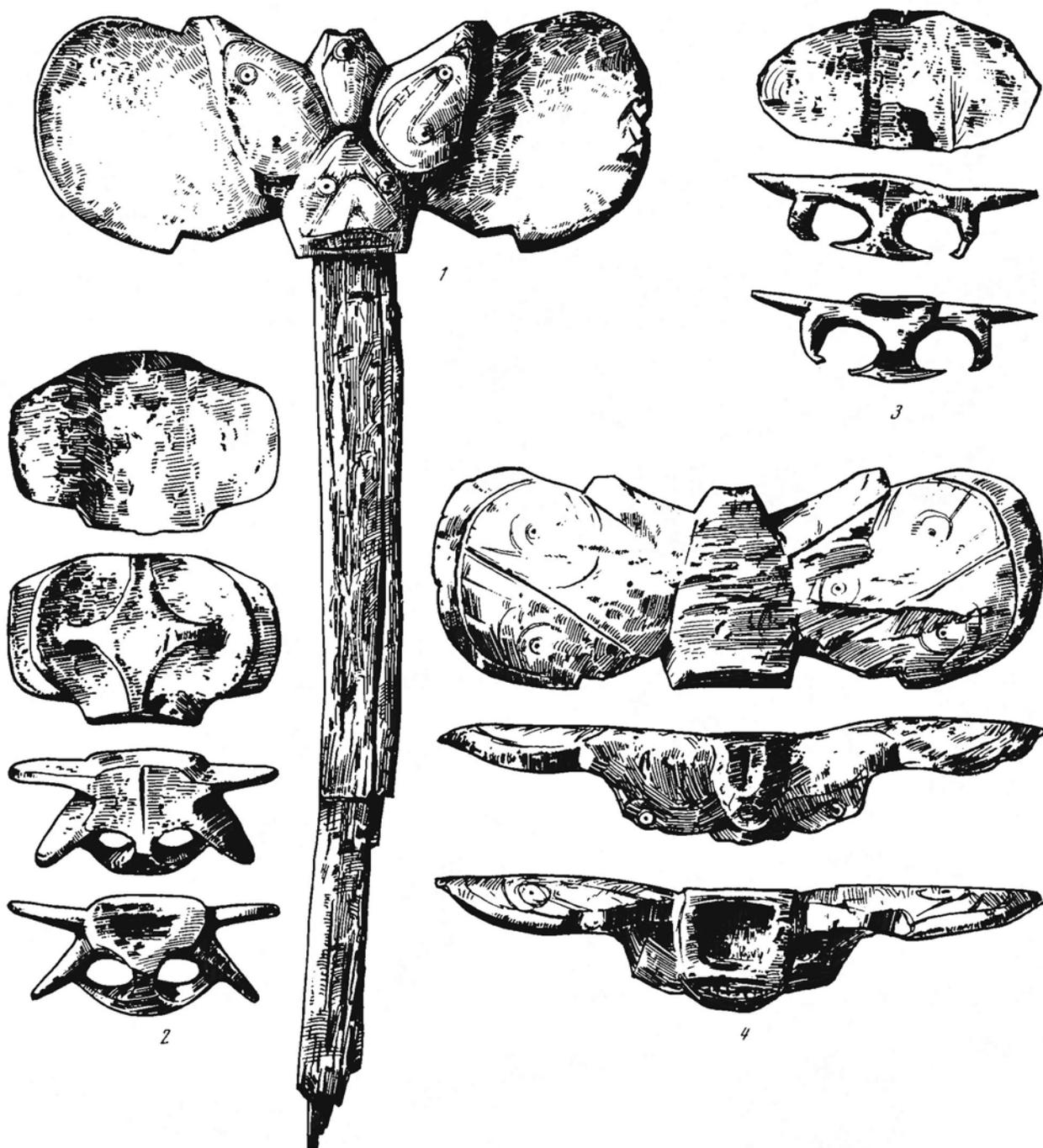


Figure 88. "Winged objects" (1/2 actual size). 1—Type B, Ekven, Burial 12; 2—Type A, Uelen, Burial 16(59); 3—Type A Uelen, Burial 15(59).

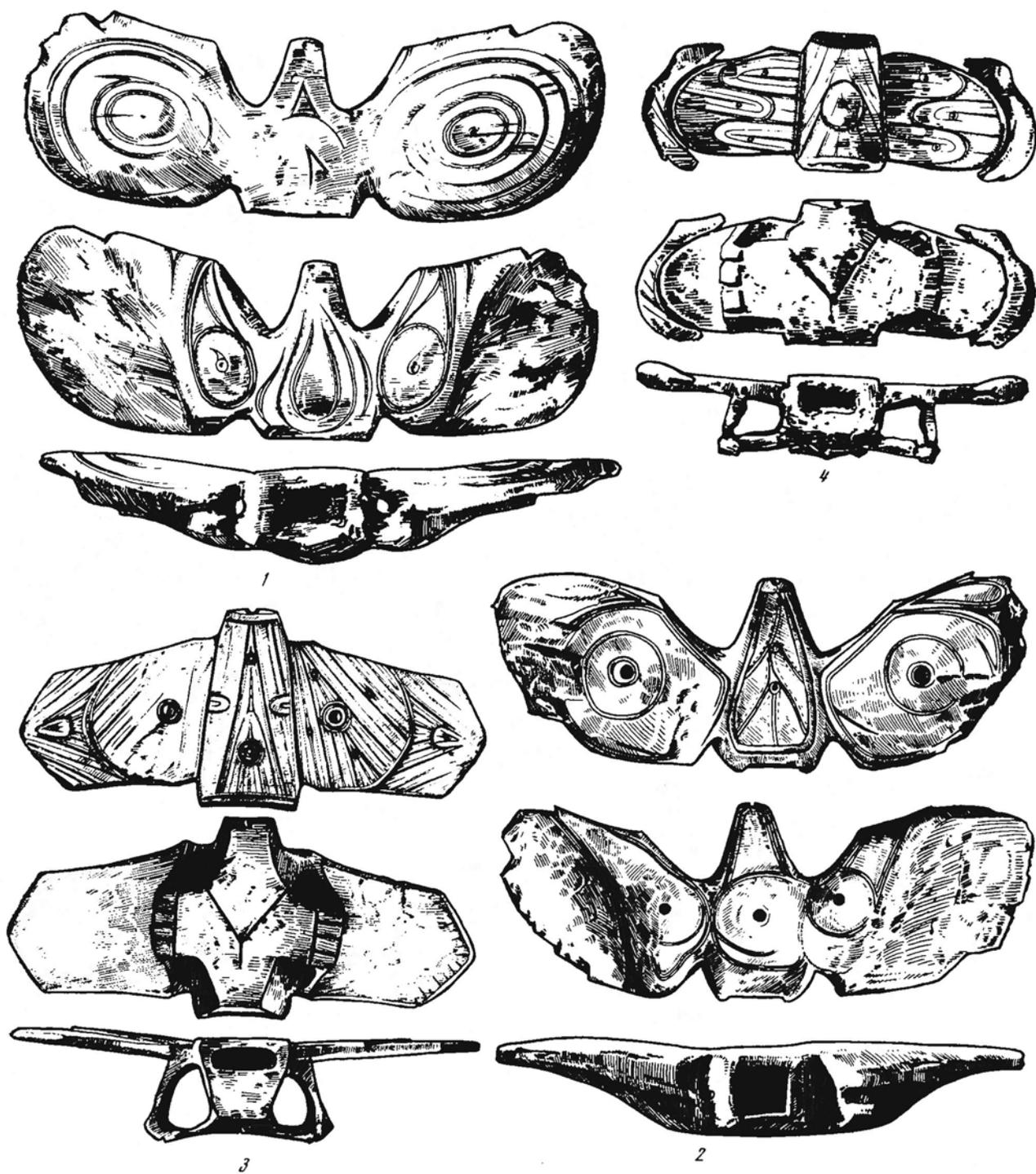


Figure 89. "Winged Objects" (1/2 actual size). 1—Type B, Ekven, Burial 52; 2—Type B, Uelen, Burial 2(60); 3—Type A, Uelen, Burial 6(59); 4—Type A, Uelen, Burial 7(59).

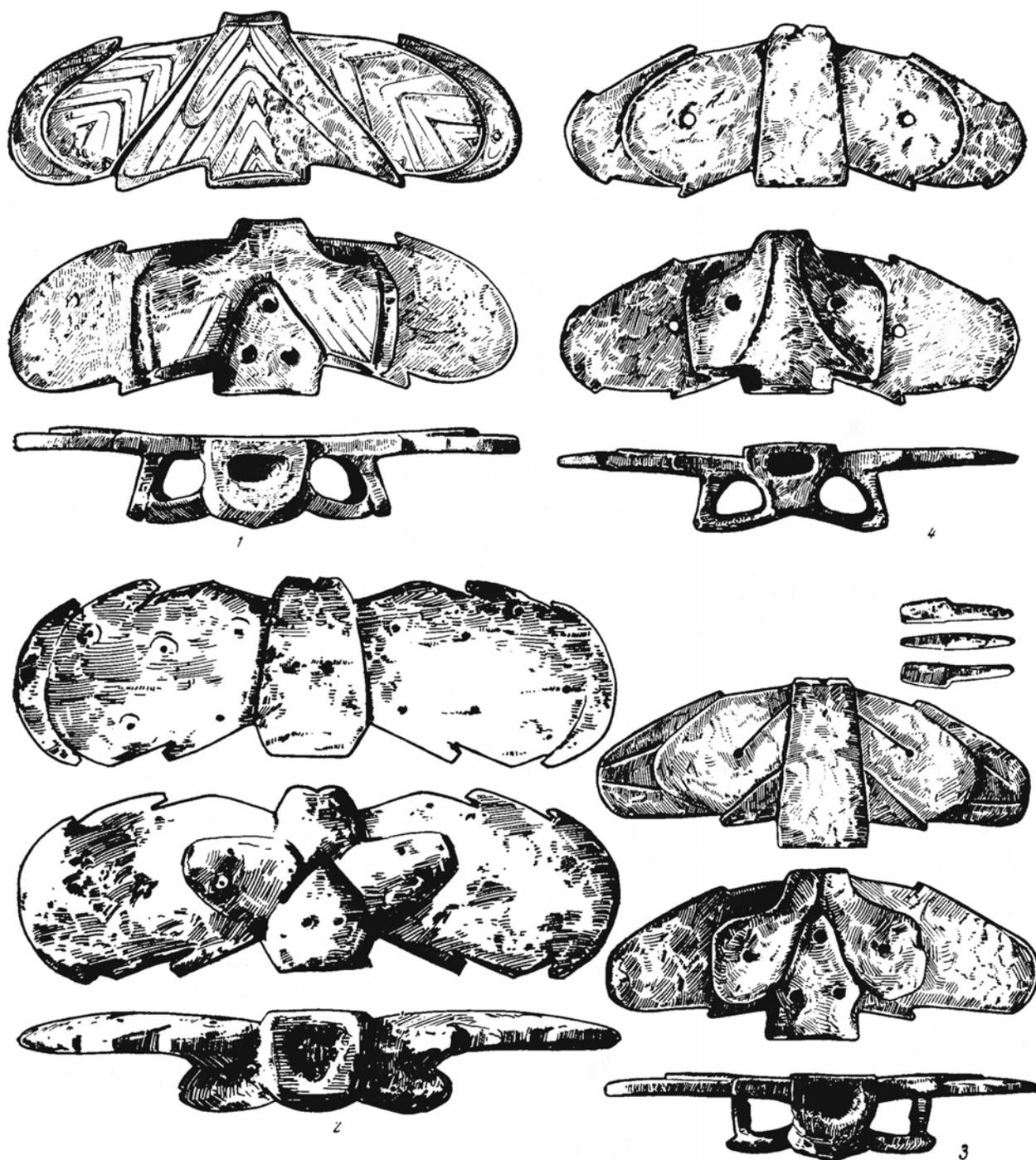


Figure 90. "Winged objects" from Uelen Cemetery, Type A (1/2 actual size). 1—Burial 2 (55), 2—Burial 5(57); 3—Burial 8(58); 4—Burial 5(58).

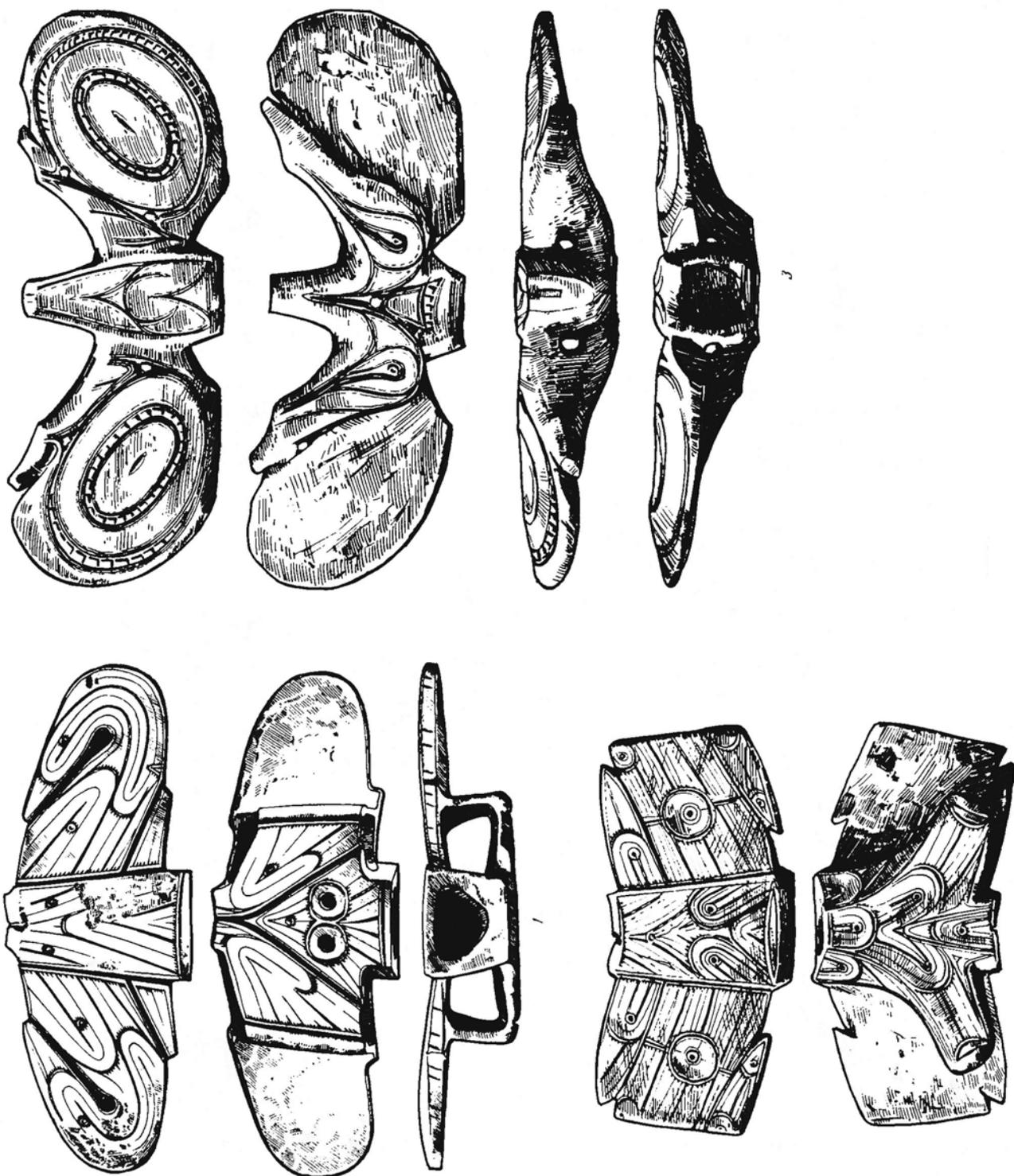


Figure 91. "Winged objects" (1/2 actual size). 1—Type A, Uelen, 4(60); 2—Type A, Uelen, back fill; 3—Type B, Ekven, Burial 92.

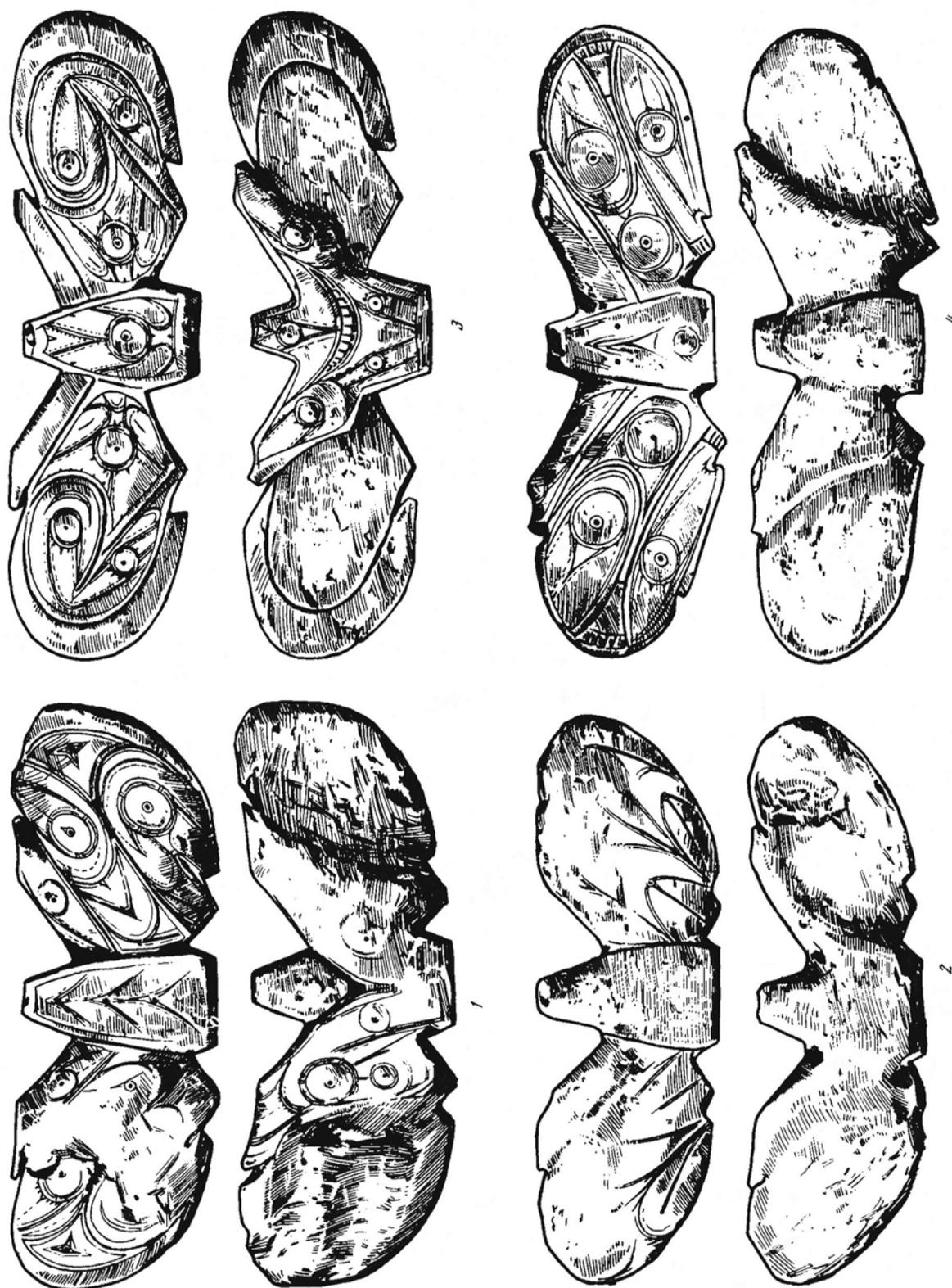


Figure 92. "Winged objects", Ekven Cemetery, Type B (1/2 actual size). 1, 2—Burial 49; 3—Burial 53; 4—Burial 54.

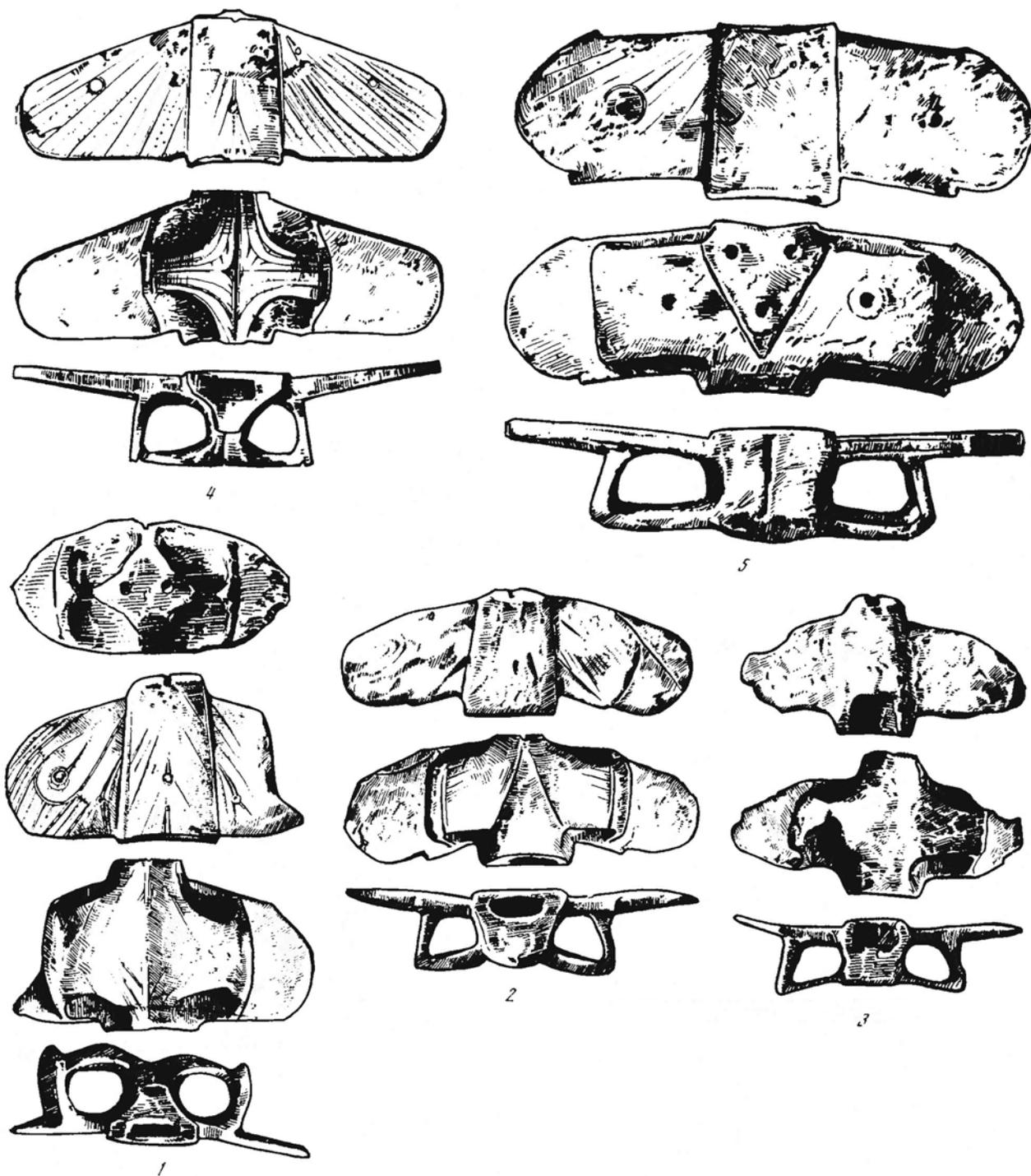


Figure 93. "Winged objects", Uelen Cemetery, Type A (1/2 actual size). 1—Burial 16(59); 2—Burial 18(59); 3—Burial 18(59); 4—Burial 20(59); 5—Burial 22(59).

The so called “winged objects” also for a long time remained a mystery to us. In the Russian original of this book we still kept to the hypothesis that was suggested in the monograph *Ancient Cultures of Asian Eskimos* (Arutiunov and Sergeev 1969:108–127).

According to that hypothesis, “winged objects” were the fastening locks for lateral stringers in the bow of the kayak. However, many later in situ finds had demonstrated beyond any doubt, that the initial hypothesis of Henry Collins had been quite correct and the winged objects were used as counterweight—stabilizers, attached to the rear part of a short harpoon shaft, thrown with the aid of a throwing board (atlatl). After the excavations at the Ekven cemetery, we had found many “winged objects,” enough to state that they were “mass produced.” Seventeen “winged objects” were found in Uelen burials, and one was found in the fill material. Thirty were found in Ekven burials, plus one miniature “winged object” outside of grave N_c-174. One more “winged object” was found in the vicinity of the early Ekven village.

Thus, we ended up with fifty “winged objects” after completing the excavations in the Uelen-Ekven complex. That allows us to make some typological generalizations.

All the “winged objects” can be divided into two groups on the basis of evolution.

Group A had two big holes for side pieces of wood, somehow attached to the main body of the harpoon shaft for the purpose of a more reliable junction and were decorated with a kind of special handle.

Group B did not have any lateral holes. There were narrow bored slots instead, and only thin leather strips or laces made of tendons could fit through the slots.

A difference exists between the styles of wings in Groups A and B.

In Group A, the axis of the planes of the wings is usually deflected back and sometimes it is perpendicular to the longitudinal axis of the object (Burial 95, Fig. 85:1). Very few have the wings deflected to the front (Uelen cemetery, surface material, Fig. 90:2).

As a rule, the wings have notches on them. In Group A, the front pair of notches on the wing edge was turned in, while the rear pair (on the back edge) was turned out from the longitudinal axis of the object. In one instance, the “winged object” found as surface material in Uelen cemetery is an exception (Fig. 90:2). Its notches had the characteristic orientation characteristic of Group B.

In Group B, the wings have the frontal notches turned out, while the rear ones turn in. Also, carved decorations in the form of sea-mammal heads (walrus) are almost always seen on the frontal notches of Group B objects.

Classical “winged objects” of Group A (early and developed Old Bering Sea traditions) usually had the edges of the upper, decorated surface shaped into images of extended sea-mammal heads. An image of a stylized mask was on the lower side of the object under the socket for the main (central) part of the harpoon shaft, i.e. the thick central part. The yokes for additional lateral wooden details were also sometimes decorated with sea-mammal heads (seals).

In the classical variants of Group A, the yokes of the lateral wooden details were made along the whole length of the “winged object.” Later forms (developed in late and latest Old Bering Sea traditions) had shorter yokes, and the lower section of the “winged object” was in the shape of a cross (Fig. 84:4). At the same time, the decoration became increasingly similar to that of the Okvik period, and the decoration on the wings sometimes was done according to Okvik motifs (Fig. 85:5) (for comparison, see Bandi 1969:69). Group B seems to be more recent than Group A, although it is very possible that early forms of Group B existed alongside the late forms of Group A. Group B was characteristic of the final stages of the Old Bering Sea tradition, when we can see signs of a transition towards Punuk.

Following the evolution of the Group B “winged object,” the openings that separate the wings from the central part of the object became deeper. By the time of the latest variants of Group B (Burial 173, Fig. 87:1), we notice Punuk forms (Bandi 1969:76), already transitional to the wingless “Punuk tridents.”

Here we have tried to break the “winged objects” into groups according to the structural elements that seem to us rather important.

On the other hand, there are characteristics that could allow us to organize the objects in another way. For example, the socket for the main shaft has different shapes. It can be square, rectangular, triangular, semicircular, and even round. It is clear that the technique used for “shaping” them differed. For example, several holes were bored, and then a hole was made by hand, but some were directly bored and had a large diameter (Burial 161–162). We might assume that during the early stages of evolution the socket had a rectangular shape, but there are some “winged objects” in both A and B groups where we see triangular and semicircular sockets along with rectangular ones.

Other structural details exist that can serve as a denominator for a group. For example, if we compare two “winged objects” from Burials 133 and 9, we can see that, though they belong to different groups (A and B), they both have the same type of slit in the center of the lower section.

We suggested our own typological development of the styles of “winged objects,” both in the ornamentation and associated items (togging harpoon heads, harpoon shaft socket pieces). This development scheme does not contradict the chronological subdivision of the Old Bering Sea tradition worked out earlier. Nevertheless, we can not assume that all the questions about this interesting feature of hunting equipment of the early Eskimos are being answered. Quite a few questions about the structural elements of “winged objects” are still in dispute.

Chapter 5

Aesthetics and Purposes of Early Eskimo Art

Great examples of Neolithic art have come to us from different cultures. These bear witness to the mastery, talent, and creativity of the people who lived at that time. Carved stone pipe bowls from North American Indians, decorated pottery of the late Jomon period of Japan, petroglyphs from the Sahara, the Kalahari, and aboriginal Australia, statues from Easter Island, and obsidian goods from ancient Mexico—all are masterpieces that cannot help but impress even the most demanding modern artistic tastes.

Due to a number of features, early Eskimo art holds a special place in the long list of high achievements of human culture. First of all, it features an exceptionally refined and delicate example of ornamental forms. The aesthetic effect is not achieved by bold combinations of bright colors, by deliberate stylizing, by its large size, or by an abundance of different ornamental forms.

The art of the early Eskimos is, first of all, an art of fine designs. The ornamentation always conforms to mathematical laws, even when it covers the entire surface of the object. Its most powerful impact is in the small details, which cannot always be distinguished by a modern person's untrained eye and which requires deliberate, concentrated scrutiny. A second feature is the universality of artistic attitude. The same precision is seen in the fabrication of ritual goods (such as offertory troughs) as in simple and prosaic household articles (such as pail handles). A third feature is the unusual coordination between ornamentation, size, and plasticity. The final feature is the subordination of the plastic form to the practical purpose. Judging by all these features, early Eskimo art has the same right to be on the list of superior achievements for its period as Japanese art of the seventeenth and eighteenth centuries has for the late Middle Ages.

The comparison is intentional, since the reasons which created both phenomena are comparable. First of all, there is relative but not complete isolation. Complete isolation inevitably leads to cultural degradation. In our example, the level of isolation was close to optimal. The people who possessed the culture were protected by the natural environment from ruinous invasions and conquests, but at the same time they had contacts with their neighbors through whom they could learn of ideas and cultural trends originating in distant centers of high civilization. At the same time, these trends and influences were too weak to flood, suppress, absorb, or supplant the local spiritual tradition; they could only supplement, enrich, and enhance it.

Some specific historical circumstances also promoted the flourishing of early Eskimo culture. It's necessary to remember that this culture is called Neolithic only with reservations. Iron had come to the Eskimos, albeit in insignificant quantities. The amount was not large enough to change the general Neolithic character of the culture, or to influence the level of productive forces and the character of the basic tools, but it did provide an opportunity to create exceptionally delicate artistic decoration and ornamentation on bone articles.

Another important fact was the economic-cultural complex of the sea hunters, which allowed the procurement of a higher level of resources than other lifestyles might. Of course, cases of catastrophic starvation were known in Eskimo history, but they were never regular and were more characteristic of the American Arctic than the Bering Strait region, which was exceptionally rich in sea mammals. In general,

the lifestyle and the favorable environmental conditions together created the opportunity to accumulate a large amount of food and provided a good existence, not only during the hunting seasons but also during the long periods between hunts.

Long polar nights combined with sitting in a limited space lit by an oil lamp promoted the unhurried, meticulous and delicate decoration of handcrafted articles. An important happenstance was the abundance of ivory from walrus tusks, a very durable material that could be readily worked.

The working environment (e.g., insufficient light) demanded detailed ornamentation that could be viewed up close, as well as in three-dimensional form. The size and form of early Eskimo carvings should be perceived not only by the eye, but even more so, by touch. As Edmund Carpenter said in his great work about Eskimo art (Carpenter 1961:361–363; 1964), “Eskimo sculpture has no top or bottom, front or back; it is a completely round sculpture. In order to perceive it, one should take it into his hands, touch it, scrutinize it, and turn it back and forth. The same could be said about carvings for non-aesthetic purposes. The richness and precision of styles of a harpoon shaft head, harpoon head, adze handle, or towing hook can only be fully perceived when holding the object, turning it and feeling how nicely it fits in the hand, how the fingers find and fit into hollows, how hidden projections and ridges fit into the curves of the palm. Even when the object has a complicated configuration, its curves are smooth, there are neither notches, nor even one single rough projection that could ruin the perfection of the aesthetic perception by touch.”

This effect was achieved very naturally, without any intentional mental effort. When the artisan processed an object, he held it not in a vice but in his hands. He finished the work and let go of the object only when the object satisfied both his hand and eye.

Where did the creators of these ideal plastic forms find their inspiration? Neither living flora nor lifeless nature was reflected in their creative work. The so called “flower motifs” (very rare), as seen on items such as buttons (Fig. 80:13), could be the result of individual variation of geometric motifs. The equally rare ear-like or corn cob-like compositions, like one found on some harpoon shaft heads (Fig. 45:3) or on an unidentified object from St. Lawrence Island, probably demonstrate an extreme degree of the stylization of animal heads and mouths. This stylization was similar to that seen on totem poles of Indians from the Pacific Northwest in America.

Out of all of nature’s variety, the Eskimo only considered the fauna, and particularly large mammals, to be worthy of their attention. This correspondence between the basics of life and of art was direct and complete.

The early Eskimos knew, as proved by their art, not only the appearance of these animals but also their characteristic movements, manners, and behavior. They knew, as do contemporary Eskimos, the anatomy of the animals and were familiar with the position of internal organs, bones and joints. After all, an animal’s body had to be separated at the joints—not one bone should be broken.

Animal bones—phalanges, scapulas, ribs, and long-bones—did not serve just as material for tools. They were also part of the aesthetics and the expedient genius of nature, in which solutions could be found for technical tasks.

The more complex objects were made of walrus tusk, but the configuration of the tusk itself was also taken into consideration. When making a harpoon head, the front, flat cutting segment was made from the thin, sharp flange of the tusk, which was set deep in the upper jaw. The same part of the tusk served as a wing of very large “winged objects.”

When the skeletal bones were used, they underwent very minimal processing. The scapulas of the pinniped became spades, large or small. The long-bones of deer were offertory troughs. We have seen an axe with a handle consisting of an unprocessed walrus ousic (Fig. 69:17). The natural slightly S-shaped curve of the ousic helps the bone withstand impact, and the axe looks nice while being very practical. The

same kind of curves and proportions could be found on adze handles that were delicately carved from antler or wood. The form of the object was determined by nature. An awl made from a deer ulna could seem rough and primitive, as seen in Fig. 66:13. The bone was hardly processed—only the base of the bone and the hollow of the joint were slightly sawed. But the roughness of this tool is only visual; as soon as you take the object in your hand in the way it would most likely be used, the bone easily and firmly fits in the hand. The base of the bone is pressed against the hollow of the palm; the middle finger lies in the hollow of the joint as if in a trigger guard; and the rest of the fingers easily find their natural positions. The whole tool, which was so perfectly designed for a palm, becomes an extension of the arm.

Of course, the Eskimos were not the only people of the Neolithic who made wide use of the natural features of bone. For example, the ancient Indians of Virginia (convergently, without any doubt) worked out the same two basic awl types: one made of a tibia for rough work and another that was thin and sharp for fine work (Holland 1970:186, Pl. 20). In any case, such peculiar “osteodontokeratic” features are more characteristic of the Eskimo Neolithic period than any other.

Over many generations the Eskimos learned the features and secrets of natural bone and used that knowledge to make their tools. One harpoon shaft head found at Ekven was not exactly cylindrical, but elliptical in cross section, asymmetrical, and thicker on the edges (Fig. 45:8). The shaft head had the proportions of a long-bone (e.g., a femur). Another find, a harpoon shaft finger rest, had the contours of a phalange, and a handle from a pressure flaker had the contours of a sternum with a walrus rib as the working portion (Fig. 81:7–9). It is not likely that this was an intentional imitation, but a subconscious association. Forms and images that had been learned since childhood were inspirationally brought to life in the body of a congenial material.

When we look at the clean lines, delicate forms, and ornamental richness of the early Eskimo’s tools, it is difficult to imagine how little was aesthetic (from our point of view) in the everyday life of the people who created these objects. Clotted blood and flowing fat were constantly present in their lives, touching everything. Fat made things slippery, so objects with straight lines and even surfaces would have been difficult to hold. The complexity of the form, the many small projections and hollows that supported the hand had a practical purpose. At the same time, major projections, uneven surfaces, protruding combs, and spurs were undesirable and are rarely seen on early Eskimo articles. No matter how complex the items, their contours were smooth and surfaces polished. Besides the fact that very uneven surfaces collect dirt, we should consider the climate, which was cold and windy, requiring the constant use of heavy clothing. Any object, especially a hunting implement, in conditions where quickness was of major importance, had to be of such quality that it would not get caught or tangled. The hunters’ lifestyle and the conditions in a boat filled with hunting equipment, such as numerous floats and skeins of line which were carefully designed to fit into the boat, promoted the development of streamlined objects as a major requirement of early Eskimo art.

One very important exception to this rule exists in the spurs, notches, and barbs found on many types of harpoon heads and arrowheads. Here they are functional. Despite this, it is not accidental that in the process of evolution those projections disappear, and so in the Penuk period we see absolutely plain, bullet-like, streamlined weapon heads.

As soon as the practical and functional importance of an object required an even surface with a number of small and soft projections, the ornamentation also had to adapt to this surface and follow the contours. Flowing curves, “eyes,” and ovals of Old Bering Sea style are connected with the form and technical construction of objects by means of an inner logic. The Okvik style is very close to that of Old Bering Sea with its high degree of micro-detail, but the former is based mainly on straight lines and therefore is associated with different perspective on creating objects, especially of harpoon heads. This is proof for our supposition that the Okvik and Old Bering Sea periods are not consecutive stages following one another but two different, although related, synchronic traditions that probably reflect different ways of life.

Many graves combine typical Old Bering Sea objects with items decorated with Okvik ornamentation. The best examples were found in Uelen cemetery and are from Burial 5 (58)—harpoon heads 36, 38, and 39 (Fig. 27), and Burial 18a (59)—harpoon heads 145, 146 and 149, etc. (Arutiunov and Sergeev 1969).

It is difficult to imagine a situation where hunting tools that had been made not simply by different people but even by different families and tribes were all placed into a single grave. One should remember the prohibition against passing hunting tools from one tribe to another. What's more likely is that the objects in this grave were made not just by a single tribe, but by a single artisan. The fact that the ornamentation on the objects belonged to different styles and followed the requirements of those styles, without eclecticism, makes us think that an Eskimo carver could simultaneously manage two different, coexisting ornamental styles without mixing them up. Such ability could be defined as "ornamental bilingualism," a bilingualism of artistic expression. A craftsman could choose which style to use according to the goal, purpose, and construction of the weapon heads. Obviously the harpoon heads decorated with Old Bering Sea ornamentation have more rounded construction and are more sculptural, demanding curvilinear forms; while the Okvik harpoon heads, even without ornamentation, have very straight, plain, and angular forms.

A comparative analysis is not our goal, but we can not help noticing that wherever we find carved bone articles of the peoples of continental Siberia, of taiga-tundra hunters and deer herders, we see not only another completely different ornamentation, but also a functionally different set of articles that define their own ornamentation, dimensions, and construction type. The disappearance of Old Bering Sea art and the change in all aspects of the artistic styles reflected both the inner evolution of the aesthetic attitude toward working tools, and the substantial changes in the whole lifestyle of the Chukotkan coastal population after its contact with deer-herding peoples.

But here we are not speaking of this dramatic stage in Eskimo art history but about the period of its flourishing in the classic Old Bering Sea forms. We have already said that the Old Bering Sea ornamentation was closely connected with the form of the object and followed the form. But this does not mean that the ornamentation of the early Eskimos had only a decorative purpose, supplemented the object, or was just a derivative function of that form while the form was functionally connected with the purpose of the object. Not at all. Ornamentation was very important by itself, and we can even say that the object and its ornamentation were, to a certain degree, of equal value and expressed two sides of the whole—the material and the spiritual.

