PANSKOYE I

VOLUME 1

ARCHAEOLOGICAL INVESTIGATIONS IN WESTERN CRIMEA

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(Eds.)

PANSKOYE I

Volume 1

The Monumental Building U6

Text

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PREFACE

This volume is the first of a series of three volumes presenting the results of the excavations at Panskoye I, a settlement in north-western Crimea. This volume contains the results of the excavations of the so-called monumental building U6, one of several such building complexes forming the larger part of the settlement. Volume 2 will deal with the necropolis adjoining the settlement, and volume 3 with its remaining building complexes, including U7, which was originally laid out as a fortress with four rounded corner towers. Altogether the site was only settled during a comparatively short time span – from *c.* 400 B.C. to around 270 B.C. During its first *c.* fifty years of existence the settlement apparently formed part of the *chora* of Olbia, but after being destroyed around 350 B.C. it was included in the *chora* of the rapidly expanding city of Tauric Chersonesos.

The excavations at Panskoye I form part of a large-scale archaeological landscape study of the coastal zone of north-western Crimea carried out by the so-called Tarkhankut Expedition since 1959. This project is presented in the Introduction.

This volume is the result of joint efforts of members of the Institute of the History of Material Culture, Russian Academy of Sciences, St Petersburg, and of the Institute of Classical Archaeology, University of Aarhus. In 1994, a collaboration between these two institutions resumed the excavations at the site, which had been discontinued in 1990 due to lack of funding. The new joint expedition was financed by INTAS, for whose sustained support we shall always remain grateful. Without the opportunity which the creation of this organization offered us, we could never have inaugurated this joint effort. Originally we planned a continuation of the fieldwork for at least three years, but the political situation in the Crimea prevented us from carrying out this plan. However, what in the spring of 1995 seemed like a serious set-back, soon turned into a benefit from a scientific point of view, because it forced us to turn our efforts to the publication of the huge body of information and material that had been collected since 1969, a task with which the team has been involved since 1996.

Apart from INTAS, other foundations and institutions have supported our work throughout this long period. Thus the Danish team received support from the Novo-Nordisk Foundation, and both teams from the Faculty of Humanities of the University of Aarhus and the Research Foundation of the University of Aarhus, without whose support we could not have finished this first volume.

In autumn 2000 the newly created Danish Centre for Advanced Studies in the Humanities generously offered a one-year grant to Lise Hannestad and Vladimir Stolba – an opportunity for intensive collaboration in the last phase of the work and the editing of this volume. Printing costs have been covered by the Danish Research Council for the Humanities and the Research Foundation of the University of Aarhus. We are truly grateful to all these institutions. In the coming years the recently established Danish National Research Foundation's Centre for Black Sea Studies at the University of Aarhus will support the continued work on volumes 2 and 3.

Many people have kindly assisted us, among them colleagues in our institutes who have offered advice and encouragement. We owe a very special thanks to Alexei Gilevič for translating the Russian manuscripts into English, to Julian Ward and Patricia Lunddahl for the

huge task of correcting respectively our 'Russian' and 'Danish' English. Aarhus University Press, its former director Toennes Bekker-Nielsen and its present director Claes Hvidbak, assisted by their staff, including Mary Lund and Anette Juul Hansen, have undauntedly undertaken the publishing of a manuscript of this size and complexity. During the excavation campaigns S. Il'in and T. Oznobišina assisted with the architectural measuring of U6, and M. Agoranjan, M. Kazanceva, and T. Eršova with the photographing and drawing of the finds. Restoration of artefacts was carried out by O. Plamenevskaja and N. Chvoščinskaja (pottery) and I. Bogdanova-Berezovskaja (metal, glass). Drawings of finds and figures for this volume were prepared by the authors (S. Kašaev, S. Monachov, E. Rogov, V. Stolba, A. Ščeglov) and O. Andreeva.

Lise Hannestad Vladimir F. Stolba Alexander N. Ščeglov

INTRODUCTION

Alexander N. Ščeglov

Before we consider the material from the excavation of building U6, a brief report on the research project of the Tarkhankut Expedition will be presented, together with a general characterisation of the settlement of Panskoye I and its necropolis, as well as of the surrounding palaeolandscape and modern landscape.

THE TARKHANKUT EXPEDITION

The expedition attached to the Chersonesos Museum of History and Archaeology (now, the National Historical and Archaeological Park of Tauric Chersonesos, in Sevastopol) was launched by the author in 1959. At the outset, the foundation and financing of the Expedition were supported by I.A. Antonova, then Director of the Museum; S.N. Bibikov, Director of the Archaeological Institute of the Ukrainian Academy of Science, and a well-known expert on the Palaeolithic period; and P.N. Schulz, then the Director of the Crimean branch of the same institute. In 1969 the Expedition was transferred to the Leningrad Division of the Archaeological Institute of the USSR Academy of Science (in 1991 renamed the Institute of the History of Material Culture of the Russian Academy of Sciences, St Petersburg).

The idea of launching an expedition to study the north-western Crimea, which at the time still remained a *tabula rasa*, first occurred to me in 1958 during an inspection of some ancient coastal town-sites carried out jointly with my teacher P.N. Schulz, who first discovered and described these sites. During this brief expedition the main questions were formulated that were to form the basis of the first stage of investigation of the sites of this region.

During this first stage (1959-1968), the programme of investigations comprised examination of the hypothesis proposed by P.N. Schulz after his archaeological surveys of 1933-1934. The hypothesis concerned a synchronous expansion of the Chersonesos Greeks and Crimean Scythians towards the western coasts of the Crimea in the 3rd and 2nd centuries B.C.; this expansion resulted in the simultaneous appearance of maritime Greek (Chersonesean) and Scythian fortresses that 'seemed to stand in confrontation to each other'.[1] This hypothesis eventually became a generally accepted theory. Indeed, many scholars considered it an axiom. Several general historical models based on it (without any archaeological investigation in the field, however) appeared during the late 1940s and 1950s, by way of explaining certain peculiarities of the historical process not only in the western Crimea but also in the south of Eastern Europe in the second half of the first millennium B.C. and the beginning of the first millennium A.D. These theories considered the problems of nomadism in the 'Scytho-Sarmatian' period; Late-Scythian culture; the history of the development of Scythian society; and Graeco-Scythian relations in the northern Black Sea area.[2]

However, the theory of opposing Greek and Scythian fortresses (which was put forward only very cautiously by its author) had first to be tested by carrying out largescale regional, archaeological, and landscape researches; mapping the sites, and studying their stratigraphy; and establishing the typology and chronology of settlement sites. The first ten years were devoted to these tasks.

After the accomplishment of the regional project had brought fairly representative results, it was decided to limit the studies to an archaeological investigation of only the Greek (Chersonesean) settlement system in the territory of the western Crimea. Such an approach, it seemed, would make possible a thoroughly exhaustive study of the spatial structure of a particular type of Greek state – a peripheral Doric *polis* as represented by Chersonesos. The project therefore focused on stationary excavations of those sites that could be considered as the most representative ones.

THE STRUCTURE OF THE TARKHANKUT EXPEDITION

The structure of the Expedition varied according to the objectives that were set before it. In the first stage, when the main task was a regional study of a vast territory, the team included a Surveying Detachment (1959-1968), a Palaeogeographic Detachment (1959-1968), an Archaeological and Geophysical Detachment (1963-1964), and a Detachment that during the period 1960-1967 conducted the stationary excavations. Beginning in 1969, when the project concerned with the Greek sites alone was initiated, the detachments that carried out permanent excavations became the most important ones; they included the teams that, since 1969, have excavated the settlement (Panskoye I) and the kurgans (the necropolis of Panskoye I), and also those detachments that worked on the other shore of the lake (1978) and on the sites of Bolshoi Kastel (1983-1987) and Ğangul (1983-1984). In 1994 a team from the University of Aarhus headed by L. Hannestad took part in the work. In addition, the Palaeogeographic Detachment (1969-1973), the Geophysical Detachment (1970-1980), and the Surveying Aero-topographical Detachment (1979-1985) pursued other studies associated with separate projects.

It should be specially noted here that the project was carried out in close co-operation with specialists from different fields of scholarship and from various scientific institutions. Otherwise the projected programme of research could not have been achieved. I welcome the opportunity to mention the contribution made in different years by the following archaeologists: G.M. Kutykina (Nikolaenko) and O.Ya. Savelja (assistants at the Chersonesos State Museum); N.K. Belaja, E.Ya. Rogov, V.F. Stolba, M.Yu. Vachtina, Yu.A. Vinogradov (LOIA – The Leningrad Division of the Institute of Archaeology of the USSR Academy of Science, now IIMK – The Institute of the History of Material Culture of the Russian Academy of Science); O.Yu. Bogoljubova, A.M. Gilevič, I.I. Saverkina (The State Hermitage Museum); A.V. Gadlo (The Leningrad / St Petersburg State University); and E.V. Jakovenko (The Chernigov Pedagogical Institute); I must mention, too, the geographer N.S. Blagovolin (The Institute of Geography of the USSR Academy of Science, Moscow); V.I. Kac, an expert in ceramic epigraphy (The Borisoglebsk Pedagogical Institute, The Saratov State University); the archaeologist and ceramist S.Yu. Monachov (The Saratov State University); the geophysicists K.K. Šilik (LOIA), G.A. Vnučkov (The Institute of the Magnetism of the Earth, Ionosphere and Propagation of Magnetic Waves, Moscow), V.V. Glazunov (The Mining Institute, St Petersburg), T.N. Smekalova (The Institute of Physics of the St Petersburg State University); the experts in geophysical equipment A.P. Naumov and I.S. Chasiev (The D.I. Mendeleev All-Union Institute of Metrology, St Petersburg); K.V. Šiškin, a topographer and expert in deciphering aerial photographs (The Institute of Archaeology, Moscow); as well as many other assistants.

The laboratory-processing and studies of the archaeological materials (pottery, glass, coins, and art objects) were carried out in the first years in the Chersonesos Museum and

later in various laboratories of the LOIA/IIMK of the Russian Academy of Science and the State Hermitage. The palaeobotanic material was investigated in collaboration with a group of experts from the All-Union Scientific Research Institute of Plant-Growing (VIR, Leningrad) headed by M.M. Jakubciner (identification of cereal seeds) and G.N. Lisicina (identification of wooden remains) from the Institute of Archaeology of the USSR Academy of Science (Moscow). From 1969 the study of the plant remains was conducted by Z.V. Januševič and N.N. Kuz'minova (The Botanical Gardens of the Moldavian Academy of Science, Kishinev), and O.S. Čavčavadze (The Botany Institute of the Russian Academy of Science, St Petersburg); in recent years this work has been carried out by G.A. Paškevič (The Institute of Archaeology of the National Academy of Science of Ukraine, Kiev). Osteological finds were identified by N.N. Ščerbak, O.V. Topačevskij and A.S. Umanskaja (The Institute of Zoology of the Ukrainian Academy of Science, Kiev), and by A.K. Kasparov (IIMK of the Russian Academy of Science). The ichthyofauna was studied in co-operation with B.D. Burdak (The Institute of Biology of the South Seas, Sevastopol).

During the thirty-five years of the Expedition project's existence, a huge amount of work has been done by students of the Department of Archaeology, the Department of the History of Ancient Greece and Rome, and the Department of Classical Philology at St Petersburg State University, and by students of the Historical Faculty of the Saratov University, who did their field archaeological training with the Expedition. Much of the architectural measuring was done by students of the architectural faculties of the I.E. Repin Institute of Painting, Sculpture, and Architecture (Academy of Arts, St Petersburg) and of the Leningrad Institute of Building Engineering. The geophysical studies were carried out mainly by students and post-graduates of the Department of Geophysics of the Leningrad/St Petersburg Mining Institute and St Petersburg State University. For many of the students and post-graduates the material obtained became the basis of their diplomas or theses.

REGIONAL PROJECT 'NORTH-WESTERN CRIMEA'

The regional studies of 1959-1968 comprised the area of western Crimea that stretches about 250 kilometres along the sea coast from the city of Chersonesos as far as the Bakal Spit and up to ten kilometres inland (Pls. 1-4, *1*). The methods and techniques used for the study, together with surface surveys and excavations at certain selected sites that will be mentioned below, also included: study of aerial photographs and visual observations from the air; palaeogeography and geomorphology; palaeobotanics; and archaeological and geophysical field mapping of buried buildings by electrical profiling, *etc.*[3]

Besides studying the topography of the settlements, fixing them on maps, and identifying their typological peculiarities, special stratigraphical test trenches were laid out that complemented the maps based on surface observation. This enabled us to obtain comparable stratigraphical profiles for the whole area studied. The regional search activities were combined with long-term excavations that were to prove or disprove the data observed before the excavations. Between 1960 and 1966 the expedition team excavated a small Scythian fortress of the 2nd century B.C.-2nd century A.D. that had been erected in the place of a former Chersonesean settlement at the settlement-site of Tarpanchi in the centre of the southern coast of the Tarkhankut Peninsula.[4] In 1963-1966 a Greek (Chersonesean) farmhouse near the Bay of Vetrenaya was excavated.[5] In 1963 excavation of the previously surveyed settlement-site of Belyaus was initiated jointly with the South-Donuzlav Expedition of the Archaeological Institute of the USSR Academy of Science (O.D. Daševskaja).[6] This latter settlement original-

ly arose as a Chersonesean fortress formed from a block of fortified one-towered farmhouses. After destruction of the Chersonesean fortified settlement its ruins were used for building a Scythian fortress in its place.

The working programme of the Expedition comprised components of archaeological and landscape study aimed at obtaining material for the reconstruction of the natural and cultural (anthropogeneous) landscapes in the historic period. To that end, observations were begun in 1960 to evaluate the character and rate of erosion of the seashores at the places where ancient settlements had been situated. The Archaeological and Palaeogeographical Detachment of the Expedition carried out a geomorphological investigation in north-western Crimea, and on the basis of archaeological data conducted an evaluation of relative changes in the land and sea levels during the historic period.

The most interesting results obtained during this period concerned the discovery and investigation of traces of ancient land-tenure in north-western Crimea, which had previously been considered uninhabited. In 1962 the remains of a Greek land plot of the 4th-early 2nd century B.C., with traces of vineyards and orchards were discovered for the first time near the Cape of Oirat (Uret). The site was in a unique state of preservation for the Greek Mediterranean and Black Sea area.[7] In the same year remains of ancient Greek land lots and a farmhouse of the 4th century B.C. (date of origin) were found near the Bay of Vetrenaya, and during the following two years traces of the Greek cadastral system were discovered in different places in the vicinity of the Bay of Ak-Mechet (or Bay of Chernomorskoye or Uzkaya) on the north-western and southern coasts of the Tarkhankut Peninsula.[8] In 1966-1967 traces of the cadastre were revealed by means of aerial observation in other coastal areas of north-western Crimea.[9]

The first palaeobotanical and osteological material to be obtained from the region for laboratory and experimental studies later enabled us to change radically our previous ideas on the ancient natural and cultural landscapes of the steppe of north-western Crimea. Analysis of carbonised wood remains from hearths and combustion-sites, in combination with other signs, indicated that in the first millennium B.C. considerable areas of woodland and shrubs existed in the present semi-desert steppe regions.[10] In 1960, by means of X-ray analysis of hand-made pottery produced on the site, it was first established that vines were grown in 4th-3rd centuries B.C on the southern coast of the Tarkhankut Peninsula – just in the very locality which had hitherto been considered by botanists and soil scientists as quite unfit for cultivating this plant species.[11] Excavations and surveys subsequently confirmed this conclusion through a number of convincing examples. Detailed research and identifications of species enabled us later to recognise the basic composition of the cultivated plants that had constituted the bulk of the crops and thus of the economy of the region. Moreover, an experiment carried out in the Chersonesos Museum made it possible to reconstruct the weight of the Tarkhankut wheat (one hectolitre equalled 74.7 kgs). This data corresponded with the information provided by Pliny on the weight of Chersonesean wheat (NH XVIII, 66).[12] Osteological analysis brought information on the wild and domestic fauna; consideration of fish bones and scales found during the excavations enabled us to form an idea of the ancient fishery, the composition of fish stocks, and, indirectly, of the temperature profile of the sea.[13]

The results of the first stage of the project made it possible to determine a number of regularities in the stratigraphy and chronology of sites in the north-western Crimea in the period from the 6th century B.C. to the 3rd century A.D. The development of a new typology for the settlements became possible. In addition, data were obtained for a reconstruction of the ancient landscape, the main branches of the economy of the region, and its economic relations. Material was also gained for study of the spatial, social, economic and ethnic structures of the

settlements and of the traditions and innovations in their cultural development. On the basis of this material a new periodisation of the history of north-western Crimea was established that was related to the history of one of the most significant Greek settlements in the Black Sea region, *i.e.* the *polis* of Chersonesos and of its relations with local tribes of Taurians and the Late-Scythian kingdom in the Crimea.[14] Here is a brief summary of the results achieved:

1. The hypothesis of P.N. Schulz proposing the simultaneous appearance of Chersonesean and Scythian fortified settlements in north-western Crimea proved to be erroneous, having been based on superficial studies of the settlements. In fact two consecutive stratigraphic levels were identified in the whole area: the earlier – Greek (second half of the 4th-3rd century B.C.) and the later – Scythian (from the end of the 3rd or early 2nd century B.C. to the 2nd/3rd century A.D.). Each of these levels consisted of a number of consecutive layers, with corresponding building remains.
2. The material of the first stratigraphic level suggests with a high degree of probability, that Greek fortresses (including Kalos Limen) and fortified and unfortified rural settlements of different types, including isolated farmhouses, were built in evidently previously uninhabited coastal sites during the first chronological period (second half of the 4th-first half of the 3rd century B.C.). The predominance of Chersonesean pottery and the system and technique of construction characteristic of Chersonesos (just as had been supposed by P.N. Schulz for the settlements described by him) seemed to be connected with the activities of the Chersonesean Greeks. All the evidence mentioned suggests that an intensive territorial expansion of Chersonesos into north-western Crimea occurred probably in the second half or last third of the 4th century B.C. In the course of that expansion it is likely that Chersonesos subdued Kerkinitis and mastered a vast tract of maritime territory in north-western Crimea. The land was divided into lots according an orthogonal (Hippodamian) system – in the same way as the land in the close vicinity of Chersonesos itself, on the Herakleian Peninsula in south-western Crimea. No Scythian settlements had existed in the region under consideration.

   The material obtained enabled us to identify the flat country in north-western Crimea as the region mentioned in Chersonesean inscriptions (*IOSPE* I^2 318, 401), as forming part of the territory (χώρα) of Chersonesos called 'the plain' (πεδίον). The fortresses (τείχη) subject to Chersonesos were located in that territory. According to the inscriptions, grain was grown and vineyards existed on 'the plain'. This fact has been confirmed by the discovery of a cadastral system of a typically Chersonesean structure with fields and vineyards, as well as by palaeobotanic data which suggest that cereals and vines were the main agricultural species in the region.
3. All Late-Scythian fortresses in north-western Crimea appeared at the turn of the 3rd-2nd or in the first half of the 2nd century B.C. on the sites of destroyed and burnt-down Greek fortified settlements. Typologically these fortresses are very close to the Late-Scythian settlements in the Lower Dnieper regions. The culture of the fortresses may be considered a local variety of the Late-Scythian culture. The majority of the fortresses in the north-western Crimea perished during a total devastation in the late 1st or at the turn of the 1st-2nd century A.D.; probably only some of them survived till the 2nd-3rd century A.D.

The new data obtained by the Expedition demanded a revision of those historical models that were based on P.N. Schulz's hypothesis. Subsequently I made an attempt at a new interpretation of the evidence.[15] This interpretation was based largely on then prevailing ideas on the development of Scythian culture and society. According to this hypothesis the steppe-dwelling Scythians of the Dnieper transferred their main centres to Crimea in the 3rd century

B.C. under pressure from the Sarmatians, thus endangering Greek states. Hence, it seemed probable that the Scythians' intention of occupying the prosperous maritime territory of north-western Crimea was the direct cause of the conflict between Chersonesos and the Scythians. The results of the regional studies suggested that Chersonesos possibly lost its territorial possessions after a long period of Scytho-Chersonesean wars in the 3rd-2nd century B.C. The apogee of those wars fell towards the end of the 2nd century B.C. when an expeditionary corps of Diophantes – a general of Mithridates VI Eupator – was acting on behalf of Chersonesos (*IOSPE* I^2 352).

However, notwithstanding that the above-noted chronological and typological schemes have stood the test of time, my hypothesis on the character of Scytho-Chersonesean relations is now out of date. The results obtained during the subsequent one and half decades of the 'Chersonesean territory' project demand a revision of my views. The new interpretation, which I have reason to hope is more accurate, will be briefly presented below.

PROJECT: 'STUDY OF THE CHERSONESEAN TERRITORY (CHORA) IN THE WESTERN CRIMEA'

In the second stage of the Expedition, initiated in 1969, verification and a detailed working out of the chronological scheme previously developed were carried out. The regional research and palaeogeographic studies were proceeded with (Pl. 4, *3)*. However, the focus of the project became a more detailed archaeological investigation of the *chora* of Chersonesos as one of the structural elements of the Greek colonisation in the Black Sea area. This objective was achieved through long-term excavations at some previously selected 'clean' Chersonesean sites – the ones that had not been disturbed by Late-Scythian fortresses. The main targets for excavation in this period became the settlement and necropolis of Panskoye I (1969-1994);[16] Panskoye III (1978)[17] – an unfortified farmhouse of the 4th-early 3rd century B.C.; a 4th-2nd century B.C. one-towered fortified farmhouse typical of Chersonesos in the Bay of Bolshoi Kastel (1981-1986); and the remains of a sanctuary of the 2nd century B.C. in the *urochishche* (isolated forest-steppe area) of Ğangul (1983-1984).[18] Special attention was paid to the search for and investigation of the remains of the Greek cadastral system in the north-western Crimea (1980-1985); the study of the cadastral system in the south-western Crimea – in the close vicinity of Chersonesos itself – also continued. This was done by means of analysis of aerial photographs and by surface surveys (1980-1996). It was in those years that a large land-division system occupying an area of more than 100 square kilometres in the western part of the Tarkhankut Peninsula was identified (Pl. 4, *2*), and the mapping of the cadastral system on the Mayachnyi Peninsula was completed. The results of these projects constituted one part of the material for compiling an archaeological and topographical atlas of the western Crimea.[19] Between 1970 and 1980 were conducted archaeological and geophysical experiments concerned with the application of remote sensing methods for studying the layout of buried structures and the physical properties of cultural deposits before, or without any, excavation.[20]

On the basis of the material obtained through these projects, the following more precise historical model may be proposed. At the turn of 5th-4th century or at the very beginning of the 4th century B.C., new settlements appeared on the coasts of the north-western Crimea, founded by representatives of the Ionian Greek culture that came, most probably, from the Lower Bug regions (from Olbia or its surroundings). It seems that during this period Kerkinitis and the entire north-western Crimea belonged to the sphere of Olbian economic interests. However, about the middle of the 4th century B.C., following the territorial expansion

of the Doric Chersonesos, this territory became a part of the latter. The archaeological evidence suggests an aggressive character in that expansion and possibly even a military conflict between Chersonesos and Olbia. A second stage of intensive Chersonesean colonisation of the region belongs to the last third or quarter of the 4th century B.C.[21]

A combined consideration of the archaeological sources and some important Chersonesean inscriptions (*IOSPE* I^2 401; Solomonik 1984) enabled me jointly with Yu.G. Vinogradov to suppose as already suggested by V.V. Latyšev (Latyšev 1909) that at the turn of 4th-3rd century B.C. certain political disturbances occurred within the Chersonesean state that resulted in splitting the society in two. Even a degree of military conflict between the two parties cannot be ruled out. It is just during this period that the desertion of the isolated farmhouse of Panskoye III took place, as well as the fortifying of house U13 with a tower built into one of the rooms.[22]

It has been reliably established that in the first third or quarter of the 3rd century B.C. there took place a total devastation of every one of the Chersonesean settlements in the north-western Crimea, including Kalos Limen (the town-site of Chernomorskoye = Ak-Mechet) and the town of Kerkinitis. If one compares this occurrence with similar and synchronous events in other regions of the Black Sea area (the Eastern Crimea; regions of the Lower Bug and Lower Dniester; territories that made up part of Bosporos; Olbia, and, possibly, Nikonion) as well as with the sudden disappearance of the north Black-Sea steppe Scythian culture from the historical scene, it becomes evident that my previous supposition of a prolonged Chersonesos-Scythian conflict in the 3rd-2nd centuries B.C. is not justified. The hypothesis most probable for the present is that the destruction of rural territories of Chersonesos and other Greek states in the Black Sea area as well as the disappearance of Scythian culture of the Dnieper and Crimea must have been due to the crushing incursion and ensuing devastation of Scythia as so vividly though briefly described by Diodorus (II, 43).[23]

The settlements of the north-western Crimea perished in fires in the early 3rd century B.C. and lay in ruins for a long time. Some of them (including Panskoye I) were deserted ever afterwards. However, in the second half or at the very end of the 3rd century B.C. many of these sites were occupied again (*e.g.* Bolshoi Kastel, Oirat, Chaika).

The final and total destruction of Chersonesean settlements in the north-western Crimea evidently occurred not later than the second quarter or half of the 2nd century B.C. This devastation is fairly well recorded in the material from excavations of the fortified farmhouse of Bolshoi Kastel and the sanctuary in the *urochishche* of Ğangul. The appearance of Late-Scythian fortresses belongs to the same period, and these fortresses were built on the ruins of the former Chersonesean fortifications. Probably it was during this period that Chersonesos lost its territories in the north-western Crimea. Thus, according to the archaeological evidence, the appearance of the Late-Scythian sites is not to be dated to the earlier period. This fact, in its turn, demands a new look at the questions concerning the emergence of the Late-Scythian culture in Crimea and the rise of the Late-Scythian kingdom.[24]

THE SETTLEMENT OF PANSKOYE I AND ITS SURROUNDINGS

The Archaeological and Geographical Micro-Region near the Bay of Yarylgach: the Modern and Ancient Landscapes

The steep north-west coast of the Tarkhankut Peninsula, washed by the waters of the Bay of Karkinitis, presents an almost even contour. Along its whole length, it is collapsing and

receding under the influence of the sea. According to our observations over ten years, the erosion rate is extremely high. In some areas of actively eroding limestone cliffs, at the edge of which the ancient settlements are situated, it amounts to 7-12 centimetres per year.[25] At about the middle of the eroded coast, the shore line is breached, and here is a sizeable depression which forms the Bay of Yarylgach (otherwise Yarylgachskaya Bay) – the largest such bay on the Tarkhankut Peninsula. It cuts almost three kilometres into the land, while the distance across its entrance is three kilometres. In its interior the bay widens out to 4.4 kilometres. On the south-west and the east, the large but shallow salt lakes of Panskoye (the old name was Sasyk), Ğarylgach, and Olenye (Karlav) adjoin the bay, but are separated from it by barriers of sand and sea-shell accumulations. At the southern end a very shallow nameless lagoon, with a growing but not yet quite closed sand barrier, is connected to the bay (Pls. 4, *1* and 177-178).

The bay, together with the lake system and the territories surrounding it, forms a distinct micro-region – a landscape that covers a relatively small area (of not more than 50 square kilometres).

A low flat coastal plain, from two to four kilometres wide, covered with steppe surrounds the bay. From the south-east it is screened by a low flat-topped ridge – the Ğangul Rise (*Uval*) – reaching up to 130-140 metres above sea level, its rocky undeveloped soils overgrown by semi-desert vegetation. To the north-east of the Bay and Lake Ğarylgach there is the low Bakal Rise up to 50 metres above sea level, with chernozem soils covering its flat top. To the west the plain stretches for about ten kilometres, gradually rising along the foot of the Ğangul *Uval* as far as the Bay of Chernomorskoye (former Ak-Mechet or Uzkaya) – the Καλὸς λιμήν of ancient literary and epigraphical sources.

The plain is covered by fertile soils of the southern carbonate chernozem type formed on Tertiary limestones and partially on Quaternary limestones and loams. The land is now arable, and planted with modern cultivated crops (wheat, maize, and vines). Only some very small parcels (including the area of the settlement of Panskoye I and its necropolis), which have not so far been ploughed up, preserve remains of the virgin steppe vegetation.

The modern system of settlement in the vicinity of the Bay of Yarylgach differs in principle from the one existing in ancient times, which has been identified by excavations at archaeological sites. The modern settlement system was evidently formed before the end of the 18th century and was first recorded on early detailed Russian maps of this region. The Tartar villages, later Tartar and Russian ones (from the 19th century) and subsequently Russian and Ukrainian ones (since the 1960s), are situated (with only one exception) far from the seashore, on the slopes close to the foot of both the Ğangul and the Bakal *Uvals* (Pl. 178). Such a tradition, which was not violated till the 1960s, arose in the first place from a local economy based mainly on pasturing (sheep-rearing) in the conditions of an arid steppe zone with only insignificantly developed agriculture. It is noteworthy that even the intensive development of arable farming in the 20th century has not changed the traditional settlement system very much. However, this fact finds other explanations that are beyond the scope of our consideration.

By contrast, the ancient (Greek) settlement system was closely connected with the sea coast and the shores of the lakes, one of the settlements (Panskoye IV) having been found at the bottom of the lake bearing the same name (Pl. 179, *A*). Such a situation enabled us to suppose, that not only the economic and cultural character of the inhabitants of the plain (*i.e.* Greek settlers) but also the type of the natural landscape was of importance in the ancient settlement system. The test of this inference necessitated carrying out a special archaeological and palaeogeographical study of the immediate vicinity of the settlement of Panskoye I

out with the aim of reconstructing the ancient natural and cultural landscapes. The data obtained in the course of previous researches was also used during this study.

Lake Panskoye (Sasyk) is about 4.5 kilometres long from west to east, and about 1.0 to 2.15 kilometres wide; its area is about 4.5 square kilometres. The maximum depth is 1.1-1.2 metres. It is separated from the Bay of Yarylgach by a barrier of sand and sea-shell accumulations about 150 metres wide. The water level of the lake was in former times higher than the sea level in the bay, varying in different years from 0.2 to 0.4 metre above that of the sea. But in the early 1970s, when the construction of a sea port began, a channel was dug through the barrier. After this the water level in the lake naturally sank and became equal to that of the sea.

The first geological and limnological description of Lake Sasyk (Panskoye) and its surroundings was made by A.I. Dzens-Litovskij in 1933.[26] In 1945 the Bay of Yarylgach was studied by the oceanologist V.V. Longinov as a member of the expedition of The Institute of Oceanology, Academy of Science of the USSR, directed by V.P. Zenkovič.[27] At the very end of the 1950s, the region of Lake Panskoye was investigated by the geographer P.D. Podgorodeckij.[28] His researches revealed that the Bay of Yarylgach and the lakes adjacent to it were formed as a result of ingress of the sea, in the course of which the water submerged the mouths of *balkas* (gullies) situated along the axis of the synclinal depression. The axis of the syncline passing through lakes Panskoye and Ğarylgach is practically parallel to the Kara-Burun anticlinorium (the Ğangul Anticline).

The geological, limnological, and oceanological studies mentioned above were not linked together in one project, and for that reason a number of major problems remained unsolved. These problems are related to the *causes* of the ingression and the subsequent genesis of the bay, lakes, and sand barriers, as well as to the absolute chronology of the events.

One hypothesis, first grounded by A.I. Dzens-Litovskij, explains the formation of the bay and lakes by vertical tectonic movements – a lowering of a wing of the Kara-Burun anticlinorium. According to P.D. Podgorodeckij, some areas of the eroding shore of Lake Panskoye show a continuous sinking of the land. However, V.V. Longinov did not find any traces of synclinal sagging in the mouths of the submerged *balkas*. He came to the conclusion that the bay, lakes, and sand barriers between them were formed not as a result of a tectonic sinking of the land but in the process of a rising of the sea level, the barriers not having shifted from their places since the time of their formation. V.P. Zenkovič did not consider the causes of the ingression in particular and was not concerned with the absolute chronology of the shore dynamics. However, he built the following model for the genesis of the bay and lakes: in the period when the sea level was 10-12 metres lower than the modern one, the bay was quite small and the lakes did not exist. Later, as the sea level rose because of tectonic or eustatic factors, the sea flooded the synclinal vales, and it was in their places that the lakes separated from the bay by barriers were formed. It should be noted that, based on observations in the Bay of Karkinitis, the value mentioned (equal to minus ten or twelve metres according to the calculations of E.N. Nevesskij) corresponds to a time period of 3000-2500 years ago (or 10^{th}-5^{th} centuries B.C.) for the sea level. According to other evidence, the minimum level of the Black Sea occurs in the middle of the first millennium B.C. and corresponds with the so-called 'Phanagoria' Regression phase identified by P.V. Fedorov. Different scholars define this level as being from minus three-five (P.V. Fedorov, N.S. Blagovolin, A.N. Ščeglov) to minus nine-ten metres (A.B. Ostrovskij, K.K. Šilik) in relation to the modern sea level.

The divergences of opinion outlined above are explained to a certain degree by the fact that the archaeological objects found on the lake shores and at its bottom were not known to

the scholars concerned and hence reliable chronological reference points for the observed facts were not available to them. This compelled us to undertake a new series of archaeological and palaeolandscape research (*cf.* Appendix I):

1. Observations conducted since 1969 show that the erosion of the shores of Lake Panskoye diminished after the digging of the channel that connects the lake with the sea. The lake level has sunk and now corresponds with the bay level. As a result, some low-lying areas in the vicinity of the settlement of Panskoye I that had formerly been boggy or under water were drained; as also was the lagoon with an area of one hectare in the eastern part of the lake that had previously flooded and washed away a part of the settlement.
2. Geoacoustic research undertaken along two profiles across the Bay of Yarylgach and underwater visual observations revealed the edges of two submerged terraces at depths of -3 and -4 metres. They probably correspond to lower sea levels from the times when the bay shores lay about 150 and 300 metres respectively away from the modern ones, and the west side of the bay facing the sand barrier of Lake Panskoye was about 400 metres wide. The height of the edge of the second submerged terrace is over one metre.
3. A geophysical study of the beach barrier by resistivity surveys revealed the presence of two buried *balkas* cut into the bedrock. Subsequent drillings in the barrier and in the lake showed that in the north part of the lake two very deep *balkas* meet; the beds of these *balkas* are filled with silts, above which are the lake water and the bulk of the barrier. At the watershed between the *balkas*, 800 metres to the south-west of the settlement of Panskoye I and at a depth of about three metres, building stones, fragments of tiles, Chersonesean amphorae, and household pottery were found during dredging work. The material was found on the surface of the limestone bedrock in the lake silt deposits. The character of the finds indicates that there was an isolated structure here, probably a farmhouse (Panskoye IV) which can be dated summarily to the 4th-3rd centuries B.C.

Another farmhouse – that of Panskoye III (the 4th or the turn of 4th-3rd century B.C.) – was excavated by us on the north-west shore of the lake, 3.2 kilometres to the south-west of the settlement of Panskoye I. The coast here is subject to severe erosion. The remains of the house are located on the very edge of a small precipice, 1.6-2.0 metres high. Almost half of the house has been ruined in the course of modern erosion of the shore. Exploration of the bottom of the lake showed that at a distance of 10-12 metres from the eroded precipice and down to a depth of 0.6 metres there is a slightly sloping bench with an almost flat rocky surface; further down liquid silts begin. The maximum depth in the middle of the lake opposite to the settlement of Panskoye III does not exceed 0.9 metres.

A comparison of all the evidence led us to the conclusion that Lake Panskoye within its modern limits was formed some considerable time after the destruction of the settlements, the remains of which lie now on its shores and at its bottom. Thus, the lake took on its present shape much later than the 3rd century B.C. During the existence of the settlements, in the 4th-beginning of the 3rd centuries B.C., the sea level must have been at least five metres lower than the modern one, and possibly even more. The Bay of Yarylgach was narrower. Lake Panskoye did not exist: in its place there was a low coastal vale or a depression covered with fertile soils and crossed by two *balkas* joined at their mouths. One of the *balkas* stretched along the valley and along the axis of the synclinal lowering, the second ran across the syncline from south to north. It had its origin on the northern slope of the Ğangul *Uval*. The remains of the farmhouse Panskoye II lie on the slope of this *balka*, not far from where it falls into the south-west part of the lake, and on the right bank of the same *balka*, not far from the mouth, the settlement of Panskoye I was situated. The latter was the largest unit, and un-

doubtedly represented the centre of this agricultural oasis. Isolated rural houses (*e.g.* Panskoye II, III) were situated at the edges of Panskoye I and some including Panskoye IV were located within the valley. On the bottom of the lake, remains or traces of some other structures of the same type are likely to be found.

One may suppose with a fair degree of probability, that the mouths of the *balkas* were submerged and presented narrow bays or inlets of the ria type. It is possible that the barrier, though subsequently shifted seawards, already existed at the time. Probably it was not closed and ships could sail directly to the settlement of Panskoye I.

Thus it seems likely that the lake was formed as a result of the modern transgression, probably complicated by some slight tectonic movements. However, the submerging of the fertile maritime basin occurred after the catastrophic destruction of the settlements at the beginning of the 3rd century B.C. (Pl. 4, *3*).

There are reasons to suppose that in the 4th-early 3rd centuries B.C. the vegetation and climate in the micro-region under discussion differed from their modern counterparts.

Small areas of the Tarkhankut landscape that have not undergone long-term ploughing, are covered at present with typical steppe vegetation, or with a steppe vegetation transformed by many years of cattle pasturing. This applies to the territory of the settlement of Panskoye I and its necropolis as well as to a tiny plot of land near the settlement (or farmhouse) of Panskoye III. Here, there are numerous types of Lessing feather-grasses (*Stipa lessingiana* Trin. et Rupr.), hairy feather-grasses (*Stipa capillata* L.), Ukrainian feather-grasses (*Stipa ucrainica* P. Smirn.), as well as of Wallis fescue (*Festuca valesiaca* Schleich. ex Gaud.), couch-grasses (*Elytrigia elongata* (Host.) Nevski), crested wheatgrass (*Agropyron pectinatum* (Bieb.) Beauv.), Junegrass (*Koeleria cristata* (L.) Pers.) and other wild cereals. Motley grasses are represented by endemic Tauric asphodelinae (*Asphodeline taurica* (Pall. ex Bieb.) Kunth), wilting sages (*Salvia nutans* L.), flax (*Linum tauricum* Willd.), prickly *zopnik* (*Phlomis pungens* Willd.), Shrenk tulips *(Tulipa Schrenkii* Rgl.), steppe irises (*Iris pumila*), different species of *kermek* (*Limonium*), and cloves, as well as by some other ephemerae, ephemeroides, and perennial plants. Of subshrubs, among other species of wormwood, the Crimean wormwood (*Artemisia taurica* Willd.) is the most widespread. Thyme (*Thymus*) and astragalus (*Astragalus*) are also found. Along the banks of the lake, especially at the submerged areas of the settlement of Panskoye I, the salt-marsh plants are widespread. Here, *sarsazan* (*Halocnemum strobilaceum* (Pall.) Bieb.), saltwort (*Salicornia europaea* L.) and sea-blite (*Suaeda prostrata* L.) form continuous fields of red, crimson, and green with shoots of flowering lilac *kermek*, dove-coloured wormwood, and green warty goosefoot (*Halimione verrucifera* (Bieb.) Aell.). On the sand barrier between the bay and the lake, clumps of sea-holly (*Eryngium maritimum* L.) are widespread.

The vegetation covering the area of Panskoye I and its surroundings forms today one of the few unique natural floral landscapes still preserved in the Crimean steppe. However, it is not the original vegetation as is evidenced by the palaeobotanic data.

During excavations at the settlement of Panskoye I and its necropolis, charred and uncharred remains of wood from downy oak (*Quercus pubescens* Willd.), juniper (*Juniperus* sp.), and beech (*Fagus* sp.) were found. The same and some other deciduous species, except for the beech, have been reported from other synchronous Greek coastal settlements in the north-western Crimea. It is of importance that the samples consisted mainly of charcoals which had formed from small branches constituting hearth trash. Moreover, from the filling of a well dated to the first quarter of the 4th century B.C. at Panskoye I, seeds of wild vines (*Vitis silvestris* C.C.Gmel.) and stones of domestic olives (*Olea europea* L.) were recovered. At another ensemble dated to the turn of 4th-3rd century B.C. 27 fruits, evidently of wild oleaster, were found. Among the ethnopalaeobotanical material from excavations in the north Black Sea region, oleaster is here recorded for the first time.

The excavation evidence thus suggests that both trees and shrubs grew in the vicinity of Panskoye I as well as in other coastal areas of the north-western Crimea. Accumulations of the shells of garden and vineyard snails (*Helix vulgaris* Rassm.) often found in the cultural layers present a further indication of the existence here of tree and shrub biotypes. Hence, it is justifiable to suppose that the shallow fertile depression crossed by *balkas* and now lying under Lake Panskoye (Sasyk) had a forest-steppe landscape formed by plant species of Sub-Mediterranean type. This fact allows us to form an idea about the climate (microclimate?) of the basin under discussion.

The climatogram of the genus of *Vitis* indicates a monthly minimum average temperature of -4°C for January. The olive-tree is also adapted to a climate with warm moist winters and hot dry summers. Its climatogram has an average index equal to -3°C for January. For the growth of such heat-loving trees as beech and downy oak, too, a warmer and moister climate than the modern one is necessary. One of the factors influencing the spread of beeches is an average annual precipitation that must exceed by 100 millimetres the modern level for the Tarkhankut Peninsula. A southern plant such as oleaster is distinguished by its drought- and salt-resistance and its adaptability to both heat and cold: it grows well in low, saline places. In our case, it may be supposed that thickets of oleaster were widespread in the immediate vicinity of the settlement, along the banks of branches of the Bay of Yarylgach, and possibly even within the settlement itself.

These facts suggest that the climatic conditions in the agricultural micro-region under discussion – the fertile depression on the site of the modern Lake Panskoye – were very favourable in the 4th and at the beginning of the 3rd century B.C. The average temperature in January, according to the above-mentioned data of the climatograms of plants must have exceeded the modern temperature by approximately 3°C. It seems likely that during the whole period of the existence of the Greek settlements there were mainly mild winters and, possibly, rather lower summer temperatures compared with the modern ones.

THE SETTLEMENT AND NECROPOLIS OF PANSKOYE I – A BRIEF DESCRIPTION

General Topography, and State of Preservation

The settlement is located in the north-western sector of a low, flat, narrow isthmus that protrudes in the form of a cape into the Bay of Yarylgach between Lakes Panskoye and Maloye Solenoye. The isthmus is 600-800 metres wide. Almost the whole of it is now ploughed up. The settlement lies on the limestone bedrock shore of a shallow boggy lagoon separated from Lake Panskoye by a narrow secondary barrier of sand and shell-accumulations (Pl. 177). The axis of the settlement lies from north-west to south-east. Its length is about 300 metres and its preserved width is about 170 metres. The entire extent of the settlement is about four hectares; however, traces of intensive building are discernible over an area of only 2.8 hectares, the northern and south-western parts of the settlement (that is approximately two hectares more) having been submerged or turned to bog by the lagoon waters (Pl. 5). The cultural layer and virtually all remains of any buildings that stood on the ground now occupied by the lagoon have been washed away and destroyed both by the rise of the waters of the lake and by the fluctuations in their level related to the processes of the shore erosion. Of the buildings that were located within the lagoon area, only some remains of the walls of house U14, and some remains of house U13, half destroyed by erosion (Pl. 6), have survived.

There is an ancient road running along the north-east side of the settlement. Such remains of it as may be traced in the ground are preserved in the area that has never been

under the plough. The road starts on the cliff directly above the shore of the bay (an additional evidence of the marine ingression) and runs south-west in a straight line. An analysis of aerial photographs has enabled us to trace its course even further, for almost two kilometres, through a field that has been ploughed up for growing cereals. For part of its length it runs near and parallel to a modern field road.

Beyond the road lies a necropolis with both kurgans and unmounded graves. It stretches alongside the road as a strip 230 metres long and 150 metres wide (Pls. 5 and 6). In an area of about 3.5 hectares there is a dense accumulation of kurgans varying in height from ten centimetres to two metres. They form groups in the shape of clusters and chains, and number over 60 visible burial mounds which have also been documented by aerial photography. There is another small and separate group consisting of four kurgans 200 metres south-east of the main area. Probably there was a necropolis with unmounded graves located between the two groups of kurgans. But the fact that the land in this area is in constant cultivation has prevented us from checking this conjecture.

The settlement, the remains of the road, and the necropolis present a single archaeological ensemble and the main elements of a non-urban type of community. Considering the strictness of the layout and the size of this settlement, it was quite possible to suppose, even before excavations commenced, that it had no parallels in the *chora* of any Greek colonial settlement either in the Black Sea area or in the Mediterranean. It was clear that we had come across a settlement of a new type, and moreover, a settlement and necropolis that were exceptionally well-preserved.

At the time of its discovery the major part of the settlement area and the northern part of the necropolis were covered by untouched steppe vegetation and had not been significantly damaged. The general features of the layout were clearly visible to the eye and were especially apparent on aerial photographs. Here and there on the surface of the settlement site, there was slight evidence that certain of the stones had been broken off from ancient buildings. This probably occurred around the end of the 19th and the beginning of the 20th century, when there were several salt pans at the lagoon near the site. Buildings related to those salt-works were put up to the south of the settlement. However, it cannot be ruled out that in the search for ready-cut building stone, people came here from the villages four kilometres to the south near the foot of the Ğangul *Uval*. In addition to these relatively old disturbances, two small but deep trenches were dug in 1960 by a local bulldozer operator hunting foxes. He also damaged one of the kurgans in the necropolis. Finally, part of the north-eastern outskirts of the settlement and the southern group of kurgans have been destroyed by long-term ploughing of the fields and clearing them of stones.

Explorations

The kurgan group on the cape near the Bay of Yarylgach was plotted on Russian military maps in the 19th century. It was described for the first time by P.N. Schulz in his field diary during his survey of 1932. At the end of 1963 I received a letter from G.I. Aleščenko, a local resident, in which he informed me that a kurgan had been damaged by a bulldozer near the Bay of Yarylgach. During a survey by the Tarkhankut Expedition project of 1964 which included an inspection of the damaged kurgan, a large and previously unknown settlement was discovered lying not far from the kurgan group. Immediately, a preliminary plan of it was drawn and a stratigraphic trench dug, while the Palaeogeographic Detachment of the Expedition prepared a geomorphological description and explored the erosion and accumulation of the shores in the region of the settlement (*cf.* Appendix I). In the same year the settlement was inspected by members of O.D. Daševskaja's expedition.

In 1967 a stratigraphic pit 0.5 × 3.0 m was sunk in the internal courtyard of the building near the well (square G-4).

Regular excavations of the settlement and its necropolis began in 1969 and continued till 1994. During that period, the Settlement Detachment of the Expedition excavated a monumental building in area U6 on the south-eastern outskirts of the settlement, the central area U7, the northernmost structure (U13), the remains of house U14 located in the lagoon, and houses at the north-eastern edge of the settlement in area U2. In the final year, excavations in area U10, on the southern outskirts, were started (Pl. 6). Altogether, an area of about 7,000 square metres has been explored covering approximately 25% of the total area of intensive building. The main objectives that were set during the exploration of the settlement were as follows: (*1*) to excavate the monumental building U6; (*2*) to study the topography and layout of the buried buildings by means of remote sensing; (*3*) to elucidate the stratigraphy and planigraphy of the central area U7; (*4*) to explore the limits of the settlement. These objectives determined the selection of the areas for investigation. Attention was focused mainly on studying the stratigraphy and building remains related to the latest periods of the history of the site.

In the period 1969-1985 the Kurgan Detachment excavated 33 kurgans and several dozen inter-kurgan unmounded graves in the central part of the necropolis. Four kurgans that had been severely damaged by grave robbers (including two in the southern group) were explored later.

Between 1970 and 1980, besides excavation, the Archaeological and Geophysical Detachment carried out an experimental investigation of the settlement by means of remote sensing. The first attempt at such investigation was undertaken in area U6. Subsequently, over a period of ten years, and on the basis of a fixed net of observation points an analysis of aerial photographs, survey of microreliefs, geobotanic cartographic recording, resistivity survey based on symmetrical profiles and magnetometry survey were carried out on two test grounds including the central area U7 and area U13. Also, experiments were conducted on the use of kappametry and the so-called biophysical method of surveying (dowsing). The experiments were intended to throw light on the possibilities and limitations of each method for classical archaeology, and above all, to determine the possible benefits of combining different methods of remote sensing to elucidate the layout of buried remains and physical features of cultural layers prior to excavation. At the same time the efficiency of different scientific instruments (various types of opto-mechanical, proton, and quantum magnetometers) for archaeological and geomagnetic survey was tested.

The Main Results

During excavation of the central, *i.e.* the most ancient, part of the settlement (U7) two main horizons of the cultural layer – the upper A and lower B – were identified. To these horizons four main building periods were related. The stratigraphy and planigraphy of the settlement are well synchronised with those of the necropolis. The relationship of the structural and temporal elements of the archaeological assemblage enabled us to reconstruct with a fair degree of probability the principal features of the structure and to identify the main periods of the history of this area from the time of its first occupation and down to the moment of its sudden destruction.[29]

NOTES

1. Schulz 1937; 1941.
2. *Cf.* Artamonov 1948; Tjumenev 1950; 1955; Solomonik 1952; Grakov 1954; Daševskaja 1954.
3. Beginning in 1959 information on the work of the Expedition was regularly published in the annual 'Archeologičeskie Otkrytija'. For particulars of the general conclusions, *cf.* Ščeglov 1978, *passim* (with references); 1985, 3-5, 6 f.
4. Ščeglov 1963; 1965; 1978, 69-71, 85.
5. Ščeglov 1967, 249-256.
6. Daševskaja and Ščeglov 1965.
7. Ščeglov and Malikov 1963; Ščeglov 1965, 141 f.; 1967a, 212; 1977. *Cf.* Wąsowicz 1972, 211-213.
8. Ščeglov 1967, 249-256.
9. Ščeglov 1978, 99 ff.; 1980a, 62 f.
10. Ščeglov 1978, 24 ff.
11. Ščeglov 1961a; 1961b; 1978, 109 ff.
12. Ščeglov 1978, 106. *Cf.* Jardé 1925, 32.
13. Ščeglov and Burdak 1965; Burdak and Ščeglov 1966; Ščeglov 1969; 1978, 114 ff.
14. Ščeglov 1968, 335 ff. For particulars *cf.* Ščeglov 1978.
15. Ščeglov 1978, 116-135.
16. Ščeglov 1987. For yearly information on the excavations see the annual 'Archeologičeskie Otkrytija', nos. since 1969.
17. The material from the excavations remains unpublished. For the plan of the farmhouse, *cf.* Ščeglov 1987, 259, fig. 2, *II.*
18. Bogoljubova 1988; Ščeglov 1988.
19. The material is partly published. *Cf.* Chtcheglov 1992, 225 ff.; Ščeglov 1993.
20. *Cf.* Ščeglov 1977; 1980; Vnučkov, Glazunov *et al.* 1977; Glazunov, Naumov *et al.* 1979; Alekseev, Vnučkov *et al.* 1980.
21. For particulars, *cf.* Ščeglov 1986a. Also *cf.* Ščeglov 1984, 45; 1985a, 84-86; Ščeglov and Rogov 1985, 86-88; Vinogradov and Ščeglov 1990, 321 ff. For criticism of the hypothesis on the supposed military conflict between Chersonesos and Olbia, *cf.* Zubar' 1998, 113 ff. However, the article arguing in favour of this hypothesis (Ščeglov 1986a) was unknown to the latter author.
22. For details of the military and political situation in Chersonesos at the turn of the 4th-3rd centuries B.C., *cf.* Vinogradov and Ščeglov 1990, 333 ff. Probably the destruction of a fortress on the isthmus of Mayachnyi Peninsula in the South-Western Crimea was related to the same events. *Cf.* Ščeglov 1994b, 37 ff.
23. *Cf.* Mačinskij 1971; Ščeglov 1985.
24. *Cf.* Ščeglov 1989; 1998.
25. Ščeglov 1978, 19.
26. Kurnakov, Kuznecov, Dzens-Litovskij and Ravič 1936.
27. Longinov 1955.
28. Pidgorodec'kyj 1961.
29. For details *cf.* Ščeglov 1987; Chtcheglov 1992, 238 ff., 268 ff.

Part I

MONUMENTAL BUILDING U6

Alexander N. Ščeglov

GENERAL INFORMATION

Location

The ruins of house U6 are situated on the south-eastern outskirts of the settlement, 50 metres north-east of the present-day coastline of the lagoon and 120 metres south-west of the ancient road which separated the settlement from its necropolis. On the north-west, 29 metres from the ruins, are the central, densely built-up excavation area U7[1] and behind it the remains of houses U13 and U14, which were situated at the northern edge of the settlement. To the north and south-west of the house, in areas U1, U3 and U8-9, there are remains of buildings so far unexcavated; and to the south – on the gently sloping area U10 – lie the remains of a large and complicated building, as revealed by Russian-Danish excavations.[2] To the east and south-east of house U6, stretches an open space devoid of any traces of buildings; however, to the north-east, in area U2, a group of standard dwellings constructed as one rectangular block with a single ground plan has been excavated (Pls. 6-8).[3]

The general plan (Pl. 6) clearly shows that the axes of the ground plan of U6 blend well with the overall spatial structure and layout of the settlement, the necropolis, and the road separating them. The basis for the layout of the settlement is its most ancient nucleus, which is of rectangular plan with axes aligned on the cardinal points (Pl. 7). Only in the northern and north-eastern outskirts of the settlement have slight deviations from the general principle been revealed. They are seen in a minor displacement of the orientation of the axes of the ground plan. The reasons for such deviation have not so far been fully understood.

The ruins of house U6 lie 3.5 m above the sea level of 1970. That the building commanded the settlement territory is still readily appreciable in the context of the present-day relief of the area.

View before the Excavations. State of Preservation

In contrast to those neighbouring structures, the outlines of the house were very easily discernible in relief as a low (0.4-0.9-metre-high) earthen bank of square plan surrounding a depression (also rectangular). In the centre of the latter, the edges of a rectangular well cut in the rock could be distinguished. The well was filled up to the top with soil and modern refuse, and grown over with rich grass.

In some spots, masonry blocks were visible on the surface of the earth banks. We were able to trace the position of a number of buried walls by the luxuriance of the herbage. Judging by these surface traces, the dimensions of the building were 35 × 35 metres.

Just like the rest of the settlement the surface area of house U6 was covered with typical

steppe feather-grass and other graminaceous herbs. No significant traces of contemporary disturbance of the surface were observed except at the northern corner, where there were the deep ruts of a new cart-track; also there were indications of stones having been removed from the outer walls all round the perimeter.