Following an old ethnographic tradition, culture that is understood as the totality of everything that has been created by purposeful human activity is divided into material and spiritual. This division is very conditional. For example, analyzing the creative works of the early Eskimos, we clearly see that those two aspects are interrelated in real life.

The material culture could be defined as the sum of all material objects created by man; objects that exist in space and that are relatively constant over time. The spiritual culture of any society is a complex of information that exists in the collective living memory of the particular society. This complex is materially written into the brain, but visually can be perceived in behavior that can occur only over time. Speech, dance, ritual, work processes—all of these are forms of behavior. The information that programs this behavior is spiritual culture. Alongside this, a fixed, materialized spiritual culture exists, which consists of information engraved in material objects (signs, images, etc.). Their medium (paints, physical materials) belongs to the material culture, while the graphic and symbolic information written in it are part of the spiritual culture.

Understandably, all the fixed information can by no means be stored at any one moment in the living collective consciousness of the society, but from time to time one or another part is reflected in attitudes and behaviors, which is how this fixed information links with current living information

(unlike dead information, which can be brought back to life only through the efforts of archaeologists or historians).

An important point is that some of the information that is expressed in conventional forms is found not only in texts, pictures, charts, etc., but in each and every item of the material culture. Every article of the household, the clothing, and each tool contains the symbolic elements which deal with its usage and which could also be deciphered within the context of the given culture's habits. A person of a different culture will have no understanding of this item, just as would happen with a text from an unknown writing system. But a person who belongs to this culture can easily deal with even altered parts of this culture if the symbolic system is generally familiar to him. Even for the archaeologist of the twentieth century, it is sometimes easier to decipher an unknown text written in a dead language than to determine the way a strange item was used. (The long discussion on the purpose of the early Eskimo "winged object" is an example). The notion of a symbolic or informational side to a household object is one of the main components of the general notion of design, which has been intuitively known not only to modern but also to early creators, and particularly to the early Eskimos.

The early Eskimos did not have a writing system. Some common information was "written down" through the ornamentation and painting of objects surrounding them.

Some ornamental techniques (the shaping of the front of the harpoon shaft head to look like a mouth with tusks or the shaping of the spur of the harpoon head to look like the rear fins or tail of an animal) might have ritual or magical meaning, as well as design implications. They tried to emphasize metaphorically the purpose of the tool. Finally, the separate ornamental and graphic motifs obviously had a purely representational meaning, a sign of personal or family property or a totem. In cases where such signs marked the arrowheads or harpoon heads, they identified the person who killed an animal and therefore owned it.

Besides these superficial ways of interpreting the ornamentation, there are other ways that we can trace only intuitively and approximately. Intuition is not very popular in the world of science, so we should also note here that we are not speaking about the intuition of a scientist but about the intuition of the artist M. M. Mechev. He not only did a great job on the illustrations for this book, but also during the process of repetitious copying he noted a number of patterns that surface when you redraw objects several times.

Fine and extra-fine dotted lines as well as dots and cogs made by separate sharp movements of a burin were characteristic of both Old Bering Sea and Okvik ornamentation. Burins scratched or picked the surface of the bone. While copying these lines, we realized that their sequence usually follows numeric and rhythmic rules. The rhythm is so strong that with practice your hand acquires an automatic movement, feels the rhythmic and numeric beat and knows how many lines or scratches should be in the next element of the design. The carver's hand performs a rhythmic dance that is stored in the kinetic memory and the resulting design is a musical score of these movements.

The numeric rules might reflect the magic and symbolism of numbers. The traditional rhythms of poetry, songs, and dances might also be reflected in the design, or in the rhythm that was worked during the process of manufacturing. Any of these are possible. At the present stage of research we cannot give a conclusive answer. But we do know that the ornamentation is not arbitrary and is subordinated to kinetically learned rules and therefore should have a high degree of stability.

If we look at a popular and standardized object such as the harpoon head, we find that each head is very individual and has its own unique features, but each also falls into one of a defined number of groups according to its ornamentation. Ornamental elements have different degrees of importance and vary in sequence between the groups. We should reiterate that this sequence is partly arbitrary and partly standardized because of the rhythmic measure. Since the shape of the object is connected with the ornamentation, and the elements of ornamentation are related to each other, we can state that not only does the

shape of the object define the stability of the ornamentation but that the ornamentation also promotes the stability of the form. In the graves we find “test” forms of harpoon heads that were single specimens and were rejected during the natural selection of the best forms. These so called “construction mutants” are characterized by unusual or no ornamentation, while the stable types correspond to the fixed forms of ornamentation. Thus we can see another important role of decoration. It is a “genotype” of an object, a schematic code that helps one remember the construction, makes copying easier, and promotes stability and succession in the main forms.

In the conclusion to his essay about Eskimo art, Carpenter wrote: “Carvings are not being saved—the figures get lost. Wooden masks are being burnt after a single performance. But all the basic forms are alive because they are being stored in the memory of each carver, not just in one or another of the five senses, but in all of them, in a whole person. Just as a song or poem is easier to remember if it touches more than one sense, this art is also easier to remember because it is a “multi-sensual” one. This interrelation of the senses refines the drawings, and shapes the combinations into fundamental forms so they can go from one person to another, from one tribe to another, and consequently overcome long stretches of time and space” (Carpenter 1964:18).

Archaeologically we cannot trace any actual copying. We concluded that this happened only after finding nearly identical objects in different graves, and by our artist’s intuition. While drawing, he had the impression that some of the objects were less than perfect copies of a more precise original. Possibly the early Eskimos knew other techniques for design standardization besides copying from a model and using ornamental mnemonic code. During excavation, we found a number of objects that are difficult to define as anything but some kind of model, pattern, or measuring ruler (Fig. 81:10–12). In many instances, the pail handles, adze handles, and other types of handles were shaped for a hand, each finger having a hollow. The shape of these objects is very plastic, they fit into a hand perfectly, yet they are made for a specific hand size. The question comes to mind of how they were modeled. The people who made the handles were acquainted with clay (this was how the ceramic paddle handles were made). Very possibly the handle carving was preceded by making a hand mold in clay. The carved bone item would then have been a copy.

This theory became more plausible when we found handles from objects (e.g., spoons) that had been shaped for a left-handed person. The utility part of these objects was worn down on the edge in a way that could only have been done by a left-handed person.

Usefulness, practicality, and beauty; excellent features that were characteristic of early Eskimo applied art, were achieved by applying a set of highly perfected technical skills and means. They were also achieved with the help of a so-called high culture of production, and we think that of all the people who remained in the Neolithic stage of development, the Eskimo should be considered to have had the highest.

Despite the harmony of early Eskimo pieces, they do not have the mechanical precision that usually comes with metal. Symmetry was never absolute. Despite the fact that an object (e.g., “winged object”) seems to be rather symmetrical and balanced, careful study will reveal that the left half is similar but not identical to the right, and the composition of the ornamentation always has some variations. Despite all this, the harmony and completeness of the object is not destroyed, but increased. Early Eskimo art pieces have the same symmetry as tree branches and grass blades.

The mattock handle in Figure 79:8 is one of the masterpieces that express this natural harmony. Starting at the wide, working edge with a slot for a blade, which is separated from the rest of the handle by small bumps, the body of the handle narrows toward the rear and becomes a bear’s head. The handle is sculpted and formed in relief where it is to be gripped. The relief offers a better grip among the protruding sections, so the handle fits perfectly into the hand. The protruding sections are carved into five nearly identical seal heads. The first and second heads (starting at the bottom of the handle) are relatively symmetrical but are slightly skewed in relation to each other, which gives a better effect than complete

mechanical symmetry. The third and fourth heads are facing each other, forming a composition that is built on a symmetrical “ray.” Finally the fourth and fifth heads appear to grow from the third one and form a fan-shaped composition that is emphasized by the fan-like design near the bottom. The top of the fan is the organizational center for the entire composition, although it is not geometrically centered. The fan defines the center according to the proportions of the composition. This is not only a visual impression. When we balance the handle, the balancing point is also the center of gravity for the handle.

The evolution of early Eskimo culture can be traced back at least two thousand years, starting with the early Old Bering Sea period, through its more advanced stages, and on through the Okvik and Birnirk, right up to the developed Punuk. Middle Eskimo culture, or the Arctic Middle Ages, covered the twelfth through seventeenth centuries, which includes the Thule and late prehistoric cultures. Finally, there is the historic period. Some types of tools and other items, especially ones made of stone, did not change much during the period from Old Bering Sea to Punuk and Thule. Others, such as arrowheads and especially harpoon heads, went through a long evolution. Some items, such as “winged objects,” disappeared entirely.

From a technical point of view, the evolution of the harpoon head, from type 2A2Y2M3 of early Old Bering Sea to type 1BXM1 of developed Punuk and of today, looks progressive. Although it happened very slowly, early Eskimo society did develop productive forces.

At the same time, the high artistic achievements of classic Eskimo culture were in decline. The material we have allows us to see the details of this decline in the development of early Eskimo art. On the “winged objects,” we can clearly see the gradual decline, corruption, and degeneration of not only the ornamental art but the art of design. The evolutionary process starts with more advanced forms. It starts suddenly. No preceding forms were found.

Even if we accept an old, previously rejected chronological system that has Old Bering Sea following Okvik, nothing will change. No principle ornamental and design differences exist between the best Okvik and Old Bering Sea specimens of “winged objects” and harpoon heads. What is seen are merely stylistic variations within one level of artistic and technical achievement. This is easily observed by comparing the classic Old Bering Sea “winged object” from the Uelen cemetery (Burial 4(60), Fig. 90:1), the “winged objects” from both Okvik and Old Bering Sea that were found in a single grave at Ekven (Fig. 85:4, 5), and a typical Okvik “winged object” from the materials of Birket-Smith. The Okvik object does not look more primitive or archaic when compared to the Old Bering Sea example. On the contrary, the Okvik object shows the features of a deliberate complexity that had already appeared at that time.

We will not explore reasons for the decline in the art of design and ornamentation that began in the Old Bering Sea period. The cause could be a combination of factors: increased intertribal influence, a shift in ideological self-expression from graphic to visual and verbal, or the development of whale hunting and the enlargement of the basic units of economic and household cooperation connected with it. It is more important to note here that the exceptionally high artistic achievements of the early Old Bering Sea could not have appeared out of nothing. A long period of technological and artistic development must have preceded the early Old Bering Sea period.

Chapter 6

Eskimo Folklore Motifs in the Sculpture of the Old Bering Sea Period

Today Eskimo peoples live over a vast territory and are quite removed from each other. But long ago, before the Christian era, they were a single ethnic group with common spiritual beliefs.

People who came from the south to the coast of the Bering Sea developed their own original and distinctive method of hunting Arctic mammals. This method is seen in the drawings, as well as in the stories, of the Eskimos. This area was the origination point for the expansion of the Eskimos. The Eskimos took with them a world view, myths, and legends that are now found in different areas of their territory and demonstrate remarkable similarity despite the vast distances that separate the groups.

Archaeological material found in the Uelen and Ekven cemeteries illustrates the formation and development of some of these myths and legends. The study of the material was interdisciplinary, with anthropologists, archaeologists and ethnographers all working together. Local inhabitants—the Eskimos and Chukchi—also took part in the excavations, helped explain burial rituals, and identified some of the objects.

The notion of “the Master of the Universe,” Yughym-Yua, exists in Eskimo folklore, and contrasts with the phenomena of “the Mistress of the Sea.”

According to the legends of the Greenland Eskimos, the sea princess Nekvivik defeated Tornarsuk, the “King of the Earth” (Freuchen 1961:84). In the folklore of the Asian Eskimos, we see that the “Master of the Universe” reigns not only over the land but also over the sea.

A wooden mask found in Burial 154 in Ekven cemetery (Fig. 94) was identified as an image of the Yughym-Yua, “Master of the Universe” by the Eskimos working at the excavations. Consequently, we can surmise that Eskimo ancestors who lived at the beginning of our era were familiar with that personage. Burial 154 dates back to the third and fourth centuries A.D.

Archaeological material about these myths and legends has been supplemented with ethnographic information, including linguistic and folklore data. Folklore sources explained some carvings of walrus tusk that were difficult to interpret. Those carvings were created by unknown talented carvers as much as two millennia ago.

The idea of using folklore to understand the archaeological material is not new. Similar research has been done before. The same approach was used by A. P. Okladnikov and V. D. Zaporozhskaya in their study of Lensk drawings (Okladnikov and Zaporozhskaya 1959). K. D. Laushkin, in his work *The Onezhsky Shrine*, used folklore material to explain cliff drawings in Karelia (Laushkin 1962). He suggested the following for deciphering early art images: “The method of deciphering ancient images is similar to the method used to decipher passages in an unknown language. It employs what might be called ‘bilingual’ writing. We literally have to find two kinds of language for the images. The researchers should make compilations of ancient drawings and mythological stories that convey the same plot through different artistic means.”



Figure 94. Wooden mask of the “Master of the Universe”

With the help of analogies, we can trace certain parallels between the themes of the ancient carvings and the legends that still live today.

One particular theme is seen repeatedly in both folklore and in Neolithic Eskimo art and that is transformation. An animal transforms into another animal, an animal transforms into a human, a human transforms into an animal.

W. G. Bogoras wrote that “Eskimos of the Pacific Coast offer sacrifices to an old woman who lives on the bottom of the sea and is called ‘Nulizahaq’ (‘Big Woman’). She also has another name that can be pronounced only during the ritual. I did not have an opportunity to acquaint myself with it.”

As a matter of fact, it was Myghym Agna, “Sea Woman,” who was represented in the legends as a walrus or as an old woman. This old woman was a sea queen who lived on the bottom of the sea and sent sea animals to the people. In Greenland she was called Nekvivik. All Eskimo sea hunters were acquainted with her legend, which, according to archaeological research, has been familiar to them for at least two millennia.

This can be proved by the unique object found in Burial 154 which represents a carved ornamented walrus tusk towing hook with a complex composition. The anthropo-zoomorphic carving included two intertwined images that could be seen as such only by viewing them in two different perspectives. In one view, the carving shows a female walrus with a baby walrus on her back, which, viewed in the other perspective, depicts a woman. The carving was made in such a manner that the same details were parts of the animal’s body and of the woman’s (Fig. 56:1). The woman on the hook had a big head, pendulous breasts, and a low protruding abdomen. Her eyes were indicated by long narrow slits. A necklace-like ornament that lay across her bosom was made of narrow carved lines, which formed nesting triangles. A broad, deep hollow was on both sides of her abdomen, which ruined the shape of the stomach. Forepaws or fins were on her shoulders and near her abdomen. These paws were not a part of the figure of the woman.

If we examine the image of the woman in profile, we can see how the abdomen turns into the head of a walrus, or to be more precise, a female walrus, as is obvious from the shortened tusks. The tusks were formed by the hollows in the lower part of the woman’s abdomen, which were not appropriate in the first image. Shallow incisions in the lower part of the woman’s abdomen become the walrus’s nose. Fins that looked like they existed by themselves turned into the front and rear extremities of the animal. The most interesting aspect is the transformation of the woman’s breasts, which have small round holes in them. In the first case they are the nipples, and in the second they are the eyes of a baby walrus that is on the back of the mother.

Two identical images of animals are on sides of this hook, directly under the figure of the woman. These carvings are not as deep but otherwise the lines are similar. The eyes were drilled and marked with two concentric circles. Fins, which were connected with the design, were on the lower part of the hook.

Anthropo-zoomorphic carvings of the Old Bering Sea period expressed the notion the pristine hunters had about the transformation of animals into other animals, animals into humans and humans into animals.

A clasp of walrus tusk (Fig. 56:3), also found in Burial 154 at the Ekven cemetery, was composed of three images.

This clasp is shaped like a polar bear with a stretched muzzle and very lightly outlined extremities. The muzzle of the bear narrows toward the nose; the massive neck of the animal is edged with a deeply carved line. The back of the animal is also the head of another image and does not have a smooth contour. Instead, it ends with a bump that forms the muzzle of a walrus “hanging” above the head of the bear. (This compositional technique is described above, in the case of the walrus tusk hook.) The upper lip of the walrus is indicated by a thick line; nostrils are carved hollows; the lower lip is marked with a deep curve. The tusks are designated by deeply carved lines (the technique is similar to that used to depict the walrus tusks on the above-mentioned hook). The small round eyes are bored and decorated with wooden inlays that have transverse cuts perpendicular to the walrus’s tusks. Behind the head of the walrus is a large round hole that served as a loop for the clasp. Two diverging carved lines are on the outside of the loop and represent two separated horns if the clasp is held vertically. From that perspective, the head of the walrus turns into the head of a mountain ram with twisted horns. The wooden inlays in the eyes of the walrus are on a transverse line that helps to turn them into the ram’s eyes. The rest of the details of the first image coincide with the second.

The carvings on both the hook and the clasp are connected with certain ideas of the Old Bering Sea people that have existed throughout the centuries and have been recorded by ethnographers. Similar clasps are still being used by the Eskimos today for transporting slain animals (Arutiunov and Sergeev 1969:144–145). In most cases such objects have carved images of various animals. According to informants, every group had its patron-helper, which could be a polar bear, ermine, mink, or other inhabitant of the sea or land. The clasp-helpers were supposed to “reconcile” the killed animal with the hunter.

It is interesting to note that the clasps used for transporting a whale had both zoomorphic and anthropomorphic images (Arutiunov and Sergeev 1969:144–145).

One clasp that appeared to depict a fight between a walrus and a polar bear was found. This motif is widely known all along the Bering Strait coast (Sergeev 1958:141–150).

The archaeological data proves that ideas about reincarnation existed as early as the beginning of the Christian era, as is demonstrated by one other carving that is characteristic of that time. It is made of walrus tusk, and the motif can be explained with the help of folklore sources. Folklore is the only available way to understand and explain the points of view of early Eskimo carvers, which seem to have been lost in past centuries.

A carefully made pottery stamp decorated with carved images and Old Bering Sea designs was found in Burial 45 (Fig. 65:6). An anthropomorphic figure and a separate mask are in the middle of the non-operational side of the stamp. An image of a polar bear head with the neck outstretched (as if swimming) serves as the handle of the stamp. The bear has no shoulders. Instead there are four convexities with a hole in the center of each—a common element of the Old Bering Sea ornamentation. The anthropomorphic carving also had such holes in places, as did the image on the mask. The mouth of the sea mammal on the mask was also depicted in a manner characteristic of the Old Bering Sea period. In the anthropomorphic carving under examination, we see that the artist emphasizes an intentional link between humans and sea mammals.

The center of the upper lip of the sea mammal serves as the neck of the mask of the anthropomorphic figure. The point of their connection ties two different beings together—man and sea mammal—as it ties

together land and sea. It is possible that the image of the polar bear was included in the composition on purpose, since the life of the polar bear more than any other land animal is closely connected with the sea.

The theme of the connection between land animals and sea animals is often found in archaeological materials, as well as in folklore and ethnographic sources. The archeological connection was obvious during the study of images on the pottery stamp, as in the anthropomorphic image transforming itself into a zoomorphic one. We should note that the mutual transformation of animals, as well as the transformation of animals into humans and humans into animals, is found in many Eskimo legends and stories. We might mention several legends and tales that have been published by O. E. Baboshina (1958:164–167), G. A. Menovshchikov (1958:67–70), and E. S. Rubtsova (1954:437–441). Stories about whales are especially popular all over the coast of the Chukchi Sea and have several variants.

One example: A whale came to a woman when her husband was away from home. A young man who came out of the head of the whale became the woman's guest. Soon the woman's husband discovered that his wife was cheating on him. So the next time he saw the whale at the shore, he killed it with his spear. A cry came from the house, and the young man ran out and entered the head of the whale, but the whale did not move. The vengeful husband called the villagers. They butchered the whale but did not find the man in it. Nine months passed. The woman gave birth to a whale-child. They placed the whale-child into a vessel with sea water. The mother nursed him. The whale-child grew quickly, so they took him to a small lagoon not far from the village. Eventually they set the whale-child free into the sea. In order to avoid accidentally killing him during a hunt, they placed a red cloth made from seal skin on his head. Every year the whale-child would bring many animals to the coast of the village, including whales. Neighboring villages became very jealous, so one day they killed the whale-child. A feud arose that was later resolved.

This same theme of transformation of animals into humans is reflected in archaeological material (e.g., the composition on the pottery stamp) and other folklore. Ekven cemetery, where we found the above-described objects, is very close to the village of Naukan (30 km) where the legend about the whale was documented. The archaeological materials show that the village existed as far back as the Old Bering Sea period, that is, contemporary with the carvings. It is obvious that having these themes occur in both carvings and legends was not a coincidence. They appear in the same territory among related people. So, the archaeological data prove that the theme of transformation was already a familiar one by the beginning of the Christian era.

Images of other animal-humans were also documented in the materials of Uelen cemetery, and visages on "winged objects" at both cemeteries seem to be synthesized animal-humans.

The idea of transformation between different animals is clearly seen on one walrus tusk amulet (Fig. 80:18). A talented artist managed to reflect almost all the species of animals hunted. Carved heads of walrus, mountain sheep, seal or walrus-child, polar bear or wolf, and killer whale were combined so that different perspectives of the same detail on the amulet revealed different images. It is interesting to note that there is an image of a killer whale among the five heads, with its opposite head belonging to a land animal, probably a wolf.

The image of a killer whale on the amulet was purposeful. Killer whales came closer to the coast when they were hunting other whales. Not infrequently, the latter heaved themselves onto the shore and became prey for the hunters. The hunters used to regard killer whales as their protectors; they worshiped them and gave them offerings. People endowed killer whales with supernatural power. One result was the belief that killer whales were helpers of people. This legend appeared and was documented by ethnographers and linguists much later. The idea that killer whales possess supernatural power has survived up to our day. The Chukchi borrowed this belief from the Eskimos, so the legend appears among both groups.

The local people could not understand where the killer whales went in winter when the sea was frozen. The desire to explain their absence was the most likely reason the legend about killer whales turning

into wolves emerged. According to the Eskimos' account, killer whales and wolves transformed into each other depending on the season of the year. In the winter, when the killer whales leave for warmer, more southerly regions, the people thought they turned into wolves and went out onto the tundra. The Eskimos and the Chukchi believed that the transformation took place in the lakes that were located in the hills.

As a result of their gratitude to the killer whales for producing edible whales, and their belief that these orcas were supernatural creatures, the Eskimos also came to think of wolves as sacred. There are documented cases of wolves attacking a deer herd, and the Chukchi herders neither killed the wolves, nor did they even dare to drive them away. People believed that the wolf was a transformed killer whale, and the killer whale was a sacred animal. "In winter killer whales take deer from people, and in the summer they bring them whales instead." Such beliefs were common as recently as the beginning of the twentieth century. That is why it's not odd to find the killer whale head opposite the head of the wolf on the amulet described above. We can explain it using both folklore and ethnographic material.

The Neolithic art of the early Eskimos continues Upper Paleolithic traditions. We see these parallels not only in the similarity of the themes (images of women and animals) but also in the depictions, techniques, and materials used.

It is possible that this is not simply convergence, but also a reflection of more complex processes. It could be that elements of genetic succession were preserved in carving compositions, and these expressed certain ideological views connected with hunting. Many similar myths created by the minds of early hunters are reflected in Paleolithic drawings and sculptures of Eurasia and in Eskimo carvings of north-east Asia, Alaska, Canada, and Greenland.

The ways of life of both Paleolithic hunters and Eskimos, their tools, dwellings, and decorations have features of great similarity. Everything testifies to the closeness of their world view and ideology.

However, a new lifestyle arose following a change in climate, flora, and fauna. Paleolithic hunting methods were supplanted by agriculture and cattle breeding. Several local cultures appeared during the Neolithic period, each of which belonged to a definite ethnic group with its characteristic economy and everyday life, and distinctive features in belief and art.

Among Neolithic cultures, Old Bering Sea holds a very special place and has many similarities with the Upper Paleolithic. Though they had the bow and arrow, a harpoon complex, and new techniques for processing stone, (polishing, boring, and sawing), hunting large animals was the main focus among these people.

The animals of Europe and the Siberian valleys primarily being hunted at the beginning of the Holocene were the woolly mammoth, woolly rhinoceros, reindeer, bison, and bear. In the extreme north-east, among the Eskimos, whale, walrus, seal, polar and brown bear, wild reindeer, mountain sheep, and many other animals were hunted both in the sea and on the tundra.

The similarity of those cultures was noticed long ago by researchers studying their tools and instruments, economy, clothing, and religion (the cult of the female goddess and sculpted images associated with it) (Rudenko 1972:16). Even the houses of the early Eskimos are similar to those of the Upper Paleolithic. The only difference is that the Eskimos used whalebone instead of mammoth bone (Okladnikov 1935; 1937). Similarly common features (though of convergent character) can be seen in the rich and complex art of the Old Bering Sea period. It is very interesting to see the similarity of themes and the presence of the same artistic images in the art of cultures so distant from each other in time. Most of the images are of animals and men. They both used materials such as bone and stone, the only difference being that Paleolithic carvings were of mammoth ivory while Eskimo carvings were of walrus tusk.

Speaking of the parallels between Upper Paleolithic art and Neolithic Eskimo art, we should note that they not only had similar themes and artistic images, but also used similar techniques, such as the one described above, in which images that alter when seen from different perspectives are included in a single

composition (Fradkin 1969). The Upper Paleolithic and Eskimo carvings have much in common as far as technique is concerned, too. They are small in size and should be viewed from a distance no greater than that of an outstretched arm—an exhibit of these carvings could be shown easily only to a small group of people. Eskimo carvings are more tied into a common composition than those of the Paleolithic era were, thus showing a higher level of art.

Chapter 7

The Role of Early Eskimo Cultures in the Ethnic History of the North Pacific Basin

Within the framework of this book and the publication preceding it we have tried to give an overview of the most essential characteristics of the early Eskimo cultures of the Asiatic Bering Sea as they appear in the most important sites of these cultures—the Uelen and Ekven cemeteries. The early Eskimo cultures of the Bering Sea, attaining high development during the first millennium A.D., emerged not in a wasteland and did not develop in isolation. They were closely connected both with the preceding history of Northeast Asia and with cultures both of neighboring and of more distant regions of Asia synchronic with them. Between all these cultures, which belonged to large ethnic communities with different origins, there were multi-system, mutual cultural connections.

The earliest Eskimo culture of Asia represented in the available sites is the Old Bering Sea era, which can be separated into early and late stages. The early stage begins long before the Common Era and ends in the third to fourth centuries A.D. The late Old Bering Sea stage continues into the fifth and sixth centuries A.D., when, from this foundation, the Birnirk and then the Punuk cultures emerge in various regions.

From the beginning of our era and into the first centuries A.D., a localized variant of the Old Bering Sea culture—the Okvik culture—developed on the islands in the Bering Strait.

The differences between these two cultures—Okvik and late Old Bering Sea—bear a much more spatial-local rather than a temporal character: mutual influence and mutual penetration can be seen between these cultures, so that objects of both traditions are frequently encountered in a single burial.

Later, at the end of the first millennium A.D., the Punuk culture was gradually formed from this mixed Old Bering Sea-Okvik base in the northern Bering Sea region.

One cannot agree with N. N. Dikov, who adhered to the outdated concept—refuted by much data—that the Old Bering Sea stage was preceded by the Uelen Okvik (Dikov 1967b). It was purely by chance the single burial with Okvik inventory excavated by Dikov turned out to have no objects with Old Bering Sea traits. With larger excavations, the coexistence of both traditions becomes very clear.

Okvik harpoon heads, which have only one line hole, are later in the evolutionary series, having derived from Old Bering Sea heads with two holes.

Equally, one cannot agree with the opinion stated in the same work that the Birnirk culture emerged from the Okvik culture and consisted of a distinctive evolutionary series in comparison with the “Old Bering Sea-Punuk” line.

Classic Okvik and classic Punuk sites are situated in one and the same place: the Punuk Islands. Both coordinate excellently with the natural environment cultures of walrus and whale hunters.

The economy of the Birnirk culture was based on hunting small pinnipeds, which is demonstrated by the whole complex of hunting inventory. The Birnirk culture was also obviously formed on the basis of some variant of the Old Bering Sea culture, and appeared somewhat earlier than the Punuk culture. This is implied by the close similarity of “atypical” early Birnirk harpoon heads with some late Bering Sea small toggling harpoon heads for hunting seals. These Birnirk heads, though accompanied by barbed forms, lack barbs themselves.

The area where the Birnirk culture originated was north of the Bering Strait, in places where walrus and whale hunting could not be the basis of the economy.

In the settlements of the Bering Strait, the Birnirk people were late arrivals and, in distinction from the Punuk people, did not have a direct genetic connection with the preceding local population. It was not by chance, therefore, that both at Uelen and at Ekven, the Birnirk burial sites were located in the most distant and least favorable sections of the cemetery.

At the same time, it is possible to trace the attempt of the Birnirk people, native seal hunters newly arrived from the north, to adapt to the richer hunting of the Bering Strait region. In the Birnirk burials of the Ekven cemetery were harpoons characteristic of the Birnirk barbed style, but twice as large as was common. They were clearly designated for hunting larger animals, but, being inadequate for this purpose, they were used only by the Birnirk people and were not widespread later on.

The materials from the cemeteries point to the multifaceted distant cultural and ethnic connections of the early Bering Sea people. These connections stretch from their closest relatives, the Aleuts, to tribes of the Okhotsk coast, Primor’e, and ancient Japan. The early penetration of iron artifacts into the Arctic had special significance among these cultural connections.

For example, an engraving instrument with an iron working edge was found in the Uelen cemetery. This iron has, judging from chemical analysis, a mined origin. The iron very well could have arrived in the extreme Northeast from the more southern regions of Priamur’e and the basin of the Sea of Japan. M. G. Levin’s find of a similar instrument in the approximately contemporary sites of Ol’sk Island is an indicator of the route of penetration of metal into the north.

Other finds also point to cultural connections having come from these directions. Some stone knives from the Uelen cemetery are undoubtedly imitations of metal ones, most probably the so-called broad-bladed bronze swords known in Japan and Korea at the beginning of the first millennium A.D.

Some small zoomorphic items of walrus tusk have motifs that are reminiscent of the so-called bird chariots of Kharsk bronze. It is well known that in comparatively recent times a wooden variety of these chariot toys existed among the Ekven, that is, on the Okhotsk coast (Seligman 1928:251–252).

So the route of penetration of cultural influences from East Asia into the Bering Sea region was very probably along the coast of the Seas of Japan and Okhotsk.

Evidently the general spread into the northern part of the Pacific coast of the curvilinear-eye design and masks, which from ancient times were characteristic art of the Neolithic tribes of Primor’e and the lower Amur, should also be assigned to these cultural influences.

Curvilinear design was widespread among the Eskimos in the Old Bering Sea period. All tools made from walrus tusk, and especially objects connected with sea-mammal hunting, were carefully decorated.

In Punuk times this decoration disappears and gives way to much more sparing and schematic forms of ornamentation.

What explains this quick change?

Here we will not consciously examine possible influences from American shores in the Arctic in connection with the formation there of the cultures of the Thule circle, which were closely related to the Punuk, limiting ourselves only to the Asian material. First, as Rudenko noted, at this time connections with the south weakened, and the residents of the western Bering Sea began to establish close contact with the Paleoasiatics of Northeast Asia (Rudenko 1972). Second, the growth of productivity in sea-mammal hunting and the specialization in hunting whales during Punuk times increased to a substantial degree the yields from hunting. Larger settlements appeared on the coast with new types of houses. In the Punuk pit houses, the *nynlyu*, large clan groups numbering up to 400 persons began living together in a single house (Sergeev 1961). Under these conditions, the basic methods of artistic expression of religious-mythological ideas were displaced from the sphere of representational art into the sphere of performance art: oral creations, legends and stories, dances and theatrical mystery plays using masks, and so on.

However, there is no doubt about the succession and preservation of traditions and ideas that were formed in deep antiquity: they can be easily traced through a comparison of Old Bering Sea cultural compositions with the subjects of folklore motifs that have come down to us.

It is interesting that many ideas connected with sea-mammal hunting, which have been preserved among the Eskimos for almost two millennia (as indicated by the coincidence of the motifs of Old Bering Sea sculpture and modern legends), have been documented by ethnographers among natives of the lower Amur and Sakhalin—the Nivkhi. The Nivkhi, like the Eskimos, worshiped the orca and made sacrifices to it. The custom of offering fresh water to a slain seal existed among both the Eskimos and the Nivkhi. Thus, parallels between extreme northeast Asia and the regions located at the juncture of the Seas of Okhotsk and Japan exist both in archaeological and ethnographic material. Also, it is completely natural to suppose that these connections and influences were mutual and spread not just from south to north, but also from north to south.

Influence that spread from north to south can be clearly traced in the archaeological material of the southern shores of the Sea of Okhotsk, that is, Sakhalin, Hokkaido, and the Kurile Islands; and we now come to an examination of this influence.

The early history of Hokkaido, up to and including the first millennium B.C., was closely connected with the early history of the Japanese Archipelago in general. The Neolithic cultures of the Japanese Islands are the Proto-Jomon (sixth to fifth millennia B.C.) and Jomon (fourth to first millennia B.C.). In Hokkaido, the latest stages of Jomon were preserved into the first millennium A.D. The ethnic associations of the bearers of these cultures are not especially in doubt. Judging by everything that is known about them, these were the ancestors of the Ainu.

The earliest sites known to us on Sakhalin Island belong to the second millennium B.C. These are the sites of Starodubskoe in the south of the island and Nogliki in the north, which were investigated by R. V. Chubarova (Kozyreva 1967). Well-known differences exist between these early Neolithic cultures, but more important are the similarities. Temporally, they are more or less synchronic, though the Nogliki site may be somewhat older than the Starodubskoe.

Kozyreva notes two directions of contacts between these earliest Sakhalin cultures. One of the lines of connection leads to the continental regions of the lower Amur, where Kozyreva is inclined to find the bearers of these cultures.

On the other hand, one should note the connection of Starodubskoe and Nogliki ceramics with those of Early Neolithic Japan—the Proto-Jomon period. Connections with later ceramics of the Japanese Islands, that is, with the Developed Jomon, are not noted. On this basis, Kozyreva rejects the possibility of early penetration of the Ainu into Sakhalin. She assigns the appearance of the Ainu on Sakhalin to a much later time—the early fifteenth century.

One can agree with this to the extent that we are talking about the modern late Ainu, the Neo-Ainu who are well known to us ethnographically and historically.

However, it seems to us that the preservation of the characteristic features of the Proto-Jomon in the earliest Neolithic period on Sakhalin leads us to assume that in preceding periods (i.e., sites on Sakhalin that are presently unknown to us), some part of the earliest bearers of the Proto-Jomon culture, which might be called Paleo-Ainu, came through Hokkaido to Sakhalin. Here they were mixed with immigrants from the mainland, most probably with the early Nivkhi. The development of their culture then passed along a special route, while in the region of the Japanese Islands the Paleo-Ainu culture developed in isolation from these strong mainland influences and retained its unbroken progression through successive stages of the Jomon culture, and up to the formation of the Neo-Ainu culture around the end of the first and beginning of the second millennia A.D.

Formation of the characteristic features of the Neo-Ainu culture was connected with the spread in the north of Honshu Island of the Japanese population, which had been founded by this time.

The earliest artifacts of the Kurile Islands—from sites on Iturup Island, including Kosatka, Kuibyshevka (Rubetsu), and several others—belong to the end of the first millennium B.C. and beginning of our era and have many features connecting them with cultures of the Late Jomon of the Japanese Islands. The bearers of this earliest culture in the Kurile Islands might be considered early Ainu, but not the earliest Paleo-Ainu, who several millennia before our era penetrated into Sakhalin, but rather later Ainu, who passed through the complex stages of the Jomon culture.

At a later time, cultures of a different type were spread around Sakhalin from the coastal regions of Hokkaido—especially its northern part—to the Kurile Islands, which in foreign literature received the name Okhotsk. In order not to confuse these cultures with some other cultures of the north coast of the Sea of Okhotsk, here we will call them South Okhotsk.

The largest sites of the South Okhotsk culture on Sakhalin Island are Susui and Verkhnyaya Sano-sava. On Hokkaido Island, the best known site of the South Okhotsk is the Moioro shell midden. In the Kurile Islands, the South Okhotsk culture was documented on Iturup Island at the village of Kuril'sk, on Paramushir Island, and on Shumshu Island.

Precise dating for all these sites is still in dispute, and we are inclined to believe that the Kozyreva's dating of the Susui site (second half of the first millennium B.C.) is somewhat too early, and that dating the early stages of the South Okhotsk culture to the beginning of the first millennium A.D. and the late stages at the end of it, which is generally accepted in foreign literature, especially Japanese, is more accurate. Also, many objects from Sakhalin, in particular from the Nevel'sk site, were so like the objects from Moioro, that they are considered to have been simultaneously produced (Oba 1955).

For our theme, the bone inventory in the sites of the South Okhotsk culture is of greatest interest. Its distinctiveness, in comparison with the bone inventory of early cultures of the Bering Sea, is due to the fact that here, in the south of the Sea of Okhotsk, walrus tusks were less plentiful and tools were made from the long-bones of various animals, whale bones, and similar low-quality materials. Nevertheless, the structural principles of harpoon heads from Nevel'sk and Moioro are often extremely close to those of Old Bering Sea harpoon heads. There are heads here with a single line hole and an end blade, but with a complexly shaped spur that is characteristic of such constructions in the Old Bering Sea-Okvik stage. What is more, there are flat heads here with two line holes, an open socket, and a symmetrical spur, which are identical characteristics of Old Bering Sea. The difference is in the absence in the South Okhotsk culture objects of insets and internal grooves for the socket girdle. This is completely understandable inasmuch as South Okhotsk heads of this type were made of thin, brittle long-bones.

Connections between the South Okhotsk culture and the early Eskimo circle of cultures can be also traced in other kinds of bone inventory, such as labret-like studs for floats, bone mattocks, spades, and others; as well as in the form, paste, and decoration of ceramics.

As skull measurements of the bearers of Moioro culture taken by Japanese physical anthropologists show, this people stands closest of all, even in paleoanthropological regard, to the Eskimos and Aleuts. There are also elements in the material culture connecting the South Okhotsk and Aleut cultures, e.g., non-toggling harpoon heads.

Concerning decoration, though the form of South Okhotsk toggling harpoons—as we have already said—is reminiscent of Old Bering Sea, the decoration covering them is much simpler and is most similar to Punuk.

Thus, the question arises, how can one explain these complexes, multifaceted and not entirely simple connections between the South Okhotsk culture and the Eskimo-Aleut circle of cultures in the Bering Sea region? Rudenko says that it is “across Kamchatka, to the island chain fringing the continent of Asia on the east, to the area where seamanship and the harpoon complex are developed from early times that we must keep looking to solve the problem of the origin of the ancient culture of the Bering Sea area” (Rudenko 1972:176).

Kozyreva believes that the Okhotsk culture emerged in southern Sakhalin and northern Hokkaido and spread to the north through the Kurile Islands, with Shumshu Island serving as the northernmost boundary of the spread of the Okhotsk culture.

Kozyreva is correct when she notes some similarity between the stone inventory and ceramics of Sakhalin’s variants of the South Okhotsk culture and the cultures of mainland Priamur’e and Primor’e. This similarity is entirely natural inasmuch as the bearers of the South Okhotsk culture must inevitably have been pushed together on Sakhalin with the ancestors of the Nivkhi, who were closely connected to the mainland, and mutual cultural contacts emerged between them. However, traditional bone artifacts, in particular tools for sea-mammal hunting characteristic for the South Okhotsk culture, do not have roots either in Sakhalin or Hokkaido. On the contrary, these traditions appeared here suddenly in fully finished and highly developed form. On the well-examined northern coast of Hokkaido, it can be especially clearly seen that the South Okhotsk culture there represents a later sudden, foreign invasion, which subsequently dissolved and came to nothing in the environment of an abundant local Ainu population, which continued traditions of the Jomon culture that differed sharply from those of the Sea of Okhotsk.

Therefore, it seems more probable that the expansion of the Okhotsk Sea culture went from north to south, from Kamchatka to the Kurile Islands, Hokkaido, and Sakhalin. Rudenko notes that “On Kamchatka, no sites have been excavated so far yielding evidence of coastal inhabitants for whom sea mammal hunting provided the basis of subsistence. Nevertheless, isolated finds of toggling harpoon heads suggest that a culture related to that of the Eskimo will be discovered in Kamchatka. Toggling harpoon heads have been found in considerable numbers in kitchen middens on the Kuriles and other islands that fringe the eastern coast of the Asiatic continent. Some of them are of simple form, with a bifurcated basal spur and invariably with an open socket. However, harpoon heads with symmetrical trifurcated spurs, similar to those of Old Bering Sea, also occur” (Rudenko 1972:175).

At the time when these lines were written, that is, in 1947, sites of the South Okhotsk culture had still not been thoroughly studied. Now we know that the toggling harpoon heads mentioned in Rudenko’s work belong to the Okhotsk Sea culture, meaning they most probably date to no earlier than the first centuries of our era. This is precisely the time when the Old Bering Sea Eskimo culture, after going through its long multi-century development, reached its highest efflorescence. Therefore, it is impossible to assume that the Okhotsk toggling harpoons were genetic predecessors of those of Old Bering Sea since chronologically they belong to the same or even a later period.

We still do not know when, from where, and by what routes the ancestors of the Eskimos and Aleuts arrived on the shores of the northern part of the Pacific basin. It is presently unknown which Eskimo-Aleut cultures preceded the Old Bering Sea in these regions. But one thing is sure: the Old Bering Sea culture arose long before our own era. It is also entirely probable that the elements of Old Bering Sea and cultures related to it could have spread at the outset of and even into the first centuries A.D. from north to south and served as the basis on which the Okhotsk Sea culture formed and developed.

We find confirmation in archaeological sources of the presence of cultural influences coming from the Bering Sea coast far to the south. R. V. Chubarova-Kozyreva wrote that even in the stone inventory of the Sakhalin sites of the South Okhotsk culture there are indications of connections moving from Kamchatka to Sakhalin, and not the reverse. "Great similarity is revealed, for example, in the elongated leaf-shaped forms of knives from sites on Sakhalin (for example, at the city of Nevel'sk and on Cape Kril'on) and Kamchatka. A large, oblong, obsidian knife from the site on Grazhdanskaya Street in the city of Nevel'sk is very interesting. There is no obsidian on Sakhalin, so this knife was evidently brought from Kamchatka" (Chubarova 1957).

So, although Chubarova-Kozyreva basically holds the point of view that the spread of the South Okhotsk culture of sea mammal hunters of the Eskimo-Aleut type proceeded from south to north, the factual material she cites inclines to rather the opposite.

In M. G. Levin's opinion, "the area of initial settlement and formation of the northeastern Paleo-Asiatics lay on the northern part of the Okhotsk coast" (Levin 1958:225).

To the north, deep in the regions of the Chukchi Peninsula, were Yukagir tribes. To the east, on the coast, were the descendants of the early Eskimo-Aleuts, their settlement then being much broader and evidently embracing the coast of eastern and southern Kamchatka. Judging by the substrate traces they left, these people retained, perhaps to a large degree, remnants of early Eskimo-Aleut unity and were different from the population of the northern Bering Sea by being closer to the Aleuts not only in language but also in material culture. The latter is the result of climatic conditions of the Kamchatka coast that are closer to those of the Aleutian Islands than to those of northern Chukotka. In addition, there were many anadromous fish near the mouths of rivers in Kamchatka, so sea-mammal hunting wasn't a primary characteristic.

Subsequent movement of the Paleo-Asiatics into the territory they now occupy, and in particular their appearance on the coast of the Pacific Ocean, entailed partial assimilation, but mainly, further resettlement of the bulk of the Eskimo coastal population.

In extreme northeast Asia, in the region of the Bering Strait, these movements were directed along a previously known route on the Alaskan Arctic coast. They are assigned to the end of the developed Old Bering Sea period (that is, to the third to fifth centuries A.D.). Definitely connected with these events is the beginning of the formation of the Birnirk and Punuk cultures.

It is natural to suppose that the Kamchatka coast, directly adjoining the area of initial settlement by the Paleo-Asiatic, was affected by the latter's advance somewhat earlier, that is, in the first centuries A.D.

The Eskimo-Aleut population of Kamchatka was partially assimilated by the newly arrived Itel'men and Koryak, which is indicated through many features of their language and culture (Vdovin 1966). Some of the Eskimo-Aleuts may have settled in other regions, in particular in the south, along the Kurile chain, though it is possible that some descendants of this resettlement also went in other directions—to the east into the Aleutian Islands, and to the north—into the regions of Chukotka and Alaska.

Even up to the present, the lexical and structural elements of the Aleut language in the language of the Sirenik Eskimos cause bewilderment among linguists (Menovshchikov 1964).

In our opinion, it is fully possible that the similarity of the Sirenik and Aleut languages can be explained by the fact that part of the Eskimo population, under pressure from the Paleo-Asiatics, was forced to leave the southern regions of the Kamchatka coast and go north, and some of these new arrivals remained in Chukotka.

Early contacts between the Paleo-Asiatics and the early Eskimo-Aleut population of Kamchatka are corroborated, in our opinion, by the style and decoration of toggling harpoon heads. These harpoons are similar in form to those of Old Bering Sea, though they were made from bone rather than walrus tusk and covered with designs similar to Punuk. Thus, in the region of expansion of the South Okhotsk culture, the influence of the Paleo-Asiatics in the realm of art (judging by decoration on harpoons) can be traced several centuries farther back than on the coast of the Bering Strait.

Some Paleo-Asiatic influences can be traced in the construction methods of harpoon heads, in particular, head No. 21 from materials published on the Esan culture (*Hokkaido Esan*. . . , 1960) and by the presence of barbs. The method of attaching the flaked flint end blade to the harpoon head by binding is also strongly reminiscent of Koryak methods.

While only a small amount of iron reached the Old Bering Sea population, the bearers of the South Okhotsk culture used metal very widely. The remains of iron end blades on harpoon heads are encountered even in the early stages of the South Okhotsk culture. The later levels of South Okhotsk sites, in particular Moioro, contain Japanese iron swords and daggers and a Sung Dynasty (tenth to thirteenth centuries A.D.) bronze coin. These data are cited by Harumi Befu and Chester C. Chard in their book, which is a very good survey of the South Okhotsk culture (Befu and Chard 1964).

Later, the bearers of the South Okhotsk culture were evidently assimilated by the more dense local populations of Hokkaido and Sakhalin.

The process of their assimilation was accelerated by a new wave of Ainu settlement on Sakhalin and the Kurile Islands. This wave, which now consisted of the Neo-Ainu people, was connected with the expansion into southern Sakhalin and the Kuriles, as far as the south end of Kamchatka, of the Neidzi Ainu culture, which is characterized, in particular, by ceramics with internal lugs. These internal lugs were copied by the Ainu from metal vessels of Japanese origin. Kozyreva's fully substantiated opinion indicates that the appearance of the Ainu, bearers of the Neidzi culture on Sakhalin and the Kuriles, dates from the beginning of the fifteenth century A.D. It was at this time that the Japanese finally expelled the Ainu from northern Honshu, leading to a sharp increase in the density of the Ainu population on Hokkaido and causing a large number of Ainu to move farther north.

However, the numerous parallels between the culture of the Ainu, including not only those on Sakhalin but also those living on Hokkaido, and the culture of the peoples of the lower Amur, the Nivkhi and Oroch, could hardly be explained by these late contacts. It is entirely possible that those similarities assigned to the realm of religion, in particular the specifics of the bear festival, have greater antiquity and go back to the Paleo-Ainu, bearers of the Proto-Jomon traditions, who penetrated into Sakhalin much earlier, long before our era. The religious views common for the Nivkhi, Ainu, and Eskimos, for example the killer whale cult, were evidently brought into these regions by bearers of the South Okhotsk culture.

Many researchers of the Ainu, as early as the nineteenth and beginning of the twentieth centuries, point to ethnographic connections between the Neo-Ainu, that is, the last Ainu migratory wave to Sakhalin and the Kuriles, and some more ancient residents of those places. These predecessors of the Ainu are known in the literature by the name Tonchi, Tontsi, and the like. They were evidently the first founders of the South Okhotsk culture and were later assimilated or annihilated by the Ainu population and by groups of northern Mongoloids who arrived on Sakhalin from the lower reaches of the Amur.

Very interesting and important, in our view, is mention of the fact that as late as the beginning of the twentieth century the Ainu had an excellent idea of the appearance of their predecessors, who lived before them on Sakhalin and nearby islands.

B. O. Pilsudskii wrote: “Several of the Ainu assured me that the Tontsi even now come with Americans to Tyulenii Island to catch fur seals and that the Ainu who went to the island in boats during hunting season saw Tontsi there. It is known that in recent times, the company having the lease on fur seal hunting in the Tyulenii and Commander Islands bring the Aleuts settled in the latter to help with the hunting. Consequently, the Aleuts reminded the Ainu of the appearance of the Tontsi preserved in their traditions” (Pilsudskii 1909:9). It should be emphasized that the Aleuts who came from the Commander Islands to hunt had been settled there in the first half of the nineteenth century and had been subjected in significant degree to Russian influence and assimilation. However, even these Aleuts reminded the Ainu of the Tonchi.

Ideas that were formed among the Nivkhi also attest to earlier contacts of the Eskimo-Aleuts—or of later, but closer ones with Aleut groups—with the aborigines of Priamur’e and Sakhalin. In 1893 L. Ya. Shternberg recorded the statement of an old Gilyak about the commonality of many customs and ways of life of the Nivkhi and Aleuts.

Of course, as Shternberg (1933:19–20) noted, such primitive conclusions might not have much significance in resolving the question of the origin of the Gilyak. However, the fact that among the Nivkhi, the Eskimos, and the Aleuts there are similar customs, ideas, and parallels in material and spiritual culture is very interesting and deserves attention. It is possible that some components of the South Okhotsk culture similar to those of the Aleut were borrowed by the Nivkhi.

It remains for us to examine sites of early cultures of the northern shore of the Sea of Okhotsk. The earliest of these are Neolithic, but yet pre-ceramic, sites on the islands of Ol’kom and Nedorazumeniya. R. S. Vasil’evskii, who investigated the inventory of these sites, notes the multilateral connections of this Neolithic culture. He writes that “the Neolithic culture of the northern part of the Okhotsk coast was formed under the influence of two cultural currents: one of them came from Pribaikal’e, the other from the southeast, from Primor’e. At the same time, it is clear that the earliest culture of the Okhotsk coast known to us here preceded the development of sea-mammal hunting.

“Judging by the inventory found on Nedorazumeniya Island (arrowheads, spear points and knives), the population that occupied the site lived by hunting and fishing, adding to the food supply through sophisticated collecting of edible mollusks and plants. It is possible that the early residents of the island occasionally hunted pinnipeds, but maritime hunting was not yet their chief defining economy.

“The formation of an economy of sea mammal hunting was for them a future affair” (Vasil’evskii 1964:674).

A later stage in the development of the Neolithic culture of the northern part of the Okhotsk coast may already be tied to the establishment of the Old Koryak ethnic community. All the sites of the North Okhotsk culture are noted for their great uniformity. In this stage sea-mammal hunting becomes the basis of the economy, other economic pursuits having only a subsidiary character. A characteristic indicator of the Old Koryak economic-culture is harpoon heads. Vasil’evskii distinguishes in his work no fewer than seven varieties of such heads. Also, in a series of harpoon head types distinguished by him, there are features very similar to the characteristic heads of the South Okhotsk culture, in particular with Sakhalin heads. This leads to the supposition that the formation of a sea-mammal hunting, economic-cultural type among the Old Koryak promoted contacts of this people with the early Eskimo-Aleut population of Kamchatka.

Chronologically the Old Koryak culture of sea-mammal hunters was subdivided by Vasil’evskii into three stages. The middle one of these stages, in which artifacts of iron are widespread, he dates from

the seventh to the tenth century. Consequently, the earlier stage is the stage of formation among the Koryak of an economy of sea-mammal hunting belonging to the first centuries of our era. Such dating fully agrees chronologically with the map sketched earlier showing ethnic contacts in northeast Asia and the wide distribution of the variants of sea-mammal hunting cultures around the Sea of Okhotsk associated with them.

The ancient Paleo-Eskimo-Aleut culture of Kamchatka was almost completely assimilated with the arrival of the Paleo-Asiatics. However, it is this culture that was the base on which the Okhotsk Sea cultures emerged.

In the southern island part of the Sea of Okhotsk, the South Okhotsk culture continued for a long time to preserve early Eskimo-Aleut features, both in hunting equipment and in the sphere of spiritual ideas. By virtue of the island character of this region, assimilation here proceeded comparatively slowly.

In the northern Sea of Okhotsk, the Eskimo-Aleut features in the sites known to us archaeologically are more poorly reflected, since the ancestors of the Koryak arrived in this region very early and entirely assimilated the small Eskimo-Aleut groups, which had already been forced out of Kamchatka by the Paleo-Asiatics.

In this way it is possible to explain the seeming peculiarity and originality of the Koryak culture of the northern part of the Okhotsk coast. Nevertheless, this culture is still genetically connected to the whole common Okhotsk Sea culture and goes back through its roots to Paleo-Eskimo-Aleut prototypes, which are also the foundation of Okhotsk Sea cultures.

From the above, it follows that over the course of the first millennium A.D., and in particular its first half, very substantial ethnic and cultural shifts occurred in northeast Asia, which in many ways determined the later ethnic history of these regions. With this, it is possible to distinguish two chief factors that determined the direction of these shifts. First was the flowering of the Old Bering Sea culture of sea-mammal hunters in the region of the Bering Strait and the Eskimo-Aleut cultures in adjoining regions that are related to it. Second was the sharp expansion of the ethnic territory of the northeastern Paleo-Asiatics—the ancestors of the present-day Chukchi, Koryak, and Itel'men—which corresponded in time with the late period of development of the Old Bering Sea culture.

Conclusion

The Results of Paleo-Ethnographic Research in the Bering Sea Region

Generations of researchers have written hundreds of monographs devoted to the study of the origin of Eskimo culture. The number of publications grows each year because even now the Eskimo's past varies in the imagination of different scholars.

The Eskimo problem is impossible to resolve using only the data from archaeology or physical anthropology. The data from ethnography, language, folklore, and toponymy are also important. Only interdisciplinary research with parallels drawn from the known cultures of other peoples will be the proper way to address the Eskimo problem.

The publication of *The Ancient Culture of the Bering Sea and the Eskimo Problem* by S. I. Rudenko (1947) was a very important event in the study of Eskimo culture. But this work, for the most part, was based not on the results of planned excavations, but on surface material, which of course put some limitations on the researcher's work. Despite this, a number of generalizations made by Rudenko, with the aid of comparative data, have retained their significance even today.

Our book, *Ancient Cultures of the Asiatic Eskimo* (1969), was also devoted to the study of Eskimo culture. Many years of excavation at the Uelen cemetery served as the basis for this work. Archaeological and ethnographic research at Uelen and other places on the Chukotkan coasts of the Bering Sea and in the Bering Strait allowed the authors to trace more closely the development of Eskimo culture during the previous two millennia. Besides the information from the excavations at the Uelen cemetery, useful material was also obtained from the Ekven cemetery, which was much larger and located farther south along the sea coast.

The material from the Uelen and Ekven cemeteries greatly improved our ideas about the lifestyle of the early Eskimos who lived at the beginning of the Christian era, a period that was characterized by the Old Bering Sea and Okvik cultures, then later by the Birnirk and Punuk. First, we should emphasize the high degree of stability and the continuity of all known Eskimo cultures in the region of the Bering Sea. While the styles of ornamentation and forms of artistic expression changed, and harpoon heads styles varied during different periods—though some basic forms were used, to a degree, in all periods—the main features of life remained unchanged. Sea-mammal hunting continued to be the basis for existence, especially walrus hunting. Of course, some variations existed during certain periods, such as the Birnirk when the preference was for small pinnipeds. On the other hand, a gradual increase in the importance of whale hunting was seen in this region, though whales had been hunted as far back as the early stages of the Old Bering Sea period.

The hunting of land animals was always important, too. The types of associated material items (bows, arrows, adzes, and ulus) were distinct for their exceptional persistence, testifying that this economic-cultural complex had developed its basic features long before the development of the Old Bering Sea stage.

The high degree of continuity in Eskimo culture is reflected not only in tools and household items, but also in such readily changing areas as folklore and mythology.

A number of carvings among the excavated material show that all the basic religious-mythological ideas and folklore subjects still characteristic of modern Eskimos were well-known and widespread as early as the beginning of the Christian era.

The high degree of stability and limited number of variations in Eskimo culture during its known period of existence does not mean that detailed and precise dating is not important. In that respect, the excavations in eastern Chukotka provide new data, and the material from those excavations disproves the notion that the Uelen-Okvik stage was the oldest of all the known cultures, as advocated by Rudenko. Okvik forms were known everywhere that Old Bering Sea forms existed. Both forms were similar and coexisted to a great degree. The forms did not succeed each other in time, but more likely were regional variants of the same culture. Wherever one might place their origins, their areas overlapped significantly throughout the region being examined. Moreover, there is a basis for believing that early Old Bering Sea forms appeared first, while Okvik forms came later and are synchronized primarily with the developed and even late Old Bering Sea period.

As far as the “Uelen” component of the artificially created combination “Uelen-Okvik” forms is concerned, it was represented only by material found by Rudenko in the Uelen village site and resembled the Okvik forms only in outward appearance without exhibiting any genetic connection.

We have studied this site more thoroughly along with collecting new ethnographic data (e.g., local legends). The data led us to conclude that Uelen village was still occupied many centuries after the Uelen cemetery stopped being used, that is, up to the sixteenth to seventeenth centuries. The people who lived at Uelen were not just Eskimos but also Chukchi who, by the time they came to Uelen, had mastered sea-mammal hunting. This explains the seeming archaic and primitive nature of the material from the Uelen site.

Most of the graves in the Uelen and Ekven cemeteries belonged, for the most part, to the mixed late Old Bering Sea-Okvik type, which dates back to the fourth to seventh centuries.

Further development of the later forms of the early Eskimo culture of sea-mammal hunting took place on the basis of this synthesis. In the seventh and eighth centuries, Birnirk forms were associated with hunting small pinnipeds. In the eighth and ninth centuries, Punuk forms were characterized by the appearance of a special type of whale hunting. Although we may say the Birnirk forms are closer to the Okvik prototypes and that the Punuk ones bear features of the Old Bering Sea period, these complexes are all generally rooted in a common foundation.

The ninth and tenth centuries are the Birnirk-Punuk period, when both types existed but their geographic distribution varied. Birnirk forms tended to be located mainly near the Arctic Ocean while Punuk forms were closer to the Pacific. In the Bering Strait region, their areas of distribution overlapped. Further evolution of these cultures led to the appearance of the so-called prehistoric and later Eskimo cultures.

The excavations at the Uelen and Ekven cemeteries gave us a mass of material in the form of hundreds of harpoon heads, which were not found in isolation but in grave complexes. This material allowed us to employ a formalized statistical study. As a result, the harpoon heads were grouped in a number of basic typological series. The sequence of the stages of development was found by building an evolutionary chain, and a number of important inferences were drawn from the statistical analysis of the type distribution of harpoon heads in graves and in their compatibility within an individual grave.

Toggling harpoon heads, which were characteristic of all the evolutionary stages of the Old Bering Sea culture, can be subdivided into four major groups.

Group I consists of the typical Old Bering Sea harpoon head with two holes for the line, an open socket, more often than not with lateral insets, and a symmetrical spur. These harpoon heads originated in spear heads with inset microblades.

Group II consists of harpoon heads with only one hole for the line and a closed socket. These heads have been identified in all the stages but became a dominant form only during the Punuk period. Unlike Group I, they were usually equipped not with side blades but with end blades made of ground slate, which were hardly distinguishable from the end blades of javelins and must have originated in them.

Group III consists of harpoon heads with only one hole for the line, an open socket, and an asymmetrical spur. In evolutionary terms, this group is a transitional stage between Groups I and II, although chronologically the group existed throughout all the periods.

Group IV consists of harpoon heads with prongs, characteristic of the Birnirk period. Genetically they are a synthesis of the Group I tradition and pronged non-toggling harpoons and fish spears.

According to accumulated ethnographic data, different forms of the harpoon were used depending on the ecological situation of a given time or region.

In general, toggling harpoons were used in places where there was hunting from boats when the sea was covered with ice floes. In areas where there were no ice floes or the ice was solid and hunting could be done only at air holes, people usually used either non-toggling harpoons or so-called semi-toggling harpoons of the Birnirk type.

Smaller details of harpoon head construction also reflect ecological nuances. Thus, the statistical compatibility of variants X and Y within one type (Collins 1937) is connected with climatic differences and with the severity of the ice regime. Other variants reflect social diversity. Consequently, the spurs in Group II could number either one or three. The distribution of these variants throughout the cemetery leads us to assume that these differences reflect either a tribal or a fraternal subdivision of the inhabitants of the early villages.

An iron burin found in an Old Bering Sea grave (analysis indicated that the iron was not meteoritic) and many metal tool imitations made of stone and bone not only allows us to reconsider the time of the introduction of iron into the Arctic region, but also reveals the major trends of the cultural links in the Bering Sea region during the first centuries A.D. The direction of these links appears to have stretched more intensively to the south and southwest, the regions of the Sea of Japan and the Amur River.

The excavations at Ekven cemetery provided us with much new paleoanthropological material which supplemented numerous older findings. A brief preliminary report was published but contained the results of only a portion of the material. Even so, the data allowed us to make some inferences concerning the formation of the Arctic peoples. In general, all the paleoanthropological material from the Uelen and Ekven cemeteries seems to prove the hypothesis of V. P. Alekseev, which was stated in his article on the craniology of the Asiatic Eskimo. The people from the cemeteries at Uelen and Ekven had much longer heads than the contemporary Eskimos of the same region, although their heads were smaller than the heads of Greenland Eskimos. Thus, neither the Bering Sea variant of the Eskimo complex as A. Hrdlička (1930) and G. F. Debets (1951) thought, nor the Greenland one as M. G. Levin (1947, 1958b) expected, were the original variant for the formation of the physical anthropological features of the modern Eskimo.

The original variant was some neutral transitional complex that was recorded for the populations who left the Ekven and Uelen cemeteries behind. On the basis of that complex, we have the Bering Sea variant in the west of the Eskimo range arising as a result of brachycephalization, and the Greenland variant to the east as a result of specialized adaptation. Thus, the processes of adaptation and brachycephalization worked simultaneously in different areas of the modern Eskimo range.

Recent physical anthropological studies show that the Arctic peoples belong to the Pacific branch of Mongoloids and are closer to the eastern and southern than to the mainland Mongoloids. The Arctic peoples include the Eskimos, Aleuts, and Chukchi. Results from the latest research demonstrate a genetic unity between Eskimos and Chukchi and completely reject the hypothesis of the Eskimo wedge. Therefore, we think that the differentiation of the continental type—the reindeer-herding lifestyle that is characteristic of the Chukchi, and the sea-mammal hunting style that is characteristic of the Eskimo—occurred in a genetically homogeneous environment.

So far there is no final conclusion as to where the differentiation began or how the Chukchi Peninsula was entered by the Chukchi and Eskimo.

But we can make some suppositions that are stated only as working hypotheses. These hypotheses are grounded in a systematic fifteen-year-long study of the archaeology, ethnography, language, and folklore of the west Bering Sea Eskimo and are based on numerous publications in archaeological, physical-anthropological, and ethnographic studies done in Alaska, Canada, and Greenland. These statements are: The genesis of Eskimo culture is connected with sea-mammal hunting, and the development of the main features of the culture ultimately occurred in the Bering Sea region. That was the place where the Eskimo expansion into new territory started.

Originally the Eskimo-Aleut tribes probably occupied more southerly territories, perhaps along the Sea of Okhotsk coast up to the region of the Shantar Islands. Later, they moved farther north along the coast of Gizhiga and Penzhin, from where the ancestors of the Eskimos and Aleuts moved to the coast of the Bering Sea after crossing the narrow portion of the Kamchatka Peninsula.

We should also note that even now a number of geographic place names in northern Kamchatka are of Eskimo origin despite the fact that Eskimos no longer live there.

According to the results of archaeological excavations, the peninsula was populated long before Eskimo-Aleut tribes came. Possibly some of the newcomers were assimilated, but the majority of the Eskimo-Aleut tribes went farther north. Having inhabited the coast of the Bering Sea and the Bering Strait, the Eskimos crossed the strait in the region of St. Lawrence Island to the south and the Diomed Islands to the north. As far as the differences between the Eskimos and Aleuts is concerned, the latter may not have gone north, but (as Krasheninnikov thought) either crossed the Commander Islands or went along the southwest coast of Alaska and settled in the Aleutian Islands. Undoubtedly some people were already living on those islands; probably Indians who migrated there from more eastern parts of North America.

Paleo-Aleut stone items are more comparable with Neolithic ones from pre-Eskimo cultures of Alaska than with those of the early Eskimos.

Further study of the Aleut language may reveal that the development of Aleut vocabulary is associated, to some extent, with borrowed American Indian words. These borrowings should be very obvious among the peoples of the Aleutian Islands, which are close to mainland Alaska. Some borrowing is also seen in art and the material culture.

Of the Eskimo-Aleut tribes that moved north into Chukotka, no evidence is available that indicates they met other ethnic groups there. And no wonder, since we believe that the spread of Eskimos along the coast of the Bering Sea began no earlier than the first half of the second millennium B.C.

Long before this, proto-Indian tribes came through the Beringian isthmus. Then the Bering Strait formed and climatic changes forced modifications in the means of subsistence. Not enough reindeer existed on the relatively narrow piece of land at the eastern end of the Chukchi Peninsula, which is a sound argument for the claim that continental reindeer hunters would not go so far to the northeast. Even now, in the twentieth century, the number of deer that can be pastured in that region of Chukotka is extremely limited.

At that time, techniques for hunting reindeer were poor, and that was the reason Neolithic tribes could not exist solely on hunting. Later, after the Chukchi tribes came to Chukotka and reindeer herding appeared, the people in the northernmost regions of the peninsula had to hunt tundra animals, fish, and sea mammals in season.

We believe that the northeast border, beyond which no reindeer hunters passed in the second millennium, was the territory from the Amguema River in the north to Cross Bay in the south.

The Chukchi must have come to the western Bering Sea in the first millennium A.D., and their contact with the Eskimos was brief. Later, after the appearance of Koryak and Chukchi reindeer herding, the Chukchi opened up deer pastures near the coast that was populated by the Eskimos. Wars, which are described in the folklore of both peoples, occurred during this period. We believe that the time period for this was from the twelfth to sixteenth centuries. In the sixteenth to seventeenth centuries, due to population growth, the Chukchi could no longer be sustained by deer herding alone due to a lack of sufficient pastures. Some groups shifted to sea-mammal hunting, having borrowed techniques from the Eskimos.

After the Chukchi moved to the coast, some of the Eskimo villages became Eskimo-Chukchi. Originally a purely Eskimo village in existence long before the Christian era, Uelen eventually became a Chukchi village. W. G. Bogoras (1934) made the same observation, noting that the Eskimos were gradually assimilated by the Chukchi. As support, he compared the names of a number of Eskimo villages on the coasts of the Arctic and Pacific Oceans that by the end of the nineteenth century were occupied by Chukchi.

These long-term contacts between the Eskimo and Chukchi could not help but influence the physical-anthropological type of the new arrivals. Such connections existed only in the areas where the two ethnic groups had contact. So how can we explain the fact that the inland Chukchi, who had no contact with the Eskimos, belong to the same group of Arctic peoples? That contact dates back to the time when the Eskimos were still in the southern regions of the Sea of Okhotsk coast, which bordered the northern edge of the Amur River region. Early Koryak and Chukchi tribes came from the more continental regions that were not connected with the coast. Contact may have allowed borrowing of material culture (the beginning of reindeer herding) as well as of spiritual culture (religious and shamanistic beliefs).

Koryak and Chukchi groups moved north most likely in the middle of the first millennium B.C., and unlike the Eskimos who moved along the coast in boats, their movement was slow. The Koryak tribes appeared slightly later than the Chukchi and therefore had more contact with the continental Siberian peoples. This may explain why the Koryak had reindeer herding earlier than the Chukchi. Chukchi reindeer herding was borrowed from Koryak tribes.

The Chukchi who came to the coast did not alter the culture of the sea-mammal hunting Eskimos, but they brought some elements of the Siberian continental cultures that can be seen in spiritual manifestations. In addition to the direct influence on the spiritual culture of the Eskimos, we can see other, possibly even more important, indirect influences.

The transition from the late Old Bering Sea to the early Punuk period extended for several centuries (seventh to ninth). The process had a number of features that indicate an increase in intertribal warfare. During this period, more massive arrowheads and plate armor appeared, which were used not only for hunting but also for war.

The growth of coastal Eskimo villages was related both to the economy and to warfare. The larger villages were stronger in time of war, as can be seen by examining two tendencies that are not genetically connected but whose directions coincide and so stimulate each other. On one hand was the growth of work groups stemming from the onset of whale hunting. On the other was the tendency toward unification in large villages based on the need for protection due to warfare. Both of these stimulated the further development of whale hunting, because there were more people to be fed. More people living in a village

meant more boats going out to sea, which meant a greater chance for a successful whale hunt. The combination of all these factors made the villages grow quickly, which eventually brought changes in the spiritual culture. More possibilities of having large feasts, competitions, song and dance and other forms of art exist in a large village, as well as there being greater need for them. As the demand for these things increases, certain elements of spiritual culture might be borrowed from other cultures. Several centuries of proximity and a mutual cultural influence made the genetic homogeneity of the Chukchi and Eskimos even greater among the people of northeast Asia. However, we think that the homogeneity of all these peoples cannot be explained just by these late contacts, but rather as a result of belonging to the same group of peoples, now called the “Arctic peoples.”

From the Editor (1975)

Multi-year excavations of early Eskimo cemeteries at Uelen and Ekven in Chukotka have provided material of great scientific significance, including that related to paleoanthropology (Arutiunov and Sergeev 1969). Investigation of the first appearance of bone material was carried out by M. G. Levin, who was both a director and participant in several field seasons of excavations of these cemeteries (Arutiunov et al. 1963; Lebedinskaya 1969; Levin 1960; Levin and Sergeev 1964; Surnina 1969; Zubov 1969). Unfortunately, Levin's premature death interrupted this work.

Later, the study of physical anthropology collections was continued by G. F. Debets, who made, as is well known, a major contribution to physical-anthropological investigations of northeast Asia, as well as in the investigation of the physical anthropology of the Eskimos specifically (in craniological and somatological aspects) (Debets 1951, 1960).

Debets was also unable to finish this work before his death. However, in Debets's archive at the Institute of Ethnography AN SSSR there is a large amount of material on the craniology and osteology of the early Eskimo series from Chukotka (excavations of 1955–1963) and comparative data on the American Eskimos, also obtained by Debets. These materials have independent value and should be published.

All measurements and descriptions of the skulls and bones of the post-cranial skeleton given in tables of individual characteristics and summary tables of average dimensions (Tables 1–13), as well as in the introduction, are those of G. F. Debets (1999).

Paleoanthropological Materials from the Old Bering Sea Cemeteries of Uelen and Ekven

by *G. F. Debets*

At the present time, physical-anthropological materials from the Uelen and the neighboring Ekven cemeteries are almost the only source of information on the physical type of the people of the Old Bering Sea culture. The significance of these materials for resolution of the question of the origin of the Eskimos has been appraised by M. G. Levin (Levin and Sergeev 1964). The role of comparison in the use of physical-anthropological data for the elaboration of problems of ethnogenesis is especially great. Therefore, it is expeditious to publish the materials from the Uelen cemetery not in isolation, but rather in comparison with materials from the Ekven cemetery (though excavations at the latter are far from finished), as well as materials from the Ipiutak cemetery in Alaska and the cemetery of the Eskimo proper at Tigara, which is located near the one at Ipiutak. Physical-anthropological material from these cemeteries was examined by the author in 1957–1958 in the Museum of Natural History in New York.

The historical significance of the physical-anthropological materials from the Uelen cemetery consists chiefly in the fact that they provide a basis for a conclusion about the comparatively deep antiquity of that combination of traits that has acquired the name “Eskimo,” or “Arctic,” type. Even the first researchers of Eskimo skulls noted the distinctiveness of this combination.

The face is substantially broader than the braincase, which itself is long, narrow, and high. The braincase, measured from the basion, is substantially higher than it is wide. Therefore, in the transverse section, the braincase has a roof-shaped form, which is especially clearly seen if the skull is viewed from the occipital side. The greatest width of the braincase in most people is along the temporal line.

In accordance with Martin’s textbook,⁸ accepted throughout the world, the transverse diameter has to be measured on the squamous portion of the temporal or parietal bones. Among almost all people, this dimension is the greatest, but among the Eskimos this so-called “greatest” width is often less than the width at the crest of the temporal line. This Eskimo feature is reflected less clearly on female skulls. The width of the base of the skull, measured on the same temporal lines, but above the ear orifices, is also greater at times among the Eskimos than the “greatest” width of the braincase. Such strong extension of the braincase downward is rarely encountered, of course, but the average width of the base nevertheless is exceptionally great in comparison with the “greatest” width.

Eskimo faces are generally large, though still somewhat less so than among the Yakut and Northern Buryat. The mandible is massive, but the branch of the jaw is low, though broad.

For resolution of the Eskimo question in regard to their physical anthropology, it is necessary to answer the following questions:

⁸ This probably refers to the *Lehrbuch der Anthropologie* [Textbook of Anthropology] by R. Martin and K. Saller (Gustav Fischer, Stuttgart, 1958/1960).—*Trans.*

1. What are the genetic relations between the eastern and western Eskimos? The former, most represented by those residing in Greenland, reveal specific Eskimo features in a most pronounced form. First is the matter of the sharp narrowing of the braincase. From here, there is a sharp dolichocrania based on the transverse-longitudinal index—the predominance of the height of the braincase over its width with a roof-shaped form of the transverse section of the vault—and finally the predominance of the width of the face over the width of the braincase. The latter, especially the Asiatic Eskimos, are not so sharply different from Siberian Mongoloids in the form of their braincase. They are, so to speak, “less typical.”

2. What are the genetic relations between the Eskimos and Aleuts? Based on the language of both peoples, they are rather close on the whole, and both languages go back, in all probability, to a common “Eskimo-Aleut” ancestral language. However, in terms of the braincase, they differ very sharply. Among the Eskimos, especially among Greenlanders, the average size of the transverse-longitudinal index of the braincase is one of the largest in the world. Among the Aleuts it is the reverse—one of the smallest. The Aleuts, therefore, differ from the Eskimos in the same direction in which the western Eskimos differ from the eastern, but to an even greater degree. In other words, the Asiatic Eskimos occupy an intermediate position between the Greenlanders and the Aleuts. The differences between the Aleuts and the Eskimos in the structure of the braincase is so striking that opinions of a closer relationship of the Aleuts with the Siberian Mongoloids than with the Eskimos have been repeatedly elicited. And this is in spite of the long-standing observations of substantial changes in the correlation of the axis of the braincase in the course of a comparatively short time (10–20 generations).

3. What are the genetic relations between the Eskimos, Siberian Mongoloids, and American Indians? Somatological observations, and among them chiefly data on the frequency of the Mongoloid fold of the eyelid (epicanthus), attest to the fact that the Eskimos are closer to the Siberian Mongoloids than to the American Indians. However, based on blood groups the similarity of the Eskimos to the American Indians is distinctly revealed. This is especially true for blood groups of the MN system. The American Indians in this regard differ by a very specific distribution: nowhere in the world is such a high frequency of group M encountered. This applies to both parts of the New World. The Eskimos (and the Aleuts) are clearly similar to American Indians in this feature. Turning to the ABO system, in this regard, also, the American Indians are very specific: there is entirely no group B among them. Among the Eskimos the frequency of group B may be low, but it is still encountered. In addition, it has now been ascertained that group B is also very infrequently found among some peoples of northern Siberia.

In general, this data on blood groups significantly weakens the idea of a sharp distinction between the Eskimos and American Indians.

In the correlation of the transverse diameter of the braincase with its height and the width of the face, the early Bering Sea people of Chukotka are clearly closer to the “typical” Eskimos of Greenland than to modern Asiatic Eskimos. In this instance, the braincase became broader over the course of time. However, at Point Hope (Alaska) the reverse correlation is observed. The skulls from the Ipiutak cemetery, which belong approximately to the same period as the Old Bering Sea, are characterized by less “typical” Eskimo features than those of late Eskimos of the same locality (Tigara). Early residents of Cape Dezhnev resemble more the modern residents of Point Hope, while the early residents of Point Hope resemble the modern Eskimos of Cape Dezhnev.

This distribution of both “types” in time consequently does not give definite indicators of either their antiquity or their genetic relationships.

Suppositions about influences of the Siberian Mongoloids have arisen both with respect to modern Asiatic Eskimos and with regard to the Ipiutak people, mixture with whom is supposed to have smoothed out the specific features of the early Eskimo type. With regard to the Asiatic Eskimos, this supposition is seemingly corroborated by the distribution of blood groups, as among Asiatic Eskimos

there is no sharp predominance of group M, which is so characteristic of the American Eskimos and Indians (Levin 1958, 1959).

The width of the nose has long figured among the craniological traits of the Eskimos that distinguish them from the Siberian Mongoloids. Only in northern Europe is it possible to find such small sizes. The great height of the alveolar process of the maxilla can also be added to this, being reflected by the difference between the upper height of the face (Martin, 48) and the height of the nose (Martin, 55). The relationship of the height of the alveolar process to the height of the nose can be viewed as an index of the height of the alveolar process. From the correlation of both sizes, it can be seen that all Eskimo groups, including early Bering Sea people, Ipiutak people, Asiatic Eskimos, and Aleuts (and Chukchi) are noticeably different from Siberian Mongoloids. Based on the index of height of the alveolar process, the differences are not so outstanding as those based on the width of the nose. However, according to this trait the most "typical" Eskimos—those with narrow braincases (Inugsuk, Birnirk, Tigara, and our Old Bering Sea groups)—are less different from Siberian Mongoloids.

Neither the Aleuts, nor the Asiatic Eskimos, nor the early Ipiutak exhibit noticeable deviations that would make them more similar to the Siberian Mongoloids.

The Eskimos, as is known, more generally resemble the Siberian Mongoloids in the facial structure of the skeleton. Therefore, further comparisons of the Ipiutak and Asiatic Eskimos with the "typical" Eskimos and Siberian Mongoloids run into some difficulties. Nevertheless, well-known differences in some features are of substantial interest.

Especially characteristic for the Eskimos is the high frequency of distinctive thickening along the median line of the bone palate (*torus palatinus*) and the inner edge of the alveolar process of the mandible (*torus mandibularis*). In this regard, the Lapps are closer to the Eskimos. It is evident, however, that these features are not significant in establishing a relationship. Among the Siberian Mongoloids these features are encountered not infrequently, but nevertheless are rarer in general than among the Eskimos. In this regard the Ipiutak, Asiatic Eskimos, and Aleuts do not exhibit noticeable differences from the "typical" Eskimos.

The thickening of the tympanic part of the temporal bone (*pars tympanica os. temporalis*) is considered to be a characteristic feature of the Eskimo skull. It is difficult to get an objective determination of this feature via measurements. Nevertheless, the observations of another author would be useful for comparison.

This feature is reflected less distinctly among the Siberian Mongoloids than among the Eskimos, independent of the shape of the braincase of the latter. Thus, this trait does not provide a significant enough solution to the admixture of the Siberian Mongoloids to explain the deviation from a "typical" Eskimo structure of the braincase either among the Ipiutak people or among the Asiatic Eskimos.

The similarity of the Ipiutak, Asiatic Eskimos, and Aleuts with Siberian Mongoloids with respect to the axis of the braincase has consequently a convergent origin and is not evidence of relatedness. All Eskimos (as well as Aleuts and Chukchi), both "typical" and less "typical," are related to the Siberian Mongoloids to approximately the same degree.