REMOTE SENSING SURVEYS BEFORE THE EXCAVATIONS

In 1966 and 1969-1970 an analysis of aerial photographs as well as interdisciplinary archaeological and geophysical investigations were carried out in order to draw up a detailed plan of the buried structures before starting excavations. All the investigations were conducted using a common grid of 5-metre squares so as to give a fair comparison of the results of surveys carried out by each of the different methods.[4]

Analysis of aerial photographs. The archive vertical aerial photographs of 1956 were analysed.[5] The photographs taken with a wide-format camera proved to be the most informative for archaeological decoding. The shots were enlarged to a variety of different scales.

House U6 stands out very plainly in comparison with the traces of other structures. Against the general background it is easily distinguishable as a clear-cut light square with slightly rounded corners. The inner part of the square is occupied by a dark patch of almost regular rectangular shape (Pl. 5). This building, so readily discernible on the aerial photos, proved to be the only one with a plan which could be interpreted with assurance: there could be no doubt that it was a large structure built up around a central courtyard. The photos also clearly showed a broad entrance-gate in the middle of the south-western side leading directly into the courtyard (Pl. 9, *1*). An analysis of stereograms gave us reason to suppose that the ranges of rooms located on two sides of the courtyard – those facing towards the central part of the settlement and the ancient road – each consisted of a single-depth row of adjacent rooms; however, the layout of the two other sides of the building was much more complex.

Micro-relief surveys and geological and botanical mapping. In 1964 an approximate plan of U6 was drawn (Pl. 9, *2*);[6] in 1969, before the beginning of the excavation, levelling of the entire area was carried out using a 5 metre square grid. Within each square levellings were made at 0.5-metre intervals. On the basis of the data obtained, a plan of the micro-relief was drawn, with indication of 0.1 metre variations in height (Pls. 9, *3* and 9, *9*).

The plan reflected all protrusions of the ancient masonry on the surface as well as the outlines of buried walls which were traceable as strips of short, sparse grass and showed up particularly well under low sunlight (surveying was conducted with the sun at an altitude of 10-20°). Zones where the height and density of the herbage was considerably less than average were also fixed on the plan. These zones defined both the inner courtyard and certain rooms in which only a very thin layer of soil covered rich accumulations of pottery.

The micro-relief plan (Pl. 9, *9*) combined with the distribution plan of herbage according to height and density (Pl. 10) were compared with aerial photographs, and it enabled us not only to define accurately the outlines of the entire buried structure before the excavations began but also to have a plan of the location of inner rooms reflecting the ground plan of the area (Pls. 9, *3* and 10, *4*).[7] It became clear that the dimensions and the general layout of the building were very similar to those of the rural house excavated by S.F. Strželeckij on farm plot no. 25 in the neighbourhood of Chersonesos on the Herakleian Peninsula.[8] However, some differences were revealed in the plan of our building: in contrast to no. 25, no traces of a square tower protruding beyond the line of walls were found; there were no signs of any

buildings within the open area of the central courtyard; instead of a door protected by a tower, there was a broad entrance-gate and it was located not in a corner but in the middle of the south-western side. In addition, we had grounds to suspect that the rooms forming the perimeter of the complex all had standard areas.

In 1969 excavations were started in accordance with the plan of the buried remains – as revealed to us. However, the preliminary scheme of the building's layout proved to be still not detailed enough, and the arrangement of the rooms along the south-western and especially the south-eastern sides of the internal courtyard remained insufficiently clear for meaningful forecasting and planning of the excavations. It was therefore decided to carry out experimental geophysical surveys. I was optimistic because earlier, during excavation of the rural house near the Bay of Vetrenaya in the neighbourhood of the Chersonesean fortress of Kalos Limen (1962-63 in co-operation with K.K. Šilik) we had already obtained positive results from resistivity surveys by symmetrical profiles.

Remote sensing surveys. In 1970, after the north-eastern side and the northern part of the south-western side of the building had been entirely excavated, resistivity surveys of the whole unexcavated area were carried out by means of electric profiles.[9] The object of the surveys, besides that of obtaining a detailed plan of the buried structures, was to develop and improve different remote sensing methods in order to use them later for surveying other areas of the settlement.

For these surveys we used a very simple and under field conditions reliable set of serial low-frequency remote sensing ANCh-1 appliances consisting of a 20 Hz alternator, a selective tube AC milli-voltmeter, and a set of electrodes and wires (Pl. 9, *10*). The appliances were powered from 69-GRMTs-6 dry batteries.[10]

The technique based on symmetrical profiles was developed jointly with K.K. Šilik for similar rural houses in the Crimea during experimental work in 1964-65.[11] In employing this technique, resistivity surveying is carried out after establishing the major axes and peculiarities of the plan of the buried structures by means of the remote survey procedures noted above (aerial photographs, studies of the micro-relief and herbage, *etc.*). The measurements are taken on a system of crossed profiles which are aligned perpendicularly to the known axes of the plan (*i.e.* the buried walls). The density of the survey grid should be selected so as to provide sufficiently precise and reliable data for mapping the isolines of the geoelectric field.

The distance between the receiving electrodes MN and the interval between the measurement points on the profiles was 0.5 m. Such an interval (experimentally proved) was selected on the basis of the two following considerations. Firstly, the standard thickness of the wall socles of the typical Chersonesean urban and rural building of the 5^{th}-2^{nd} centuries B.C. is mostly in the range of 0.4-0.55 m. Therefore the interval between the receiving wires must be equal to or slightly less than these values. By increasing the MN interval, the precision of the measurements is decreased while increasing the interval of the measurements increases the probability of missing the objects being searched for (the walls in our case). Secondly, 0.5 m is a multiple of the excavation grid-square side of 5.0 m. It is therefore convenient for recording and processing the information, as well as for comparing it with the results of other surveys.

In our case the unexcavated part of the building was covered with a rectangular 2.0×0.5 m grid of measurement points which was, however, denser in some areas (1.0×0.5 m when necessary). Such a grid provided an acceptable degree of information from the resistivity surveys.

As an alternative to resistivity methods employing symmetrical profiles (the Chlum-

berger apparatus) – the method usually applied for archaeological surveys – V.V. Glazunov proposed and tested in the field the median gradients technique.[12] The latter proved to be efficient for overall investigation of large areas (975 sq metres in our case). However, the results were supplemented and checked using the classical symmetrical profiles technique.

The information gained from the survey was represented as plots and maps of isolines of the apparent electrical resistivity ΔU/J along the longitudinal and transversal profiles (Pl. 9, *4*). On the basis of these data Glazunov drew a plan of the unexcavated part of the building (Pl. 9, *5*). However, as the later excavation (1971) of the north-western part of the building actually showed, that plan had essential inaccuracies both in the interpretation of the measurements and in the topographical ties.

A correction and re-evaluation of the original geoelectric survey data using the information gained through the excavations enabled Glazunov to build a composite map of isolines by combining two isoline maps of residual anomalies ΔU/J along the longitudinal and transversal profiles. On the basis of this composite map, a second plan of the buried structures was drawn, and proved to be both more accurate and to correspond more closely to the results obtained by means of other remote sensing methods (Pl. 9, 7).

THE TECHNIQUE AND HISTORY OF THE EXCAVATIONS

The excavation technique. The preliminary investigations (including the remote sensing) enabled us to construct an observations system and to ensure that the excavations were aligned to correspond exactly with the axes of the plan of the buried structures. Moreover, the preliminary work also made it possible for field investigations to be planned ahead so that a previously determined number of rooms or courtyard areas could be excavated completely each season. To facilitate operations the whole of the buried building was covered by a grid of fixed rectangular sections 5.0 × 5.0 and 5.0 × 2.5 m in such a way that the sides of the building were strictly parallel to the sides of the grid squares. The entire excavation area amounted to 1500 sq metres. The grid squares were indexed alphanumerically (Pl. 11).

The excavations were conducted by clearing large areas according to layers of the real stratigraphy and searching the upper and lower boundaries of each layer, interlayer, or facia. The topsoil layer was removed by squares. The clearing of the courtyard and the outside areas was also done in squares. The fills inside the rooms were uncovered by clearing each room separately. In all cases the finds were recorded both on the plan and on the elevations relative to their stratigraphic contexts.

The stages of the excavations (Pl. 11). The first exploratory investigations were conducted in 1965 and 1967. The whole building was excavated in the period 1969-1974 and 1977. The excavations started at the eastern corner and were carried out counter-clockwise in a series of large sections (of not less than 100 sq m each).

1965. Preliminary surveys. Discovery and initial description of the settlement of Panskoye I.

1967. A rough summary plan of the settlement and a separate, more detailed plan of the remains of house U6 were drawn (Pl. 9, *2*). A stratigraphic pit 0.5 × 3.0 m was sunk in the internal courtyard of the building near the well (square G-4). Aerial photographs were compared with visual observations in the field. After the completion of our work for the season, additional clearing of the mouth of the well was carried out by members of the Donuzlav Expedition.

1969. Beginning of the regular excavations over an area of 125 sq m. *Rooms 2-4* at the north-eastern, and *room 1* at the south-eastern, side of the building (squares Zh-0, D-1 - Z-1) were uncovered.

1970. Excavation area of 100 sq m. Investigation of the rooms at the north-eastern side completed. *Rooms 5-6* and the northern part of *room 7* (squares A-1 - G-1) investigated.[13]

1971. Excavation area of 450 sq m. (squares A-2-7, B-2-7, V-2-3, 6-7, G-2-3). Eleven rooms (*7-17*) were uncovered along the north-western and south-western sides of the building, as well as adjoining sections of the courtyard and outside the perimeter wall.

1972. Excavation area of 425 sq m. (squares V-5-7, G-6-7 - E-6-7, Zh-4-7, Z-4-7). The southern part of the building was excavated; 13 rooms (*19-30*) were uncovered; the investigation of the structures within three rooms (*16-18*) located along the south-western and north-eastern sides of the building as well as of the adjoining areas within the courtyard and outside the building was completed. The gate leading into the courtyard (squares G-6-7) was excavated. Also, excavation of the western corner of the courtyard (squares B-5-6, V-6) was completed.

1973. Excavation area of 425 sq m (squares V-5-7, G-6-7 - E-6-7, Zh-4-7, Z-4-7). The ground plan of the building was now completely laid bare by the excavations. Five rooms (*31-35*) were uncovered; the remaining part of the courtyard was cleared out (except for square D-5); and excavations at the north-eastern (A-0 - Z-0) and south-eastern (Z-0-7) sides of the building were undertaken. Clearing of the well began; however, it was not possible to complete it that season because of a serious excess of subsoil water.

1974-75. A layer in square D-5 (25 sq m) was excavated; clearing of the courtyard was completed (with final checks) down to the level of its ancient surface (about 400 sq m).

1977. The well was investigated down to its bottom with the aid of a motorised pump and a diving suit. Check-digging inside the rooms of the northern range was completed down to the bedrock.

DESCRIPTION OF THE BUILDING COMPLEX

PLAN

The building is of precisely square plan with the outer dimensions of 34.2-34.5 × 34.2-34.5 (Pls. 12, *A* and 13). The total built-up area is about 1190 sq m.

The four corners of the building are strictly orientated so as to point towards the four cardinal points (356°). The deviation of 4° to the east is quite insignificant and possibly indicates that the designer of the building either orientated it by the North Star or the midday sun or simply aligned the structure with a more ancient layout and built the axes parallel to the outer walls of the earlier fortress U7, which dates to the first building period.

The building belongs to the closed-plan type of structure, with its accommodation and offices built around the periphery. Its central part is occupied by a large courtyard measuring of 23.5 × 23-26 m. In the middle of the courtyard there was a well cut in the rock. The only entrance – the gate leading into the courtyard – was located almost in the middle of the south-western side of the building. Ranged around the courtyard in single or double rows were 35 rooms serving various purposes. The doorways of the rooms gave onto the yard.

Some of the rooms (*3-6*, *8-11*) built in two single depths rows along the north-eastern and north-western sides were quite separate from one another, each having its own entrance from the courtyard. The other rooms built in single- or double-depth rows along the south-western and south-eastern sides, formed self-contained blocks of 2 or 3 intercommunicating rooms having one single entrance from the courtyard (Pls. 12, *A*, 14-16).

The layout described above as revealed by the excavations, was such as it had become through various piecemeal repairs and alterations up to the time of the destruction of the building. A reconstruction of the original plan and its subsequent development will be presented below, after a detailed description and consideration of the structural remains and architecture.

STRATIGRAPHY

The thickness of the cultural layer varied within the range 0.3-1.2 m (Pl. 12, *B*). The thinnest layer was in the central part of the courtyard and the thickest one within the rooms located round the perimeter.

In general, the cultural layer was homogeneous throughout the whole area. It consisted mostly of a dense, amorphous, raw clay and loam mass, which had formed due to the decay and natural decomposition of the mud-brick walls.

The topsoil was covered with turf. It contained objects dating from the late Hellenistic period (some fragments of 'Megarian' bowl found in the courtyard area), the Medieval period (small fragments of amphorae), and the 19th and 20th centuries (including cartridge-cases from the war of 1941-45 and refuse accumulated during the recent decades).

Round the perimeter of the courtyard, in the lower part of the layer and beneath the floors of the rooms annexed to the earlier ones, thin facias (intercalations) were revealed; these owed their existence both to certain building activities and to the gradual accumulation of a cultural layer of detritus/decayed building material near the base of the outer wall of an annexe.

The cultural layer (I) lies on the thin layer of buried soil (II) that is still preserved in some spots and that originally formed on the limestone bedrock (III).

Summary of the general stratigraphy of the site:

I. *CULTURAL LAYER*

Horizon IA. The turf layer, gradually merging into the underlying horizons. Thickness 0.10-0.15 m. This is actually the turf-covered upper part of the loamy horizons IB and IC transformed into a soil of southern chestnut-coloured chernozem type, with a poor humus content. The few finds from this horizon are thoroughly mixed up and cannot be separated chronologically. They are represented by various types of pottery, including tiny fragments of red-slipped ware, black-glazed vessels of the 4th and 3rd centuries B.C., and of Megarian bowl of the 2nd century B.C.; there are also small fragments of medieval amphorae and jugs with zonal grooves (7th-11th centuries?) and of vessels dating to the three most recent centuries. Other, contemporary materials included rifle and submachine gun cartridge-cases left from the First and Second World Wars and bottle splinters dating from the end of the 19th century to the time when the excavations began. The finds dating to different periods were distributed uniformly in the layer and were not separable stratigraphically. This indicates that

the natural soil-forming process has continued without further interruption ever since the formation of the major part of the cultural layer (horizons IB-IC).

Horizon IB. A layer of humus-containing, dense and dust-like grey soil, rich in archaeological materials and containing a large amount of crumbled stone. Thickness 0.20-0.30 m. This layer was found only within the area of the internal courtyard. The underside boundary of the layer was in contact with the ancient earth floor of the courtyard and was clearly marked by debris of pottery and other finds as well as by paving-stones. The layer was formed at the time the building fell into ruin.

Horizon IC. This layer consisted of dense yellowish grey loam with a high content of fine white lime particles. It contained all the remains of the stone structures of the building and surrounded the stone socles of the walls. All the rooms and the contiguous areas were filled with this layer. Its lower limit was demarcated by the floors of the rooms and, in the outside areas of the building, by the surface of the courtyard or the buried soil (layer II). Horizon IC reached its maximum thickness (0.80-1.10 m) above the middle of the floors of the rooms along the perimeter of the building. Outside the building and in the courtyard it tapered out smoothly. Altogether this layer amounted to an average of 15 metres in width along the perimeter of the building.

Inside the rooms the horizon IC was generally composed of two sub-horizons (IC_1 and IC_2). The upper one (IC_1) consisted of an almost pure loamy mass with a very small content of finds. The latter were represented mostly by small (sometimes rounded) pottery fragments, mainly of the flat Sinopean or 'Laconic'-type roof-tiles or body sherds of amphorae and red-clay plain ware. In the lower sub-horizon IC_2 – at the level of the floors of the rooms and on the earth surface of the courtyard or on its paving-stones – the concentration of finds markedly increased. Here were found large accumulations of pottery; metal, bone, and stone objects; coins *etc.*: this was the material dating to the time of the destruction of the building. However, in some rooms (*2*, *3*, *12*, *13*, *etc.*) the layer had a more complicated structure, consisting in fact of several intercalations alternating with micro-layers that bore the traces of burnt wooden ceilings. All these facias are described in detail below.

In terms of its composition and density the layer is identical to the mud-bricks found *in situ,* which suggests that this amorphous mass was formed by the decomposition and wash-out of collapsed mud-brick walls and other clay-containing elements (*e.g.* roofs, wall-plaster, *etc.*). The origin and conditions of this horizon's formation account for its lens-shaped cross-section.

II. *THE BURIED SOIL*

The buried soil lay beneath horizons IB (partly) and IC. Horizon IC included all remains of the building elements. On the surface of the buried soil were set the stone socles of all the rooms along the periphery of the building, the adobe floors in the rooms, and most of the stone-paved areas in the courtyard. This layer is presented all over the building apart from the middle of the courtyard where the bedrock (layer III) is immediately visible. Its thickness varies up to 0.35 m. In the upper part of the buried soil, isolated small fragments of pottery and metal (including coins) were recorded in a few places. These finds belong to the 4th century B.C. (*cf.* the detailed description below).

III. *THE BEDROCKS*

The buried soil (layer II) was formed above the dense spongy Pontic shellrock the surface of which was covered by so-called 'decomposed rock' (formed through decomposition of the rock surface). In the middle of the courtyard – around the well – horizons IB and IC lay directly on top of layer III. Here, there is a vigorous water-bearing horizon at a depth of 2.35-2.50 metres below the surface of the rock, probably at the point of contact between the limestones of the Pontic and Maeotic layers, which have different densities. (The well supplied the house with water and is still active).

In addition to the horizons of the cultural layer described above facias occurred at a few isolated points. Their description is nevertheless important for our knowledge of the history of the building.

Facias IC_a. In some places beneath the floors, *i.e.* below horizon IC, of *rooms 15*, *16*, *18*, *19* and *23* (in the inmost row opening onto the courtyard) thin intercalations (0.08-0.10 m thick) were uncovered. They were of a dense, dark, loamy texture with inclusions of fine fragments of stone, pottery, animal bones, and the shells of sea and land molluscs. In some places they were represented by a blend of gravel and crumbled lime mixed with loam. In all cases, the bases of stone wall socles of the second-row rooms stood on the surface of these intercalations, and the buried soil constituted the underlying horizon. Finds were rare and fragmentary. They included small wall fragments of amphorae and red clay vessels, and several fragments of kantharoi with both ribbed and plain bowls and spur handles coated with brownish glaze. The general date of these objects cannot be earlier than the early 3rd century B.C. Thus facias IC_a were formed during the period between the construction of the house and its ultimate destruction.

Facias IC_b. These were found only beneath the length of the north-eastern *rooms 16*, *18*, *19*, *21*. Their thickness near the wall socles was 0.08-0.15 m; they were thinner to the north-east – towards the centre of the courtyard. The upper surface of the facias was easy to define because it constituted the surface of the courtyard on which the broken pottery was lying at the time when the building fell into ruin. The lower limit was hardly discernible; it was roughly defined by the bases of the walls of the innermost row of rooms and by the surface of the buried soil.

These facias consisted of dark grey, dense soil containing very fine fragments of pottery, small stones, small unidentifiable animal bones, and shells of molluscs. In addition to the pottery fragments dating in general to the 4th and 3rd centuries B.C., occasional objects dating to earlier periods were found: fragments of amphorae from Herakleia Pontike with stamps of the first and second groups according to Grakov's classification (Grakov 1926), a handle fragment from a Sinopean amphora with part of a stamp of the first group, according to Grakov 1929 (the device being an eagle upon a dolphin). The earlier material was probably secondary and got into the facias accidentally from neighbouring areas of the settlement (*e.g.* area U7), where a stratigraphic horizon contemporaneous with that material was recorded.

Summarising all that is described above, we may propose the following stratigraphic column.

Period A. A space without buildings, lying at the periphery of an earlier settlement. The bedrock (layer III) was covered by soil (layer II) in which material of the 4th century B.C. accumulated as refuse.

Event B. Construction of house U6 on the surface of layer II; this evidently took place not later than *c.* 320/310 B.C. (see Conclusion).

Period B1. Formation of facias IC_a as a result of alterations and the building of annexes: last decade of the 4th and beginning of the 3rd centuries B.C.

Period B2. Formation of facias IC_b: discarded material. The formation of these facias probably took place about the beginning of the 3rd century, but later than B1 – the period between the construction of the rooms in the inmost row and the destruction of the building.

Event C. Formation of horizons IB and IC due both to the total and catastrophic demolition of the building and to fire. On the basis of the finds, this event is dated to the first third or quarter of the 3rd century B.C. (most probably not later than 270 B.C.).

Period D. Formation of the present-day natural soil layer (of the southern chestnut 'chernozem' type) covered by the usual vegetation of steppe feather-grass and wild cereals. The development of this ecosystem has continued uninterrupted from the destruction of U6 down to our own time. Judging by the finds from horizon IA and the indications of stones having been dug out from the ancient masonry structures, this lonely spot was sporadically visited by man throughout the period between the 2nd century B.C. and the present.[14]

DETAILED DESCRIPTION

A. Rooms Located Around the Perimeter of the Courtyard

The room numbers and descriptions correspond to the sequence of their uncovering during the excavations. The following information is presented: the location – either in the first or outer range (*i.e.* the rooms all around the perimeter of the courtyard), or in the second or inner range (*i.e.* the rooms attached to the courtyard side of the outer range; connection (if any) to adjacent rooms; the inner dimensions of the rooms and their areas; the position and size of the doorways; the construction of thresholds and floors; details of structures found both upon the floor surface and in the floor layer, and the positions of these structures; the stratigraphy of the fills and description of the substrates; finds in the filling, on the floor, and beneath it; specific features; preliminary conclusions.

Room 1 (Pl. 17). Situated in the first row, this is the second room to the south-east of the eastern corner; length 4.10 m, width 3.0-3.1 m, area 12.5 sq m. It formed a single block together with *rooms 32-34* and was connected with *room 33* by a doorway about 1 m wide in the south-western wall. Another doorway 1.10 m wide in the western corner led to corridor *room 34*, which was built later and through which there was access into the courtyard.

The floor was of clay 10-12 cm thick. A low bench of clay was built against the north-eastern wall (length 2.20 m, width 1.10 m, height 0.30 m) (Pl. 17, *1-2*). It was plastered with a layer of dense light-coloured clay stucco 5-10 cm thick and had traces of limewash preserved on the lateral surface; its western corner ended in a horn-like projection of dense clay mixed with chopped straw. A second, poorly preserved, bench 0.55 m wide and 0.30 m high was built against the south-eastern wall of the room. In the middle of the room there was a round hearth (diameter 0.8 m) with a border of rounded limestone blocks (Pl. 17, *3*). Examination of the ashes revealed no vegetal remains.

No objects were discovered on the floor itself, but in the clay and loam fills (sub-horizon IC_1) were found twenty small body fragments of amphorae (mostly Chersonesean), two fragments of Sinopean flat tiles and one from the wall of a Sinopean pithos, a fragment of a Sinopean mortar, the shackle of a silver finger-ring 2.0 cm in diameter, and two fragmentary whetstones. Traces of fire were detected in the layer.

Beneath the floor a layer of buried topsoil (II) up to 30 cm thick was uncovered. In this layer small charcoal fragments of unidentifiable origin were found.

Room 2 (Pls. 17, *1* and 18, *1-2*). Situated in the eastern corner of the building in the first row, this room made up a single block with the subsequently added *room 35* in the second row; length 4.70 m, width 3.10-3.15 m, area about 14.7 sq m. A doorway connected it with *room 35*, though originally – before the construction of the latter room – it opened directly onto the courtyard. The width of the doorway with a carefully built stone threshold is 1.10 m. The stone doorpost socket was set on the south side, thus the door was a single one, not more than 0.8 m wide and opened outwards.

In the southern corner there was a rectangular hearth 42 × 72 cm sunk into the floor to a depth of 27 cm. Isolated grains of naked wheat (*Triticum sp. Triticum aestivo-compactum*) were found among the ashes from the hearth and scattered over the adjacent area.

The floor was of clay 10-12 cm thick. On its surface were found three body fragments of a Chersonesean amphora and a jug, a wall fragment of a black-glazed kantharos, five mussel-shells (*Mytilus*), and one scallop-shell (*Pecten*). In the clay-and-loam fills above the floor (sub-horizon IC_1) there were 119 small fragments of Chersonesean amphorae, jugs, and bowls; 6 fragments of Sinopean and 3 fragments of Herakleian amphorae; 10 body fragments of plain ware and 3 of black-glazed ware from unidentified centres; and 5 body fragments of handmade pots. There were also numerous fragments of charcoal from the burnt ceiling and the samples taken were hypothetically identified by G.N. Lisicyna as oak (*Quercus* sp.).

Beneath the floor there was a layer of buried topsoil (II) up to 25 cm thick. It was full of fine charcoal from unidentifiable species of trees and/or shrubs.

Room 3 (Pls. 18-19). A self-contained room in the first row on the north-eastern side of the building; length 4.75 m, width 3.10-3.12 m, area about 14.7 sq m. The entrance was in the middle of the south-western wall and opened directly onto the courtyard. In front of the entrance was a path paved with limestone slabs leading from the courtyard (Pl. 18, *1*).

The doorway was 1.10 m wide. Just outside it – to the right (or E-NE) as one enters – three bronze nails, each with a right-angled bend (**K 21-23**), were found lying on the floor; remains of burnt wood were preserved on one of the nails. In the threshold special cuts were found into which the wooden door-case was fixed. The form of the threshold, the position of the lower door-socket, and the nails indicate that the door (about 65 cm wide) opened outwards onto the courtyard and the door-frame was evidently fixed to the wall with long bronze nails.[15]

On the vertical surface of the socle of the south-western wall inside the room there were remains of clay stucco up to 5 cm thick with traces of limewash (Pl. 18, *4*); the total of the preserved plaster was about 0.5 sq m. The clay floor was 5-8 cm thick. In the northern corner were found the remains of the base of a rectangular mud-brick enclosure about 1 × 0.7 m; but apart from this there were no other structures on the surface of the floor.

The fill layer (horizon IC) preserved traces of a very fierce fire (Pls. 18, *2*, 19, *1*). Two stratigraphic horizons were identified, and within them several thin intercalations were also distinguished though rather less reliably. The upper sub-horizon (IC_1) indicative of intense combustion contained cracked and broken amphorae, both stamped and unstamped, that

were mostly of Chersonesean production and were scattered over the entire area of the room. The amphorae were strongly affected by exposure to high temperatures: more than half the fragments were fused and misshapen, and the surfaces of about half were actually fused to the point of vitrification, *i.e.* the temperature had exceeded 1200° C. Apparently the fire raged particularly fiercely in the northern part of the room, for here virtually all the amphora fragments were fused. On a number of larger fragments traces of black runnels of some burnt substance were noted, suggesting that a combustible organic liquid (oil?) had been stored in some of the amphorae.[16] In the southern corner, fragments of a small Sinopean pithos were uncovered (**Ac 3**); a number of fragments of the same pithos were found outside the room in the topsoil horizon IA and some of the fragments had sunk into sub-horizon IC_2. Among the fragments of one of the amphorae charred grains of naked wheat (*Triticum sp.*) were found (see Appendix IV). A bowl (**C 81**) filled with sheep's vertebrae had been standing beside the north-eastern wall (Pl. 19, *2-3*), but during the fire most of the sherds from the bowl, and the vertebrae too, settled into sub-horizon IC_2 right down to the level of the clay-plastered floor. Probably a large painted Chersonesean krater (**Ac 2**) stood in the same spot since half the fragments of such a vessel were found in the lower sub-horizon (IC_2) but above the floor surface.

At certain spots the upper (IC_1) and lower (IC_2) sub-horizons were divided from each other by an intercalation formed by the burnt remains of the wooden ceiling of the lower storey. Numerous lumps of clay stucco, on average 0.5-1 cm and occasionally up to 2-2.5 cm thick, were also encountered at this level: some of these showed traces of whitewash on one side and imprints of wood on the other. In various separate places were found nine pairs of iron nails with the charred remains of the wooden beams that they had originally fixed in place a piece of board, and numerous pieces of charcoal. Analysis of fifteen samples of charred wood carried out independently by G.N. Lisicyna (Institute of Archaeology AS USSR, Moscow) and E.S. Čavčavadze (Botanic Institute AS USSR, Leningrad) showed that nine of them belonged to oak (*Quercus* sp.), one to beech (*Fagus* sp.), and two to juniper (*Juniperus* sp.). In the case of twenty other small samples it was impossible to identify the original type of wood.

In the lower sub-horizon (IC_2), immediately above the floor, was a large accumulation of fragments of different ware (mostly amphorae) that had fallen from above during the fire, as well as the shattered remains of amphorae and other vessels that had been kept on (or somewhere above) the floor. Some of these vessels, and other objects too, were probably stored on shelves in the lower and (or) upper storey. It was possible to identify the individual positions of about ten fragmented amphorae which had been standing on the floor along the north-eastern wall. At least two of the amphorae (of Chersonesean production) had contained wheat (*cf.* Appendix IV). During the clearing of the north-eastern wall a bronze three-bladed arrowhead with solid tang was found stuck into the wall, having evidently been fired from outside (**K 82**).

The composition of the collection of (complete or relatively complete) ceramic vessels found in the fill and on the floor of *room 3* is presented in Table 1.

Most of the 29 amphorae were evidently stored on the upper storey (rather than on the ground floor); four fifths of them were manufactured in Chersonesos, and, judging by their profiled fragments, belonged to type ІБ in S.Y. Monachov's classification.[17] The handles of seven amphorae bore the stamp of astynomos *Dioskouridas* (**Ae 35-39**, **Ae 45-46**);[18] on five handles there were monograms (**Ae 84-88**) which should most probably be interpreted as Ευα( ).[19] This group of amphorae were undoubtedly stored on the upper storey and probably made up a single consignment of ware. In addition, three other Chersonesean am-

Table 1. Composition of the collection of ceramic vessels (as complete shapes or equivalents of complete shapes) found within room 3.

	Centre/type of production					
Vessel type	**Chersonesos**	**Sinope**	**Amphorae with mushroom-shaped rims**	**Unknown centres ware**	**Local (handmade)**	**Total**
Pithos		1				1
Amphorae	29 (incl. 15 stamped)	2	3	2		36
Painted krater	1					1
Jugs	3					3
Bowls	1					1
Fish-plate				1 (in grey ware)		1
Handmade ware					2 (1 decorated)	2
Total	**34**	**3**	**3**	**3**	**2**	**45**

phorae bore the stamps of the astynomoi *Kraton* (**Ae 58**), *Sopolis* (**Ae 73**), and *Apollas* son of *Choreios* (**Ae 2**). The first two names, according to V.I. Kac, belong to astynomoi of group 1A and the third to an astynomos of group 2.[20] The three amphorae with these stamps must all have stood on the floor of the lower storey. Here also were found the fragmentary remains of five unstamped amphorae from unidentified centres including three of the same type with mushroom-shaped rims (**Ab 80**),[21] one of a previously unknown Mediterranean type, and one with a rare 'beaker-shaped' (Russ. '*ryumkoobraznaya*') foot, its shape most closely resembling that of amphorae from Mende (or some other North-Aegean centre?).[22] As nothing more than the foot and body fragments of the latter piece have been preserved, probably only its lower part had been retained for some special, secondary use within the room where it was found. Fragments of Sinopean amphorae were found only in the upper horizon of the fill; these vessels had evidently been kept on the upper storey together with the consignment of 12 Chersonesean amphorae.

Eleven of the fragments of amphora necks and shoulders bore graffiti and dipinti.[23] The graffiti on the Chersonesean amphorae were the following: 3 examples (**H 5**, **H 8-9**) of A and AΠ in ligature (one on the neck of the amphora with the stamp of *Sopolis*); 1 example of the monogram AΠH (**H 7**); 2 examples (**H 20-21**) of the monogram HPA and HPAK (*eta* and *rho* in ligature) (the first of these accompanied by the stamp of the astynomos *Dioskouridas*); and 1 of the mark CI (**H 41**). Of the dipinti in red paint there was one example each of ΘA (**H 68**)and EYΦ (**H 64**), and one that was unclear. On the neck of a Sino-

pean amphora was scratched the graffito ΘΑ (**H 23**) and on the neck of the Mediterranean amphora from an unknown centre (mentioned above) there was the dipinto A in red with an apostrophe to the right (**H 74**).

Along with the amphorae originally kept on the upper storey there was evidently a unique painted krater of Chersonesean manufacture (**Ac 2**) as well as a bowl, probably also Chersonesean, in which 134 knucklebones were once kept (sheep's and cows' vertebrae) (Pl. 19,*3*). The sides of some of these astragali were ground, and some had a hole drilled through them; one bore the graffito Λ (**H 27**). Close by, were found some fragments of a large hand-made pot of the Kizil-Koba culture (**D 104**)[24] with combed ornament.

In addition to the amphorae and other pottery described above, various tools and implements were also kept in the lower storey of *room 3*. All were found lying on the surface of the floor, and among the finds were the following: 3 iron sickles (**K 141-143**); the remains of the handle and part of the iron blade of a garden or vine-dresser's knife; the hollow iron point of some kind of picket; half of a pair of iron scissors (?); a five-pronged fork-like iron tool with a long shaft (?) (**K 178**);[25] an implement shaped like a long iron rod (a picket for planting?) (**K 189**); and small fragments of certain other iron implements. Also found lying on the floor were two bone spools for thread made from bulls' vertebrae ground smooth (one of them bearing the graffito Π (**H 29**)), together with a few round stone stoppers (?) and some square objects, possibly weights.

The surface of the buried soil that overlay the bedrock was plastered over to form the floor of the room. The soil layer itself was 37-45 cm thick and contained very fine pieces of charcoal.

All the facts before us suggest that both the lower and upper storeys of this room were used as storerooms.

Room 4 (Pl. 20, *1*) A self-contained room situated in the outer range on the north-eastern side of the building; length 5.2 m, width 3.10-3.15 m, area about 16.0-16.4 sq m. The original entrance was located almost in the middle of the south-western wall and gave onto the courtyard. The doorway was 0.60 m wide; later it was blocked up with stones and the entrance was transferred to the western corner of the room. The width of the new doorway was again 0.60 m. The floor 8-10 cm thick contained of two intercalations: the lower one of clay stucco, the upper of earth with a high content of humus and phosphates.[26] In the northern corner was a rectangular 'enclosure' built of upright limestone slabs 15 cm thick along the north-eastern wall and divided in two by a transverse wall. Overall dimensions: length 2.9 m, width 1.0 m, height 0.45-0.50 m. Originally, the enclosure comprised only a single compartment (1.85 × 1.00 m), and was bordered by a rectangular pavement (1.05 × 0.85 m) of limestone pebbles from the shore. After the construction of the second compartment the pavement was covered over with an earthen floor.

To the right of the original doorway near the south-western wall, three stone steps of the first flight of the staircase leading to the upper floor were preserved. In the steps, traces of the fixings for the second, wooden, flight of the staircase and the door closing off the staircase were also preserved. Leaning against the wall close to the first stone step was a broken-off piece of a flat Sinopean tile bearing the stamp of the astynomos *Diophantos* and the device of an 'eagle on a dolphin' (group I in Grakov's classification) (**Ab 2**). This tile fragment was evidently part of the original structure of the staircase.

With the exception of a number of small pottery fragments no finds were made either in the clay and loam fill or on the floor. The list of the fragments is presented in Table 2. Beneath the floor was a layer of buried soil 0.40-0.45 m thick overlying the bedrock.

The room was probably used as a byre for small cattle. This is suggested not only by the presence of the low stone enclosure in the corner (a feeding-pen?) and the humus-containing

Table 2. Distribution of the pottery fragments found in room 4 according to types and production centres.

	The centre/type of production					
Vessel type	**Chersonesos**	**Sinope**	**Herakleia**	**Unknown centres**	**Local (handmade) ware**	**Total**
Flat tiles		5 (from a single specimen)				5
Amphorae	57	2	2	2		63
Commonware:						
Jugs	5			1		6
Bowls	2					2
Black-glazed pottery				1		1
Handmade ware					13	13
Total	**64**	**7**	**2**	**4**	**13**	**90**

earthen floor with its high concentration of phosphates but also by the absence of finds in the room. Possibly the staircase with its door that fastened on the outside led to the storeroom above *room 3*. However, this hypothesis can hardly be proved now.

Room 5 (Pl. 20, *1*). A self-contained room situated in the outer range of the north-eastern side; length 7.50, width 3.0-3.1 m, area 22.5-23.0 sq m. The entrance, with a door that fastened from the outside was situated in the middle of the south-western wall and gave onto the courtyard. The width of the doorway was 0.65 m. The earthen floor was 10 cm thick.

To the right of the doorway at a distance of 0.65-0.70 m from the south-western wall and parallel to it, was a two-course stone socle 2.8 m long, 0.53-0.55 m wide, and 0.35-0.57 m high. It was topped by a pylon 0.64 × 0.35 m and 0.75 m high. The top surface of the stone socle was levelled off to provide a base for a wall of mud-bricks. In the space between this internal wall and the south-western wall a number of charred pieces of oak beams and boards (*Quercus sp.*) were uncovered. Their position indicates that there was probably once a narrow wooden staircase here leading up to the first floor.

Near the north-eastern wall, 2.20 m from the northern corner, the debris of a large hearth was discovered; its dimensions were 1.10 × 1.20 m. At the base the perimeter was faced with stones and fragments of flat Sinopean tiles mortared with clay.

In the clay and loam fill and on the floor the only artefacts found were small body fragments of amphorae and jugs, mostly of Chersonesean manufacture. Beneath the floor was a layer of buried soil 0.30-0.40 m thick lying on the uneven surface of the bedrock.

Room 6. A self-contained room located in the outer range on the north-eastern side of the

building; length 5.20, width 3.15 m, area 16.38 sq m. The entrance from the courtyard was near the southern corner; the doorway was 1.05 m wide. The clay floor was 10-18 cm thick and in its western part had two micro-horizons. Near the remains of the north-western partition wall of mud-brick, and beneath its base on the clay-plastered floor, was an area of burnt surface with an accumulation of ashes nearby – the remains of a hearth belonging to the first building period (?). Traces of fire were clearly visible.

In the clay and loam fill and on the floor the only objects found were some small body fragments of amphorae and jugs mostly of Chersonesean manufacture, and a fragment of a black-glazed kantharos. Beneath the floor was a layer of buried soil 18 cm thick lying on the flat surface of the bedrock.

The base of the north-western wall of the room stood on the surface of the lower horizon of the clay floor. In part this wall covered the spot occupied by the supposed former hearth, suggesting that at some stage the northern corner was the subject of replanning and alterations.

Room 7 (Pl. 20, *2*). This room occupied the northern corner of the first row on the north-western side of the building and made up a single block with *room 15*; length 11.05 m, width 3.0 m, area 34.5 sq m. It could be entered from the courtyard via *room 15*, which was built later. The main entrance was located in the middle of the south-eastern wall, and the actual doorway was 1.00-1.05 m wide. The floor was of clay 5-10 cm thick.

To the left of the doorway as one entered and close beside the south-eastern wall were found the remains of a large rectangular oven (80-83 × 95-98 cm) made of mud-bricks each about 20-21 × 40-41/42 × 8.5-9 cm. The clay hearth, raised 15 cm above the floor level, was thoroughly fired to the depth of 0.4 m, and the surfaces of fragments of flat bricks were also very well fired. These facts probably indicate that the oven had a manufacturing rather than a domestic function.

In the southern corner of the room there was an accumulation of different materials. Right in the corner itself was a pile of grog derived from finely crushed amphora sherds (mostly Chersonesean) and other pottery fragments (Pl. 20, *3*). The volume of this pile amounted to 1500-2000 cub cm; upon and around it were the fragments of four handmade pots (**D 12**, **D 34**, **D 91**, **D 99**) decorated with fingernail ornaments round the rim and containing an admixture of grog in the ceramic paste. Judging by the position of the fragments the direction in which they had fallen and the way in which they were dispersed – probably all originally stood on a shelf fixed on the south-western wall above the place where the pile was found. Lying near the pile of grog there were two rather small slabs of dense dark-red sandstone; the lower bodies of one Chersonesean and one Sinopean amphora (the foot of the latter had been broken off sometime in antiquity); fragments of amphora walls; and a discoid ceramic net-weight of Chersonesean manufacture (**M 20**). It is possible that the accumulation of pottery on the floor in the southern part of the room, which included 64 rather large body fragments of different amphorae and jugs mostly of Chersonesean manufacture, was the raw material of the grog heaped in the corner and intended for handmade pots. This is suggested both by the fragments, belonging to a number of different vessels and by the indications that they had already been broken before the destruction of the building.

In the clay and loam fill, an intercalation of burnt material was distinguished, which suggested the existence of an upper floor. In this intercalation, 35 cm above the floor level, the remains of a stone structure were uncovered; this had probably fallen down from the first floor above. The remains comprised three carefully dressed rectangular limestone blocks 55 × 40 × 11-12 cm and a number of specially cut slabs; they were located 5.5-7.0 m from the south-eastern wall, which faced the courtyard. The position of the flagstones suggested that originally they stood upright, so possibly they were the remains of a rectangular household

'enclosure' (or bin). The fill layer contained numerous tiny fragments of various potteries.

In the fill and on the floor were found several different types of shell: twelve examples of the vineyard snail (*Helix*); and seven examples of marine molluscs, namely: 4 mussels (*Mytilus*); 1 oyster (*Ostrea*); 1 scallop (*Pecten*); and 1 cockle (*Cardium*).

Beneath the floor there was a layer of buried soil 20-22 cm thick lying on the flat surface of the bedrock. In this layer tiny pieces of charcoal were encountered.

The stone socle of the south-eastern wall stretching towards the inner courtyard preserved traces of one or two alterations. A doorway 1.10 m wide blocked up with small stones was uncovered at a distance of 2.70 m from the southern corner of the room. Traces of alterations were also discernible in the northern part of the room where the original transverse wall had been dismantled. These alterations suggest that *room 7* acquired its final appearance only in the final period of the building's occupation. The room was extended by taking in parts of the previously adjoining rooms on the lower storey in the northern corner lying immediately to the south-west of the original *room 7*. As mentioned above, the artefacts discovered here suggest that before the destruction of the building this room was probably given over to some production process(es). It is fairly likely that handmade ware was manufactured here.

Room 8 (Pls. 14 and 20, *2*). A self-contained room situated in the outer range on the north-western side; length 3.65 m, width 3.15 m, area about 11.5 sq m. The entrance from the courtyard was in the eastern corner, the width of the doorway being 1.10 m; no threshold. The clay-plastered floor was 10 cm thick.

In the centre of the room the site of a square hearth-place 0.55 × 0.55 m was discernible. Near the western corner of the hearth there was a small pear-shaped pit cut in the rock. This was 0.6 m deep, the diameter of the mouth being 0.34 m and the maximum diameter near the bottom 0.5 m; over time it had gradually filled up with a natural accumulation of soil. In the southern corner a rectangular depression in the floor measuring 0.53 × *c.* 0.75-0.8 m had been sunk down as far as the underlying rock, to a depth of 15 cm.

In the clay-and-loam fill tiny fragments of amphorae and jugs, mostly of Chersonesean manufacture, predominated. In addition, three small fragments of black-glazed kantharoi (**B 33**, **B 35**, **B 54**) and one of a fish-plate (**B 235**) were found. Twelve isolated fragments of a Chersonesean amphora were scattered about the floor.

Beneath the floor was a layer of buried soil 10-25 cm thick lying on the uneven surface of the bedrock. In this layer tiny pieces of charcoal formed of wood and bush plants were encountered.

The presence of the central hearth suggests that this may have been used as a living-room.

Room 9 (Pls. 14 and 20, *2*). A self-contained room situated in the first row on the north-western side of the building; length 3.75 m, width 3.15 m, area 11.8 sq m. The entrance from the courtyard was in the eastern corner. The doorway was 1.03 m wide with a threshold made of two flagstones. The clay floor was 10 cm thick.

In the centre there was a hearth in the form of a rectangular platform 0.50 × 0.60 m raised 8 cm above the floor. On each side the hearth was bordered by semi-cylindrical clay bricks 30 cm long, 9 cm wide and about 3-5 cm high.

In the clay-and-loam fill it was mostly small wall fragments of Herakleian and Chersonesean amphorae and other vessels that were encountered. One fragment from the neck of a Herakleian amphora bore the remains of an engraved stamp (**Ae 126**; two letters were preserved: – –]EO). Parts of a broken Chersonesean amphora (**Ad 39**, **Ad 42**), three fragmented

handmade pots (**D 31**, **D 73**, **D 105**), and a whetstone were found lying on the floor. A tiny fragment of the wall of an Attic red-figured kylix bearing a representation of a bearded satyr (**B 1**) was plastered into the clay fabric of the floor, along with other small body fragments of clay vessels.

Beneath the floor there was a layer of buried soil 15-20 cm thick lying on the uneven surface of the bedrock. Tiny pieces of charcoal were encountered in this layer, along with small fragments of walls and rims of Herakleian amphorae.

The presence of a hearth in the centre of the room suggests that it was a living-room.

Room 10 (Pls. 14 and 20, *2*). A self-contained room situated in the outer range on the north-western side of the building; length 3.80 m, width 3.15 m, area 11.97 sq m. The entrance from the courtyard was in the eastern corner. The doorway was 1.12 m wide and had a high, double-step stone threshold. The clay floor was 10-12 cm thick.

In the centre were traces of a hearth-place 50-55 cm in cross-section. In the western corner there was a rectangular household 'enclosure' in the form of a bin. Its long side was built of limestone slabs set upright, while the short side was made of clay. The inner dimensions of the bin were 1.40 × 0.86-0.90 m; the height was 42 cm, and the volume about 0.5 cub m.

In the clay-and-loam fill were found wall fragments (mostly small) of Herakleian, Sinopean, and Chersonesean amphorae and other ware. Fragments of a stone (limestone) louterion were scattered over the floor. Near the entrance was a three-bladed bronze arrowhead with its point towards the entrance (**K 85**).

Beneath the floor there was a layer of buried soil 15-18 cm thick lying on the uneven surface of the bedrock. A fragment of a small discoid stone weight was found in the upper part of this layer, along with some small wall fragments of Herakleian amphorae.

The presence of a hearth suggests this room may have been a living-room; less probably, it was intended for some other domestic purpose.

Room 11 (Pls. 14 and 20, *2*). A self-contained room situated in the outer range on the north-western side of the building; length 3.60-3.65 m, width 3.15 m, area 11.4 sq m. The entrance from the courtyard was in the eastern corner, and in front of it lay a small area of stone pavement. The doorway was 1.05 m wide with a threshold constructed from two flagstones. The clay floor was 10-12 cm thick.

In the centre, a hearth-place in the form of irregular rectangle about 50 × 60 cm was identified. The traces that remain indicate either the use of a portable hearth (*i.e.* a brazier) or a fire kindled directly on the floor.

In the clay-and-loam fill, small wall fragments of Herakleian, Sinopean, and Chersonesean amphorae and other pottery predominated. Here also, fragments of the bottom and edge of a stone louterion (the same vessel that was uncovered in the neighbouring *room 10*) were found above the floor level. Near the entrance, a piece of the cutting edge of an iron sickle was found lying on the floor surface (**K 6**).

The room was possibly used as living-quarters.

Room 12 (Pls. 21-22). An originally self-contained room occupying the western corner of the building in the outer range and subsequently made into a two-room block with *room 14*, which was constructed later; length 4.30 m, width 3.15 m, area 13.55 sq m. The entrance was in the eastern corner. The doorway was 1.10 m wide with a well-made threshold consisting of a single stone block. Immediately inside the doorway one flagstone step led down into the ground-floor room. The structure suggests that the door must have opened inwards. Before the construction of *room 14* the doorway of *room 12* gave directly onto the western

corner of the courtyard, with a narrow stone-paved path leading to it (see the description of *room 14* below).

Room 12 is distinguished from all the other rooms by three major features: the stratigraphy of the fill, the composition of the finds, and the type of building construction. Its mud-brick walls were built on high stone socles 1.00-1.10 m high and 0.55-0.65 m thick; these socles were carefully constructed of well-cut and closely fitting blocks laid in single- or double-layered bed masonry (Russ. '*postelistaya*' masonry) on a clayey mortar. The top surfaces of the socles were carefully levelled to provide a sound base for the construction of the mud-brick walls.

The floor of the room was of earth, and in contrast to the other rooms showed no traces of renovation or any later levelling or stuccoing with clay. Indeed the floor was lowered relative to the levels of the courtyard and other rooms in the building, so that the densely rammed earth of its surface lay 0.45 m below the threshold.

On the surface of the floor and embedded in it the following installations were identified:

1) Standing along side the north-western wall, 0.25-0.35 m from the latter and 1.1 m from the northern corner of the room, there was a large stone vessel of oval plan (90 × 46 cm and 26 cm deep) cut from Sarmatian limestone (**L 29**) (Pls. 21, *3-4*, 22, *1*). A limestone weight for a press lever was lying nearby (**L 30**). 2) A small pit about 40 cm in diameter and about 10 cm deep was dug in the floor in the northern corner. It was filled with ashes and the burnt and finely crushed bones of birds (unidentifiable). 3) At the mid-point of the north-eastern wall, near its base, was another semicircular, pit 30-40 cm in diameter and about 10 cm deep. At the bottom there was a pile of thirty marine mollusc shells (*Cardium* and *Pecten*), five of the cockle shells (*Cardium*) were drilled through at the apex, and the pile was 'roofed' by a large shell from a Black Sea mussel (*Mytilus galloprovincialis*). 4) At the very centre of the south-eastern wall, and 47 cm from it, stood a small square block of Sarmatian limestone 32.5 × 18-20 × 12 cm (Pl. 22, *1-2*). The top surface of the block and its three visible sides were smoothly cut; the rear was by contrast rather roughly cut. The position of the block and the character of the objects found around it suggest that it was probably an altar similar to that installed in the neighbouring *room 14* (see below and also **G 3**). Slightly dug into the floor in an upright position in the very centre of the room there was a Herakleian point-bottomed amphora (**Ad 78**); its rim and handles had been broken off sometime in antiquity and the rest of it was subsequently smashed by the central hearth falling down from the floor above (see further below).

In the course of layer-by-layer removal of the fill inside the room four horizons of the cultural layer were identified. Horizon IA represented a topsoil clay-and-loam layer with a high content of ash and small pieces of charcoal. In this layer were found eleven large, and numerous small, fragments of Sinopean tiles (both flat ones and kalipteroi), along with wall fragments of amphorae from various centres. On one of the fragments – a small splinter of the neck of a Herakleian amphora – the remains of an engraved stamp, **Ae 123**,[27] were detected. Here also, parts of a broken Chersonesean amphora with an unreadable stamp on the neck were uncovered (**Ae 82**, **Ad 38**); the remaining fragments of this amphora were found in the lower sub-horizons IC_1 and IC_{1bis}. Other items found in horizon IA were 38 fragments of the upper body of a large two-handled red-ware pot or flat-bottomed amphora (**C 3**), possibly of Chersonesean manufacture, and a fragment of a flat flask.

At the level of contact between horizons IA and IC_1 numerous small fragments of surface-burnt clay stucco from the walls, or, more probably, the ceiling were uncovered all over the room. In some places these fragments had formed accumulations, inside which were found very badly oxidised iron nails or their fragments. At this level too, fragments of Sinopean tiles were also found.

The lower-lying clay-and-loam horizon IC preserved traces of a very fierce fire. The upper sub-horizon IC_1, which was rich in ash, also contained the widely dispersed fragments of four point-bottomed amphorae that had been broken, shattered, or cracked by the fire: two of them were Chersonesean (**Ad 6**, **Ad 26**) and two were from unidentified Mediterranean centres (**Ad 87**, **Ad 90**). Parts of the same vessels were found at a lower level in the adjoining sub-horizon IC_{1bis}, though a number of their fragments had actually sunk into sub-horizon IC_2 and even down to the level of the floor. In certain places sub-horizon IC_{1bis} was separated from horizon IC_1 by accumulations of clay stucco debris from the walls or ceiling. Some fragments of the plaster preserved traces of limewash. Within the described horizon, and just above its contact with the lower one, the debris of a large circular fireplace and its clay-plastered hearth, which had fallen from the floor above, was uncovered in the centre of the room (Pl. 21, *1-2*). The fireplace was bordered by large sea-rounded stones, and, judging by the segments preserved *in situ*, its diameter can be defined as approximately 1.0-1.5 m. Lying inside the debris of the fireplace and at its edges were the broken remains of a large crushed two-handled pot (**C 122**), a handmade decorated pot (**D 2**), and several jugs of Chersonesean manufacture (**C 9**, **C 14**), along with amphora fragments and wall fragments of other vessels. A number of further fragments from these vessels were also found in the lower sub-horizon IC_2. In addition to the pottery, some fragments of small silver attachment plates, possibly from a wooden casket (**K 186-187**), five complete and fragmentary bronze buckles (**K 88-91**), a few whetstones, and a fragment of the blade of an iron knife were found in and around the breakdown of the hearth, at different levels in the horizon.

The lower sub-horizon IC_2, which lay immediately above the floor, was composed of a loamy and ashy mass showing traces of a fierce fire. At the contact level between sub-horizons IC_{1bis} and IC_2, thin intercalations of burnt clay plaster were also detected; however, the plaster showed no traces of whitewashing.

Within sub-horizon IC_2, beneath the fireplace described above and partly among the fragments of its hearth, as well as above the floor surface and on the floor itself, there were a great number of broken and fragmented objects, including some of a very specific character. The following paragraphs present a description of the materials dispersed throughout the area.

Lying in the eastern corner, on and beside the threshold, were some iron parts from a lock (**K 179-180**).[28] On the floor nearby were scattered the fragments of a handmade pot and a miniature flat-bottomed Sinopean vessel with a vertical handle (**C 26**).[29] Lying together with these objects there was a lamp made from the 'salt-cellar' of a fish-plate with the graffito ΠΡΩ on its bottom (**B 232**, **E 11**, **H 31**).

Alongside the north-eastern wall, at the very bottom of sub-horizon IC_2, *i.e.* just above the floor surface, was the fragmented upper half of a Chersonesean amphora; it bore the graffito ΔΟ on its shoulder (**Ad 33**, **H 36**) and was lying with its neck towards the entrance; some oily liquid must have flowed out of it and caught fire.[30] Among the amphora fragments there was a shattered one-handled flat-bottomed jug of Chersonesean manufacture (**C 9**). Judging by the context, the jug and the amphora must have fallen from one of the floors above. They had perhaps originally been among the items found in sub-horizon IC_{1bis}.

In the northern corner, in a small area (about 0.3 m wide and 1 m long) between a large stone vessel standing on the floor and the north-western wall, and partly inside the vessel itself, were found the following: 1) fragments of a deep cup-skyphos with the graffito ΙΕΡΑ ΣΑΒΑΖΙΟΥ (**B 98**, **H 2**); 2) a salt-cellar broken into two pieces with the graffito ΘΕΥ on the bottom (**B 129**, **H 25**); 3-4) fragments of four handmade pots (**D 23-24**, **D 74**, **D 79**). Also found at this spot were: 5-6) two cylindrical pendants of coloured glass with a double representation of bearded face (**G 18**, **G 19**, **N 14-15**) and an amphora-shaped glass pendant (**N 9**).