But is it possible to give some consideration to the idea that the Asiatic Eskimos are more related to the Ipiutak people than to other Eskimos? The similarity is there. And it is impossible, of course, to determine if similarities between the axes of the braincase play a role in the establishment of relatedness. However, the farther from each other in time and space are the groups that hold these traits in common, the more probable it is that these similarities are the result of parallel modifications and do not prove a direct relationship.

All these considerations have, unfortunately, an abstract and speculative character. The possibility of an especially close relationship between the Ipiutak people and modern Asiatic Eskimos could be considered either more or less probable on the basis of indirect data.

If we concede that during the course of the fifty generations that separate the Old Bering Sea people and the Ipiutak people from modern Eskimos, no modifications occurred with regard to the axis of the braincase and all the differences between the early skulls and modern ones are evidence of migration, then a rather complex and, it must be said, low probability picture is drawn. At the beginning of our era, long-headed Old Bering Sea people (“typical” Eskimos) lived on Cape Dezhnev. Medium-headed people lived on Point Hope. In Birnirk times, people of the Old Bering Sea type were at Point Barrow. Later, the Ipiutak people moved to Cape Dezhnev, while the Old Bering Sea people or their descendants—the Birnirk people—replace the Ipiutak people at Point Hope. The descendants of the Ipiutak people in Alaska are inland Eskimos of the Colville River (the Nunatagmyut or Nunamiut), among whom, as among the Ipiutak people, the braincase is neither very narrow nor very long. However, the Nunatagmyut are relatively tall (169 cm), by which they are noticeably different from the Ipiutak people, who are characterized by being shorter (158 cm).

Such a picture hardly reflects actual reality. Of especially low probability is the replacement of the Old Bering Sea people by descendants of the Ipiutak people on Cape Dezhnev. Neither archaeology nor ethnography corroborates such population replacement. And M. G. Levin was probably correct in suggesting that the differences between modern Asiatic Eskimos and Old Bering Sea people are one of the manifestations of the process of brachycephalization.

But how is it with the reverse correlation, which is noted on Point Hope? It is known that in Europe the process of “debrachycephalization” has occurred over the last decades, that is, the form of the head again became longer in contrast to the fact that it became brachycephalic over the extent of several centuries from the early Middle Ages to the nineteenth century. This elongation of the form of the head can be interpreted at first glance as a phenomenon that accompanies an increase in height.

It is known that among taller people both diameters of the head are greater than among short people in the same population. But the longitudinal diameter grows with an increase in size more intensively than the transverse diameter. Therefore, taller people are longer-headed. However, in the twentieth century, by comparison with the nineteenth, not only an increase in the longitudinal diameter occurs in Europe, but also a reduction in the transverse. Thus, it is not a matter of change in height.

Skeletons from the Eskimo cemetery of Tigara are also different from the Ipiutak both by virtue of their greater stature and their longer, narrower braincase. The direction of differences is clearly analogous to that observed in Europe in the last century. But if it is considered on this basis that in both cases we are dealing with a phenomenon of only one order, then it has to be acknowledged that external factors do not play a role in the process of “debrachycephalization”; they are already too different in both cases.

Nevertheless, one obviously cannot avoid “debrachycephalization” in any attempt to envision the formation of the physical type of the Eskimos. The unusually small width of the braincase of the “typical” Eskimos can hardly have been inherited by them from distant Siberian ancestors. Among contemporary people the predominance of a width between the crests of the temporal line greater than the so-called “greatest” width on the squamous portion of the temporal bone is an extremely rare phenomenon. Among the “typical” Eskimos, including among the Old Bering Sea people of Cape Dezhnev, this rare phenomenon becomes ordinary. Such correlation is observed, of course, among Sinanthropoids, but it is hardly possible to consider on this basis that the Eskimos preserved an ancient form of skull structure. This is contradicted by the great height of the braincase of the “typical” Eskimos. It is much more probable that a sharp reduction in the width of the braincase in the realm of the parietal bones (that is, where the greatest width also occurs among most modern peoples) occurred among the Eskimos after their movement into the Arctic zone. Of course, we do not know the reasons for this phenomenon.

Tables

Table 1

Average Dimensions of Skulls from Old Bering Sea Cemeteries of the Chukchi Peninsula.

Features	Males						Females					
	Uelen			Ekven			Uelen			Ekven		
	n	\bar{x}	s	n	\bar{x}	s	n	\bar{x}	s	n	\bar{x}	s
1. Longitudinal diameter	30	189,3	5,8	52	192,2	6,5	32	182,5	5,4	51	182,8	6,6
8. Transverse diameter	28	134,3	4,5	52	134,2	4,4	32	129,2	4,5	52	129,3	4,8
17. Upper diameter	27	139,3	5,7	49	139,1	4,9	29	130,2	5,4	49	132,6	4,4
20. Ear height	29	118,3	3,5	52	117,7	4,3	32	111,9	4,7	51	112,8	3,7
8 : f. Skull index	28	70,9	3,7	53	70,0	3,3	32	71,0	2,3	51	70,7	3,2
17 : 1. Height-length index	27	73,7	2,2	49	72,4	2,4	29	71,5	2,5	49	72,7	2,6
17 : 8. Height-width index	25	103,8	5,4	49	103,6	5,2	29	101,0	4,3	40	103,3	4,3
5. Length of skull base	25	105,5	4,5	47	107,9	5,0	28	100,6	3,1	45	101,6	4,4
9. Smallest width of forehead	28	96,5	4,4	52	97,4	4,6	31	92,5	4,0	50	92,8	3,7
10. Greatest width of forehead	24	113,5	4,5	51	113,3	3,9	25	109,9	4,5	50	107,6	4,4
9 : 10. Forehead index	24	84,9	2,6	51	86,5	3,5	25	84,8	2,1	50	86,4	2,8
9 : 8. Transverse forehead index	26	72,0	1,7	52	71,4	3,5	31	71,9	3,5	50	71,9	3,3
11. Width of skull base	28	129,2	4,6	51	129,0	3,9	30	120,5	5,0	51	122,2	4,6
12. Width of occiput	22	108,8	4,3	51	108,4	3,9	27	105,4	4,4	49	105,8	4,2
29. Forehead arc	30	113,6	4,2	52	115,3	3,4	30	109,0	4,7	51	110,7	3,9
Height of forehead curve	30	26,3	2,3	52	27,4	1,8	29	26,6	2,8	51	26,9	2,2
32. Angle of forehead profile from nasion	28	84,8	3,7	52	83,4	2,9	28	86,9	3,8	47	84,1	3,3
Angle of forehead profile from the glabellae	28	78,0	3,9	52	76,4	3,8	28	82,2	4,3	47	80,6	4,0
Above the bridge of the nose (1-6)	30	2,73	—	52	2,66	—	32	1,61	—	51	1,78	—
Mammiform process (1-3)	28	1,50	—	50	1,94	—	29	1,28	—	50	1,62	—
Thickness of the tympanic parts (mm)	31	3,77	—	52	4,25	—	31	3,55	—	53	4,38	—
45. Malar diameter	27	140,8	5,9	52	140,9	5,0	27	129,7	4,0	49	130,5	5,2
40. Length of base of face	20	103,1	5,4	41	107,0	4,9	23	100,7	5,2	40	100,2	4,2
48. Upper face height	26	75,5	3,6	47	76,4	3,5	27	69,7	4,7	45	70,7	3,9
47. Full face height	18	124,3	5,0	44	124,7	5,2	20	114,1	4,3	39	115,0	5,0
48 : 45. Upper face index	25	53,7	3,0	47	54,25	2,7	25	50,4	2,9	45	54,2	2,7
47 : 45. Face index	18	88,0	5,2	44	88,1	4,5	19	87,9	3,9	39	88,1	2,6
40 : 5. Index of face projection	19	97,3	2,7	41	98,8	3,1	23	100,0	4,2	40	99,9	2,6
48 : 17. Vertical facies-cerebral index	22	53,9	2,8	43	55,3	2,3	23	53,2	3,5	45	53,6	2,6
45 : 8. Horizontal facies-cerebral index	26	105,2	3,1	51	105,3	4,4	27	100,5	3,9	49	101,5	4,1
9 : 66. Forehead-jaw index	21	85,8	6,7	48	85,2	7,1	19	90,3	5,8	42	88,5	3,5
43. Upper face width	22	105,3	3,7	50	109,7	4,7	25	101,1	3,4	49	102,7	3,3
46. Middle face width	19	105,2	3,6	50	106,9	4,8	19	97,8	3,1	46	99,9	5,7
60. Length of alveolar arc	15	53,9	3,1	39	55,5	2,6	19	52,5	2,2	37	52,4	2,6
61. Width of alveolar arc	16	66,0	2,9	39	68,0	3,5	22	62,3	2,6	35	63,4	3,3
62. Palate length	15	48,9	2,1	39	49,3	3,1	17	45,9	2,0	36	46,7	2,9
63. Palate width	18	40,8	2,7	39	42,7	2,7	21	38,5	1,8	35	39,9	2,7
63 : 62. Palate index	12	85,5	4,3	36	85,6	6,5	16	84,4	5,1	34	85,8	7,2
54. Nose width	21	24,3	2,0	48	24,0	1,6	23	23,1	1,5	48	23,4	1,9
55. Nose height	29	54,1	4,1	50	54,9	2,9	30	50,1	3,3	48	50,7	2,5
54 : 55. Nose index	20	44,9	4,1	47	43,8	3,8	23	45,9	3,7	46	46,3	4,2
51. Width of orbits (maxillofrontal)	22	44,2	2,5	50	45,1	2,0	23	42,5	1,5	49	42,8	2,0
51 ^a . Width of orbits (dacryal)	16	41,7	1,5	45	41,9	1,6	17	39,4	1,6	40	40,5	2,0
52. Orbital height	22	36,3	1,9	50	35,9	2,4	23	35,2	1,7	48	34,8	1,8
52 : 51. Orbital index (masillofrontal)	22	82,5	4,4	50	79,4	5,4	23	82,9	3,8	48	81,0	5,1
52 : 51 ^a . Orbital index (dacryal)	16	87,0	4,4	45	85,2	5,5	17	88,1	4,1	40	85,4	5,1
SC. Simotic width	21	5,50	1,9	43	6,07	2,3	22	5,57	2,3	45	5,49	2,1

Table 1 (cont.)

Features	Males						Females						
	Uelen			Ekven			Uelen			Ekven			
	n	\bar{x}	s	n	\bar{x}	s	n	\bar{x}	s	n	\bar{x}	s	
<i>SS</i> . Simotic height	21	1,96	0,8	43	2,59	0,9	22	1,73	0,7	45	1,86	0,7	
<i>SS</i> : <i>SC</i> . Simotic index	21	37,4	10,8	43	42,9	11,5	22	33,9	13,2	45	34,4	12,0	
<i>MC</i> . Maxillofrontal width	17	16,78	5,1	45	17,03	2,2	20	16,00	1,4	44	15,98	2,0	
<i>MS</i> . Maxillofrontal height	17	4,12	1,8	45	4,87	1,1	20	4,12	0,9	44	4,23	0,9	
<i>MS</i> : <i>MC</i> . Maxillofrontal index	17	26,5	5,1	45	28,8	7,3	20	26,0	5,5	44	27,3	7,2	
<i>DC</i> . Dacryal width	13	18,91	2,5	42	18,75	2,2	13	18,23	1,4	40	17,75	2,2	
<i>DS</i> . Dacryal height	13	9,47	1,4	42	9,84	1,7	13	8,99	1,2	40	8,67	1,3	
<i>DS</i> : <i>DC</i> . Dacryal index	13	52,2	9,1	42	50,0	9,8	13	49,9	9,1	40	49,5	8,7	
Depth of canine pit (mm)	22	5,02	1,7	51	4,74	1,7	18	3,87	1,4	46	4,27	1,6	
Width of malar bone	20	58,7	3,7	51	60,4	4,4	13	52,7	2,9	46	54,8	3,5	
Height of curve of malar bone	20	11,70	1,5	51	13,37	1,7	13	10,81	1,5	46	12,1	1,6	
77 . Nasomalar angle	23	145,0	4,5	50	144,8	4,8	26	144,8	4,4	50	145,4	4,9	
< <i>sm</i> ⁺ . Zygomatic angle	18	133,9	5,1	49	135,0	3,4	17	134,8	6,5	46	134,9	4,8	
72 . Total facial angle	24	88,0	2,5	48	85,5	3,0	24	87,2	5,1	46	85,2	2,8	
73 . Average facial angle	24	90,3	3,1	49	87,7	3,1	24	90,5	4,4	47	87,5	3,3	
74 . Angle of alveolar parts	21	79,8	3,9	42	79,0	4,1	14	75,2	8,4	38	78,9	5,2	
75 . Angle of slope of nasal bones	15	65,4	4,9	39	62,9	4,4	15	68,4	3,8	43	65,4	5,7	
75(1) . Angle of nose projection	15	22,5	4,2	40	23,0	3,8	15	19,2	5,0	43	19,9	4,6	
Pre-nasal spine	11	2,18	—	35	2,14	—	7	2,14	—	34	1,97	—	
Lower edge of pyriform orifice, 0/0	Anthropina Infantilis Fossae praenasales Sulcus praenasalis	12	46,2	—	18	36,0	—	8	34,8	—	20	42,6	—
		1	3,8	—	5	10,0	—	7	30,4	—	12	25,5	—
		12	46,2	—	24	48,0	—	5	21,7	—	15	31,9	—
		1	3,8	—	3	6,0	—	3	13,1	—	—	—	—
68(1) . Length from condyles	24	110,0	5,4	51	112,2	5,1	21	105,1	4,0	45	107,1	5,2	
68 . Projection length from angles	24	80,3	6,3	51	82,2	3,9	21	75,3	3,7	45	77,1	4,1	
70 . Height of branch	25	57,4	3,1	53	57,0	4,3	21	51,9	4,5	45	53,1	2,9	
71^a . Smallest width of branch	27	40,6	3,0	53	41,2	2,3	23	36,1	2,5	46	37,2	2,6	
65 . Condyle width	21	124,1	5,6	49	124,9	5,8	17	115,5	5,4	43	118,4	5,2	
66 . Angular width	24	113,6	4,5	50	115,1	7,1	22	104,7	4,0	44	107,0	4,3	
67 . Frontal width	25	47,2	2,4	53	47,5	2,4	22	45,4	1,7	45	45,9	2,9	
69 . Symphysis height	20	35,2	2,1	46	37,1	2,3	13	32,2	2,9	36	33,7	2,9	
69(1) . Body height	24	31,7	2,7	50	33,4	2,3	19	28,1	2,1	45	30,6	2,4	
69(3) . Body thickness	26	10,3	1,6	50	12,2	1,6	22	11,8	2,1	46	10,9	1,7	
79 . Angle of mandible branch	25	124,4	6,3	51	125,2	5,8	21	130,0	5,7	45	128,7	6,2	
<i>C</i> ⁺ . Angle of chin projection	22	75,5	4,5	47	76,7	3,9	19	77,5	3,0	38	75,9	5,2	

Table 2

Distribution of Some Morphological and Discretely Varying Features on Skulls from the Old Bering Sea Cemeteries of the Chukchi Peninsula.

Features	Expression of the feature	Uelen				Ekven			
		Male		Female		Male		Female	
		n	%	n	%	n	%	n	%
Form of vault (norma occipitalis)	1*	2	6,9	9	31,0	2	3,85	8	15,4
	2	11	37,9	12	41,4	22	42,3	33	63,5
	3	16	55,2	8	27,6	28	53,85	11	21,1
Lateral walls (norma occipitalis)	1**	5	17,2	3	10,3	8	15,4	2	3,85
	2	24	82,8	25	86,2	44	84,6	48	92,3
	3	0	0	1	3,5	0	0	2	3,85
Occipital ridge	0	9	29,0	19	61,3	16	31,4	36	67,9
	1	17	64,8	10	32,3	30	58,8	17	32,1
	2	5	16,2	2	6,4	5	9,8	0	0
Sagittal sinus	right	16	64,0	14	50,0	34	68,0	31	60,8
	left	3	12,0	9	32,1	14	28,0	13	25,5
	indeter.	6	24,0	5	17,9	2	4,0	7	13,7
Indentation of parietal bone	absent	19	73,1	23	92,0	26	54,2	36	75,0
	right	1	3,8	1	4,0	4	8,3	4	8,3
	left	2	7,7	0	0	11	22,9	0	0
	bilateral	4	15,4	1	4,0	7	14,6	8	16,7
Perforation of the tympanic part of the temporal bone	absent	28	90,3	26	83,9	46	86,8	40	75,5
	right	0	0	2	6,45	0	—	4	7,5
	left	2	6,5	1	3,2	1	1,9	1	1,9
	bilateral	1	3,2	2	6,45	6	11,3	8	15,1
Superorbital apertures	absent	13	44,8	6	20,7	26	50,0	18	35,3
	right	7	24,15	4	13,8	11	21,15	1	2,0
	left	2	6,9	6	20,7	4	7,7	8	15,7
	bilateral	7	24,15	13	44,8	11	21,15	24	47,0
Transverse profile of the back of the nose	0	5	23,8	10	45,4	15	34,1	18	40,9
	1	7	33,3	6	27,3	18	40,9	16	36,4
	2	2	42,9	6	27,3	11	25,0	10	22,7
Palate ridge	0	12	44,5	9	34,6	14	27,5	13	26,5
	1	8	29,6	10	38,5	19	37,2	20	40,8
	2	4	14,8	7	26,9	13	25,5	11	22,5
	3	3	11,1	0	0	5	9,8	5	10,2
Lower jaw ridge	0	8	29,6	7	29,2	15	28,8	21	45,7
	1	10	37,1	14	58,3	24	46,2	17	36,9
	2	7	25,9	3	12,5	10	19,2	4	8,7
	3	2	7,4			3	5,8	4	8,7
Closing of the edges of the maxillo-sublingual furrow	absent	20	74,1	19	86,4	41	82,0	43	95,6
	right	1	3,7	1	4,5	4	8,0	0	0
	left	4	14,8	2	9,1	2	4,0	1	2,2
	bilateral	2	7,4	0	0	3	6,0	1	2,2

* 1 - flattened; 2 - roundish; 3 - roof-shaped; ** 1 - expanding downward; 2 - parallel; 3 - expanding upward.

Table 3
Average Size of Some Dimensions of the Bones of the Extremities, Height and Weight of Early Eskimos of the Chukchi Peninsula.

Feature	Males		Females	
	Uelen	Ekven	Uelen	Ekven
Femur				
1. Greatest length	423,7(20)	421,9(43)	396,4(21)	397,0(39)
8. Circum. of middle of diaphysis	91,0(20)	90,3(43)	79,9(21)	80,9(39)
Tibia				
1. Full length	334,7(16)	338,1(41)	310,1(16)	317,6(40)
106. Least circum. of diaphysis	71,7(15)	73,9(41)	64,9(16)	66,6(40)
Humerus				
1. Greatest length	298,8(16)	300,6(38)	281,4(14)	279,4(39)
7. Least circum. of diaphysis	62,6(16)	64,7(38)	54,8(14)	55,0(39)
Radius				
1. Greatest length	227,7(15)	227,2(39)	211,4(11)	208,8(39)
Height (in cm)	160,4	159,7	150,2	150,2
Weight (in kg)	61,0	61,8	51,3	53,5

Note. 1) All dimensions are on the right side. In the case of absence of dextral bones, dimensions of those on the left were reduced (femur) or increased (humerus and radius) in correspondence with the mean correlation. 2) The height and weight were calculated by formulas published in Debets and Durnovo (1971).

Table 4
Average Dimensions of Skulls from the Old Bering Sea Cemeteries of the Chukchi Peninsula in Comparison with Eskimo Cemeteries of Alaska.

Feature	Males				Females			
	Uelen	Ekven	Ipiutak	Tigara	Uelen	Ekven	Ipiutak	Tigara
1. Longitudinal diameter	189,3(30)	192,2(52)	182,7(36)	186,1(112)	182,5(32)	182,8(51)	175,1(33)	177,6(123)
8. Transverse diameter	134,3(28)	134,2(52)	139,1(36)	137,4(113)	129,2(32)	129,3(52)	136,2(34)	132,5(125)
17. Upper diameter	139,3(27)	139,1(49)	133,0(35)	139,8(109)	130,2(29)	132,6(49)	126,8(31)	132,4(120)
9. Least width of forehead	96,5(23)	97,4(52)	94,9(35)	97,0(114)	92,5(31)	92,8(50)	90,5(31)	92,2(124)
32. Angle of forehead profile	84,8(28)	83,4(52)	79,2(34)	82,2(110)	86,9(28)	84,1(48)	81,6(26)	84,5(114)
Above bridge of nose (1-6)	2,73(30)	2,66(52)	2,91(35)	3,26(114)	1,61(32)	1,78(51)	1,85(34)	2,22(124)
5. Length of skull base	105,5(25)	107,9(47)	102,1(35)	106,2(108)	100,6(28)	101,6(45)	98,4(29)	99,9(119)
40. Length of face base	103,1(20)	107,0(41)	98,8(33)	103,6(101)	100,7(23)	100,2(40)	93,7(24)	98,3(98)
72. General facial angle	88,0(24)	85,5(48)	85,4(32)	84,9(101)	87,2(24)	85,2(46)	84,6(22)	84,6(99)
48. Upper height of face	75,5(26)	76,4(47)	76,2(34)	76,3(105)	69,7(27)	70,7(45)	70,5(25)	71,0(102)
45. Malar diameter	140,8(27)	140,9(52)	137,6(35)	142,2(112)	129,7(27)	130,5(49)	128,6(30)	130,3(120)
77. Nasomalar diameter	140,1(23)	144,8(50)	146,6(33)	146,5(113)	144,8(26)	145,4(50)	147,2(27)	147,6(114)
∠ <i>zm'</i> . Zygomatic angle	133,9(18)	135,0(49)	135,8(31)	134,0(108)	134,8(17)	134,9(46)	136,6(22)	134,4(101)
Depth of canine pit (mm)	5,02(22)	4,74(51)	5,46(32)	5,22(110)	3,87(18)	4,27(46)	4,43(23)	5,06(102)
55. Nose height	54,1(29)	54,9(50)	54,8(32)	55,0(112)	50,1(30)	50,7(48)	50,5(26)	50,7(113)
54. Nose breadth	24,3(21)	24,0(48)	24,3(32)	24,0(108)	23,1(23)	23,4(46)	23,5(24)	23,2(100)
Frequency of anthropene forms, 0/0	46,2(26)	34,0(50)	20,0(30)	36,5(112)	34,8(23)	42,6(47)	40,9(22)	50,0(104)
<i>DS</i> . Dacryal height	9,47(13)	9,84(42)	9,08(24)	9,30(106)	8,99(13)	8,67(40)	8,73(19)	8,36(101)
<i>DC</i> . Dacryal width	18,91(13)	19,75(42)	20,29(24)	19,43(106)	18,23(13)	17,75(40)	19,18(19)	18,10(101)
<i>SS</i> . Simotic height	1,96(21)	2,59(43)	2,42(30)	2,54(110)	1,73(22)	1,86(45)	2,46(28)	2,00(110)
<i>SC</i> . Simotic width	5,50(21)	6,07(43)	6,73(30)	6,14(110)	5,57(22)	5,49(45)	7,11(28)	5,55(110)
75(1). Angle of nose projection	22,5(15)	23,0(40)	21,4(25)	21,1(93)	19,2(15)	19,9(43)	18,4(18)	17,7(68)
51. Width of orbits (mf)	44,2(22)	45,1(50)	43,7(34)	45,6(112)	42,5(23)	42,8(49)	41,6(28)	43,1(110)
52. Height of orbits	36,3(22)	35,9(50)	36,2(34)	36,1(112)	35,2(23)	34,8(48)	35,5(28)	35,7(110)

Table 5
Individual Measurements of Male Skulls from the Old Bering Sea Uelen Cemetery.

Year of excavation	Form number	Burial numbers	Age	1. Longitudinal diameter	1b. Longitudinal diam. from opnyon	8. Transverse diameter	Crest transverse diameter	17. Upper diameter	20. Ear height	5. Length of skull base	9. Smallest brow width	10. Largest brow width	11. Width of skull base	12. Width of occiput	23. Horizontal circumference	24. Transverse arc	25. Sagittal arc	26. Frontal arc	27. Parietal arc
1955	1	Findings in the trench wall	Sen.	182	181	141	143	132	110	102	94	112	137	113	515	308	365	118	409
1956	2	Chance excavations	Mat.	193	190	131	135	140	116	111	94	110	127	104	520	303	375	130	122
1956	5	Grave 1, upper burial	Ad.	192	191	131	132	138	119	Deform.	97	114	125	108	520	310	382	130	123
1956	6	Grave 1, lower burial	Sen.	194	193	151	158	149	131	100	102	123	143	—	351	343	409	135	132
1956	7	Grave 4, Burial 1	Mat.	188	186	—	—	137	—	100	92	112	—	—	500±2	288±2	381	131	136
1956	8	Grave 4, Burial 2, skel. 2	Sen.	196	194	135	138	145	125	111	102	116±1	132	111	533	322	385	128	132
1956	9	Grave 4, skeleton 3	Sen.	195	193	133	138	—	126	—	98	114±1	131	109	528	322	390	130	125
1957	11	Burial 19	Mat.	188	185	—	—	130	120	109	93	—	—	—	—	—	366	127	106
1957	13	Burial 1	Mat.	202	201	135	141	150	129	108	97	112	150	118	545	350	410	144	145
1957	15	Burial 3	Mat.	182	179	134	136	138	116	100	89	112	125	105	507	312	376	138	127
1957	16	Burial 4	Sen.	187	186	136	137	139	120	106	102	118	130	115	527	316	385	133	135
1957	21	Burial 10	Sen.	195	191	133	138	—	117	—	90	108	128	112	525	307	—	125	129
1957	29	Burial 20	Sen.	195	183	138±2	142	140	119	103	95	—	134	—	518	312	377	133	112
1957	33	Surface C	Sen.	191	190	127±1	129±1	141	118	—	90	104	123	103	518	311	381	130	137
1958	35	Burial 5	Ad.	192	191	128	131	140	117	110	98	114	128	106	526	311	382	128	131
1958	36	Burial 7	Sen.	183	182	134	136	135	111	106	93	106	129	108	510	273	364	120	126
1958	43	Burial 14	Sen.	184	183	142	135	144	121	110	108	122	130	104	522	321	367	128	128
1958	48	Burial 20	Mat.	187	184	135±3	—	133	106	106	—	—	125	—	505	293	365	122	126
1958	49	Burial 21	Ad.	183	183	132	134	143	123	101	99	118	125	113	517	317	371	132	143
1958	50	Burial 22B	Sen.	184±1	183±1	134±2	—	137	112	101	93	—	129	—	508	300	—	123	127
1958	53	In back dirt	Mat.	190	189	131	134	136	116	107	100	113	129	103	523	301	376	126	133
1958	55	Quad BB---18 burials	Ad.	186	185	126	129	143	117	108	94	117	120	103	507	310	374	125	130
1959	58	Burial 5	Sen.	158	197	134	140	138	116	111	102	114	131	110	535	306	379	122	129
1959	64	Burial 15	Ad.	187	185	133	138	140	119	109	94	109	129	114	515	308	373	130	122
1959	65	Burial 16*	Sen.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1959	69	Burial 19	Juv.-ad.	190	189	135	138	140	118	105	100	118	134	112	525	305	378	132	126
1959	70	Burial 20	Mat.	190	188	129	135	—	114	—	—	—	126	—	512	300	370	128	—
1959	71	Burial 21	Mat.	180	179	133	132	126	108	98	94±1	114±1	124	106	500	298	365	123	126
1959	72	Burial 23	Sen.	182	183	140	146	137	118	103	96	116	132	113	520	310	365	131	129
1959	73	Quad M---12	Mat.	200	200	134±2	138	151	127	113	98	116	131	108	537	323	402	143	134
1960	75	Burial 1	Sen.	193	191	136	137	138	121	98	97	—	132	109	530	317	399	125	147

Table 5 (cont.)

Year of excavation	Form number	Burial numbers	Age	28. Occipital arc	29. Frontal chord	30. Parietal chord	31. Occipital chord	31(1). Chord of upper part of occiput	31(2). Chord of lower part of occiput	Height of forehead curve	7. Length of occipital opening	16. Width of occipital opening	32. Angle of forehead profile from nasion	Angle of forehead profile from glabella	33(1). Angle of upper part of occiput	33(2). Angle of lower part of occiput	33(4). Angle of bend of occiput	34. Angle of occipital opening	45. Malar diameter	48. Upper height of face
1955	1	Findings in trench wall	Sen.	138	105	100	112	86	44	22,5	36,0	32,1	79	73	95	20	115	-11	144±2	81
1956	2	Chance excavations	Mat.	123	115	109	102	52	64	25,4	37,0	29,6	79	69	89	31	120	-7	138	78
1956	5	Grave 1, upper burial	Ad.	129	113	113	103	73	46	28,2	33,9	27,2	87	80	94	26	120	-9	134±2	72
1956	6	Grave 1, lower burial	Sen.	142	120	121	112	79	51	26,1	-	-	87	80	89	25	114	-10	153	76±1
1956	7	Grave 4, Burial 1	Mat.	114	112	117	97	64	44	28,0	38,5	31,0	85	80	96	22	118	0	-	76±1
1956	8	Grave 4, Burial 2, stel. 2	Sen.	125	114	122	104	80	41	24,1	38,1	31,2	83	79	95	31	126	0	150±1	76±1
1956	9	Grave 4, stel. 3	Mat.	135	115	115	113	76	50	25,2	-	-	81	74	85	34	119	-12	143	84±1
1957	11	Burial 19	Mat.	133	114	97	106	73	46	23,1	40,9	29,1	90	82	93	28	121	6	148	78
1957	13	Burial 1	Mat.	121	125	127	98	60	53	-	37,1	31,0	88	85	96	21	117	12	148	74
1957	15	Burial 3	Mat.	111	119	108	95	60	45	29,2	39,1	33,8	88	85	96	21	117	12	146	71
1957	16	Burial 4	Sen.	117	116	119	98	70	42	23,3	-	-	85	75	93	25	118	-7	144	84±2
1957	21	Burial 10	Sen.	-	111	115	-	77	43	28,3	-	-	84	74	93	25	118	-7	144	84±2
1957	29	Burial 20	Sen.	132	116	103	104	60	44	26,0	37,0	32,8	84	74	93	25	118	-7	144	84±2
1957	33	Surface C	Sen.	114	114	122	93	60	44	26,0	39,0	30,0	85	79	95	28	123	-5	136±2	75±1
1958	35	Burial 5	Ad.	123	110	118	101	70	45	22,2	36,8	29,8	92	83	92	29	121	-6	133	74
1958	36	Burial 7	Sen.	118	107	110	97	63	41	23,0	36,2	33,0	86	82	94	31	125	-1	139	74
1958	43	Burial 14	Sen.	111	115	114	91	69	41	27,2	36,2	27,4	83	78	91	21	112	+3	146±1	76
1958	48	Burial 20	Mat.	117	107	117	95	60	44	25,2	32,0	27,2	75	69	105	25	130	0	136±2	74
1958	49	Burial 21	Ad.	126	115	103	101	78	39	27,8	42,0	31,0	87	79	94	24	118	-1	141	74
1958	50	Burial 22B	Sen.	-	111	113	-	-	23	-	-	-	83±1	76±1	-	-	-	-	138±2	74±1
1958	53	In back dirt	Mat.	117	110	118	95	62	48	25,2	36,1	32,0	86	79	93	27	120	-8	142	72
1958	55	Quad BB---18 above	Ad.	119	111	116	97	65	47	25,1	34,6	28,8	86	79	90	30	120	+1	128±1	73±1
1959	58	Burial 5	Sen.	128	109	118	102	70	48	23,9	40,0	31,0	85	78	94	25	119	-5	146	79±1
1959	64	Burial 15	Ad.	121	116	103	104	70	48	26,6	38,8	32,6	86	78	90	34	124	-6	140	75
1959	65	Burial 16*	Sen.	-	115	115	101	67	44	27,1	41,2	32,8	84	80	98	32	130	-6	144	74
1959	69	Burial 19	Juv.-ad.	120	113	-	-	-	27,2	-	-	-	82	76	-	-	-	-	133±2	79±1
1959	70	Burial 20	Mat.	-	113	-	-	-	-	-	-	-	82	76	-	-	-	-	133±2	79±1
1959	71	Burial 21	Mat.	116	109	111	93	69	39	24,4	35,0	28,5	87	83	100	18	118	-2	133±2	67
1959	72	Burial 23	Sen.	113	112	109	97	60	47	29,0	38,4	29,0	86	76	95	35	130	-4	144±1	75
1959	73	Quad L---12	Mat.	125	122	122	101	68	50	31,3	38,0	31,0	90	83	95	30	120	-4	143	75±2
1860	75	Burial 1	Sen.	127	113	123	106	75	42	24,5	40,1	32,1	84	76	105	23	128	13	146	-

Table 5 (cont.)

Year of excavation	Form number	Burial numbers	Age	47. Full face height	40. Length of base of face	43. Upper face width	46. Average face width	60. Length of alveolar arc	61. Width of alveolar arc	62. Length of palate	63. Width of palate	55. Nose height	54. Nose width	51. Orbit width (maxillofrontal)	51a. Orbit width (dacryal)	52. Orbit height	Bimalar chord	Height of nasion above the bimalar chord	77. Naso-malar angle
1955	1	Find in the trench wall	Sen.	129	95±1	101	105	—	67	—	40,5	58	—	—	—	—	90	13,5	146,6
1956	2	Chance excavations	Mat.	127	112	104	106	60	67	52,2	40,0	56	23,9	42,2	39,8	36,0	94	15,3	143,9
1956	5	Grave 1, upper burial	Ad.	—	—	105	—	56	60	52,0	36,8	51	22,0	44,5	41,0	34,2	97	16,8	141,8
1956	6	Grave 1, lower burial	Sen.	122	99±2	109	—	—	—	—	—	53	—	42,1	—	37,3	100	13,8	149,1
1956	7	Grave 4, Burial 1	Mat.	—	—	—	—	—	—	—	—	471	23,6	42,9	40,4	34,0	—	—	—
1956	8	Grave 4, Burial 1, skel. 2	Sen.	123	111±2	106	107±2	—	—	—	—	56	24,8	46,8	—	39,2	102	18,5	140,2
1956	9	Grave 4, skel. 3	Sen.	127±2	—	106	103	—	—	—	—	63	—	—	—	—	—	—	—
1957	11	Burial 19	Mat.	—	—	—	—	—	—	—	—	55	—	45,9 n	44,2 n	38,0 n	97	18,1	139,2
1957	13	Burial 1	Mat.	127	106	102	112	55	65	50,5	40,1	57	26,0	40,4	39,5	35,2	96	17,1	140,8
1957	15	Burial 3	Mat.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1957	16	Burial 4	Sen.	—	106	110	108	—	—	—	—	53	24,1	47,9	43,0	37,0	101	16,8	143,3
1957	21	Burial 10	Sen.	118	105	110	110	56	68	51,0	44,0	53	25,0	42,6	40,9	31,8	97	15,1	145,6
1957	29	Burial 20	Sen.	134	95	—	—	58	71	48,5	42,0	60±2	23±0,5	—	—	—	—	—	—
1957	33	Surface C	Sen.	—	—	100	102	54	65	48,0	41,2	56	30,0	44,8	—	36,2	95	16,5	141,6
1958	35	Burial 5	Ad.	125	109	105	105	55	89	49,9	42,2	54	25,4	41,1	37,8	34,4	97	15,0	145,6
1958	36	Burial 7	Sen.	121	102	100	103	—	—	—	—	54	23,7	42,0	39,0	34,2	93,5	14,1	146,4
1958	43	Burial 14	Sen.	124	109	113	101	55	67	49,8	45,2	55	25,9	48,9 n	45,9	37,8 n	103	20,0	137,6
1958	48	Burial 20	Mat.	120	100	—	—	—	—	—	—	53	—	—	—	—	—	—	—
1958	49	Burial 21	Ad.	120	100	105	106	50	65	—	43,1	53	—	45,1	42,4	35,0	95	9,1	158,3
1958	50	Burial 22B	Sen.	127±2	99	—	—	50	62	46,0	38,8	51	22,0	—	—	—	104	14,3	149,4
1958	53	In back dirt	Mat.	—	104	103	107	54	67	46,5	43,2	54	22,6	46,0	41,8	37,0	95	14,2	146,8
1958	55	Quad BB--18 above	Ad.	—	102	106	—	—	—	—	—	49	—	44,1	37,5	—	100	14,8	147,0
1959	58	Burial 5	Ad.	—	104±1	112	107	—	—	—	—	59	26,0	44,7	41,8	37,2	101	17,8	141,2
1959	64	Burial 15	Ad.	125	106	105	105	50	68	48,1	40,0	52	21,1	42,0	39,3	35,4	95,5	14,1	147,2
1959	65	Burial 16*	Sen.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1959	69	Burial 19	Juv.-ad.	—	101	110	102	51	69	45,5	42,8	56	25,6	47,8	—	38,2	103	17,8	141,8
1959	70	Burial 20	Mat.	131±2	—	—	—	53	—	48,0	38,2	58	—	—	—	—	—	—	—
1959	71	Burial 21	Mat.	115	96	—	—	62	62	48,8	36,0	42	—	—	—	—	—	—	—
1959	72	Burial 23	Sen.	120	97	104	104	52	64	46,0	38,9	58	21,6	43,4	41,2	39,6	96	10,9	154,5
1959	73	Quad L--12	Mat.	—	108	107	109	—	—	—	—	53	24,2	44,0	41,1	35,0	97	14,1	147,7
1960	75	Burial 1	Sen.	—	—	101	96	—	—	—	—	50	25,5	43,2	—	38,4	94,5	14,0	147,0

Table 5 (cont.)

Year of excavation	Form number	Burial numbers	Age	Zygomaxillary chord	Ht. of subspinal pt. above zygomaxillary chord	> zm' zygomaxillary angle	SC. Simotic width	SS. Simotic height	MC. Maxillofrontal width	MS. Maxillofrontal height	DC. Dacryal width	DS. Dacryal height	Width of malar bone	Height of curve of malar bone	Depth of canine socket	72. General facial angle*	73. Angle of middle part of face	74. Angle of alveolar part of face	75. Angle of slope of nose bone
1955	1	Find in the trench wall	Sen.	100,5	19,5	137,6	—	—	—	—	—	—	—	—	—	90	92	84	—
1956	2	Chance excavations	Mat.	105	25,3	128,5	5,3	1,5	16,6	4,9	17,8	11,3	64,0	43,1	5,0	86	88	83	66
1956	5	Grave 1, upper burial	Ad.	—	—	—	6,0	1,9	16,8	4,7	—	—	60,9	40,6	6,5	87	91	75	71
1956	6	Grave 1, lower burial	Sen.	—	—	—	—	—	—	—	—	—	60,9	42,0	1,8	87	90	79	—
1956	7	Grave 4, Burial 1	Mat.	—	—	—	1,4	0,8	16,5	3,0	18,0	7,4	—	—	6,2	—	—	—	—
1956	8	Grave 4, Burial 1, skel. 2	Sen.	108	22,5	134,8	5,4	1,5	17,0	4,0	—	—	61,1	41,1	3,9	87±1	91	73	—
1956	9	Grave 4, skel. 3	Sen.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1956	11	Burial 19	Mat.	—	—	—	4,1	1,5	—	—	—	—	58,9	42,0	4,0	—	—	—	—
1957	13	Burial 1	Mat.	106	23,1	132,9	9,0	2,2	20,9	6,9	21,0	12,0	53,1	42,2	5,8	90	92	80	73
1957	15	Burial 3	Mat.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1957	16	Burial 4	Sen.	106,5	19,8	139,2	4,2	1,0	15,8	4,0	21,3	9,8	60,3	40,5	4,7	87	88	82	81
1957	21	Burial 10	Sen.	108	24,6	131,0	5,9	2,9	16,9	4,6	17,2	9,3	61,0	42,8	5,7	85	86	79	60
1957	29	Burial 20	Sen.	—	—	—	—	—	—	—	—	—	—	—	—	93	96	84	—
1957	33	Surface C	Sen.	100,5	21,0	134,6	7,9	2,8	—	—	—	—	—	—	3,1	87	91	73	—
1958	35	Burial 5	Ad.	99	21,4	133,3	4,1	2,0	18,2	3,9	24,0	8,3	60,0	43,3	4,9	90	91	81	61
1958	36	Burial 7	Sen.	104	23,8	130,8	5,6	2,2	13,3	4,0	14,5	9,3	56,1	41,9	3,9	88	90	80	63
1958	43	Burial 14	Sen.	103	23,2	131,6	6,1	3,0	17,0	5,6	18,9	7,9	57,1	43,0	4,2	85	88	76	60
1958	48	Burial 20	Mat.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1958	49	Burial 21	Ad.	102,5	20	137,4	5,8	1,1	17,1	2,6	—	—	50,6	9,2	7,8	82	83	78	63
1958	50	Burial 22B	Sen.	—	—	—	—	—	—	—	—	—	—	—	—	86	90	76	—
1958	53	In back dirt	Mat.	103	23,9	132,7	2,4	0,8	16,8	3,8	19,0	9,8	57,1	40,1	8,1	87	90	77	—
1958	55	Quad BB--18 above	Ad.	—	—	—	—	—	—	—	—	—	53,9	41,1	5,0	90	92	85	—
1959	58	Burial 5	Ad.	107	23,0	133,5	7,3	2,4	17,0	4,0	19,0	9,3	59,3	40,0	3,3	(92)	90	—	71±1
1959	64	Burial 15	Ad.	104,5	15,9	146,2	6,9	2,5	17,0	4,8	18,4	10,1	61,0	44,8	2,9	91	94	84	70
1959	65	Burial 16*	Sen.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1959	69	Burial 19	Juv.-ad.	101,5	22,8	131,6	2,8	0,5	15,8	5,2	—	—	68	14,9	5,4	88	90	81	—
1959	70	Burial 20	Mat.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1959	71	Burial 21	Mat.	—	—	—	9,9	3,6	—	—	—	—	—	—	—	91	99	77	65
1959	72	Burial 23	Sen.	104	28,1	123,3	5,3	2,1	15,3	4,8	16,0	9,3	55,6	40,1	5,6	88	90	82	70
1959	73	Quad L--12	Mat.	103	17,4	142,6	5,0	1,2	16,3	3,8	18,1	11,3	60,8	43,3	7,8	(87)	90	—	63±2
1960	75	Burial 1	Sen.	94	22,1	129,7	5,9	2,8	—	—	—	—	56,0	40,0	7,0	(87)	90	—	59±1

Table 5 (cont.)

Year of excavation	Form number	Burial numbers	Age	75(1). Angle of nose projection	68(1). Length of lower jaw from condyle	79. Angle of branch of lower jaw	68. Length of lower jaw from angle	70. Height of branch	71a. Smallest width of branch	65. Condyle width	66. Angular width	67. Front width	69. Height of symphysis	69(1). Height of body of lower jaw	69(3). Thickness of body of lower jaw	C. Angle of chin projection	Form of vault (n. occipitalis)	Lateral walls (n. occipitalis)
1955	1	Find in the trench wall	Sen.	—	109	118	86	57	42	123	111	44	36	33	11	69±1	3	2
1956	2	Chance excavations	Mat.	20	118	132	82	57	40	119	115	50	39	36	12	74	3	2
1956	5	Grave 1, upper burial	Ad.	46	115	123	87	56	41	—	124	48	—	33	12	—	2	2
1956	6	Grave 1, lower burial	Sen.	—	115	—	—	—	—	—	—	—	—	—	—	—	2	2
1956	7	Grave 4, Burial 1	Mat.	—	115	128	81	59	40	124	117	48	—	34	12	—	3	2
1956	8	Grave 4, Burial 1, skel. 2	Sen.	—	110	122	84	56	42	127±2	117±1	46	34	29	13	78±2	3	1
1956	9	Grave 4, skel. 3	Sen.	—	110	122	84	56	42	127±2	117±1	46	34	29	13	78±2	3	1
1956	11	Burial 19	Mat.	—	117	117	71	59	41	—	—	—	—	—	—	—	2	2
1957	13	Burial 1	Mat.	17	108	119	84	61	43	122	113	50	36	31	14	79	3	2
1957	15	Burial 3	Mat.	—	99	123	71	55	36	120	115	46	33	30	11	76	1	2
1957	16	Burial 4	Sen.	26	110	119	84	60	40	136	120	48	33	32	11	74	3	2
1957	21	Burial 10	Sen.	25	117	129	87	53	43	134	127	51	33	28	13	70	2	2
1957	29	Burial 20	Sen.	—	117	129	87	53	43	134	127	51	34	27	13	75	3	1
1957	33	Surface C	Sen.	—	—	—	—	—	44	—	106	51	34	27	13	75	3	2
1958	35	Burial 5	Ad.	29	111	130	78	58	39	118	104	48	36	32	11	82	3	2
1958	36	Burial 7	Sen.	25	108	130	73	58	37	120	111	44	36	33	10	80	2	2
1958	43	Burial 14	Sen.	85	107	108	92	63	43	121	108	45	37	33	12	77±1	3	2
1958	48	Burial 20	Mat.	—	103	126	78	51	44	125±2	115±2	49	—	28	13	—	—	—
1958	49	Burial 21	Ad.	19	103	124	77	55	38	119	107	46	34	30	10	79	2	2
1958	50	Burial 22B	Sen.	—	108	131	72	62	41	—	—	45	—	33	14	76	3	2
1958	53	In back dirt	Mat.	—	109	117	84	59	38	123	113	49	—	32	10	75	3	2
1958	55	Quad BB---18 above	Ad.	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2
1959	58	Burial 5	Ad.	19±2	119	120	93	62±2	44	131±2	108	49	39	38	13	76	3	2
1959	64	Burial 15	Ad.	21	113	132	79	59	41	123±1	120	47	37	34	14	71	3	2
1959	65	Burial 16*	Sen.	—	109	133	76	55	37	—	106±1	43	33	29	9	69±1	3	1
1959	69	Burial 19	Juv.-ad.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1959	70	Burial 20	Mat.	—	114	123	86	56	42	127±2	111±1	48	38	36	12	70	2	2
1959	71	Burial 21	Mat.	26	106	132	74	57	40	115±2	104±1	44	31	28	14	76	1	2
1959	72	Burial 23	Sen.	18	104	133	72	52	35	128	111	45	35	31	8	75	2	1
1959	73	Quad L---12	Mat.	24±3	119	125	91	53	49	132	126	51	35	31	10	71	3	2
1960	75	Burial 1	Sen.	28±2	103	116	79	60	38	120±2	111	46	34	30	11	85	3	1

Table 5 (cont.)

Year of excavation	Form number	Burial numbers	Age	Occipital ridge (0-2)	Sagittal sinus	Mammiform appendix (1-3)	Bone of parietal indentation (rt./left, mm)	Thickness of tympanic part (mm)	Perforation of tympanic part (rt./left)	Above bridge of nose (1-6)	Superoorbital orifice (rt./left)	Transverse profile of the back of the nose (0-2)	Lower edge of the pyriform orifice	Pre-nasal spine (1-5)	Palate ridge	Lower jaw ridge	Closing of the edges of the maxillary-sublingual furrow (rt./left)	8:1. Cranial index	17:1. Height-length index
1955	1	Find in the trench wall	Sen.	1	Rt.	2	15/0	3	0/0	2	0/0	—	f. pr.	—	0	3	0/0	77,5	72,5
1956	2	Chance excavations	Mat.	1	Indet.	1	0/0	4	0/0	4	0/0	2	f. pr.	3	1	2	0/0	67,9	72,5
1956	5	Grave 1, upper burial	Ad.	0	—	2	0/0	4	0/0	3	+/+	1	f. pr.	—	0	0	0/0	68,2	71,9
1956	6	Grave 1, lower burial	Sen.	1	—	2	0/0	5	0/0	3	0/0	2	f. pr.	—	2	2	0/0	77,8	76,8
1956	7	Grave 4, Burial 1	Mat.	1	Rt.	2	0/10	4	0/0	3	0/0	2	ant.	—	—	—	—	—	72,9
1956	8	Grave 4, Burial 1, skel. 2	Sen.	1	Rt.	2	0/0	3	0/0	2	+/-0	0	f. pr.	—	0	0	+/+	68,9	74,0
1956	9	Grave 4, skel. 3	Sen.	1	Indet.	—	0/0	3	0/0	3	0/0	—	ant.	—	—	0	0/0	68,2	—
1957	11	Burial 19	Mat.	1	Left	1	—	3	0/0	2	0/0	0	—	—	—	0	0/0	—	69,2
1957	13	Burial 1	Mat.	2	Rt.	2	0/0	7	0/0	3	0/+	0	f. pr.	1	0	0	0/0	66,8	74,3
1957	15	Burial 3	Mat.	1	Indet.	2	0/0	4	0/0	3	+/+	—	—	—	—	1	0/0	73,6	75,8
1957	16	Burial 4	Sen.	2	Rt.	3	0/0	3	0/+	2	+/+	1	ant.	2	1	2	0/0	72,7	74,3
1957	21	Burial 10	Sen.	1	Rt.	2	0/0	4	0/0	5	+/0	2	ant.	2	0	0	0/0	68,2	—
1957	29	Burial 20	Sen.	2	—	2	—	4	0/0	3	+/0	0	s. pr.	—	0	1	0/0	74,6	75,7
1957	33	Surface C	Sen.	1	Rt.	1	0/0	6	0/0	2	+/+	1	f. pr.	2	1	3	0/+	66,5	73,3
1958	35	Burial 5	Ad.	0	Rt.	1	0/0	3	0/0	3	+/+	2	f. pr.	2	1	2	0/+	68,7	72,9
1958	36	Burial 7	Sen.	1	Left	2	16/14	3	0/0	2	+/+	1	ant.	3	2	2	0/+	73,2	73,8
1958	43	Burial 14	Sen.	2	Rt.	2	8/14	4	0/0	3	+/0	1	f. pr.	—	1	1	0/0	77,2	78,3
1958	48	Burial 20	Mat.	0	—	—	—	3	0/0	3	0/0	—	—	—	1	2	0/0	72,2	71,1
1958	49	Burial 21	Ad.	0	Rt.	1	0/0	4	0/0	2	0/0	0	f. pr.	2	0	1	0/0	72,1	78,1
1958	50	Burial 22B	Sen.	0	—	1	—	2	0/+	2	0/+	—	ant.	—	1	2	0/0	72,8	74,5
1958	53	In back dirt	Mat.	1	Indet.	2	0/0	3	+/+	3	+/0	2	ant.	—	0	1	0/0	69,0	71,6
1958	55	Quad BB--18 above	Ad.	1	Rt.	2	0/0	4	0/0	3	0/0	—	ant.	—	3	—	—	67,7	76,9
1959	58	Burial 5	Ad.	1	Indet.	2	10/10	6	0/0	3	0/0	1	f. pr.	2	0	2	+/+	87,7	69,7
1959	64	Burial 15	Ad.	1	Rt.	2	0/0	3	0/0	3	+/+	2	ant.	—	1	0	0/0	71,1	74,9
1959	65	Burial 16*	Sen.	0	Left	—	—	3	0/0	—	—	—	—	—	2	1	0/0	—	—
1959	69	Burial 19	Juv.-ad.	0	Rt.	1	0/0	3	0/0	2	+/0	2	inf.	3	0	—	—	74,1	73,7
1959	70	Burial 20	Mat.	0	—	2	0/0	3	0/0	3	—	—	—	—	0	1	0/0	67,9	—
1959	71	Burial 21	Mat.	0	Rt.	2	0/11	4	0/0	1	0/0	—	f. pr.	—	1	1	0/0	73,9	70,0
1959	72	Burial 23	Sen.	1	Indet.	1	12/11	5	0/0	3	+/+	2	ant.	2	0	1	0/+	76,9	75,3
1959	73	Quad L--12	Mat.	2	Rt.	1	0/0	4	0/0	3	0/0	3	ant.	2	3	1	+/0	87,0	75,5
1960	75	Burial 1	Sen.	1	Rt.	2	0/0	4	0/0	3	0/0	1	ant.	—	2	0	0/+	70,5	71,5

Table 5 (cont.)

Year of excavation	Form number	Burial numbers	Age	17:8. Height-transvers index	9:8. Frontal-transverse index	9:10. Frontal index	45:8. Horizontal facial-cerebral index	48:17. Vertical facial-cerebral index	9:66. Frontal-maxillary index	40:5. Index of facial projection	47:45. Facial index	48:45. Upper facial index	63:62. Palatal index	54:55. Nasal index	52:51. Orbital index (maxillo-frontal)	52:51a. Orbital index (dacryl)	SS:SC. Stomatic index	MS:MC. Maxillo-frontal index	DS:DC. Dacryal index
1955	1	Find in the trench wall	Sen.	93,6	66,7	83,9	102,1	61,4	84,6	93,1	89,6	56,3	—	—	—	—	—	—	—
1956	2	Chance excavations	Mat.	106,9	71,8	85,5	105,3	55,7	81,7	100,9	92,0	56,5	76,6	42,7	85,3	90,5	28,3	29,5	63,5
1956	5	Grave 1, upper burial	Ad.	105,3	74,1	85,1	102,3	52,2	—	—	—	53,7	70,8	43,1	76,9	83,4	31,7	28,0	—
1956	6	Grave 1, lower burial	Sen.	98,7	67,6	82,9	101,3	51,0	82,3	99,0	79,7	49,7	—	—	88,6	—	—	—	—
1956	7	Grave 4, Burial 1	Mat.	—	—	82,1	—	—	—	—	—	—	—	50,2	79,3	84,2	57,1	18,2	41,1
1956	8	Grave 4, Burial 1, skel. 2	Sen.	107,4	75,6	87,9	111,1	52,4	87,2	100,0	82,0	50,7	—	44,3	83,8	—	27,8	23,5	—
1956	9	Grave 4, skel. 3	Sen.	—	73,7	86,0	107,5	—	83,8	—	88,8	58,7	—	—	—	—	—	—	—
1957	11	Burial 19	Mat.	—	—	—	—	—	85,8	—	85,8	52,7	79,4	45,6	82,8	86,0	36,6	—	—
1957	13	Burial 1	Mat.	111,1	71,9	86,6	109,6	52,0	85,8	98,2	85,8	52,7	—	—	87,1	89,1	24,4	33,0	57,1
1957	15	Burial 3	Mat.	103,0	66,4	79,5	—	—	77,4	—	—	50,0	—	45,5	74,2	86,1	23,8	25,3	46,0
1957	16	Burial 4	Sen.	102,2	67,0	86,4	108,8	53,2	85,0	100,0	—	—	—	47,2	74,7	—	49,2	27,2	54,1
1957	21	Burial 10	Sen.	—	87,7	83,3	108,8	—	70,9	—	80,8	48,6	86,3	47,2	74,7	77,8	—	—	—
1957	29	Burial 20	Sen.	101,5	68,8	—	104,4	60,0	83,6	92,2	93,1	58,3	86,6	38,3	—	—	—	—	—
1957	33	Surface C	Sen.	111,0	70,9	86,5	107,1	53,2	—	—	—	55,2	85,8	53,6	80,8	—	35,4	—	—
1958	35	Burial 5	Ad.	109,4	76,6	86,0	103,9	52,9	94,2	99,1	94,0	55,6	84,6	47,0	83,7	91,0	48,8	21,4	34,6
1958	36	Burial 7	Sen.	100,8	69,4	87,7	103,7	54,8	83,8	96,2	87,1	53,2	—	43,9	81,4	87,7	39,3	30,1	64,1
1958	43	Burial 14	Sen.	101,4	76,1	88,5	102,8	52,8	100,0	99,1	84,9	52,1	92,2	47,1	77,3	82,4	49,2	32,9	41,8
1958	48	Burial 20	Mat.	98,5	—	—	100,7	55,6	—	—	88,2	54,4	—	—	—	—	—	—	—
1958	49	Burial 21	Ad.	108,3	75,0	83,9	106,8	51,8	92,5	99,0	85,1	52,5	—	45,3	77,6	82,6	19,0	15,2	—
1958	50	Burial 22B	Sen.	102,2	69,4	—	103,0	54,0	—	98,0	92,0	53,6	84,4	43,1	—	—	—	—	—
1958	53	In back dirt	Mat.	103,8	76,3	88,5	108,4	52,9	88,5	97,2	—	50,7	92,9	41,9	80,4	88,5	33,3	22,6	51,6
1958	55	Quad BB---18 above	Ad.	113,5	74,6	80,3	101,6	51,1	—	94,4	—	57,0	—	—	85,0	—	—	—	—
1959	58	Burial 5	Sen.	103,0	76,1	89,5	109,0	57,3	94,4	93,7	—	54,1	—	44,1	83,2	89,0	32,9	23,5	49,0
1959	64	Burial 15	Ad.	105,3	70,7	86,2	105,3	53,6	78,3	97,3	89,3	53,6	83,2	40,6	84,3	90,1	36,2	28,2	54,9
1959	65	Burial 16*	Sen.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1959	69	Burial 19	Juv.-ad.	103,7	74,1	84,8	106,7	52,9	—	96,2	—	51,4	94,1	45,7	79,9	—	17,9	32,9	—
1959	70	Burial 20	Mat.	—	—	—	103,1	—	—	—	98,5	59,4	79,6	—	—	—	—	—	—
1959	71	Burial 21	Mat.	94,7	70,7	82,5	99,3	53,2	90,4	98,0	87,1	50,8	73,8	—	—	—	39,1	—	—
1959	72	Burial 23	Sen.	97,9	68,6	82,8	102,9	54,7	86,5	94,2	83,3	52,1	83,0	37,2	91,2	96,1	39,6	31,4	58,1
1959	73	Quad L---12	Mat.	112,7	73,1	84,5	106,7	49,7	77,8	95,6	—	52,5	—	45,7	79,6	85,2	24,0	23,3	82,4
1960	75	Burial 1	Sen.	101,5	71,3	—	102,9	—	87,4	—	—	—	—	—	88,9	—	47,5	—	—

*In brackets are the measurements with consideration of obliteration of the alveolar margin. The same for Tables 7 and 8.

Table 6
Individual Measurements of Female Skulls from the Old Bering Sea Uelen Cemetery.

Year of excavation	Form number	Burial numbers	Age	1. Longitudinal diameter	1b. Longitudinal diameter	8. Transverse diameter	Crest transverse diameter	17. Upper diameter	20. Ear height	5. Length of base of skull	9. Least width of forehead	10. Greatest width of forehead	11. Width of base of skull	12. Width of occiput	23. Horizontal circumference	24. Transverse arc	25. Sagittal arc	26. Frontal arc	27. Parietal arc	
1957	14	Burial 2	Juv.-ad.	182	181	126	129	135	111	105	90	104	123	102	495	293	362	136	106	
	17	Burial 5?	Ad.	180	180	132	130	124	110	94	89	107	121	—	501	295	357	118	118	
	18	Burial 7	Ad.	185	186	131	130	127	112	100	97	119	—	103	518	296	372	130	132	
	20	Burial 9	Ad.	182	182	128	128	129	110	101	91	109	120	102	503	295	368	127	115	
	22	Burial 10a	Ad.	177	175	127±3	125	124	108	98	98	—	118	105±4	488	293±5	—	—	—	—
	23	Burial 11	Mat.	168	187	131	133	—	119	—	—	97	112	123	106	518	315	380	135	127
	24	Burial 13	Juv.-ad.	176	177	126	129	134	113	101	95	110	110	110	108	495	292	360	124	132
	25	Burial 15	Ad.	194	194	130	131	134	118	101	96	117	117	119	109	532	311	398	135	142
	26	Burial 15a	Sen.	186	184	129	131	—	115	—	—	87	—	122	101	505	307	361	125	125
	28	Burial 18	Mat.	178	178	135	136	131	112	96	89	111	111	131	107	502	297	362	122	124
	30	Burial 18	Sen.	183	182	128	134	130	107	99	97	109	128	107	503	285	358	118	115	
	31	Excav. 2, Grave 1	Ad.	181	180	127±2	—	129	113	100	87	—	—	—	493	302±2	369	124	118	
	32	A surface	Sen.	184	183	118	120	127	112	103	95±1	—	116	98	98	495	292	364	113	119
	33	B surface	—	175	174	129	—	130	111	111	97	89	107	118	99	—	300	362	122	120
34	Burial 27	Sen.	181	180	130±2	137	134	114	100	100	91	107±2	123	108	502	288	365	122	117	
37	Burial 9	Sen.	187	186	130	133	136	115	103	103	90	110	122	114	516	307	379	122	135	
39	Burial 10	Sen.	186	186	129	127	125	114	98	96	113	113	111	—	516	304	382	135	120	
40	Burial 12	Juv.-ad.	184	184	126	125	135	115	115	104	95	109	119	102	503	302	369	131	117	
42	Burial 13	Juv.-ad.	188	189	133	130	139	120	120	106	99	115	124	106	517	318	380	129	137	
44	Burial 15	Sen.	177	176	128	129	126	109	101	101	89	106±1	122	106±2	490	292	352	116	117	
45	Burial 16	Sen.	180	179	132	131	—	107	107	—	95	110	123	100	500	288	—	119	126	
47	Burial 19	Sen.	181	180	134	133	129	110	110	98	94	110	125	105	506	301	367	126	119	
51	Burial 23	Ad.	181	180	129	129	125	110	110	99	91	106	124	106	497	294	360	120	127	
54	Quad D-4	Mat.	189	186	139	140	130	110	110	—	—	—	128	—	525	305	375	130	128	
59	Burial 9	Ad.	182	181	127	127	126	111	111	103	85±1	—	120	112	497	293	359	110	133	
60	Burial 10	Ad.	173	173	124	125	131	112	112	102	90	106	124	101	479	287	337	116	112	
61	Burial 11	Ad.	195	194	135	139	137	118	101	101	99	115	128	109	535	305	388	127	139	
62	Burial 13	Ad.	176	176	122	125	128	109	109	103	92	104	120	109	487	279	—	128	121	
63	Burial 14	Mat.	191	191	140	139	143	122	122	104	96	118	128	114±2	538	328	401	135	132	
66	Burial 17	Mat.	183	181	127	128	130	109	109	98	87	104	123	100	497	292	370	120	128	
68	Burial 19	Ad.	173±2	173±2	122±2	118±2	115	96	96	98	88±1	—	111	—	486±5	272±5	335±5	—	—	
74	Quad M-N 7	Juv.-ad.	183	182	129	131	132	110	110	103	94	109	125	109	503	292	365	127	123	

Table 6 (cont.)

Year of excavation	Form number	Burial numbers	Age	28. Occipital arc	29. Frontal chord	30. Parietal chord	31. Occipital chord	3(1). Chord of upper part of the occiput	3(2). Chord of lower part of occiput	Height of curve of forehead	7. Length of occipital office	16. Width of occipital office	32. Angle of forehead profile from nasion	Angle of forehead profile from glabella	3(1). Angle of upper part of occiput	3(2). Angle of lower part of occiput	3(4). Angle of crest of occiput	34. Angle of occipital office	45. Malar diameter
1957	14	Burial 2	Juv.-ad.	180	116	99	100	71	39	30,7	37,5	28,9	85	79	95	34	129	-4	129
	17	Burial 5?	Ad.	121	105	108	97	69	12	24,3	37,3	28,0	89	81	94	25	119	-10	130±2
	18	Burial 7	Ad.	110	108	117	88	57	42	31,0	36,0	34,1	95	88	98	28	126	-16	—
	20	Burial 9	Ad.	126	112	104	101	76	41	27,2	31,8	27,5	85	82	98	19	117	-8	130
	22	Burial 10a	Ad.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	23	Burial 11	Mat.	118	117	113	97	62	43	30,0	—	—	84	80	96	27	123	—	133±2
	24	Burial 13	Juv.-ad.	104	106	118	93	68	30	28,6	41,6	33,4	90	87	102	32	134	-9	126
	25	Burial 15	Ad.	121	118	125	95	70	39	29,0	38,3	30,4	89	82	105	12	117	-11	127
	26	Burial 15a	Sen.	111	112	112	93	66	36	22,7	—	—	—	—	—	—	—	—	—
	28	Burial 18	Mat.	116	107	111	96	69	37	26,1	36,3	30,9	—	—	—	—	—	—	—
1958	30	Excav. 2, Grave 1	Sen.	125	104	102	99	64	55	24,1	39,5	28,6	84	77	87	27	114	0	137
	31	A surface	Ad.	127	109	100	100	76	38	26,0	—	—	87	84	96	23	119	—	130±2
	32	B surface	Sen.	132	100	110	106	76	45	21,8	37,5	25,9	85	82	90	30	120	-5	130
	12	Burial 27	—	120	108	109	98	—	—	26,0	—	—	95	93	93	34	127	+6	121
	34	Burial 2	Sen.	126	106	106	105	74	47	24,0	—	—	85	78	96	24	120	—	131
	37	Burial 9	Sen.	122	108	122	102	71	40	24,5	39,5	33,1	85	80	102	28	130	-13	130±2
	39	Burial 10	Sen.	127	115	108	105	77	41	29,1	36,0	31,0	90	85	100	21	121	-24	130±2
	40	Burial 12	Juv.-ad.	121	112	107	99	67	44	29,3	35,1	29,2	90	86	95	27	122	-3	125
	42	Burial 13	Juv.-ad.	114	111	123	92	71	30	28,0	37,1	27,2	92	90	102	18	120	-6	133±2
	44	Burial 15	Sen.	119	103	106	97	62	43	23,6	33,9	27,8	85	78	93	38	131	-8	—
1959	45	Burial 16	Sen.	—	108	112	—	—	—	23,1	—	—	81	77	—	—	—	—	132
	47	Burial 19	Sen.	122	110	110	99	62	41	26,0	33,0	25,8	86	80	98	23	121	-5	132±2
	51	Burial 23	Ad.	113	105	113	93	60	44	24,9	33,4	29,9	86	82	100	21	121	-8	126±2
	54	Quad D-4	Mat.	117	116	115	98	65	42	25±0,5	—	—	80	76	103	25	128	—	132±2
	59	Burial 9	Ad.	116	100	120	97	68	39	—	—	—	84	80	95	28	123	-9	131±2
	60	Burial 10	Ad.	109	105	102	94	62	41	22,1	39,9	30,1	83	78	90	44	134	-5	132
	61	Burial 11	Ad.	122	114	127	99	70	41	25,0	39,0	27,1	86	82	105	19	124	-5	133±1
	62	Burial 13	Ad.	—	112	108	—	—	—	28,7	—	—	88	84	—	—	—	—	130
	63	Burial 14	Mat.	134	114	118	110	65	58	31,1	40±0,5	31,1	93	89	93	33	126	-13	134
	66	Burial 17	Mat.	122	106	111	98	68	44	25,1	31,9	27,1	85	80	100	18	118	-3	129
68	Burial 19	Ad.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
74	Quad M-N 7	Juv.-ad.	115	110	109	96	64	41	28,1	36,9	33,1	86	81	100	29	129	-8	130	

Table 6 (cont.)

Year of excavation	Form number	Burial numbers	Age	48. Upper height of face	47. Full height of face	40. Length of base of face	43. Upper width of face	46. Average width of face	60. Length of alveolar arc	61. Width of alveolar arc	62. Length of palate	63. Width of palate	55. Height of nose	54. Width of nose	51. Width of orbit (maxillofrontal)	51a. Width of orbit (dacryal)	52. Height of orbit	Bimalar chord	Height of nasion above bimalar chord	
1957	14	Burial 2	Juv.-ad.	68	—	99	103	95	48	64	43,2	40,5	53	23,3	44,0	41,5	36,3	94,5	18,8	
	17	Burial 5?	Ad.	61	109	96	97	95	—	65	—	39,0	48	24,5	42,2	38,9	33,9	91,5	14,2	
	18	Burial 7	Ad.	64	109	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	20	Burial 9	Ad.	68	109	103	104	98	53	61	47,5	39,0	47	24,4	41,7	40,8	34,9	99	16,8	
	22	Burial 10a	Ad.	72	116	103	104	102	55	67	—	39,2	53	26,5	—	—	—	36,8	97	19,8
	23	Burial 11	Mat.	74	122	—	105	105	54	67	—	42,1	53	22±0,5	44,3	—	—	36,8	99	17,8
	24	Burial 13	Juv.-ad.	69	109	96	99	100	49	61	42,1	37,4	51	20,0	41,0	38,1	35,2	89,5	14,0	
	25	Burial 15	Ad.	68	117	103	108	94	52	61	48,5	36,5	48	23,0	43,8	41,2	34,5	101,5	15,5	
	28	Burial 15a	Sen.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	28	Burial 18	Mat.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	30	Excav. 2, Grave 1	Sen.	68±1	—	—	107	101	50	63	44,9	40,9	48	—	45,3	—	—	36,0	99,5	14,8
	31	A surface	Ad.	70	—	102	—	—	—	—	—	—	—	51	24,8	41,8	39,9	97	16,0	
	32	B surface	Sen.	71±1	—	108±1	—	—	—	—	—	—	—	52	—	—	—	—	—	—
	1958	12	Burial 27	—	60	99	95	96	92	—	60	45	37	45	22,8	40,4	36,4	32,7	88	15,5
34		Burial 2	Sen.	73	115	93	103	98	—	—	—	—	56	23,0	45,9	42,8	35,6	92	13,8	
37		Burial 9	Sen.	—	—	—	99	—	—	—	—	—	50	21,0	42,0	39,0	38,0	92	11,0	
39		Burial 10	Sen.	72±1	—	92±2	102	—	—	58	43,1	37,8	51	20,9	42,8	—	36,3	95,5	14,0	
40		Burial 12	Juv.-ep.	69	117	104	104	101	52	62	46,5	36,8	46	21,5	42,0	39,1	33,9	93,5	15,2	
42		Burial 13	Juv.-ad.	68	112	105	105	97	51	62	46,3	38,9	48	24,6	43,0	41,0	37,2	100	19,0	
44		Burial 15	S n.	—	—	—	98	—	—	—	—	—	—	—	—	—	—	—	—	
45		Burial 16	Sen.	66	108	—	102	—	—	—	—	—	—	43	—	—	—	95	15,1	
47		Burial 19	Sen.	—	—	—	103	—	—	—	—	—	—	50	42,3	—	33,5	94	12,5	
51		Burial 23	Ad.	72	116	102	100	—	—	52	59	—	36,8	51	—	—	37,4	95	17,6	
54		Quad D-4	Mat.	71	115±2	—	—	—	—	55	63	46,5	—	48	—	—	—	—	—	
59		Burial 9	Ad.	71	119	113	—	—	—	55	65	49,0	39,1	55	25,5	40,5	—	35,2	90,5	15,5
60		Burial 10	Ad.	68	117	107	101	97	97	54	62	47,0	37,1	47	23,0	42,6	39,8	92,5	16,1	
61		Burial 11	Ad.	76±1	122	102	105	—	—	56	65	48,8	39,0	53	23,5	—	—	33,3	96	13,3
62	Burial 13	Ad.	67	111	103	98	98	96	53	62	44,9	37,8	52	22,0	41,0	38,6	91	13,0		
63	Burial 14	Mat.	76	—	99	101	99	99	51	60	42,8	36,6	57	24,8	43,2	39,9	93,5	12,3		
66	Burial 17	Mat.	68	112	94	96	99	99	53	62	45,9	39,4	48	21,9	40,4	37,1	34,0	89,5	16,0	
68	Burial 19	Ad.	68±1	110±2	99±1	96±2	88±2	—	50	57	—	34,0	48	—	—	—	—	—	—	
74	Quad M-N 7	Juv.-ad.	69	115	99	101	104	104	54	64	46,0	39,2	51	24,1	41,1	37,0	35,0	92	17,3	

Table 6 (cont.)

Year of excavation	Form number	Burial numbers	Age	77. Nasomalar angle	Zygomaxillary chord	Ht. of subspinal pt. above zygomaxillary chord	∠zm' zygomaxillary angle	SC. Simotic width	SS. Simotic height	MC. Maxillofrontal width	MS. Maxillofrontal height	DC. Dacryal width	DS. Dacryal height	Width of malar bone	Height of curve of malar bone	Depth of canine socket	72. General angle of face	73. Angle of middle part of face	74. Angle of alveolar part of face	
1957	14	Burial 2	Juv.-ad.	136,6	94	23,1	127,6	1,2	0,6	16,8	5,0	17,8	7,2	50,6	10,1	4,1	90	91	86	
	17	Burial 5?	Ad.	144,9	97	22,0	131,2	4,5	1,9	15,1	4,0	—	—	—	—	6,2	85	90	68	
	18	Burial 7	Ad.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	68
	20	Burial 9	Ad.	142,4	98	16,2	143,5	8,6	2,3	19,1	5,2	21,0	9,5	52,4	10,4	4,1	84	89	—	
	22	Burial 10a	Ad.	135,6	101	21,0	134,8	—	—	—	—	—	—	—	—	2,3	91	95	—	
	23	Burial 11	Mat.	140,4	103	19,0	139,6	—	—	—	—	—	—	—	—	2,9	89	90	83	
	24	Burial 13	Juv.-ad.	145,3	98	21,8	132,1	3,3	1,9	15,9	3,9	17,9	9,3	51,1	8,4	2,9	88	90	83	
	25	Burial 15	Ad.	146,0	90	16,1	140,6	4,9	1,0	17,3	3,7	19,2	7,2	52,0	12,1	1,9	88	91	76	
	26	Burial 15a	Sen.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	28	Burial 18	Mat.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
30	Excav. 2, Grave 1	Sen.	146,8	—	—	—	5,3	0,6	15,9	3,1	—	—	—	—	—	—	—	—	—	
1958	31	A surface	Ad.	143,5	—	—	—	5,2	0,8	18,2	2,4	—	—	—	—	2,0	83	85	77	
	32	B surface	Sen.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	12	Burial 27	—	145,6	89	17,5	137,0	6,1	3,1	15,0	5,1	18,0	10,5	—	—	4,1	95	97	66	
	34	Burial 2	Sen.	146,6	96	16,3	142,4	4,9	1,8	14,1	3,5	18,8	9,9	50,2	12,4	4,5	90	93	—	
	37	Burial 9	Sen.	153,0	—	—	—	4,5	1,9	13,0	4,8	15,0	8,1	—	—	5,4	82±1	88	—	
	39	Burial 10	Sen.	147,2	—	—	—	7,3	2,8	16,0	4,2	—	—	—	—	3,2	99	101	—	
	40	Burial 12	Juv.-ad.	143,9	101	16,5	143,9	8,0	2,3	15,0	5,0	19,1	8,6	56,2	12,3	2,4	86	90	70	
	42	Burial 13	Juv.-ad.	140,4	96,5	19,5	136,0	10,0	2,3	—	—	—	—	—	—	2,6	87	90	80	
	44	Burial 15	Sen.	141,4	—	—	—	3,6	1,9	16,1	4,6	—	—	—	—	—	—	—	—	
	45	Burial 16	Sen.	144,7	—	—	—	9,5	2,3	—	—	—	—	—	—	—	—	—	—	
1959	47	Burial 19	Sen.	150,2	—	—	—	4,0	0,9	17,1	4,2	—	—	—	—	—	—	—	—	
	51	Burial 23	Ad.	139,4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	54	Quad D-4	Mat.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	59	Burial 9	Ad.	142,2	98,5	26,9	122,7	3,8	1,1	14,3	3,8	—	—	57,2	10,0	4,3	80	84	—	
	60	Burial 10	Ad.	141,6	95	20,9	132,5	6,2	1,3	15,8	3,0	18,3	7,5	57,5	10,8	5,0	80	82	—	
	61	Burial 11	Ad.	148,9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	62	Burial 13	Ad.	148,1	92,5	23,3	126,5	2,0	1,1	15,6	3,4	17,0	9,6	55,8	12,2	5,1	85	88	75	
	63	Burial 14	Mat.	150,4	100,5	23,5	129,8	5,5	1,8	14,8	3,6	17,0	11,4	52,8	12,2	6,1	90	90	90	
	66	Burial 17	Mat.	140,6	99	22,2	131,7	6,8	2,1	15,9	4,3	18,5	9,0	52,0	11,5	4,0	89	91	79	
	68	Burial 19	Ad.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
74	Quad M-N 7	Juv.-ad.	138,8	98	19,0	137,6	6,0	2,5	16,4	5,3	19,0	9,1	51,2	11,0	3,4	89	91	78		

Table 6 (cont.)

Year of excavation	Form number	Burial numbers	Age	75. Angle of slope of nose bones	75(1). Angle of nose projection	68(1). Length of lower jaw from condyle	79. Angle of branch of lower jaw	68. Length of lower jaw from angles	70. Height of branch	71a. Least width of branch	65. Condyle width	66. Angular width	67. Front width	69. Height of symphysis	69(1). Height of body of lower jaw	69(3). Thickness of body of lower jaw	C. Angle of projection of chin	Form of arch (n. occipitalis)	Lateral walls (n. occipitalis)	
1957	14	Burial 2	Juv.-ad.	68	22	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
	17	Burial 5?	Ad.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
	18	Burial 7	Ad.	—	—	107	133	76	52	35	—	109	47	33	29	12	81	2	2	2
	20	Burial 9	Ad.	72	12	—	—	—	—	34	—	104	43	—	—	10	—	1	3	3
	22	Burial 10a	Ad.	—	—	105±2	134	76	54	34	—	101	46	—	27	11	81	—	—	—
	23	Burial 11	Mat.	—	—	111	136	75	51	36	122±1	112±1	48	34	30	12	77	2	2	2
	24	Burial 13	Juv.-ad.	64	25	103	135	79	42	34	—	99	47	28	23	10	78	3	3	2
	25	Burial 15	Ad.	70	18	109	128	77	57	40	117	107	45	36	29	12	75	2	2	2
	26	Burial 15a	Sen.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	2	2
	28	Burial 18	Mat.	—	—	106	128	75	57	34	122±1	107	47	—	—	—	77	2	2	2
1958	30	Excav. 2, Grave 1	Sen.	—	—	105	137	74	44	38	—	103	43	—	28	11	—	3	1	2
	31	A surface	Ad.	65	18	—	—	—	—	—	—	—	—	—	—	—	—	3	3	2
	32	B surface	Sen.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	3	2
	12	Burial 27	—	72	23	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	34	Burial 2	Sen.	—	—	102	123	74	56	—	36	110	102	—	—	—	—	2	2	1
	37	Burial 9	Sen.	67±1	—	—	—	—	—	—	38	118	105	43	—	—	—	2	2	2
	39	Burial 10	Sen.	77	15±2	—	—	—	—	—	—	—	48	—	—	—	—	3	3	2
	40	Burial 12	Juv.-ad.	67	19	109	126	81	52	—	42	112	100	46	34	30	11	80	1	2
	42	Burial 13	Juv.-ad.	67	20	100	128	72	53	36	36	119	102	44	31	27	13	80	1	2
	44	Burial 15	Sen.	—	—	100	120	74	55	37	37	111	105	44	34	29	10	76	2	2
1959	45	Burial 16	Sen.	—	—	104	122	76	57	39	116	97	43	—	28	11	83	3	3	2
	47	Burial 19	Sen.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	2
	51	Burial 23	Ad.	—	—	98	134	86	50	34	—	—	—	—	26	11	77	2	2	2
	54	Quad D-4	Mat.	—	—	105	143	73	43	35	120±2	113	47	—	26	9	70±2	2	2	2
	59	Burial 9	Ad.	—	—	111±1	125	81±5	55	40	117±2	105±2	45±1	34	30	13	81	1	1	2
	60	Burial 10	Ad.	70	10	109	135	78	51	39	113	105	44	34	31	11	79	1	1	2
	61	Burial 11	Ad.	—	—	109	131	77	53	40	120	120	47	—	—	11	74	3	3	2
	62	Burial 13	Ad.	65	20	102	126	73	51	35	115	99	46	31	29	10	80	3	3	1
	63	Burial 14	Mat.	61	29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
	66	Burial 17	Mat.	71	18	103	124	77	52	37	117	109	44	35	31	12	75	1	1	2
68	Burial 19	Ad.	—	—	103	136	69	50	33	103±2	92±2	—	—	—	—	—	—	—	2	
74	Quad M-N 7	Juv.-ad.	70	19	104	127	78	53	38	110±1	105	46	30	26	12	78	—	—	—	2

Table 6 (cont.)