Fragments of a miniature handmade ceramic altar (**D 130**, **G 11**), some fragmentary ter-

Table 3. Distribution of tiles and pottery according to types and horizons in the layer (as complete units or equivalents of complete shapes).

Category of finds	Horizons: IA and IC_1	Horizons: IC_{1bis}	Horizons: IC_2 and the surface of the floor	Catalogue Numbers
Tiles (Sinopean)	11	17 (small)		**Aa 1-9, Aa 12-14**
Amphorae	5	2	1	**Ad 6, Ad 24, Ad 26, Ad 33, Ad 38, Ad 78, Ad 87, Ad 90**
Commonware		6	6	**C 3, C 9, C 11, C 14, C 26, C 44, C 93, C 122, C 128, C 134, C 145, C 174**
Black-glazed pottery			10	**B 10, B 18, B 28, B 66, B 89, B 98, B 129, B 145, B 146, B 188**
Ditto with graffiti			3	**B 98, B 129, B 146, H 4, H 25**
Handmade pottery		1	3	**D 2, D 74, D 79, D 130**
Total of the pottery (excluding tiles)	**5**	**9**	**23**	**37**

racotta figurines and protomes (**F 1-6**),[31] a terracotta representation of an apple (**F 7**), a ceramic phiale of an 'Achaemenid' type (**B 145**, **G 16**), and a few fragments of plain, wheel-made closed ware (one lekythos and two jugs), were collected in front of and beside the suggested stone altar in the central part of the room. Fragments of a black-glazed one-handler with the graffito A on its bottom (**B 146**, **H 4**) were scattered in the very centre of the room. The distribution pattern of the fragments clearly suggests that the one-handler fell down (or was dropped) from a height in the northern corner of the room. The same may be supposed of the fragments of another small, handmade pot, some of which were uncovered in the northern corner. The other finds enumerated here were probably connected with the stone altar, *i.e.* with the central and south-eastern parts of the room.

In addition to the finds described above, mention must also be made of an iron machaira (**K 174**) found beside the stone vessel; the blade was very ragged and even doubled over on itself – such damage as might have occurred only if the sword had been used to cut something very hard.[32]

A badly calcined marble plate was found on the floor in the western corner; and scattered over the floor surface nearby were the burnt or calcined and iridescent remains of a thin-walled cup of 'Achaemenid' type made of transparent glass (**N 16**), shattered into the

Table 4. Distribution of finds connected with cultic practice according to types and horizons of the layer.

Category of finds	Horizons		
	IA and IC_1	IC_{1bis} (beneath the debris of fireplace and at the contact with IC_2	IC_2 and the surface of the floor
Stone altar (?)			1 (on the floor)
Portable ceramic altars			2 (on the floor)
Terracotta figurines and protomes; representation of apple		2	5 (in the horizon and on the floor)
Black-glazed cup-scyphos with a dedication to Sabazios			1 (in the horizon and on the floor)
Phialai (ceramics, glass)			2 (on the floor)
Glass pendants with faces			2 (in the horizon)
Shells of *Cardium* and *Pecten*			30 (in a special pit in the floor)

finest fragments. A small portable ceramic altar-*eschara* (**G 7**) of Chersonesean manufacture was lying on the floor near the south-western wall (Pl. 22, *3*), and a Chersonesean copper coin (**I 1**) was found nearby.

In the southern corner, sub-horizon IC_2 contained further fragments of the pottery found in larger quantities in the upper sub-horizon IC_{1bis}.

Thus four horizons (or faciae), containing varying types and quantities of items, were actually identified in the fill of *room 12*. As regards the ceramic materials they may be provisionally divided into four categories: 1) roof tiles – both flat ones and kalipteroi; 2) ceramic containers (both point-bottomed and flat-bottomed amphorae and large earthen pots); 3) household and culinary wheel-made and handmade ware; 4) black-glazed ware. The stratigraphic distribution of these finds is presented in Table 3.

The above table illustrates the following points. The tile fragments were concentrated mostly in the uppermost part of the fill (layers IA and IC_1). The majority of the point-bottomed amphorae were found in sub-horizons IC_1 and IC_{1bis}. It was mostly ware destined for household purposes that was connected with sub-horizon IC_{1bis}, in which the remains of a circular hearth were also uncovered in the centre of the room. The lower sub-horizon IC_2 and the surface of the floor provided all the finds of black-glazed ware (including all the graffiti found here) and some other types of pottery. However, the most distinctive feature of this sub-horizon (IC_2) and the floor surface immediately below it was that they yielded objects that were undoubtedly related to cultic practice. The distribution of these objects is shown summarily in Table 4 above.[33]

A comparison of the stratigraphic and typological distribution of the finds presented in Tables 3 and 4 have enabled us to formulate the following hypotheses:

1. *Room 12* evidently had three (maybe even four) storeys or 'tiers'. In other words, there was probably a rectangular tower at the western corner.
2. The recorded fragments of Sinopean tiles (both flat ones and kalipteroi) suggest that the roof of the putative tower was probably tiled. This proposition, however, is by no means certain, and the tiles may have been used for other constructional purposes.
3. Judging by all the signs, the ground floor (or 'lowest tier') must have accommodated a sanctuary evidently dedicated to Demeter and Sabazios. A detailed discussion, proposed explanation, and reconstruction are presented below.
4. The second storey; or 'tier', with a large circular fireplace in the middle of the room, was probably intended for some household purpose. However, it cannot be ruled out that this room was in some way connected with the one below it *i.e.* the sanctuary.
5. On the third (and, possibly, the fourth) storey or 'tier', amphorae were stored. However, the storeroom(s) here not only differed from the designated amphorae stores in *rooms 3* and *13* in the extremely varied composition and relatively small quantity of their contents, but also presented a distinct contrast to the debris of fallen amphorae in the north-western part of the courtyard.[34]

Room 14 (Pls. 25-26). A 'corridor' room situated in the western corner of the courtyard in the inner range, between *rooms 11-13* and *16*.

Inside the room three stratigraphic horizons were identified, connected with three separate building phases and the corresponding alterations of plan.

1. Stratigraphic horizon IA and *room 14a*: the topsoil, ash-containing layer (*i.e.* the uppermost soil layer); thickness 0.25-0.30 m.

At the contact between horizon IA and the underlying sub-horizon IC_1 were found stone socles of the walls of *rooms 11*, *12,* and *13* (belonging to the first row), and also the socles of the northern and eastern walls of *room 14a*. This room constituted the last phase on the spot in question and was of trapezoid plan with sides measuring 2.28 × 1.25 × 2.05 m (from the western corner clockwise) and an area of 4 sq m. The creation of *room 14a* was the result of constructing a connecting wall across the gap between the earlier northern wall of the previously existing *room 14* and the wall of *room 13* (Pl. 26). The remains of this connecting wall are represented by a socle 0.35-0.37 m thick, carelessly constructed in the form of a single row of flat stones that had quite evidently been appropriated for reuse from breakdowns of the nearby walls. Throughout the entire length the foundation of this latest wall was laid on the surface of the underlying sub-horizon IC_1 (the layer containing traces of the fire and the debris of part of the mud-brick walls). It was not possible to determine the position of the entrance to *room 14a*. The floor was of earth and a number of wall fragments of amphorae and handmade ware were found lying on its surface. Along the northern wall stretched a household 'enclosure' 75-80 cm wide; it was separated from the rest of the room by a low partition built of flat, unworked stones set upright. The earthen floor of the 'enclosure' was 5-8 cm lower than the floor level of the main part of the room. The fill consisted of ashes, and in the southern corner stood the lower body of a Chersonesean amphora (**Ad 28**).

2. Stratigraphic sub-horizon IC_1 and *room 14*: a loam-and-clay layer with traces of fire filled *room 14* down to the surface of the floor.

The room was of almost rhomboid plan, 2.35-2.85 × 2.67-3.20 m, area 7.87 sq m. Its irregular plan resulted from the orientation both of the north-western wall of *room 16* (in the second row) and of the subsequently added northern wall, which separated the room from

the courtyard (Pl. 12). In the eastern corner was a very narrow entrance (about 50 cm), and in the western corner a doorway leading to *room 12* (see above).

The clay-plastered floor was up to 10 cm thick. Running diagonally across the room, between the entrance from the courtyard and the entrance to *room 12*, there was a path paved with flagstones, in the original construction of which fragments of amphorae and Sinopean flat tiles were used for filling the intersticies (Pl. 26). On one of the tile fragments the stamp of astynomos *Histiaios,* with its 'eagle on a dolphin' device[35] (**Ab 5**) was partly preserved.

Near the south-western wall, and at a distance of 85 cm from the entrance to *room 12* was installed a stone altar (**G 3**) (Pl. 25). The scattered fragments of a ritual vessel with a red dip-into in the form of a retrograde monogram, HP (**H 1**, **G 14**), were uncovered *in situ* upon the altar and around it; and lying face downwards on the floor beside the altar was a flat limestone relief bearing a representation of Herakles (**G 1**). In the southern corner, both on the floor surface and in the thickness of the layer, there were fragments of the upper body of a Solokha-I type amphora with a mushroom-shaped rim (**Ad 81**) (Pl. 25, *1*); fragments of its lower body were found in the upper layer of the amphorae store in *room 13* (see below).[36] The position of this neck of the amphora suggests that its remains actually fell down here from the storeroom above *room 13* during the fire. For descriptions of other finds from the layer on the floor (probably not originally related to *room 14*) see **K 120**, **M 5**.

3. Beneath the floor and the stone pavement there was a thin (no greater than 10 cm) intercalation of fine limestone particles containing minute splinters of the walls of amphorae and jugs (facia IC_a) and covering the buried-soil layer 15-20 cm thick that lay on the uneven surface of the bedrock below. The soil layer itself contained fine pieces of charcoal and small fragments of the walls and rims of Herakleian amphorae.

Thus the following sequence of phases in this particular part of the building may be conjectured.

Phase 1. A limestone altar dedicated to Herakles (**G 3**) was installed on the bare earth in the western corner of the courtyard beside the entrance to *room 12* and in front of the sanctuary of Demeter and Sabazios. It is quite probable that at the same time a relief representing Herakles was fixed on the wall above the altar. Some time later a paved path was laid to the entrance to *room 12*. This path, about 1 m wide and about 2.2 m long, was oriented on a diagonal running from the centre of the courtyard towards the entrance of *room 12* at an angle of 45°. The relative positions of the path, the base of the altar, and the threshold of the entrance to *room 12,* as well as their respective stratigraphies, make it a fairly probable supposition that the altar was installed either at the same time as the rooms of the first (outer) row were constructed or shortly after the building had been completed.

Phase 2. After *room 16* (in the second row) had been added at the south-western side of the courtyard and the wall forming that rooms north-west side had been constructed, the corner with the altar remained for some time enclosed on three sides but open towards the north-east – *i.e.* onto the courtyard. Later, after the construction of a further wall 4-5 m to the north of the altar, the corner became completely separate from the courtyard and thus formed *room 14*. This sequence of construction is suggested by the following facts. The orientation of the south-eastern wall of *room 14,* which separated the latter from *room 16,* corresponds with the direction of the paved path and is connected with it stratigraphically; moreover the stone socle is very carefully laid in the two-layered bed technique ('*postelistaya'* masonry). By contrast, the foundation of the northern wall is higher than the flagstones of the path, and the

socle is built in a rather different manner: *i.e.* more carelessly, from undressed stones of different sizes and using slightly perfunctorily worked orthostates for the base.

In this way, then, the formation of the sanctuary of Herakles as a separate room was evidently completed.

Phase 3. After the destruction of the house, a small *room* (?) *14a* was built on the levelled surface of the collapsed debris of mud-brick walls that had filled the previously existing *room 14* (horizon IC). This latest room was formed by a connecting wall carelessly constructed across the gap between the remains of *room 14*'s earlier south-west and north walls. Both the purpose and the period of existence of this room are unclear. However, the fact that it was located directly above the buried altar may be of importance.

Room 15 (Pl. 27, *1*). A 'corridor' room giving access to *room 7* (see above). It was situated in the northern corner of the courtyard, in the inner range, filling the angle formed by the walls of *rooms 6* and *7*; length 3.60 m, width 2.0-2.3 m, area about 7.7 sq m. The entrance from the courtyard was in the western corner of the room. The doorway was 1.15 m wide and had no threshold. The carelessly constructed walls were built of reused stones, among which a block with a mortise for the installation of an upright gravestone. The floor 5-8 cm thick was made of finely crushed limestone mixed with clay and very small fragments of pottery, and densely rammed. This floor covered a small (about 1 × 1 m), partially destroyed, pavement of limestone slabs which had earlier been laid in the courtyard in front of the entrance to *room 7*. The fill of *room 15* consisted of clay and loam. Lying in a pile and scattered over the floor were the shells of the Black Sea scallop (*Pecten*) (Pl. 36, *3*) along with fragments of Chersonesean amphorae, jugs, and other pottery.

Room 13 (Pls. 23-24). Situated on the south-western side of the building in the outer range, this room formed a single block with *rooms 16, 17 and 18*. The doorway was presumably about 1 m wide. The floor was of clay 5.5-8 cm thick. Stretching along the north-eastern wall from the eastern corner were the remains of a rectangular household 'enclosure' (or bin) 1.37 m long, 55-60 cm wide and about 60 cm high. Of this enclosure, only the remains of the cross wall, in the form of a single mud-brick 45 × 57 × 9 cm standing on edge, was preserved *in situ*; the longer of its walls had been destroyed and was traceable only by the breakdown of mud-bricks.

Three horizons of the cultural layer were identified in the fill within the room.

Stratigraphic horizon IA. A turf-covered, ashy soil layer with a high content of small fragments of amphorae (123 examples) mostly of Chersonesean manufacture. Only four wall fragments and one rim fragment belonged to a Korinthian amphora (**Ad 86**). In the same horizon a fragment of the rim and 27 pieces of the body of a Sinopean pithos (**Ac 1**) were also found.[37]

Stratigraphic sub-horizon IC_1. This reached its maximum thickness of 80-90 cm near the south-eastern wall. Westward it thinned out and almost disappeared at a distance of 1.5-2.5 m from the wall covering the underlying sub-horizon IC_{1bis}. It was quite clear that sub-horizon IC_1 had formed as a result of the contents of the first floor falling down from above during a fierce fire. Structurally the horizon presented debris entirely composed of broken and surface-burnt amphorae and other pots whose fragments were lying both on and under the mud-bricks (or debris) from the collapsed south-eastern wall that separated *room 13* from the adjacent *room 17* (Pl. 23 and 24, *1*). Some of the amphora pieces had fallen onto the floor,

Table 5. Pottery from room 13, stratigraphic sub-horizon IC_1 (complete shapes and equivalents of complete shapes).

Types of vessel	Places of production: Chersonesean	Sinopean	Other centres	Total	Catalogue Numbers
Pithos		1		1(?)	**Ac 1**
Storage-bins	2			2	**Ac 5**, **Ac 6**
Amphorae	14	2	2	18	**Ad 1**, **Ad 3**, **Ad 7-8**, **Ad 11-16**, **Ad 22**, **Ad 25**, **Ad 32**, **Ad 40**, **Ad 44**, **Ad 79**, **Ad 84**, **Ad 86**
Including:					
Stamped specimens	3	1		4	**Ae 33**, **Ae 72** (14), **Ae 105** (3)
Specimens with graffiti and dipinti	5		2	7	**H 33-34**, **H 42**, **H 61**, **H 63**, **H 70**, **H 73**
Closed shapes (flask, jug)	2			2	**C 7**, **C 266**
Total	**18**	**3**	**2**	**22-23**	

and many sherds of amphorae, jugs, and other vessels were deformed by a temperature that was sufficiently high to cause vitrification of their surfaces. Similarly some of the mud-bricks were also superficially vitrified. Taken together these facts add up to certain testimony that the temperature of combustion reached, or even considerably exceeded, 1200°C.[38]

The qualitative and quantitative description of the materials found in sub-horizon IC_1 is summarily presented in Table 5 above.

The composition of the pottery found in the debris of ceramic containers that constituted sub-horizon IC_1 seems to be a definite indication that certain stores were kept in the amphorae, the storage-bins, and, possibly, the pithos on the first floor of the building. Judging by the position of the amphorae in the debris, they originally stood (possibly in two rows) along the south-eastern wall, and then fell, necks foremost, together with the wall and the ceiling. On the inner and outer surfaces of most of the amphora fragments, runnels of fatty and oily cinders were preserved, while inside some of these runnels had formed clots. A chemical and technological analysis carried out by I.V. Bogdanova-Berezovskaja in the Laboratory of Archaeological Technology, LOIA (IIMK) showed that the runnels and clots from almost all the samples taken were the result of the burning of some organic liquid – probably vegetable oil.[39] This fact may perhaps explain the very high temperature of combustion (*cf.* the description of *room 3* above). Secondly, it suggests, more reliably than direct observations made during the clearing of the layer itself, that the graffiti and dipinti of letter

E found on the necks and shoulders of the amphorae may indeed have denoted the contents of the vessels, *i.e.* ἔλαιον – oil.[40] Recently, however in his consideration of the graffiti and dipinti on amphorae from house U6, V.F. Stolba has suggested that these (and other) letter marks were not in fact a means of identifying stored goods but, rather abbreviations of the name of the owner of the vessels.[41] This supposition is well-reasoned, but even if it is justified, the fact that it was mostly oil that was kept in the amphorae from the storeroom in question is indisputable. Moreover, the oil was kept in amphorae of various different origins: mainly in Chersonesean ones, then in an amphora from Sinope and in one from an unknown East-Mediterranean centre (conventionally referred to as amphorae of the 'Thasian Circle' or 'pseudo-Thasian'). In addition to this, as our analysis demonstrated, oil had been kept in all except one of the amphorae bearing the mark E. And finally the fact that the same analysis showed that in the stores in the house oil had been kept mainly in Chersonesean wine amphorae, particularly those stamped with the name of the astynomos *Bathyllos*,[42] testifies indirectly (or even directly) to Chersonesean home-trade wine amphorae (at least those of Chersonesean manufacture) being reused for storing products other than wine. In other words, the amphorae must have been circulating as reusable containers for a long time, especially among individual urban and rural houses.[43] Three of the fourteen Chersonesean amphorae from sub-horizon IC_1 bore the stamps of the astynomoi *Bathyllos*, *Sokrites* and *Kraton*[44] (**Ae 33**, **Ae 72**). In his recent typological and chronological classification Kac assigned these three magistrates to group 1A; as to absolute chronology, he supposed that they were in office within the period 325-315 B.C.[45]

Stratigraphic sub-horizon IC_{1bis}. This, ashy layer 20-30 cm thick with indications of a fierce fire lay directly above the original floor surface. Fragments of amphorae belonging to sub-horizon IC_1 had sunk into this layer and through it onto the floor itself. However, the majority of the finds that were lying on the floor and within the thickness of horizon must have been connected exclusively with the lower storey of the building.

In the northern corner the skeleton of a man aged 30-40 and about 1.70 m tall was found stretched on the floor alongside the north-eastern wall (Pls. 23-24).[46] The skeleton was partly covered with fragments of amphorae bearing runnels of some burnt liquid on their surface. Many of the bones, especially those in the lower part of the skeleton, were burnt. The pelvic region was the most badly damaged and burnt of all. Quite obviously this individual died a tragic death in the fire. The burning store of amphorae and storage-bins on the upper storey evidently fell down on top of him, and he must have died beneath the weight of the collapsed ceiling among streams of boiling and burning oil. According to the conclusion of anthropologist T.S. Konduktorova there were no other signs of a violent death.

In the eastern corner of the room there was an amphora (**Ad 79**) seemingly of Kolophonian manufacture, standing upright inside the 'household enclosure' (or bin); and lying beside this amphora were two pairs of the iron nails commonly used in fixing beams – each was bent at a right angle; above these nails and within the layer there was also a short nail with a broad head (**K 117**).

In the centre of the room the piled-up remains of a burnt wooden structure comprising fragments of boards and strips and blocks of wood were found on the floor.[47] Next to them at least 20-30 pyramidal loom-weights of unfired clay were lying in a single row; they formed an agglomerated mass from which it was possible to extract and preserve only four complete examples. In the same accumulation were found a long iron rod of rectangular section flattened at its upper end in the form of a very narrow trowel with its tip bent into a hook (**K 189**); a cast bronze ring (**K 65**); a second nail with a broad head (**K 118**); and an iron 'buckle' (**K 170**). This accumulation of objects found lying all together with the burnt wooden

structure probably constructed the remains of a vertical loom which had been standing in the middle of the room.[48]

A second accumulation of items was found on the floor in the southern corner, and these too may have been connected with certain manufacturing activities by those who used this room. In the very corner, a sleeved chisel with a narrow blade was lying on the floor; next to it was an iron shovel (**K 149**), and nearby a whetstone; there was also an iron bow-drill (**K 167**),[49] with a stone pestle next to it. A little over a metre to the north-east of these tools were found an iron axe with a lug (**K 168**), a small iron knife with a hump-like back (**K 154**), and some part of an unidentified tool. The planigraphic position of the finds on the floor indicates quite clearly that originally either all of them had been stored on a corner shelf or some of them at least had been hung on the wall. One way or another, all or almost all these iron tools were most probably carpenter's or joiner's implements.

In addition to the two above-noted accumulations of objects intended for manufacturing purposes, another group of artefacts not connected with manufacture was also conspicuous. All the objects in this group were found close to each other, both on the floor surface and beneath (and partly within) the breakdown of the upper storey. Their relative positions within the layer and on the floor suggest that originally they probably all stood next to each other on a single shelf. They included a small painted ceramic portable altar-thymiaterion (**F 12**), a terracotta model of egg (**M 22**; 42 × 31 cm), a miniature flask for medicines (**B 203a**; height 6.5 cm), and a larger flask of Chersonesean manufacture (**C 94**). Possibly, three Chersonesean lekythoi with narrow throats should also be assigned to the same group (**C 88-89**, **C 92**), but this remains to be proved. A number of the fragments of these lekythoi lay in the area occupied by the other objects (**F 12**, **E 11** *etc.*), while others were scattered over a considerable area within the horizon and on the floor surface. Some functional relationship between the various vessels in this group is very probable: it is possible, for instance, that not only the typical miniature medicine flask but also the other narrow-throated vessels were intended for storing liquid medicaments. The presence of the terracotta egg (*apotropaios*?) and the portable altar is quite likely an indirect indication of the 'medicinal' character of the group. If this supposition is justified, then these vessels may in some way have been connected with the cult of Asklepios and Hygieia, the existence of which is established for Chersonesos and its territory.[50] Also, in this case, the cult of Asklepios and Hygieia might, tentatively, be added to those of Herakles, Demeter and Sabazios which have been proved by materials from the excavations.

In various places on the floor of the room, and inside the horizon covering the floor, there were broken and shattered Chersonesean painted jugs, bowls, black-glazed vessels and their fragments, a small dish, and lamps, as well as handmade kitchen pots and their fragments. One handmade pot, according to an identification by Z.V. Januševič, was originally filled with millet gruel (see Appendix IV). The total composition of all the ceramic shapes found in this layer is presented in Table 6.

Judging by the rather numerous and varied set of objects, the ground floor of *room 13* was used both for living and for manufacturing activities.

Beneath the floor was a layer of buried soil 15-20 cm thick lying on the uneven surface of the bedrock.

Room 16 (Pl. 27, *2*). Situated in the south-western sector of the building in the inner range, this room formed a single block with *rooms 13*, *17*, *and 18*; it was of trapezoid plan: length 3.25 m, width 2.25 m, area 7.3 sq m. Originally it was a corridor room with an entrance from the courtyard located in the northern corner; the doorway here would have been 0.8 m wide, though this was later blocked up with rubble. In the south-west wall a second doorway 1.10

Table 6. Ceramic materials from room 13, stratigraphic sub-horizon IC_2 and the surface of the floor (as complete forms and equivalents of complete forms).

	Place of production				
Types of vessel	**Chersonesos**	**Other centres**	**Local**	**Total**	**Catalogue Numbers**
Amphorae		1 (Kolophon?)		1	**Ad 79**
Commonware:					
Painted jugs	3			3	**C 8**, **C 12**, **C 114**
Lekythoi, flasks	5			5	**B 203a**, **C 88-89**, **C 92**, **C 94**
Bowls, louteria	2			2	**C 82**
Plates		1 (?)		1	**C 30**
Black-glazed vessels:					
Kantharoi		3		3	**B 9**, **B 31**, **B 43**
Bowls		1		1	**B 142**
Jug		1		1	**B 187**
Lamp		1 (Attic?)		1	**E 12**
Handmade kitchen ware (pots)			6	6	**D 7**, **D 20**, **D 34**, **D 85**
Miscellaneous objects:					
Incense burner (thymiaterion)	1			1	**G 12**
Model of egg		1(?)		1	**M 22**
Total	**11**	**9**	**6**	**26**	

m wide led into *room 17*. The floor was 3-5 cm thick and consisted of densely rammed fine gravel mixed with clay and very small fragments of pottery.

Three horizons of the cultural layer were identified:

Horizon IA – a turf-covered soil layer devoid of finds.

Horizon IC – a dense clay-and-loam mass covering the floor. Within this mass and on the floor surface very small splinters of plain, black-glazed or handmade pottery were encountered, as well as fragments of flat Sinopean tiles which join onto one of the broken keramides (or roof-tiles) from *room 12* and half of a Chersonesean keramis.[51] The lower body of a Chersonesean amphora was found standing in the eastern corner – the foot of this vessel had been broken off sometime in antiquity and the fracture-surface subsequently evened and smoothed (indicating reuse for some other household purpose). Also lying on the floor were the lower body of a Sinopean amphora and fragments of the neck of a Herakleian amphora bearing the traces of an unreadable stamp (**Ae 130**).

Horizon IC_a – a layer of dense loam and rubbish underlying the floor and the bases of the stone socles of the walls, and containing fine splinters of stone, sea-worn pebbles, and small

(unidentifiable) fragments of animal bones along with fragments of shells of marine molluscs and vineyard snails. This facia had formed on the surface of the courtyard before the construction of *rooms 16* and *18*. It was bedded upon a layer of the buried soil that itself lay on the surface of the bedrock.

The room was evidently intended for some household purpose. No signs of the existence of an upper floor were discovered.

Room 18 (Pl. 27, *2-3*). Situated in the south-western sector of the building in the second row and adjoining the gate, this room was attached to *room 17* and built at the same time as *room 16*. It formed a single block with *rooms 13*, *16*, *and 18,* and was of trapezoid plan: length 2.70-2.93 m, width 2.25 m, area 6.33 sq m. Initially it was a self-contained room; the entrance from the courtyard was originally located in the middle of the north-eastern wall, and in front of it was a stone pavement 1.20 × 1 m (upon which was found a crushed handmade pot). The doorway, which was 1.0 m wide, was later carefully blocked up with rubble in such a way that a niche 12-13 cm deep was formed inside the room. Probably at the same time, a narrow exit (48-50 cm) opening into the gateway was cut in the south-eastern wall, and this also had a small rectangle of paving 0.9 × 1 m laid in front of it (within the gateway area). It is possible that at this time too the earlier north-eastern wall of *room 17* (which was also the south-western wall of *room 18*) was reconstructed. The renewed wall was built in the same technique and type of masonry as was used for the wall socles of *rooms 16* and *18*. A doorway about 1 m wide made in the western corner of *room 18* gave access to *room 17*. The former thus became a corridor or passage-way room adjoining the gate (and so we named it preliminarily 'the door-keeper's room').

The floor of *room 18* resembles that of *room 16* in its structure. The stratigraphy and the character of the fill were also similar: with the exception of a few small fragments of pottery and a bronze arrowhead (**K 86**) lying in the niche, there were no finds in the fill or the floor. No signs of an upper floor were found.

Room 17 (Pl. 27, *2*). Situated on the south-western side of the building in the outer range and adjoining the gate, this room made up a single block with *rooms 13*, *16*, and *18,* to which communicating doorways gave access (see above); length 4.75-4.80 m, width 2.90 m, area about 14 sq m. Originally, before attachment of *rooms 16* and *18*, this room formed a block with *room 13* only. The entrance from the courtyard was in the northern corner, the doorway there being 1.10 m wide. The floor was made of clay 5-7 cm thick. In the southern corner there was a round fireplace 75-80 cm in diameter built of flat stones and fragments of flat Sinopean tiles on clay mortar. In the homogeneous clay-and-loam fill were found small fragments of tiles, amphorae, and other vessels (total 79). Standing on the floor by the fireplace and close to the south-eastern wall, there was a large crushed handmade pot decorated with fingernail impressions; a whetstone and some mussel-shells were found in the same spot. Fragments of three other handmade pots (**D 100-102**) were found close to the entrance to *room 13*.

Beneath the floor there was a layer of buried soil 15 cm thick lying on the uneven surface of the bedrock. The layer contained small pieces of charcoal and the shells of vineyard snails (*Helix*).

Judging by the clay-and-loam fill it may be supposed that this room had an upper storey.

Room 19 (Pl. 28, *1*). A corridor or passage-way room in the inner range. It fronted onto the courtyard and the south-eastern side of the gateway, sharing its south-western wall with *room 20,* with which it originally made up a single block. Later, both *rooms 19* and *20* were made to communicate with *rooms 21* and *22*. *Room 19* was of trapezoid plan, length 3.10-3.30 m,

width 2.25-2.28 m, area about 7.7 sq m. The entrance from the courtyard was in the northern corner, where the width of the doorway was 1.05 m. The stone threshold 85 × 45 × 18 cm was very carefully cut from a single block, with one edge chiselled out to accommodate the door-post and the door, a socket for fixing the door-post, and a hole for the door pivot. The door itself would have been 68 cm wide and evidently opened into the room. An area 1.1 m wide in front of the entrance in the courtyard was carefully paved with flat stones. A second doorway 1.05 m wide in the middle of the south-western wall led into *room 20*. Its threshold (27-32 cm wide and 18-20 cm high) was composed of two stone slabs with straight-cut edges and a special socket for fixing the door-post. In the western part of the doorway on the side of *room 20* there was a lower bearing of stone; the door thus opened into *room 20*. The width of the door would have been about 65 cm. The floor presented a densely rammed fine limestone gravel mixed with clay. In the western corner there was a round fireplace about 0.4 m in diameter with a hearth put together from pieces of flat Sinopean roof-tiles.

The dense clay-and-loam fill of the room was similar in terms of its stratigraphy and structure to the fills of *rooms 16* and *18* (and the same is true of the underlying layers). In the fill (horizon IC) were found the following: about 80 small fragments of plain red-ware closed and open vessels of Chersonesean and Sinopean manufacture; 7 amphora fragments of Chersonesos and of the Solokha-I type; the same number of fragments of cooking pans; 5 small fragments of Sinopean keramides; a fragment of a lamp (**E 4**); and one fragment of a terracotta figurine. No objects were found on the floor surface.

The room was probably intended for household purposes. No signs of the existence of an upper floor were discovered.

Room 20 (Pl. 28). Situated on the south-western side of the building in the outer range, this room was originally a self-contained one (length 3.80 m, width 3.10 m, area 11.78 sq m): the former entrance from the courtyard was towards the northern corner, as described above (see *room 19*). After the construction of *room 19* the two rooms together formed an independent block; later this block was enlarged to four rooms by taking in the adjoining *rooms 21* and *22*. The floor about 5 cm thick was clay-plastered, and its level was 5-6 cm below that of the floor in *room 19*. In the centre of the room a fiercely scorched round hearth (?) about 50 cm in diameter was distinguished while close to the north-eastern wall were the remains of a fireplace in the form of a square, clay-plastered area with sides measuring 50 cm raised 7 cm above the floor. The clay-plastered sides had pieces of Sinopean keramides mortared into them, and on one of these pieces an unreadable astynomos stamp was preserved (**Ab 8**).

In the homogeneous clay-and-loam fill small fragments of tiles, amphorae, and other pottery were encountered (total 127 examples). A large crushed handmade pot (**D 3**) decorated with finger impressions was found standing on the floor in the western corner. But, apart from a crushed miniature handmade salt-cellar (**D 126**) and next to it a pyramidal pendant of blue glass (**N 7**) lying in the eastern corner, no other objects were found in the room.

In the clay-and-loam fill (horizon IC) pieces of clay stucco with imprints of wood were encountered; these probably belonged to the ceiling. The volume of the layer suggests that there was originally an upper floor above this room.

Room 21 (Pl. 29, *1-2*). This room was situated on the south-western side of the building in the inner range, between *rooms 19* and *23*, and the stone socles for its mud-brick walls were built at the same time, of the same materials, and in the same manner as those of *room 19* (length 2.80 m; width 2.25 m; area 6.3 sq m). The room lay on the north-east side of *room 22*, with which it originally constituted a single block and to which it gave access in the manner of a walk-through passage-way. The entrance from the courtyard was originally located in the

northern corner, and the doorway, which had a stone threshold, was 1 m wide; in the courtyard in front of this doorway there was a stone pavement measuring 1.5 × 1.45 m. Later, the doorway was blocked up with small pieces of rubble held together with a clayey mortar. The room then formed a single block with *rooms 19, 20, 21,* and *22*. There was a second doorway, 1.05 m wide, leading into *room 22*. The threshold was made of two carefully cut blocks of the so-called 'Sarmatian' limestone with two sockets cut into for a wooden door-post with a pivot (the lower bearing for the hinge-pin of the wooden door). Preserved *in situ* inside one of the sockets there was a copper nail for fixing the wooden frame of the door-post to the wall. The door itself (about 65 cm wide) opened into *room 22*. The floor of *room 21* was paved with large stone slabs except at the south-eastern side, where an adobe strip about 4 cm wide and 2.25 m long was left unpaved alongside the wall, at the same level as the paving. The purpose of this strip is not quite clear.[52]

In terms of its stratigraphy and structure, the dense clay-and-loam fill of the room is similar to that of *rooms 16* and *18*. (And the same is true of the underlying layers.) In the fill (horizon IC), were found 92 small fragments of Sinopean tiles, the walls of Chersonesean and other, unidentified, amphorae, and fragments of plain, red-ware closed and open vessels and hand made pots, as well as the shells of marine molluscs (*Ostrea, Mytilus, Pecten*) and vineyard snails (*Helix*). Here, also numerous fragments of the claws and shells of both stone crabs (*Eriphia spinifrons* L.) and green crabs (*Carcinus maenas* L.) were collected. Lying on the floor in the centre of the room were an overturned limestone tub (70 × 26-37 cm; depth 9 cm) and a low rectangular support for it (27 × 27 × 14 cm), also made of limestone. Near the entrance to *room 22* a copper fishhook was found on the floor.

The room probably served some household purpose, and the considerable accumulation of remains of marine fauna suggests that it was used for cooking and/or preserving the same. No trace of a second storey was discernible.

Room 22 (Pls. 29, *2-3* and 30, *1*). This room was on the south-western side of the building, in the first row, between *rooms 20* and *24*; length 3.80 m, width 3.10 m, area 11.78 sq m. The adobe floor was about 5 cm thick, its level being 5-6 cm lower than that of the floor in *room 19*. Originally the room was self-contained, and the entrance from the courtyard was in the northern corner (see description of *room 21* above). After *room 21* had been annexed to *room 22*, the two rooms together constituted a separate block which could be entered from the courtyard. Later, the courtyard entrance to *room 21* was blocked up, and, probably at the same time, a doorway 0.85 m wide was cut in the western corner of *room 22* through its north-western wall into *room 20*. For this purpose, the upper course of the stone foundation was removed while the section below, measuring 85 × 44 × 20 cm, was left in place as a stone threshold. Thus *room 22* finally became part of a separate block of four rooms (*rooms 19-22*).

The floor (3-5 cm thick) was of densely puddled clay mixed with finely crushed limestone and lay on a very thin (less than 20 cm) layer of buried soil. In the eastern corner of the room there was a square fireplace (50-55 cm wide) with a puddled-clay hearth and a low kerb constructed of sea-worn pebbles, fragments of flat Sinopean tiles, and the walls of a Sinopean pithos.

Within the dense clay-and-loam fill and at different spots on the surface of the floor, were found 98 small fragments of amphorae and other vessels, fragments of severely corroded hammered iron nails, a small bronze nail (**K 34**), a ring (**K 61**), and two pendants (**K 53** and **K 56**). A spindle-whorl made from the foot of a black-glazed kantharos with the graffito ΘΕΟΚ (**B 67**, **H 24**, **M 6**) was found lying in the southern corner.

In the western corner of the room were found two Chersonesean copper coins of the type depicting the Parthenos shooting the hind on the obverse and a bull above a club on the re-

verse (**I 7-8**). Both were uncovered at a depth of 6 cm below the floor surface – that is to say, in the upper part of the ancient topsoil layer that covered the bedrock, but below the level of the masonry of the wall socles. One of the coins was lying 78 cm from the north-western wall and 84 cm from the south-western wall of the room, while the other was respectively 1.10 and 0.44 m from these same walls. The stratigraphic context (taking into account the dense structure of the floor which would hardly have allowed the coins to sink through it naturally) leads to the conclusion that the coins could only have got into the buried soil *either* before the beginning of construction of the house *or* during the course of its construction, but certainly before the laying of the dense clay-and-gravel floor in this room. Hence, we may suppose with a fair degree of probability that the release of this new type of Chersonesean coin had either begun immediately before construction of house U6 or was synchronous with the beginning of the construction.[53]

The volume of the fills and traces of burnt ceiling materials found in sub-horizon IC_1 suggest a second storey above this room.

Room 23 (Pls. 30-31, *1*). A corridor room located in the southern corner of the courtyard, in the second row between *rooms 21* and *25*, and adjacent to *rooms 22* and *24* (situated in the first row on its south-west side). Its ground plan is an irregular pentagon: length 3.70 m, width (clockwise) 2.27, 2.45, 1.75 m, area 7.44 sq m. This room was built in between *rooms 21* and *26*, probably after the construction of *rooms 19* and *21,* and possibly after that of *room 26* too (see below).

Initially, the room was built to give access to *room 24* (see below). The entrance from the courtyard was in the northern corner. The width of the doorway, together with the stone threshold (made of a single block), was 1.05 m; at a later stage, it was blocked up with stones. The entrance to *room 24*, in the southern corner, was possibly blocked up at the same time, and a narrow passage (65 cm wide) was made through to *room 25* instead. The floor, made of puddled clay mixed with finely crushed limestone, was plastered over a layer of refuse (facias IC_a).

The clay-and-loam fill and the walls preserved traces of a very fierce fire. In the fill and on the floor, were found 68 small fragments of Chersonesean amphorae and 27 fragments of other amphorae, along with fragments of nails (**K 129**, **K 139**), and the remains of a bronze bodkin or awl (**K 51**). In the northern corner there were 19 molluscs-shells (*Ostrea, Mytilus, Helix)* lying in a small heap on the floor. A smashed and severely scorched terracotta (**F 8**) was lying in the western corner, and beneath it, in the thickness of the floor, was a small pit 16 cm deep and 42 cm in diameter; this was filled with ash mixed with small shells from marine molluscs (*Venus, Cardium, Tapes, Nassa reticulata*) and crushed and scorched bird bones (unidentifiable). Scattered elsewhere on the floor surface, were a fragment of the upper part of a rectangular millstone, some fragments of a Chersonesean bowl, and the walls of an amphora.

The purpose of the room is unclear. There were no traces indicative of the existence of a second storey.

Room 24 (Pl. 31, *2*). This room was in the southern corner of the courtyard, in the first row between *rooms 22*, *23*, *25*, and *28*; length 3.75 m, width 3.0-3.05 m, area 7.44 sq m. Initially, the room was self-contained, and the entrance from the courtyard was in the northern corner. The doorway was 1.10 m wide with a threshold composed of several stone slabs. The lower door bearing, cut in stone, was preserved *in situ.* The door itself, about 70 cm wide, must have opened into the room.

After the corridor *room 23* had been annexed to the courtyard side of this room, both rooms together formed an individual block with a single exit to the courtyard. Later, prob-

ably after the construction of *rooms 25* and *26* (see below), the doorway that had originally connected *rooms 24* and *23*, was blocked up (as was the courtyard entrance to *room 23*). The entrance to *room 24* was then transferred to its eastern corner, thus connecting it with *room 25*. The width of this new doorway was about 1 m. The upper part of the wall socle was removed, but the lower section, lying on the surface of the soil, was left in situ as a stone threshold.

The floor was made of puddled clay (or adobe) applied over a layer of finely crushed limestone; thickness 5-8 cm. Beneath the floor was a thin layer of buried soil (0.15-0.20 m thick) covering the surface of the bedrock; this layer contained very small pieces of charcoal and the crushed shells of vineyard snails (*Helix*). At the level where the lower limit of the adobe floor met the surface of the ancient topsoil layer, there was found in the centre of the room, a Chersonesean copper coin issued under the magistrate *Eudromos*, with a griffon on the obverse and a kneeling Parthenos on the reverse (**I 5**). The context of course indicates that the coin must have got there *before* the laying of the adobe floor.[54]

Dispersed uniformly in the clay-and-loam fill (horizon IC) and on the surface of the floor, there were 122 small fragments of amphorae and other wheel-made and handmade (**D 54**) pottery, as well as the fragments of some severely corroded iron nails (**K 116**, **K 140**). Lying on the floor surface near the north-eastern wall were a Chersonesean jug whose rim had been broken off in antiquity (**C 13**) and the fragments of a large iron knife (**K 150**) and scattered elsewhere on the floor were the shells of various molluscs: oyster (*Ostrea*), scallop (*Pecten*), *Venus*, and vineyard snail (*Helix*).

The volume of the clay-and-loam fill and traces of burnt ceiling materials found in sub-horizon IC_1 indicate the existence of a second storey here.

Room 25 (Pl. 32, *1*). This was a walk-through or passage-way room situated in the southern corner of the courtyard, in the inner range; length 2.85 m, width 2.10 m, area about 6 sq m. The entrance from the courtyard was in the northern corner, and the doorway was 70 cm wide with a threshold made of stone slabs. The floor, which lay immediately on top of a thin intercalation of refuse, was densely paved with small limestone setts and cemented with a clay mortar; thickness 4-5 cm.

This room was formed in the angle created by the addition of *rooms 23* and *26* alongside the rooms in the outer range. It combined *rooms 23*, *24*, *26*, *28* and *29* into a single block with a single entrance from the courtyard, and four doorways led out into the neighbouring rooms; the two doorways in the southern corner gave access to *rooms 24* and *28*, the one in the western corner to *room 23*, and that in the eastern corner to *room 26*.[55]

In the clay-and-loam fill and on the floor, were found the fragments of some severely corroded iron nails (**K 124**, **K 125**), as well as 89 small fragments of various pottery (mostly Chersonesean amphorae and jugs, cooking pots (**C 151**), and handmade pots and bowls (**D 118**)). A portable stone small altar in the form of a bird (**G 5**) lay on the floor in the southern corner, near the entrance to *room 25* and scattered about elsewhere on the floor, were the shells of oysters (*Ostrea*), mussels (*Mytilus*), *Nassa*, and vineyard snails (*Helix*).

The character and volume of the fill precludes any supposition that a second storey existed above this room.

Room 26 (Pl. 32, *2*). This room was located in the southern corner of the courtyard, in the inner range, and opened out of *room 25*. Its ground plan was of an irregular trapezoid form: length (of courtyardside) 1.75-2.10 m, width 2.50-2.75 m, area about 5.03 sq m. The entrance from *room 25* was in the southern corner. The width of the doorway was 1.10 m; there was no threshold, and, probably, there was never a door either. The adobe floor, 5 cm thick, was plastered over a thin refuse layer (about 5-7 cm thick).

The room was formed by extending the north-west-wall of the previously existing *room 27* towards the south-west, and then making a right-angled turn to the south-east. Judging by the careless construction of the wall socles and the irregular ground plan, the room served some secondary purpose within the block formed by the six *rooms 23-26* and *28-29*.

The loamy fill contained a large amount of ash and fine charcoal, which had probably fallen from the burnt ceiling. On the floor were uncovered eight small fragments of Sinopean keramides and 61 fragments of various pots including wall fragments of a Sinopean pithos, along with Chersonesean, Sinopean, and Rhodian amphorae, a Chersonesean amphoriskos, jugs, and bowls (**C 51**),[56] a black-glazed bowl (**B 105**), and a couple of fragmentary handmade vessels (**D 51** and **D 63**). Scattered about on the floor there were also shells of oysters (*Ostrea*) and mussels (*Mytilus*), bones of brill (*Rhombus maeoticus* Pall.), fragments of some scorched and badly corroded hammered iron nails, and a round leaden spindle-whorl. Near the middle of the north-western wall, a very severely scorched terracotta – a winged Eros (**F 9**) – was uncovered.

The character and volume of the fill indicate with a fair degree of probability that this room was single-storeyed. Its definite purpose was impossible to identify, though it seems clear that it had some merely auxiliary function.

Room 27 (Pl. 32, *2*). A corridor room, situated on the southern side of the courtyard, in the second row; length 3.40-3.57 m; width 2.40 m; area 8.36 sq m. The room was added to *room 30* (in the outer range) to form a single block. The entrance from the courtyard was in the western corner, the width of the doorway being 86 cm. The double-stepped threshold was made of limestone slabs; however no traces of any wooden door framing have been discovered. The adobe floor, 5 cm thick, was plastered over a thin intercalation of refuse (about 5 cm thick).

In the lower part of the very dense, loamy fill, containing much ash and fine charcoal, and on the floor surface, were found 49 small fragments of Sinopean tiles, along with the walls of pithoi, some Chersonesean amphorae and jugs, a fragment of a grey-slipped fish-plate, and a fragmentary handmade bowl.[57] Lying jumbled together in the middle of the room, were a small silver pendant (**K 185**), a whetstone, and a mussel shell (*Mytilus*).

The character and volume of the fill plainly indicate that the room was single-storeyed. Probably it served some household purpose.

Room 28 (Pls. 32, *2* and 34, *1*). This room was situated in the southernmost corner of the building in the outer range, and formed part of a single block made up of the adjacent *rooms 23-26* and *29*; length 4.65 m, width 3.10 m, area 14.42 sq m. Originally, the room was self-contained. The entrance from the courtyard was in the northern corner, the width of the doorway being 1.10 m. The threshold was very carefully fashioned from a single limestone block with rectangular mortises for the door-jambs and a spherical socket (the lower bearing) for the hinge-pin of the door cut into it.[58] The door itself, which would have been about 7 cm wide, evidently opened into the room. Later, the room was entered from the southern corner of the courtyard via the corridor *room 25*.

The floor was of adobe, 8-10 cm thick, plastered over the surface of the buried soil (about 15 cm thick) that covered the limestone bedrock. In the western corner, there was a small pit in the floor, 6 cm in diameter and 3 cm deep; it was filled with pure ash, containing calcined and crushed bird bones. Lying three metres from the southern corner and 60 cm from the south-eastern wall, the broken lower base of a press carved of dense limestone in the form of a rectangular 'trough' with low walls; a limestone block, also rectangular, was lying nearby – possibly, the weight for the lever of the press. Judging by the position of these fragments,

the base of the press was originally set about 1.50 m above the level of the floor. Near the south-eastern wall, and 2.05 m from the southern corner, there was a square fireplace measuring 52 × 52 cm. A sandstone slab plastered with clay on top served as the hearth. The plaster covering the wall of the fireplace contained fragments of Sinopean keramides.

In the clay-and-loam fill of the room, it was possible to discern two stratigraphic horizons divided in places by lenses of thin, calcined, ashy intercalation, containing woody remains and spots of accumulated clay plaster, probably from the ceiling.[59] In the fill and on the floor surface, a fragmentary flat Sinopean tile, some wall fragments of a pithos (also Sinopean),[60] and a whetstone were uncovered. Besides these, fragments of at least three to five Chersonesean and one Sinopean amphorae were found in the fill and on the floor of the room, as well as just outside the building – in square Z-7. On the handles of two of the Chersonesean amphorae there were stamps of the astynomos *Bathyllos* (**Ae 22**) and a stamp with the monogram EYA (**Ae 97**).[61] The Sinopean amphora bore the stamp of the astynomos *Mnesikles* (**Ae 110**). The archaeological context (*i.e.* stratigraphy and planigraphy) suggested unequivocally that, before the building collapsed, these amphorae were stored on a second storey, above *room 28*.[62]

It is difficult to determine the purpose of this room, but probably it was used for some manufacturing process.

Room 29 (Pl. 32, *2*). This room was situated in the southern part of the building, on the south-eastern side of the courtyard, in the outer range; length 3.50 m, width 3.10 m, area 10.85 sq m. It was part of the single block comprised of the adjacent *rooms 23-26*. *Room 29* adjoined *room 28* and was connected with the latter by a doorway in the party-wall, though initially it had been self-contained. Its original entrance, from the courtyard, was in the western corner, the doorway there being 1.10 m wide. Later, this was blocked up, and evidently at the same time, the south-western wall separating this room from the adjacent room (*28*) was partially rebuilt. The western end of this wall was replaced by a wall built of mud-bricks on a low stone foundation, in the middle of which a new entrance from *room 28*, about 1.0-1.1 m wide, was opened up. The floor was very densely paved with finely crushed limestone (gravel) in a clayey mortar. This floor was 3 cm thick and covered an earlier adobe floor (2-3 cm thick) plastered over the thin layer of buried soil on top of the bedrock.

In the centre of the room was an adobe fireplace 44-45 cm square, while in the eastern corner there was a household 'enclosure' (or bin) measuring about 0.7-0.8 × 1.5 m by about 0.35 -0.40 m high. Its shorter side was separated by an unstamped flat Sinopean tile, set perpendicular to the south-eastern wall; some small stones and the remains of mud-bricks made it possible to trace the long side of this 'enclosure'. In the western corner of the room, a pit about 60 cm in diameter and 21 cm deep was dug in the floor; this was filled with ashes devoid of any admixtures, though lying on the top were the fragments of a small portable clay altar (or censer) of **G 12-13** type, of Chersonesean production.

Besides a few small fragments of amphora walls and a piece of the wall of a pithos, no other artefacts came to light within the clay-and-loam fill of the room. All the other artefacts found were lying on the floor surface. A Chersonesean amphora (**Ad 20**) – a vessel that had been reused in antiquity after its rim had been broken – stood *in situ* in the northern corner. Lying to the west of the fireplace, there were the bottom part of a Chersonesean amphora, some fragments of the upper body of a Sinopean amphora, a broken grey-slipped fish-plate (**B 224**) and two black-glazed kantharoi (**B 8**, **B 24**) (Pl. 32, *3*). Inside one of which was a bronze nail (**K 39**). Scattered about elsewhere on the floor were the fragments of one iron and two bronze plates (**K 93**, **K 94**, **K 182**), some fragments of a severely corroded iron knife (**K 159**), an iron chisel (**K 165**), a whetstone, and the shells of mussels (*Mytilus*) and (*Nassa reticulata*).

The volume of the clay-and-loam fill in the room and the intercalations of ashes suggest the possible existence of a second storey. Quite probably, *room 29* served as living-quarters.

Room 30. This room was situated in the outer range on the south-eastern side of the courtyard. It formed a single block with *room 27*, which was constructed later; length 3.50 m, width 3.05 m, area 10.68 sq m. Originally, the room was self-contained, with an entrance straight from the courtyard in the western corner. The doorway there was 1.10 m wide, but later, possibly after the addition of *room 27*, it was apparently blocked-up with mud-bricks, and a new entrance, estimated to have been about one metre wide, was cut in the northern corner.[63]

The adobe floor, 8-10 cm thick, was plastered over the surface of the ancient topsoil. Near the south-western wall, and 60 cm from the western corner of the room, there was a small rectangular fireplace measuring 35 × 45 cm; this was constructed out of pieces of flat Sinopean tiles, on one of which was imprinted the stamp of the astynomos *Diophantes* (**Ab 4**). Close beside the fireplace, the lower part of a Chersonesean amphora was found dug into the floor (**Ad 30**).[64]

In the clay-and-loam fill and on the floor surface, were found 55 small fragments of various pots, a whetstone, two bronze arrowheads (**K 84**, **K 87**), and a mussel shell (*Mytilus*).

The volume and character of the fill suggest the existence of a second storey above *room 30*.

Room 31. Situated on the south-eastern side of the courtyard, in the first row, between *rooms 30* and *32*, this room formed a single block with the corridor *room 36* attached later on the courtyard side; length 4.55-4.57 m, width 3.10 m, area about 14 sq m. The communicating doorway to *room 36* was in the west corner. Traces of reconstruction (reconstructions?) were discernible, and it seems that originally, the room was self-contained and shorter in length (about 3.7-3.8 m), with entry direct from the courtyard. Later, the party-wall with *room 32*, was completely dismantled and moved north-eastwards, thus enlarging the area of *room 31* and correspondingly reducing that of *room 32* (see below). The new wall was built entirely of mud-bricks without any stone socle, and so stood directly on the surface of the floor.

The adobe floor, up to 8-12 cm thick, showed no traces of any kind of structures having been built upon it. Within the clay-and-loam fill and on the surface of the floor a total of 58 small ceramic fragments were collected. During the clearing of the wall opposite the entrance, an arrowhead (**K 83**) was found stuck into it. Scattered about on the floor were the badly scorched pieces of the upper stone of a rectangular push-pull action mill that had been cracked and broken by fire.

Intercalations of ashes and pieces of plaster found in the clay-and-loam fill (sub-horizon IC_1) suggest the possible existence of an upper floor.

The purpose of the room was impossible to determine.

Room 32 (Pl. 34, *2*). Situated on the south-eastern side of the courtyard, in the outer range, this room formed a single block with *rooms 1*, *33*, *34*; length 2.50 m, width 3.03-3.10 m, area 7.58 sq m. The entrance from *room 33* was in the north-eastern wall, 92 cm from the northern corner; the (poorly preserved) doorway was about 90-95 cm wide and had no threshold. The adobe floor was up to 12 cm thick.

The room had been remodelled at some stage. In its original form it had been self-contained, with a length of about 3.6-3.7 m and an area of roughly 11 sq m. The former entrance from the courtyard was in the western corner, the width of the doorway being about 1.05-1.10 m. Later, this entrance was blocked up with mud-bricks, and just to the south-west of it

a new cross wall was built between *rooms 31* and *32*. As a result, the area of *room 31* was increased and that of *room 32* correspondingly reduced. In addition, the latter room ceased to be self-contained, access having been created to *room 33*, and via that to *rooms 1* and *34* in the eastern corner of the building, as noted above.

In *room 32*, there were two household 'enclosures' built of stone and mud-bricks. The first (enclosure A), measuring 1.0 × 1.30 m was in the eastern corner. Its walls were made of upright limestone slabs 6 cm thick and 45-50-62 cm high, and its volume probably amounted to about 0.85 cub m. The second enclosure (enclosure B), measuring 1.12 × 1.12 m, was in the southern corner; the wall aligned with the longer axis of the room had a foundation of limestone blocks 18-20 cm high and 30 cm thick (there must have been a mud-brick wall above), while the transverse wall was made of a limestone slab 40 cm high and 10 cm thick. The volume of this enclosure was presumably about 0.5 cub m.

Lying on the floor surface between enclosures A and B was the lower part of a reused Chersonesean amphora (**Ad 34**) (its upper half had been broken-off in antiquity). The lower part of another Chersonesean amphora, identical to the first one, was found inside enclosure B (**Ad 35**), and the smashed lower part of a Sinopean amphora lay on the floor in the centre of the room; undoubtedly, this piece too had been reused, for though the foot had been broken off in antiquity, the fracture surface had been carefully smoothed down. In addition to the amphorae (or rather, their lower parts), there were also the fragments of three handmade pots (ornamented round the edges of the rims (**D 19**, **D 67**, **D 72**)) and the bottom of a handmade pot that had possibly been used as a lid (**D 90**).[65] Nearby, there was also a whetstone.

At different levels, in the clay-and-loam fill, there were small fragments of Sinopean tiles and amphora walls, while on the floor surface and slightly above it, three very severely scorched fragments of the upper stone of a rectangular push-pull action mill were uncovered. Calcined intercalations and fine particles of plaster discerned in the fill suggest the possible existence of an upper floor.

The floor was plastered over a very thin loamy layer that covered the bedrock surface. In the period between its remodelling and its ultimate destruction, this room, by all appearances, served as some kind of storeroom constituting an integral part of the four-room block (*rooms 1*, *32-34*) situated in the eastern corner of the building. However, neither the stratigraphic and planigraphic information, nor the finds provide any evidence as to the *original* purpose of *room 32*.

Room 33 (Pls. 35-36). This corridor room situated in the outer range, on the south-eastern side of the courtyard, formed a single block with rooms *1*, *32*, and *34*; length 3.30 m, width 3.05-3.10 m, area about 10.2 sq m. The entrance from *room 32* was in the south-western wall (see above), while the entrance to *room 1* was in the north-eastern wall (see *room 1* above). The adobe floor was up to 12 cm thick.

Initially, the room was self-contained, and (like all the rooms situated on the north-western and south-eastern sides of the building) it opened directly onto the courtyard. The doorway, in the western corner, was 1.05 m wide, with a threshold made from a single limestone block; in front of it, in the courtyard, there was a flagstone pavement measuring 1.25 × 1.10 m (see the description of the courtyard below). Later, this doorway was blocked up with stones and some sort of puddled clay mass (of which the original form remains unclear, though possibly it was mud-brick walling). A stone weight from a wine-press was used for blocking the lower part of the doorway (Pl. 35, *2-3*): this weight was a rectangular block of dense 'Sarmatian' limestone measuring 60 × 20-24 × 40 cm with mortises cut into it (12-15

cm wide and 4.5 cm deep) for fixing it to the wooden frame of the press. It was evidently after the blocking-up of the courtyard doorway that the new doorway, connecting *room 33* with *room 1*, was cut in the north-eastern wall.[66] This was about 1 m wide; it had no threshold and hence, possibly, no door.

Near the north-western wall, and 1.85 m from the northern corner of the room, there was a round fireplace about 40 cm in diameter (Pl. 36, *1*). Its hearth was composed of fragments of flat Sinopean tiles, and fragments of the walls of Chersonesean and Herakleian amphorae were employed elsewhere in its construction. In the eastern corner of the room, the remains of a rectangular household 'enclosure' (or bin) measuring 1.10 × 0.70 m were uncovered; its walls consisted of large limestone slabs set on edge, and in the foundation of its end-face wall the lower part of what appears to be a gravestone (or some other type of stele), complete with a tenon for fixing it in a pedestal, had been reused.[67] Near the 'enclosure' a lead weight (**K 4**)[68] and two square stone weights (?) were found lying on the floor. In addition, scattered about on the floor surface, there were a number of small fragments of black-glazed vessels, a whetstone, and a glass figured pendant in the form of a bird (**N 12**).

The clay-and-loam fill contained only some very small fragments of amphora walls and charcoal from burnt ceiling beams (?). The latter fact and the volume of the fill suggest that there was an upper floor above this room.

Beneath the floor there was a humus-containing layer about 30 cm thick lying on the surface of the bedrock. This had undoubtedly been dug over in antiquity (during reconstructions?) and contained small fragments of amphorae, mostly Chersonesean – but also from some other, unidentifiable Mediterranean (?) centres.

During the later stage of its existence, the room seems to have served some domestic purpose.

Room 34 (Pl. 18, *1*). Situated in the eastern corner of the courtyard, in the inner range, this corridor room formed a single block with *rooms 1*, *32*, *33*; length 2.60-2.70 m, width 2.40 m, area about 6.4 sq m. The entrance from the courtyard was in the western corner of the room. The doorway was 1.05 m wide, and the threshold was made from a single stone slab with a mortise cut into it for the bearing of the hinge-pin of the door. Another doorway, 1.10 m wide, leading into *room 1*, was cut in the south-eastern wall towards the eastern corner.

High stone socles (of 1.05-1.10 m) were preserved, on top of which the remains of mud-brick masonry were discernible. The adobe floor, up to 5 cm thick, was plastered over a thin layer of refuse (facia IC_a). No traces of a hearth were found.

The clay-and-loam fill was homogeneous and completely devoid of finds. Lying on the floor surface near the south-western wall were a small smashed jug of flaky, greyish clay and a few wall fragments of Chersonesean amphorae. In the southern corner, there was a scattering of beads made from scallop-shells (*Pecten*) with holes drilled in their apices for stringing (Pl. 36, *2*).

To all appearances, the room was used for ancillary purposes. The volume and character of the fill clearly indicate that it was one-storeyed.

Room 35 (Pl. 18, *1*). This corridor room, situated at the eastern corner of the courtyard, in the second row, formed a single block with *room 2*; dimensions 2.35 × 2.75 m; area about 6.46 sq m. The room was created by the construction of a wall across the gap between the south-western wall of *room 3* and the northern corner of *room 34*. The entrance from the courtyard was in the western corner of the room, the doorway being 1.10 m wide with a threshold made from a single stone slab. In the eastern corner, another doorway, 1.10 m wide, gave access to *room 2* (see above).

The floor, which was laid over a thin (3-5 cm) layer of refuse containing very small fragments of pottery, presented a densely rammed surface of limestone gravel held together with a clayey mortar. No traces of a hearth were uncovered; and, apart from a few fragments of walls of Chersonesean amphorae and the foot of a black-glazed kantharos (**B 68**), no artefacts were found on the floor surface.

Judging by the volume of the clay-and-loam fill, this was a single-storeyed, ancillary room.

Room 36. This was a corridor room situated in the inner range on the south-eastern side of the courtyard. It was constructed in the angle formed by the north-eastern wall of *room 27* and the north-western wall of *room 31*, with the latter of which it composed a two-room block. The architectural remains were very poorly preserved because the walls had been either of mud-bricks or of the so-called '*turluk*' construction.[69] The presumed length of the room was 3.5 m, as reconstructed by the north-eastern edge of the adobe floor; the width at the south-western end was 2 m, and that at the north-eastern end probably about 2.4-2.5 m; thus the area may have been 8.4-8.75 sq m. The entrance from the courtyard was in the western corner of the room, the doorway there being 1.10 m wide with a threshold made from a single limestone slab set on edge; directly opposite, another doorway gave access to *room 31*.

In the clay-and-loam fill and on the floor surface, only some small unrelated fragments (mostly walls of amphorae or jugs, and mainly of Chersonesean production) were found. The adobe floor, about 3 cm thick, was plastered over a thin layer of refuse (facia IC_a).

Judging by its appearance, the room was an ancillary one.

B. Gate. Courtyard. Well

Gate (Pl. 37). The only entrance into building U6 from outside was located almost in the middle of its south-western side and led to the central courtyard. Judging by the topography of the site, the gateway evidently gave onto the street that ran from north-west to south-east and separated the building from areas U8-U9 where there are thought to be some other building remains (as yet unexcavated).

The gate was located between *rooms 17* and *20*. The centre-line of the gateway lies 2.7 m to the south-west of the central axis of the ground plan of the building, which coincides with wall between *rooms 3* and *4* (thus the centre of the gateway lies 15.6 m south-east of the western corner of the building).

Originally, the width of the gateway between *rooms 17* and *20* was 3.92-4.12 m. On the inner side of the gate where it opened out into the courtyard, the foundations of two massive pylons have been preserved. In plan they measured 1.05 and 1.08 m × 0.55 m, while in height they rose 50-52 cm above the level of the adjacent ground surface at the time of the destruction of the building.[70] These foundations (actually stone socles for mud-brick masonry) were composed of large, excellently cut, limestone blocks measuring 1.08 × 55 × 20-26 cm. The opening between the pylons was 2.05 – 2.08 m wide. No traces were found of any structures that might indicate the existence of gates here at the initial building stage.

It was not possible to establish with any certainty if similar pylons existed on the south-western side of the entrance (*i.e.* in the street outside), because a number of blocks of the stone socle of the exterior wall of the building have been completely removed here, probably in very recent times. Nevertheless, the position of the south-western edge of the levelling fill in the inner space of the gateway (see below), the distribution of materials over its entire surface, and signs of stones having been quarried from the foundations of the walls suggest with a fair degree of probability that here, too, there were pylons, similar to those on

the north-eastern side of the gateway, dating from the time when the major part of the building was erected.

The stratigraphy of the space between *rooms 17* and *20* was as follows. Beneath a thin turf layer (horizon IA) there was a dense, dusty, and ashy layer, up to 55-65 cm thick. In terms of its structure it was similar to horizon IB found throughout most of the courtyard. Horizon IA was almost entirely devoid of finds. It lay on the densely rammed surface of the entry-way, which was littered all over with broken and smashed pottery. Beneath this, and down to the surface of the bedrock, there was a very dense artificial levelling fill, consisting of finely crushed limestone mixed with earth and clay, and containing small fragments of pottery (mostly amphora walls), sea gravel, fragmentary shells of marine and land molluscs, and pieces of the claws and shells of crabs. Clearing of this layer by horizontal sections, about 1 cm thick, revealed that throughout the entire period that the gateway was in use, the surface of the entry-way was regularly covered with 'refuse' brought from other parts of the building.[71]

By the addition of the ancillary *rooms 18* and *19* in the inner range to the courtyard side of *rooms 17* and *20*, the length of the gateway passage was increased a further 3.25-3.35 m north-eastwards, its width in this section amounting to 2.10 m. Probably at the same time, a threshold made of five limestone slabs, 12-15 cm thick and 45-55 cm wide, was laid between the north-eastern pylons. It was not possible to establish for certain if any actual gates existed here.

Directly beyond the threshold described above, a narrow entrance to *room 18* (see above) was cut in the wall on the north-west or left side of the gateway. This entrance was 0.50 m wide, and in front of it was laid a small (0.8 × 0.9 m) pavement of undressed limestone flags, the existence of which indicates that the section of the gateway between *rooms 18* and *19* was unroofed.

In the fill of most of the gateway area, covering the ancient surface of the entrance passage, accumulations of large and small pieces of rubble, undoubtedly from the collapsed second storeys of the rooms on either side, were found lying alongside the walls. Beneath this rubble, and over the entire ancient surface of the gateway, an accumulation of broken, smashed, and trampled vessels was uncovered in the thickness of a thin ashy intercalation (3-10 cm thick). The pottery found here included a large bowl (mortar) of Chersonesean production (**C 188**), fragments of at least four Chersonesean, two Herakleian and one Amastrian amphorae, and numerous fragments of vessels of other types.

All told, over a thousand ceramic fragments were found in the course of clearing the layers inside the gateway. These fragments are distributed as shown in Table 7.

The fragments of amphorae and other ware found inside the gateway are most probably related to the accumulation of artefacts uncovered in the southern corner of the courtyard (accumulation 5: see the description of the courtyard below). This is particularly indicated by fragments of two stamped Amastrian amphorae (**Ad 77**, **Ae 115-116**, **H 12**), different parts of which were found both inside the gateway and in square G-6 in the courtyard.

Courtyard (Pls. 38-39). The inner courtyard, round the periphery of which all the rooms were situated, was fairly large. By the time of the destruction of the building, the length of the courtyard, from the gate along the central axis of its ground plan, amounted to 22.5 m, and its width varied in different parts from about 23 to 26 m.

The ancient surface of the courtyard was of earth. During its clearing, the following structures were uncovered: stone pavements, traces of posts (or uprights), and a well.

Table 7. Distribution of the pottery fragments found inside the gateway according to types and production centres.

Material	Production centres						
	Cherso-nesos	**Sinope**	**Herakleia Pontike**	**Amastris**	**Uniden-tified centres**	**Local pottery**	**Total**
Tiles, total		8					8
stamped specimens		1					1
Amphorae, total	437	100	26	15	84		662
stamped specimens	1		1	1			3
Commonware:							
Closed shapes	170	5			37		212
Open shapes	32						32
Cooking ware					5		5
Grey-ware vessels					9		9
Black-glazed vessels					21		21
Handmade pottery						138	138
Total	**639**	**113**	**26**	**15**	**156**	**138**	**1087**

Stone pavements (Pl. 12). The paved areas may be divided into two subgroups: (*a*) pavements in the form of narrow paths or rectangular areas in front of the entrances to rooms in the first row; (*b*) pavements of various types in front of the entrances to rooms in the inner range. All the pavements were made of undressed flags of limestone of different types. A number of paved areas of subgroup (*a*) were later covered by the floors of rooms added or constructed in the inner range. In the particulars given below, the pavements are described according to their subgroups – in counterclockwise sequence, beginning from the eastern corner of the courtyard.

Pavements of subgroup (a) in front of entrances to rooms in the first (or outer) range

1. Remains of a partially removed pavement of limestone flags in front of the entrance to *room 2*. The precise dimensions were impossible to determine, though, judging by the flags preserved *in situ*, this was probably a narrow paved path running diagonally towards the centre of the courtyard. The remains of the paving were covered by the floor of *room 35* (square Zh-2).
2. A finely preserved path of flagstones in front of *room 3* (square E-2); Width about 1 m., length up to 4 m. This path also ran towards the centre of the courtyard. For filling the interstices between slabs, fragments of Sinopean tiles were used; one of these bore a stamp (**Ab 7**).
3. A short flagged path in front of *room 6* (square V-2); width 9 cm, length about 1.5 m. This path also ran towards the centre of the courtyard.

4. Remains of a paved area (?) or path (?) in front of the, subsequently blocked-up, original entrance to *room 7* in the northern corner of the courtyard. Square B-2. Two flat flagstones beneath the floor of *room 15* have been preserved.
5. Remains of a partially removed pavement in front of the entrance to *room 7* from the later *room 15* (Square B-2). The precise dimensions were impossible to determine (but approximately 1 × 1 m). This section of paving was subsequently covered over by the floor of *room 15*.
6. Remains of a partially removed pavement (?) in front of the blocked-up entrance to the south-western part of *room 7* (Square B-2); width about 1 m, length impossible to determine.
7. A very carefully laid path paved with large flagstones, in front of the entrance to *room 12* (the sanctuary of Demeter and Sabazios) in the western corner of the courtyard (squares B-6 – B-7); width 1.0-1.10 m, length about 3 m. This path ran towards the centre of the courtyard (the well) being oriented at an angle of precisely 45° to the adjacent sides of the courtyard. The interstices between the flagstones were filled with small fragments of amphora walls (from Herakleia, Sinope, and other, unidentified, centres), small wall fragments of pithoi, and fragments of flat Sinopean tiles, one of which bore the remains of a stamp with the name of the astynomos *Histiaios* (see **Ab 5**). This pavement subsequently became part of the floor of *room 14* (the sanctuary of Herakles) added later, but even so it was well maintained at all times, and, unlike the rest of the floor of *room 14*, it was not plastered over with adobe.
8. Beneath the floor of *room 25* (in the second row) a few limestone slabs were uncovered lying on the ancient topsoil and laid in a single straight line (square Zh-6-7). Their position suggests that in front of *room 28* there once existed a paved path that was similar to those leading from the other corner rooms (*2*, *7*, and *12*). This, however, is impossible to prove.
9. In front of the blocked-up entrance to *room 33* there was a well-preserved area (1.3 × 1. 15 m) paved with stones (square Zh-3).
10. Beneath the floor of *room 34*, in front of the entrance to *room 1*, two limestone slabs were laid on the surface of the ancient buried soil. Their position suggests that here, too, we are dealing with the remains of a stone pavement that was later removed (square Zh-2).

Paved areas of subgroup (b) in front of rooms in the second (internal) row

1. Pavement in front of the entrance to *room 15* in the northern corner of the courtyard, consisting of a number of carelessly laid flagstones (square B-2).
2. Pavement in front of the blocked-up entrance to *room 18* on the south-western side of the courtyard (square V-6), in the form of a small rectangular area (1.2 × 1 m) paved with small flagstones. A smashed handmade pot was found lying on its surface.
3. Pavement in front of the entrance to the southern corner of *room 18* (from the gateway passage) (square G-7). This was a rectangular paved area similar to pavement 2 (*b*) above; dimensions 0.9 × 1 m.
4. A similar paved area in front of the entrance to *room 19* on the south-west-side of the courtyard (square D-6); dimensions 1.5 × 1.1 m.
5. Another similar paved area in front of the blocked-up entrance to *room 21* on the south-west-side of the courtyard (square D-6); dimensions 1.5 × 1.45 m. This lay adjacent to pavement 4 (*b*) above.

6-8. Three pavements in the southern corner of the courtyard, probably dating from different periods but finally making up a single paved area in front of the entrances to *rooms 23*, *25*, and *27* (squares E-5 and E-6) – though even then it remained possible for the borders

that separated the three sections to be roughly determined. Probably the earliest (?) section was a path, about 1.0-1.2 m wide and 4.5 m long, which led diagonally from the doorway of *room 25* towards the centre of the courtyard at angle of about 45°.[72] Contiguous to this lay a path paved with large flagstones in front of the entrance to *room 23* (an entrance that was later blocked-up with rubble); the width of this path was about 1 m, the length about 2 m, and it too was angled towards the centre of the courtyard. To the north-east of the first path, in front of the entrance to *room 27*, lay the third pavement – an area of irregular outline paved with flagstones of different sizes; dimensions 2.5 × 3 m.

The interstices between the flagstones of the pavement (6-8) were filled with a refuse-containing soil including small fragments of various pots (mostly amphorae) and Sinopean tiles; among the latter there was a fragment with the stamp of the astynomos *Diophantos* (**Ab 1**).[73] In addition to the foregoing, a Chersonesean copper coin (**I 3**) was found in a chink in front of the entrance to *room 27*.

9. A path, paved with flagstones carelessly laid straight onto the ancient-topsoil surface, and issuing perpendicularly from the entrance to *room 36* (square E-5); dimensions about 1 m wide and 2.2 m long.

B. Traces of setting for uprights. Positioned along the north-eastern side of the courtyard, between *rooms 15* and *35* (squares G-2, D-2, and E-2), were found three post-holes, 15-20 cm in diameter, and sunk down as far as the surface of the bedrock. On the surface of the courtyard they were surrounded with small stones, a feature that actually enabled us to find them. The post-holes were arranged in a single straight line at a distance of 2.20-2.25 m from the front walls of *rooms 3-5*. The intervals between the centres of the post-holes were in the range 4.30-4.40 m. Another similar post-hole, its top also surrounded with stones, was discovered on the boundary between squares E-4 and Zh-4, at a distance of 2.8 m from *room 32* on the south-eastern side of the courtyard. No other pits outlined with stones round the top were reliably identified, though some indirect signs suggestive of two more were recorded in squares V-2 and G-2, opposite the entrance to *room 5*, on either side of the centre-line of the doorway. These continued the same straight line as that traced by the first three post-holes described above, but the interval between their centres was about 2.00-2.20 m – and the same distance intervened between the more south-easterly of the pair and the closest of the post-holes surrounded with stones, in square G-2.

The appearance of these post-holes suggests that they served for setting up certain wooden post or uprights, probably for supporting the roofs of sheds or galleries extending along the north-eastern and south-western sides of the courtyard. Judging by the diameters both of the post-holes and of their stone surrounds, the posts they supported must have been about 8-10 cm thick at the base.

C. Ash-pit. The western corner of the courtyard in square B-6, *i.e.* the angle between the walls of *rooms 11* and *14*, was occupied by a rather small, extremely diffuse ash layer – a typical refuse dump. Its maximum thickness (in the very corner) amounted to 70 cm, and it was mainly composed of ash and small bits of charcoal mixed with a great quantity of other very miscellaneous materials. Predominant among the latter were fragments of various vessels and other objects broken and thrown out in antiquity (see the Concordance, square B-6). In the thickness of the ash layer, there were numerous shells (both whole and fragmentary) of marine molluscs – mostly mussels (*Mytilus galloprovincialis* Lam.), scallops (*Pecten ponticus* B. Det.), oysters (*Ostrea taurica* Kryn), and clams (*Venus (Chamelea) gallina*) – as well as pieces of the claws and shells of crustaceans: *e.g.* stone crab (*Eriphia spinifrons* [Herbst.]) and floating crab

(*Portunus holsatus* Fabr.). The ichthyofauna was represented by finds of bone-plaques of sturgeon (*Acipenser* sp.), and 'sea-fox' skate (*Raja clavata* Pal.), bones and bone-plaques of brill (*Rhombus maeoticus* Pal.), and scales of grey mullet (*Mugil* sp.); the calcined vertebrae of dolphin (*Delphinus delphis ponticus* Brab.) were also encountered, and shells of the vineyard snail (*Helix*) were fairly common. Bones of birds and animals were severely crushed and mostly calcined; they were thus unidentifiable, except for a small number of bones of sheep and goats and large ruminants (presumably cows).

The refuse, it seems, was periodically removed outside the confines of the building, and the ash-pit as here described, was formed during the very last stage of the occupation of the house, *i.e.* not long before its destruction. This is indicated in particular by some fragments of handles of Chersonesean amphorae – two with remains of the stamp of the astynomos *Apollonios* (**Ae 4-5**), and one with the name of the astynomos *Kraton* (**Ae 59**) – the same magistrates that have been recorded in the amphora assemblage from within the building.[74]

D. Household enclosure. This enclosure was built in the angle formed by walls of *rooms 33* and *34*, in square Zh-3 in the eastern part of the courtyard. Its ground plan was a sector of a circle with an inner radius of 1.05 m, it was partitioned off from the yard by a small wall, 40 cm thick, built of rubble held together with a clayey mortar (only the foundation was preserved). Inside, the enclosure was floored with densely rammed, finely crushed limestone mixed with clay. The inner space was filled with grey, ashy soil; no artefacts were found there.

This was the only 'enclosure' of circular shape within the confines of the building, and the only one situated outside, rather than inside of the rooms;[75] however, it *was* probably roofed, as indicated by the presence nearby (outside *room 32*) of a small post-hole for erecting an upright (see above).

The well (Pl. 40). The well is located in the very centre of the courtyard, straddling the boundary between squares G-4 and D-4, and is cut into a bedrock to the depth of 3.05-3.10 m from its surface. The well-mouth is of rectangular plan measuring 1.70 m × width 0.85-0.90 m, though the shaft widens slightly towards the bottom, where the corresponding dimensions are 1.80-1.95 × 1.20 m. The water level in the well is on average 2.40 m below the surface of the bedrock. In different years it varies within a range of at least 20 cm.[76]

At the depth of 0.8-1.8 m, the shaft cuts through a layer of soft and loose limestone riddled with holes, and round the entire circumference of the wall of the well there are deep natural cavities running 0.8-1.2 m downwards through the thickness of the layer. It is, in fact, directly below these cavities that the modern, very rich water-bearing horizon lies in a denser limestone/shell-rock.[77]

At present, the water in the well is brackish because of the formation of the salt Lake Panskoye and the rising of the latter's water level. Depending on annual and seasonal variations, the salt water of the lake, the level of which coincides almost exactly with that in the well,[78] pervades the water-bearing horizon and carries salt into the water of the well. In antiquity, when the lake did not exist (see Appendix I for details) this water must have been absolutely fresh.

On each of the longer sides of the well-mouth, mortises of a complicated form and 16-18 cm deep were cut into the rock of the courtyard surface. These were probably intended for anchoring the base of some device for lifting water and the same was evidently the purpose of two pairs of oval depressions cut into the longer sides of the well to a depth of 55 cm from the surface. Their centres were set 25 and 80 cm from the northern (and correspondingly) the western corner of the well, and they must have served for fixing two wooden beams, about 15 × 10 cm in cross-section, across the well-mouth.

The well was empty of soil down to a depth of about one metre. Below this level, there was a layer of sedimentary soil, washed down from the edges of the well-mouth (horizons IA and IB); this contained pottery fragments and showed signs of modern digging as well as a partial clearing.[79]

Below the depth of 1.9 m, the well was completely blocked with stones of various sizes. In the humus-containing earth filling between the stones, fragments of pottery of the same types as those found during excavation of the building were constantly encountered. At a depth of about 2.50 m – *i.e.* 10-15 cm below the water level – bovine (cow) bones were found lying in normal anatomical order beneath the stones or higgledy-piggledy amongst them. Directly beneath these, at a depth of about 20-30 cm below the water level, there were two human skeletons: a woman of 18-20 years and a child of 8-10 years old.[80] As far as could be judged in the process of lifting the parts from under the water, the woman's skeleton was on its back and lying diagonally across the well, the skull being in the southern corner; the bones of the left arm extended alongside the body, but it was not possible to determine the position of the bones of the right arm; the leg bones were scattered about in disorder. The child's skeleton, poorly preserved, was lying alongside the south-western wall of the well, probably on its side with the bones of the legs scattered about over a widish area. Among and above these human bones there were also individual bones of both domestic animals (horse, cow, sheep, and goat) and wild ones (large jerboa), as well as bones of wild birds. As concluded by A.K. Kasparov (Appendix V), these were probably the remains of food. Pieces of wooden blocks or beech timbers also were found here.

The bottom of the well was covered with a layer of a pure, dark silt, 10-20 cm thick, with a rather small content of pottery fragments, mostly amphorae. In addition to the pottery, shreds of stems and leaf-stalks of cultivated vines (*Vitis vinifera* L.) and pieces of wood specimens with traces of working and charring were uncovered in the silt. Among the wood, downy oak (*Quercus pubescens*) and tree-juniper (*Juniperus excelsa*) have been identified.[81] It is possible, that these fragments could have been the remains of some wooden structure associated with the well, which got into this layer later.

The investigation of the inside of the well allows us to envisage, though with a certain degree of caution, the following process the formation of its fill. The lower silt layer formed, evidently in a natural way, during the period when the well was in normal daily use. Then, during the sacking of the building or shortly after it, the woman and child, perhaps freshly murdered, were thrown into the well and pressed down under the body of a cow that fell (or was thrown) on top of them. Occasionally thereafter, animal food remains were disposed of here, and finally, the well was blocked with stones.[82] The most natural supposition would be that these were the actions of the invaders who had seized and destroyed the building.

Distribution of artefacts over the surface of the courtyard. The whole of the vast space occupied by the courtyard, an area of over 500 sq m, presented a scene of terrible devastation. The entire surface was literally strewn with the scattered fragments of broken, smashed, and trampled ceramic vessels of various types, along with querns and stone louteria broken to pieces, the remains of metal objects, and fragments of terracottas, *etc.* – *i.e.* all those things which had been kept in the various rooms of the building and been used by its inmates in their everyday activities.

Because of the enormous number of materials recorded in the course of clearing the courtyard, it is impossible to present a full enumeration and description of them here. However this is not actually necessary, since the general planigraphic distribution of the major part of the objects collected from all the twenty-seven squares of the courtyard is given in the Concordance, and detailed descriptions of artefacts according to their groups are included in

catalogues appended to the corresponding sections in Part II below. Therefore it will suffice to present here only a *summary* review of the distribution and types of the materials found in the courtyard area.

The distribution of finds was irregular throughout the area of the courtyard. Although there was no square entirely devoid of fragments of amphorae and various other vessels, or indeed other types of objects, certain large accumulations or 'fields' covered all over with broken and smashed pottery stood out. In origin, these accumulations were undoubtedly related with this or that group of rooms surrounding the courtyard. In was possible to distinguish six such large accumulations.

Accumulation 1. This accumulation, found in the northern corner of the courtyard, occupied the southern quarter of square B-2, the eastern quarter of square B-3, and part of the western sector of square V-3. The area over which the materials were scattered amounted to about 25 sq m. The highest concentration of broken and smashed pottery, mostly amphorae, was observed in square B-2. Among sherds of amphorae were fragments of five stamped Chersonesean amphorae, of which three bore the name of the astynomos *Dioskouridas* (**Ae 34**, **Ae 44**, **Ae 51**), one a monogram stamp EYA (**Ae 89**)[83] and one an unreadable stamp (**Ae 75**), there were also some fragments of a Sinopean amphora stamped with the name of the astynomos *Theodoridas* (**Ae 102**). All these amphorae had probably been kept in the same storeroom, and on the basis of an analogy with the storeroom situated over *room 3* (see above), it may be confidently assumed that in this case the amphorae had been kept on the upper storey above *room 7*, from where they were then thrown out. An indirect confirmation of this is the discovery of certain other remains that evidently belonged to the same assemblage – namely fragments of two Chersonesean amphorae with similar monogram stamp EYA on their handles (**Ae 95-96**) and a fragment of neck with a monogram stamp, all of which were found in the debris of the external walls of the building at both ends of *room 7*, in squares A-3 and B-0. Thus we may suppose that at least nine stamped amphorae had been kept in the storeroom above *room 7*. Moreover, the roll of names of Chersonesean astynomoi on their stamps being close to that in the case of the amphora storeroom above *room 3*, we may further suppose that the amphorae from *accumulation 1* and *room 3* probably came from one or two large consignments of goods brought to the house in ceramic containers of Chersonesean production.

Thoroughly mixed into the accumulation among the amphora fragments were sherds of various plain ware: jugs and bowls (*cf.* **C 5**, **C 36**, **C 73**, **C 76**, **C 172**, **C 254**), as well as a handmade decorated pot.

Accumulation 2 (Pl. 41). This accumulation was found in the north-eastern sector of the courtyard, directly in front of *room 5*. It occupied square G-2, the northern part of square G-3, the southern quarter of square V-2, part of the eastern quarter of square V-3, and extended about 1 m along the north-western boundary between squares G-2 and G-4. The area over which the materials were scattered amounted to more than 50 sq m.

The accumulation is notable for two points in particular: first, the pottery is very thoroughly crushed; and secondly, the fragments are regularly dispersed over the entire area, sherds from the same vessel being sometimes located at a considerable distance from each other, and many fragments being found in altogether different parts of the courtyard.

Moreover, *accumulation 2* differs from *accumulation 1* above in the types of the finds brought to light. Parts of the walls of amphorae (including stamped ones) trampled into small pieces were scattered about over the entire area, out of twenty-four handle fragments from stamped amphorae, twenty-one stamps were those of Chersonesean astynomoi – namely

Apollonios (5), *Bathyllos* (5), *Dioskouridas* (4), *Kraton* (1), *Xanthos* (3), *Sokritos* (1), and illegible (2). Other centres are represented by two stamps from Sinope with the names of the astynomoi *Hephaistios* and *Mnesikles*, and a Thasian stamp with the name of *Bion*. As is evident from the greater variety of names, this assemblage of amphorae is not so compact as those from *accumulation 1* or *room 3*. In contrast to the latter assemblages, there are no EYA monogram stamps here. It may therefor be supposed that the amphora set from *accumulation 2* formed gradually, over a fairly long period. Moreover, there is one other feature that is worthy of note: aside from three graffiti (**H 28**, **H 37**, **H 38**), fourteen fragments had dipinti of a uniform type in the form of the letters B and BIC (**H 45-46**, **H 48-54**, **H 56**, **H 58-59**, **H 65**, **H 71**); all these graffiti and dipinti were drawn on Chersonesean amphorae. Taking all the above features into account, we may suppose with a fair degree of probability that all the remains of amphorae from this accumulation belonged to a single large store of ceramic containers. The close parallels with the other storerooms (*rooms 3*, *12*, and *13*) suggest that this store too must have been kept on an upper floor, possibly above *room 5* or, more likely, above a room adjacent to it (*room 4* or *6*?).

Another peculiarity of *accumulation 2* is the exceptional composition of the black-glazed ware. For scattered about here there were parts of two or three very large black-glazed kantharoi (**B 4-6**) and numerous fragments of small kantharoi, including one fragment with a graffito (**B 75**, **H 10**). There were also fragments of at least ten or twelve bowls (**B 102-103**, **B 111-112**, **B 116-118**, **B 127**, **B 136**, **B 139**, **H 18**), and of a large amount of shallow plates (fragments of 20-25 items according to our calculations) (**B 147**, **B 150-155**, **B 163**); one of the latter had a graffito (**H 18**). Finally, there was a large plate with the graffito ΔAMOC on the bottom (**B 147**, **H 32**).

While this accumulation contained many fragments of variously shaped plain vessels for everyday use – pelikai, jugs, numerous bowls, and so on (not less than 25-30 items) – as well as a ceramic lamp, and objects of metal or stone (see Concordance, squares B-3, V-2, V-3), what emerges as a point of special note is the high concentration of 'ceremonial' black-glazed tableware, among which was an extremely distinctive 'service', composed of a number of standard small plates, a large plate, and kantharoi, both large and small. This ceremonial 'set of ware', so compact in terms of its composition, stands out distinctly from any other sets of ware, both from rooms and courtyard accumulations alike, and may justly be termed unique. By all appearances, and taking into account the graffito δαμόσ(ιον) scratched on the bottom of a large plate, we may suppose that the 'service' was intended for communal meals taken be the inmates of the house. Possibly the plain tableware served the same purpose, though it might have had some auxiliary application – for instance in the preparation and/or cooking of food.

If our supposition is justified, then the black-glazed 'service' must have been connected with the room above *room 5*. Indirect evidence of this room's importance is provided by its focal position opposite the gateway (almost in the middle of the north-eastern side of the courtyard, in the outer range, by its considerable dimensions (its area being second only to that of *room 7*), by the presence of an interior staircase leading to the upper floor, and finally, by its having the largest hearth in the building (*cf.* the descriptions of individual rooms above). The specific position of *room 5* on the ground plan of the building and all the features listed here suggest that a special 'dining-hall' for communal meals may have been situated above it. This hall might have been identical in plan to the ground-floor room below it, but it is also possible that it was considerably larger in area, perhaps extending above *room 4* and/or *6*.

The store of amphorae mentioned above must also have been functionally connected with the supposed purpose of the second-storey room. In my opinion, the series of identical dipinti on amphora fragments, and the numerical graffiti too, find in this case their most plau-

sible explanation. V.F. Stolba has quite convincingly attributed these dipinti to the 'client names' group, and assumes them to be trade marks.[84]

It is therefore quite possible that a single individual from among the inmates of the house was responsible for the procurement of stores and ordering of wine (Chersonesean, one might suppose) to provide communal meals for the whole household. We cannot, however, rule out the alternative explanation – namely that we are dealing with the marks of a merchant who supplied the consignments of goods that had been ordered.

Accumulation 3 (Pl. 42). This accumulation was found almost in the centre of the courtyard, north-west of the well and opposite *rooms 8* and *9*. It completely filled squares V-4 and G-4 and the north-eastern half of squares V-5 and G-5. The total area was about 70-75 sq m.

This accumulation was the greatest both in density and in quantity of broken objects. In the central area of the accumulation (squares V-4 and G-4), sherds mixed with other materials were found lying in a solid layer, up to 10-15 cm thick.

The most numerous group was composed of fragments of amphorae, including stamped ones. It was not possible to determine the *total* number of vessels, but undoubtedly these would have been several dozen; and a sufficiently accurate *subtotal* of stamped amphorae was arrived at on the basis of stamps found on the handles and necks of the vessels. The largest such group comprised stamps on Chersonesean amphorae; out of twenty-two examples, nineteen bore the names of astynomoi, as follows: *Apollonios* (10), *Bathyllos* (3), *Dioskouridas* (2), *Eukleidas* (1), *Xanthos* (3); three other stamps in this group had monograms: EYA twice on handles, and ΠA once on a neck fragment. Other centres were represented by three Sinopean stamps with the names of the astynomoi *Mikrias*, *Mnesikles*, and *Theupeithes*, as well as a monogram stamp (TIB?) from some unknown Mediterranean centre.[85]

Along with fragments of amphorae, the accumulation contained a great number (several thousands) of fragments of commonware of practically every type recorded inside the rooms and in other areas of the courtyard. They were represented by closed shapes (jugs, cups, beakers, flasks, unguentaria), by open shapes (mortars-louteria, bowls, and fish-plates), and by cooking ware (pans); there were also numerous fragments of handmade ware. In addition, fragments of terracottas and other ceramic objects, parts of querns, and metal objects were found here (for details see Concordance, squares V-4, V-5, G-4, and G-5 and the descriptions of artefacts presented in the corresponding sections and catalogues in Part II).

The identification of the original location of the dumped objects that formed this accumulation is more difficult than in the two previous cases. It remains unclear whether they originally composed a single complex, which had been kept in one particular room, or were just things brought out from various different rooms and thrown onto a dump here. My own opinion, influenced by the fairly homogeneous composition of the stamped examples, is that the amphorae come mostly from one individual store and that this store, like the other reliably identified ones (*cf.* above), was kept on the upper storey above a single room. In the case of the other materials, it is difficult to say anything definite. The accumulation was located to the north-west of the well. The layer of sherds was at its maximum concentration and thickness opposite *rooms 8* and *9*, its north-western edge lying some 3 m from the socle of the courtyard wall of these rooms. It is thus quite probable that at any rate the storeroom where the amphorae and some other vessels were kept was on the second storey above these rooms. It is also possible, though can hardly be proved, that most of the other objects were thrown out from rooms situated along the north-western side of the courtyard.

Accumulation 4. This was found in the western corner of the courtyard, beside the walls of *rooms 10* and *11* (squares B-5 and B-6). It covered the ash-pit (refuse dump; see above) and

consisted of fragments of amphorae and other vessels, probably thrown out from both the ground and upper floors of *rooms 10* and *11*. Among the recorded items are fragments of the walls, rims, handles, and bottoms of at least six Chersonesean and two Sinopean amphorae. Preserved on fragments of six handles of Chersonesean amphorae were the stamps of astynomoi, four with names – *Apollonios* (3), *Herakleios* (1), illegible (1) – and one with the monogram abbreviation EYA (**Ae 3**, **Ae 4**,[86] **Ae 5**, **Ae 55**, **Ae 76**, **Ae 90**). On one of the fragments of Chersonesean amphorae there was a dipinto (**H 44**).

It is unlikely that the fragments of amphorae from this accumulation composed a single assemblage (*i.e.* a separate store of ceramic containers). Probably, the same is true of the extremely numerous fragments of pottery of other types (for a detailed description see Concordance, squares B-5 and B-6, and also Part II).

Accumulation 5. This accumulation was located in the southern corner of the courtyard with two of its edges lying against the walls of rooms in the second row of the building: *rooms 19*, *21*, and *23* on the south-western side and *rooms 26* and *27* on the south-eastern. The area of the accumulation occupied the north-eastern halves of squares D-6 and E-6, the southern half of square D-6, and the major part of square E-5. The total area over which the materials were scattered amounted to 58-60 sq m. Thus, this accumulation was the third largest in terms of the quantity and density of artefacts.

As in the other accumulations already described, fragments of broken amphorae predominated. It was impossible to evaluate with any real accuracy the amount of unstamped vessels, but on the basis of complete-profile parts found, it may be supposed that there were at least two or three dozen of them. As in the other accumulations, first place was taken by fragments of amphorae from Chersonesos, thirteen stamps with the names of astynomoi were preserved on handle fragments as follows: *Bathyllos* (2), *Dioskouridas* (3), *Eukleidas* (1), *Kotytion* son of *Ariston* (1), *Xanthos* (2), virtually illegible examples (3), the monogram EYA (1). A particular feature of this set is that, as in the case of both *accumulation 1* and the store in *room 3*, the stamps of *Apollonios* were absent. Also, the composition of the assemblage of stamps on amphorae from other centres differs from the accumulations described above. In addition to a couple of poorly preserved but nevertheless identifiable Sinopean stamps, there were also found here the neck of a Herakleian (?) amphora with a relief stamp KEP (**Ae 121**), and parts of two amphorae from unknown centres: one of these had a mushroom-shaped rim and the stamp ΣΑΓΓΑΡΙ on its handle (**Ae 135**), and a handle fragment from the other bore the name ΑΝΤΙ/ΟΧΟΥ (**Ae 134**). Two other fragmentary stamped amphorae, from Amastris, found in square G-6 (**Ae 115-116**), possibly belonged to the same assemblage of containers.

Sorting carried out in the field, yielded hundreds of amphora fragments. From among these it was possible to identify the remains of individual amphora of the following types: at least ten or twelve Chersonesean ones (five of them stamped), three Sinopean (two with stamps), one Herakleian (?) with a relief stamp, one from Thasos (or some other North Aegean centre of the 'Thasian Circle'), three from an unknown centre (Samos?) with mushroom-shaped rims of the Solokha-I or (according to Zeest 1960) Ust'-Laba type, one or two from an unknown (probably Mediterranean) centre, one from Korinth (?), and one presumably Herakleian amphora with a relief stamp. In addition to the stamps, a graffito and two dipinti in form of B (**H 47**) and E (**H 13**, **H 62**) were recorded on three Chersonesean amphorae; there were also three dipinti on three Sinopean amphorae (**H 66**, **H 69**, **H 76**), and one on an amphora of the Solokha-I type (**H 60**).

The details of ceramic containers presented above clearly indicate that the broken amphorae from this accumulation differ considerably in their composition at variety (types of the vessels and production centres) from those in the accumulations previously described.

There is little doubt, that this assemblage of ceramic containers must have come from the two blocks of rooms located in the southern corner of the building: the six-room block composed of *rooms 23-26*, and *28*, *29* and the block made up of *rooms 27* and *30*. It is difficult to separate out materials from the individual blocks; however, judging by the density of distribution of artefacts across the grid squares in question, it seems to me that most of the amphorae must have come from the six-room block. This is also suggested indirectly by the discovery of fragments of stamped and unstamped amphorae outside the confines of the building, beyond the external wall of the corner *room 28* (square Z-7) – some came from Chersonesos (stamped with the name *Bathyllos* and the monogram EYA) and others from Sinope (with the name *Mnesikles*).

In terms of its composition all the other material generally correlates with the material from *accumulation 3* (for details see Concordance, squares D-5, D-6, E-5, E-6, and descriptions of the artefacts in Part II). Of particular interest are the two unusual portable stone altars in the form of birds (**G 5-6**). Both were uncovered among a heap of smashed vessels in front of the entrance to *room 25*. Close to the entrance to *room 27*, two Chersonesean copper coins (**I 2-3**) were found lying together on the surface of the pavement, and a silver spiral pendant was discovered nearby.

Accumulation 6. The area of this accumulation occupied square E-3 (completely), the southern sector of square D-3, the north-eastern half of square E-4, and the 'half-square' Zh-3 adjacent to the walls of the building. This area took up a relatively small part of the courtyard in front of *rooms 32*, *33*, and *34*. The quantity of fragments of amphorae and other ware in the accumulation was also relatively small (in comparison to the other accumulations).

According to field computations (made on the basis of complete-profile parts), the fragments of amphorae belonged to not more than 10-15 minutely crushed vessels. Three handles of Chersonesean amphorae bore the stamps of astynomoi, namely: *Alexandros* (1: **Ae 1**) and *Bathyllos* (2: **Ae 21**, **Ae 30**). On three fragmentary handles of Sinopean vessels the stamp of *Mnesikles* was preserved, and on another that of *Theupeithes* (**Ae 107-108**, **Ae 111**, **Ae 103**). Three handle fragments of some unknown, probably east Mediterranean, centre included monograms in their stamps (**Ae 138**, **Ae 140-141**). Clearly, therefore the typological composition of the remains of this assemblage of ceramic containers differed from the other five accumulations described above – in particular, this accumulation, which was evidently related to the four-room block in the eastern corner of the building (*rooms 1*, *32-34*), contained extremely few Chersonesean amphorae.

As regards the character of the pottery other than amphorae, this in general did not differ from that of the pottery found in the other accumulations, except for *accumulation 2* (for details see Concordance, squares E-3, E-4, Z-3, and the descriptions in Part II).

Close to the previously described household 'enclosure', the remains of a plough were found lying on the earthen surface of the courtyard: these consisted of an iron plough-tip, some large iron nails with broad heads, and some fragments of rods. In the course of clearing the remains, it was also possible to discern traces of the main wooden parts of this implement.[87]

DISCUSSION

PRELIMINARY NOTES

The excavation results described in the preceding section have provided a reasonably reliable basis for tracing out a relative chronology of the evolution of the ground plan and elevations of building U6 from the time of its construction till its catastrophic destruction; and at the same time have enabled us to establish with a fair degree of accuracy the actual dates of the construction and destruction of the house. Moreover, the information necessary for a reasonably precise reconstruction of the building's external appearance and internal structures in different periods, has also been obtained. Finally, the excavations have made it possible for us to reconstruct the system of linear measures used by the architect and builders of the house.

As will be shown below, the period during which the building was occupied was relatively short, yet in the course of that period the interior plan of U6 underwent constant change, albeit without any alterations of its outline and general exterior appearance. The way in which the ground plan became more complicated was solely due to adoption of new layouts for certain existing rooms and the addition of new rooms to the latter – developments that seem to reflect certain changes in the composition and hence the status of the inmates.

ANALYSIS OF THE POSITION OF THE HOUSE WITHIN THE SPATIAL AND CHRONOLOGICAL SETTING OF THE SETTLEMENT

Building U6 – the largest of the building complexes excavated here – was constructed at the eastern edge of the settlement, in an area that had previously remained unoccupied as shown by the plan and stratigraphy of the site. The ruins of the building lie on a thin layer of soil (horizon II) showing signs that shrubs (or trees and shrubs) had once grown there – though the area was devoid of any traces of economic exploitation or agricultural use. The soil layer had formed on the underlying bedrock surface, and the relatively few fragments of pottery found in this layer cannot be assigned to any precisely defined time-span; they are represented in the main by very small sherds of walls and rims of amphorae from Herakleia Pontike (the most numerous), walls of amphorae from Sinope and Thasos (or the Thasian Circle), and other, unidentified Mediterranean centres, and by small pieces of Sinopean and 'Laconic' type tiles. Of special note in the layer were fragments of Chersonesean amphorae of types I-A-1 and I-A-2 in Monachov's classification, datable to about 350-325 B.C.[1] Thus the ceramic assemblage from the soil layer is in general confined within the limits of the 4th century B.C.[2] A contra-indication would seem to be the three Chersonesean coins found in the uppermost horizon of the layer, beneath the adobe floors of *rooms 22* and *24* (**I 4**, **I 6**, **I 8**). According to the chronological schemes developed by different authors such coins are usually dated to the period covering the late 4th to the early 3rd century B.C. However, I am inclined to suppose that in this case (as in many others), the archaeological context and stratigraphic position of these coins are rather an opportunity for defining more accurately certain dates of issue and periods of the circulation, than an occasion for dating a layer on the basis of finds which themselves need a more accurate dating. Clearly, we should accept both the hypothesis proposed by V.F. Stolba,[3] who, on the basis of certain other indications, dated one of the issues of this type of coin to the end of the 4th century B.C., and A.M. Gilevič's independent suppositions based on the stratigraphy of the site.[4]

Thus, the artefacts from soil layer suggest that the building was constructed within the period *c.* 320-310 B.C. in a previously unoccupied area lying to the south-east of the central part of the settlement with its already existing structures.

The building called U6 was built so that the axes of its ground plan corresponded exactly with those of the previously destroyed four-towered fortress (*tetrapyrgia*) in the central area U7 and likewise with the axes of a block of houses subsequently built upon the ruins of that fortress.[5] The orientation of U6 also coincides with the structures belonging to the first building period of house U10 situated to its south (Pl. 7).[6]

At first sight, it may seem that the architects blended building U6 quite successfully and accurately into the general spatial structure of the settlement, which even before the construction of U6 had had a regular plan oriented almost exactly (with a deviation of only 4°) on the four cardinal points. However, excavations at the northern, eastern, and southern edges of the site (including the block of houses in area U2, the part of house U10 belonging to its second building phase, and house U13[7]), as well as further analysis of the aerial photographs, showed that the axes of the ground plans of the structures situated in these areas, and also in the unexcavated area U1, deviate by12-15° from the 'exact' orientation (Pl. 6). Is this fortuitous?

Judging by the artefacts recovered, construction of the houses at the northern and eastern edges of the settlement took place in the second half of the 4th century B.C., *i.e.* after the destruction of the four-towered fortress. The earliest items from the ceramic assemblage are dated to about 350-325 B.C.,[8] the block of standard houses in area U2 being constructed at the same time and undoubtedly according to a common plan.

It seems that the edges of the settlement were built up before the construction of U6. This is also confirmed by analysis of enlarged aerial photographs, taken before the excavation began. That the plan of the building appeared brighter and in higher contrast in comparison with nearby structures (Pl. 5) is to be explained not so much by its dimensions (for the towered fortress was larger and its walls twice as thick, being well preserved to the height of over a metre on its three sides), as by the fact that it was the latest structure to be put up on the site.[9]

Hence, in finally defining both the position of the building on the ground plan of the settlement and the chronology of its construction we may outline the following major stages:

1. Construction of four-towered defences (fortress): about the turn of the 5th century B.C. (central area U7).
2. Partial destruction of the fortress: about 350 B.C.; subsequent construction upon its former site of blocks of small houses (350-325 B.C.?).
3. Erection of the monumental building U6: about 320-310 B.C.

Although situated at the edge of the settlement, U6 nevertheless occupied a dominant position, towering over the surrounding structures. This was not, however, just an architectural domination. For not only its dimensions and peculiar ground plan, but also the carefulness of its masonry, the existence of special rooms for storing amphorae or destined for use as sanctuaries, and a richness surpassing that of the other, ordinary houses, both in the central area and at the periphery, suggest that the building had a special functional significance.

Occupation of U6 lasted no longer than 50 ± 10 years, as suggested by the aggregate of the archaeological evidence published and considered in Part II of this book. Judging by the major assemblage of the artefacts and the latest objects, the catastrophic destruction of the house occurred within the first third of the 3rd century B.C., most probably about 270 B.C.

The total devastation and fire were the result of an attack, as indicated by finds of weapons – arrowheads, javelin-heads, and a *machaira* – broken and smashed objects thrown into the courtyard, and by the remains of three dead humans. I assume this attack to be connected with one of the invasion by nomads, namely Sarmatians, who, according to Diodoros (II, 43; 46) advanced from the east (from beyond the river Don) into Scythia and completely laid waste the latter.[10] Diodoros' information is supported by archaeological evidence, since it was during this period that the Scythian steppe culture suddenly disappeared and traces of the destruction of Greek rural settlements can be traced not only throughout the Western Crimea (the Chersonesean state) but also in the rural territory of Olbia at the lower reaches of Bug, and in the European part of the Bosporan empire in the Crimea.

It seems that the invaders stayed for a – probably short – time in the ruins of U6. This is suggested indirectly by two significant factors. The first is the osteological evidence from the well, where the composition of the animal species used for food is not typical of the settled population residing within the territory of a Greek state, but is, on the other hand, characteristic of nomads (*cf.* Appendix V). The second factor is the discovery that the well had been filled with the corpses of humans and animals and stones (undoubtedly done intentionally to poison the water) (see p. 73 and note 82).

It is also quite possible that certain inmates of the house, having survived the attack, later returned to the ruins for a short time. This, very guarded, supposition follows from the identification of a small, undoubtedly temporary, room above the ruins of *room 14* (see above p. 50, *room 14a*). It would be interesting to know if this makeshift room, with its slightly sunken floor and a carelessly built cross-wall closing the gap between the remains of earlier walls, was positioned purely by chance exactly over the sanctuary of Herakles.

The ruins of the building were later intermittently visited by man – from the 2nd century B.C. till our own day. This is indicated by isolated finds of fragments of a 'Megarian bowl', small fragments of walls of medieval amphorae of the 7th-11th centuries A.D., and pot sherds, including faience ware, of the 18th to early 20th centuries. These were all uncovered in topsoil layer (horizon IA) in the courtyard, and in the upper fill of the well.[11] In the neighbouring area U2, a medieval nomadic burial with a horse has been uncovered. Probably, at the end of the 19th or the beginning of the 20th century, when salt-works were in operation on the Sasyk Lake, some of the stone blocks were quarried from the external walls of U6 for use as building materials elsewhere.

Building periods (development of the spatial structure and ground plan of building U6)

Stratigraphically, and on the evidence of the structure of the wall bases and spatial and planigraphic changes, two major building periods at U6 are very clearly distinguishable. The first one comprised the period from the original construction of the building up to the time when annexes began to be added to the bulk of the rooms and the latter were themselves remodelled internally. The second period included a progressive modification of the internal plan. The upper chronological limit of this period of course is the sacking, burning, and ultimate destruction of all the structures. On the basis of observations made in the course of the excavations, it was possible to identify fairly reliably a number of successive discrete phases of construction within this second period. Finally, I have defined very arbitrarily a third 'building' period; this, it seems may most probably be connected with a very short interim that directly followed the destruction of the building. However, I will describe it further below, in its proper place.

The first building period

Ground Plan. The original building was strictly square in plan with a central courtyard, around the four sides of which a series of self-contained rooms were ranged in a single row. Each of the rooms had a single entrance and, with one exception, was not connected with any other room. All the entrances to the rooms were from the courtyard. The only entrance into the building from outside was located almost in the middle of the south-western side of the building and gave access directly to the courtyard.

According to external measurements, the building in the first period measured 34.5-35 × 34.5-35 m,[12] with a total area of about 1250 sq m. The major space was occupied by the courtyard, which measured 26.25 × 25.8-26.0 m along its central axes and covered an area of 682.5 sq m (accounting for almost 55% of the entire building). The well was cut in the centre of the courtyard at probably the same time as the building was originally constructed.