Year of excavation	Form number	Burial numbers	Age	Occipital ridge (0-2)	Sagittal sinus	Mammiform process (1-3)	Bone of the parietal indentation (rt/left, mm)	Thickness of the tympanic part (mm)	Perforation of the tympanic part (rt/left)	Above bridge of nose (1-6)	Superoital orifices (rt/left)	Transverse profile of back of nose (0-2)	Lower edge of pyriform orifice	Pre-nasal spine (1-5)	Palate ridge	Lower jaw ridge	Closing of edges of maxillary-sublingual furrow (rt/left)	8:1. Cranial index	17:1. Height-length index	
1957	14	Burial 2	Juv.-ad.	0	Left	1	0/0	4	0/0	2	o/+	2	inf.	2	1	—	—	69,2	74,2	
	17	Burial 5?	Ad.	0	Rt	1	—	3	0/0	2	+/+	2	s. pr.	—	1	0	—	73,3	68,9	
	18	Burial 7	Ad.	1	Rt	2	0/0	3	0/0	2	0/0	—	f. pr.	—	0	2	0/0	70,8	68,7	
	20	Burial 9	Ad.	0	Indet.	1	0/0	4	0/0	1	+/0	—	0	inf.	1	0	0/0	70,3	70,9	
	22	Burial 10a	Ad.	0	Rt	1	—	3	0/0	1	—	—	—	s. pr.	—	0	0/0	71,8	70,1	
	23	Burial 11	Mat.	1	—	2	0/0	4	+/0	2	0/+	—	—	ant.	2	1	1	0/0	69,7	—
	24	Burial 13	Juv.-ad.	0	Left	1	0/0	3	0/0	1	0/+	—	2	ant.	1	1	1	0/0	71,6	76,1
	25	Burial 15	Ad.	1	Rt	1	0/0	5	0/0	2	+/+	—	5	inf.	1	1	1	0/0	67,0	69,1
	26	Burial 15a	Sen.	1	Rt	2	0/0	6	0/0	2	0/+	—	—	—	—	—	—	69,4	—	
	28	Burial 18	Mat.	0	Indet.	1	0/0	4	0/0	1	+/+	—	—	—	—	0	—	75,8	73,6	
	30	Excav. 2, Grave 1	Sen.	0	Left	—	0/0	5	0/0	2	0/0	—	0	—	1	1	—	70,0	71,0	
	31	A surface	Ad.	0	Left	1	0/0	3	0/0	1	+/+	—	0	ant.	—	—	—	70,2	71,3	
	32	B surface	Sen.	1	Indet.	2	0/0	3	0/0	2	+/0	—	—	f. pr.	—	—	—	64,1	69,0	
	12	Burial 27	—	—	—	1	—	—	—	1	—	—	—	inf.	—	—	—	73,7	74,3	
1958	34	Burial 2	Sen.	1	Left	1	—	4	0/+	2	+/0	0	ant.	3	2	1	0/0	71,8	74,0	
	37	Burial 9	Sen.	0	Rt	1	0/0	4	0/0	2	+/+	1	ant.	—	2	1	0/0	69,5	72,7	
	39	Burial 10	Sen.	0	Rt	1	0/0	3	0/0	1	0/+	1	—	—	0	—	—	69,4	67,2	
	40	Burial 12	Juv.-ad.	0	Left	1	0/0	4	0/0	1	+/+	0	0	inf.	—	0	1	0/0	68,5	73,4
	42	Burial 13	Juv.-ad.	0	Left	1	—	3	0/0	1	+/+	0	0	inf.	—	1	1	0/0	70,7	73,9
	44	Burial 15	Sen.	1	Indet.	1	0/0	3	0/0	3	+/0	—	2	ant.	0	2	2	0/+	72,3	71,2
	45	Burial 16	Sen.	2	Rt	1	0/0	3	0/0	1	+/+	—	0	—	2	1	1	73,3	—	
	47	Burial 19	Sen.	1	Indet.	2	18/14	3	0/0	2	+/+	—	1	—	2	—	—	74,0	71,3	
	51	Burial 23	Ad.	0	—	—	0/0	3	0/0	1	0/+	—	—	—	0	1	—	71,3	69,1	
	54	Quad D-4	Mat.	0	—	2	0/0	3	+/+	2	—	—	—	—	0	1	0/0	73,5	68,8	
	59	Burial 9	Ad.	2	Left	1	0/0	5	0/0	2	0/0	—	1	s. pr.	2	0	0	0/0	69,8	69,2
	60	Burial 10	Ad.	0	Rt	2	0/0	4	0/0	1	0/0	—	1	inf.	0	1	1	0/0	71,7	75,7
	61	Burial 11	Ad.	0	Left	2	0/0	3	0/0	1	+/+	—	0	f. pr.	0	2	2	0/0	69,2	70,3
	62	Burial 13	Ad.	0	Left	2	0/0	3	0/0	1	+/+	—	2	ant.	1	1	1	0/0	69,3	72,7
63	Burial 14	Ad.	0	Rt	1	15/0	3	+/+	1	+/+	—	0	f. pr.	1	1	—	73,3	74,9		
66	Burial 17	Mat.	1	Rt	1	—	4	0/0	2	+/+	—	0	ant.	1	1	1	—	69,4	71,0	
68	Burial 19	Ad.	0	—	—	0/0	4	+/0	2	0/0	—	—	—	1	0	0	0/0	70,5	66,5	
74	Quad M-N 7	Juv.-ad.	0	Rt	1	0/0	3	0/0	2	0/0	—	1	f. pr.	—	0	0	0/+	70,5	72,1	

Table 6 (cont.)

Year of excavation	Form number	Burial numbers	Age	178: Height-length index	9:8: Frontal-transverse index	9:10: Frontal index	45:8: Horizontal facial-cerebral index	48:17: Vertical facial-cerebral index	9:66: Frontal-maxillary index	40:5: Index of facial projection	47:45: Facial index	48:45: Upper facial index	63:62: Palatal index	54:55: Nasal index	52:51: Orbital index (maxillo-frontal)	52:51a: Orbital index (dacryal)	55:50: Sinoptic index	MS:MC: Maxillo-frontal index	DS:DC: Dacryal index	
1957	14	Burial 2	Juv.-ad.	107,1	71,4	86,5	102,4	50,4	—	94,3	—	52,7	93,7	44,0	82,5	87,5	50,0	29,8	40,5	
	17	Burial 5?	Ad.	93,9	67,4	83,2	98,5	48,2	—	102,1	83,9	46,9	—	51,0	80,3	87,2	42,2	26,5	—	
	18	Burial 7	Ad.	97,0	74,1	81,5	—	50,4	89,0	—	—	—	—	—	—	—	—	—	—	—
	20	Burial 9	Ad.	100,8	71,1	83,5	101,6	52,7	87,5	102,0	83,9	52,3	82,1	51,9	83,7	85,5	26,7	27,2	45,2	—
	22	Burial 10a	Ad.	97,6	78,0	—	—	58,1	98,0	105,1	—	—	—	—	50,0	—	—	—	—	—
	23	Burial 11	Mat.	—	74,1	86,6	101,5	—	86,6	—	91,7	55,6	—	—	41,5	83,1	—	—	—	—
	24	Burial 13	Juv.-ad.	106,3	75,4	86,4	100,0	51,5	96,0	95,1	86,5	54,8	88,9	39,2	85,9	92,4	57,6	24,5	52,0	
	25	Burial 15	Ad.	103,1	73,9	82,1	97,7	50,8	89,7	102,0	92,1	53,5	75,3	47,9	78,8	83,7	20,4	21,4	37,5	
	26	Burial 15a	Sen.	—	67,4	80,2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	28	Burial 18	Mat.	97,0	65,9	80,2	—	—	83,2	—	—	—	—	—	—	—	—	—	—	—
1958	30	Excav. 2, Grave 1	Sen.	101,6	75,8	89,0	107,0	52,3	94,2	99,0	—	48,6	91,1	48,6	80,9	84,7	11,3	19,5	—	
	31	A surface	Ad.	101,6	68,5	—	102,4	54,3	—	102,0	—	53,9	—	48,6	80,9	84,7	15,4	13,2	—	
	32	B surface	Sen.	107,6	80,5	—	110,2	55,9	—	104,9	—	54,6	—	—	—	—	—	—	—	—
	42	Burial 27	—	100,8	69,0	83,2	93,8	46,2	87,3	97,9	82,5	49,6	82,2	50,7	80,9	89,8	50,8	34,0	58,3	
	34	Burial 2	Sen.	103,1	70,0	85,1	100,8	54,5	86,7	93,0	87,8	55,7	—	41,1	77,6	83,2	36,7	24,8	52,7	
	37	Burial 9	Sen.	104,6	69,2	81,8	100,0	—	—	—	—	—	87,7	42,0	90,5	97,4	42,2	36,9	54,0	
	39	Burial 10	Sen.	96,9	74,4	85,0	100,8	57,6	—	—	93,9	—	55,4	—	84,8	86,7	38,4	26,2	—	
	40	Burial 12	Juv.-ad.	107,1	75,4	87,2	99,2	51,1	95,0	100,0	100,0	93,6	55,2	79,1	80,7	86,7	29,8	—	—	
	42	Burial 13	Juv.-ad.	104,5	74,4	86,1	100,0	48,9	97,1	99,1	84,2	51,1	51,1	84,0	51,3	86,5	23,0	—	—	
	44	Burial 15	Sen.	98,4	69,5	84,0	—	—	84,8	—	—	—	—	—	43,1	89,2	—	—	—	
1959	45	Burial 16	Sen.	—	72,0	86,4	100,0	—	97,9	—	81,8	50,0	—	45,0	79,2	86,3	24,2	24,6	—	
	47	Burial 19	Sen.	96,3	70,2	85,5	98,5	—	—	103,0	—	—	—	—	86,8	—	—	—	—	
	51	Burial 23	Ad.	96,9	70,5	85,9	97,7	57,6	—	—	92,1	57,1	—	—	—	—	—	—	—	
	54	Quad D-4	Mat.	93,5	—	—	95,0	54,6	—	—	87,1	53,8	—	—	—	—	—	—	—	
	59	Burial 9	Ad.	99,2	66,9	—	103,2	56,4	81,0	109,7	90,8	54,2	79,8	46,4	86,9	—	29,0	26,6	—	
	60	Burial 10	Ad.	105,6	72,6	84,9	106,5	51,9	85,7	104,9	88,6	51,5	78,9	48,9	78,2	83,7	21,0	19,0	41,0	
	61	Burial 11	Ad.	101,5	73,3	86,1	98,5	55,5	82,5	101,0	91,7	57,1	79,9	44,3	—	—	—	—	—	
	62	Burial 13	Ad.	104,9	75,4	88,5	106,6	52,3	92,9	100,0	85,4	51,5	51,5	84,2	42,3	85,1	90,4	55,0	21,8	
	63	Burial 14	Mat.	102,1	68,6	81,4	95,7	53,2	92,9	95,2	—	—	56,7	90,2	43,5	77,5	84,0	32,7	24,3	
	66	Burial 17	Mat.	102,4	68,5	83,7	101,6	52,3	79,8	95,9	86,8	52,7	85,8	85,8	45,6	84,2	91,6	30,9	27,0	
68	Burial 19	Ad.	94,3	72,1	—	96,7	59,1	95,7	101,0	93,2	57,6	—	—	—	—	—	—	—		
74	Quad MN 7	Juv.-ad.	102,3	72,9	86,2	100,8	52,3	89,5	89,5	96,1	88,5	53,1	85,2	47,3	85,2	94,6	41,7	32,3	47,9	

Table 7. Individual Measurements of Male Skulls from the Old Bering Sea Cemetery at Ekven.

Year of excavation	Form number	Burial numbers	Age	1. Longitudinal diameter	1b. Longitudinal diameter from ophtyon	8. Transverse diameter	Crest transverse diameter	17. Upper diameter	20. Ear height	5. Length of skull base	9. Smallest brow width	10. Largest brow width	11. Width of skull	12. Width of occiput
1961	1	Surface	Ad.	197	196	133	137	142	119	103	99	113	125	114
	2	3	Mat.	199	196	133	137	139	119	111	99	111	128	108
	3	4	Mat.	189	187	128	131	139	114	112	96	110	127	104
	4	9	Mat.	196	194	136	145	141	120	108	94	112	131	115
	5	10	Mat.	194	191	140	144	132±2	116	—	107	117	139	109
	6	11	Mat.	187	187	132±1	133±1	141	116	—	102	114	128	110
	7	12	Sen.	199	199	138	142	141	122	112	103	117	133	115
	8	13	Sen.	195	196	134	137	140	117	107	98	111	128	116
	9	13A	Mat.	—	—	—	—	—	—	—	—	—	—	—
	10	17	Mat.	195	192	132±2	—	139	119	103	101	112	—	109
	11	18	Mat.	191	190	131	134	141	118	114	95	111	128	104
1962	12	Surface A	Mat.	195	193	135	133	137	120	105	95	109	128	109
	13	Surface B	Ad.	200	200	138	142	137	116	100	104	114	132	109
	14	22	Ad.	202	201	141	142	141	124	109	108	123	134	104±2
	15	27b	Ad.	189	189	142	143	136	120	105	99	116	125	110
	16	28	Ad.	188	188	135	138	145	118	109	89	112	126	109
	17	31	Mat.	189	189	134	134	144	121	110	99	115	122	111
	18	35	Sen.	189	188	132	137	136±2	114	110±2	96	108	130	108
	19	37	Sen.	197	195	143	145	135	123	105	102	117	134	113
	20	38	Mat.	180	178	143	138	135	118	106	100	117	133	113
	21	40b	Mat.	184	181	132	132	133	113	107	96	109	122	101
	22	41	Sen.	192	188	133	134	139	118	106	99	111	126	107
	23	42	Ad.	185	184	132	133	141	117	104	100	108	127	107
	24	44b	Ad.	195	195	138	136	141	117	115	95	107	128	109
	25	46	Ad.	—	—	—	—	—	—	—	—	—	—	—
	26	46b	Mat.	197	196	129	134	142	123	113	96	114	129	106
	27	46c	Mat.	200	199	133	137	148	125	111	100	118	132	109
	28	49b	Mat.	184	183	135	135	133	111	98±1	87	—	122	109
	29	51	Mat.	191	190	134	137	137	112	109	103	111	127	109
	30	52	Ad.	183	183	138	140	132	114	98	97	116	132	110
	31	52b	Mat.	197	196	140	142	141	124	110	101	115	128	105
	32	53a	Mat.	207	205	133	138	152	127	122	101	115	130	111
	33	54	Mat.	189	187	126±2	129±2	137	114	112	96	113	125	103
	34	55	Mat.	183	180	124	131	130	110	102	96	106±1	122	103
	1963	35	58	Sen.	190	189	135	135	141	122	103	90	115	129
36		59	Mat.	195	192	137	142	134	116	103	92	114	133	109
37		62	Mat.	188	185	139	140	140	116	111	101	114	128	111
38		63	Mat.	192	187	136	142	135	115	104	95	111	131	112
39		66	Mat.	183	180	136	138	136	113	105	96	115	126	111
40		68	Mat.	182	180	136	138	133	111	—	95	108	128	—
41		74	Ad.	181	180	128	133	135	112	105	96	113	127	105
42		77	Mat.	205	204	135	141	153	130	120	101	115	134	115
43		78	Mat.	186	183	131	135	142	120	106	99	111	127	106
44		81	Ad.	196	192	131	136	145	117	108	98	110	127	105
45		89	Ad.	198	195	134	140	144	120	115	101	120	130	102
46		92B	Mat.	192	189	127	135	138	113	106	89	105	130	105
47		93	Ad.	189	185	137	140	147	122	111	94	117	132	107
48		95	Mat.	190	188	143	147	135±1	116	105	98	118	140	111
49		96	Mat.	191	189	126	129	—	115	—	91	110	129	102
50		97D	Mat.	200	199	133	141	136±1	119	103±1	94	113	130	114
51		98	Mat.	200	197	133	139	—	122	—	91	117	133	110
52		100	Mat.	197	197	128	136	141	119	115	102	116	130	101
53		101	Sen.	187	187	133	137	137	112	107	91	109	133	103
54		103	Sen.	192	191	138	138	138	115	106	99	114	129	106

23. Horizontal circumference	24. Transverse arc	25. Sagittal arc	26. Frontal arc	27. Parietal arc	28. Occipital arc	29. Frontal chord	30. Parietal chord	31. Occipital chord	31(1). Chord of upper part of occiput	31(2). Chord of lower part of occiput	Height of forehead curve	7. Length of occipital opening	16. Width of occipital opening	32. Angle of forehead profile from nasion	Angle of forehead profile from glabella	33(1). Angle of upper part of occiput
535	310	400	132	146	122	112	127	102	66	49	30,0	41,2	32,8	89	79	93
532	308	392	132	140	120	115	123	101	68	45	27,9	39,6	33,2	83	74	96
512	295	371	129	123	119	112	109	98	64	49	27,8	37,2	28,6	82	77	90
533	305	396	135	138	123	120	121	103	70	47	28,2	35,8	29,9	81	75	100
530	305	385	140	127	118	121	113	95	58	53	29,0	—	—	79	68	92
522	305	368	123	129	116	109	113	97	64	45	24,5	—	—	85	80	87
549	315	392	126	139	127	114	123	104	73	46	27,8	42,4	33,9	88	85	88
534	302	394	128	137	129	113	121	101	74	46	27,8	33,1	29,0	89	85	91
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
525	309 ± 3	390	135	117	138	118	108	108	76	52	28,0	39,2	29,0	86	76	86
522	303	379	130	128	121	114	110	102	66	49	26,4	39,0	32,0	82	75	85
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
525	314	390	131	118	141	114	110	110	84	42	26,8	—	—	86	80	92
553	312	409	129	143	137	112	122	103	75	47	28,1	40,8	31,6	84	77	97
558	328	402	137	143	122	118	127	102	64	51	28,7	40,4	31,0	85	78	96
528	310 ± 3	380	137	128	115	120	113	95	64	41	30,1	34,6	28,7	86	82	100
520	310	380	135	125	120	118	111	99	63	50	28,0	37,9	34,6	87 ± 1	82 ± 1	90
520	315	377	132	127	118	117	112	102	68	43	28,0	40,4	34,0	80	74	93
517	300	372	133	126	113	114	111	93	61	45	28,0	38,0	30,1	83	75	89
537	308	390	128	135	127	111	118	105	71	46	26,4	38,2	31,6	85	76	99
513	317	359	137	108	114	118	99	99	70	39	30,0	37,8	28,6	83	80	94
503	305	356	124	121	111	109	108	92	59	44	25,0	36,3	31,3	82	75	91
513	310	385	134	131	120	116	117	101	74	38	27,5	37,1	30,0	83	73	100
518	300	371	130	127	114	115	116	95	60	46	25,6	36,2	31,0	82	75	99
525	305	374	130	124	120	113	115	97	72	39	28,0	35,0	32,0	87	80	94
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
531	316	390	133	140	117	115	123	101	62	50	28,9	41,0	31,2	84	80	91
540	321	401	137	127	137	120	116	111	81	46	29,1	36,4	28,1	89	84	92
508	296	387	125	125	137	110	115	104	79	45	26,0	35,3	32,0	81	76	103
522	298	380	125	122	133	109	112	109	79	45	26,1	36,0	32,9	84	78	91
521	306	381	125	137	119	109	117	100	67	44	26,4	38,2	30,8	85	77	94
535	325	392	135	138	119	117	124	100	66	47	28,4	38,4	29,8	86	80	95
552	323	407	132	147	128	117	127	106	73	50	27,3	38,0	29,5	83	76	90
515	299	365	124	116	125	106	106	101	73	42	27,3	38,3	30,9	84	76	87
494	287	358	120	117	121	106	107	98	67	43	24,0	34,3	28,0	79	73	95
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
522	317	378	140	125	113	120	114	93	62	46	29,6	40,2	30,2	79	72	92
530	304	387	135	135	117	118	122	97	65	42	26,4	38,5	35,0	81	76	110
524	307	370	125	117	128	109	106	104	84	36	23,2	40,0	33,9	80	72	91
522	303	379	133	125	121	117	112	101	62	53	25,9	35,9	30,0	79	70	93
516	304	366	125	127	114	108	109	94	76	34	23,2	41,9	32,3	83	72	91
509	299	355	128	119	108	111	109	92	—	—	26,7	39,4	34,4	82	76	—
500	297	364	122	125	117	109	113	96	64	46	23,5	33,0	28,9	80	75	84
551	335	409	134	140	135	119	126	110	83	46	26,0	39,0	30,0	83	76	87
514	315	385	129	135	121	114	119	99	71	44	24,2	37,9	29,8	79	71	93
530	316	394	135	135	124	119	121	107	60	62	26,0	37,5	32,8	80	70	92
540	315	396	135	126	135	116	113	112	76	51	27,1	37,4	33,6	83	75	88
515	299	374	127	123	124	109	111	103	72	45	26,1	41,1	32,6	85	74	87
525	315	380	125	130	125	116	111	108	65	55	26,8	43,3	33,3	85	78	84
529	315	382	130	137	115	113	120	96	65	45	27,2	38,1	29,5	80	75	97
518	298	—	135	118	—	117	107	—	—	—	26,9	—	—	80	71	—
542	317	405	135	137	133	114	123	107	71	56	29,8	37,0	27,8	90	83	90
537	318	398	135	128	135	116	114	107	77	48	28,0	—	—	85	76	87
546	315	385	135	128	122	115	116	98	68	49	30,3	40,5	31,8	84	77	88
517	295	375	134	110	131	115	100	105	78	47	28,0	35,8	28,9	85	77	85
533	310	390	133	130	127	113	114	103	69	50	30,0	34,4	30,0	85	79	92

Table 7 (cont.)

Year of excavation	Form number	Burial numbers	Age	33(2). Angle of lower	33(4). Angle of bend of occiput	34. Angle of occipital opening	45. Malar diameter	48. Upper height of face	47. Full face height	40. Length of base of face	43. Upper face width	46. Average face width	60. Length of alveolar arc	61. Width of alveolar arc
1961	1	Surface	Ad.	29	122	-9	131	73	125	106	107	102	55	71
	2	3	Mat.	25	121	-8	143	77	124	110	110	106	54	73
	3	4	Mat.	28	118	-2	143	77	125	115	109	108	59	72
	4	9	Mat.	20	120	-5	141	79	123	107	107	107	56	68
	5	10	Mat.	25	117	-	146	74	119	-	111	113	56	67
	6	11	Mat.	36	123	-3	147	76	128	-	110	102	55	64
	7	12	Sen.	32	120	-4	150	75	126	104	116	106	51	64
	8	13A	Sen.	21	112	-3	135	-	-	-	110	99	-	-
	9	13	Mat.	-	-	-	-	-	-	-	-	-	-	-
	10	17	Mat.	26	112	-5	137±2	70	123	103	110	102±2	51	-
	11	18	Mat.	37	122	-2	146	72	121	111	107	107	58	69
1962	12	Surface a	Mat.	24	116	-7	137±1	-	-	-	105	98	-	-
	13	Surface b	Ad.	15	112	-8	144	79	128	104	109	113	57	70
	14	22	Ad.	29	125	-5	146±1	81	132	111	116	107	56	74
	15	27 b	Ad.	24	124	-5	138	80	133	109	105	113±1	56	62
	16	28	Ad.	31	121	0	141	74	119	109	105	113	55	64
	17	31	Mat.	35	128	-6	138	78	125	107	106	100	58	63
	18	35	Sen.	32	121	-3	139	-	-	-	106	103	-	-
	19	37	Sen.	26	125	-5	145	79±1	-	106±1	110	105	-	-
	20	38	Mat.	33	127	+3	139	78	124	102	105	107	54	70
	21	40b	Mat.	30	121	+3	134	76	129	102	105	99	52	63
	22	41	Sen.	25	125	-1	140	80±1	130±2	103±1	107	105	-	-
	23	42	Ad.	27	126	0	136	78	125	98	100	104	52	67
	24	44b	Ad.	23	117	+3	138	79	124	111	106	111	57	71
	25	46	Ad.	-	-	-	-	-	-	-	-	-	-	-
	26	46b	Mat.	35	126	-2	140	76±1	119	116±1	102	104	57±1	61
	27	46c	Mat.	25	117	0	147	77	125	111	112	114	58	72
	28	49b	Mat.	8	111	-9	135±1	71±2	-	-	-	-	-	-
	29	51	Mat.	29	120	-11	140	74	122	111	107	107	57	66
	30	52	Ad.	30	124	-11	143	71	118	101	105	103	51	67
	31	52b	Mat.	27	122	-3	137	78	-	107	107	106	55	65
	32	53a	Mat.	27	117	+5	149	82	131	117	115	116	80	72
	33	54	Mat.	32	119	+2	139	77	125	113	105	114±2	52±1	66±1
	34	55	Mat.	27	122	-6	132±1	-	-	-	-	-	-	-
	1963	35	58	Sen.	30	122	+1	143	-	-	-	102	111	-
36		59	Mat.	25	135	-11	149	72	119	105	109	113	58	72
37		62	Mat.	25	116	+5	139	76	125	108	101	104	57	64
38		63	Mat.	31	124	-9	142	76	121	98	108	110	53	60
39		66	Mat.	20	111	0	138	75	124	105	104	103	56	65
40		68	Mat.	-	-	-3	134	75	122	-	105	106	53	71
41		74	Ad.	26	110	-3	130	78	125	98	104	100	52	68
42		77	Mat.	28	113	+3	152	85±1	137	115	114	116	59	66
43		78	Mat.	23	116	-5	139	78	128	106	112	105	58	73
44		81	Ad.	28	120	-8	141	78	130	105	111	104	58	69
45		89	Ad.	33	121	-3	144	80	129	114	115	115	59	71
46		92B	Mat.	33	120	-1	141	76	124	102	103	107	-	-
47		93	Ad.	44	128	+4	143	80	126	110	111	106	55	71
48		95	Mat.	16	113	-3	151	80	124	103	110	109	-	73
49		96	Mat.	-	-	-	140	74	119	-	104	101	-	-
50		97D	Mat.	27	117	-	135	70	110	108	108	110	59	70
51		98	Mat.	28	115	-	140	80	127	-	105	111	-	-
52		100	Mat.	27	115	+5	145±2	81	134	110	110	107	-	-
53		101	Sen.	29	114	-1	145	69	111	105	103	106	53	69
54		103	Sen.	26	118	-9	143	76	125	99	108	106	52	66

62. Length of palate	63. Width of palate	55. Nose height	54. Nose width	51. Orbit width (maxillofrontal)	51 a. Orbit width (alacryal)	52. Orbit height	Bimalar chord	Height of nasion above the bimalar chord	77. Naso-malar angle	Zygomaxillary chord	Ht. of subspinal pt. above zygomaxillary chord	∠ zmi' zygomaxillary angle	SC. Simotic width	SS. Simotic height	MC. Maxillofrontal width	MS. Maxillofrontal height
49,0	43,9	53	23,0	42,2	40,8	34,3	97,5	14,5	147	101	24,4	128	1,7	1,0	17,5	3,7
50,8	46,5	54	25,1	44,1	42,9	34,7	101	16,0	145	103	22,1	134	8,2	3,0	20,1	6,5
53,9	44,2	55	27,5	44,8	42,1	36,5	101	17,5	142	106,5	23,9	132	10,0	4,1	17,3	6,8
50,8	40,5	57	23,9	43,8	41,0	37,8	99	16,9	142	106	18,0	142	6,2	3,5	17,4	5,8
51,0	43,3	52	23,2	46,7	43,3	34,1	101	12,9	151	110	22,2	136	3,1	2,0	14,1	3,0
47,1	39,4	55	25,0	46,5	41,9	35,1	101	15,2	147	103	22,4	133	4,4	1,2	17,8	2,8
45,8	41,0	55	24,6	45,8	42,5	33,2	105	17,0	144	105	18,1	142	5,1	2,1	18,0	4,0
—	—	52	22,9	45,8	42,2	33,0	102	16,9	143	97	22,4	130	5,8	2,1	19,2	3,8
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
44,5	—	49	22,7	45,1	42,4	35,0	100,5	15,0	147	101	21,3	134	6,0	2,1	16,4	5,0
51,0	42,1	54	20,8	46,5	42,0	31,5	99	16,2	144	105,5	21,2	136	5,5	3,6	14,6	5,4
—	—	53	25,3	45,0	41,8	33,0	99	17,6	141	96,5	18,8	137	9,2	2,9	18,1	4,7
51,8	47,1	53	27,3	45,1	41,3	39,0	102	14,1	149	112	21,2	137	3,5	1,0	19,1	4,0
49,5	45,7	58	26,1	46,8	43,4	37,8	106	15,8	147	107	21,0	137	7,0	2,8	19,0	3,5
46,8	36,0	56	23,8	43,0	40,0	36,6	93	15,0	144	113	24,2	134	8,1	3,8	14,8	6,4
49,9	43,1	55	22,8	45,8	40,4	37,0	97,5	15,5	145	114	25,2	132	5,0	1,9	18,0	3,8
53,6	87,0	56	23,8	44,8	42,0	38,8	97	13,5	149	99	22,5	131	7,1	3,8	18,0	6,1
—	—	49	22,6	42,8	41,0	36,0	96	15,2	145	103	18,0	141	3,4	2,0	16,5	5,2
—	—	58	26,1	47,3	43,4	38,0	101	11,8	154	105	22,5	134	7,0	2,5	20,1	4,3
49,0	43,1	55	23,2	45,4	42,5	36,1	92	14,8	145	106	20,3	138	8,0	3,0	14,8	4,9
48,2	37,8	58	20,3	43,5	41,8	36,6	97	18,5	138	96	23,8	127	4,0	1,8	17,0	4,9
—	—	57	23,3	46,4	40,9	34,1	98	16,0	144	106	20,4	136	5,1	2,3	15,5	4,9
43,3	41,1	56	21,8	40,8	37,8	37,8	88	12,5	148	105	21,3	136	4,1	2,2	14,7	4,1
49,5	40,4	55	23,4	43,4	41,0	31,0	97	16,8	142	105	23,5	132	7,0	2,3	17,4	4,9
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
51,9	42,2	—	—	44,6	—	37,3	95	17,7	139	—	—	—	—	—	—	—
52,8	45,8	54	25,3	45,0	42,2	33,8	101	16,1	145	114	25,0	133	6,3	2,9	19,6	4,0
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
51,0	39,4	51	23,7	46,5	41,3	37,6	97	12,5	151	104	20,8	136	—	—	15,2	3,0
45,9	43,3	50	23,0	42,2	40,2	34,2	98	12,6	151	103	19,8	138	—	—	—	—
—	42,1	58	22,5	48,0	—	37,0	99	22,1	132	105,5	22,8	133	9,5	3,4	17,4	6,7
53,8	43,0	59	27,4	49,2	46,6	35,2	107	19,4	140	115	21,1	140	7,6	2,8	21,8	5,0
47,3	42,2	56	24,0	—	—	—	94	13,2	149	115	25,4	132	—	—	—	—
—	—	58	25,2	40,9	—	38,9	—	—	—	—	—	—	8,5	2,6	—	—
—	—	57	24,7	44,0	40,9	38,0	94,5	12,1	151	109	24,0	133	6,0	3,5	15,9	5,2
52,0	44,8	52	29,1	45,8	41,8	32,8	102	16,1	145	105	21,0	136	8,7	3,9	20,2	7,0
50,6	38,1	57	22,1	45,1	41,2	33,8	99	17,5	141	101	21,9	133	8,8	3,1	15,4	4,8
45,2	43,0	56	23,4	44,5	41,9	36,0	99	15,5	145	109	24,0	133	4,5	1,9	15,5	5,0
50,1	40,6	53	21,9	43,0	40,8	34,4	96	14,3	147	98	18,3	139	6,3	1,5	16,8	3,8
46,1	43,0	53	—	45,1	41,5	36,1	98,5	19,0	138	106	21,5	137	5,0	3,1	15,8	6,8
42,8	43,2	57	23,0	43,6	40,0	33,6	94	17,2	140	100,5	20,0	137	5,8	3,0	14,0	6,0
51,2	—	61	25,0	45,9	42,8	38,1	104	22,0	134	114,5	23,0	136	10,1	4,6	19,6	7,8
50,0	44,1	55	24,8	49,2	45,0	37,5	104	17,8	142	104,9	25,1	129	4,0	1,2	15,4	4,0
50,1	45,1	57	23,9	45,0	42,9	37,0	101	14,4	148	101	22,8	131	5,0	3,3	17,1	5,6
51,0	40,9	55	24,9	48,5	44,1	36,5	109	17,8	144	115	20,9	140	9,8	2,5	22,0	4,8
—	—	54	24,0	41,2	38,4	33,8	91	11,5	152	105	18,0	142	3,0	0,7	15,0	4,0
49,5	43,1	57	25,0	46,2	41,9	35,5	102	14,0	149	108	24,1	132	7,6	3,0	16,8	3,5
—	47,0	60	24,0	47,6	—	38,9	104	16,3	145	108	22,0	136	—	—	—	—
—	—	57	23,3	43,9	41,0	36,1	96	13,3	149	101	24,5	128	—	—	14,0	5,0
52,0	41,8	51	24,0	43,3	39,8	32,3	96	12,1	152	111	25,0	132	6,5	2,6	14,5	4,3
—	—	57	—	43,9	—	35,5	96	14,8	146	109	21,5	137	—	—	—	—
53,1	43,0	58	23,4	46,5	41,9	38,6	102	17,3	142	105	24,5	130	—	—	17,8	4,8
44,6	48,0	49	24,1	44,5	42,2	35,5	95	13,5	148	101	20,0	137	2,4	1,0	14,9	3,5
44,8	41,2	53	23,3	47,1	44,4	35,0	100	14,0	149	105	17,5	143	3,2	1,7	13,7	4,8

Table 7 (cont.)

Year of excavation	Form number	Burial numbers	Age	DC. Dacryal width	DS. Dacryal height	Width of malar bone	Height of curve of malar bone	Depth of canine socket	72. General facial angle*	73. Angle of middle part of face	74. Angle of alveolar part of face	75. Angle of slope of nose bone	75(1). Angle of nose projection	68(1). Length of lower jaw from condyle
1961	1	Surface	Ad.	18,9	7,7	62,7	15,0	6,0	82	83	76	61	21	107
	2	3	Mat.	22,0	9,2	62,1	14,1	6,6	88	89	80	66	22	121
	3	4	Mat.	20,2	13,8	64,1	15,5	4,8	79	80	75	57	22	117
	4	9	Mat.	20,5	11,2	64,1	14,5	5,9	85	86	80	60	25	114
	5	10	Mat.	20,0	9,2	69,6	16,9	5,0	80	82	70	57	23	109
	6	11	Mat.	21,5	7,5	66,0	13,7	3,1	85	85	85	63	22	109
	7	12	Sen.	20,1	8,3	68,1	15,4	7,3	94	96	84	67	27	106
	8	13A	Sen.	22,4	8,4	63,4	14,9	5,6	(86)	89	—	60	(26)	—
	9	13	Mat.	—	—	—	—	—	—	—	—	—	—	118
	10	17	Mat.	18,8	9,8	52,2	11,9	5,4	86	87	82	65	21	106
	11	18	Mat.	19,5	11,0	68,5	12,7	2,5	85	86	80	59	26	119
1962	12	Surface a	Mat.	19,8	10,9	61,0	12,1	7,9	(87)	90	—	65	(22)	—
	13	Surface b	Ad.	22,6	8,6	64,0	16,4	6,0	82	85	76	61	21	110
	14	22	Ad.	22,2	8,8	68,8	16,3	3,1	86	87	81	62	24	117
	15	27	Ad.	17,8	12,0	55,8	11,9	4,1	86	88	76	57	29	111
	16	28	Ad.	20,4	8,8	57,0	10,1	4,0	82	83	77	63	19	103
	17	31	Mat.	19,0	11,2	60,0	12,8	3,8	83	87	71	60	23	113
	18	35	Sen.	17,0	11,1	64,0	14,0	5,8	(84)	87	—	50	(34)	109
	19	37	Sen.	20,9	9,4	62,1	13,5	5,9	(83)	86	—	62	(21)	117
	20	38	Mat.	18,2	8,1	59,9	12,2	5,0	90	93	80	72	18	104
	21	40b	Mat.	19,1	11,6	62,0	12,2	6,8	87	88	84	59	28	117
	22	41	Sen.	20,8	10,0	63,6	14,1	2,1	(87±1)	89	—	68	(19)	114
	23	42	Ad.	18,0	8,9	58,1	13,4	4,1	87	89	80	65	22	109
	24	44b	Ad.	19,4	9,9	62,4	11,1	4,0	87	89	83	68	19	113
	25	46	Ad.	—	—	—	—	—	—	—	—	—	—	117
	26	46b	Mat.	—	—	54,0	11,0	3,9	—	—	—	—	—	112
	27	46C	Mat.	19,6	8,8	60,1	14,2	5,0	84	86	79	60	24	120
	28	49b	Mat.	—	—	60,1	15,2	—	—	—	—	—	—	115
	29	51	Mat.	21,0	6,3	62,8	14,8	6,6	80	82	72	—	—	113
	30	52	Ad.	—	—	57,8	10,4	5,8	83	85	80	—	—	101
	31	52b	Mat.	18,8	9,0	60,9	11,9	2,8	91	92	83	73	18	—
	32	53a	Mat.	23,0	10,9	64,6	11,7	0,5	90	92	82	69	21	121
	33	54	Mat.	—	—	52,3	11,9	5,0	85	87	80	—	—	113
	34	55	Mat.	—	—	49,5	9,1	2,3	—	92	—	—	—	107
	1963	35	58	Sen.	19,9	12,9	57,2	11,8	3,8	(90)	88	—	59	(31)
36		59	Mat.	23,0	12,9	65,2	14,0	4,0	86	87	80	61	25	113
37		62	Mat.	18,1	11,0	52,0	13,5	3,9	85	88	77	66	19	113
38		63	Mat.	15,9	10,1	57,2	12,2	5,5	90	91	84	64	26	106
39		66	Mat.	17,6	6,6	64,0	14,6	5,3	85	88	75	65	20	110
40		68	Mat.	—	—	58,3	13,8	3,9	—	—	—	—	—	108
41		74	Ad.	16,8	9,8	58,9	12,0	5,1	88	89	85	65	23	108
42		77	Mat.	20,0	13,9	66,0	12,0	2,0	88	89	85	61	27	122
43		78	Mat.	18,2	9,2	59,3	12,1	3,6	83	84	80	55	28	112
44		81	Ad.	19,2	9,5	63,2	14,5	6,1	82	85	77	57	25	119
45		89	Ad.	27,2	9,6	66,0	16,9	2,9	88	90	81	69	19	115
46		92B	Mat.	17,2	8,6	63,1	16,5	3,1	87	90	77	65	22	112
47		93	Ad.	20,8	9,8	62,0	14,1	2,9	84	86	77	64	20	114
48		95	Mat.	—	—	58,2	11,0	6,0	85	88	76	—	—	108
49		96	Mat.	—	—	58,0	12,3	3,0	88	91	81	—	—	108
50		97D	Mat.	18,3	8,1	56,0	13,6	7,6	82	86	67	64	18	108
51		98	Mat.	—	—	57,8	13,0	3,9	87	91	80	—	—	120
52		100	Mat.	—	—	—	—	8,1	86	89	77	—	—	118
53		101	Sen.	16,8	7,7	58,0	12,5	6,2	84	85	82	—	—	108
54		103	Sen.	18,0	9,9	59,6	14,0	5,9	87	89	81	69	18	109

79. Angle of branch of lower jaw	68. Length of lower jaw from angle	70. Height of branch	71 a. Smallest width of branch	65. Condyle width	66. Angular width	67. Front width	69. Height of symphysis	69(1). Height of body of lower jaw	69(3). Thickness of body of lower jaw	C. Angle of chin projection	Form of vault (n. occipitalis)	Lateral walls (n. occipitalis)	Occipital ridge (0-2)	Sagittal sinus	Mammiform appendix (1-3)	Bone of parietal indentation (tr./left, mm)
112	81	88	39	124 \pm 2	113	49	42	35	12	85	2	2	0	—	1	0/0
130	88	56	48	127	123	51	38	13	13	63	3	2	1	—	3	16/0
122	82	56	45	123	124	48	39	33	15	82	3	2	1	—	2	0/0
124	81	64	48	124	121	49	35	31	13	76	3	1	1	—	3	0/14
116	83	62	43	131	124	50	36	32	12	84	3	1	2	—	1	0/0
115	86	64	46	124	101	45	36	35	12	79	2	1	2	—	2	—/—
122	78	65	39	125	123	45	38	35	12	78	2	1	1	—	2	0/0
—	—	50	41	—	—	47	—	—	—	—	2	2	1	—	1	0/8
132	84	55	44	128	123	50	40	35	15	76	—	—	—	—	—	—/—
121	78	60	38	121	110	44	36	37	13	83	2	2	—	—	1	—/0
128	89	64	46	130	115 \pm 2	47	33	32	12	79	3	2	2	—	3	9/7
—	—	56	41	—	—	44	—	—	—	—	2	2	1	—	1	0/0
128	80	56	39	117	114	50	37	35	14	74	2	2	1	—	1	16/11
128	84	59	41	128	116	49	39	36	11	78	2	2	0	—	1	—/18
124	84	54	44	—	110	47	39	36	14	73	3	2	1	—	2	0/0
116	77	64	41	120	121	46	36	34	12	84	3	2	1	—	2	0/9
123	85	61	42	120	107	45	34	32	11	80	3	2	1	—	2	0/0
120	84	56	44	122	112	45	33	31	10	74	3	2	1	—	2	0/0
124	86	55	42	125 \pm 2	107	47	—	—	—	—	3	1	1	—	3	0/0
120	80	53	39	122	99	50	36	28	11	70	1	2	0	—	2	15/12
128	89	53	40	109	93	44	36	30	11	72	1	2	0	—	2	0/12
122	88	55	43	125	111	48	—	35	11	—	1	2	0	—	1	10/10
130	77	56	38	119	121	49	34	30	12	72	2	2	1	—	1	0/0
130	85	52	40	121	115	51	35	31	11	70	3	1	0	—	3	0/10
128	88	58	41	126 \pm 1	114	51	43	36	12	81	—	—	—	—	2	—/—
133	76	57	41	124	118	48	34	31	12	75	2	2	0	—	2	12/8
122	89	64	44	123	117	53	38	32	12	74	3	2	1	—	2	0/0
125	86	58	38	—	—	—	—	32	12	—	2	2	1	—	2	—/—
124	84	56	41	124 \pm 1	120	51	36	32	12	78	3	2	1	—	2	14/14
115	79	58	41	127	112	48	34	30	11	82	3	2	0	—	2	8/12
—	—	—	—	—	—	48	—	32	12	—	3	2	1	—	2	0/0
132	82	61	45	127	125	50	40	34	15	76	2	1	1	—	3	0/12
130	79	59	38	122	112	47	38	34	11	77	3	2	1	—	1	0/0
139	80	51	39	122	107	50	—	—	—	—	2	2	0	—	2	0/0
122	81	60	41	129	118	47	37	33	11	74 \pm 1	3	2	2	—	2	0/0
127	81	55	40	132	118	46	35	32	14	73	2	2	0	—	2	17/0
129	82	60	37	130	107	44	37	35	9	77	3	2	1	—	3	0/0
122	80	56	40	121	111	47	35	30	13	75	3	2	1	—	2	3/0
117	86	60	41	124	111	48	36	33	10	76	3	2	1	—	2	0/0
131	78	50	39	125	126	47	33	31	12	75	2	2	—	—	2	—/—
129	79	54	42	118	111	48	38	34	14	74	3	2	0	—	2	0/12
126	90	60	45	137	117	52	41	35	14	76	3	2	1	—	2	0/0
121	83	63	37	124	113	44	38	36	10	80	3	2	0	—	3	0/0
125	87	62	41	131	117	48	40	34	12	75	3	2	2	—	3	0/10
129	78	66	41	128	125	47	37	35	14	76	2	2	0	—	3	10/0
125	81	59	41	127	113	47	39	37	11	78 \pm 1	3	2	0	—	1	0/0
121	84	64	44	127	117	48	38	36	14	78	2	2	0	—	2	0/6
125	76	60	38	131	119	46	39	36	12	81	2	1	1	—	8	0/0
128	76	58	37	128 \pm 1	118	46	36	33	9	71	3	2	0	—	1	0/0
116	84	61	41	128	101	45	37	30	13	84	2	2	1	—	1	0/0
130	83	60	43	126	122	50	—	35	12	75 \pm 1	2	2	1	—	2	0/0
141	78	56	39	129	127	48	39	34	12	73	3	2	1	—	2	0/0
123	82	56	41	126	110	41	35	33	14	73	2	2	1	—	2	0/0
130	80	50	40	124	122	45	38	36	10	76	3	2	1	—	2	0/8

Table 7 (cont.)