The structures around the perimeter of the courtyard occupied an area of about 567 sq m (*i.e.* about 45% of the total area) and had a standard depth of 4.20-4.25 m, the internal width of the rooms being 3.10-3.15 m. Ranged along the north-western and south-eastern sides of the courtyard, to the left and right of the gateway, there were twelve standard rooms – six on each side (*rooms 7*, *7a-11*; *1*, *29-33*). The width of these rooms varied from 3.6 to 4.1 m, the average area being about 11-12 sq m. As a rule, the entrances were located in corners of the rooms: in the eastern corners in the left (or north-west) wing and in the western corners in the right (or south east) wing (note the inverse symmetry). An exception was *room 7* in the northern corner of the courtyard, which had its entrance in the middle of the wall. Three other rooms (*20*, *22*, and *24*), with the same average area, were ranged along the south-western side of the courtyard, to the right of the gateway; these were each connected with the courtyard by an entrance in their northern corners. Two rooms located dissymetrically in the western and southern corners of the building (*rooms 12* and *28* respectively), and having correspondingly symmetrical entrances, were both of the same average area (about 14 sq m). Differing from any of the rooms described thus far were those ranged along the north-eastern side of the courtyard, directly opposite the gateway. They may be divided into two sections – the eastern and the western, the boundary between them being the central axis that divides the building into two and runs from south-west to north-east through the centre of the courtyard. In the right-hand section (looking from the gateway towards the opposite side of the courtyard) there were three self-contained rooms (*2-4*): two with an area of 14.7 sq m and one of slightly more than 16 sq m. In the left-hand section, almost in its middle, and directly opposite the gateway, was an entrance leading into the large *room 5* (about 23 sq m). Inside this room, there were already, during the first building period, a staircase leading to an upper floor and a very large fireplace. The entrance to the room was in the centre of its courtyard wall. Adjoining this room in the northern corner of the courtyard was *room 6*; however, the exact plan of the first-building-period structures located in the northern corner has remained unclear, owing to the remodelling carried out during the second building period and to the poor preservation of the masonry of the walls. Two suppositions are possible: *either* there were once two adjacent rooms here (*6* and *6a*), of about 16.4 sq m (like *room 4*) and 10 sq m respectively; *or* there was one very large room with an area of about 26 sq m.[13] Finally, on the south-western side of the courtyard, to the left of the gateway, there was a single block of two adjoining rooms (*13* and *17*) with a common exit into the courtyard.

Thus the total number of rooms at ground-floor level in the first building period was 24 or 25. Since traces of the existence of a second storey have been found throughout almost the entire range of the first-period structures round the courtyard, it may be supposed that the second storey amounted to the same number of rooms. Hence the building had a total of about fifty rooms.

Table 8. The hierarchical structure of the functional layout.

Hierarchical level	**Rooms (numbers shown on ground-plan)**	**Total no. of rooms at each level**	**Type**	**Purpose**	**Average standard area**	**Location in courtyard**
Ia	1, 7, 7a-11, 20 22, 24, 29-33	15	One-roomed	Individual Living-unit	11.6 sq m	North-west and south-east sides
Ib	2, 3, 28	3	One-roomed	Individual Dwelling	12.2 sq m	Eastern and southern corners
II	13, 17	2	Two-roomed block	Individual Dwelling	*c.* 22.5 sq m	Near the gateway and the sanctuary
III	4-6, (+6a?)	3 (4?)	One-roomed	Public?		Northern corner and north-east side of the courtyard
IV	12	1	One-roomed	Public sanctuary	13.55 sq m	Western corner, the lower tier of the tower

The ground-plan composition of the building combines signs both of an 'equivalently parallel principle' – seen in the layout of its one-roomed dwelling-units – and of a 'hierarchical principle' – seen in two-roomed dwelling-units and rooms of a large area (see Table 8).

The twelve small standard rooms facing one another along the left and right sides of the courtyard, as well as those on the right of the gateway, were probably individual living-units from the very beginning. This function is particularly indicated by a number of fireplaces or their remains preserved in the centres of the rooms and which were not moved during the subsequent building period. Possibly, the standard rooms *2*, *3*, and *28* situated in the southern and eastern corners of the courtyard and having slightly larger floor-areas (14.4-14.7 sq m) owing to the exigencies of the ground plan were also individual living-units. On the left of the gateway, there was the only example of a two-roomed dwelling-unit of higher status; and adjacent to this block, in the western corner of the building, was the three- or four-storeyed *room 12*, which possibly from the very beginning served as a communal sanctuary for the entire building (as indicated by the excavations; see above, pp. 45-50). Near its entrance in the western corner of the courtyard was an altar with a relief representing Herakles on the wall above it. Finally, to a special category should be assigned the large rooms situated at the side of the courtyard opposite to the gateway. Of those, *room 4* was probably intended from the very outset as a cow-house. One or perhaps both of the others (*rooms 5* and *6*), seem to have served certain purposes common to all the inmates of the building.

In the hierarchical, and in my view well thought-out, spatial and functional layout of the building, four groups of rooms can be identified as of different status and as very appropriately arranged around the courtyard according to their particular level of importance. The four status-levels can be ranked I-IV, as summarized in Table 8 above.

Such a layout probably reflects the social structure of the inhabitants rather than their property status. Hypothetically, and very cautiously, we may suppose that the building was constructed for a certain compact and homogeneous collective which made communal use of the sanctuary and the altar of Herakles in the southern corner of the courtyard together with the larger rooms *4-6* in the north-eastern range. The two-roomed living-unit may have belonged to the head of the collective. Everything noted, taken in combination with the dominating topographical position of the building at the site, suggests that the communal occupation of the house most probably had behind it both military and economic functions: on the one hand it provided a centre for the economic exploitation of the surrounding land, and on the other hand, it offered a substantial base for control of the settlement and the adjoining area.

Taking into account the fact that even in the first building period there were probably two storeys, and that judging by the location of the load-bearing walls the plan of the upper storey duplicated that of the lower storey, then there are good grounds to suppose that the total number of rooms in the building must have been about fifty (as noted above). Correspondingly, it is possible to calculate a hypothetical number of inhabitants.[15]

Parallels of the ground-plan composition. A number of sites, very similar (but not absolutely identical) to ours, both in dimensions (35 × 35 m) and ground plan, are known on the coasts of the Black Sea. The first two similar buildings were investigated by S.F. Strželeckij in the close vicinity of Chersonesos on the Herakleian Peninsula as early as the beginning of 1950s.[16] Both these buildings were single-towered structures, each of approximately the same area amounting to about 1250 sq m (*i.e.* just the same as U6); and both consisted of a large central courtyard with a number of rooms ranged round it in a single row. To these sites, might perhaps be added two buildings without towers and combined in a single block, which have been investigated by A.B. Kolesnikov at the edge of Cape Eupatoria (the 'Mayak' settlement in the vicinity of Kerkinitis).[17] One other house – by all appearances a contemporeneous one – has been excavated by V.V. Ruban at the site of 'Didova Khata' on the northern edge of the *chora* of Olbia (in the Lower Bug region).[18] In dimensions and ground plan it duplicates building U6 of the first building period almost exactly, though there *are* some slight differences (*e.g.* predominance of two- and three-roomed blocks). However, it seems that until we have a more or less complete publication of the results of the above excavations – detailing the character of the building remains in particular – any comparison of our building with the 'villa' (according to Ruban) or 'collective rural house' (according to S.D. Kryžickij) would be premature.[19] Therefore, the buildings uncovered in the western Crimea on the supposed *chora* of the Chersonesean state remain thus far the safest examples for comparison. The very noticeable similarity of ground plans among the large structures excavated to date in the relevant area suggests that a certain canon of spatial and planimetric layout for such buildings had appeared in the *chora* of Chersonesos by the end of the 4th century B.C. (though evidently not earlier than about 325/320 B.C.). It seems that this canon owed its existence rather to the realities of the everyday life than to the architectural and aesthetic ideas of their designers.

Materials and constructions. Building U6 was constructed on a flat site sloping gently towards the south-west and surfaced with a thin soil layer that hardly covered the surface of the bedrock. It was therefore unneccessary to dig any trenches for foundations, and the socles of the walls were set directly on the soil surface, which was possibly just levelled here and there. The presence of small bits of charcoal found in the buried soil beneath the floors of various rooms suggests that before construction began the vegetation on the planned building site (bushes and small trees) had been burnt off.

Stone wall socles. For the socles supporting the mud-brick masonry of the walls, the builders used only the dense Miocene limestones of the Sarmatian layer (N_2s_{2-3}). There are no outcrops of this rock nearer than the top and northern slope of the Ğangul Rise, several kilometres to the south of the site (*cf.* Appendix I). The limestones of the Pontic and Maeotic layers (N_{2m}, N_{2p}) which are easy to cut and convenient for construction, and upon which the house was actually built, were not used for any masonry. Thus even though it would appear to have been easier to utilize the material immediately to hand, this course was not adopted. However, the precise choice of rock for construction was not, in my opinion, fortuitous; for it was the dense and extremely plastic limestones of the Sarmatian layer that were the main building material in Chersonesos, and it would seem that the builders of U6 hesitated to use unfamiliar stone, preferring to bring to the site and work with materials that they were well used to.

The socles, with their upper surfaces carefully levelled to provide a base for the mud-brick walls,[20] were constructed of large, well-worked blocks bonded with a clayey mortar, the block themselves being clearly cut on their front, upper, and lateral faces and left undressed at the back. The height and thickness of the socles were observed to be within the range 0.50-0.65 x 0.55 (± 0.01-0.02) m correspondingly. The only exception was the western corner of the building (the walls of *rooms 12* and *13*), where the height of the socles was doubled to 1.05-1.10 m. This was evidently due to the fact that here a taller part of the building, exceeding two tiers (storeys), was to be built (see p. 50, *room 12*).

The socle masonry is carefully executed. Masonry type: *postelistaya* (stones laid flat), one row deep, one course high with the front side carefully dressed.[21] The stone blocks were from 0.50 to 1.53 m long, 0.53-0.56 m wide, and 0.20-0.55 m high. The back side of the masonry was filled with smaller, roughly dressed stones. In addition to these small stones on the back side, the interstices were occasionally filled with pieces of flat Sinopean tiles, tiles of 'Laconic' type and fragments of amphora walls for levelling.[22]

The faces of the socles were towards the yard round its entire periphery. By contrast, the orientation of the face planes of the socles of the transverse walls separating individual rooms varied in different parts of the building. This peculiarity reflects the sequence of construction of the rooms. The socles preserved to full height, together with such traces remaining after subsequent reconstructions as can be identified, have enabled us to restore the sequence of construction with a fair degree of reliability. Our suppositions are based on the following facts.

The masonry of the wall socles, located on each side of the gateway, had its dressed face towards the inside of the gateway. Correspondingly, the socles of *rooms 13* and *17* lying adjacent to the gateway and themselves divided by a mud-brick wall were faced on their outer sides: *i.e.* towards the gateway, towards the courtyard, and towards *room 12*. In a similar way, the socles of *room 5*, on the opposite side of the courtyard, had their faces towards the yard and towards *rooms 4* and *6* on either side. Thus it is evident that, originally, two 'nuclei' were projected: (1) the gateway with the block of *rooms 13* and *17* adjacent to it, and (2) *room 5*; and starting from these 'nuclei', the construction of all the other rooms surrounding the courtyard was then proceeded with. By the way, this fact is probably a further indication of a special (higher) status being accorded to these particular rooms (*i.e. 5*, *13*, and *17*). The same is possibly true of *room 12* – the only case in which the socles had their faces towards the inside of the room.

The first building period was continued by the sequential addition of rooms to either side of the axial line running along the wall between *rooms 4* and *5* and on to the wall between the gateway and *room 20*. Generally speaking, rooms were added in a counter-clockwise direction. Thus *room 6* was added on side of *room 5*, in the northern corner of the courtyard,

and *then rooms 4*, *3*, and finally *2* were added in succession on the other side (towards the south-east). In this way the north-eastern part of the house was completed. On the other sides of the yard, construction was again conducted counter-clockwise. Beginning from the northern corner, standard *rooms 6-11* were successively added along the north-western side of the courtyard. Sequential construction of similar standard rooms was carried out beginning on the right of the gateway – first along the south-western side of the courtyard (*rooms 20, 22, 24*), and then along the south-eastern side (*rooms 28-33*, *1*).

The above sequence of constructing the walls of a house has never, to my knowledge, been reported from any other site, either in the rural or urban domestic building, during the early Hellenistic period. This applies not only to Chersonesos and its *chora*, but also to other Greek sites on the Black Sea coasts (*e.g.* Olbia and Kimmerian Bosporos). The present case opens up the possibility of adding some new touches both to our conceptions of the architectural and planning activities of Chersonesean builders, and to our understanding of the technology of construction of large buildings and the organization of production alike.

Mud-brick walls. In a number of places, the remains of mud-bricks have been uncovered *in situ* on the upper surface of socles. Mostly, these remains were sufficient to allow measurement of the bricks' thickness only. However, the collapsed mud-brick masonry of the partition wall between *rooms 13* and *17* was an exception. This wall was built entirely of mud-bricks laid on a very low stone base. Here, two standard shapes of brick were used: square (*pentadoron*[23]), with sides of 44-45 cm and 8-9 cm thick, and rectangular 'half-size' bricks measuring 44-45 × 20-22 × 8-9 cm.

As is well known, mud-brick construction was widely utilized in Greece – for dwellings, public buildings, and defensive works alike.[24] The Greek states in the northern Black Sea area were no exception. Construction of mud-brick walls upon stone socles was common practice in the mass of urban and rural domestic building in Olbia and Kimmerian Bosporos. In addition to the bricks described above, mud bricks measuring 40 × 40 × 9 cm and 40 × 20 × 9 cm have been uncovered in the necropolis of Panskoye I, where they were used for building sub-kurgan vaults;[25] and bricks of the same size were found in a building of the 3rd century B.C. at the Chersonesean settlement of 'Chaika',[26] and in urban houses of the Hellenistic period in Olbia.[27] In the construction of defences on the Taman Peninsula (the Asian part of Bosporos), two other sizes of square bricks were used (52 × 52 × 7 cm and 24 × 24 × 4.5 cm).[28] Although we still do not have sufficient data to form a statistically based conclusion, we may suppose, with due caution, that the same (or very closely similar) standards for the production of mud-bricks existed both in Olbia and in the territory of the Chersonesean state during the period under discussion.

Doors. Those doorways, that were not reconstructed later are standard both as to width and as to construction of their thresholds and door-cases. The width of the doorways varies in the range 1.0-1.1 m. In terms of construction the stone thresholds are of two varieties. The first comprises thresholds cut very carefully from a single block and furnished with slots for fixing a wooden door-case and a bearing for the vertical axis of the door – though sometimes a separate rectangular block was used for the lower bearing. The second variety of threshold comprises those made up of two or more carefully cut blocks neatly fitted together.

Judging by the dimensions of the mortises, the position of bearings, and the form of the wall ends, the vertical members of the door-cases consisted of rectangular wooden beams about 8-10 cm thick, which were fixed to the walls with bronze nails. The doors proper, pivoting on their vertical axes, must have been 65 to 80 cm and would open outwards.

Ceilings. Although the remains of certain wooden structures that must have been installed between the lower and upper storeys were uncovered, no measurable beams have been found. Only the imprints of wood on fragments of what was presumably clay plaster from the ceilings are preserved. Nevertheless, eighteen iron nails were found lying *in situ* by pairs at a distance of 1-1.25 m from each other among the fallen remains of the ceiling in *room 3*. Each individual nail was bent in the shape of a Greek capital gamma (Γ), and every pair of nails was lying with their heads turned in opposite directions, thus Γ⅃. This fact enabled us to reconstruct the probable method of joining together the ends of wooden beams. The thickness of the beams, judging by evaluations based on measurements of the length of each part of the Γ-shaped nails, probably amounted to about 10 cm. Such a thickness must have been able to bear a fairly large load (and it should be remembered that on the second storey, above this room, a large store of goods was kept in amphorae and a pithos).

Roof. Judging by the absence of tiles, the roof of the building was probably made of wood and earth, or of reeds and earth. It is difficult to establish if it was flat or pitched – both variants are possible.

The system of measures. To determine the units of measure by which the planners and builders of U6 were guided, dozens of measurements were carried out in the course of excavations. The results are summarized in Table 9 below, and are compared with the most conveniently usable (*i.e.* divisible) Greek linear measures.

The table shows that the linear measures used by the builders correspond to those identified by G. Nikolaenko on the basis of on-site measurements of land lots in the immediate vicinity of Chersonesos on the Herakleian Peninsula.[29] Obviously, we must agree with her conclusions that 'a single system of planning based on one and the same system of linear measures' was employed for the division of the entire territory of the western Crimea into land lots, and that 'this fact indicates that a single metrological system was valid throughout the entire territory of the Chersonesean state, and the corresponding activities were under control of the state'.[30] Now, it is clear that not only were the division of western Crimea's *chora* and the planning of urban plots in Chersonesos carried out in accordance with the established measures,[31] but probably so too was the construction of buildings (at least, of the larger ones) on the territory of the state.

Dactyl should certainly now be included in the system (from foot to stade) reconstructed by Nikolaenko; indeed it was possibly in dactyls that the size of standard mud-bricks was measured, as shown in Table 10. A certain lack of precision in this case is due to the small number of measurements available and to the fact that the bricks became misshapen as a result of exposure to high temperatures during the fire.

In her studies, Nikolaenko proposed that Chersonesean linear measures were based on two Egyptian measures of length: the so-called 'royal cubit' of 52.5 cm and the foot equal to 35.0 cm.[32] It is quite possible that these standard measures were borrowed in their time from Egypt and adopted in a number of Greek *poleis*, particularly those of Asia Minor and some island states in the Aegean. It has long been established that in various individual Greek states ('cities') in Asia Minor there were at least seven different standards of measure based on feet of differing length – from 29.6 to 35.0 cm.[33] Such a situation had also existed in Chersonesos before the establishment of that city's measures originating from the Egyptian prototypes. The discovery of the original system of measures – that is to say, the system closest in time to the foundation of Chersonesos – is one of my aims. While not claiming to have found a solution to this problem, I would nevertheless like to present a few considerations.

According to Dinsmoor's calculations, the modules of the two systems most widely used

Table 9. Linear measures.

Subject of measurement /Number of measurements	Range of measurements (m)	Average (m)	Equivalents in ancient Greek linear measures: 'fathom' [ὄργυια] (2.10 m)	'royal cubit' [πῆχυς] (52.5 cm)	Foot [πούς] (35.0 cm)	Dactyl [δάκτυλος] (*c.* 2.18 cm)
Overall length/width of the building / 14	34.2-35.8	35	16.6	66.6	100	–
Width of peripheral structures / 23	4.0-4.5	4.2	2	8	12	*c.* 200
Interior width of rooms / 23	3.05-3.15	3.15	1.5	6	9	*c.* 150
Length of standard rooms of the Ia type / 13	3.3-3.8	3.5	1.6	*c.* 6.5	*c.* 10	*c.* 160
Width of the gateway (max.)	3.92-4.12	4.10	*c.* 2 (1.95)	*c.* 9 (7.8)	*c.* 12 (11.7)	188
Width of the passage in the gateway	2.05-2.08	2.07	*c.* 1	*c.* 4 (3.94)	*c.* 6 (5.9)	*c.* 95 (94.95)
Width of socles / 40	0.53-0.56	0.525	0.25	1.0	1.5	24
Typical height of socles / 25	0.50-0.65	0.525	0.25	1.0	1.5	24
Maximum height of socles / 5	1.05-1.10	1.06	0.5	2.0	3.0	48
Width of doorways / 13	1.0-1.10	1.05	0.5	2.0	3.0	48

in the Greek Mediterranean had the following metric equivalents: the 'short' or Ionic foot was 29.395 cm, and the 'long' or Attic (Dorian) foot was 32.654 cm.[34] Thus, if Dinsmoor's calculations are correct, these very widespread systems obviously do not conform at all with the Chersonesean one.

However, it is possible that a certain agreement with the Chersonesean measures under discussion might be found by investigation of the so-called Oxford 'metrological' relief, the ultimate origin of which is considered to be Samos. It has been established that two standards of measurement are represented on this relief. The first (illustrated by the upper torso of a man with arms outstretched to either side) includes one 'fathom' in the so-called Ionic system of measures of Asia Minor, in which a foot is 34.8 cm, a cubit is 52.25 cm, and a fathom is 2.09 m. In the second standard (the 'impression' of a human sole), a foot is represented in the Attic (Doric) system. This has enabled those who have investigated the relief to reach the unanimous conclusion that the Egyptian 'royal cubit' was taken as the basis of the Samian fathom which also means it was the basis of the Ionic standard of Asia Minor.[35]

Table 10. Dimensions of mud bricks.

Number of measurements	Range of measurements (cm)	Average (cm)	Equivalents in ancient Greek linear Measures: Foot [πούς] (35.0 cm)	Equivalents in ancient Greek linear Measures: Dactyl [δάκτυλος] (*c.* 2.18 cm)
Length: 5	44.0 – 45.0	44.3	1.27 (*c.* $1^1/_3$)	*c.* 20 (20.3)
Width: 6	20.0 – 22.0	21.9	0.6 (> $^2/_3$)	10
Thickness: 20	8.0 – 9.5	9.0	0.26 (*c.* $^1/_4$)	*c.* 4 (4.1)

The values obtained by our measurements taken at building U6 are actually very close to the Samian standard. Nevertheless, there can be no certainty that this standard was the 'original' for the Chersonesean system, and possibly, we must look for the true origins of the Chersonesean measures among the cluster of Megarian colonies in Propontis and Pontos. Thus these measures probably had their roots in the systems that were used in Greek centres of Asia Minor and the Aegean islands. The most valuable information for studies of the metrology of the Chersonesean state would be supplied by accurate measurements of archaeological objects found in its metropolis, Herakleia Pontike, and in the latter's second colony – Kallatis. However, such data are lacking at present.

The second building period

During this concluding period, which seems to have lasted for several decades, the final ground plan of the building gradually emerged (Pl. 12). This layout was the result of adding new rooms to the courtyard side of rooms in the first range, the reconstruction of a number of the first-period rooms, and the joining of several rooms into single blocks. The gradualness of the process probably reflected certain qualitative changes in the demographic, social, and economic status of the inhabitants. In the formation of the final ground plan and the overall appearance of the house, it is possible to distinguish a number of building phases and to suggest a relative chronology. On the other hand, it is not possible to separate these phases in terms of an absolute chronology, and they may be summarily dated to about 300-270 B.C., though hardly later.

Phase 1. On the south-western side of the courtyard, to either side of the gateway, one of the walkthrough or passageway rooms (*16/18* (at first a single room), *19*, *21* and *23*) was annexed to each of the first-period *rooms 17*, *20*, *22*, and *24* respectively. Possibly at the same time, the passageway *room 34* was annexed to *room 1* in the eastern corner of the yard. Peculiar to the above-mentioned 'new' rooms are the very carefully made stone socles, the mud-brick walls, and also the floors consisting either of crumbled limestone in a clayey mortar or of stone pavements as in *room 21*. In this way were formed four two-roomed blocks and one three-roomed block. Most probably, though it is impossible to prove, it was at this same time that *rooms 28* and *29* in the southern corner of the building were combined to make a single two-roomed unit.

Phase 2. This stage saw probably the most significant changes in the ground plan. Thus in the western corner of the yard, the originally single passageway room was divided by a transverse wall into two rooms (*16* and *18*). In this way, the three-roomed block near the gateway became a four-roomed one, and at the same time the entrances to the rooms were reconstructed. The original entrance to the block, situated in the northern corner of *room 16*, was closed off and access was now via *room 18*. At this time too the wall between *rooms 17* and *18* was reconstructed and had a doorway made in it.

Perhaps this same period also saw the conversion of the two double-roomed blocks to the right of the gate into a single four-roomed block (*rooms 19-22*), which could be entered via *room 19*. It is quite possible, that it was at this time too that the large *room 7*, intended for some domestic purpose, was formed out of two or three first-period rooms in the northern corner of the courtyard. In the course of this reconstruction the interior walls were dismantled and one of the exits into the yard was blocked up. The new annexes added to the first range of rooms during this phase possibly included the small passageway *room 35* in front of *room 2* in the eastern corner of the courtyard, and *room 27* in front of *room 30* on the south-eastern side of the yard. As a result, a couple of isolated two-roomed blocks were created.

Phase 3. The last annexes, it seems, were the following: corridor *room 15* (which led to *room 7*) in the northern corner of the yard; *room 14* in the western corner of the yard; *room 26*, an infill room in the southern corner of the yard; and *room 36* annexed to *room 31* on the south-eastern side of the yard. Probably at the same time, the latter room was enlarged and *rooms 1* and *32-34* were made into a single four-roomed block. The original exits from these rooms to the courtyard were closed off, and this set of rooms could then be entered only via the corridor *room 34*. We may suppose that it was during this phase that the 'awnings' in front of the north-eastern range of rooms (and partially along the south-eastern side of the courtyard) were constructed.

Thus, owing to the enlargement of the living-accommodation, the ground plan of the building underwent fairly considerable changes before reaching its final form. Three large four-roomed living-units which undoubtedly represented the same number of independent households can be reliably identified. However, the set-up in the southern corner of the building has remained somewhat unclear. Here, there was access by way of a single entrance to a block of five rooms, but there is no certainty as to whether these rooms made up just one household, or two consisting of one two-roomed unit and one three-roomed one. In addition to the foregoing, three independent two-roomed blocks have also been identified; and finally there remained five or six self-contained single rooms, as in the first building period. Thus we may suppose that the total number of 'units' amounted to about twelve to fourteen. And as had been the case during the first period, the five or six single rooms were evidently for communal use. These were the sanctuaries in the western corner, the supposed room for communal meals on the north-eastern side of the courtyard (the lower storey being probably occupied by the kitchen), and other rooms intended for general domestic purposes. On the basis of all the above, we are led to suppose that notwithstanding the structural (and hence demographical) changes during this final phase, the everyday life and occupations of the building's inhabitants would have continued as before.

NOTES

1. Excavation of this area showed that originally, probably since the turn of the 5th-4th century B.C., there had been a square fort here, with round towers at its corners. Later, in the second half of the 4th century B.C., a densely built-up area of dwellings formed on its ruins. *Cf.* Ščeglov 1987, 242 ff.; Chtcheglov 1992, 238 ff.
2. Excavation of this building complex was begun in 1994 by the Aarhus University team of the Tarkhankut Expedition, headed by L. Hannestad. See: Stolba and Ščeglov 1994, 149; Hannestad 1995, 312-316; Stolba, Hannestad and Ščeglov 1995, 335-337; Ščeglov, Hannestad, Kašaev, *et al.* 1995, 290; Ščeglov 1997, 275 f.
3. *Cf.* Ščeglov, Hannestad, Kašaev, *et al.* 1995, 289.
4. *Cf.* Ščeglov 1977, 78-81; Ščeglov 1987, 242, fig. 5.
5. The Institute of Archaeology, Russian Academy of Science, photo 814.
6. *Cf.* Ščeglov 1970, fig. 7.
7. For the rough plan, *cf.* Ščeglov 1977, 80, fig. 1.
8. Strželeckij 1961, 205, fig. 65; Dufková and Pecírka 1970, 162 ff., fig. 15.
9. For that purpose an Archaeologico-Geophysical Detachment was established. The task of carrying out the surveys and the subsequent processing of the results were entrusted to V.V. Glazunov, then a student in the Department of Geophysics of the Leningrad Mining Institute. A.I. Aibabin and E.V. Cuckin, students from the Leningrad State University, also took part in the work. The results obtained in the course of these studies were included into his dissertation by Glazunov and subsequently published (Ščeglov 1977, 79 f.; Glazunov 1978, 68-72).
10. For a detailed description of the equipment, *cf.* Višnjakov 1967, 84, 122.
11. Ščeglov and Šilik 1965, 122; Šilik 1967. *Cf.* also Frantov and Pinkevič 1966, 68 f.
12. For details, *cf.* Glazunov 1978.
13. During that season we were not able to excavate *room 7* completely, since in 1970 the work of the Expedition was interrupted by quarantine measures against an epidemic of cholera in the Crimea.
14. The same observation applies to most of the sites in the north-western Crimea.
15. We found similar nails related to door construction (one still fixed in the lower part of the face plane of a doorway) during excavation of the settlement-site of Tarpanchi.
16. See below the description of *room 13* and note 39 below, giving details of the chemical analysis of similar runnels on amphora fragments.
17. Monachov 1989, pls. IV-XI. The amphorae from room 3 were handed over to the Chersonesean Museum for restoration and measurement, but unfortunately all of them were lost there.
18. Kac 1994, 51 ff. (Group 1B).
19. Kac 1994, 120, 2A-13. I agree with S.R. Tochtas'ev (1997, 370), who pointed out that Kac's reading of this monogram as Εὐ( ) ἀ(στυνόμου) is improbable. One further stamp, on a handle that had evidently fallen down along with other fragments from the upper floor, was found in the courtyard – in the breakdown of the south-western wall of the room in square E-2.
20. Kac 1994, 50, 58.
21. The layered and unstable fabric of the mushroom-rimmed amphorae was completely decayed owing to crystallisation of soil salts and it was impossible to preserve and restore the vessels in field conditions. One of the three 'matching-type' amphorae from *room 3* is hypothetically identified in the Catalogue (Part II **A** below) as Samian (**Ad 80**). In terms of its clay fabric this pot is visually identical to amphora **Ad 82** with stamp **Ae 135**. In this case, however, amphora **Ad 81** cannot have come from the same centre since it is of a very different clay (a dense pink one).
22. Find list 6/69, 6/30. They were not included in Monachov's publication (1999a).

23. For a description and discussion of the graffiti and dipinti, see Part II **H** (**H 5-9**, **H 20-21**, **H 23**, **H 41**, **H 64**, **H 68**, **H 74**).
24. *Cf.* Part II **D**.
25. E.Ya. Rogov calls it 'a fork' and along with D.M. Robinson interprets it as an implement for removing hot meat from a boiling pot. However, it is possible that the tool was used for some other household purpose.
26. I.V. Bogdanova-Berezovskaja discovered an unusually high content of phosphorus pentoxide (P_2O_5) in the samples analysed in the LOIA Chemical Laboratory.
27. The second fragment of the same stamp was found in the gateway, below the level of the surface synchronous to the building's destruction.
28. E.Ya. Rogov (see Part II **K**) believes that these were probably parts of a lock for some chest. However, their planigraphic position suggests that they more probably belonged to the door lock.
29. One fragment of this vessel was found in *room 7*.
30. Samples scraped off this vessel were identified in the laboratory of LOIA (IIMK) by I.V. Bogdanova-Berezovskaja. She concluded that it had contained an organic liquid, most probably vegetable oil.
31. Two of these were covered by the breakdown of the fireplace and mixed with fragments of its hearth.
32. It is unlikely that such traces were left by striking against armour. The character of the context which we observed during clearing of the layer induced us to suppose that somebody had used the *machaira* in an attempt tried to cut open the closed door of the room. It is also possible that the sword was used by the defenders.
33. For a detailed analysis, see *room 12*.
34. *Cf.* the detailed description of *rooms 3* and *13* and of the courtyard.
35. Group I in Grakov's classification (1929).
36. S.Yu. Monachov (1999a, 508, pl. 214, *4*) tentatively identified it as Samian, along with the amphora from *room 3* (**Ad 80**) and the amphora (**Ad 82**) bearing the stamp САΓΓАРІ from square D-5 in the courtyard. Although these items are really close in terms of paste composition there are, even so, certain significant differences (and in the rim profiles too).
37. Fragments of the walls of the same pithos were found in sub-horizon IC_1 in *room 14*, in the upper layer of the clay-and-loam fills of the adjoining *rooms 16* and *17*, and in the western part of the courtyard (squares B-6 and V-6). The pithos was probably kept on the first floor of *room 13*; however, this supposition is difficult to prove. Judging by the outer and inner diameters of the rim (34.5-35 cm) and (27.4 cm respectively), and by its rectangular profile, this was a typical Sinopean pithos of the 4th century B.C. It was impossible to reconstruct the complete profile of the vessel.
38. Numerous fragments of similar amphora fragments that had fused to the same extent because of over-firing (spoilage in manufacture) were found during V.V. Borisova's 1955-57 excavations of potters' workshops in Chersonesos (*cf. SAI* G1-20, 1966, pl. 13, *6*).

    After excavation of *room 13*, and in pursuance of the planned project of relative petrographic studies of stamped amphorae (*cf.* Appendix II), we carried out an experiment to sample clay from deposits in Chersonesos, modelling plates of the raw clay (without mineral tempers) up to 7 mm thick (*i.e.* comparable to the average thickness of Chersonesean amphorae and other large vessels) and firing them in a muffle kiln at different temperatures (S.Yu. Monachov conducted the firing). The experiment showed that the optimal firing, giving results that best corresponded (visually least) to examples of Chersonesean pottery from excavations, was achieved at a temperature in the range 800-1000°C.
39. Samples for analysis were scraped from the interior parts of the amphorae and fragments thereof directly after their removal from the layer and prior to preliminary washing; subsequent desalting (treatment with solutions of hydrochloric acid and leaching in water with mechanical clean-

ing off of residues) and restoration were conducted in the laboratory of LOIA (restorer O.N. Plamenevskaja). During restoration all the sooty runnels, lime residues, *etc.* were removed. For purposes of analysis ten samples of scraped off material and sediments were selected. Itemised descriptions and the conclusions drawn by Bogdanova-Berezovskaja are presented in the following table.

Sample no./ Find list no.	**Description of vessel**	**Results of the analysis**
1. 8/2	Chersonesean amphora (**Ad 1**) with the stamp of the astynomos *Bathyllos* (**Ae 33**) and two graffiti: a numerical one and letter E (**H 33(a)**, **H 33(b)**)	Fatty organic liquid, probably vegetable oil
2. 8/3	Chersonisean amphora (**Ad 13**) with dipinto M (**H 70**)	Organic substance (more accurate identification impossible)
3. 8/4	Sediment from a Chersonesean amphora (**Ad 12**)	Fatty organic liquid (vegetable oil?)
4. 8/5	Chersonesean amphora (**Ad 22**) with dipinto A/XI (**H 73**)	Traces of soot. Organic substance (more accurate identification impossible)

40. *Cf.* Ščeglov 1974, 49. Kac and Monachov 1977, 95, agreed with this supposition.
41. *Cf.* below Part II **H**.
42. Another amphora (**Ad 2**) with the stamp of astynomos *Bathyllos* (**Ae 32**) and the graffito E (**H 13**) bearing traces of similar fatty runnels of some burnt liquid was found near the southern corner of the building in squares DE-6. See Gilevič and Ščeglov 1996, 105 (square B-6 was named erroneously in the publication). *Cf.* the description of *room 3* and note 16 above.
43. This applies not only to the amphorae of Chersonesean manufacture described here. For details, see Gilevič and Ščeglov 1996, 105 ff. However, a possible exception to this rule was a Sinopean amphora with oil (**Ae 105**). Communications by ancient authors (though rather late ones) give an impression that olive growing was traditionally the main branch of the Sinopean economy, thus the resulting produce was quite possibly exported (Strab. 2. 1. 15; Eust. Il., II. 853).
44. The latter stamp is not included in the catalogue below (Part II **A**).
45. Kac 1994, 50, 76.
46. Physical data determined by T.S. Konduktorova (Institute of Anthropology, Moscow State University).
47. The wood is very poorly preserved. According to the investigations carried out by G.N. Lisicyna, it was possible to identify oak (*Quercus* sp.), juniper (*Juniperus* sp.), and, possibly, poplar or asp (*Ulmus* sp.) among the presented samples.
48. A graphic reconstruction of the loom would be possible, though it presents special problems.
49. Identification by E.Ya. Rogov.
50. For the earliest communications on worship of Asklepios in Chersonesos, see Golenko and Ščeglov 1966. In this article, it was proposed, on the basis of epigraphic and numismatic evidence, sculpture and small bronze artefacts as well as glyptics, that the cult of Asklepios appeared and became especially popular in Chersonesos in the early centuries A.D. During that period a

sanctuary of Asklepios was functioning in the city (*IOSPE* I^2 376). However, the facts now accumulated make it possible for the date marking the rise of worship connected with this cult to be shifted back at least as far as the 4th century B.C. Indications in favour of this supposition are: I.A. Antonova's find of two polychrome gravestones of physicians in Chersonesos (Solomonik and Antonova 1974); a graffito with a dedication to Hygieia on a kantharos from a Chersonesean country house (synchronous with U6) at the settlement of Mayak on the Eupatoria Peninsula (Jacenko 1983, 202 f., fig. 7a; Kolesnikov 1984, 86); and a graffito on a fragment of the base of black-glazed plate from Chersonesos with a supposed dedication to Asklepios in a Doric dialect (*GACh*, 35, no. 355 – ΑCΚΛΑ[).

51. This is the only find of a tile of Chersonesean manufacture.
52. Probably it was a household enclosure separated from the rest of the room by a wooden or wattle partition. Since fairly numerous scales of mullet (*Mugil* sp.), annular bream (*Diplodus annularis* L.), and fish of the herring family (*Alosa* sp.), as well as bone-plaques of sturgeon (Acipenser), brill (*Rhombus maeoticus* Pall.) and fox-skate (*Raja clavata* L.), were found here during the process of clearing the layer, this side of the room was possibly associated with the cooking or, most likely, the storing of fish.
53. At the time of his writing, A.N. Zograf dated the release of this series of Chersonesean copper to the first half of the 3rd century B.C. (1951 (= Zograf 1977), XXXV, 24-25; the precise dates (300-250 B.C.) in the notes to the plate in Zograf's book were put in by D.B. Šelov). Later, V.A. Anochin (1977 (= Anokhin 1980), 77-81) proposed a narrower dating, to the first decade of the 3rd century B.C. (300-290 B.C.). However, taking account of the archaeological context of the coins published here and the fact that one of the coins was not worn in circulation (the other was badly corroded), A.M. Gilevič supposed that the release must have taken place in the late 4th or at the turn of the 4th-3rd century B.C. (inventory list of coins from U6, archive manuscript; *cf.* also Gilevič's article in Part II below). V.F. Stolba (1989, 67) independently came to the same conclusion (end of the 4th century B.C.).
54. The context here is similar to that in *room 22* (*cf.* note 53 above).
55. The construction of the doorways leading to the adjacent *rooms 24*, *26*, and *28* is given in the respective descriptions of these rooms.
56. Fragments of the same bowl (**C 51**) were found lying on the floor of the adjacent *room 25*.
57. Fragments of the same bowl (find list 9/16 and 10/14. 1972) were uncovered in *rooms 25* and *26*.
58. This was the only threshold of such a high quality to be found in the building.
59. However, in contrast to *rooms 3*, *12*, and *13* (see above) the stratigraphic picture was not so distinct. The fire may not have been so strong here, and it probably occurred after the rooms had been plundered, when nothing remained there.
60. The same that was found in the adjacent rooms.
61. *Cf.* note 19 above.
62. Probably from the same storeroom comes an accumulation of broken stamped and unstamped amphorae, mostly Chersonesean, found in the southern part of the courtyard (*cf.* the description of the courtyard, pp. 68-72)
63. The location of this doorway was preliminary identified by remote sensing carried out by V.V. Glazunov. Clearing of the very poorly preserved base of the wall confirmed the results of the electric profiling.
64. The top of the amphora had been broken off in antiquity, and the lower part was then reused for some domestic purpose.
65. During the excavation of a country house near the Bay of Vetrenaya I recorded a similar example of the reuse of a handmade pot bottom as a lid.

66. This wall was very poorly preserved; its position was traced from the small stones of its base and the remains of mud-brick masonry.
67. The height of the preserved lower part was 0.45 m; the width 0.60 m; the thickness 0.16 m. The length of the tenon was 20 cm, and the width 24 cm.
68. Weight 444.61 gr.
69. A vertical frame made of wood or wattle and plastered with clay.
70. The original height of the socles has about 75-80 cm.
71. Here is an indicative example: part of an engraved stamp on a fragment Herakleian amphora neck (**Ae 118**) was found in *room 12*, while another part of the same was found in the thickness of artificial fill in the gateway (see p. 68 and note 27). This fact is yet another indication that a certain group of early artefacts is to be excluded not only from consideration of the ceramic assemblage synchronous to the period of occupation of the building, but also from the materials used in dating the period of its construction.
72. Possibly futher remains of the same path that was laid from the entrance of *room 28* in the first row, and part of which was uncovered beneath the floor of *room 25*.
73. Belonging to the first group in Grakov's classification. Fragments of two other stamped Sinopean tiles with the names of the astynomoi *Histiaios* and *Diophantos* (see **Ab 3** and **Ab 6**) were uncovered at the edges of the paved areas, in a refuse layer beneath the level of the surface of the courtyard (facia IC_a).
74. Although only three samples of stamps of the astynomos *Kraton* have been recorded (**Ae 58-60**), those of *Apollonios* amounted to more than fifteen (**Ae 3-19**).
75. All the other 'enclosures' were of rectangular plan. Circular 'enclosures' are, however, typical of household rooms in houses excavated in other areas of the Panskoye I (U7 and U13).
76. According to my measurements at the beginning of September 1973, the level in the well was 2.48 m below the surface of the bedrock, and in August 1977 it was 2.30 m below the surface of the bedrock. The latter value exceeded the water level in Lake Panskoye (Sasyk) at that time by only 10 cm.
77. The quantity of water springing from the walls in a continuous flow was so great that it was quite impossible to drain it with a hand pump. For this reason, in 1974 the clearing of the well had to be suspended; it was completed in 1977, when a powerful motorized pump was employed. However, even this pump did not enable to lower the water level essentially. Therefore, removal of the fill, down to 0.5 m. thick, had to be carried out 'by touch', an operation undertaken by V.I. Kac, working in a diving-suit!
78. *Cf.* note 76 above.
79. This clearing was conducted in 1967 by a group from assistants of the Donuzlav Expedition, who visited the site after we had started work there and had already dug an exploratory trench near the well. They found, in particular, an anepigraphic stamp on a fragment of a Sinopean amphora handle (**Ae 114**), which had possibly fallen from the edge of our trench. For brief details, see Daševskaya 1968, 215 ff.; Ščeglov 1968, 213 ff.
80. As identified by T.S. Konduktorova.
81. Identification by E.S. Čavčavadze.
82. I observed a similar picture during excavations on the late Scythian site of Tarpanchi near the village of Okunevka (on the southern coast of the Tarkhankut Peninsula). There, after the similar destruction of a small fortress (which, however, took place at the beginning of our own era), a well was filled to its entire depth with the skeletons of domestic animals that had been thrown into it. Such a method of poisoning wells is well known among the offensive tactics of nomads.
83. Kac 1994, 120, nos. 13 -15. But *cf.* Tochtas'ev 1997, 370.
84. *Cf.* Part II **H**.

85. Remains of two englyphic stamps on extremely small neck fragments of Herakleian amphorae (**Ae 119**, **Ae 125**) were also found in this part of the courtyard but in a refuse layer below the surface of the yard, directly above the bedrock; they therefore cannot be considered as belonging to this accumulation of amphorae.
86. The other half of this stamp was found in square V-4, and it is highly probable that this example belongs with the dump of amphorae in *accumulation 3*.
87. This is a unique find enabling a fairly exact reconstruction of the plough to be made; this is, however, a special subject.

DISCUSSION

1. Monachov justifiably bases his dating on materials from the necropolis of Panskoye I, see Monachov 1989, 49; Monachov and Rogov 1990a, 130. Amphorae of this type were probably manufactured in Chersonesos before the beginning of regular stamping. The definition of the upper chronological limit for the production of these vessels depends on establishing the beginning of the practice of stamping, which, according to certain recent works, is to be dated either to 320-315 B.C. (Kac 1985, 100 ff.; Kolesnikov 1985, 73 ff.) or to about 325 B.C. (Kac 1994, 69 ff., 76). Yet it is possible that these amphorae continued in use in tandem with the first consignments of stamped containers.
2. A significant point is that the concentration of pottery fragments in the layer of ancient soil lying beneath the floors and wall-bases of U6 increases westwards, *i.e.* towards the central area U7, while the same layer in the eastern and south-eastern parts of the excavation is almost entirely devoid of finds. Probably, we are dealing with refuse dumped beyond the eastern confines of the settlement during the period before U6 was put up. Another important indication, in my view, is that during the clearing of the courtyard – beneath the level of the earthen surface existing at the time of the destruction – there were found in the mixed layer that had gradually accumulated throughout the entire period of the building's occupation fragments of amphora necks from Herakleia Pontike with remains of englyphic stamps dating to about 400-350 B.C. (see **Ae 117-118**, **Ae 122-126**). Probably, to the period not later than the middle of the same century belong a number of stamps of Grakov's first group on fragments of Sinopean tiles (**Ab 5-7**). Of note is that this layer is practically devoid of Herakleian and Sinopean stamps, which, were they presented, might be reliably dated to about 350-375 B.C.
3. Stolba 1989, 97. The coin types concerned are those described in Zograf 1951, pl. XXV, *24* (= Zograf 1977).
4. *Cf.* Part II **I**.
5. The fortress was built at the turn of the 5th and 4th centuries B.C. or at the very beginning of the 4th century on a previously unoccupied site. It was probably about 350 B.C. that it was partially demolished and a group of ordinary small houses appeared at its place. See Ščeglov 1986, 166 ff.; Ščeglov 1987, 242 ff., figs. 1, 19, 21, 22; Chtcheglov 1992, 268 ff.
6. Ščeglov 1987, 258 f., fig. 1; Chtcheglov 1992, 268 ff.; Stolba, Hannestad and Ščeglov 1995, 50 ff., fig. 4; Ščeglov 1997, 276.
7. For a brief description, see Ščeglov 1976, 409 f.; Stolba, Hannestad and Ščeglov 1995, *passim*.
8. *E.g.* an Attic askos (Guttus type) Sparkes and Talcott 1970, no. 1194 (*c.* 350), a fish-plate with a graffito, and other items.
9. Such a suggestion is supported by K.V. Šiškin (Institute of Archaeology, RAS), topographer, expert in aerial surveying and photography, for whose learned advice I am extremely grateful.
10. For the grounds of this hypothesis, first proposed by me in a slightly different form, see Ščeglov 1968a, 339; *cf.* Ščeglov 1985a, 190-193; Ščeglov 1987, 250 f., 273, fig. 30.

11. A similar picture with an analogous composition of finds emerged at some other sites too (for instance at the Tarpanchi settlement; at the rural houses of Panskoye III; near the Bay of Vetrenaya; and near the Bay of Bolshoi Kastel), as well as in the course of exploratory excavations at a number of sites in the north-western Crimea. The same is also typical of the immediate rural environs of Chersonesos.
12. The slight variations in the external dimensions are due to the non-uniform state of preservation of the external walls.
13. The second supposition is more probable. See above, p. 43.
14. Some time ago, I suggested, as a preliminary hypothesis, that 'the site of Panskoye I at the northern edge of the Chersonesean *chora* may have been a military and economic settlement, possibly similar to the early Hellenistic ones of the same type as *katoikia* as defined by E. Bickerman' (Ščeglov, Gilevič, Glazunov *et al.* 1975, 376). With the subsequent extension of the excavations and the accumulation of further evidence, my hypothesis has found additional confirmation (for more details, see Ščeglov 1986).
15. This, however, is a special topic which will not be discussed here.
16. Strželeckij 1961, 87 ff. (Chapter 6), fig. 65 ff., 94 ff. See also Dufková and Pecírka 1970, 163, fig. 15, 168, fig. 17; Pečírka 1973, 140 ff., fig. 2, *6* and *8*; Novicka 1975, 113 f., fig. 66; Ščeglov 1976, 56 ff. (including a three-dimensional reconstruction); Wąsowicz 1982, 210, figs. 165, 166; Kryžyckij 1982, 55, fig. 22, *1-2* (including a three-dimensional reconstruction); Chtcheglov 1992, 79 ff. These two buildings were supposed by Strželeckij (and by all subsequent authors) to be 'country houses' dating to the period spanning the turn of the 3rd to the 2nd century B.C. However, E.Ya. Turovskij (1994, 11 ff.) convincingly showed that these buildings were erected during the last quarter of the 4th century B.C. and that their occupation came to an end about the close of the first third of the 3rd century. His conclusion is based both on a new analysis of the ceramic assemblage from these houses and on the results of our excavations in north-western Crimea.
17. Kolesnikov 1984.
18. Ruban 1974, 335 ff.; 1978b, 34 ff., fig. 2; Kryžyckij 1982a, 42, fig. 17, 45 (including a three-dimensional reconstruction).
19. Except for a number of schematic plans that differ from each other (see Ruban 1978b, 35, fig. 2, and Kryžyckij 1982, 42, fig. 17, *2*) no other information (photographs or drawings) has yet been published.
20. Such a technique of constructing mud-brick walls upon low stone socles is typical both for urban and country houses in early Hellenistic Chersonesos. A sure indication that walls were originally built of mud-bricks are the remains of stone socles with a carefully levelled upper plane and infills of dense clay loam. See Ščeglov 1982a, 50 ff.
21. The system of categorizing stone masonry here and below is presented according to Kryžyc'kyj 1965, *passim*; however, some slight alterations have been made to reflect certain peculiarities in the techniques of stone-working and construct employed in the region under discussion (the western Crimea). For the system of describing the different types of masonry used in mass construction in ancient cities of the northern Black Sea area was originated by A.N. Karasev, and in perfecting this system Kryžyckij like Karasev, took as his basis material from excavations in Olbia, where building traditions were slightly different. The type of masonry described here is closest to the type illustrated by Kryžyc'kyj 1965, 46, fig. 6, *1*.
22. This fact is yet another indication that fragments of certain ware (from red-figured and black-glazed vessels, early Herakleian stamped amphorae, Sinopean stamped tiles, *etc.*), found in various parts of the building, should be excluded from consideration of the ceramic ware used by the inmates in their everyday life. All these fragments were either reused as building material or carried into the house as refuse from adjacent areas.
23. See Ορλανδος and Τραυλος 1986, 202 f., *s.v.* πεντάδωρος.

24. Orlandos 1966, 51 ff. On the sizes of bricks at different sites in Greece, see Orlandos 1966, 58-61.
25. Vaults in kurgans K2, K33, and K34. See also Ščeglov 1978, 80.
26. Jacenko 1970, 254.
27. Kryžyckij 1971, 124.
28. Sokol'skij 1967, 110 ff. The fortress at the Batareika II settlement is dated to the 1st century B.C.
29. Nikolaenko 1983, 13 ff., 17.
30. Nikolaenko 1985, 14. This author reached her conclusions not only on the basis of her own on-site measurements taken over many years, but also on the basis of measurements carried out likewise over a long period by S.F. Strželeckij, E.N. Žerebcov, and by myself on the Herakleian Peninsula, as well as my measurements in the north-western Crimea (*cf.* Nikolaenko 1985, 13-15 and the refs. given there). This conclusion may thus be accepted as well-founded.
31. Nikolaenko 1983, 17. The dimensions of the smallest land lot or urban plot in Chersonesos are 52.5 × 52.5 m (100 × 100 cubits).
32. Nikolaenko 1983, 14.
33. Nissen 1892, 863.
34. Dinsmoor 1961, 357 ff. Such a degree of precision without any correspondance to measures existing in reality is, in my opinion, entirely superfluous and does not even justify the time spent on the calculations. The line thickness of the gradations marked on any measuring implement used in construction-work, not only in antiquity but even today (with the possible exception of laser levels and theodolites), is 0.25 to 1-2 mm. For any ancient structures, therefore, there is absolutely no sense in making calculations to five decimal places.
35. See Wesenberg 1976, 15 ff. with many references.

Part II

TILES AND CERAMIC CONTAINERS

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TILES (**Aa 1-14**)

Several dozen fragments of pan tiles (*keramides)* and cover tiles (*kalypteres)* were found in U6. Only one cover tile was found virtually complete, and it was also possible to reconstruct one unstamped pan tile. The main characteristic of this group of material is that by far most of the fragments of unstamped tiles and all those of stamped tiles were found re-used for secondary purposes on the floors of hearths in *rooms 20* (**Ab 8**) and *30* (**Ab 4**), and in the construction of an inner staircase (**Ab 2 = Aa 10**). Fragments were also used for filling spaces between the flags of pavements in the southern corner of the courtyard (**Ab 1**, **Ab 3**, **Ab 6**, **Ab 9**) and in front of the entrances of *rooms 3* (**Ab 7**) and *12* (**Ab 5**), and crushed tiles were used in the masonry of the wall socles to level the layers of stone, and possibly also the layers and junctures in mud-brick. Taken in conjunction with the small number of finds and the stratigraphic evidence, this clearly suggests that the building had never been roofed with tiles. The only possible exception is the roof over the upper storey of *room 12*. However, in this case too, re-used tiles were used for the roofing; the tiles having been manufactured some decades before the house was built, as evidenced by the date of the stamped fragments. That tiles were not otherwise used for roofs is strongly suggested by the very few fragments of cover tiles (**Aa 11-14**).

It is obvious that almost all the tiles found in U6 were brought here, most of them probably in a fragmentary state, from the debris of earlier (probably neighbouring) buildings or from dumps. All examples – whether fragmentary or almost complete tiles – belong to two types well known from Greek sites in the Mediterranean and Black Sea areas.

Type 1 – tiles of the so-called 'Laconian' type. They are characterized by being slightly concave and very well fired. The ware is dark red, thin, and dense, and contains a large amount of mineral inclusions, which are not seen in the ceramic wares from production centres in the Black Sea region. These tiles may have been imported from a Greek centre in the east-Mediterranean. Visually, the clay is very similar to that of amphorae from Thasos or from the so-called 'Thasian Circle'. Due to the fragmentary state of the material, this type is not included in the following catalogue.

Type 2 – tiles for the so-called 'Sicilian' system of roofing. The pan tiles are flat, with vertical ridges with oblique notches in the upper inner corners for fixing the tiles of the row above. In the lower corners of the plates there are corresponding bevelled edges, fitting into the notches of the tile below. The cover tiles are semicircular in cross-section, slightly widening downwards, and have a narrow 'shovel-blade'-shaped upper end, which fits into the lower part of the cover tile above. In the Black Sea area, three production centres, Herakleia Pontike, Sinope and Tauric Chersonesos, manufactured tiles of this type, including stamped tiles. Only Sinopean tiles, stamped and unstamped, are represented among our finds. Nine fragments of Sinopean tiles bear stamps (**Ab 1-9**). The most characteristic examples of tile fragments and all the stamps are included in the following catalogues.

Aa 1. U6 room 12, horizon IA and sub-horizon IC_1. Find list 6/1. 1971.

Fragmentary unstamped pan tile. The lower left quarter of the plate, both upper corners, and small fragments of the middle part of the plate are preserved. Clay dense, well fired, with coarse and fine grains of pyroxene and other mineral inclusions; lilac and yellow hues in break. Dimensions: estimated L. 66.7 cm, W. 50.6 cm, thickness 3.0 cm, H. of ridge 3.0 cm, W. of ridge 3.50-4.0 cm.

Sinopean manufacture.

Aa 2-9. U6 room 12, horizon IA and sub-horizon IC_1. Find list 6/2. 1971.

Fragments of seven pan tiles. Similar to **Aa 1**.

Sinopean manufacture.

Aa 10. U6 room 4. Find list 4/1. 1970.

Fragment of a pan tile with a Sinopean stamp of the astynomos *Diophantos* with the device 'eagle on a dolphin' (**Ab 2**). Similar to **Aa 2-10**. About 70% of the plate is preserved.

The tile was used as building material in the construction of the staircase leading to the first floor.

Aa 11. U6 courtyard, E-6. Find list 17/19. 1972. Pl. 44

A semi-cylindrical cover tile. The only completely preserved example. Clay dense, similar to **Aa 1-10**. Dimensions: L. 62.5 cm, W. 17.0 cm, thickness 2.0 cm, L. of 'shovel-blade' 11.5 cm.

Sinopean manufacture.

Found *in situ* in the southern corner of the courtyard. The position suggests that it had been used as a gutter.

Aa 12-14. U6 room 12, horizon IA. Find list 6/2a. 1971.

Fragments of lower and upper parts of semi-cylindrical cover tiles. Clay dense, similar to **Aa 1-11**. Dimensions: estimated W. *c.* 17-18.5 cm, thickness 2.0 cm.

Sinopean manufacture.

STAMPS ON FRAGMENTS OF SINOPEAN TILES (**Ab 1-9**)

As previously mentioned, only nine fragments of Sinopean tiles with stamps were recorded. Despite the fragmentary character of most of the stamps it is possible to reliably restore the legends on seven impressions. They all belong to Sinopean astynomoi from Grakov's group I (360s – 340s B.C.). Three of the stamps contained the name of one of the first magistrates, *Histiaios* (**Ab 5-7**), the others that of the last astynomos of the group – *Diophantos* (**Ab 1-4**).

Ab 1. U6 courtyard, E-6. Find list 17/1. 1972. Pl. 54.

Tile fragment with a rectangular stamp, Grakov's group I (1929). Type: *IOSPE* III 2766. Legend running along the perimeter.

ΔΙΟΦΑ | ΝΤΟΥΑΣΤΥΝΟΜΟ | ΥΝΤ | ΟΣΝΕΥΜΗΝΙΟΥ
dove

Διοφά | ντου ἀστυνομο | ῦντος Νευμηνίου

Ab 2. U6 room 4. Find list 4/1. 1970. Pl. 54.

Stamped tile fragment. Rectangular stamp, Grakov's group I, with legend running along the perimeter. Type: *IOSPE* III 2767-8.

ΔΙΟΦΑ | ΝΤΟΥΑΣΤΥΝΟΜ | ΕΥΝΤ | ΟΣΠΟΣΕΙΔΩ
dove

Διοφά | ντου ἀστυνομ | εῦντ | ος Ποσειδω(νίου)

Ab 3. U6 courtyard, D-5. 1974. Pl. 54.

Tile fragment with a stamp from Grakov's group I. Type: *IOSPE* III 2769.

ΔΙΟΦΑΝ | ΤΟΥΑΣΤΥ | ΝΟΜΕΥΝ | ΤΟΣΠΟΣΕΙ
(along the perimeter)
bunch of grapes
Διοφάν | του ἀστυ | νομεῦν | τος Ποσει(δωνίου)

Ab 4. U6 room 30. Find list 14/1. 1972.

Similar to the preceding. Type: *IOSPE* III 2769. Used in the construction of the hearth.

Ab 5. U6 room 14. Find list 7/5. 1971. Pl. 54.

Small sherd with fragmentary stamp from Grakov's group I. Type: *IOSPE* III 363-5.

]IO	eagle	ʽΙστια]ῖο
] vac.	on the	ἀστυ( )]
]NIO	dolphin	Νευμη]νίο

Ab 6. U6 courtyard, D-5. 1974. Pl. 54.

Similar to the preceding. Type: *IOSPE* III 363-5.

]AIO	eagle	ʽΙστι]αῖο
] vac.	on the	ἀστυ( )]
]NIO	dolphin	Νευμη]νίο

Ab 7. U6 courtyard, E-2. 1973.

Fragmentary stamp from Grakov's group I. Type: *IOSPE* III 359-60.

[– – –]	eagle	[ʽΙστιαῖο]
]NO	on the	ἀστυ]νο( )
]EMHNIO	dolphin	Ν]ε<υ>μηνίο

Ab 8. U6 room 20. Find list 4/1. 1972.
Small stamped fragment.

ΠΡ[Πρ[
ΑΣ[ἀσ[τυνόμου
[– – –] [– – –]

Ab 9. U6 courtyard, G-6. 1972.
Fragmentary stamp. No letters preserved.

CERAMIC CONTAINERS I. PITHOI AND STORAGE-BINS (**Ac 1-6**)

Large vessels for the storage of liquids or dry provisions are rare in the ceramic assemblage from U6. This fact distinguishes the building from many other rural houses in the *chora* of Chersonesos, both in the immediate vicinity of the city on the Herakleian Peninsula, and in the more remote territory of north-western Crimea.

At the time of destruction there were probably no more than two pithoi in the house. All the fragments are of Sinopean manufacture.

Ac 2 is as yet the only complete one of this type among the finds from the northern Black Sea area (Pls. 43-44). A fragment of the upper body of a similar pot with a painted floral decoration was found during excavations at the Yuzhno-Donuzlavskoye site in the north-western Crimea (near the village of Popovka). O.D. Daševskaja, who has published the site, describes it as a *krater* (κελέβη), according to the typology proposed by V.D. Blavatskij.[1] B.A. Sparkes and L. Talcott have classified a similarly painted (bands and floral design) pot from the Athenian Agora, dated to the second half of the 4th century B.C. as a *storage-bin*.[2]

The excavations of potters' workshops[3] at Chersonesos have attested that painted ware, both with a very simple decoration in the shape of bands around the body or neck, and with more complex floral ornaments, was manufactured here. The contexts of the workshops can be dated to *c.* 300-270 B.C., *i.e.*, the later period of U6. The same date is indicated by finds of painted ware on other sites with good stratigraphies in north-western Crimea, *e.g.* in the rural house near the Bay of Vetrenaya, on the Yuzhno-Donuzlavskoye site, *etc.*[4] However, it still remains an open question whether the production of painted ware in Chersonesos began *c.* 300 B.C. or in the late 4th century B.C.

Storage bins (Pl. 44) are represented by four examples, three of which were kept in the storerooms for amphorae (**Ac 3**, **Ac 5-6**). One pot (**Ac 4**) and its lid were found in fragments in the accumulation of broken pottery in the southern part of the courtyard.

Ac 1. U6 room 13, horizon IA. Find list 8. 1971.

Rim-shoulder fragment of heavy *pithos*. The rim is trapezoid in section. Clay dense, well fired, with coarse and fine grains of pyroxene and other mineral inclusions; lilac hue in break. The surface is slipped. Dimensions: D. of rim: outer 34.5 cm, inner 27.4 cm, preserved H. 10.0 cm, H. of rim 5.0 cm, thickness 3.5 cm.

Ac 2. U6 room 3, sub-horizon IC_1. Find list 6/37. 1971. Pls. 43-44.

Painted two-handled jar. The vessel has a broad bulbous body on a ring foot. Broad out-turned, beak-shaped rim, low neck, and sloping shoulder. On the shoulder two vertical arched handles, round in section. Rectangular handle plates. The pot is covered with light slip and decoration in red paint. Three 0.45-0.55 cm wide bands on the upper body; the space between the two lower bands is filled in with white paint. Stylised, 2.0 cm wide floral frieze on the shoulder, consisting of a laurel branch between bands the same width as those on the body. The handles and butt-ends of the handle plates are decorated with painted stripes (0.3 cm wide), forming an ornament of rays. Dimensions: H. 32.0 cm, D. 34.2 cm, D. of rim 25.0 cm, D. of base 13.8 cm, H. of neck 3.6 cm.

Chersonesean manufacture.

The pot was kept in the amphora storeroom on the first floor.

Ac 3. U6 room 3, sub-horizon IC_1. Find list 6/1. 1971. Pl. 44.

Fragmentary pot with straight vertical rim, ovoid body and flat base. Two vertical arched handles (12.0 × 5.5 × 2.0 cm) are attached on the shoulders. All the fragments were badly burnt in the fire. Clay brownish grey with a high content of coarse pyroxene grains. Reconstructed graphically. Dimensions: estimated H. *c.* 55 cm, D. *c.* 40 cm, D. of rim 19.0 cm, D. of base 20 cm; wall thickness 1.2-1.4 cm.

Probably Sinopean.

The pot had been kept in the amphora storeroom on the first floor, along with **Ac 2**.

Ac 4. U6 courtyard, D-4, D-5, E-6. 1974. Pl. 44.

Fragmentary two-handled pot with straight vertical rim, ovoid body and flat base. Two vertical arched handles (14.5 × 8.5 × 3.0 cm) are attached on the shoulders. Light slip on the surface. Dimensions: H. 37.0 cm, H. of rim 2.0 cm, D. of rim 19.2 cm, D. 36.7 cm, D. of base 13.0 cm; thickness of rim and body *c.* 1 cm.

Chersonesean manufacture.

Ac 4a. U6 courtyard, E-4. 1974. Pl. 44.

Fragmentary lid in the form of a truncated cone with a vertical, 2.5 cm-high edge. The base (*c.* 5 cm in D.) of a round knob for lifting the lid is preserved in the centre. Light slip on the surface. Clay and slip are identical with that of **Ac 4**. Dimensions: H. *c.* 6 cm, D. 22.0 cm; thickness of the walls *c.* 0.7 cm. The dimensions of the lid fit pot **Ac 4** precisely – they clearly belonged together, as is also indicated by the fact that the fragments were found in the same area.

Chersonesean manufacture.

Ac 5. U6 room 13, sub-horizon IC_1. Find list 8/28. 1971.

Fragmentary pot similar to **Ac 4**. The lower body, fragments of the rim, the shoulder, and a vertical arched handle are preserved. Light slip. All the fragments were badly burnt in the fire. Enough preserved for a reconstruction of the complete profile of the pot. Dimensions: preserved H. 19.0 cm, estimated H. *c.* 30-32 cm, estimated D. *c.* 27-30 cm, D. of rim 14.0 cm, D. of base 12.0 cm; thickness of the walls 0.6-0.8 cm.

Chersonesean manufacture.

The pot had been kept in the amphora storeroom on the first floor, together with **Ac 6**.

Ac 6. U6 room 13, sub-horizon IC_1. Find list 8/29. 1971.

The upper part of a painted pot similar to **Ac 4**. The rim is beak-shaped.[5] Two vertical arched handles (14.0 × 4.7 × 2.2 cm) on the shoulders. Light slip. A red band, 0.7 cm wide, around the widest diameter of the body. Dimensions: preserved H. 15.0 cm, D. 32.6 cm, D. of rim 19.8 cm; thickness of the walls *c.* 0.7 cm.

Chersonesean manufacture.

The pot had been kept in the amphora storeroom on the first floor, together with **Ac 5**.

CERAMIC CONTAINERS II. TRANSPORT AMPHORAE (**Ad 1-93**)

Part of the amphora collection from U6 – mainly Chersonesean vessels – has already been published.[6] However, the collection was considerably augmented during the completion of the excavations of the building and especially after pottery was restored. Only a third of about 200 vessels stored in the house present complete or archaeologically complete shapes. These are catalogued below, together with a number of characteristic fragments, giving an idea of the diversity of the shapes of transport amphorae brought to the settlement.

Chersonesean amphorae are the most common. Peculiar to this group is the absence of earlier examples of unstamped Chersonesean specimens of the I-A-1 and I-A-2 variants, dating to the middle and third quarter of the 4th century B.C., which are quite common in the graves of the necropolis, as well as in the North Bank Necropolis of Chersonesos and at other sites. The chronologically subsequent issue, variant I-A-3, is, however, represented by a number of vessels, including those with stamps of the astynomos *Bathyllos* (**Ad 1-5**; Pls. 45 and 50). These are large, standard amphorae of 6 Attic *hemihectes* (26.26 litre), which were produced in Chersonesos in the period from the last quarter of the 4th century to the first quarter of the 3rd century B.C.

The most frequently found transport amphora in U6 is the Chersonesean amphora of variant IБ (30 examples: **Ad 7-36**). This actually reflects a general trend in Chersonesean amphora production, since this variant is the most common, not only in U6, but in general. In fact, variant IБ is a four *hemihectes* (17.51 litre) variety of type I-A-3. All the specimens from U6 belong to the earliest issues, as proven by stamps on some of the vessels: one with the name of the astynomos *Sopolis* (**Ad 18**; Pl. 46); and two other cases of monogram stamps EYA in ligature (**Ad 17**, **Ad 19**; Pl. 46), which are usually considered as manufacturer's stamps. However, since the other handle of the same amphorae is without any standard astynomos stamp, the explanation for the monogram stamps could be that there may have been a practice of stamping containers with monogram stamps in the name of an astynomos in Chersonesos.

Only very few examples of other types and variants of Chersonesean amphorae are represented in the collection from U6. Three amphorae (**Ad 37-39**) may be attributed to variant IIA (a variety of the standard with a volume of 1 *hemihecte* (4.37 litre); one of them has a conical body, a truncated bi-conical foot with a groove in the transition between body and foot, and a trapezoid rim (**Ad 37**; Pls. 47 and 52). Vessel **Ad 38** is tentatively attributed to this variant. It has a softer body contour, a different foot, and a longitudinal groove along the outer surface of its handles (Pls. 47 and 52). Unfortunately, the stamps impressed on two of the three amphorae of this type are illegible. Two fragmentary amphorae possibly belong to the rare variant IIIБ (a standard measure of 3 Attic *choes* – 9.85 litre), which was not produced after the first third of the 3rd century (**Ad 40-41**; Pl. 47).

The number of imported transport amphorae from U6 is small and limited to single specimens from Herakleia, Amastris, Kolophon, Samos, Rhodos, and Korinth, along with some of unknown origin.

Imports from Herakleia are represented by a single fragmentary vessel (lacking handles and the upper part of the neck) (**Ad 78**; Pls. 47 and 53), which can be attributed to I.B. Brašinskij's classification, late type IIA. Similar vessels have been found in burials dated to the late 4th century B.C. or *c.* 300 B.C. (*e.g.* Grave 25 in Gorgippia, Azov Kurgan 2; the 1973 burial in Novorossiysk; Kurgan 14 at Elizavetovskoye). They usually bear late Herakleian stamps, such as NI, HPA, *etc.* Apparently this Herakleian amphora does not belong to the last period of the occupation of U6, since parallels suggest a date around 300 B.C. The Herakleian amphora stamps from U6 (**Ae 117-132**) also suggest that products of this city did not reach U6 during the last period of its existence.

Amphorae produced in other centres are only represented in the collection by single finds. Thus two Amastrian stamps (**Ae 115-116**) were found, including one on the neck of an amphora whose shape can be reconstructed. In terms of its morphological characteristics (**Ad 77**; Pls. 47 and 53) and the results of petrographic analysis of the clay, this vessel is similar to the Sinopean prototype from the period of stamps from Grakov's group III. According to A.N. Ščeglov, the main exports from Amastris were olive oil and salted olives rather than wine,[7] and a major part of exports from Sinope may also have been oil. The only identifiable specimen from this city comes from the well (**Ad 76**; Pl. 47), and belongs to Monachov's type IIC (Monachov 1992). However, as evidenced by the number of stamps and characteristic profile fragments, Sinopean amphorae were second in number only to those from Chersonesos.

The assemblage of pottery from U6 also includes an amphora with two-barrelled handles (**Ad 79**; Pls. 47 and 53), which made it possible to identify a group of transport amphorae from Kolophon.[8] Although there was no stamp on this vessel, it is very probable that the stamps with a legend containing a magistrate's name and the ethnikon ΚΟΛΟΦΩΝΙΩΝ, known from rare finds, are products of this small Ionian centre on the Aegean coast of Asia Minor. Dated fragments of a similar amphora (a handle and a foot) have as yet been reported only at the Elizavetovskoye site, in a layer dated not later than the 270s B.C.[9]

One fragmentary amphora with a peg foot (*kubarevidnaya* in Russian terminology) may confidently be attributed to Rhodos (**Ad 84**; Pl. 48). As to the type of clay, the dimensions, and the profile of the body, an exact parallel is to be found in the 'proto-Rhodian' amphora from the Benaki collection, with stamps of the eponymos *Polyaratos* and the manufacturer *Mikythos*.[10] The rims of these amphorae were probably mushroom-shaped.

A number of other vessels from our collection also possess the so-called mushroom-shaped rims. One of them has a cylindrical neck with a marked transition to the shoulder, and its rim is not massive, but thin and strongly out-turned. The wide body ends in a rather small peg foot. The very loose, flaky light brown clay contains a large amount of fine mica and is very similar to Samian clay (**Ad 80**; Pl. 48). Its shape and rim profile closely resem-

ble the Samian(?) amphora published by V. Grace and dated to the time of the Athenian occupation of Samos (about 300 B.C.).[11]Another close parallel is an amphora from Kastro Tigani, attributed to a local Samian production.[12] Among the finds from the Black Sea area are two more vessels, possibly belonging to this series of supposedly Samian amphorae: one with the stamp ΚΛΕΟ, which was found in the layer dated to the late 4th century at the Elizavetovskoye site[13] and the other with the stamp 'Φ' deriving from Grave 13 of the necropolis near Khutor Lenina in Kuban'.[14]

One of the stamps mentioned in the preceding section (**Ae 135**) may also be connected with this supposedly Samian group of amphorae. It bears an as yet unmatched one-lined legend, CAΓΓAPI[, on a flattened handle of flaky dark grey clay containing a large amount of mica. The complete shape of the vessel (**Ad 82**) could not be identified, the most marked feature being an out-turned rim.[15]

Amphora **Ad 81** has quite a different profile. Its rim is high and overhanging rather than mushroom-shaped, the neck widens upwards, the transition from neck to shoulder is smooth, the body is broad (Pl. 48). The clay is reddish brown, flaking off in parts and with sparse inclusions of mica. The closest parallel is a fragmentary amphora from the cellar excavated in 1988 at Elizavetovskoye. A complete specimen of this shape comes from the barrow of Vodyana Mogila. It cannot be ruled out that this group of containers was produced at Samos or a neighbouring centre. The type may preliminarily be referred to as the 'Vodyana Mogila' type.

Two more vessels with mushroom-shaped rims and relatively thin walls have been grouped as of uncertain origin (**Ad 89-90**; Pl. 48). Both are made of yellowish clay with a large amount of mica and a few particles of grog. They may possibly come from the same workshop.

Korinthian transport amphorae are rare among the 3rd century transport amphorae found in the Black Sea area. Fragments of two vessels from this centre were found in U6. The neck of one of them has a high, almost vertical, collar-shaped rim and loop handles (**Ad 85**; Pls. 48 and 53). The rim of the second (**Ad 86**; Pl. 48) is more gently sloping towards the shoulder. Both are variants of Koehler's type A'.[16] The closest parallels are the vessels from the archaeological museum in Korfu, dated indirectly to the 4th – middle of the 3rd century B.C.,[17] together with some fragmentary amphorae from Elizavetovskoye, dated not later than the 270s B.C.[18]

In concluding this brief typological review of the assemblage of transport amphorae from U6, we must emphasise that the sample represented in the following catalogue does not present a complete picture of the amphorae imported to U6 during the whole period of its occupation. Unfortunately, a considerable part of the amphora material used in the statistical calculations below has been lost since these were done.

A relatively simple and apparently quite logical method of counting the total number of vessels from diverse centres and of various types was proposed by I.B. Brašinskij, who considered the counting of complete feet (*i.e.* of those which have retained the underside) as the 'only correct' method when dealing with amphorae fragments.[19] However, the long-term investigations of the settlement at Panskoye I, during which a detailed counting of all types of sherds from amphorae was carried out, have shown that the amount of preserved amphora feet from some centres was considerably smaller than the number of other fragments giving the complete profile of the same vessels. Therefore it may be seriously doubted whether feet sampled at sites always adequately reflect the totality of the amphorae represented there.

In our opinion this phenomenon may first and foremost be explained by the practice of re-using amphorae even if their feet were broken off; the lower body was then smoothed and the feet themselves used as net-weights, graters, stoppers, *etc.*

Table 1

	Number of WAE						
		Handle attachments					
Centres	**Rims**	**Upper**	**Lower**	**Feet**	**Weight**	**Maximal number**	**Number of stamps**
Chersonesos	168	158	155	127	164	168	99
Sinope	10	10	9	11	12	12	15
Amastris	2	2	1	1	–	2	2
Herakleia	7	6	8	8	7	8	16
Thasos	1	1	1	2	–	2	1
Kolophon	1	1	1	1	–	1	–
Samos (?)	2	2	2	1	–	2	–
Kos (?)	–	–	1	1	–	1	–
Rhodos	–	–	1	1	–	1	–
Korinth	2	2	–	–	–	2	–
Uncertain	12	12	8	17	–	17	8
Total	**205**	**194**	**187**	**170**	**–**	**216**	**141**

A more promising method of calculating numbers when studying a large body of fragments of transport amphorae seems to be to estimate the *equivalent in whole amphorae* (WAE). This method was proposed by S.M. Koljakov (Koljakov 1975), but has unfortunately not met wide acceptance.

In our case an estimation of WAE was carried out, taking into account the following diagnostic parts of vessels: rims (sum of fragments rendering 360° is taken as a unit), upper and lower handle attachments (two attachments counted as one unit), feet (those complete). In addition, in the estimation of WAE of amphorae from Herakleia, Sinope and Chersonesos, the mean weight of the vessels was employed as a criterion. The results of the estimation are presented in the table above.

Using the method described, it was possible to identify 216 WAE from ten centres (not counting those unidentified) among the transport amphorae from U6. The number of the various diagnostic parts deviates slightly from the mean values for most of the centres. Exceptions from this pattern are the Chersonesean amphorae and amphorae from unidentified centres. Thus, the number of feet of Chersonesean amphorae was 20-25% less than the quantity suggested by the other diagnostic fragments, a fact which, as mentioned above, is accounted for by the distinctive practice of re-using the amphorae of this centre. It seems that there were similar reasons for the opposite tendency, characteristic of the amphorae from as yet unidentified centres. Here the number of equivalents of whole rims and whole handle attachments is 30-40% smaller than the number of feet. Typological analysis of the latter showed that about a third of them (six specimens) are either the so-called 'flaring stem toes' or the 'conical toes with offset ridge and narrow deep hollow in the base' (*ryumkoobraznye* and

kolpachkovye respectively in Russian terminology),[20] typical of amphorae of the third quarter of the 4th century B.C. These amphorae must already have arrived at Panskoye I during this period, and their feet did not attract the attention of the inhabitants of U6 until later, when they were broken, and were then used for secondary purposes. Thus only about two thirds of WAE of the unidentified centres (12 examples out of 18) can be reliably connected with the period of occupation of U6.

During the excavations it was revealed that in U6 at least three or four amphora storage rooms had existed on the first floor of the building (the largest above *rooms 3* and *13*).[21] There is no doubt that not only the containers of the last deliveries were kept in these storage rooms, but also those that had been brought to U6 some decades earlier. As is usual in a farmer's household, the emptied jars were re-used for storing wine from the new harvest or other provisions.

In this connection one may ask how accurately the assemblage of transport amphorae from U6 reflects the diversity of trade relations of the Black Sea region in that period. In contrast to materials from excavations of such large trade settlements as Elizavetovskoye or Chersonesos itself, materials from rural settlements, including that of Panskoye I, cannot reflect the totality of the trade relations encompassing the Black Sea. What they can and do reveal is the characteristics of the rural sites in the *chorai* of the major Greek centres. At such sites wine and oil in amphorae were purchased by the inhabitants of the settlement for their own needs, not for resale. Hence the irregularity and the special character of the goods, *i.e.*, the fact that they are of the cheapest kinds. It is by no means mere chance that Chersonesean amphorae (the cheap local wine) predominate in U6, the Sinopean ones being much rarer (as already mentioned, they most probably contained olive oil rather than wine; however, one cannot rule out purchases of Sinopean wine), and the famous and expensive wines (Thasian, Chian *etc.*) were extremely seldom purchased, as witnessed by the virtual lack of transport amphorae from these centres. Another characteristic is that empty transport amphorae were used at such settlements for many years. Therefore the co-existence of amphorae differing by 20-30 years in date is not an exception but a rule at these rural sites.

(Amphorae are presented on plates 45-48 on a scale of 1:10; stamps, and profiles of rims and feet – 1:2)

The following abbreviations are used to designate the major linear dimensions: H. – height of the vessel; H_0 – depth of the vessel; H_1 – height of the upper body; H_3 – height of the neck; D. – the maximal diameter of the body; d_1 – diameter of the mouth.

Pontic Ateliers

Chersonesos

Ad 1. U6 room 13. Find list 8/2. 1971. Pls. 45 and 50.

Transport amphora, Monachov (1989) type I-A-3, with the magistrate stamp **Ae 33**. Two graffiti on lower part of the neck (**H 33(a)**) and on opposite shoulder (**H 33(b)**). Capacity 31.4 l. Dimensions: H. 69.5 cm, H_0 63.6 cm, H_1 27.0 cm, D. 36.8 cm, d_1 12.0 cm. Publications: Kac and Monachov 1977, fig. 2, *1*, tab. I, *1*; Monachov 1980, no. 37; Brašinskij 1984, 201 no. 2; Monachov 1989, no. 12; Monachov 1999a, 498 pl. 211, *1*.

Ad 2. U6 courtyard, DE-6. Find list 17/26. 1972. Pl. 45.

Fragmentary transport amphora similar to **Ad 1**, with the magistrate stamp **Ae 32** on handle and the graffito **H 13** on the neck. Lower part and base missing. Dimensions: preserved H. 59.5 cm, H_0 *c.* 64.0 cm, H_1 27.0 cm, D 35.3 cm, d_1 12.4 cm. Publications: Kac and Monachov 1977, fig. 2, *2*, tab. I, *2*; Monachov 1989, no. 15; Monachov 1999a, 498 pl. 211, *2*.

Ad 3. U6 room 13. Find list 8/9. 1971. Pl. 45.

Fragmentary amphora similar to **Ad 1**. Rim and both handles missing. Estimated capacity *c.* 30 l. Dimensions: H_0 63.5 cm, H_1 26.0 cm, D. 38.0 cm. Publications: Monachov 1980, no. 36; Brašinskij 1984, 201 no. 3; Monachov 1989, no. 13; Monachov 1999a, 498 pl. 211, *3*.

Ad 4. U6 courtyard, D-5. 1973. Pl. 45.

Fragmentary amphora similar to **Ad 1**. Neck and both handles missing. Dimensions: preserved H. 54.5 cm, D. 38.5 cm, H_2 44.7 cm. Publications: Monachov 1989, no. 121.

Ad 5. U6 courtyard, DE-6. Find list 17/34. 1972. Pl. 45.

Upper part of an amphora similar to **Ad 1**. One handle as well as part of rim and neck missing. Relief stamp **Ae 53** on the preserved handle. Clay light brown with few inclusions of limestone and pyroxene. Fawn-coloured slip. Dimensions: d_1 *c.* 10.5 cm; H_1 20.5 cm, H_3 15.5 cm.

Ad 6. U6 room 12. Find list 6/11. 1971. Pl. 53.

Fragmentary amphora of type I-A. Lower part of body and base are preserved. Reddish brown clay with few inclusions of limestone. Dimensions: preserved H. 17.3 cm.

Ad 6a. U6 gate. Find list 3/17. 1972. Pl. 53.

Upper part of amphora of type I-A. Rim and one of the handles are missing. Clay reddish brown with limestone particles, few pyroxene and dark brown inclusions. Dimensions: preserved H. 18 cm.

Ad 7. U6 room 13. Find list 8/6. 1971. Pls. 45 and 50.

Amphora, Monachov (1989) type I-Б. Base missing. Horizontal groove on neck. Capacity 18.2 l. Dimensions: H_0 63.6 cm, H_1 23.8 cm, D. 29.5 cm, d_1 11.2 cm. Publications: Kac and Monachov 1977, fig. 3, *1*, tab. I, *7*; Monachov 1980, no. 31; Brašinskij 1984, 202 no. 23; Monachov 1989, no. 16; Monachov 1999a, 498 pl. 211, *4*.

Ad 8. U6 room 13. Find list 8/9. 1971. Pl. 45.

Transport amphora similar to **Ad 7**. Horizontal groove on neck. Capacity 19.0 l. Dimensions: H. 71.0 cm, H_0 63.5 cm, H_1 24.0 cm, D. 30.0 cm, d_1 11.2 cm. Publications: Monachov 1980, no. 26; Brašinskij 1984, 202 no. 17; Monachov 1989, no. 18; Monachov 1999a, 498 pl. 211, *5*.

Ad 9. U6 courtyard, E. 1975. Pl. 45.

Transport amphora similar to **Ad 7**. One of the handles and the base are missing. Capacity 16.7 l. Dimensions: H_0 64.7 cm, H_1 24.7 cm, D. 29.8 cm, d_1 11.6 cm. Publications: Monachov 1980, no. 13; Brašinskij 1984, 203 no. 34; Monachov 1989, no. 20; Monachov 1999a, 498 pl. 211, *6*.

Ad 10. U6 room 3. Find list 6/2. 1969. Pls. 45 and 50.

Transport amphora similar to **Ad 7** with the magistrate stamp of *Dioskouridas* (**Ae 52a**). Base missing. Red painted band under the rim. Graffito **H 7** on lower part of the neck. Capacity 19.2 l. Dimensions: H_0 62.8 cm, H_1 26.0 cm, D. 30.6 cm, d_1 11.8 cm. Publications: Kac and Monachov 1977, fig. 2, *6*, tab. I, *6*; Monachov 1980, no. 30; Brašinskij 1984, 202 no. 14; Monachov 1989, no. 26; Monachov 1999a, 498 pl. 211, *7*.

Ad 11. U6 room 13. Find list 8/9. 1971. Pl. 45.

Transport amphora similar to **Ad 7** with two horizontal grooves on neck. Capacity 19.4 l. Dimensions: H. 72.4 cm, H_0 65.7 cm, H_1 24.0 cm, D. 30.4 cm, d_1 12.0 cm. Publications: Monachov 1980, no. 31; Brašinskij 1984, 202 no. 13; Monachov 1989, no 21; Monachov 1999a, 499 pl. 212, *1*.

Ad 12. U6 room 13. Find list 8/4. 1971. Pls. 45 and 50.

Transport amphora similar to **Ad 7**. Horizontal groove on neck. Capacity 17.2 l. Dimensions: H. 70.0 cm, H_0 64.4 cm, H_1 24.7 cm, D. 29.2 cm, d_1 11.6 cm. Publications: Kac and Monachov 1977, fig. 3, *3*, tab. I, *9*; Monachov 1980, no. 17; Brašinskij 1984, 203 no. 29; Monachov 1989, no. 27; Monachov 1999a, 499 pl. 212, *2*.

Ad 13. U6 room 13. Find list 8/3. Pls. 45 and 51.

Transport amphora similar to **Ad 7**. Red painted band and dipinto **H 70** on the neck. Capacity 19.6 l. Dimensions: H. 71.7 cm, H_0 66.2 cm, H_1 24.1 cm, D. 29.5 cm, d_1 11.0 cm. Publications: Kac and Monachov 1977, fig. 2, *3*, tab. I, *3*; Monachov 1980, no. 32; Brašinskij 1984, 202 no. 12; Monachov 1989, no. 25; Monachov 1999a, 499 pl. 212, *3*.

Ad 14. U6 room 13. Find list 8/7. 1971. Pls. 46 and 51.

Transport amphora similar to **Ad 7**. Horizontal groove on neck. Capacity 19.1 l. Dimensions: H. 70.8 cm, H_0 62.8 cm, H_1 25.2 cm, D. 29.5 cm, d_1 11.2 cm. Publications: Kac and Monachov 1977, fig. 2, *4*, tab. I, *4*; Monachov 1980, no. 28; Brašinskij 1984, 202 no. 16; Monachov 1989, no. 17; Monachov 1999a, 499 pl. 212, *4*.

Ad 15. U6 room 13. Find list 8/9. 1971. Pl. 46.

Fragmentary amphora similar to **Ad 7**. Base broken off, no join to the upper part. Capacity 18.4 l. Dimensions: H. *c.* 70 cm, H_0 *c.* 63.5 cm, H_1 23.6 cm, D. 30.0 cm, d_1 11.5 cm. Publications: Monachov 1980, no. 24; Brašinskij 1984, 202 no. 22; Monachov 1989, no. 24; Monachov 1999a, 499 pl. 212, *5*.

Ad 16. U6 room 13. Find list 8/9. 1971. Pl. 46.

Transport amphora similar to **Ad 7**. Capacity: 19.7 l. Dimensions: H. 72.0 cm, H_0 67.0 cm, H_1 25.1 cm, D. 31.0 cm, d_1 12.4 cm. Publications: Monachov 1980, no. 33; Brašinskij 1984, 202 no. 11; Monachov 1989, no. 19; Monachov 1999a, 499 pl. 212, *6*.

Ad 17. U6 room 3. Find list 6/16. 1969. Pl. 46.

Upper part of transport amphora similar to **Ad 7**, stamped on one handle with **Ae 86**. Horizontal groove on neck. Dimensions: H_1 22.0 cm, D. 29.4 cm, d_1 11.0 cm. Publications: Monachov 1989, no. 144; Monachov 1999a, 500 pl. 213, *1*.

Ad 18. U6 room 3. Find list 6/21. 1969. Pl. 46.

Neck and handles of amphora similar to **Ad 7**. Stamped on one handle with **Ae 73**. Graffito **H 8** on lower part of neck. Dimensions: preserved H. 19.0 cm, d_1 12.0 cm. Publications: Monachov 1989, no. 152; Monachov 1999a, 500 pl. 213, *2*.

Ad 19. U6 room 3. Find list 6/14. 1969. Pl. 46.

Neck and handles of amphora similar to **Ad 7**. Signed with stamp **Ae 84**. Two horizontal grooves on neck. Dimensions: preserved H. 19.8 cm, d_1 11.5 cm. Publications: Monachov 1989, no. 237; Monachov 1999a, 500 pl. 213, *3*.

Ad 20. U6 room 29. Find list 13/3. 1972. Pls. 46 and 51.

Fragmentary amphora similar to **Ad 7**. Both handles and rim missing. Estimated capacity *c.* 18 l. Dimensions: preserved H. 63.0 cm, H_0 *c.* 64.5 cm, H_1 *c.* 26.0 cm, D. 29.2 cm. Publications: Kac and Monachov 1977, fig. 3, *2*, tab. I, *8*; Monachov 1980, no. 21; Brašinskij 1984, 202 no. 24; Monachov 1989, no. 22.

Ad 21. U6 courtyard, E-6. Find list 17. 1974. Pl. 46.

Fragmentary amphora similar to **Ad 7**. Base and one handle missing. Capacity 17.35 l. Dimensions: preserved H. 64.0 cm, H_0 63.5 cm, H_1 21.0 cm, D. 29.0 cm. Publications: Monachov 1980, no. 18; Brašinskij 1984, 203 no. 28; Monachov 1989, no. 23.

Ad 22. U6 room 13. Find list 8/5. 1971. Pls. 46 and 51.

Fragmentary amphora similar to **Ad 7**. Upper part of neck and both handles are missing. Estimated capacity *c.* 19 l. Dipinto **H 73** on lower part of neck. Dimensions: preserved H. 60.5 cm, H_0 *c.* 62.0 cm, H_1 *c.* 25.0 cm, D. 29.8 cm, Publications: Kac and Monachov 1977, fig. 2, *5*, tab. I, *5*; Monachov 1980, no. 26; Brašinskij 1984, 202 no. 18; Monachov 1989, no. 41.

Ad 23. U6 courtyard.

Fragmentary amphora similar to **Ad 7**. Base, handles and most of neck are missing. Estimated capacity 18.1 l. Dimensions: preserved H. 60.8 cm, H_0 60.0 cm, H_1 23.0 cm, H_3 15.0 cm; D. 31.0 cm; d_1 9.2 cm. Publications: Monachov 1989, no. 138.

Ad 24. U6 room 12. Find list 6/7. 1971. Pl. 46.

Lower part of amphora similar to **Ad 7**. Dimensions: preserved H. 52.5 cm, D 30.8 cm. Publications: Kac and Monachov 1977, fig. 3, *5*, tab. I, *11*; Monachov 1989, no. 137.

Ad 25. U6 room 13. Find list 8/9. 1971 + courtyard, B-2. 1973. Pl. 46.

Fragmentary amphora similar to **Ad 7**. Estimated capacity *c.* 16 l. Dimensions: H. 68.0 cm, H_0 58.5 cm; H_1 25.5 cm; H_3 17.0 cm; d_1 8.5 cm; D. 29.0 cm. Publications: Monachov 1989, no. 139.

Ad 26. U6 room 12. Find list 6/6. 1971. Pls. 46 and 52.

Fragmentary amphora similar to **Ad 7**. Both rim and lower part of body missing. Red painted band on neck. Dimensions: preserved H. 52.0 cm, D. 31.3 cm. Publications: Kac and Monachov 1977, fig. 3, *4*, tab. I, *10*; Monachov 1989, no. 173.

Ad 27. U6 room 30. Find list 14/4. 1971.

Fragmentary amphora similar to **Ad 7**. Both neck and base are missing. Dimensions: D. 30.6 cm. Publication: Monachov 1989, no. 174.

Ad 28. U6 courtyard, B-6. 1971.

Lower part of amphora similar to **Ad 7**. Dimensions: preserved H. 47.0 cm, D. 29.0 cm. Publications: Monachov 1989, no. 175.

Ad 29. U6 courtyard.

Fragmentary amphora similar to **Ad 7**. Neck, handles, and lower part of body missing. Dimensions: preserved H. 45.5 cm, D. 29.0 cm. Publications: Monachov 1989, no. 176.

Ad 30. U6 room 30. Find list 14/5. 1972. Pl. 46.

Lower part of amphora similar to **Ad 7**. Dimensions: preserved H. 35.0 cm, D. *c.* 30 cm. Publications: Kac and Monachov 1977, fig. 3, *6*, tab. I, *12*; Monachov 1989, no. 188.

Ad 31. U6 gate. Find list 3/6. 1972.

Fragmentary amphora similar to **Ad 7**. Only lower part of body preserved. Dimensions: preserved H. 35.5 cm, D. *c.* 31 cm. Publications: Monachov 1989, no.191.

Ad 32. U6 room 13. Find list 8/13. 1971.

Fragmentary amphora similar to **Ad 7**.

Ad 33. U6 room 12. Find list 6/8. 1971. Pl. 47.

Upper part of amphora similar to **Ad 7**. Restored with plaster. Lower part of one handle and upper part of the other are missing. Graffito (**H 36**) described in the find list is not preserved. Clay light brown with few inclusions of limestone. Yellowish rose slip. Dimensions: preserved H. 31.8 cm, H_1 25.0 cm, H_3 18.4 cm, d_1 9.2 cm

Ad 34. U6 room 32. Find list 3/1. 1973. Pls. 47 and 52.

Lower part of amphora similar to **Ad 7**. Clay reddish brown with inclusions of limestone. Cream-coloured slip. Dimensions: preserved H. 29.5 cm

Ad 35. U6 room 32. Find list 3/2. 1973. Pls. 47 and 52.

Lower part of amphora similar to **Ad 7**. Light brown clay with few inclusions of limestone. Greenish white, partly yellowish white slip on both outer and inner surface. Dimensions: preserved H. 35.7 cm.

Ad 36. U6 room 7. Find list 1/31. 1971.

Lower part of amphora similar to **Ad 7**. Base is missing. Dimensions: preserved H. 26.0 cm.

Ad 36a. U6 gate. Find list 3/5. 1972. Pl. 52.

Upper part of amphora similar to **Ad 7**. Graffito **H 78** on shoulder. Dimensions: preserved H. 20 cm; H_3 16 cm; d_1 9 cm.

Ad 37. U6 courtyard, D-6. Find list 17/27. 1972. Pls. 47 and 52.

Small amphora, type II-A, signed with stamp **Ae 81** on one handle. Horizontal groove (width 0.7 cm) on outer surface of base. Capacity 5.0 l. Dimensions: H. 50.8 cm, H_0 43.8 cm, H_1 20.1 cm, D. 22.8 cm, d_1 8.8 cm. Publications: Kac and Monachov 1977, fig. 4, *1*, tab. I, *13*; Brašinskij 1984, 203 no. 49; Monachov 1989, no. 93; Monachov 1999a, 500 pl. 213, *7*.

Ad 38. U6 room 12. Find list 6/5. 1971. Pls. 47 and 52.

Small amphora, type II-A, stamped with **Ae 82** on one handle. Vertical grooves (width 0.5 cm, depth 0.3 cm) on outer surface of handles. Capacity 5.16 l. Dimensions: H. 53.0 cm, H_0 44.8 cm, H_1 20.5 cm, D. 20.8 cm, d_1 9.4 cm. Publications: Kac and Monachov 1977, fig. 4, *2*, tab. I, *14*; Monachov 1980, no. 9; Brašinskij 1984, 203 no. 45; Monachov 1989, no. 92; Monachov 1999a, 500 pl. 213, *8*.

Ad 39. U6 room 9. Find list 3/2. 1971. Pl. 47.

Fragmentary amphora, type II-A. Only the upper part is preserved. Typical Chersonesean clay with few inclusions of limestone. Greenish white slip. Dimensions: preserved H. 21.8 cm, H_1 18.5 cm, H_3 16.7 cm, d_1 7.0 cm, D. 23.4 cm.

Ad 40. U6 room 13. Find list 8/9. 1971. Pl. 47.

Fragmentary amphora, Monachov (1989) type III-Б. One handle and most of rim missing. Broad red band on neck. Dimensions: preserved H. 30.0 cm, H_1 28.5 cm, D. 30.0 cm, d_1 11.0 cm. Publications: Monachov 1989, no. 225; Monachov 1999a, 500 pl. 213, *4*.

Ad 41. U6 courtyard, E-6. Find list 17. 1975. Pl. 47.

Fragmentary amphora similar to **Ad 31**. Type III-Б. Upper part of neck, base, as well as one handle are missing. Dimensions: preserved H. 49.0 cm, H_0 *c.* 58.0 cm, D. 29.2 cm. Publications: Monachov 1989, no. 103; Monachov 1999a, 500 pl. 213, *5*.

Ad 41a. U6 courtyard, B-6. Find list 16/26. 1974.

Fragment from rim and the upper part of a handle of amphora. Type unidentified. Relief stamp **Ae 3** on the handle. Publication: Monachov 1989, 135 pl. 9 rim no. 77.

Ad 42. U6 room 9. Find list 3/4. 1971. Pl. 49.

Lower part of amphora. Brown clay with few inclusions of limestone. Cream-coloured slip. Preserved H. 12.0 cm.

Ad 43. U6 well, no. 62. 1977. Pl. 49.

Lower part of amphora. Light reddish brown clay with few particles of limestone. Preserved H. 10.7 cm.

Ad 44. U6 room 13. Find list 8/4. 1971. Pl. 49.

Lower part of amphora. Clay reddish brown. Greenish white slip. Preserved H. 12.3 cm.

Ad 45. U6 room 3. Find list 6/3a. 1969. Pl. 49.

Lower part of amphora. Preserved H. 8.0 cm.

Ad 46. U6 room 3. Find list 6/4a. 1969. Pl. 49.

Lower part of amphora. Preserved H. 8.5 cm. Room 3 revealed the correlation of this type of base with the magistrate stamps of *Dioskouridas*.

Ad 47. U6 room 3. Find list 6/4b. 1969. Pl. 49.

Lower part of amphora. Preserved H. 8.2 cm.

Ad 48-52. U6 room 3. Find list 6/4c-g. 1969. Pl. 49.

Amphora bases similar to **Ad 46-47**.

Ad 53. U6 room 3. Find list 6/3b. 1969. Pl. 49.

Lower part of amphora. Preserved H. 7.8 cm.

Ad 54-57. U6 room 3. Find list 6/3d-g. 1969. Pl. 49.

Amphora bases similar to **Ad 45** and **Ad 53**.

Ad 58. U6 room 3. Find list 6/5a. 1969.

Lower part of amphora. Preserved H. 13.8 cm. The finds in room 3 enable us to combine this base type with the monogram stamps similar to **Ae 83-97**.

Ad 59-62. U6 room 3. Find list 6/5b-e. 1969.

Amphora bases similar to **Ad 58**.

Ad 63. U6 gate. Find list 3/15. 1972.

Base of amphora. Preserved H. 6.0 cm.

Ad 64. U6 room 3. Find list 6/3c. 1969.

Lower part of amphora. Preserved H. 9.4 cm.

Ad 65. U6 room 3. Find list 6/6a. 1969.

Lower part of body with base of a small amphora. Preserved H. 11.3 cm.

Ad 66. U6 room 3. Find list 6/6b. 1969.

Lower part of amphora. Preserved H. 8.6 cm.

Ad 67-74. U6 room 3. Find list 6/6c-j. 1969.

Amphora bases similar to **Ad 65-66**.

Ad 75. U6 well, no. 51. 1977.

Base of an amphora. Clay light brown with few inclusions of limestone and pyroxene. Preserved H. 6.0 cm.

Sinope

Ad 76. U6 well, no. 88. 1977. Pl. 47.

Lower part of body with conical base of an amphora, Monachov type IIC (1992, 173 f., 193 pl. 8). Clay yellowish brown, partly brownish lilac, with many inclusions of pyroxene. Dimensions: preserved H. 21.5 cm.

Amastris

Ad 77. U6 gate. Find list 3/25. 1972. Pls. 47 and 53.

Fragmentary amphora signed on the neck with stamp **Ae 115**. Graffito **H 12** on neck. Lower part of the body missing. Clay similar to Sinopean clay (with many inclusions of pyroxene). Estimated capacity *c.* 21-23 l. Dimensions: estimated H. 70-74 cm, H_0 64.0-68.0 cm, H_1 30.0 cm, D. 38.0 cm, d_1 13.1 x 13.5 cm. Publications: Ščeglov 1986, 365 ff., fig. 1, *1, 7*; Kac, Pavlenkov and Ščeglov 1989, 24, 16 fig. 1, *3* catalogue no. 3; Monachov 1999a, 501 pl. 214, *1*.

Herakleia Pontike

Ad 78. U6 room 12. Find list 6/9. 1971. Pls. 47 and 53.

Fragmentary amphora, Brašinskij type II-A (1980). Both handles and upper part of the neck are missing. Dimensions: preserved H. 49.0 cm, D. 25.0 cm. Publications: Monachov 1999a, 500 pl. 213, *6*.

MEDITERRANEAN ATELIERS

Kolophon

Ad 79. U6 room 13. Find list 8/15. 1971 + courtyard, B-6. Find list 16/81. 1972. Pls. 47 and 53.

Fragmentary amphora. Middle part of double-barrelled handles restored with plaster. Clay reddish brown with small sand particles. Light greyish slip. Capacity 9.2 l. Dimensions: H. 51.0 cm, H_0 44.6 cm, H_1 20.0 cm, D. 26.2 cm, d_1 10.2 cm. Publications: Monachov 1990, 101 fig. 5; Monachov 1999a, 501 pl. 214, *2*, 506.

Samos (?)

Ad 80. U6 room 3. Find list 6/26. 1969. Pl. 48.

Transport amphora, Solocha-I type. Mushroom-shaped rim. Clay micaceous yellowish brown (partly grey). Dimensions: H. 64.8 cm, H_0 62.6 cm, H_1 28.0 cm, D. 40.3 cm, d_1 15.0 cm. Publications: Monachov 1999a, 501 pl. 214, *3*, 599 variant IV-C.

Ad 81. U6 room 14. Find list 7/3. 1971. Pl. 48.

Fragmentary amphora, Solocha-I type. Lower part missing. Broad mushroom-shaped rim. Clay reddish brown with inclusions of mica. Clay-coloured slip. Dimensions: H_1 35.0 cm, D. 44.8 cm, d_1 16.8 cm. Publication: Monachov 1999a, 501 pl. 214, *4*.

Ad 82. U6 courtyard, D-5. 1973.

Fragmentary transport amphora. Shape could not be determined. Mushroom-shaped rim. Relief stamp **Ae 135** on handle. Dark grey clay with inclusions of mica. Publication: Monachov 1999a, 501 pl. 214, *7*, 507.

Kos (?)

Ad 83. U6 well, no. 109. 1977. Pl. 48.

Fragmentary amphora. Lower part with the typical base and both double-barrelled handles preserved. Clay light brown with many inclusions of mica. *Cf.* Monachov 1999a, 444 pl. 193, *6* (late 4th century B.C.).

Rhodos

Ad 84. U6 room 13. Find list 8/14. 1971. Pl. 48.

Fragmentary 'proto-Rhodian' amphora. Upper part of neck and both handles missing. Graffito **H 34** on shoulder. Dimensions: estimated H. 70 cm, H_0 63 cm, H_1 32 cm, D. 42 cm. Publication: Monachov 1999a, 501 pl. 214, *5*.

Korinth

Ad 85. U6. Pls. 48 and 53.

Upper part of amphora, Koehler's type A' (1992, 281 pl. 2c). Dimensions: d_1 11.6 cm. Publication: Monachov 1999a, 501 pl. 214, *6*. *Cf.* Marčenko, Žitnikov and Kopylov 2000, Abb. 70.7.

Ad 86. U6 room 13. Find list 8/16. 1971. Pl. 48.

Fragment from rim and neck of an amphora, Koehler's type A' (1992, 281 pl. 2b). Fawn-coloured clay with large inclusions of grog. Dimensions: d_1 12.0 cm. *Cf.* Abramov 1993, 109 pl. 41, *3.70*; Marčenko, Žitnikov and Kopylov 2000, Abb. 70.10.

UNCERTAIN

Ad 87. U6 room 12. Find list 6/10a. 1971. Pl. 48.

Amphora with a wide body. Clay light brown, micaceous. Fragmentary graffito **H 80** on the shoulder. Capacity 38.16 l. Dimensions: H. 82.0 cm, H_0 78.0 cm, H_1 33.0 cm, H_3 22.0 cm, D. 43.0 cm, d_1 8.4 cm.

Ad 88. U6 well, no. 75. 1977. Pl. 48.

Fragmentary amphora. Middle part of body missing. Clay brownish orange with many impurities. Clay-coloured slip. Estimated capacity *c.* 30-31 l. Dimensions: estimated H. *c.* 70 cm, H_1 *c.* 27 cm, H_3 15.0 cm, estimated D. *c.* 42 cm, d_1 12 cm. For the shape compare an amphora from the necropolis of Nikonion dated to the last quarter of the 4th century B.C. (Monachov 1999a, 335 pl. 144, *6*).

Ad 89. U6 courtyard, DE-6. Find list 17/50. 1972. Pl. 48.

Fragmentary amphora with broad mushroom-shaped rim. Upper part with both handles is preserved. Clay yellowish with many inclusions of mica and sparse small particles of grog (similar to **Ad 87**). Dipinto **H 60** in red on neck. Dimensions: preserved H. 24.3 cm, H_1 *c.* 25.0 cm, H_3 13.5 cm, D. *c.* 34.0 cm, d_1 8.5 cm.

Ad 90. U6 room 12. Find list 6/10b. 1971. Pl. 48.

Upper part of amphora with mushroom-shaped rim. Clay yellowish, micaceous, similar to **Ad 89**). Dimensions: preserved H. 18.5 cm, H_3 13.7 cm, d_1 10.4 cm.

Ad 91. U6 well, no. 102. 1977. Pl. 49.

Base of an amphora. Clay reddish brown, partly orange with few particles of mica. Preserved H. 7.3 cm.

Ad 92. U6 well, no. 103. 1977. Pl. 49.

Base of an amphora. Clay orange with few small inclusions of limestone and sand. Preserved H. 11.0 cm.

Ad 93. U6 courtyard. 1973-1974. Pl. 53.

Fragmentary amphora with wide, bulbous body. Restored with plaster. One of the handles and base with lower part of body are missing. Dimensions: preserved H. 51 cm, H_1 15.5 cm, d_1 11 cm, D. 35.5 cm.

AMPHORA STAMPS (**Ae 1-141**)

142 amphora stamps were recorded during the investigation of U6. They are distributed as follows according to production centres:

Chersonesos	–	100
Sinope	–	15
Amastris	–	2
Herakleia	–	16
Thasos	–	1
Unidentified centres	–	8
Total	–	142

Most of the stamps of this relatively small collection are made with dies well known from finds at other sites in the Black Sea area. However, a number of them derive from dies not previously known (**Ae 67**, **Ae 100**, **Ae 119**, **Ae 121**, **Ae 132-136**, **Ae 138-140**).

Stamps of Tauric Chersonesos. Chersonesean stamps make up by far the largest group, and it has been possible to identify almost all the 100 examples in the collection more or less definitely.

The overwhelming majority of the stamps (83 examples, **Ae 1-82**) contain a magistrate's name (in three cases with patronymics) in the complete form (Pls. 55-58). We have been able to read and restore the inscriptions on 74 examples (about 90% of the total number). They belong to 14 officials who controlled the ceramic production in the city, unevenly distributed in time: ten officials are represented by 1-4 stamps; one by 7 examples, and three by 14-20 stamps.

Apart from these, the collection includes 17 Chersonesean monogram stamps (**Ae 83-99**). Usually such stamps are identified as abbreviated names of the 'manufacturers' or potters,[22] the reason being that on complete vessels these monogram stamps are accompanied with a magistrate's stamp, either on the same or on the opposite handle.

However, our collection has yielded a unique example, which throws doubt on this usually accepted interpretation. Among the amphorae found in *room 3* there is an upper body with both handles preserved (**Ad 19**); one of the handles bears a monogram stamp containing three retrograde letters: E, Y and A in ligature (**Ae 84**). Additionally, 14 separate handles with stamps made with the same die were found during the excavation (**Ae 83**, **Ae 85-97**). They are all considerably larger than the typical Chersonesean stamps, and unlike the latter, not made with a semi-cylindrical, but a flat stamp. All this enabled one of us to suggest that in the present case we are dealing, not with a 'manufacturer's' or potter's stamp, but with the stamp of a magistrate.[23]

Based on the materials from the excavations of Panskoye I, Kac has recently developed a new chronological classification of Chersonesean ceramic stamps.[24] Taking into account the closed complexes of stamps from this site and paying special attention to typology, he was able to distinguish four different types:[25]

Type 1 is characterized by the legend beginning with a name without patronymic, followed by the magistrate's title;

Type 2 is composed of stamps with name and patronymic followed by the title;

Type 3 comprises stamps in which the magistracy is put before name and patronymic;

Type 4 is composed of stamps without any magistrate title.

The typological analysis of the magistrate stamps shows that the first three types of stamps probably represent an uninterrupted chronological sequence, and that each of these types

Table 2. Magistrate stamps of Chersonesos

Chronological groups	Chronological Limits	Magistrates	Number of Stamps
1A	325-315 B.C.	*Bathyllos*	14
		Eua( )	15
		Eukleidas	2
		Kraton	3
		Sopolis	1
		Total	**35**
1Б	315-300 B.C.	*Alexandros*	1
		Apollonios	17
		Herakleios	1
		Xanthos	7
		Sokritos	4
		Total	**21**
1B	300-285 B.C.	*Dioskouridas*	20
		Herodotos	1
		Total	**21**
2A	285-272 B.C.	*Apollas Choreiou*	1
		Kotytion Aristonos	1
		Prytanis Aristonos	1
		Total	**3**
		Total	**89**

may possibly form a chronological group, whereas type 4 may be considered as atypical variations of the first three types of dies.