Year of excavation	Form number	Burial numbers	Age	Thickness of tympanic part (mm)	Perforation of tympanic part (r./left)	Above bridge of nose (1-6)	Supero-orbital orifice (r./left)	Transverse profile of the back of the nose (0-2)	Lower edge of the pyriform orifice	Pre-nasal spine (1-5)	Palate ridge	Lower jaw ridge	Closing of the edges of the maxillary-sublingual furrow (r./left)	8:1. Cranial index
1961	1	Surface	Ad.	3	o/o	3	+/o	2	ant.	3	2	1	+/+	67,5
	2	3	Mat.	6	o/o	3	+/+	0	f. pr.	4	1	1	o/o	65,8
	3	4	Mat.	5	o/o	2	o/o	0	s. pr.	1	0	0	o/o	67,7
	4	9	Mat.	6	o/o	3	o/o	1	ant.	2	1	0	o/o	69,4
	5	10	Mat.	5	o/o	4	+/+	2	f. pr.	2	1	1	o/o	72,2
	6	11	Mat.	4	o/o	2	+/+	1	f. pr.	3	1	1	o/o	70,6
	7	12	Sen.	4	o/o	2	+/+	1	ant.	3	0	1	o/o	89,4
	8	13A	Sen.	6	0/+2	1	o/+	1	inf.	—	0	1	o/o	68,7
	9	13	Mat.	—	—/—	—	—/—	—	—	—	—	2	o/o	—
	10	17	Mat.	6	o/o	3	o/o	0	ant.	2	0	1	o/o	67,7
	11	18	Mat.	3	o/o	3	o/o	2	ant.	2	0	0	o/o	68,6
1962	12	Surface a	Mat.	3	+/+	3	+/+	1	f. pr.	—	2	2	o/o	69,2
	13	Surface b	Ad.	3	o/o	2	+/o	1	inf.	1	1	1	+/o	69,0
	14	22	Ad.	5	o/o	2	o/o	1	f. pr.	3	1	1	o/o	69,8
	15	27 ^b	Ad.	4	—	2	+/+	0	ant.	—	1	2	—	75,1
	16	28	Ad.	4	—	2	o/o	1	inf.	2	1	1	—	71,8
	17	31	Mat.	4	o/o	2	o/+	0	ant.	3	0	2	o/o	70,9
	18	35	Sen.	4	o/o	3	+/o	2	ant.	—	0	0	o/o	69,8
	19	37	Sen.	3	o/o	2	o/o	1	f. pr.	1	0	2	o/o	72,6
	20	38	Mat.	2	o/+	2	o/o	0	ant.	3	2	1	o/+	79,4
	21	40 ^b	Mat.	4	o/o	1	+/+	1	ant.	4	2	1	o/o	71,7
	22	41	Sen.	3	o/o	2	o/o	1	f. pr.	2	1	1	o/o	69,3
	23	42	Ad.	5	o/o	1	o/o	2	inf.	1	2	0	o/o	71,4
	24	44 ^b	Ad.	4	+/+	3	o/o	1	ant.	2	0	1	+/+	67,7
	25	46	Ad.	—	—	—	—	—	—	—	—	2	—	—
	26	46 ^b	Mat.	4	—	2	o/o	—	—	—	3	1	—	65,5
	27	46 ^c	Mat.	7	o/o	2	o/o	2	f. pr.	1	0	0	o/o	66,5
	28	49 ^b	Mat.	3	o/o	2	+/—	—	—	—	—	0	+/o	73,4
	29	51	Mat.	3	+/+	2	+/o	—	ant.	1	1	1	o/o	70,2
	30	52	Ad.	3	o/o	2	o/+	—	f. pr.	—	1	1	o/o	75,4
	31	52 ^b	Mat.	5	o/o	2	+/o	0	f. pr.	1	2	0	—/—	71,1
	32	53 ^a	Mat.	3	o/o	3	o/o	1	f. pr.	—	1	0	+/o	64,3
	33	54	Mat.	4	o/o	4	o/o	—	f. pr.	2	1	1	o/o	66,7
34	55	Mat.	4	o/o	3	+/o	0	ant.	—	3	—	o/o	67,8	
1963	35	58	Sen.	3	o/o	3	o/o	0	ant.	3	2	2	o/o	71,1
	36	59	Mat.	4	o/o	2	+/o	1	s. pr.	2	2	2	o/o	70,3
	37	62	Mat.	5	o/o	4	o/o	0	f. pr.	2	1	1	o/o	73,9
	38	63	Mat.	3	o/o	4	+/o	2	f. pr.	2	2	3	o/+	70,8
	39	66	Mat.	4	o/o	4	o/o	0	ant.	2	3	1	o/o	74,3
	40	68	Mat.	3	o/o	2	o/o	1	f. pr.	—	1	1	+/+	74,7
	41	74	Ad.	5	o/o	2	+/+	0	f. pr.	3	2	1	o/o	70,7
	42	77	Mat.	6	o/o	2	+/o	0	f. pr.	2	1	1	o/o	65,9
	43	78	Mat.	3	o/o	3	o/o	2	f. pr.	2	2	0	o/o	70,4
	44	81	Ad.	6	o/o	4	+/+	2	ant.	4	3	0	o/o	66,8
	45	89	Ad.	3	o/o	4	+/+	1	f. pr.	2	0	0	o/o	67,7
	46	92 ^b	Mat.	4	o/o	4	o/o	0	f. pr.	—	2	2	o/o	66,2
	47	93	Ad.	3	+/+	3	+/+	1	s. pr.	2	0	0	o/o	72,5
	48	95	Mat.	4	o/o	3	+/o	—	ant.	—	0	2	o/o	75,3
	49	96	Mat.	5	o/o	4	o/o	—	f. pr.	—	1	1	o/o	66,0
	50	97 ^D	Mat.	4	o/o	2	o/o	1	f. pr.	—	3	3	o/o	66,5
	51	98	Mat.	4	o/o	4	o/o	—	inf.	—	3	1	o/o	66,5
	52	100	Mat.	5	o/o	2	o/+	0	ant.	—	0	2	o/o	65,0
	53	101	Sen.	4	o/o	2	o/o	2	f. pr.	—	1	3	o/o	71,1
	54	103	Sen.	3	o/o	3	o/o	2	f. pr.	2	2	0	o/o	71,9

17:1. Height-length index	17:8. Height-transverse index	9:8. Frontal-transverse index	9:10. Frontal index	45:8. Horizontal facial-cerebral index	48:17. Vertical facial-cerebral index	9:66. Frontal-maxillary index	40:5. Index of facial projection	47:45. Facial index	48:45. Upper facial index	63:62. Palatal index	54:55. Nasal index	52:51. Orbital index (maxillo-frontal)	52:51a. Orbital index (dacryal)	SS:SC. Simotic index	MS:MC. Maxillo-frontal index	DS:DC. Dacryal index
72,1	106,8	74,4	87,6	98,5	51,4	87,6	102,9	95,4	55,7	89,6	43,4	81,3	84,1	58,8	21,1	40,7
69,9	106,1	75,6	89,2	109,2	55,4	80,5	99,1	86,7	53,9	91,5	46,5	78,7	80,9	36,6	32,3	41,8
73,5	108,6	75,0	87,3	111,7	55,4	77,4	102,7	87,4	53,9	82,0	50,0	81,5	86,7	41,0	39,3	68,3
71,9	103,7	69,1	83,9	103,7	56,0	77,7	99,1	87,2	56,0	79,7	41,9	86,3	92,2	56,5	33,3	54,6
68,0	94,3	76,4	81,5	104,3	56,1	86,3	—	81,5	50,3	84,9	44,6	73,0	78,8	64,5	21,3	46,0
—	—	77,3	89,5	111,4	—	101,0	—	85,7	51,7	83,7	45,5	75,5	83,8	27,3	15,7	34,9
70,9	102,2	74,6	88,0	108,7	53,2	83,7	92,9	84,0	50,0	89,5	44,7	72,5	78,1	41,2	22,2	41,3
71,8	104,5	73,1	88,3	100,8	—	—	—	—	—	—	44,0	72,1	78,2	36,2	19,8	37,5
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
71,3	105,3	76,5	90,2	103,8	50,4	91,8	100,0	89,8	51,1	—	46,3	77,6	82,6	35,0	30,5	52,1
73,8	107,6	72,5	85,6	111,5	51,1	82,6	97,4	82,9	49,3	82,6	38,5	67,7	75,0	65,5	37,0	56,4
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
70,3	101,5	70,4	87,2	101,5	—	—	—	—	—	—	47,7	73,3	79,0	31,5	26,0	55,1
68,5	99,3	75,4	91,2	104,4	57,7	91,2	104,0	88,9	54,9	90,9	51,5	86,5	94,4	28,6	20,9	38,1
69,8	100,0	76,6	87,8	103,6	57,5	93,1	101,8	90,4	55,5	92,3	45,0	80,8	87,1	40,0	18,4	39,6
72,0	95,8	69,7	85,3	97,2	58,8	90,0	103,8	96,4	58,0	76,9	42,5	85,1	91,5	46,9	43,2	67,4
77,1	107,4	65,9	79,5	104,4	51,0	73,6	100,0	84,4	52,5	86,4	41,5	80,8	91,6	38,0	21,1	43,1
76,2	107,5	73,9	86,1	103,0	54,2	92,5	97,3	90,6	56,5	69,0	42,5	86,6	92,4	53,5	33,9	59,0
72,0	103,0	72,7	88,9	105,3	—	85,7	—	—	—	—	46,1	84,1	87,8	58,8	31,5	65,3
68,5	94,5	71,3	87,2	101,4	58,5	95,3	101,0	—	54,5	—	45,0	80,3	87,6	35,7	21,4	45,0
75,0	84,4	69,9	85,5	97,2	57,8	101,0	96,2	89,2	56,1	88,0	42,2	79,5	84,9	37,5	33,1	44,5
72,3	100,8	72,7	88,1	101,5	57,1	103,2	95,3	96,3	56,7	78,4	35,0	88,7	92,3	45,0	28,8	60,7
72,4	104,5	74,4	89,2	105,3	57,6	89,2	97,2	92,9	57,1	—	40,9	73,5	83,4	45,1	31,6	48,1
76,2	106,8	75,8	94,3	103,0	55,3	82,6	94,2	91,9	57,4	94,9	38,9	92,7	100,0	53,7	27,9	49,4
72,3	106,8	72,0	88,8	100,0	56,0	82,6	96,5	89,9	57,3	81,6	42,6	71,4	75,6	32,9	28,2	51,0
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
72,1	110,1	74,4	84,2	108,5	53,5	81,4	102,7	85,0	54,3	81,3	—	83,6	—	—	—	—
74,0	111,3	75,2	84,8	110,5	52,0	85,5	100,0	85,0	52,4	86,7	46,9	75,1	80,1	46,0	20,4	44,9
72,3	98,5	64,4	—	100,0	53,4	—	—	—	52,6	—	—	—	—	—	—	—
71,7	102,2	76,9	92,8	104,5	54,0	85,8	101,8	87,1	52,9	77,3	46,5	80,9	91,0	—	19,7	30,0
72,1	95,7	70,3	83,6	103,6	53,8	86,6	103,1	82,5	49,7	94,3	46,0	81,0	85,1	—	—	—
71,6	100,7	72,1	87,8	97,9	55,3	—	97,3	—	56,9	—	38,8	77,1	—	35,8	38,5	47,9
73,4	114,3	75,9	87,8	112,0	54,0	80,8	95,9	87,9	55,0	79,9	46,4	71,5	75,5	36,8	22,9	47,4
72,5	108,7	76,2	85,0	110,3	56,2	78,7	100,9	89,9	55,4	89,2	42,9	—	—	—	—	—
71,0	104,8	77,4	90,6	108,5	—	89,7	—	—	—	—	43,5	95,1	—	30,6	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
74,2	104,4	66,7	78,3	105,9	—	76,3	—	—	—	—	43,3	86,4	92,9	58,3	32,7	64,8
68,7	97,8	67,2	80,7	108,8	53,7	78,0	101,9	79,9	48,3	86,2	56,0	71,6	78,5	44,8	34,7	56,1
74,5	100,7	72,7	88,6	100,0	54,3	94,4	97,3	89,9	54,7	75,3	38,8	74,9	82,0	35,2	31,2	60,8
70,3	99,3	69,9	85,6	104,4	56,3	85,6	94,2	85,2	53,5	95,1	41,8	80,9	85,9	42,2	32,3	63,5
74,3	100,0	70,6	83,5	101,5	55,2	86,5	100,0	89,9	54,4	81,0	41,3	80,0	84,3	23,8	22,6	37,5
73,1	97,8	69,9	88,0	98,5	56,4	75,4	—	91,0	56,0	93,3	—	80,0	87,0	62,0	43,0	—
74,6	105,5	75,0	85,0	101,6	57,8	86,5	93,3	96,2	60,0	100,9	40,4	77,1	84,0	51,7	42,9	58,3
74,6	113,3	74,8	87,8	112,6	55,6	86,3	95,8	90,1	55,9	—	41,0	83,0	89,0	45,5	39,8	69,5
76,3	108,4	75,6	89,2	106,1	54,9	87,6	100,0	92,1	56,1	88,2	45,1	76,2	83,3	30,0	26,0	50,6
74,0	110,7	74,8	89,1	107,6	53,8	83,8	97,2	92,2	55,3	90,0	41,9	82,2	86,3	66,0	32,8	49,5
72,7	107,5	75,4	84,2	107,5	55,6	80,8	99,1	89,6	55,6	80,2	45,3	75,3	82,8	25,5	21,8	35,3
71,9	108,7	70,1	84,8	111,0	55,1	78,8	96,2	87,9	53,9	—	44,4	82,0	88,0	23,3	26,7	50,0
77,8	107,3	68,6	80,3	104,4	54,4	80,3	99,1	88,1	55,9	87,1	43,9	76,8	84,7	39,5	20,8	47,1
71,1	94,4	68,5	83,1	105,6	59,3	82,4	98,1	82,1	53,0	—	40,0	81,7	—	—	—	—
—	—	72,2	82,7	111,1	—	77,1	—	85,0	52,9	—	40,9	82,2	—	—	—	—
68,0	102,3	70,7	83,2	101,5	51,5	93,1	104,9	81,5	51,9	80,4	47,1	74,6	81,2	40,0	29,7	44,3
—	—	68,4	77,8	105,3	—	74,6	—	90,7	57,1	—	—	80,9	—	—	—	—
71,6	110,1	79,7	87,9	113,3	57,5	80,3	95,7	92,4	55,9	81,0	40,3	83,0	92,1	—	27,0	—
73,3	103,0	68,4	83,5	109,0	50,4	82,7	98,1	76,6	47,6	107,6	49,2	79,8	84,1	41,7	23,5	45,8
71,9	100,0	71,7	86,8	103,6	55,1	81,2	93,4	87,4	53,2	92,0	44,0	74,3	80,0	53,1	35,0	55,0

Table 8. Individual Measurements of Female Skulls from the Old Bering Sea Cemetery at Ekven.

Year of excavation	Form number	Burial numbers	Age	1. Longitudinal diameter	1b. Longitudinal diam. from ophtyon	8. Transverse diameter	Crest transverse diameter	17. Upper diameter	20. Ear height	5. Length of skull base	9. Smallest brow width	10. Largest brow width	11. Width of skull base	12. Width of occiput	
1961	55	6	Mat.	198	196	129	129	145	124	—	96	108	126	106	
	56	7	Ad.	178	177	136	136	139	116	102	92	109	129	107	
	57	8	Ad.	198	198	129	135	135	117	104	95	105	124	110	
	58	14	Mat.	188	187	132	134	136	115	106	101	112	128	108	
	59	45	Mat.	180	179	129	130	128	110	98	92	108	126	—	
1962	60	16	Ad.	182	181	128	133	128±2	108	—	95	107	123	105	
	61	Surface	Ad.	174	174	121	121	132	112	97	96	106	116	101	
	62	19	Mat.	190	189	128	132	132	118	102	96	108	123	106	
	63	20	Ad.	178	176	129	131	131	110	104	98	109	124	102	
	64	23	Mat.	186	184	132	—	138	114	107	91	108	124	112	
	65	24	Mat.	177	176	126	128	132	111	101	87	102	121	100	
	66	25	Ad.	180	180	128	130	127	109	98	92	108	119	108	
	67	26	Sen.	178	177	134	130	128	111	96	91	106	121	109	
	68	27 _a	Mat.	181	180	136	132	128	110	97	89	102	120	101	
	69	29	Mat.	181	180	133	136	136	115	107	99	113	127	108	
	70	30	Ad.	176	176	124	130	128	114	100	97	111	116	103	
	71	32	Mat.	183	182	130	132	133	110	103	95	108	119	110	
	72	33	Mat.	191	190	124	129	138	115	109	90	105	125	101	
	73	39 _a	Ad.	173	173	129	128	133	107	100	94	106	119	107	
	74	39 _b	Ad.	173	173	130	127	129	110	98	91	104	119	107	
	75	40 _a	Sen.	181	180	132	130	128	109	99	91	103	119	106	
	76	43	Sen.	188	189	134	132	136	118	—	93	109	—	113	
	77	44	Mat.	182	179	126	128	134	117	100	97	111	122	109	
	78	45 _a	Ad.	180	179	125±1	129±1	130	106	95	91	103	122	107	
	79	45 _b	Mat.	188	185	132	134	132	115	109	90	105	128	107	
	80	46 _a	Ad.	—	—	134	138	—	115	—	—	—	132	—	
	81	49 _a	Ad.	179	179	131	130	130	113	99	98	108	122	107	
	82	49 _c	Ad.	201	201	128±2	—	139	116	109	—	—	118	—	
	83	49 _d	Ad.	190	188	132±1	135±1	136	113	104	88	109	130	105	
	84	50	Mat.	174	174	125	127	132	114	98	93	106	120	103	
	85	52 _a	Mat.	190	189	135±2	—	—	—	—	—	96	113	—	
	1963	86	55	Ad.	182	180	124	128	133	111	101	92	110	118	107
		87	57	Ad.	180	179	126	128	122	110	90	83	103	118	106
		88	61	Ad.	182	181	120	124	127	109	103	89	104	116	103
89		65	Mat.	—	—	—	—	—	—	—	—	—	125	106	
90		67	Mat.	180	179	137	135	135	119	99	98	112	128	113	
91		70	Sen.	190	190	123	125	138	118	114	93	109	117	100	
92		71	Mat.	196	192	140	141	133	111	—	94	125	129	116	
93		72	Mat.	182	180	132	137	135	115	104	95	111	126	111	
94		73	Sen.	170	170	119	119	133	114	101	87	102	116	94	
95		75	Mat.	181	179	135	133	133	111	106	93	109	121	112	
96		76	Sen.	178	178	129	129	138	116	100	93	111	119	111	
97		80	Mat.	182	180	126	129	136	114	105	86	102	125	101	
98		82	Sen.	185	185	132	131	136	116	104	91	105	121	104	
99		83 _a	Mat.	180	180	123	125	128	108	101	90	103	119	101	
100		85	Ad.	180	180	130	130	139	118	100	95	111	124	105	
101		88	Mat.	182	180	137	132	—	114	—	97	115±2	120	107±2	
102		90	Ad.	185	184	125	127	129	108	99	92	108	140	99	
103		92 _a	Mat.	185	185	128	131	132	113	100	94	112	125	103	
104		97 _b	Ad.	175	175	128	125	126	106	96	84	99	119	100	
105		97 _c	Mat.	182	180	125	130	128	111	100	91	107	118	108	
106	99	Sen.	185	185	130	135	132	109	100	91	106	124	106		
107	102	Sen.	187	187	132	132	132	111	105	94	101	123	105		

23a. Horizontal circumference	24. Transverse arc	25. Sagittal arc	26. Frontal arc	27. Parietal arc	28. Occipital arc	29. Frontal chord	30. Parietal chord	31. Occipital chord	31(1). Chord of upper part of occipit	31(2). Chord of lower part of occipit	Height of forehead curve	7. Length of occipital opening	16. Width of occipital opening	32. Angle of forehead profile from nasion	Angle of forehead profile from glabella	33(1). Angle of upper part of occiput
528	320	—	136	132	—	119	118	—	—	—	28,8	—	—	85	75	—
503	306	368	130	121	117	114	106	101	63	46	28,2	33,2	29,9	85	79	95
529	296	392	138	130	124	118	119	100	67	47	31,6	36,2	25,2	88	83	100
518	300	366	131	125	110	114	112	94	74	29	27,8	42,1	31,9	85	78	93
496	290	355	125	118	112	109	107	91	56	47	25,0	35,9	29,9	84	77	90
500	286	—	127	129	—	111	114	—	—	—	26,1	—	—	84	76	—
461	296	360	120	129	112	105	111	94	74	30	26,2	36,8	26,9	80	85	102
518	313	365	130	134	121	114	118	102	71	43	27,3	38,2	33,1	85	75	95
466	291	356	128	114	111	113	101	90	69	35	27,3	31,9	28,5	79	72	95
511	303	366	125	124	117	112	112	92	68	42	24,0	38,8	32,3	79	72	92
491	295	360	130	120	119	113	106	91	58	47	27,8	35,7	30,2	85	77	90
502	288	365	122	121	122	108	109	100	70	42	26,7	38,0	29,0	86	86	97
496	299	371	129	128	116	111	110	100	69	40	29,0	36,0	29,6	85	78	100
491	300	364	125	119	123	108	105	96	74	37	24,8	31,9	24,5	82	75	96
505	305	365	132	118	115	114	105	100	76	36	29,5	35,9	28,2	83	79	96
488	295	351	126	121	104	108	106	88	61	36	28,6	35,9	28,3	86	81	100
508	290	368	125	126	117	111	113	96	60	51	26,8	34,4	29,8	79	75	94
513	293	377	128	135	119	107	118	96	67	42	27,0	36,8	33,2	84	77	93
463	288	361	115	125	111	102	111	99	67	38	23,5	33,0	30,3	82	77	104
482	292	356	129	110	117	112	99	87	63	46	29,0	30,9	27,5	89	85	96
495	290	366	125	122	119	111	110	97	65	45	25,7	27,8	32,0	85	81	100
520	304	368	130	141	117	116	123	99	68	39	25,8	—	—	81	80	105
500	308	375	130	129	116	114	113	97	65	44	27,0	37,1	30,0	82	76	97
460	280	358	128	121	100	111	110	90	64	37	26,6	36,8	30,8	82	72	104
511	296	368	121	121	122	110	110	101	77	34	23,7	36,4	33,8	—	—	—
—	305	—	—	116	—	—	108	—	—	—	—	—	—	—	—	—
502	296	363	128	115	120	110	106	97	65	44	28,1	37,8	30,1	87	82	98
583	300	396	130	125	141	111	115	116	84	45	28,4	—	—	90	80	96
518	300	363	138	136	114	113	120	97	63	38	30,5	37,0	30,0	84	77	104
488	299	362	124	126	112	111	109	96	67	36	27,1	34,6	29,0	89	85	100
525	—	—	126	135	—	110	119	—	—	—	27,1	—	—	—	—	—
499	292	370	125	123	122	109	109	101	72	38	37,0	37,0	29,5	84	78	101
498	298	373	127	130	116	110	114	95	63	44	27,0	38,0	26,7	86	82	99
500	287	363	120	123	120	103	107	99	72	38	25,0	35,5	29,8	86	79	97
—	—	—	—	112	—	—	—	92	69	40	—	35,1	29,0	—	—	—
509	314	375	125	130	120	111	116	100	80	33	24,1	36,2	29,7	88	86	98
520	305	378	134	134	110	112	119	92	55	51	30,0	36,0	30,8	89	82	88
549	305	390	129	143	118	111	125	99	52	60	26,9	35,8	29,8	—	—	—
508	303	370	127	120	123	111	108	101	70	45	25,0	34,5	37,4	83	77	90
475	292	356	126	117	113	110	106	96	58	48	26,4	32,8	27,9	83	80	90
505	298	365	120	125	120	107	111	101	66	45	21,6	36,1	33,0	79	71	90
500	304	374	128	125	121	112	112	104	73	45	25,6	—	—	83	78	92
493	297	368	125	120	121	112	108	103	70	45	22,9	35,1	28,0	76	72	92
513	305	386	133	132	121	115	117	101	65	50	29,9	34,1	27,6	88	84	92
496	285	361	130	122	109	109	110	91	55	49	29,1	33,9	31,8	87	81	92
505	307	377	140	126	111	121	109	98	63	48	29,8	35,6	27,0	85	81	96
511	309	—	129	121	—	111	109	—	—	—	27,4	—	—	—	—	—
502	291	365	128	115	122	111	106	96	68	43	25,3	36,0	28,5	83	77	96
511	304	370	126	114	130	110	104	105	69	53	28,5	41,0	29,9	88	82	88
481	280	353	115	127	111	100	110	91	61	42	22,8	34,0	27,3	79	71	97
500	295	361	118	120	123	103	108	98	70	43	23,7	36,0	29,1	80	73	89
513	293	367	130	121	116	110	109	93	59	52	28,8	—	—	80	73	86
520	297	372	135	130	117	110	117	94	62	50	27,0	33,9	29,8	83	79	84

Table 8 (cont.)

Year of excavation	Form number	Burial numbers	Age	33(2). Angle of lower part of occiput	33(4). Angle of bend of occiput	34. Angle of occipital opening	45. Malar diameter	48. Upper height of face	47. Full face height	40. Length of base of face	43. Upper face width	46. Average face width	60. Length of alveolar arc	61. Width of alveolar arc	
1961	55	6	Mat.	—	—	—	133	75	118	—	107	108	52	65	
	56	7	Ad.	37	132	—8	138	71	118	97	102	103	52	65	
	57	8	Ad.	18	118	—6	132	75	121	106	108	110	57	67	
	58	14	Mat.	28	121	+3	140	76	121	104	113	103	54	—	
	59	15	Mat.	32	122	—7	138	66	109	99	106	99	—	—	
1962	60	16	Ad.	—	—	—	129	69	112	—	104	99	54	61	
	61	Surface	Ad.	19	121	—4	122	611	—	96	100	95	47	62	
	62	19	Mat.	27	122	—16	136	641	104	100	105	105	49	66	
	63	20	Ad.	19	114	—1	131	68	114	104	107	101	52	64	
	64	23	Mat.	18	110	—5	132	74	117	102	104	102	511	—	
	65	24	Mat.	32	122	—4	130	71	111	99	102	104	55	68	
	66	25	Ad.	27	124	—9	128	66	109	98	101	97	50	61	
	67	26	Sen.	27	127	—15	131	70±1	112	98±1	99	95	52±1	64	
	68	27 ^a	Mat.	17	113	—7	126	74±1	120	101±1	100	103	—	—	
	69	29	Mat.	27	123	—8	138±1	—	—	—	107	—	—	—	
	70	30	Ad.	28	128	—1	127	71	—	100	103	94	54	61	
	71	32	Mat.	24	118	—9	131	70	111	103	104	94	54	62±1	
	72	33	Mat.	31	124	+2	139	77±11	—	109±1	109	113	56±1	71	
	73	39 ^a	Ad.	31	135	—3	128	64	108	98	102	97	50	58	
	74	39 ^b	Ad.	27	123	—10	122	71	119	97	100	93	53	64	
	75	40 ^a	Sen.	21	121	—9	122	—	—	—	99	96	—	—	
	76	43	Sen.	25	131	—	127	69±1	—	—	102	99±1	—	—	
	77	44	Mat.	27	124	—5	136	73	114	96	105	105	51	65	
	78	45 ^a	Ad.	20	124	—8	128	68	110	95	101	98	51	62	
	79	45 ^b	Mat.	—	128	—	—	—	—	—	—	—	—	—	
	80	46 ^a	Ad.	—	—	—	—	—	—	—	—	—	—	—	
	81	49 ^a	Ad.	29	122	—13	130	71	120	96	105	99	51	62	
	82	49 ^c	Ad.	28	124	—	132±2	72	117	108	—	91±2	50	62	
	83	49 ^d	Ad.	24	128	—5	136	71	115	104	101	99	54	65	
	84	50	Mat.	32	132	—6	130	70	115	97	104	100	50	65	
	85	52 ^a	Mat.	—	—	—	—	—	—	—	105	—	—	—	
	1963	86	55	Ad.	27	128	—2	126	72	117	96	101	103	49	61
		87	57	Ad.	24	123	—19	120	65	112	94	93	90	49	60
		88	61	Ad.	28	125	—7	125	68	114	109	99	94	53	59
		89	65	Mat.	—	—	—	—	—	—	—	—	—	—	—
		90	67	Mat.	21	119	—5	138	69	114	105	106	108	57	64
		91	70	Sen.	36	124	—7	124	73±1	—	—	104	95	—	—
92		71	Mat.	—	—	—	141	71	119	—	105	—	60	63	
93		72	Mat.	33	123	—2	136	78	128±2	104	109	106	55	74	
94		73	Sen.	39	129	—9	127	68±1	108	95±1	99	98	47±1	61	
95		75	Mat.	33	123	—5	129	78	117	102	100	106	56	66	
96		76	Sen.	31	123	—	124	68	116	94	102	93	—	—	
97		80	Mat.	32	124	—5	135	73	114	107	103	103	53	64	
98		82	Sen.	29	121	—15	127	—	—	—	100	94	—	—	
99		83 ^a	Mat.	29	121	—6	127	66	—	99	100	101	—	—	
100		85	Ad.	25	123	—6	129	78	127	95	101	101	51	64	
101		88	Mat.	—	—	—	—	—	—	—	102	—	—	—	
102		90	Ad.	25	121	—10	128	69	114	101	100	98	52	62	
103		92 ^a	Mat.	32	120	—10	130	73	120	99	101	99	54	62±1	
104		97 ^b	Ad.	25	122	—3	125	71	115	99	97	97	50	61	
105		97 ^c	Mat.	27	116	—6	131	70	108	99	104	97	—	—	
106	99	Sen.	23	109	—	134±2	72±1	116	100	103	104	—	—		
107	102	Sen.	21	115	—3	132	73	118	104	101	94	54	58		

62. Length of palate	63. Width of palate	55. Nose height	54. Nose width	51. Orbit width (maxillofrontal)	51 a. Orbit width (dacryal)	52. Orbit height	Bimalar chord	Height of nasion above the bimalar chord	77. Naso-malar angle	Zygomaxillary chord	Ht. of subspinal pt. above zygomaxillary chord	L. zm' zygomaxillary angle	sc. Simotic width	ss. Simotic height	MC. Maxillofrontal width	MS. Maxillofrontal height
45,8	40,8	54	24,0	44,0	41,8	36,2	97	15,4	145	107	21,8	136	3,1	0,6	17,9	4,1
47,6	40,3	52	23,2	44,0	—	34,0	95	12,6	150	102	22,0	133	3,2	1,9	13,2	4,0
48,1	42,6	53	26,9	43,0	40,0	34,8	96,5	17,0	141	108	23,0	134	3,7	1,7	18,3	3,6
48,5	—	55	23,1	46,0	43,0	34,5	102	16,3	145	103	22,3	133	7,7	2,7	17,9	5,1
—	—	47	25,0	45,2	42,5	34,4	98	15,0	146	98,5	21,0	134	5,0	1,8	16,6	3,7
49,3	35,2	49	24,9	44,0	39,41	31,8	95,5	16,0	143	100	21,2	134	4,0	1,3	15,6	3,31
42,2	37,6	46!	25,8	42,0	39,9	34,0	93	15,1	144	91	20,0	133	8,5	2,2	15,0	3,6
42,8	43,0!	51!, 5!	26,4	43,9	41,0	33,5	98	17,9	140	105	19,0	140	5,1	1,9	18,3	3,4
49,2	41,2	47	20,1	43,1	41,0	31,8	96	16,4	142	100	18,6	139	7,0	3,0	18,2	6,8
47,0!	—	54	23,0	44,6	41,2	38,0	96	10,0	157	100	15,2	146	2,0	1,1	14,2	3,6
47,2	42,0	52	25,5	42,1	41,0	33,0	96	13,7	148	98	16,8	142	8,4	3,3	14,4	5,8
—	40,0	50	20,1	41,9	40,8	33,0	93	13,0	149	98	18,6	138	8,0	2,0	16,8	4,3
46,1	48,9	48	21,1	41,1	39,0	34,8	91	10,3	155	93	17,5	139	5,0	1,9	14,2!	4,5
—	—	50	24,0	39,9	37,3	35,0	93	15,0	144	103	27,2	124	3,4	0,8	17,3	5,0
—	—	48	—	42,5 rt.	—	37,5 rt.	100	17,8	141	—	—	—	—	—	—	—
47,0	34,5	53	21,0	42,1	39,8	33,4	92	15,9	142	95	22,4	129	7,9	3,2	15,6	4,2
47,9	39,0	48	21,0	45,5	43,2	37,9	95,5	14,8	146	93	19,5	134	6,0	2,9	13,9	5,0
51,8	45,0	51!	27,4	48,1	46,2	38,5	103,5	15,1	147	111	19,8	141	4,2	1,2	15,4	4,0
43,8	33,9	48	25,1	40,4	38,5	35,0	94	15,3	144	97,5	21,8	132	5,9	1,8	16,3	3,5
44,8	38,1	53	23,0	41,8	39,2	32,0	92	15,8	142	89	19,4	133	6,7	2,2	13,6	4,3
—	—	51	21,6	43,0	39,8	34,0	94	21,0!	132	96	18,8!	137	8,9	3,5	15,2	6,0
—	—	48	22,0	42,2	—	36,5	96	20,1	135	99	29,0	119	7,5	2,7	17,1	5,0
46,0	41,8	54	22,1	44,9	41,0	38,5	96	14,8	146	105	20,8	137	6,0	1,8	16,5	4,2
44,3	39,5	48	23,3	40,3	38,2	34,7	91	13,1	148	97	21,1	133	3,0	2,1	14,8	4,1
—	—	—	—	41,8	—	—	93	16,7	140	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
45,0	85,9	50	21,5	41,9	39,2	35,0	95,5	14,4	146	97	19,1	136	8,4	4,0	17,3	5,3
46,9	40,0	51	23,6	45,2	43,1	34,0	100,5	17,1	142	91,5	21,1	130	7,0	1,5	18,8	4,1
48,1	39,9	49	22,5	42,3	—	37,0	89	12,5	149	98	19,0	138	3,0	1,4	14,2	5,0
42,1	40,2	48	25,7	43,2	40,1	31,9	95	13,3	149	98	18,0	140	5,7	1,9	17,1	3,3
—	—	—	—	41,0 rt.	—	36,1 rt.	95	15,8	143	—	—	—	4,0	1,5	18,0	3,1
44,8	39,1	48	23,1	41,6	38,8	35,0	92	13,0	149	100	19,1	138	3,5	0,5	15,8	3,5
42,3	40,1	51	20,3	39,0	37,0	32,8	86	10,8	152	87	20,0	131	2,1	2,0	11,3	5,1
48,6	41,8	47	20,4	41,3	39,7	33,4	102	14,3	149	92	21,8	129	5,0	1,3	15,5	3,9
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
51,7	40,2	49	24,5	40,9	38,6	32,7	97,5	16,1	143	107	22,1	135	5,3	1,3	18,9	4,4
—	—	54	26,8	46,8	44,8	35,3	96	12,4	151	96	20,8	133	3,3	1,0	12,9	2,0
53,0	40,9	49	21,9	41,4	—	34,2	96	8,4	160	—	—	—	4,9	1,6	—	—
46,0	45,0	53	24,7	45,5	42,1	33,5	102	15,1	147	105	21,2	136	10,1	1,7	20,7	3,0
40,9	38,1	52	22,0	40,0	36,9	35,0	90	12,1	150	98	20,0	136	4,8	2,1	16,9	4,8
50,3	42,5	55	23,7	45,0	41,5	34,6	95	15,5	144	103	20,1	137	6,1	2,4	14,1	3,9
—	—	47	22,9	42,0	—	35,4	95	14,5	146	94	14,5!	146	—	—	—	—
50,5	42,0	50	23,5	44,5	42,0	33,3	96	15,3	145	100	21,6	133	2,8	1,2	14,2	3,4
—	—	52	26,0	43,8	41,5	34,4	93	17,1	140	96	20,2	134	6,5	1,8	14,5	4,2
—	—	49	23,1	41,7	38,9	33,1	93	15,1	144	101,5	25,6	127	4,3	2,3	13,8	6,2
45,5	40,8	54	22,0	41,0	39,9	38,0	91	14,5	145	99	19,8	136	6,9	1,5	15,6	4,3
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
46,0	38,8	49	24,5	41,4	—	35,0	94,5	15,3	144	93	18,1	137	—	—	—	—
48,0	37,1	53	23,6	43,6	40,3	31,9	102	15,0	147	99	20,5	135	7,7	2,0	16,9	3,9
43,8	40,0	51	22,4	40,8	38,8	35,8	92	13,8	147	97	22,5	130	3,2	1,3	12,9	4,6
—	—	51	24,0	43,1	41,8	35,0	98	14,9	146	96	18,9	137	5,4	1,2	17,9	4,3
—	—	52	—	—	—	—	93	15,9	142	103	21,3	135	—	—	—	—
49,8	34,0	52	22,8	42,5	39,8	34,9	93	15,1	144	90	19,5	133	6,2	1,0	18,5	3,2

Table 8 (cont.)