According to this classification, 11 of the astynomoi whose stamps are represented among the material from U6 belong to chronological group 1, and the remaining three magistrates to the beginning of group 2. In addition, if the hypothesis that the monogram stamps (**Ae 83-97**) are actually magistrate stamps is justified, then the first astynomos undoubtedly belongs to the very beginning of group 1. Actually, it seems probable that the practice of stamping amphorae in Chersonesos began with these stamps. Thus all the magistrate stamps found in U6 may be divided into four successive chronological stages, of which three belong to the first chronological group and the last to the very beginning of the second group (*cf.* Table 2).

The import of Chersonesean products in transport amphorae went on continuously for 45-50 years of the occupation of U6. However, the intensity of the import was not consistent. It was most frequent during the first decade, to which almost 40 percent of the stamps found in the house can be dated. Imports were not uniform even during this period. Mass purchases of wine occurred twice, and during the three subsequent years only small consignments were imported. Imports of Chersonesean products continued, though on a smaller scale, during the next period, to which the stamps of astynomoi of sub-group 1Б are dated. Significantly, in this case too, purchases of only one large, one medium and three small con-

signments of wine can be registered over a period of 15 years. The last large-scale consignment was imported at the time of *Dioskouridas* – a magistrate of the beginning of sub-group 1B. After that, during the 290s and 280s, only three very small consignments of Chersonesean wine were delivered to the house.

The two 'manufacturer's' stamps (**Ae 98-99**) found in the house do not suggest any significant corrections of the above conclusions. Firstly, because the classification of this group of stamps is not completely developed, and these stamps are therefore usually dated within quite a broad range of time.[26] The date of our examples, found in a closed archaeological complex, proves to be narrower: the very end of the 4th – first quarter of the 3rd century B.C.[27]

Stamps from Sinope. This group includes 15 stamps (Pls. 58-59). The number of Sinopean amphora stamps found in the building is thus approximately equal to that of Herakleian stamps; however, the imports of these two groups of amphorae differ significantly in date.

Up to the present, the prime classification of Sinopean stamps remains B.N. Grakov's, which was worked out more than 50 years ago.[28] Although the absolute chronology of Grakov's six groups has frequently been subject to revision, the groups proper and their succession still remain unchallenged. The stamps from U6 are not distributed evenly among these groups. Thus only one stamp (**Ae 101**) belongs to the magistrates at the end of group I, and one, that of astynomos *Histiaios*, to the beginning of group IV (**Ae 104**). As to the remaining stamps (10 specimens), they derive from amphorae manufactured at the time of the magistrates at the end of group III: *Theudorides* (**Ae 102**), *Theupeithes* (**Ae 103**), *Mikrios* (**Ae 105**), *Mnesikles* (**Ae 106-111**) and *Pythokles* (**Ae 112**).

In contrast to their relative chronology, the absolute chronology of the magistrate stamps of Sinope remains disputed. The dates proposed by Grakov have later been revised more than once (also by Grakov himself) in favour of earlier dates.[29] For that reason the date of stamps from the first four groups varies greatly in different publications, though recently a certain converging of opinions can be observed. Thus there is general agreement that the practice of stamping amphorae undoubtedly started in Sinope in the 370s-360s B.C. Judging by the 18-20 magistrates of group I known so far,[30] it lasts into the 340s. Taking into account the number of magistrates constituting the next two groups, we can approximately define the temporal limits of these groups. At present, about 30 astynomoi have been recorded in each group. Therefore, the magistrates' stamps belonging to group II are dated within the range of the late 340s and the beginning of the last decade of the 4th century B.C., and those of group III between the end of that century and the first two decades of the next one. Thus the late 280s or early 270s B.C. may be considered as the time when the stamps of the astynomoi of group IV appeared. The stamp of the magistrate *Histiaios* (**Ae 104**) on the handle of an amphora evidently brought to the house not long before its destruction is to be dated to this period. The amphora stamps of magistrates from group III, constituting three quarters of our collection, are dated to the first two decades of the 3rd century B.C. Also, with the exception of stamp **Ae 100**, on which it is impossible to read the first name with certainty, all the other stamps belong to astynomoi of the end of group III and are dated to the second half of the 280s.

The amphora stamp with the name of the astynomos *Hephaistios* belongs to the number of stamps which have turned up on reused material in U6 (see above, the discussion on tiles, and below, on stamps from Herakleian amphorae).

Stamps from Amastris are known only in a few specimens, and two of those found in U6 are actually made with the same die (**Ae 115-116**; Pl. 60). Two-lined engraved stamps are

placed on amphora necks. Their shape and palaeography certainly suggest a similarity to group IV of the Herakleian stamps, with which they are probably contemporary. The hypothesis that stamps with this legend were put on amphorae during the period between 300 and 285/284 B.C., when Queen Amastris ruled the city she founded,[31] seems quite probable.

Stamps from Herakleia Pontike. In number, amphora stamps from Herakleia take second place among the stamps from U6, being considerably fewer in number than those of Chersonesos, and slightly more common than those from Sinope. However, the Herakleian stamps are much less well preserved than those of the other two cities. Most of them are found on small fragments of amphora necks, and have retained just two or three letters of the inscription (Pls. 60-61). For that reason we have not been able to restore the legends on almost half of the stamps. Taking into consideration the existing classifications,[32] the remaining nine specimens with reliably legible inscriptions belong to the following typological groups:

Group 1 – stamps including one manufacturer's name – 3 samples (**Ae 117-118**, **Ae 122**);

Group 2, early phase – stamps with two names, of which the magistrate's is given in a strongly abbreviated form – 2 samples (**Ae 124**-**125**);

Group 2, late phase – stamps with two names, of which the magistrate's is given in a slightly abbreviated form (**Ae 123**);

Group 4 – stamps with a single, possibly manufacturer's name – one example (**Ae 120**);

Group 5, late phase – abbreviations of one name made with a large type – one example (**Ae 119**);

Group 6, late phase – figured stamps – one example (**Ae 121**);

Group 7 – anepigraphic stamps – one example (**Ae 132**).

As to the main chronological periods of the stamps of Herakleia, the six stamps of group 1 and group 2, early and late phase, and presumably the anepigraphic stamp of group 7, undoubtedly belong to the first (A) period, comprising the first quarter of the 4th century B.C. Of the remaining examples, the two stamps of group 4 and late phase group 5 belong to the third (C) period, and are datable to the late 4th or first quarter of the 3rd century B.C. Similar stamps are recorded in the assemblage from the grave found in 1973 at Novorossiysk (HPA), and on a complete amphora of type IIA from the necropolis of Elizavetovskoye (HPAKΛEIΔA). The leaf-like stamp with a relief inscription from group 6 is possibly connected with the same period. Earlier, I.B. Brašinskij grouped all the figured stamps into a single group and assigned them to the first (A) period.[33] However, in recent years a number of leaf-like stamps, including those made with the same die as our example, were found at the Elizavetovskoye site in layers dating to the first quarter of the 3rd century B.C. A similar stamp is reported from Romania on an amphora neck with a 'collar' rim found in the amphorae storehouse near Islam Geaferca. The amphora is dated to *c.* 300 B.C. or the first third of the 3rd century B.C.[34] Thus there are reasons to subdivide the figured stamps typologically into two groups and to place the leaf-like impressions similar to ours in group 6, late phase.

Thus seven of the ten identifiable Herakleian stamps from U6 were made as early as the first half of the 4th century B.C., and three at the end of the same century or in the first decades of the 3rd century. The predominance of the early stamps is even more marked if we take into account that, of the six stamps on which it was not possible to restore the inscriptions completely, one (**Ae 126**) also belongs to the two first chronological periods, judging

by its typological and palaeographic peculiarities. Here, it should be noted once more that all the earlier Herakleian stamps are found on small reused fragments.

Stamps from Thasos. This production centre is represented by a single stamp of the magistrate *Bion I* (**Ae 133**; Pl. 60). According to the classification developed by Yu. G. Vinogradov, it belongs to sub-group 5b, dated within a fairly broad time-span to the late 4th and the 3rd centuries B.C.[35] According to M. Debidur's recent and more detailed classification of this sub-group, *Bion I* was in office in the first quarter of the 3rd century B.C.[36]

Stamps from unidentified centres. Only 8 stamps (less than 6% of the total amount) have been impossible to localise. Practically all of them are made with dies so far unknown (**Ae 134-141**; Pl. 61).

These stamps may be divided into two sub-groups:

1. stamps with the legend consisting of a name in a complete or slightly abbreviated form – 2 examples;
2. monogram stamps – 6 examples.

The first sub-group includes a stamp on an oval amphora handle of dense red clay with the name of *Antiochos* in the genitive on two lines (**Ae 134**). Judging by the palaeographic features and the use of very small letters, the stamp is to be dated not earlier than *c.* 300 B.C. No such stamps have been recorded in the *Corpus* of Pridik-Grakov (*IOSPE* III). The only known parallel is on one of the handles of a fragmentary amphora with a mushroom-shaped rim from the excavations at Olbia. On the other handle of this amphora, there is a relief stamp with the name of *Hermios*. In contrast to the *Antiochos* stamp, the *Hermios* stamp has been reported from other sites in the Black Sea area, in particular from Tyras[37] and in rural houses near the Eupatoria lighthouse.[38] On cursory inspection of the amphora from Olbia, we had the impression that it may belong to one of the Graeco-Italian centres in Sicily or southern Italy, where vessels with mushroom-shaped rims were very common during the entire 4th and part of the 3rd century B.C.

The second stamp of this sub-group (**Ae 135**) was on an oval handle of a broken amphora. The form of the amphora has not been restored, but its most marked morphologic feature is an out-turned, overhanging rim. The clay is very similar to Samian: it is layered, dark grey with a high content of mica. The rectangular single-lined stamp contains the name of *Sangari*[*os*?]. Judging by the palaeographic features, including the lunar sigma, this stamp can also be dated to a period not earlier than *c.* 300 B.C.

Most of the monogram stamps (**Ae 138-140**) are round impressions made with the same die. Unfortunately, the monograms are blurred on all the examples, probably because of some defect in the die, and can be only tentatively restored. The stamps are placed on oval handles of dark brown clay containing limestone inclusions and mica. A similar clay is characteristic of the fourth amphora handle, with a rectangular stamp with a monogram (**Ae 141**), which also can be only tentatively read. All these monogram stamps are probably connected with the period when U6 was active, *i.e.* they are dated to the late 4th or the early 3rd century B.C.

In contrast, stamp **Ae 136**, containing a single *beta* with angles instead of semicircles, undoubtedly belongs to an earlier period. The stamp is placed on the lower part of the neck of the amphora, which is made of a dark-brown clay with inclusions of lime and a dense slip of the same colour as the clay. No parallels to this stamp are known, and it probably belongs to a rare series of stamps seen on amphorae from Peparethos ('Solokha-II' type).

Table 3. The Distribution of Amphora Stamps

Phase	Chronological limits	Chersonesos	Sinope	Herakleia	Amastris	Thasos	?	Total	Frequency (q_i)	f°
I	*c*. 325-295 B.C.	1А 35						85	75.89	2.53
		1Б 30								
		1В 20								
II	*c*. 295-275 B.C.	1В 1	11	3	2	1	6	27	24.11	1.21
		2А 3								
I-II	325-275 B.C.	89	11	3	2	1	6	112	100.0	2.0

It is possible to date most of the stamps from U6 with reasonable certainty. Their uneven distribution into two different periods is immediately apparent. All the above-mentioned tile stamps, but only 9 of the amphora stamps belong to the earlier period, which more or less covers the first half of the 4th century B.C. Among the amphora stamps there are 7 Herakleian (**Ae 117-118**, **Ae 122-126**), one Sinopean (**Ae 101**), and one from an unidentified centre (**Ae 136**). One cannot rule out the possibility that most of the fragmentary Herakleian stamps with illegible legends (**Ae 127-131**) should be assigned to the same group. Thus, as already stressed, the earliest stamped amphora fragments from the assemblage belong to the period before the construction of U6 and were brought there, evidently by chance, from the earlier building U7, situated nearby. The stamped Sinopean tiles were probably also brought from U7 and reused in the structures of hearths and pavements.

The majority of the amphora stamps (128 examples) derive from the period when U6 was active, and date from the last quarter of the 4th to the first quarter of the 3rd century B.C. The single Herakleian stamp (**Ae 132**), three Sinopean (**Ae 100**, **Ae 113-114**), and nine Chersonesean stamps (**Ae 74-82**), on which it was possible to reliably restore the legends, can only be dated to this broad range of time. This also goes for the two Chersonesean stamps with monograms (**Ae 98-99**) and the monogram stamp from an unknown centre (**Ae 137**). The remaining 112 imprints can be dated within a narrower chronological range, and grouped in two successive phases of the occupation of the complex (*cf.* Table 3).

The first phase comprises the first three decades of the existence of the complex. Three quarters of the stamps found can be assigned to this phase. Moreover, they all belong to Chersonesean magistrates in group 1. As mentioned above, though the supplies of Chersonesean products were continual, they had an irregular character. Large consignments of wine were purchased once every seven or eight years, with two or three smaller ones in the interims. The last large consignment came at the time of the astynomos *Dioskouridas* in the early 3rd century B.C. (the very beginning of sub-group 1Б). It is notable that only one stamp of *Herodotos* (one of the last astynomoi of sub-group 1Б) is represented in the collection (**Ae 56**). That this is hardly accidental is also proved by the analysis of the set of ceramic stamps related to the last two decades of the occupation of the house (second phase, *i.e.* mid-290s – early 270s B.C.).

Only a quarter of the stamps found in the house are connected with the second phase. Their relative distribution density (f_o) is half of that of the earlier phase. Along with the *Herodotos* stamp already mentioned, only three more stamps of the magistrates of sub-group 2A (on amphorae which must have arrived immediately before the destruction of the house) date from the same period (**Ae 2**, **Ae 57**, **Ae 68**). On the other hand, import of Sinopean products becomes quite systematic during the last decade. Also, products of two more centres of southern Pontos – Herakleia and Amastris – were purchased, though in limited quantities. It is noteworthy that high quality wine from the Mediterranean arrived in this rural settlement, though in very limited amounts.

Thus there can be little doubt that there were both quantitative and qualitative differences in the wine import during the two phases of the occupation of the house. What were the reasons for these differences? We have no evidence for connecting the reduction of the imports with any general crisis in the area after the middle of the 290s. On the contrary, the situation in this region was quite favourable at the beginning of the 3rd century B.C. Therefore, we assume that the explanation is to be sought in the specific economical development of Panskoye I itself. It seems that in the first phase wine was not produced here, and local needs were satisfied by the import of relatively cheap wine from Chersonesos. But at the beginning of the 3rd century the settlement may have begun its own wine production, which then resulted in a cutback of the import.

PONTIC ATELIERS

Chersonesos

a) Magistrate stamps

Ae 1. U6 courtyard, E-3. 1974.

Fragmentary stamp on amphora handle. Retrograde. Kac's group 1Б (1994) (315-300 B.C.). Die: Kac 1994, 1-9,1-6.

]ΔΡ[᾽Αλεξάν]δρ[ου
[– – – – –] [ἀστυνόμου]

Ae 2. U6 room 3. Find list 6/20. 1969. Pl. 55.

Two adjoining fragments of an amphora handle with a stamp of Kac's group 2A (285-272 B.C.). Die: Kac 1994, 1-11,5. Beginning of line 3 is obliterated.

ΑΠΟΛΛΑ ᾽Απολλᾶ
ΧΟΡΕΙΟΥ Χορείου
]ΥΝΟΜΟΥ ἀστ]υνόμου

Ae 3. U6 courtyard, B-6. Find list 16/26. 1972.

Rim and upper part of handle of amphora **Ad 41a**. Signed with a relief stamp of Kac's chronological group 1Б (315-300 B.C.). Die: Kac 1994, 1-15,1. Publication: Monachov 1989, 135 pl. 9 rim no. 77.

ΑΠΟΛΛΩΝΙΟΥ ᾽Απολλωνίου
ΑΣΤΥΝΟΜΟΥ ἀστυνόμου

Ae 4. U6 courtyard, B-6. Find list 16/67. 1972 + courtyard, V-4. 1973.

Similar to the preceding. Two adjoining fragments. Same die.

Ae 5. U6 courtyard, B-6. Find list 16/66. 1972 + courtyard, G-4. 1967. Pl. 55.

Similar to the preceding. Two adjoining fragments. Same die.

Ae 6. U6 courtyard, V-2. Find list 11. 1971.

Similar to the preceding. Same die.

Ae 7. U6 courtyard, V-2. 1971 + courtyard, G-2. 1971. Pl. 55.

Similar to the preceding. Two adjoining fragments. Same die.

Ae 8. U6 courtyard, V-2. 1971 + courtyard, V-4. 1973.

Similar to the preceding. Two fragments. Same die.

Ae 9. U6 courtyard, V-2. 1971 + courtyard, G-2. 1971.

Similar to the preceding. Three fragments. Same die.

Ae 10-12. U6 courtyard, V-4. 1973.

Similar to the preceding. Same die.

Ae 13. U6 courtyard, V-4. 1973.

Similar to the preceding. Two fragments. Same die.

Ae 14. U6 courtyard, V-4. 1973 + courtyard, G-4. 1967. Pl. 55.

Similar to the preceding. Two adjoining fragments. Same die.

Ae 15. U6 courtyard, V-4. 1973 + courtyard, G-4. 1967. Pl. 55.

Similar to the preceding. Two fragments. Same die.

Ae 16. U6 courtyard, G-2. 1971.

Similar to the preceding. Four adjoining fragments. Same die.

Ae 17. U6 courtyard, G-4. 1967. Pl. 55.
Similar to the preceding. Same die.

Ae 18. U6 courtyard, G-4. 1967. Pl. 55.
Similar to the preceding. Two adjoining fragments. Same die.

Ae 19. U6 well, no. 39. 1977.
Similar to the preceding. Same die.

Ae 20. U6 courtyard, D-2. 1973. Pl. 55.
Fragment of an amphora handle with a relief stamp of Kac's group 1A (325-315 B.C.). Die: Kac 1994, 1-32,1.

ΒΑΘΥΛΛΟΥ Βαθύλλου
ΑΣΤΥΝΟΜΟΥ ἀστυνόμου

Ae 21. U6 courtyard, E-4. 1973.
Similar to the preceding. Three adjoining fragments. Same die.

Ae 22. U6 square Z-7. 1973.
Similar to the preceding. Same die.

Ae 23. U6 courtyard, V-4. 1973.
Similar to the preceding. Die: Kac 1994, 1-32,2.

Ae 24. U6 courtyard, V-4. 1973.
Similar to the preceding. Two fragments. Same die.

Ae 25-27. U6 courtyard, G-2. 1971.
Similar to the preceding. Same die.

Ae 28. U6 courtyard, G-4. 1973 + courtyard, G-5. 1973.
Similar to the preceding. Three fragments. Same die.

Ae 29. U6 courtyard, D-3. 1973.
Similar to the preceding. Same die.

Ae 30. U6 courtyard, E-4. 1973.
Similar to the preceding. Same die.

Ae 31. U6 courtyard, E-6. Find list 17. 1972.
Similar to the preceding. Same die.

Ae 32. U6 courtyard, DE-6. Find list 17/26.1972. See also **H 13**.
Similar to the preceding. On the handle of the fragmentary amphora **Ad 2**. Same die. Publication: Monachov 1999a, 498 pl. 211, *2*.

Ae 33. U6 room 13. Find list 8/2. 1971. Pl. 55. See also **H 33**.
Similar to the preceding. On the handle of the amphora **Ad 1**. Die: Kac 1994, 1-32,3.

Ae 34. U6 courtyard, B-2. 1974. Pl. 55.
Fragment from neck and handle of an amphora. Two adjoining sherds. Relief stamp of Kac's group 1B (300-285 B.C.) on the handle. The second line is not completely impressed (only the tops of the letters are visible). Die: Kac 1994, 1-40,1.

]ΚΟΥΡΙΔΑ Διοσ]κουρίδα
]ΣΤΥΝΟΜΟΥ ἀ]στυνόμου

Ae 35. U6 room 3. Find list 6/8. 1969. Pl. 56.
Fragment from rim (*c.* 45° preserved) and upper part of a handle of an amphora. Relief stamp of Kac's group 1B (300-285 B.C.). Die: Kac 1994, 1-40,2.

ΔΙΟΣΚΟΥΡΙΔ[Διοσκουρίδ[α
ΑΣΤΥΝΟΜ[ἀστυνόμ[ου

Ae 36. U6 room 3. Find list 6/9. 1969. Pl. 56.
Upper part of an amphora handle. Two adjoining fragments. Relief stamp similar to **Ae 35**. Same die.

Ae 37. U6 room 3. Find list 6/10. 1969. Pl. 56.
Upper part of an amphora handle. Two adjoining fragments. Relief stamp similar to **Ae 35**. Same die.

Ae 38. U6 room 3. Find list 6/11. 1969. Pl. 56.
Amphora handle. Fragment from upper part. Relief stamp similar to **Ae 35**. Same die.

Ae 39. U6 room 3. Find list 6/12. 1969. Pl. 56.
Amphora handle. Fragment from upper part. Relief stamp similar to **Ae 35**. Same die.

Ae 40. U6 courtyard, V-4. 1973.
Amphora handle. Fragment from upper part. Relief stamp similar to **Ae 35**. Same die.

Ae 41. U6 courtyard, V-4. 1973.
Similar to the preceding. Same die.

Ae 42. U6 courtyard, G-3. 1971.
Four adjoining fragments from the upper part of an amphora handle. Relief stamp similar to **Ae 35**. Same die.

Ae 43. U6 courtyard, G-2. 1967. Pl. 56.
Amphora handle. Fragment from its upper part with relief stamp similar to **Ae 35**. Same die.

Ae 44. U6 courtyard, B-2. 1975.
Fragment from rim (*c.* 40°), neck and upper part of handle of an amphora. Relief stamp similar to **Ae 35**. Same die.

Ae 45. U6 room 3. Find list 6/7. 1969. Pl. 56.
Two adjoining fragment from the upper part of an amphora handle with relief stamp of Kac's group 1 B (300-285 B.C.). Die: Kac 1994, 1-40,5.

]ΣΚΟΥΡΙΔΑ Διο]σκουρίδα
]ΤΥΝΟΜΟΥ ἀσ]τυνόμου

Ae 46. U6 room 3. Find list 6/13. 1969. Pl. 56.
Fragment from amphora handle with relief stamp similar to **Ae 45**. Same die.

Ae 47-48. U6 courtyard, G-3. 1971.
Two amphora handles with relief stamps similar to **Ae 45**. Same die.

Ae 49. U6 courtyard, D-6. 1971. Pl. 56.
Amphora handle with relief stamp similar to **Ae 45**. Two adjoining fragments. Same die.

Ae 50. U6 courtyard, D-5. Find list 17/35. 1972.
Two adjoining fragments from upper part of amphora handle. Relief stamp similar to **Ae 45**. Same die.

Ae 51. U6 courtyard, B-2. 1974.
Two adjoining fragments from the neck and upper part of an amphora handle with relief stamp similar to **Ae 45**. The second line of the stamp is not fully impressed (only the tops of two letters are visible). Same die.

Ae 52. U6 courtyard, E-5. 1974.
Handle fragment of an amphora. Relief stamp similar to **Ae 45**. Same die.

Ae 52a. U6 room 3. Find list 6/2. 1969.
Amphora of Monachov's type I-Б (1989) (**Ad 10**). Relief stamp similar to **Ae 34-52** on handle. The die is not defined. On the lower part of the neck graffito **H 7**.

Ae 53. U6 courtyard, DE-6. Find list 17/34. 1972. Pl. 56.
Upper part of amphora **Ad 5**. Type I-A-3 of Monachov (1989). Relief stamp on handle. Kac's group 1A (325-315 B.C.). Die: Kac 1994, 1-44,1.

ΕΥΚΛΕΙΔ[	Εὐκλείδ[α
ΑΣΤΥΝΟΜ[	ἀστυνόμ[ου

Ae 54. U6 courtyard, V-4. 1967. Pl. 57.
Similar to the preceding. Same die.

Ae 55. U6 courtyard, B-5. Find list 16. 1972. Pl. 57.
A stamp of Kac's group 1Б (315-300 B.C.). Twice impressed. Die: Kac 1994, 1-47-48,3.

ΗΡΑΚ[	Ἡρακ[λείου
]ΤΥΝΟΜ[	ἀσ]τυνόμ[ου

Ae 56. U6 courtyard. 1967. Pl. 57.
Fragment of an amphora handle with a rectangular relief stamp. Kac's group 1Б (300-285 B.C.). Die: Kac 1994, 1-54,1.

ΗΡΟΔΟ[·]	Ἡροδό(του) [Ἀθα (monogram)]
ΑΣΤΥΝΟ	ἀστυνό(μου)

Ae 57. U6 courtyard, D-5. 1974.
A stamp of Kac's group 2A (285-272 B.C.). Die: Kac 1994, 1-67,4.

ΚΟΤΥ[	Κοτυ[τίω-
]ΡΙΣΤΩΝ	ν Ἀ]ρίστων(ος)

Ae 58. U6 room 3. Find list 6/19. 1969. Pl. 57.
Two adjoining fragments of an amphora handle. Relief stamp of Kac's group 1A (325-315 B.C.). Die: Kac 1994, 1-68,3.

]ΡΑΤΩΝΟΣ	Κ]ράτωνος
]ΣΤΥΝΟΜΟΥ	ἀ]στυνόμου

Ae 59. U6 courtyard, B-6. Find list 16/68.1972. Pl. 57.
Similar to the preceding. Die: Kac 1994, 1-68,4.

Ae 60. U6 courtyard, V-2. 1971 + courtyard, G-3. 1971.
Similar to the preceding. Two adjoining fragments. Die: Kac 1994, 1-68,5.

Ae 61. U6 courtyard, V-4. 1967. Pl. 57.
Fragment from the upper part of an amphora handle with relief stamp of Kac's group 1Б (315-300 B.C.). Die: Kac 1994, 1-88,2.

ΞΑΝΘΟΥ	Ξάνθου
ΑΣΤΥΝΟΜ[	ἀστυνόμ[ου

Ae 62. U 6 courtyard, D-4. 1973. Pl. 57.
Small handle fragment of an amphora. Relief stamp similar to **Ae 61**. Same die.

Ae 63. U6 courtyard, D-6. 1972.
Similar to the preceding. Same die.

Ae 64. U6 courtyard, D-2. 1973 + courtyard, D-3. 1974.
Handle fragment of an amphora. Relief stamp of Kac's group 1Б (315-300 B.C.). Two adjoining fragments. Die: Kac 1994, 1-88,3.

ΞΑΝΘΟ[	Ξάνθο[υ
ΑΣΤΥΝΟΜ[	ἀστυνόμ[ου

Ae 65. U6 courtyard, V-4. 1973.
Similar to the preceding. From two adjoining fragments. Same die.

Ae 66. U6 courtyard, D-6. Find list 17. 1972.
Similar to the preceding. Same die.

Ae 67. U6 courtyard. 1971.
Handle fragment of an amphora. Relief stamp of Kac's group 1Б (315-300 B.C.). New die?

]ΟΥ	Ξάνθ]ου
]ΜΟΥ	ἀστυνό]μου

Ae 68. U6 courtyard, V-5. 1973.
Relief stamp on amphora neck. Kac's group 2A (285-272 B.C.). Die: Kac 1994, 1-99,2.

ΠΡΥΤΑΝΙΟΣ	Πρυτάνιος
ΤΟΥΑΡΙΣΤΩΝΟΣ	τοῦ Ἀρίστωνος
ΑΣΤΥΝΟΜΟΥΝΤΟΣ	ἀστυνομοῦντος

Ae 69. U6 courtyard, DE-5. 1974.
Fragment from the upper part of an amphora handle. Relief stamp of Kac's group 1Б (315-300 B.C.). Die: Kac 1994, 1-110,3.

]ΚΡΙ[	Σω]κρί[του
]ΣΤΥΝΟ[	ἀ]στυνό[μου

Ae 70. U6 courtyard, G-2. 1971.
Relief stamp on an amphora handle. Kac's group 1Б (315-300 B.C.). Die: Kac 1994, 1-110,4.

]ITO[Σωκρ]ίτο[υ
]NOM[ἀστυ]νόμ[ου

Ae 71. U6 courtyard, G-2. 1971.
Similar to the preceding. Same die.

Ae 72. U6 room 13. Find list 8/10. 1971. Pl. 57.
Similar to the preceding. Same die.

Ae 73. U6 room 3. Find list 6/21. 1969. Pl. 57.
Upper part of the amphora **Ad 18**. The stamp is on one of the handles. Kac's group 1A (325-315 B.C.). Die: Kac 1994, 1-112,3. For graffito on neck see **H 8**. Publication: Monachov 1999a, 500 pl. 213, *2*.

ΣΩΠΟΛΙΟ[Σωπόλιο[ς
ΑΣΤΥΝΟ[ἀστυνό[μου

Fragmentary two-lined stamps on amphora handles.

Ae 74. U6 courtyard, G-4. 1975.

]A[ ]α[
[– – – – –] [ἀστυνόμου]

Ae 75. U6 courtyard, B-2. 1973.

[– – – – –] [– – – – –]
]OMO[ἀστυν]όμο[υ

Ae 76. U6 courtyard, B-5. Find list 16. 1972. Pl. 57.

[– – – – –] [– – – – –]
]YNOMO[ἀστ]υνόμο[υ

Ae 77-78. U6 courtyard, G-3. 1975.

[– – – – –] [– – – – –]
ΑΣΤΥΝ[ἀστυν[όμου

Ae 79. U6 courtyard, DE-5. 1974. Pl. 58.

[– – – – –] [– – – – –]
]TYNOMOY ἀσ]τυνόμου

Ae 80. U6 well. 1977.

[– – – – –] [– – – – –]
ΑΣΤ[(retrograde) ἀστ[υνόμου

Ae 81. U6 courtyard, D-6. Find list 17/27. 1972.
Stamp on the handle of amphora **Ad 37**.

] I [ ]ι[
]ΣΤΥΝ[ἀ]στυν[όμου

Ae 82. U6 room 12. Find list 6/5. 1971.
An obliterated relief stamp on the handle of the fragmentary amphora **Ad 38**.

b) Monograms

Ae 83. U6 courtyard, VG-4. Pl. 58.
Fragment of rim, neck and handle of an amphora. Relief stamp of Kac's group 1 (325-285 B.C.) on handle. Die: Kac 1994, 2A-13,5. Publication: Monachov 1989, 134 tab. 9 rim no. 75.

ΕΥΑ( ) Εὐα( )

Ae 84. U6 room 3. Find list 6/14. 1969. Pl. 58.
Fragmentary amphora **Ad 19**. Relief stamp similar to **Ae 83** on the handle. Same die. Publication: Monachov 1999a, 500 pl. 213, *3*.

Ae 85. U6 room 3. Find list 6/15. 1969. Pl. 58.
Fragment of rim, neck and handle of an amphora. Relief stamp similar to **Ae 83** on the handle. Same die. Publication: Monachov 1989, 134 tab. 9 rim no. 76.

Ae 86. U6 room 3. Find list 6/16. 1969. Pl. 58.
Fragmentary amphora, type I-Б (**Ad 17**). Lower part of jar missing. Relief stamp similar to **Ae 83** on handle. Same die. Publication of the amphora: Monachov 1989, 148 no. 144.

Ae 87. U6 room 3. Find list 6/17. 1969. Pl. 58.
Fragment of amphora handle with relief stamp similar to **Ae 83**. Same die.

Ae 88. U6 room 3. Find list 6/18. 1969. Pl. 58.
Similar to the preceding. Same die.

Ae 89. U6 courtyard, V-2. 1971.
Similar to the preceding. Same die.

Ae 90. U6 courtyard, B-5. 1971.
Similar to the preceding. Same die.

Ae 91. U6 courtyard, E-2. 1973.
Similar to the preceding. Same die.

Ae 92. U6 courtyard, E-5. 1974.
Similar to the preceding. Same die.

Ae 93. U6 well. 1975.
Similar to the preceding. Same die.

Ae 94. U6 gate. Find list 3/8. 1972.
Similar to the preceding. Same die.

Ae 95. U6 square A-3. 1971.
Similar to the preceding. Same die.

Ae 96. U6 square B-0. 1973.
Similar to the preceding. Same die.

Ae 97. U6 square Z-7. 1972.
Like the preceding. Same die.

Ae 98. U6 well. 1975.
Relief stamp on a fragment of an amphora handle. Chronologically corresponding to the magistrate stamps of groups 1Б-В, 2A (315-270 B.C.). Die: Kac 1994, 2A-16,4.

HP( )(retrograde) ʽHρ( )

Ae 99. U6 courtyard, E-2. 1973.

Handle fragment of Chersonesean amphora with a monogram stamp. Chronologically corresponding to the magistrate stamps of Kac's groups 1Б-В, 2А (315-270 B.C.). Die: Kac 1994, 2A-32,36.

ΠA( )(retrograde) Πα( )

Sinope

a) Magistrate stamps

Ae 100. U6 courtyard, D-5. 1974. Pl. 58.

Fragment from rim, neck and upper part of a handle of an amphora. Relief stamp on handle. Grakov's group I (1929) New die? 4th- 3rd centuries B.C.

Δ[• •]O[Δ[• •]ο[
ΑΣΤΥΝ[ἀστυν[ο
ΠΟΣΕΙΔ[Ποσειδ[ωνίο

Ae 101. U6 courtyard, G-2. 1971. Pl. 58.

Fragment of amphora handle with relief stamp. Grakov's group I (1929). Type: *IOSPE* III 294-7. Middle of the 4th century B.C.

ΗΦΑΙΣΤΙΟ eagle ʽΗφαιστίο
ΑΣΤΥΝΟ on ἀστυνο( )
]ΡΧΕΠΤΟ the dolphin ʽA]ρχεπτο(λέμο)

Ae 102. U6 courtyard, B-2. 1974. Pl. 58.

Upper part of amphora handle with a relief stamp from Grakov's group III (1929). Type: *IOSPE* III 4017-20. First quarter of the 3rd century B.C.

ΘΕΥΔΩΡΙΔΟΥ Θευδωρίδου
ΑΣΤΥΝΟΜΟΥΝΤΟΣ ἀστυνομοῦντος
ΠΥΘΕΩ Satyr head Πυθέω

Ae 103. U6 courtyard, E-3. 1973. Pl. 59.

Handle fragment of an amphora with a relief stamp from Grakov's group III (1929). Type: *IOSPE* III 4096-103. First quarter of the 3rd century B.C.

]ΙΘΟΥ wreath Θευπε]ίθου
]ΟΜΟΥ ἀστυν]όμου
[– – –] kantharos [Καλλισθέ(νου)]

Ae 104. U6 courtyard, E-3. 1975.

Amphora handle fragment with a relief stamp from Grakov's group IV (1929). Type: *IOSPE* III 4550-2. 270s B.C.

Α[ἀ[στυνό- kantharos]
Μ[μ[ου ʽΙστιαί-
ΟΥΔΗ[ου Δη[μητρίου

Ae 105. U6 room 13. Find list 8/11. 1971. Pl. 59.

Three joining fragments of an amphora handle. Relief stamp from Grakov's group III. Type: *IOSPE* III 5369-79. End of the first quarter of the 3rd century B.C.

ΜΙΚΡΙΟΥΑΣΤΥΝΟ Μικρίου ἀστυνο-
ΜΟΥΝΤΟΣ μοῦντος
ΘΥΟΣ horse to left Θυός

Ae 106. U6 courtyard, V-4. 1973. Pl. 59.

Handle fragment of an amphora. Relief stamp from Grakov's group III. Type: *IOSPE* III 5584-7. End of the first quarter of the 3rd century B.C.

ΑΣΤΥΝΟΜΟΥ ἀστυνόμου
ΜΝΗΣΙΚΛΕΟΥ[Μνησικλέου[ς
ΑΠΟΛΛΩΝΙΟ leaf ʽΑπολλωνίο

Ae 107. U6 courtyard, E-3. 1973. Pl. 59.

Two adjoining fragments of an amphora handle. Relief stamp from Grakov's group III. Type: *IOSPE* III 5601-7. End of the first quarter of the 3rd century B.C.

ΑΣΤΥΝΟΜΟΥ ἀστυνόμου
ΜΝΗΣΙΚΛΕΟΥ[Μνησικλέου[ς
]ΥΟΣ bunch of grapes, ear ʽΑτο]ῦος

Ae 108. U6 courtyard, D-3. 1973. Pl. 59.

Handle fragment of an amphora. Relief stamp from Grakov's group III. Type: *IOSPE* III 5662. End of the first quarter of the 3rd century B.C.

]ΤΥΝΟΜΟΥ ἀσ]τυνόμου
]ΝΗΣΙΚΛΕΟΥΣ Μ]νησικλέου[ς
]ΤΙΟ[ʽΗφαισ]τίο[υ

Ae 109. U6 courtyard, G-2. 1971.

Handle fragment of an amphora. Relief stamp from Grakov's group III. Type: *IOSPE* III 5755. End of the first quarter of the 3rd century B.C.

ΜΝΗΣΙΚΛ[Μνησικλ[έους
ΑΣΤΥΝΟ bunch of grapes[ἀστυνό[μου
[– – –] [Τεῦθρα]

Ae 110. U6, square Z-7. 1973. Pl. 59.

Fragment of neck and upper part of handle of an amphora. Relief stamp from Grakov's group III on handle. Type: *IOSPE* III 5756-72. End of the first quarter of the 3rd century B.C.

ΑΣΤΥΝΟΜΟΥ bunch of grapes ἀστυνόμου
ΜΝΗΣΙΚΛΕΟΥΟΣ Μνησικλέου<ο>ς
ΦΙΛΟΚΡΑΤΟΥΣ Φιλοκράτους

Ae 111. U6 courtyard, E-3. 1974. Pl. 59.

Similar to the preceding. Four adjoining fragments. Same die.

Ae 112. U6 courtyard, D-6. Find list 17/42. 1972 + courtyard, D-5. 1974. Pl. 59.

Two adjoining fragments of an amphora handle. Relief stamp from Grakov's group III. Type: *IOSPE* III 7289-92.

End of the first quarter of the 3rd century B.C.

]O[	[Πυθ]ο[κλέους]
ΑΣΤΥΝΟΜΟ head	ἀστυνόμο
]ΟΣΕΙΔΩΝΙΟΥ	Π]οσειδωνίου

Ae 113. U6 courtyard, G-5. 1974.

An obliterated stamp on a Sinopean amphora handle.

b) Anepigraphic stamps

Ae 114. U6 courtyard. 1967. Pl. 59.

Round relief stamp on an amphora handle: a bird (a heron?) with a small dolphin in place of the head, standing in front of a corn ear. Diameter: 2.3 cm. Typical Sinopean clay with numerous inclusions of pyroxene. Publications: Daševskaja 1968, 215; Cechmistrenko 1971, 72 fig. 2.

Amastris

Ae 115. U6 gate. Find list 3/25. 1972. Pl. 60.

An engraved stamp on an amphora neck (See also **Ad 77** and **H 12**). Publications: Ščeglov 1986, 367 fig. 1,7; Kac, Pavlenkov and Ščeglov 1989, 24 ff. fig. 3, stamp 1; Monachov 1999a, 501 pl. 214, *1*. 300-275 B.C.

AMACT	ʽΑμάστ-
PIOC ivy-leaf	ριος

Ae 116. U6 gate. Find list 3/73. 1972. Pl. 60.

An engraved stamp similar to **Ae 115**. Same die. Twice impressed. Publications: Ščeglov 1986, 367 fig. 1, 7; Kac, Pavlenkov and Ščeglov 1989, 24 ff., stamp 1. 300-275 B.C.

Herakleia Pontike

a) 'The factory owners' stamps'

Ae 117. U6 courtyard, E-4. 1974. Pl. 60.

An engraved stamp on a fragment of an amphora neck. Type: *IOSPE* III 1535-57. Publication: Monachov 1999a, 504. First quarter of the 4th century B.C.

]Y	Εὐ]ρυ-
]MO	δά]μο

Ae 118. U6 room 12. Find list 6. 1971.

An engraved stamp on an amphora neck fragment. Type: *IOSPE* III 1594-603. First quarter of the 4th century B.C.

]K	ʽΗρα]κ-
]A	λέδ]α

Ae 119. U6 courtyard, G-5. 1973. Pl. 60.

Two adjoining fragments of an amphora neck with an engraved stamp. Absent in *IOSPE* III. *Cf.* Brašinskij 1980, no. 485. New die. Publication: Monachov 1999a, 505. First quarter of the 3rd century B.C.

HP[	ʽΗρ[α( )

Ae 120. U6 courtyard, E-6. 1973. Pl. 60.

An engraved stamp on an amphora neck. Retrograde. Type: *IOSPE* III 1617-18. Publication: Monachov 1999a, 505. First quarter of the 3rd century B.C.

HPAK[	ʽΗρακ[λείδα

Ae 121. U6 courtyard, D-6. Find list 17/45. 1972. Pl. 60.

Fragment from neck and rim of an amphora. Relief stamp on neck. Absent in *IOSPE* III. New die. Publication: Monachov 1999a, 505. First quarter of the 3rd century B.C.

KEP (in field of an ivy-leaf)	Κερ( )

Ae 122. U6 courtyard, V-2. 1971. Pl. 60.

An engraved stamp on a small fragment of an amphora neck. Type: *IOSPE* III 1879-80. Publication: Monachov 1999a, 504. First quarter of the 4th century B.C.

ΣΩΓΗ	Σω<τ>ή
]O[	ρ]ο[ς

b) Magistrate stamps

Ae 123. U 6 room 12. Find list 6/18. 1971+ gate. Find list 3/20. 1972. Pl. 60.

An engraved stamp on an amphora neck. Two adjoining fragments. Type: *IOSPE* III 861-5. Publication: Monachov 1999a, 504. First quarter of the 4th century B.C.

]ΟΞΕΝ	Θε]οξέν-
]ΑΡΙΣΤ[	ο] ʽΑριστ[ο
ΚΛΕΟ[	κλέο[ς

Ae 124. U6 square Zh-7. 1972. Pl. 60.

Fragment of rim-neck of an amphora. Engraved stamp on neck. Type: *IOSPE* III 693. First quarter of the 4th century B.C.

]N	Διο]ν-
]O HP ↑	υσί]ο ʽΗρ( )↑

Ae 125. U6 courtyard, G-4. 1975. Pl. 60.

Neck fragment of an amphora with an engraved stamp. First half of the 4th century B.C.

]OA[	Κ]όα[ς
]A	Π]α( )

c) Fragmentary stamps

Ae 126. U6 room 9. Find list 3/8. 1971.

Small fragment of an engraved stamp on a sherd of an amphora neck. First half of the 4th century B.C.

]EO	]εο
[– –]	[– –]

Ae 127. U6 courtyard, B-4. 1971.

Fragment of an illegible engraved stamp.

Ae 128. U6 courtyard, V-2. 1971.
Sherd of an amphora neck. Illegible fragment of an engraved stamp.

Ae 129. U6 courtyard, E-6. 1975.
Sherd of an amphora neck. Illegible fragment of an engraved stamp.

Ae 130. U6 room 16. Find list 10. 1971.
Sherd of an amphora neck. Illegible fragment of an engraved stamp

Ae 131. U6 room 17. Find list 15. 1972.
Sherd of an amphora neck. Illegible fragment of an engraved stamp.

d) Anepigraphic stamps

Ae 132. U6 courtyard, V-2. Find list 11/14. 1971. Pl. 61.
A cross-shaped stamp with a bunch of grapes in the centre. New die. 4th century B.C.

MEDITERRANEAN ATELIERS

Thasos

Ae 133. U6 courtyard, G-2. 1973. Pl. 61.
A stamp from Vinogradov's group 5b (1972). The first line runs retrograde. Sigma lunata. New die. First quarter of the 3rd century B.C.

ΒΙΩΝΟC	Βίωνος
alabaster	Θασίων
ΘΑCΙΩΝ	

UNDETERMINABLE ATELIERS

a) Individual names

Ae 134. U6 courtyard, D-5. 1974. Pl. 61.
Upper part of a broad massive amphora handle with a rectangular relief stamp. New die. Clay reddish brown with small particles of pyroxene and mica. Light brown slip. Publication: Monachov 1999a, 501 pl. 214, *8*, 508.

ANT[	’Αντ[ι-
OXOY	όχου

Ae 135. U6 courtyard, D-5. 1974. Pl. 61.
Stamp on handle of **Ad 82**. New die. Form not estimated. Rim shape similar to Solokha-I type. Clay dark grey with inclusions of mica. Publication: Monachov 1999a, 501 pl. 214, *7*, 507.

CAΓΓAPI[	Σαγγαρί[ου

For the name, see *LGPN* II, 392.135

b) Monograms

Ae 136. U6 square A-3. 1971. Pl. 61.
A round relief stamp on a fragment of an amphora neck. New die. Clay dark brown with particles of limestone. Dense, clay coloured slip. Publication: Monachov 1999a, 501 pl. 214, *10*.

B or ΔΔ	Β( ) or ΔΔ

Ae 137. U6 courtyard. 1967. Pl. 61.
Fragment of amphora handle signed with a relief stamp.

ΠA (?)	Πα( )

Ae 138. U6 room 33. Find list 4. 1973. Pl. 61
A round relief stamp on an amphora handle. New die. Clay dark brown with particles of limestone and mica. Publication: Monachov 1999a, 501 pl. 214, *9*.

TIB (?)	Τιβ( )

Ae 139. U6 courtyard, V-4. 1973.
Similar to the preceding. Same die.

Ae 140. U6 courtyard, E-3. 1974.
Similar to the preceding. Same die.

Ae 141. U6 courtyard, E-3. 1974. Pl. 61.
A rectangular stamp on a fragment of an amphora handle. Retrograde. Partly obliterated. Clay similar to **Ae 138-140**.

ΦP or ΦOP	Φρ( ) or Φορ( )

NOTES

1. Daševskaja 1967, 162 ff., fig. 1. *Cf.* Blavatskij 1953, 42, no. 48.
2. Sparkes and Talcott 1970, 344, no. 1537; pl. 67; fig. 13. The painting is done in 'Corinthian red' glaze.
3. *Cf.* Borisova 1958, 150, fig. 7; Borisova 1966b, pl. 13, *4*; pl. 15, *1* and *5*.
4. *Cf.*, *e.g.*, Daševskaja 1967.
5. *Cf.* Monachov 1989, pl. XVIII, *9*, *10*. According to S.Yu. Monachov these represent the first type of rims of Chersonesean transport amphorae.
6. See: Kac and Monachov 1977, 90-105; Monachov 1989, 47 f.; Monachov 1999a, 497-509.
7. Ščeglov 1986, 365 ff. fig. 1; Kac, Pavlenkov and Ščeglov 1989, 24 ff. fig. 3. The hypothesis proposed by I.T. Kruglikova and S.Yu. Saprykin (Saprykin and Kruglikova 1991, 92) according to which the Amastrian stamping falls within the range of 285/284 – 266/265 B.C. is less probable.
8. Monachov 1990, 97-105.
9. Monachov 1990, 102 fig. 6.
10. Grace 1963, 324. fig.1, *1*; Empereur and Hesnard 1987, 58. pl. 2, *8*.
11. Grace 1971, 67, pl. 15, *13*.
12. Tölle-Kastenbein 1974, 158, Abb. 259A.
13. Excavation of 1988. Excavation area XX, pit 4. Preserved at ROMK. The stamp ΚΛΕΩ is illustrated on the back cover of the collection of articles 'Grečeskie amfory' (Greek Amphoras) (Saratov 1992) (third from the left in the bottom line).
14. The Kuban Museum, Inventory no. 5455/1425.
15. It was impossible to restore the amphora.
16. Koehler 1992, 269 ff.
17. Koehler 1992, 281 pl. 2*bc*.
18. Marčenko, Žitnikov and Kopylov 2000, Taf. 41, Abb. 70, *7*, 70, *10*.
19. Brašinskij 1984, 53.
20. The English terms are those used by M.L. Lawall, Studies in Hellenistic Ilion. Transport amphoras from the lower city in *Studia Troica* 9, 1999, 187-224.
21. See Part II **H**.
22. Achmerov 1951.
23. Kac 1994, 37.
24. Kac 1994.
25. Kac 1985, 92 f.; Kac 1994, 20.
26. Achmerov 1951.h
27. Kac 1994, 77 f.
28. Grakov 1929; see also: Šelov and Vinogradov 1977; Kac 1993.
29. Grakov 1954, 90; Cechmistrenko 1958; 1960; Brašinskij, 1963, 133; 1980, 41 f.; Pruglo 1967; Vasilenko 1971; Šelov, 1975, 134 f.; Kolesnikov 1985; Conovici 1989; Conovici, Avram and Poenaru Bordea 1992; Fedoseev 1992; 1993; Efremov 1993.
30. Kac 1979; Conovici, Avram and Poenaru Bordea 1992; Fedoseev 1992; 1993; Efremov 1993.
31. Ščeglov 1986; Debidour 1986; Kac, Pavlenkov and Ščeglov 1989.
32. Brašinskij 1965; 1980; 1984; Balabanov 1985; Vasilenko 1970; 1974.
33. Brašinskij 1980, 39.
34. Bujor 1962.
35. Vinogradov 1972, 35 f.
36. Debidour 1979, 311; Debidour 1986, 282.
37. Štaerman 1951.
38. Kolesnikov 1985.

BLACK-GLAZED, RED-FIGURE, AND GREY WARE POTTERY

Lise Hannestad, Vladimir F. Stolba, Helene Blinkenberg Hastrup

This chapter deals with the black-glazed (**B 4-219**) and grey ware pottery (**B 220-242**) from U6, and also includes three red-figure fragments found in the complex (**B 1-3**).

RED-FIGURE POTTERY (**B 1-3**)

Three pieces of Attic red-figure pottery were found in U6 (Pls. 68 and 70). **B 1** is a small sherd, probably of a stemless cup, with the head and shoulders of a satyr. The style is early 4th century, and this piece undoubtedly derives from the period prior to the construction of U6, where it probably came to rest when already broken. **B 3** is the upper part of an askos in a very late Kertch style. It remains an open question whether it was complete and in use in the initial phase of U6, or whether, by that time, only the upper part was kept for the sake of the painted decoration with the four heads.

BLACK-GLAZED WARE (**B 4-219**)

A number of the pieces of black-glazed ware are undoubtedly of Attic origin, whereas this is uncertain for others, and some are definitely from other, not yet localised centres, as indicated by the types of clay, and in particular the inclusion of minerals, which can be identified in many of the black-glazed vessels from U6, but are, according to Rotroff, not visible in Attic pottery of the Hellenistic period.[1] The Black Sea area was certainly the most important export area for Attic pottery in the 4th century and the early Hellenistic period,[2] and no other similarly important source of black-glazed pottery found in that region has yet been suggested. Panskoye I, including U6, got its share of this import, whether Attic, or from other, as yet not identified, centres in the Greek world.

In the catalogue we have chosen to identify as Attic only pieces in which the clay conforms to Rotroff's description of clay used for Attic fine pottery during the Hellenistic period (Rotroff 1982, 14 and 1997, 10), including the varieties of Munsell colours she has enumerated. In some cases we have suggested that a piece may be Attic, even if the colour of the clay deviates somewhat from those specified by Rotroff. It should also be noted that due to the destruction of the building by fire, quite a lot of the pottery underwent a kind of second firing, which changed the original colour of the clay. As to the origins of a substantial number of the catalogued items, we have refrained from suggesting production centres, since such suggestions could only be hypothetical, based on present knowledge of production centres in the Hellenistic world, and thus probably causing further confusion.

The three main groups of black-glazed pottery found at U6 include: 1) drinking vessels, of which kantharoi are by far the most common; 2) bowls; and 3) plates, including plates with rolled rim, and fish-plates. There are few other shapes: some lekythoi and salt-cellars, a few

oinochoai, a single one-handler, and a feeder. When compared with black-glazed pottery from the Athenian Agora,[3] virtually all the black-glazed pottery from U6 dates from the last two decades of the 4th century B.C., or just around the turn of the century. It looks as if most of the black-glazed pottery arrived at U6 when it was founded – a pattern which conforms well with the fact that a remarkably large part of the pottery, in particular the bowls and plates, bears witness to repair.

Most of the pottery from U6 was found in the courtyard of the building, including the well (7 kantharoi, 3 bowls, 6 fish-plates, and 1 jug), where it ended up as a result either of the collapse of the upper storey of the building, or through the looting that took place after the attack. For that reason the general state of preservation is rather poor. The pieces are at best, fragmentary and at worst, quite small sherds.

KANTHAROI AND OTHER TYPES OF DRINKING VESSELS (**B 5-101**)

All the kantharoi – at least insofar as the type can be attested – belong to Rotroff's (1997) type 'classical kantharos', which is the most common drinking vessel in Athens in the early Hellenistic period. All the pieces found in U6 are of the type with plain rim (Pls. 62-63, 70-71), which accords well with the fact that this type is about three times more common in Athens in the last quarter of the 4th century than the version with moulded rim.[4] This is in contrast to the finds from the necropolis at Panskoye I, where the type with moulded rim is quite common, attesting that most of the graves investigated indeed are earlier than the foundation of U6. The kantharos with plain rim is found in two main versions: with plain bowl or ribbed bowl. Some of the ribbed-bowl kantharoi are decorated on the neck with garlands of ivy (**B 7**, **B 42**), or olive (**B 4**, **B 9**, **B 23**). This decoration is also found on some neck fragments (**B 48-49** and **B 51**), but in no case is it attested in kantharoi with plain bowl. Some of the kantharoi with this type of decoration are definitely Attic (**B 4**, **B 49**), and the other specimens may, in fact, also be of Attic origin, though the colour of the clay is a little outside the range listed by Rotroff. Only **B 51** with inclusions of calcite seems to be an 'outsider'.

On a group of kantharoi with ribbed bowl, the ribbing is replaced under the handles by an incised Λ-shaped ornament (**B 5**, **B 7**, **B 11**, and **B 16**; Pl. 76). Parallels have been found at Histria, Olbia, Myrmekion (Sztetyłło 1976, 76 fig. 65), and at Nikolaevka on the Dniester Liman (see comments to **B 7**). These specimens are quite similar in clay, though whether they are actually a product of the same workshop remains open to question. The ornament is also found on one of the cup-kantharoi (**B 90**). At Athens an incised X is frequently found under the handles of this shape (personal communication by S. Rotroff). According to Edwards (1975, 78), an X ornament like this is common in Corinthian black-glazed in the period from *c.* 325 and into the second quarter of the 3rd century B.C. (see catalogue **B 7**).

Counting the complete vessels and moulded feet from kantharoi, there were no less than 31 black-glazed kantharoi in U6. However, the number was quite probably larger, considering that 88 numbers are included in the catalogue, and that great care has been taken to identify sherds that may come from the same vessel, although not adjoining.[5]

The kantharoi are found in all parts of U6 except for the north-western row of rooms, from where none are recorded.