Year of excavation	Form number	Burial numbers	Age	DC: Dacryal width	DS: Dacryal height	Width of malar bone	Height of curve of malar bone	Depth of canine socket	72. General facial angle*	73. Angle of middle part of face	74. Angle of alveolar part of face	75. Angle of slope of nose bone	75(1). Angle of nose projection	68(1). Length of lower jaw from condyle	
1961	55	6	Mat.	19,0	8,0	59,9	15,2	3,0	84	88	—	75	9	114	
	56	7	Ad.	—	—	55,5	10,4	5,0	87	88	—	69	18	100	
	57	8	Ad.	16,9	9,1	60,8	14,1	5,0	85	86	79	57	28	115	
	58	14	Mat.	21,1	10,0	61,0	13,6	6,0	88	89	80	75	13	112	
	59	15	Mat.	18,8	8,2	54,6	9,7	4,9	83	86	86	66	17	102	
	60	16	Ad.	19,2	11,51	55,3	11,3	2,0	83	85	67	66	17	102	
	1962	61	Surface	Ad.	19,0	6,9	46,8	9,9	4,2	81	81	81	60	21	—
		62	19	Mat.	20,2	9,8	51,8	10,2	1,8	87	89	77	62	25	117
		63	20	Ad.	19,4	11,2	54,0	11,7	6,0	84	86	76	66	18	104
		64	28	Mat.	15,2	7,1	50,5	12,5	3,6	85	88	76	66	19	109
65		24	Mat.	15,8	8,1	55,1	14,1	2,8	88	93	68	77	11	95	
66		25	Ad.	18,8	7,0	53,1	12,2	6,1	85	88	71	66	19	102	
67		28	Sen.	14,01	8,9	54,4	11,9	2,5	(85)	88	—	68	(17)	102	
68		27 ^a	Mat.	18,5	10,0	51,0	9,7	3,8	88	83	83	56	27	114	
69		29	Mat.	—	—	52,5	9,8	3,8	—	94	—	—	—	—	—
70		30	Ad.	19,0	9,1	50,9	11,5	5,2	87	88	81	65	22	—	
71	32	Mat.	15,4	9,1	55,1	9,9	4,0	80	84	72	57	23	109		
72	38	Mat.	16,8	7,8	59,1	15,9	0,8	85	88	—	62	23	—		
73	30 ^a	Ad.	18,4	9,0	53,0	9,9	5,0	81	82	76	60	21	96		
74	39 ^b	Ad.	15,9	7,4	57,9	13,3	4,0	84	87	72	64	20	104		
75	40 ^a	Sen.	18,3	10,9	54,0	9,9	1,9	(90)	98	—	68	(22)	107		
76	43	Sen.	—	—	—	—	—	85	85	85	55	30	104		
77	44	Mat.	20,0	9,5	57,1	13,8	5,2	87	88	80	64	23	110		
78	45 ^a	Ad.	16,8	9,8	54,5 ^{rt.}	11,3	6,1	81	83	76	55	26	101		
79	45 ^b	Mat.	—	—	—	—	—	—	—	—	—	—	—	106	
80	46 ^a	Ad.	—	—	53,3	9,0	—	—	—	—	—	—	—	—	
81	49 ^a	Ad.	19,1	9,2	54,5	13,9	8,2	90	91	86	65	25	104		
82	49 ^c	Ad.	20,8	7,7	59,0	10,9	3,9	84	87	—	74	10	114		
83	49 ^d	Ad.	—	—	57,8	12,4	4,8	83	88	70	64	19	115		
84	50 ^a	Mat.	19,1	7,2	58,1	14,2	4,8	89	88	85	69	21	103		
85	52 ^a	Mat.	—	—	—	—	—	—	—	—	—	—	—	106	
86	55	Ad.	18,5	7,0	52,3	10,8	4,6	89	91	80	68	21	107		
87	57	Ad.	12,01	9,2	45,2	9,6	6,4	84	85	79	58	26	103		
88	61	Ad.	16,2	8,1	50,0	12,1	3,1	81	84	70	60	21	104		
89	65	Mat.	—	—	—	—	—	—	—	—	—	—	—	105	
90	67	Mat.	20,1	9,0	52,8	9,5	2,6	83	85	80	64	19	108		
91	70	Sen.	13,2	5,8	50,2	11,0	4,6	(90)	94	—	73	(17)	—		
92	71	Mat.	—	—	—	—	—	—	—	—	—	—	—	119	
93	72	Mat.	21,8	8,1	57,0	13,1	1,2	87	88	84	70	17	107		
94	73	Sen.	19,5	10,1	58,8	13,2	6,5	(88)	91	—	68	(20)	106		
95	75	Mat.	17,0	10,0	58,9	13,8	3,0	86	92	75	65	21	107		
96	76	Sen.	—	—	58,2	12,9	6,9	91	92	81	—	—	—	108	
97	80	Mat.	17,6	6,8	60,5	13,2	6,0	84	85	80	70	14	111		
98	82	Sen.	10,4	8,0	57,5	11,1	5,2	(86)	89	—	75	(19)	109		
99	83 ^a	Mat.	16,1	8,0	—	—	—	84	89	72	65	19	—		
100	85	Ad.	16,8	9,1	50,2	11,6	4,4	88	93	75	65	23	105		
101	88	Mat.	—	—	—	—	—	—	—	—	—	—	—	—	
102	90	Ad.	—	—	55,0	11,0	4,2	83	86	79	—	—	—	105	
103	92 ^a	Mat.	18,0	8,5	56,8	12,8	2,4	85	88	75	70	15	111		
104	97 ^b	Ad.	14,5	9,9	55,9	13,1	4,1	79	81	71	58	21	103		
105	97 ^c	Mat.	17,3	8,5	56,5	12,2	3,6	85	88	75	65	20	109		
106	99	Sen.	—	—	52,0	10,8	4,9	81	84	72	—	—	—	112	
107	102	Sen.	21,0	9,1	54,5	10,0	6,0	83	86	69	68	15	110		

79. Angle of branch of lower jaw	68. Length of lower jaw from angle	70. Height of branch	71 a. Smallest width of branch	65. Condyle width	66. Angular width	67. Front width	69. Height of symphysis	69(1). Height of body of lower jaw	69(3). Thickness of body of lower jaw	C. Angle of chin projection	Form of vault (n. occipitalis)	Lateral walls (n. occipitalis)	Occipital ridge (0-2)	Sagittal sinus	Mammiform appendix (1-3)	Bone of parietal indentation (rt./left, mm)
126	86	55	44	120±2	114±2	47	32	32	14	80	2	2	0	Rt.	2	o/o
127	71	54	36	118	103	43	34	33	13	80	2	2	0	Left	1	o/o
128	84	58	41	121	104	50	36	30	13	73	3	2	1	Left	1	o/o
137	80	48	38	123	109	46	36	33	11	75	2	2	0	Rt.	2	10/0
124	75	56	38	120	104	47	32	29	11	80	2	2	1	Indet.	1	o/o
127	76	51	39	115	102	45	33	29	11	84	2	2	0	Rt.	2	o/o
—	—	—	—	—	—	—	—	—	—	—	2	2	0	Left	2	14/8
128	78	54	39	123	107	47	28	27	12	76	2	2	1	Rt.	2	o/o
128	74	54	38	120	109	44	35	32	13	77	2	2	0	Indet.	2	o/o
120	85	52	41	122	98	49	34	28	11	65±2	2	2	1	Rt.	2	o/o
113	76	56	35	121	103	46	34	30	12	84	2	2	1	Rt.	1	o/o
137	70	48	35	115	112	38	31	29	12	80	1	2	0	Rt.	1	o/o
120	76	51	39	118	111	47	—	30	12	78±2	1	2	1	Indet.	2	o/o
133	81	54	38	110±1	102	48	41	35	12	76	1	3	0	Rt.	3	o/o
—	—	—	—	—	—	—	—	—	—	—	2	2	1	Rt.	2	o/o
136	74	52	33	116	111	44	33	29	10	75	2	2	0	Left	2	11/9
—	—	—	—	—	—	—	—	—	—	—	2	2	0	Indet.	1	o/o
124	72	50	37	112	101	44	28	28	11	80	3	2	1	Rt.	2	o/o
130	75	50	38	105	99	48	32	30	11	77	1	2	0	Left	1	o/o
133	77	51 ^{rt.}	33	112±2	106	47	29	26	10	64	1	3	0	Rt.	1	o/o
129	74	59	35	122	104	44	—	32	10	—	2	2	1	Left	2	o/o
131	79	51	38	123	115	48	33	31	11	69	2	2	0	Rt.	1	11/12
116	77	55	37	115±1	104	51	31	28	10	75	1	2	0	Rt.	2	8/0
132	77	54	36	127	101	43	—	33	10	—	3	2	1	Indet.	2	o/o
—	—	—	—	—	—	—	—	—	—	—	2	2	0	Rt.	2	—
129	75	54	36	116±1	106	47	32	30	8	76	2	2	0	Rt.	2	14/8
132	78	50 ^{rt.}	36	—	109	46	34	31	9	84	2	2	0	Left	2	o/o
133	84	54	40	124	105	46	34	31	11	75	2	2	0	Rt.	2	o/o
127	73	54	33	117	102	47	34	28	9	73	2	2	0	Rt.	2	o/o
130	76	52	36	129	107	47	—	29	12	75±1	2	2	1	Rt.	1	o/o
136	74	50	34	115	104	43	36	32	9	70	1	2	0	Left	1	—
117	82	52	40	108	95	42	33	28	11	72	3	2	0	Left	1	19/9
126	78	50	36	114	96	41	38	31	12	82	2	2	0	Rt.	—	—
126	77	55	38	120	104	50	29	27	11	76	—	—	0	Rt.	2	o/o
125	78	57	44	121	114	50	35	30	13	83	2	2	0	Indet.	2	19/16
—	—	—	—	—	—	—	—	—	—	—	2	2	0	Indet.	2	o/o
127	87	58	40	123	108±1	49	38	34	12	73	2	2	0	---	2	—
132	74	55	36	128	110	41	—	37	12	76±1	2	2	1	Left	2	10/0
137	75	47	34	121	98	48	—	30	7	—	3	2	0	Left	—	o/o
128	78	54	34	124	100	45	31	30	7	76	3	2	1	Rt.	—	o/o
120	83	57	37	120	106	48	35	32	12	66	2	2	0	Rt.	2	o/o
127	80	57	40	122	112	50	—	30	13	—	2	2	1	Rt.	2	o/o
129	82	51	38	123	109	45	—	—	11	—	2	2	0	Rt.	1	—
—	—	—	—	—	—	—	—	—	—	—	2	2	1	Rt.	1	o/o
135	74	50	35	118	104	49	39	35	12	76	3	2	1	Left	1	o/o
—	—	—	37	—	—	—	—	34	9	—	2	2	0	---	1	12/12
135	70	54	34	115	108	47	33	30	11	75	3	2	0	Rt.	1	20/0
131	79	53	40	111	99	44	37	34	10	83	2	2	0	Rt.	1	o/o
124	76	50	38	111	103	45	34	29	11	80	2	2	0	Rt.	1	15/7
125	75	55	36	—	—	—	—	32	10	—	3	2	0	Rt.	2	o/o
144	76	51	35	119	—	47	34	28	10	—	3	2	0	Rt.	1	o/o
139	73	54	37	118	103	42	37	32	11	85	2	2	1	Rt.	2	o/o

Table 8 (cont.)

Year of excavation	Form number	Burial numbers	Age	Thickness of tympanic part (mm)	Perforation of tympanic part (rt./left)	Above bridge of nose (1-6)	Superorbital orifice (rt./left)	Transverse profile of the back of the nose (0-2)	Lower edge of the pyriform orifice	Pre-nasal spine (1-5)	Palate ridge	Lower jaw ridge	Closing of the edges of the maxillary-sublingual furrow (rt./left)	8:1. Cranial index	
1961	55	6	Mat.	8	o/o	2	+/+	1	f. p.	1	1	1	o/o	65,1	
	56	7	Ad.	5	o/o	2	o/o	2	ant.	2	1	1	o/o	76,4	
	57	8	Ad.	6	+/+	1	+/+	1	inf.	2	1	0	o/o	65,1	
	58	14	Mat.	6	o/o	2	o/+	0	inf.	1	3	3	o/o	70,2	
	59	15	Mat.	5	+/+	2	+/+	1	inf.	—	0	1	o/o	71,7	
	60	16	Ad.	3	o/o	2	o/+	2	inf.	1	0	0	o/o	70,7	
	1962	61	Surface	Ad.	4	+/o	1	+/+	1	ant.	1	2	—	—	69,5
	62	19	Mat.	4	o/o	3	o/o	1	ant.	3	0	0	+/+	67,4	
	63	20	Ad.	4	o/o	3	+/+	0	inf.	3	1	1	o/o	72,5	
	64	23	Mat.	3	o/o	2	+/+	2	inf.	3	2	0	—	71,0	
65	24	Mat.	4	o/o	2	o/o	0	f. p.	1	2	1	o/o	71,2		
66	25	Ad.	4	o/o	1	+/+	0	ant.	2	2	0	o/o	71,1		
67	26	Sen.	5	o/o	3	+/+	1	ant.	1	3	1	o/o	75,3		
68	27 ^a	Mat.	6	o/o	2	o/+	1	ant.	—	2	3	o/+	75,1		
69	29	Mat.	2	+/o	2	+/+	—	—	—	—	—	—	73,5		
70	30	Ad.	4	o/o	2	+/o	0	ant.	4	0	—	—	70,5		
71	32	Mat.	4	o/o	1	o/o	0	f. p.	3	0	1	o/o	71,0		
72	33	Mat.	4	o/o	2	o/+	1	f. p.	2	3	—	—	64,9		
73	39 ^a	Ad.	4	+/+	1	+/+	0	ant.	2	1	1	o/o	74,6		
74	39 ^b	Ad.	3	+/+	1	+/+	0	f. p.	1	1	0	o/o	75,1		
75	40 ^a	Sen.	5	o/o	2	o/+	0	ant.	2	1	1	o/o	72,9		
76	43	Sen.	3	o/o	1	o/o	0	ant.	—	0	1	o/o	71,3		
77	44	Mat.	4	o/o	2	o/o	0	ant.	2	0	0	o/o	69,2		
78	45 ^a	Ad.	4	o/o	2	+/+	2	inf.	1	0	0	o/o	69,4		
79	45 ^b	Mat.	5	o/o	2	o/o	—	—	—	—	0	o/o	70,2		
80	46 ^a	Ad.	4	o/o	—	—	—	—	—	2	—	—	—		
81	49 ^a	Ad.	3	o/o	2	o/o	0	inf.	2	1	0	o/o	73,2		
82	49 ^c	Ad.	3	o/o	2	+/+	0	f. p.	—	0	1	o/o	69,7		
83	49 ^d	Ad.	3	o/o	3	o/+	2	ant.	2	2	0	o/o	69,5		
84	50	Mat.	5	+/+	2	+/+	1	ant.	2	1	0	o/o	71,8		
85	52 ^a	Mat.	4	+/o	2	o/+	2	—	—	1	2	o/o	71,1		
1963	86	55	Ad.	5	o/o	2	+/+	1	f. p.	1	1	1	o/o	68,1	
87	57	Ad.	4	o/o	1	o/o	2	ant.	1	2	1	o/o	70,0		
88	61	Ad.	6	o/o	2	+/+	1	inf.	—	2	1	o/o	65,9		
89	65	Mat.	5	o/o	—	—	—	—	—	—	0	o/o	—		
90	67	Mat.	4	o/o	1	+/+	1	inf.	2	1	0	o/o	76,1		
91	70	Sen.	3	o/o	2	+/+	1	ant.	3	1	—	—	64,7		
92	71	Mat.	7	o/o	2	o/o	—	ant.	—	3	3	o/o	71,4		
93	72	Mat.	4	o/o	2	+/+	0	f. p.	2	0	2	o/o	72,5		
94	73	Sen.	4	+/+	1	o/+	1	ant.	—	1	0	o/o	70,0		
95	75	Mat.	4	o/o	2	o/o	0	ant.	3	2	1	o/o	74,6		
96	76	Sen.	6	o/o	2	o/o	—	f. p.	—	1	2	o/o	72,5		
97	80	Mat.	5	o/o	2	+/+	2	f. p.	1	1	0	o/o	69,2		
98	82	Sen.	5	o/o	2	+/+	1	f. p.	—	3	3	o/o	71,4		
99	83 ^a	Mat.	4	o/o	2	o/o	2	f. p.	—	0	3	—	68,3		
100	85	Ad.	6	o/o	1	o/+	0	f. p.	—	2	0	o/o	72,2		
101	88	Mat.	3	+/o	2	+/+	—	—	—	—	2	o/o	75,3		
102	90	Ad.	4	o/o	2	o/o	—	inf.	2	1	0	o/o	67,6		
103	92 ^a	Mat.	3	+/+	1	+/+	1	inf.	2	0	0	o/o	69,2		
104	97 ^b	Ad.	3	o/o	2	o/o	2	f. p.	2	1	0	o/o	70,3		
105	97 ^c	Mat.	5	o/o	2	o/o	0	ant.	3	1	1	o/o	68,7		
106	99	Sen.	6	o/o	2	o/o	—	ant.	—	0	1	o/o	70,3		
107	102	Sen.	5	o/o	1	+/+	0	f. p.	—	1	0	o/o	70,6		

17:1. Height-length index	17:8. Height-length index	9:8. Frontal-transverse index	9:10. Frontal index	45:8. Horizontal facial-cerebral index	48:17. Vertical facial-cerebral index	9:66. Frontal-maxillary index	40:5. Index of facial projection	47:45. Facial index	48:45. Upper facial index	63:62. Palatal index	54:55. Nasal index	52:51. Orbital index (maxillo-frontal)	52:51a. Orbital index (dacryal)	SS:SC. Simiotic index	MS:MC. Maxillo-frontal index	DS:DC. Dacryal index
73,2	112,4	74,4	88,9	103,1	51,7	84,2	—	88,7	56,4	89,1	44,4	82,3	86,6	19,3	22,9	42,1
78,1	102,2	67,7	84,4	101,5	51,1	85,2	95,1	85,5	51,5	84,7	44,6	77,3	—	59,4	30,3	—
68,2	104,7	73,6	90,5	102,3	55,6	91,3	101,9	91,7	56,8	88,6	50,75	80,9	87,0	45,9	19,7	48,1
72,3	103,0	76,5	90,2	106,1	55,9	92,7	98,1	86,4	54,3	—	42,0	75,0	80,2	35,1	28,5	47,4
71,1	99,2	71,3	85,2	107,0	51,6	88,5	100,0	79,0	47,8	—	53,2	76,1	80,9	36,0	22,3	43,6
70,7	100,0	74,2	88,8	100,8	53,9	93,1	—	86,8	53,5	71,4	50,8	72,3	80,7	32,5	21,1	59,91
75,9	109,1	79,3	90,6	100,8	46,2	—	99,0	—	50,0	89,1	56,11	80,9	85,2	25,9	24,0	38,3
69,5	103,1	75,0	88,9	106,3	48,5	89,7	98,0	76,5	47,1	100,51	51,3	76,3	81,7	37,3	18,6	48,5
73,6	101,5	76,6	89,9	101,5	51,9	89,9	100,0	87,0	51,9	83,7	42,8	73,8	77,6	42,9	37,4	57,7
74,2	104,6	68,9	84,3	100,0	53,6	87,9	95,3	88,6	56,1	—	42,6	74,0	80,1	55,0	25,3	46,7
74,6	104,8	69,1	85,3	103,2	53,8	84,5	98,0	85,4	54,6	89,0	49,0	78,4	80,5	39,3	40,3	51,3
70,6	99,2	71,9	85,2	100,0	52,0	82,1	100,0	85,2	51,6	—	40,2	78,6	80,9	25,0	25,6	37,2
71,9	95,5	67,9	85,9	97,8	54,7	82,0	102,1	85,5	53,4	93,1	44,0	84,7	89,2	38,0	31,7	63,61
70,7	94,1	65,4	87,3	92,7	57,8	87,3	104,1	95,2	58,7	—	48,0	87,7	93,8	23,5	28,9	54,0
75,1	102,3	74,4	87,6	103,8	—	—	—	—	—	—	—	88,2	—	—	—	—
72,7	103,2	78,2	87,4	102,4	55,5	—	100,0	—	55,9	73,4	39,6	79,3	83,9	40,5	26,9	50,6
72,7	102,3	73,1	88,0	100,8	52,6	85,6	100,0	84,7	53,4	81,4	43,75	83,3	87,7	48,3	36,0	59,1
72,3	111,3	72,6	85,7	112,1	55,8	—	100,0	—	55,4	86,9	53,7	80,0	83,3	28,6	26,0	46,4
76,9	108,1	72,9	88,7	99,2	48,1	93,1	98,0	84,4	50,0	77,4	52,3	86,6	90,9	30,5	21,5	48,9
74,6	99,2	70,0	87,5	93,9	55,0	91,9	99,0	97,5	58,2	85,0	43,4	76,6	81,6	32,8	31,6	46,5
70,7	97,0	68,9	88,3	92,4	—	85,9	—	—	—	—	42,3	79,1	85,4	39,3	39,5	59,6
72,3	101,5	69,4	85,3	94,8	50,7	89,4	—	—	54,3	—	45,8	86,5	—	36,0	29,2	—
73,6	106,3	77,0	87,4	107,9	54,5	84,3	96,0	83,8	53,7	90,9	40,9	85,7	93,9	30,0	25,5	47,5
72,2	104,0	72,8	88,3	102,4	52,3	87,5	100,0	85,9	53,1	89,2	48,5	86,1	90,8	70,01	27,7	58,3
70,2	100,0	68,2	85,7	103,0	—	89,1	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
72,6	99,2	74,8	90,7	99,2	54,6	90,7	97,0	92,3	54,6	79,8	43,0	83,5	89,3	47,6	30,6	48,2
69,1	108,6	—	—	103,1	51,8	—	99,1	88,6	54,5	85,3	46,3	75,2	78,9	21,4	21,8	37,0
71,6	103,0	66,7	80,7	103,0	52,2	83,8	100,0	84,6	52,2	82,9	45,9	87,5	—	46,7	35,2	—
75,9	105,6	74,4	87,7	104,0	53,0	91,2	99,0	88,5	53,9	95,5	53,5	73,8	79,5	33,3	19,3	37,7
—	—	71,1	85,0	—	—	89,7	—	—	—	—	—	88,1	—	37,5	17,2	—
73,1	107,5	74,2	83,6	101,6	54,1	88,5	95,1	92,9	57,1	87,3	48,1	84,1	90,2	14,3	22,1	37,8
67,8	96,8	65,9	80,6	95,2	53,3	87,4	104,4	93,3	54,2	94,8	39,8	84,1	88,7	95,2	45,1	76,71
69,8	105,8	74,2	85,6	104,1	53,5	90,8	105,8	91,2	54,4	86,0	43,4	80,9	84,1	26,0	25,2	50,0
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
75,0	98,5	71,5	87,5	100,7	51,1	86,0	106,1	82,6	50,0	77,8	50,0	79,9	84,7	24,5	23,3	44,8
72,6	112,21	75,6	85,3	100,8	52,9	—	—	—	58,9	—	49,6	75,4	78,8	30,3	15,5	43,9
67,9	95,0	67,1	75,2	100,7	53,4	87,0	—	84,4	50,3	77,2	44,7	82,6	—	32,7	—	—
74,2	102,3	72,0	85,6	103,0	57,8	86,4	100,0	92,7	57,3	97,8	46,6	73,6	79,6	16,8	14,5	37,2
78,2	111,8	73,1	85,3	106,7	51,1	88,8	94,1	85,0	53,5	93,1	42,3	87,5	94,9	43,8	28,4	51,8
73,5	98,5	68,9	85,3	95,6	58,7	93,0	96,2	90,7	60,5	84,5	43,1	76,9	83,4	39,3	27,7	58,8
77,5	107,0	72,1	83,8	96,1	49,3	87,7	101,1	93,5	54,8	—	48,7	84,3	—	—	—	—
74,7	107,9	68,3	84,3	107,1	53,7	76,8	101,9	84,4	54,1	83,2	47,0	74,8	79,3	42,9	23,9	38,6
73,5	103,0	68,9	86,7	96,2	—	83,5	—	—	—	—	50,0	78,5	82,9	27,7	29,0	48,8
71,1	104,1	73,2	87,4	103,3	51,6	—	98,0	—	52,0	—	47,1	79,4	85,1	53,5	44,9	49,7
77,2	106,9	73,1	85,6	99,2	56,1	91,3	100,0	98,5	60,5	89,7	40,7	92,7	95,2	21,7	27,6	54,2
—	—	70,8	84,3	—	—	—	—	—	—	—	—	—	—	—	—	—
69,7	103,2	73,6	85,2	102,4	53,5	85,2	102,0	89,1	53,9	84,3	50,0	84,5	—	—	—	—
71,4	103,1	73,4	83,9	101,6	55,3	95,9	99,0	92,3	56,1	77,3	44,5	73,2	79,1	26,0	23,1	47,2
72,0	102,4	68,3	84,6	101,6	56,3	81,5	103,1	92,0	56,8	91,3	43,9	87,7	92,3	40,6	35,7	68,3
70,3	102,4	72,8	85,1	104,8	58,3	—	99,0	82,4	53,4	—	47,1	81,2	83,7	22,2	24,0	49,1
71,1	101,5	70,0	85,9	103,1	54,5	89,2	100,0	86,6	53,7	—	—	—	—	—	—	—
70,6	100,0	71,2	93,1	100,0	55,3	91,3	99,1	89,4	55,3	68,3	43,8	82,1	87,7	16,1	17,3	43,3

Table 9. Individual Measurements of the Bone Extremities of Male Skeletons from the Old Bering Sea Cemetery at Uelen.

Burial numbers	1956				1957							1958						1959				1960			
	2*		3-3*		1	3	5	12	17	2	6	7	12*	14	16*	20	22B	A	4	5	15	16	23	1	
	435	407	431	440	435	467	448	400L	384	417	447	96	94	396!	417	423	405	435L	443L	426L	390L				
FEMUR																									
1. Greatest length	90	93	27	27	27	25	27	24	27	27	25	27	24	27	27	25	27	24	27	27	25	25	25	25	—
8. Circumference of middle of diaphysis	32	33	30	30	30	28	31	32	32	32	31	35	35	34	34	35	35	34	35	33	30	30	30	—	
10. Upper sagittal diameter	30	31	29	29	30	27	26	26	29	29	29	30	30	29	29	30	33	32	32	32	29	29	29	—	
9. Upper transverse diameter	27	27	28	30	30	25	28	28	26	26	26	27	27	28	29	28	28	28	28	28	25	25	25	—	
6. Sagittal diameter of middle of diaphysis																									
7. Transverse diameter of middle of diaphysis																									
TIBIA																									
1. Full length	—	—	345	359	342	—	357	318	311	319	—	345	345	—	—	313L	—	360L	361L	345L	308L	315	315	—	
10b. Least circumference of diaphysis	—	—	70	76	70	—	70	69	74	64!	—	78	—	—	—	73	—	75	77	73	65	75	75	—	
8a. Greatest sagittal diameter	—	—	35	33	33	—	29	33	33	32	—	38	—	—	—	35	—	35	35	36	34	35	35	—	
9a. Transverse diameter	—	—	25	26	23	—	22	19	22	21	—	25	—	—	—	35	—	23	25	32	20	24	24	—	
HUMERUS																									
1. Greatest length	—	290	315	319	314	—	342	277	249	292	—	316	—	—	283	215L	—	320L	309	306	277	277	277	—	
7. Least circumference of diaphysis	—	65	59	65	69	—	63	58	56	59!	—	68	—	—	65	46	—	69	59	58	58	62	62	—	
5. Greatest diameter of middle of diaphysis	—	22	24	24	25	—	21	23	21	21	—	36	—	—	25	44	—	25	28	33	20	24	24	—	
6. Least diameter of middle of diaphysis	—	18	18	18	18	—	19	15	15	16	—	18	—	—	18	—	20	19	16	16	15	17	17	—	
RADIUS																									
1. Greatest length	—	243	227	242	240	—	244	209	207	208	—	247	—	—	—	—	—	236	243	230	209	214	214	—	
5. Sagittal diameter of diaphysis	—	—	17	17	17	—	16	15	15	16	—	16	—	—	—	—	—	—	—	14	13	15	15	—	
4. Transverse diameter of diaphysis	—	—	11	12	12	—	11	9	9	11	—	13	—	—	—	—	—	—	—	10	10	12	12	—	
ULNA																									
1. Greatest length	—	266	244	259	257	—	267	—	—	223	—	260	—	—	—	—	—	256	265	250	—	233	233	—	
14. Upper sagittal diameter	—	—	24	23	25	26	23	—	—	23	—	25	—	—	—	—	—	—	25	23	—	25	25	—	
13. Upper transverse diameter	—	22	18	21	23	—	19	—	—	21	—	21	—	—	—	—	—	—	—	17	—	19	19	—	

*Excavations of N. N. Dikov

Table 11. Individual Measurements of the Bone Extremities of Male Skeletons from the Old Bering Sea Cemetery at Ekven (1961-1962).

Burial numbers	2	9	12	13	20	22	276	28	31	35	37	39	406	41	42	446	46a	49a	496	51	52	53	53a	54
FEMUR																								
1. Greatest length	397	413L	426	413	356L	419	382	431	424	421	428	412	409	400	414	419	382	433L	440L	435	394	432	440	447L
8. Circumference of middle of diaphysis	85	95	93	87	83	89	81	84	93	90	93	93	84	88	83	83	84	87	96	90	86	96	94	89
10. Upper sagittal diameter	23	26	27	24	25	23	23	25	24	25	26	25	22	22	22	24	22	23	26	26	23	25	27	25
9. Upper transverse diameter	30	33	33	31	31	29	30	34	34	35	34	35	33	31	33	31	33	33	33	31	29	34	34	35
6. Sagittal diameter of middle of diaphysis	28	31	30	29	26	30	26	28	32	29	32	32	28	30	28	26	27	31	33	30	30	33	33	28
7. Transverse diameter of middle of diaphysis	26	29	29	25	26	26	25	26	28	29	27	27	26	27	25	25	24	24	27	26	25	28	28	28
TIBIA																								
1. Full length	315L	338L	353	336	279	311	293	337	334	349	340	—	330	318	333	332	315	347L	360	344	319	348	—	355
10b. Least circumference of diaphysis	70	80	73	73	65	77	70	75	77	73	75	—	70	72	69	77	75	65	79	77	69	80	—	75
8a. Greatest sagittal diameter	31	36	35	34	28	—	31	36	34	34	36	—	34	32	32	31	32	29	36	34	32	35	—	36
9a. Transverse diameter	21	25	24	22	25	—	21	22	22	22	22	—	21	24	20	23	25	22	26	26	22	26	—	25
HUMERUS																								
1. Greatest length	238	288L	302	298	—	315	268	312	—	305	321	—	294	293	299	305L	280	279	—	307	273	—	312	298
7. Least circumference of diaphysis	67	62	63	64	—	65	63	63	—	65	66	—	58	67	61	60	64	54	—	63	61	—	68	65
5. Greatest diameter of middle of diaphysis	25	23	24	24	—	23	23	24	—	27	24	—	23	27	21	22	24	22	—	24	23	—	26	25
6. Least diameter of middle of diaphysis	17	16	17	17	—	17	18	16	—	19	19	—	16	19	16	18	18	14	—	16	16	—	18	18
RADIUS																								
1. Greatest length	217	227L	(232)	230	191	230	206	230	225L	231	229	—	220	217	225	220	212	—	—	225	223	(237)	243	237
5. Sagittal diameter of diaphysis	16	15	—	17	14	15	17	15	17	18	16	—	13	17	15	15	17	—	—	15	14	—	17	16
4. Transverse diameter of diaphysis	11	10	—	10	10	11	10	12	11	12	11	—	10	12	11	10	11	—	—	12	11	—	12	11
ULNA																								
1. Greatest length	—	252L	250	250	210	251	224	251	247L	248	246	—	247	238	245	240	232	—	—	245	243	257	264	258
14. Upper sagittal diameter	—	25	26	25	27	25	25	25	24	28	27	—	22	25	22	24	24	—	—	26	23	29	29	26
13. Upper transverse diameter	—	19	17	16	17	19	19	18	16	20	20	—	18	19	18	19	19	—	—	22	17	20	19	21

*Excavations of N. N. Dikov

Table 12. Individual Measurements of the Bone Extremities of Female Skeletons from the Old Bering Sea Cemetery at Ekven (1961-1962)

Burial numbers	7	8	15	19	23	24	25	26	27a	29	30	32	33	38	39A	39B	40A	41A	45A	47	49B	49	50	55
FEMUR																								
1. Greatest length	407	404	379	371	415	408	388	375	398	385	403	367	427	390	363	—	381	407	398	380	—	455	368	410
8. Circumference of middle of diaphysis	79	85	84	79	87	82	72	86	80	83	72	76	95	87	74	—	84	88	75	82	—	89	79	77
10. Upper sagittal diameter	22	24	23	22	23	23	20	24	22	24	21	20	28	25	19	—	25	24	20	23	—	24	22	21
9. Upper transverse diameter	31	32	28	31	30	31	28	30	30	32	27	30	35	33	27	—	31	34	31	29	—	32	29	28
6. Sagittal diameter of middle of diaphysis	24	28	27	25	30	26	24	27	28	28	23	24	33	28	25	—	27	28	24	28	—	29	25	27
7. Transverse diameter of middle of diaphysis	25	26	24	26	25	26	22	27	24	26	22	24	28	27	22	—	26	27	24	24	—	25	25	22
TIBIA																								
1. Full length	338	329	298	295	326	328	303	299	313	324	324	293	367?	299	285	295	306	316	314	295	330	356	305	320
10b. Least circumference of diaphysis	62!	70	67	65	69	65	58	68	69	68	68	63	76	70	67	70	74	70	63	72	70	72	61	62
8a. Greatest sagittal diameter	27	31	31	30	32	28	26	30	32	33	30	28	36	35	28	33	34	33	27	32	—	31	29	29
9a. Transverse diameter	19	21	20	20	20	21	18	21	25	20	18	21	23	23	22	21	24	21	22	20	—	24	19	20
HUMERUS																								
1. Greatest length	292	284	270	263	302	291	276	272	276	273	288	261	300	264	260	270	267	288	282L	281	—	313	369	280
7. Least circumference of diaphysis	53	58	56	54	54	55	45!	57	58	58	52	53	62	59	48	55	57	57	53	55	—	58	55	52
5. Greatest diameter of middle of diaphysis	21	23	21	20	20	20	18	22	24	24	20	21	23	22	18	20	21	22	21	20	—	22	22	20
6. Least diameter of middle of diaphysis	14	15	16	15	14	14	11	17	15	16	14	15	17	17	14	16	16	15	14	15	—	16	15	14
RADIUS																								
1. Greatest length	219	207	202	202L	(215)	215	197	197	221	215	224	197	220?	194	188	200	200	203	216L	208	—	230	207	203
5. Sagittal diameter of diaphysis	14	14	15	12	—	13	13	15	15	15	14	14	16	14	13	14	16	16	15	14	—	15	14	13
4. Transverse diameter of diaphysis	10	11	11	8	—	9	8	10	10	10	10	9	11	9	9	10	10	10	9	10	—	10	10	9
ULNA																								
1. Greatest length	228	233	222	222L	235	238	223	233	242	233	240	226	251	213	208	221	226	228	234L	222	—	251	227	223
14. Upper sagittal diameter	24	24	22	23	20	21	22	23	23	23	22	22	26	22	20	23	24	24	24	23	—	23	20	12
13. Upper transverse diameter	18	17	15	15	17	18	12	17	19	17	16	17	18	16	17	18	18	19	16	18	—	17	14	15

*Excavations of N. N. Dikov

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(Abbreviations can be found at the end of the References)

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ABBREVIATIONS

AN—Akademiia nauk [Academy of Sciences].

IE—Institut etnografii [Institute of Ethnography].

KSIE—Kratkie soobshcheniia instituta etnografii [Brief Reports of the Institute of Ethnography].

KSIMK—Kratkie soobshcheniia Instituta istorii material'noi kul'tury [Brief Reports of the Institute of the History of Material Culture].

RGO—Rossiskoe geograficheskoe obshchestvo [Russian Geographical Society].

SA—Sovetskaia arkheologiia [Soviet Archaeology].

Sb. MAE—Sbornik muzeia antropologii i etnografii [Journal of the Museum of Anthropology and Ethnography].

SE—Sovetskaia etnografiia [Soviet Ethnography].

SO—Sibirskogo otdeleniia [Siberian Division].

SSSR—Soiuz Sovetskikh Sotsialisticheskikh Respublik [Union of Soviet Socialist Republics---USSR].

SVKNII—Trudy Severo-Vostochnogo kompleksnogo nauchno-issledovatel'skogo instituta [Works of the Northeast Interdisciplinary Scientific Research Institute].

QUADRANT ALPHABET

The excavators often use letters in the Cyrillic alphabet as designators. Since it has more letters than does the Roman alphabet, letters had to be added. Below are the correspondences. (For those who may read *Drevnie kul'tury aziatskikh eskimosov* by Arutiunov and Sergeev, be alerted that this alphabetical correspondence is slightly different).

! = A

= B

% = C

' = D

) = E

+ = F

/ = G

1 = H

3 = I

7 = J

9 = K

; = L

= = M

? = N

A = O

C = P

E = Q

G = R

I = S

K = T

M = U

O = V

Q = W

S = X

Y = Y

J = Z

_ = AA

a = BB