B 23 is an unusual piece, a one-piece kantharos (the only one recorded from U6), with double-handles with comic masks as thumb rests (Pls. 70 and 76). Usually this decoration is used on strap handles, not double handles, which are normally connected with Herakles knots on top,[6] and with a high, turned foot, instead of the moulded foot of the common type

of kantharos. Examples very similar to Rotroff's nos. 107 and 109 have been found in the Hellenistic necropolis of Olbia.[7]

Repair holes are rarely recorded in the kantharoi from U6, in contrast to what is seen in bowls and plates. However, a moulded kantharos foot seems quite often to have been used secondarily as a spindle whorl (*e.g.* **B 67**, **B 31**, **B 83**, and **B 86**).

Among the few examples of other types of drinking vessels, the cup-skyphos **B 98** from the household sanctuary in *room 12*, bearing a dedication to Sabazios, should be particularly noticed (Pls. 63 and 71). Such cup-skyphoi are quite common on many sites in the western and northern Black Sea region, including Apollonia, Nikonion, and Olbia and its chora (see catalogue **B 98** for more detailed references). In Athens this type is tentatively dated by Sparkes and Talcott (1970) as gradually disappearing during the second quarter of the 4th century B.C. However, both at Miletos and on several sites in the Black Sea region, there are indications that the type continued at least until the middle of the 4th century, and quite probably to the very end of the century (see **B 98** for a discussion of this question).

Bowls (**B 102-144**)

Handleless bowls are one of the three main categories of shapes in the material. They occur in two clearly defined types: a bowl with out-turned rim and one with incurving rim (the echinus bowl).

The bowl with out-turned rim is by far the most common type in U6 (**B 102-120**; Pls. 64-65, 68, 72-73). This is in accordance with the pattern observed in Athens, where this type is much more popular than the echinus bowl (Rotroff 1997). This in itself might suggest that Athens was by far the richest source for black-glazed pottery in the northern Black Sea area, since in many other production centres in the Greek world, the echinus bowl is far more popular than the bowl with out-turned rim.

The bowl with out-turned rim is mainly found scattered in the courtyard of U6, with only one example found in one of the rooms (*room 26*). Only one specimen (**B 102**) has a stamped decoration inside the bowl, a trait characteristic of this type of bowl in Athens in the Classical period, but comparatively rare in the Hellenistic period.

The echinus bowls (**B 121-128**; Pls. 65, 72-73) are all recorded from the courtyard, with none found *in situ* in any of the rooms. Only one (**B 121**), belonging to the 'shallow bowl' variant, is decorated with stamped decoration and rouletting. The fragment **B 124** may belong to the variant with deep bowl, which became popular in Athens in the Hellenistic period (see Rotroff 1997, 162 f.)

Mould-made bowl (**B 144**)

Fragments of one mould-made bowl were found in the courtyard of U6 (Pl. 73). It belongs to the group of so-called 'Ionian' bowls, which are particularly common among finds in Delos and Ephesos, for example, and which were probably manufactured in a number of centres on the west coast of Asia Minor.[8] These bowls are also very common at sites in the Black Sea region (see Bouzek 1990) – in fact more common than the Athenian type of mould-made bowl. The production of mould-made bowls began in Athens *c.* 225 B.C., and spread from there to a large number of other centres. The chronology for the beginning of the bowls is very well established, which means that the fragment found in U6 is much later than the

supposed date of the destruction of the building. The fragment was found in Horizon IA (see Part I, Description) and must be interpreted as remains from a visit or stay at the site of the ruined building, possibly *c.* 100 years later. The question is if the fact that the fragment was found on the spot where the Herakles cult existed (*room 14* or just outside it) should be connected with a still-living memory, or even a continued cult on the site.

PLATES (**B 147-183**)

Plates are quite numerous in the material (Pls. 66, 73-74). They fall in two main groups: the plate with rolled rim and the fish-plate, of which the second seems to have been most popular. In Athens, the plate with rolled rim was the most common plate during the early Hellenistic period, but at many other sites the fish-plates seem to have been more popular. In the early Hellenistic period (Rotroff 1997, 143: until *c.* 200 B.C.), the Attic plate with rolled rim is decorated with a stamped decoration on the floor, often surrounded by rouletting, whereas rouletting alone is less common. Very few of the plates of this type from U6, which seems to be Attic, actually have a stamped decoration; most having only the rouletting. This might suggest that plates with only rouletting were more common for export, or perhaps that they were cheaper than those with stamped decoration.

The majority of the black-glazed fish-plates from U6 seem to be Attic, judging by clay and glaze. In contrast to the plate with rolled rim, this plate is also common in grey ware (see below).

Very few of the plates were found *in situ* in the rooms (**B 168** in *room 11*; **B 173** in *room 9*; **B 181** in *room 27*). In the courtyard a huge concentration were recorded in squares V-2 and G-2, probably from the collapse of the room above *room 5* where they were used for common meals (see Part I, Description of the Building).

JUGS AND CLOSED VESSELS (**B 184-203**)

Noticeable among the black-glazed pottery from U6 is the complete absence of amphorae and the overall scarcity of closed shapes which are almost exclusively represented by some jugs and a few lekythoi (Pls. 67, 74-75). The finest of the jugs, undoubtedly Attic, is the oinochoe **B 184**, a ribbed example with decoration in added clay on the neck. Unfortunately the mouth is not preserved, so it is impossible to determine whether it had a trefoil mouth or a straight neck. The smaller jugs all seem to have had a flaring mouth. All the well-preserved lekythoi (**B 193-203**), as well as some of the fragments, apparently came from the same workshop, with glaze, clay, and the shape of the mouth suggesting a non-Attic origin.

The small jug with ring handle represented by **B 187** have parallels from Macedonia and also from another northern Black Sea site, Elizavetovka, whereas no immediate parallel is recorded from the Athenian agora (Rotroff 1997).

Of the lekythoi (**B 193-203**) several come from the same workshop. The shape of the rim relates them to a few specimens found on the Athenian agora (see **B 193** for further details), where they are considered to probably be imports, though a local origin is not excluded. Only a single unguentarium is recorded among the black-glazed pottery (**B 203a**; Pl. 75), but more specimens in plain ware with encircling painted bands typical of Chersonesos are recorded among the common-ware (see **C 97-101**).

GREY WARE (**B 220-242**)

A distinctive group within the ceramic assemblage of U6 is a grey ware, usually covered with a greyish slip, and with clay containing an easily recognizable mineral composition. This grey ware is well known from many sites especially in the north-western part of the Black Sea area. Sometimes it is called Olbian, sometimes Histrian Ware after two of the sites where it has been found in quite large quantities. In fact, taking into consideration the large number of varieties among the shapes produced in this ware, it is quite possible that it was made in more than one place.[9] In any case, T.N. Knipovič's investigation[10] of this grey ware from Olbia, including chemical-technological analyses conducted by O.A. Kul'skaja[11] of both fragments of this ware and of clay beds found in the territory of Olbia, leave little room for doubt that this category of pottery was actually manufactured there.[12] This is corroborated by the discovery in the city of a potter's kiln with wasters of the same clay.[13] Specimens of this group produced in Olbia are characterized by clay varying in colour from grey to brownish or yellowish grey[14] with inclusions of calcite and quartz.[15] As shown by Kul'skaja, a so-called 'red-clay' pottery also considered a local Olbian product, was actually made from the same clay and differs from the grey ware only due to being fired under oxidizing conditions.[16] The tradition in Olbia of grey ware with a greyish black slip goes back to the Archaic period, and the ware continued to be produced in varying quantities until the first centuries A.D.[17] Part of this pottery was obviously made for export. Thus finds of various types of this ware (kantharoi, bowls, fish-plates, jugs, *etc.*) are quite often reported from the Hellenistic levels at Chersonesos[18] and Tyras.[19] The feeder (**B 239a**; Pl. 75) found in *room 13* is an unusual find in Hellenistic contexts, not only in the Black Sea region but also in Greece.[20]

The most common shape in our collection of grey ware is the fish-plate (Pls. 68-69 and 75). These are all very similar and obviously derive from the same workshop. The shape differs considerably from that of the Attic specimens. Instead of the overhanging rim, these plates have a plain rim or one thickened on the outside, with two encircling grooves inside the rim. A constant trait is a high ridge around the central depression on the floor.[21] The ring foot is sometimes very massive, showing a number of different profiles. The clay as a rule contains inclusions of calcite and quartz and varies in colour from pure grey to greyish yellow. The grey slip is dull and often very thin. In some cases the outside and the ring foot have not been covered with slip.

Fish-plates with a high ridge around the central depression are a characteristic feature of the regionally produced ceramic assemblages in the north-western Black Sea region. Among the earliest published examples is a specimen from a grave in the necropolis of Histria dated to the middle of the 5th century B.C.[22] In this plate, which has a rim unrelated to the overhanging rim of the Attic fish-plate, the ridge is much less pronounced, and much closer to specimens from the settlement of Nikolaevka on the Dniester Liman dated to the 4th century B.C.[23] Closest to our fish-plates, both in shape and as to the slip, is the rich material from Olbia.[24] Actually, the resemblance of some vessels is so striking as to leave little room for doubt of their being manufactured in the same workshop. Fish-plates are also the most common type of grey ware produced in Olbia. As Knipovič, who considered this grey ware exclusively as a local Olbian product, has pointed out, all the fish-plates were found in levels belonging to the second half of the 4th and the 3rd centuries B.C.[25] However, the production of this shape probably did not continue far into the 3rd century B.C.; it may have stopped by the middle, or perhaps even after the first third of the 3rd century B.C. This is indirectly corroborated by the fact that no fragments of grey ware fish-plates at all have been found among the large quantity of ceramics from the period *c.* 250-150 B.C. in the filling of the cistern excavated in 1948-49 in the Agora of Olbia.[26] Mention should also be made of a specimen from Vladimirovka, which offers a close parallel to vessels from U6, both in shape and date.[27]

CATALOGUE

Each shape is catalogued, beginning with completely preserved or best-preserved specimens, and proceeding towards fragments showing only part of a vessel of the shape in question. All surfaces of each item are glazed unless explicitly stated otherwise. When no specific date is given, the destruction of U6, *c.* 270 B.C. must serve as a *terminus ante quem.*

RED-FIGURE POTTERY

B 1. U6 room 9. Find list 3/21. 1971. Pls. 68 and 70.

Small fragment with distinct profile at the top, probably of a stemless cup. Of the decoration, the head and shoulders of a satyr are preserved. He is bald on top, and has a heavy black beard. Glaze of very good quality, black and lustrous. Reserved decoration reddish yellow (5 YR 6/8). Clay fine, reddish yellow (7.5 YR 7/6) with no discernible particles. Size of fragment: 2.3 × 2.2 cm.

Attic. Possibly by the Q-Painter.

Early 4th century B.C.

B 2. U6 courtyard, B-6. Find list 16/97. 1972. Pls. 68 and 70.

Rim fragment of late red-figure skyphos. Decoration on the outside with reserved uneven half-circle hanging from the rim (?). Glaze of good quality, black, lustrous. Clay fine, light brown (7.5 YR 6/4). H. 3.8 cm; W. 3.1 cm.

Attic.

Date: second half of the 4th century B.C.

B 3. U6 courtyard, E-5. 1973. Pl. 70.

Upper part of askos. Restored with plaster. In the centre a small black knob, and an egg-and-dart enclosed by two encircling mouldings. Decoration consists of two pairs of female heads, two of them with dotted sakkoi, the other two seem to wear Amazon head-dresses. Glazed (reddish) on the inside. Clay reddish yellow (7.5 YR 6/6). D. 13.5 cm.

Attic. Very close to the group of the Cambridge Askos (*ARV* 1505).

Date: *c.* 320 (-300) B.C.

BLACK-GLAZED WARE

KANTHAROI

B 4. U6 courtyard, B-3. 1971, 1973. Pl. 62.

Upper part of large kantharos with ribbed bowl. Neck decorated with olive garland in added clay. Glaze thick and black, in parts brownish black. Clay medium fine, reddish yellow (5YR 6/4) Preserved H. 11.0 cm; D. of rim 18.0 cm; D. of bowl 18.0 cm. For **B 4**-**5**, compare also a similar large heavy kantharos from U7 with dedication to Herakles Soter (Stolba 1989, 56 figs. 1-2).

B 5. U6 courtyard, B-3. 1971, 1973. Pl. 62.

Fragmentary kantharos (seven fragments from the bowl, of which five adjoin, and two from the foot) with Λ-shaped ornament under the handles (see **B 7**). Glaze brownish black, reserved resting surface. Clay medium fine, changing from light reddish brown (5 YR 6/4) to greyish brown (10 YR 5/2). Preserved H. 11.3 cm; D. of bowl 18.0 cm; D. of foot 8.2 cm.

Possibly Attic, judging by clay.

Date: 325-300 B.C. Compare Rotroff 1997, no. 6. See also a fragment from farmhouse 86 on the Herakleian Peninsula at Chersonesos (Saprykin 1994, pl. 42 described as imported pottery).

B 6. U6 courtyard. 1972. Pl. 62.

Fragmentary moulded foot of a large, heavy kantharos like **B 4**-**5**. Glaze very worn, peeled, rather poor quality, dull, greyish. Clay fine, reddish yellow (5 YR 6/6), with particles of limestone and mica. Preserved H. 4.5 cm; D. of foot 8.0 cm.

B 7. U6 courtyard, D-6. Find list 17/168. 1972. Pls. 62 and 70.

Kantharos with plain rim, spur handles, ribbed bowl and moulded foot (concave underside). Under the handles, the ribbing is replaced by two grooves, forming an Λ-shaped ornament (*Cf.* Pl. 76, **B 11**). Restored with plaster. Scraped groove between ribbing and foot, and between mouldings on the foot. Ivy garland on neck, running right in added clay. Glaze greyish black with sheen, reserved resting surface. Clay fine, brown (7.5 YR 5/4) with some white inclusions and a little mica. H. 11.8 cm; D. of rim 10.4 cm; W. 18.0 cm.

Probably Attic (though the colour of the clay is outside the range of colours of Attic clay of the Hellenistic period enumerated by Rotroff 1982, 14; Rotroff 1997, 10). For decoration under handles compare **B 5**, **B 11**, and **B 16**. Similar decoration under the handles is seen on kantharoi from Kallatis (Sauciuc-Săveanu 1924, 161 fig. 89), Histria (Coja 1961, 230 fig. 14, *10*), Olbia (Levi 1940, pl. XXI, *3*), and a specimen from grave 44 of the necropolis of Nikolaevka on the Dniester Liman (Meljukova 1975, 240 fig. 42, *8*; 242, fig. 44, *5*). Related handle ornaments (an X) are to be seen on kantharoi from Korinth (Edwards 1975, 78) dated from *c.* 325 into the second quarter of the 3rd century (a one-piece kantharos), and are also common on pieces from the Athenian agora (personal communication by Susan Rotroff). Compare also a specimen decorated with olive garland from Tomis (Stoian 1961, 235 fig. 1). See also a specimen from the Hellenistic necropolis at Olbia (Belin de Ballu pl. XLII).

Date: *c.* 320-310. Compare Rotroff 1997 no. 6.

B 8. U6 room 29. Find list 13/12. 1972. Pl. 70.

Small kantharos with plain rim, spur handles, ribbed bowl and moulded foot. One handle missing. Ribbing more

primitive than usual. Lambda-shaped decoration under the handle. Olive garland in added clay on neck, running right. Clay reddish yellow (Munsell 7.5 YR 6/6) Glaze of rather poor quality, greyish black and dull. H. 7.3 cm; D. of rim 5.8 cm; D. of body 5.9 cm; D. of foot 3.5 cm. The kantharos was found together with **B 24**. For ribbing, compare Brašinskij 1980, 244 pl. XXXVI, *10*, 246 pl. XXXVIII, *17* = Marčenko, Žitnikov and Kopylov 2000, Taf. 37, Abb. 66.10.

B 9. U6 room 13. Find list 8/38. 1971. Pls. 62 and 70.

Fragmentary kantharos with plain rim and ribbed body (two adjoining sherds from rim to lower bowl with lower part of one handle preserved). Olive garland in added clay on neck. Glaze fine, lustrous black. Clay fine, dark brown (7.5 YR 4/2) with mica. For olive garland compare, *e.g.*, kantharoi from the settlements of Majak and Chaika (Jacenko 1983, 203 fig. 7, *a-b*).

Possibly Attic (though the colour of the clay is outside the range of colours of Attic clay of the Hellenistic period enumerated by Rotroff 1982, 14; Rotroff 1997, 10).

Date: *c.* 320-310 B.C. Compare **B 7**.

B 10. U6 room 12. Find list 6/34. 1971. + E-2, B-1. 1970.

Upper part of kantharos with plain rim, spur handles, and ribbed bowl (fragments (some adjoining) from rim, neck, bowl and spur handle preserved). Glaze rather thick, greyish brownish and mostly dull. Clay fine, light brown (7.5 YR 6/4), with a few inclusions of limestone and tiny dark brown particles. Olive garland in added clay running right on neck. Estimated D. of rim *c.* 6 cm.

Probably Attic.

Date: *c.* 320-310 B.C., compare **B 7**.

B 11. U6 well, no. 203. 1977 + courtyard, G-2 + courtyard, E-3. Pls. 62, 70 and 76.

Fragmentary kantharos with plain rim and ribbed bowl. The ribbing is replaced by a Λ-shaped decoration under the handles. Glaze dark greyish and rather dull, badly preserved. Clay fine, pink (7.5 YR 7/4), with no visible particles. D. of rim: 8 cm; size of fragment: 7.0 × 7.5 cm.

The decoration under the handles relates it to **B 5**, **B 7**, and **B 16**.

Date: very similar to **B 7**, *i.e. c.* 320-310 B.C.

B 12. U6 courtyard, G-3. Find list 17. 1973.

Fragments (two with joint) from neck and bowl (ribbed) of a small kantharos. Glaze of poor quality, completely worn off on the ribs. Clay fine, light yellowish brown (10 YR 6/4), with mica and inclusions of dark brown particles, rather similar to **B 46**. D. of rim 6.0 cm.

B 13. U6 courtyard, V-6. 1972.

Lower part of ribbed bowl of kantharos. Glaze very worn, of poor quality, uneven and brownish. Clay fine, light brown (7.5 YR 6/4), with small limestone inclusions and tiny mica particles. Size of fragment: 3.2 × 5.6 cm.

B 14. U6 courtyard, D-3. 1973.

Fragment of lower part of ribbed bowl of kantharos. Glaze thick and shiny, partly with metallic sheen, duller on the inside. Clay medium fine, reddish yellow (7.5 YR 6/6), with particles of limestone and some mica. Size of fragment: 3.5 × 5.4 cm.

B 15. U6 courtyard, G-3, V-4. 1971, 1973.

Two fragments (with joint) from ribbed bowl and transition to neck of kantharos. Glaze worn on outside, dull, brownish, particularly on the inside. Clay fine, reddish yellow (5 YR 6/6), with some mica and small dark brown particles. Size of fragment: 3.8 × 5.1 cm.

B 16. U6 courtyard, B-4. 1973.

Fragment of lower part of ribbed bowl of kantharos. Under the handle, part of Λ–shaped decoration. Glaze of medium quality, even and black, but rather dull. Clay fine, reddish brown (5 YR 5/4), with tiny particles of mica. Size of fragment: 3.8 × 3.1 cm.

For decoration under handle, compare **B 5**, **B 7**, and **B 11**.

B 17. U6 courtyard, E-3. 1974 + courtyard, B-6. Find list 16/154. 1972.

Two fragments from rim, neck and ribbed bowl of kantharos. Glaze dull, black on the outside, on the inside mostly brownish red. Clay fine, reddish yellow (7.5 YR 6/6-7/8), with mica and particles of limestone. Size of fragments: a) 2.0 × 3.0 cm; b) 4.2 × 5.2 cm.

B 18. U6 room 12. Find list 6/34. 1971 + courtyard, B-4. 1972. Pl. 62.

Five fragments of ribbed bowl with transition to neck of kantharos. Ornamented under handle with two vertical grooves. Glaze thick, dull and brownish. Clay fine, light brown (7.5 YR 6/4), with some mica and limestone inclusions. Size of fragments: a) 5.5 × 4.2 cm; b) 3.1 × 3.0 cm; c) 2.2 × 2.4 cm; d) 2.5 × 2.1 cm; e) 2.2 × 3.0 cm.

B 19. U6 courtyard, D-6. Find list 17/95a. 1976.

Fragment of ribbed bowl of kantharos. Glaze brownish black, dull. Clay fine, reddish yellow (7.5 YR 6/6). Size of fragment: 2.8 × 2.5 cm.

B 20. U6 courtyard, G-5, B-4. 1973, 1974.

Four bowl fragments (three adjoining) of kantharos with ribbed bowl. The ribbing is in unusually low relief. Scraped groove between bowl and foot. Glaze of rather poor quality, greyish and dull. Clay fine, reddish yellow (7.5 YR 7/6), with mica.

B 21. U6 courtyard, D-6, E-6. Find list 17/87. 1972. Pls. 63 and 71.

Fragment of kantharos (moulded foot and bottom of bowl with ribbing preserved). Glaze thick, black, and dull, reserved resting surface. Clay medium fine, reddish yellow (5 YR 6/6), with inclusions of limestone and tiny particles of mica. Preserved H. 3.8 cm; D. of foot 5.3 cm. Graffito **H 22** under foot.

Date: The reserved resting surface suggests a date not later than *c.* 300 B.C., or at the very beginning of the 3rd century B.C.

B 22. U6 room 15. Find list 9/32. 1971.

Two adjoining fragments of moulded kantharos foot with part of ribbed bowl. Glaze thick and brown with some sheen. Clay fine, light reddish brown (5 YR 6/4), with some mica and dark brown inclusions. Preserved H. 3.4 cm.

B 23. U6 courtyard, D-3, D-5. 1974. Pls. 62, 70 and 76.

Fragmentary kantharos with ribbed bowl (foot and lower part of bowl missing). Soft transition between the upper, concave, and the lower, convex, part of the body, related to the Korinthian one-piece kantharos. Handles are double, with comic mask thumb rests. Encircling incision between neck and bowl. On the neck, olive garland in applied clay. Glaze of rather poor quality, brownish grey to brownish black, partly worn on handles and neck; uneven on neck and inside, with some metallic sheen on the inside. Fine, brown clay (10 YR 5/3). Preserved H. 8.0 cm; D. of rim 9.5 cm.

For parallels see Rotroff 1997, nos. 107 and 109, though here the comic masks are used on strap handles, not on double handles, and the body shape is different. The Athenian examples and two very similar ones from the Hellenistic necropolis at Olbia (Bouzek 1990, fig. 15, *1-2*), have the 'classical' kantharos shape and a high turned foot, of a type not recorded from U6. This kantharos probably had a moulded foot.

B 24. U6 room 29. Find list 13/11. 1972. Pls. 63 and 70.

Kantharos with plain rim, plain body, and moulded foot (concave underside with nipple). Upper part of handles missing. Glaze medium fine, black, shiny. Scraped groove between mouldings on foot. Clay fine, reddish brown (5 YR 5/4), with small dark particles and a little mica. H. 10.3 cm; D. of rim 7.8 cm. Inside the bowl a nail-shaft, **K 39** in incrustations.

Clay suggests non-Attic origin. For parallels see kantharoi from excavations in Tyras (Nicorescu 1933, 583 fig. 71), Chersonesos (Belov and Jakobson 1953, 115 fig. 6, *v*), a kantharos from Chaika (Karasev 1965, 137 fig. 48, *3*), specimens from the necropolis of Elizavetovka (Brašinskij 1980, 134 no. 203, 224 pl. XVI, *203* and 244 pl. XXXVI, *8* = Marčenko, Žitnikov and Kopylov 2000, Abb. 88. 9 and 66.8), and a fragmentary kantharos from Myrmekion (Sztetyłło 1976, 82 fig. 74).

Date close to **B 7**.

B 25. U6 courtyard, B-6. Find list 16/101. 1972. Pls. 63 and 70.

Two adjoining fragments of upper part of kantharos with spur handle. Plain bowl. Glaze of poor quality, greyish and dull, some sheen in a few spots. Clay medium fine, light yellowish brown (10YR 6/4), with tiny limestone inclusions. Preserved H. 5.7 cm; D. of rim 6.8 cm.

B 26. U6 courtyard, B-2. Find list 8/17-20. 1975. Pl. 63.

Fragment of moulded foot and part of plain bowl of rather large, heavy kantharos. Glaze dull, greyish black on the outside; red (10 R 5/6) inside the bowl and inside foot. Fine, reddish yellow clay (5 YR 6/8), with a little mica. Preserved H. 5.3 cm; D. of foot 5 cm.

B 27. U6 well, no. 197. 1977. Pl. 63.

Fragment of plain bowl of kantharos. Glaze dull. Clay fine, reddish yellow (5 YR 6/6) core, greyish surface with tiny particles of mica and brown inclusions. Size of fragment: 4.7 × 6.8 cm.

B 28. U6 room 12. Find list 6/35. 1971.

Bowl (plain) of kantharos. Relatively thick ware. Glaze brownish black with some sheen, duller on inside. Scraped groove around transition to (missing) foot. Clay fine, light reddish brown (5 YR 6/4) with tiny inclusions of mica. D. of bowl *c.* 8.5 cm.

Attic.

B 29. U6 room 33. Find list 4/5. 1973.

Handle and part of plain bowl with transition to neck of kantharos. Glaze of very poor quality, grey, and more like a slip. Inside unglazed. Clay medium fine, grey (10 YR 6/1), with inclusions of limestone, dark brown and black particles. Size of fragment: 6.8 × 5.4 cm.

Non-Attic.

B 30. U6 courtyard. 1974.

Fragment with part of neck, plain bowl, and handle of kantharos. Glaze mostly dark greyish-brownish, with some sheen. Clay fine, light reddish brown (5 YR 6/4), with mica. Size of fragment: 2.5 × 5.0 cm.

B 31. U6 room 13. Find list 8/39. 1971 + D-5. 1974 + B-4. 1973. Pls. 63 and 71.

Fragments of kantharos with plain bowl (foot and five adjoining bowl fragments preserved). Three encircling incisions inside the foot. Glaze fine, black to brownish, shiny. Clay fine, light brown (7.5 YR 6/4) to reddish yellow (5 YR 7/8), with tiny inclusions of limestone and mica. D. of foot 4.4 cm. Pierced for secondary use as spindle whorl (see **M 5**).

Date: *c.* 300-290 B.C. (?)

B 32. U6 courtyard, E-4. 1973.

Fragment from neck and upper part of bowl (plain) of kantharos. Glaze of poor quality, dull, on the inside mostly red and light brown, on the outside dark grey to dark brown. Clay fine, reddish yellow (5 YR 7/8), with some mica. Size of fragment: 3.1 × 4.2 cm.

B 33. U6 room 8. Find list 2/20. 1971.

Fragment of bowl and lower part of handle of kantharos. Glaze black, lustrous, brownish inside. Clay fine, reddish yellow (5 YR 6/6), with mica and tiny particles of limestone. W. of handle 1.2 cm.

B 34. U6 courtyard, D-5. 1974.

Spur handle, neck, and upper part of bowl (plain) of kantharos. Glaze very dull, mostly dark grey. Clay medium fine, brownish yellow to yellowish brown (10 YR 6/6 – 5/6), with small particles of limestone (?). Size of fragment: 6.5 × 5.3 cm.

B 35. U6 courtyard. 1973, 1975 + room 8. Find list 2/21. 1971.

Three neck-bowl fragments (not adjoining) of kantharos with plain bowl. Glaze dull, greyish black. Scraped groove between neck and bowl. Clay fine, reddish yellow (5 YR 7/6). Size of fragments: a) 2.5 × 3.6 cm; b) 3.0 × 2.6 cm; c) 4.8 × 5.6 cm.

B 36. U6 courtyard, V-4. Find list 1/9. 1973.

Fragment of lower part of plain bowl of kantharos. Glaze

rather thick and dull. Clay fine, reddish yellow (5 YR 7/6) with dark brown inclusions and tiny particles of mica. Size of fragment: 3.3 × 1.2 cm.

B 37. U6 courtyard, D-6. Find list 17/94. 1972.

Fragment of plain bowl and transition to neck of large kantharos. Glaze brownish, worn, with some sheen inside. Clay fine, reddish yellow (7.5 YR 6/6) with mica. Size of fragment: 7.0 × 8.2 cm.

Possibly Attic.

B 38. U6 courtyard, Zh-3. 1973.

Three adjoining fragments of plain bowl with transition to neck of fairly large, thick-walled kantharos. Glaze of rather good quality, even and almost black. Clay fine, reddish yellow (7.5 YR 6/6) with a little mica. Size. 8.2 × 9.4 cm. Three repair holes preserved.

Probably Attic.

B 39. U6 courtyard, B-2. 1971 + courtyard, V-2, G-2. 1971.

Fragments from rim, neck, and plain bowl of small kantharos. Handle attachment preserved. Glaze of rather good quality, thick and black, with some sheen. Clay fine, grey (10 YR 5/1), with mica.

B 40. U6 courtyard, B-6. Find list 16/159. 1972. + courtyard, B-6. 1971.

Two fragments from spur handle, neck, and plain bowl of kantharos. Glazed only on the outside; the inside covered with a slip of the same colour as the clay. Glaze uneven, greyish brownish, dull. Clay fine, reddish yellow (5 YR 6/6), with a few limestone particles, reddish brown inclusions and mica. Size of fragments: a) 3.8 × 5.0 cm, b) 2.5 × 3.2 cm.

B 41. U6 courtyard, D-5. 1974.

Plain bowl of kantharos with transition to neck. Scraped groove between neck and bowl. Glaze rather thick and dull, greyish black. Clay fine, reddish yellow (7.5 YR 6/6), with tiny particles of mica. Size of fragment: 2.4 × 3.8 cm.

B 42. U6 courtyard, V-4. 1973. Pls. 63 and 71.

Fragmentary kantharos. Rim and neck (*c.* 180°) with one upper handle attachment preserved. The handle attachment is considerably distanced from the rim. On neck, ivy garland in applied clay, running right. Glaze brownish black, of rather fine quality, thick and with some sheen. Clay fine, brownish yellow (10 YR 6/6). Preserved H. 6.7 cm; D. of rim 9.0 cm.

For the shape, compare Rotroff 1997, no. 109; Latyševa 1978, 57 fig. 4, *1*; Egorova 2000, 140 fig. 2, *5*.

Possibly Attic.

B 43. U6 room 13. Find list 8/41. 1971.

Two fragments from rim and transition from neck to bowl of kantharos. Glaze fine, black, brownish inside, with some partly metallic sheen, especially on the inside. Clay medium fine, reddish yellow (5 YR 6/6). Size of fragments: a) 3.8 × 2.8 cm; b) 2.4 × 1.9 cm.

B 44. U6 room 12. Find list 6/63. 1971.

Three rim fragments (two adjoining) of kantharos of unusually thin ware. Glaze fine, black, with some sheen. Clay medium fine, greyish brown (10 YR 5/2), with inclusions of limestone particles. Size of fragment: 2.4 × 1.9 cm.

B 45. U6 courtyard, B-6. Find list 16/102. 1972.

Two adjoining fragments of kantharos rim. Glaze with metallic sheen, in parts greenish. Clay fine, light brown (7.5 YR 6/4), with tiny particles of limestone. Preserved H. 4.0 cm; D. of rim 8.0 cm.

B 46. U6 courtyard, V-4. Find list 1. 1973.

Two (adjoining) rim fragments of kantharos. Glaze of medium quality, black, dull. Clay light yellowish brown (10 YR 6/4), with small dark brown particles. Size: 4.2 × 7.2 cm. D. of rim 8.0 cm.

B 47. U6 courtyard, B-4. 1973.

Neck fragment of kantharos. Glaze of rather poor quality, uneven, brownish. Clay fine, reddish yellow (7.5 YR 6/6). D. of rim 8.0 cm; 4.0 × 2.5 cm.

B 48. U6 courtyard, V-4. 1973.

Neck fragment of kantharos with traces of an olive garland in added clay. Glaze black, of rather good quality. Clay fine, reddish yellow (7.5 YR 7/6), with tiny particles of mica. Size of fragment: 2.8 × 4.3 cm.

Probably Attic.

B 49. U6 courtyard, E-4. 1973.

Rim fragment of kantharos, decorated with an olive garland in added clay. Glaze brownish on the inside. Clay fine, light reddish brown (5 YR 6/4), with mica. Size of fragment: 1.6 × 2.1 cm.

Attic.

B 50. U6 courtyard, E-3, E-4 + courtyard, Zh-3. 1973.

Three rim fragments of kantharos. Glaze of rather poor quality, on the outside uneven, partly misfired to brown. Clay fine, pale brown (10 YR 6/3) to light brown (7.5 YR 6/4), with mica. Size of fragments: a) 2.8 × 3.4 cm; b) 3.8 × 3.7 cm; c) 2.8 × 3.9 cm. Repair holes preserved.

B 51. U6 courtyard, V-6. 1973.

Fragment of neck of kantharos with traces of decoration in added clay. Glaze of medium quality, black, even, with some sheen on the outside. Clay fine, reddish yellow (5 YR 6/6), with limestone particles. Size of fragment: 3.0 × 1.6 cm.

B 52. U6 courtyard. 1971, 1973.

Fragment of spur handle of kantharos. Glaze black, lustrous. Clay fine, reddish yellow (5 YR 6/6), with a little mica. Size of fragment: 6.5 × 6.2 cm.

Attic.

B 53. U6 room 13. Find list 8/40. 1971.

Fragment of lower part of handle of kantharos. Glaze black, with some sheen. Clay medium fine, light reddish brown (5 YR 6/4), with mica. W. of handle 1.4 cm.

Probably Attic.

B 54. U6 room 8. Find list 2/20. 1971.

Fragment of spur handle of kantharos. Glaze changing from

black to reddish brown, with some sheen. Clay fine, reddish yellow (7.5 YR 7/6). Size of fragment: 3.3 × 1.9 cm.
Attic.

B *55*. U6 room 11. Find list 5/11. 1971.
Fragment of handle with attachments to bowl and neck of kantharos. Glaze greyish black, inside not completely covered with glaze (not intentional). Clay fine, light brown (7.5 YR 6/4), with tiny limestone particles and mica. Preserved H. 1.9 cm; W. of handle 1.4 cm.

B *56*. U6 well, no. 199. 1977. Pls. 63 and 71.
Spur handle from kantharos, with small part of upper part of bowl (two adjoining fragments). Glaze of medium quality, rather uneven and dull, greyish, in parts brownish. Clay reddish yellow (7.5 YR 6/6), with small particles of limestone, dark brown particles, and mica. Size of fragment: 5.0 × 5.6 cm.

B *57*. U6 courtyard, B-6. 1971.
Spur handle of kantharos. Glaze of medium quality, greyish black, rather uneven, but in parts lustrous. Clay medium fine, reddish yellow (5 YR 7/6), with inclusions of mica and yellowish brown particles. Size of fragment: 2.5 × 4.8 cm.

B *58*. U6 courtyard, V-3. 1971.
Upper part of spur handle of kantharos. Glaze black, lustrous. Clay fine, reddish yellow (5 YR 6/6), with tiny particles of mica. Size of fragment: 4.1 × 5.0 cm.
Probably Attic.

B *59*. U6 courtyard. 1975.
Upper part of spur handle, with attachment, of kantharos. Glaze uneven, changing from greyish black to brown, dull. Clay fine, reddish yellow (5 YR 6/6), in section brown (10 YR 5/3). Size of fragment: 3.5 × 4.2 cm. Two repair holes.

B 60. U6 courtyard, B-6. Find list 16/103. 1972 + courtyard, E-3. 1974.
Spur handles of kantharos with attachments preserved (two fragments). Glaze of medium quality, dull. Clay fine, reddish yellow (5 YR 6/6), with mica and brown particles. Size of fragments: a) 4.5 × 3.2 × 1.8 cm; b) 3.2 × 2.5 cm.

B 61. U6 courtyard, V-4. Find list 1/14. 1973.
Part of spur handle of kantharos. Glaze of poor quality, greyish, dull. Clay fine, light yellowish brown (10 YR 6/4), with few dark particles and very little mica. Size of fragment: 3.2 × 2.3 cm.

B 62. U6 courtyard, E-4. 1974.
Part of spur handle of kantharos. Glaze greyish, dull. Clay fine, reddish yellow (5 YR 6/6), with abundant mica. Size of fragment: 2.6 × 2.5 cm.

B 63. U6 courtyard, D-5. 1974.
Small fragment of upper part of kantharos handle. Glaze rather thick, black, with some sheen. Clay fine, reddish yellow (7.5 YR 7/6), with some mica. Graffito **H 16**.

B 64. U6 courtyard, E-3. 1974.
Spur handle of kantharos. Glaze of very poor quality, uneven, greyish brownish. Clay fine, reddish yellow (7.5 YR 6/6), with mica. Size of fragment: 4.0 × 4.5 cm.

B *65*. U6 courtyard, V-4. 1973. Pl. 76.
Moulded mask of young man from thumb rest from kantharos, *cf.* **B 23**. Glaze dull, black, even. Clay fine, reddish yellow (5 YR 6/6). Size of fragment: 2.0 × 2.1 cm.

B 66. U6 room 12. Find list 6/35. 1971.
Moulded kantharos foot. An incised, encircling line on the inside of the foot. Glaze lustrous and metallic. (Vitrified during destruction fire)? Clay very fine, light reddish brown (5 YR 6/4), with no visible mica or particles. Preserved H. 2.8 cm; D. of foot 4.0 cm.
Attic.

B 67. U6 room 22. Find list 6/10. 1972. Pls. 63 and 71.
Moulded kantharos foot. Glaze thick, greyish black, dull. Clay fine, reddish yellow (7.5 YR 6/6), with inclusions of mica and limestone particles. Preserved H. 2.4 cm; D. of foot 4.0 cm. Graffito **H 24** beneath. Pierced for secondary use as spindle whorl (see **M 6**).
Date: very similar to **B 7**, *i.e. c.* 320-310 B.C.

B 68. U6 room 35. Find list 6/1. 1973. Pl. 71.
Moulded foot of kantharos. Two incised lines encircling the inside of the foot. Glaze brownish. Clay medium fine, light red (2.5 YR 6/6), with black particles and a little mica. Preserved H. 2.1 cm; D. of foot 3.9 cm.
Not Attic, judging by clay and glaze. Compare **B 69**-**70**.

B 69. U6 courtyard, V-4. 1973.
Moulded foot and part of bowl of kantharos. Glaze black, of good quality and lustrous. Clay medium fine, yellowish red (5 YR 5/8), similar to **B 68** and **B 70** in composition. Preserved H. 4.6 cm; D. of foot 5.0 cm.

B 70. U6 room 13. Find list 8/40. 1971.
Moulded foot of kantharos. Lower part of foot warped during drying. Glaze brownish black, reddish brown inside the foot, probably not intentional. Clay medium fine, reddish brown (5 YR 5/4), similar to **B 68** and **B 69** in composition. Preserved H. 3.7 cm; D. of foot 4.2 cm.

B 71. U6 courtyard, V-4. Find list 1/9. 1973.
Two adjoining fragments of moulded kantharos foot. Glazed, probably also on resting surface, which is very worn. Glaze dull, greyish black. Clay medium fine, reddish yellow (7.5 YR 6/6), with dark brown inclusions and a little mica. Preserved H. 2.4 cm; D. of foot 4.1 cm. Graffito **H 40** inside the foot.

B 72. U6 courtyard, B-2. 1970.
Moulded foot of kantharos. One incised line encircling the inside of the foot. Clay fine, pinkish grey (7.5 YR 6/2), with mica. Preserved H. 1.9 cm; D. of foot 3.6 cm.

B 73. U6 courtyard, B-4. Find list 1/9. 1973.
Fragmentary moulded kantharos foot. Clay fine, red (2.5 YR 5/6), with mica. Preserved H. 1.9 cm; D. of foot 4.0 cm.
Attic (?).

B 74. U6 well, no. 197. 1977. Pl. 63.

Moulded kantharos foot. Glaze rather thick, dull. Clay medium fine, yellowish red (5 YR 5/6), with some mica and dark brown inclusions. Preserved H. 2.4 cm; D. of foot 4.0 cm.

Date: compare **B 76**.

B 75. U6 well, no. 201. 1977. Pl. 63.

Three adjoining fragments of moulded kantharos foot. Glaze thick, dark brown, with some sheen. Clay fine, brownish red (5 YR 7/6), with a little mica and dark brown inclusions. Preserved H. 2.3 cm; D. of foot 4.5 cm. Graffito **H 10** inside foot.

B 76. U6 well, no. 200. 1977. Pl. 63.

Fragmentary moulded kantharos foot. Glaze fine, lustrous, brownish black, groove in resting surface unglazed. Clay fine, reddish yellow (7.5 YR 7/6), with a little mica. Preserved H. 2.3 cm; estimated D. of foot 4 cm.

Attic.

Date: the grooved resting surface suggests a date not later then the beginning of the 3rd century B.C.

B 77. U6 courtyard.

Fragment of a moulded kantharos foot. Glaze shiny, in parts brownish, especially on the inside. Clay fine, light red (5 YR 7/8), with mica and some limestone inclusions. Preserved H. 2.1 cm; estimated D. of foot 5 cm.

B 78. U6 courtyard. 1975.

Moulded kantharos foot. Glaze of rather good quality, even, with some sheen; resting surface unglazed. Clay fine, reddish yellow (5 YR 7/8), with some mica. Preserved H. 3.0 cm; D. of foot 4.5 cm.

Probably Attic.

B 79. U6 courtyard, D-5. 1974.

Moulded kantharos foot. Glaze worn and dull. Clay fine, reddish yellow (7.5 YR 6/6), with tiny particles of mica. Preserved H. 2.7 cm; D. of foot 4.0 cm.

Possibly Attic.

B 80. U6 courtyard, D-5. 1974.

Moulded kantharos foot. Clay fine, reddish yellow (5 YR 6/6), with tiny particles of mica. Preserved H. 2.0 cm; D. of foot 4.0 cm.

B 81. U6 courtyard, V-3. 1971.

Fragmentary moulded kantharos foot with small part of the bowl. Resting surface not preserved. Glaze black to reddish on the outside, dull black inside bowl. Reddish glaze inside foot (2.5 YR 6/8 light red). Clay fine, light red (2.5 YR 6/8), with tiny limestone inclusions and mica. Preserved H 2.3 cm.

B 82. U6 courtyard, V-4. 1973.

Moulded kantharos foot. Scraped groove between upper and lower moulding. Unusual profile with a reserved encircling line inside foot. Glaze black, without sheen. Clay fine, reddish yellow (7.5 YR 6/6), with mica. Preserved H. 1.6 cm; D of foot 4.0 cm.

B 83. U6 courtyard, B-6. 1971.

Moulded kantharos foot. Glaze dark brown, dull. Clay medium fine, reddish yellow (5 YR 6/6), with tiny limestone inclusions and mica. Preserved H. 2.7 cm; D. of foot 4.0 cm. Pierced by a large hole for secondary use as spindle whorl (see **M 8**).

B 84. U6 courtyard, Zh-3. 1973.

Small foot of a kantharos with no mouldings. Glaze dark brown, dull. Clay fine, reddish yellow (7.5 YR 6/6), with mica. Preserved H. 1.4 cm; D. of foot 3.3 cm.

B 85. U6 courtyard. 1975.

Moulded kantharos foot. Glaze fine, black, with some sheen. Clay fine, reddish yellow (7.5 YR 6/6), with mica. H. 2.7 cm; D. of foot 4.8 cm.

B 86. U6 courtyard, B-6. Find list 16/105. 1972.

Fragment of moulded kantharos foot. Glaze black, with some sheen. Clay fine, pinkish grey (7.5 YR 6/2), with a little mica. H. 2.4 cm; D. of foot 4.0 cm. Hole from secondary use as spindle whorl (see **M 7**).

B 87. U6 room 24. Find list 8/15. 1972.

Fragment of moulded kantharos foot. Glaze greyish black, rather thick, dull. Clay medium fine, grey (5 YR 5/1). Preserved H. 2.3 cm; D. of foot *c.* 4.0 cm.

Cups

B 88. U6 courtyard, E-3, Zh-3. 1975. Pls. 63 and 71.

Four fragments of rim and neck of cup-kantharos. Projecting external flange below rim. Glaze thick, black, with some sheen. Clay fine, reddish yellow. D. of rim 11.0 cm; 140° preserved.

Date: early 3rd century B.C. Compare Rotroff 1997, no. 89, which she has tentatively dated to the second quarter of the 3rd century B.C. If this is the case, **B 88** must be among the latest pieces of imported pottery recorded from U6 (apart from the mould-made bowl **B 144**). However, Rotroff's argumentation rests more on the shape of the complete cup, not the rim in particular, and this may distort the comparison.

B 89. U6 room 12. Find list 6/33. 1971.

Fragmentary cup-kantharos. Six fragments, of which two adjoin, from handles and transition from neck to plain bowl. Glaze black, rather thick, with some sheen on the outside, inside duller. One handle perhaps not glazed on the inside. Clay medium fine, changing from pinkish grey (7,5 YR 6/2), to greyish brown (10 YR 5/2) with dark brown inclusions, limestone particles, and some mica.

B 90. U6 room 24. Find list 8/15. 1972.

Fragment of a ribbed bowl of a cup-kantharos with Λ-shaped decoration under handle. Glaze of medium quality, black, but rather dull. Two rows of rouletting at the centre of the bowl. Scraped groove between bowl and foot. Clay medium fine, light brown (7.5YR 6/4), with tiny dark brown particles and mica. Size of fragment: 3.1 × 5.7 cm. For the ornament under the handle, compare the kantharoi **B 7**, **B 11**, and **B 17**.

B 91. U6 courtyard, E-6. 1972.

Fragment of the lower part of ribbed bowl, probably of a cup-kantharos. Two rows of rouletting on the inside. Glaze greyish, rather thick, with some sheen. Clay fine, light brownish grey (10 YR 6/2), with mica. Size of fragment: 3.4 × 4.6 cm. Compare a specimen from the necropolis at Apollonia, classified as Attic (Ivanov 1963, 186 f. type IX no. 434 and pl. 102), and dated to the middle or third quarter of the 4th century B.C.

B 92. U6 courtyard, V-4. 1973.

Fragment with handle attachment, probably of cup or cup-kantharos. Glazed outside, inside surface not preserved. Glaze thick, even, with some sheen. Clay fine, pink (7.5 YR 7/4), with mica. Size of fragment: 2.7 × 3.5 cm.

B 93. U6 courtyard. 1971.

Fragment from neck and plain bowl of kantharos or cup-kantharos. Parallel encircling grooves on the outside. Glaze of medium quality, uneven and rather brownish, especially on the inside. Clay reddish yellow (5 YR 6/6), with inclusions of limestone (possibly Chersonesean). Size of fragment: 2.4 × 3.6 cm.

B 94. U6 room 15. Find list 9/30. 1971. Pl. 63.

Foot-lower bowl fragment of bowl-kantharos with rouletting on the floor. Unglazed groove on outside of foot. Glaze of good quality, black, shiny. Clay fine, reddish yellow (5 YR 7/6).

Attic.

Date: probably late 4th century or *c.* 300 B.C. For rouletting on floor, compare Rotroff 1997, no. 127.

B 95. U6 courtyard. 1975. Pl. 65.

Rim fragment of very thin-walled bowl-kantharos. Glaze of good quality, even and lustrous. Clay fine, reddish yellow (5 YR 7/6), with no apparent inclusions. Estimated D. of rim 14 cm; size of fragment: 1.6 × 2.8 cm.

Attic. Compare Rotroff 1997 nos. 130-131.

Date: around 300 B.C. or just before.

B 96. U6 well, no. 104. 1977.

Small handle from a cup. Glaze fine, black, lustrous. Clay fine, light red (2.5 YR 6/6). Preserved L. 2.5 cm; D. 0.5 cm.

Attic.

B 97. U6 courtyard.

Fragment with handle attachment of open shape, probably a cup. Glaze greyish black, rather thick, dull. Clay fine, reddish yellow (5 YR 7/6), with tiny limestone inclusions. Size of fragment: 3.2 × 2.2 cm.

B 98. U6 room 12. Find list 6/29. 1971. Pls. 63 and 71.

Cup-skyphos. Missing foot restored with plaster. The rim is offset on the inside and out-turned. Handles elegantly curved and turned inwards at the top. Glaze black and thick, with some sheen. Clay fine, light reddish brown (5 YR 6/4), with some mica (?). Preserved H. 7.9 cm; D. of rim 15.8 cm. Graffito **H 2** on the front.

Probably Attic. The shape belongs to Sparkes and Talcott's category of thin-walled cup-skyphoi and is close to Sparkes and Talcott 1970, no. 608 dated to *c.* 380 B.C. This date is not argued, and in fact the cup derives from a filling of a cistern (D15.3) which is considered a single deposit of ceramics from the second and third quarters of the 4th century B.C. Pfrommer (1985, 66 Abb. 24) notes of a very similar specimen from Heroon III in Miletos that it was found with pieces that are definitely later than 380 B.C. He suggests that this type had a different chronology in Miletos, and proposes a date *c.* 375-350 B.C. for this piece. A cup-skyphos which is rather different, and probably a later (or local) development, was found in a grave in the North Cemetery of Korinth, together with a Korinthian obol possibly to be dated 338-315 B.C. (*Corinth* XIII, 281). The fact that the shape is not attested among the Hellenistic pottery from the Athenian Agora strongly suggests that, at least in Athens, it was not produced after *c.* 330 B.C. In fact, Sparkes and Talcott argue that the lack of this type at Olynthos suggests that, as early as the second quarter of the 4th century B.C., it was produced only in small quantities. Thus, unless produced in a centre where this type continued in production after it had stopped in Athens, this item must be considered an heirloom at the time of foundation of U6. If this is the case, it could be explained by its being a votive to a god.

The necropolis at Panskoye grave M1 in Kurgan 44 revealed a very similar cup-skyphos, though with the offset on the inside placed lower down the side (see Monachov and Rogov 1990b, 142, pl. 5, *6*8). In this grave two Herakleian amphorae were also found, with stamps of the late phases of groups 2 and 3 datable to the second and third quarter of the 4th century B.C. (Monachov and Rogov 1990a, 133, fig. 2, *10, 14*, 148 f., nos. 10 and 14; Monachov and Rogov 1990b, 142, pl. 5, *9* and *13*. Stamps: a) Λύκων / Κερκῖνος and b) ἐπὶ Σατύρο / Βλάσθο. For the date, see Brašinskij 1980, 39), a heavy-walled cup-kotyle similar to Sparkes and Talcott 1970 nos. 622-623, fragments of a very late Attic red-figure skyphos (see Rogov and Tunkina 1998, 168, fig. 4, *12-13*) and two lekythoi. Finds of three (with reference to a fourth) thin-walled cup-skyphoi very similar to our specimen, and with rouletting on the floor, are recorded from the necropolis of Apollonia (Ivanov 1963, 184 Type VII; 178 pl. 73, *428*), all dated to the middle of the 4th century B.C. and considered Attic imports. In Nikonion the type has been found in layers identified as 'the Classical period' (Ruban 1978, 72, note 24). Two examples of such cup-skyphoi from the Hellenistic necropolis at Olbia are published by Bouzek (1990, fig. 13, *1-2*). See also Kozub (1974, 46, fig. 6-7) and Parovič-Pešikan (1974, 69: Type 1 (similar to **B 98**)). According to Parovič-Pešikan, the earliest type of cup-skyphoi to be found in the graves at Olbia is a deep vessel on a low profiled foot (1974, fig. 68, *1-2*) with slightly out-turned rim and handles rising above the rim (Π-shaped). The floor is usually decorated with stamped palmettes (Farmakovskij 1906, 130, fig. 69). According to this scholar there are rather few such cups in the graves of the Hellenistic period. Those few are found in graves of the late 4th and early 3rd centuries B.C. B.V. Farmakovskij (1903) even dated some cup-skyphoi into the 3rd-2nd centuries B.C., but Parovič-Pešikan states that in fact there is no evidence that such cup-skyphoi found in the northern Black Sea region can be dated later than the first third of the 3rd century B.C. She stresses that vessels of this type were imports in Olbia, since the clay is clearly of non-Olbian origin, being light yellowish brown

with pinkish hues. She considers it most probable that they are Attic, but stresses that this is uncertain, since 'the type is widespread in Greece'. One such cup-skyphos was found in grave 1908/5 at Olbia which also contained 'a stater dating to 330 B.C.' (see Kozub 1974, 46, fig. 6, *7*).

The type is quite common in the *chora* of Olbia. From the settlement of Kozyrka II comes a specimen with nearly straight rim, decorated inside with linked stamped palmettes surrounded by rouletting (Danil'čenko 2000, 219, pl. 1, *4*). At the settlement of Didova Khata I, dating from the beginning of the 4th century until the second quarter of the 3rd century B.C., the type is represented both in an earlier and a later variant, characterized by rouletting, slightly outturned rim, and dull black glaze with metallic sheen (Ruban 1978, 72 f., 74 fig. 5, *4*, 75 fig. 6, *12, 17*, 76 fig. 7, *4*). The interior offset is placed considerably lower than in **B 98** in all the specimens from these two sites.

B 99. U6 courtyard. 1975. Pls. 63 and 71.

Moulded ring foot of cup-skyphos. Reserved resting surface and centre of the inside of the foot. Scraped groove on the inside of foot at the junction between foot and bowl. Part of two palmettes is preserved in the centre of the inside of the bowl. Glaze very fine, black, lustrous. Clay fine, reddish yellow (5 YR 6/6). H. of foot 1.3 cm; D. 6.5 cm. Two repair holes preserved.

Possibly Attic. For dating, see discussion under **B 98**.

B 100. U6 courtyard, E-4. 1973. Pls. 64 and 71.

Rim fragment of skyphos of Korinthian type. Decorated below rim with an ivy garland in added clay. Glaze brownish black with some sheen on outside, inside brownish and dull. Clay fine, reddish yellow, with a few limestone inclusions. Preserved H. 3.9 cm; D. max. 8.2. cm; D. of rim 6.7 cm; 60° preserved.

Date: 325-275 B.C. Compare Rotroff 1997, no. 156. Rotroff's argumentation (1997, 95) for a dating of the type to the period *c.* 325-275 B.C. is actually supported by this find from U6.

B 101. U6, E-2. 1969. Pl. 64.

Fragment of rim and bowl of bolster-cup. Both handles are missing. Almost straight rim with two encircling grooves on the outside. Decorated with ivy garland running right. Glaze thick, black, with olive-coloured patches. Clay reddish yellow and rather dense. Estimated H. *c.* 11 cm; D. of rim 17.0 cm.

Attic.

Date: *c.* 300-280 B.C. Compare Rotroff 1997, nos. 165-166. See also fragments from Olbia, dated by Levi to the first half of the 3rd century B.C. (Levi 1940, 120, pl. XX, *4*), and from Elizavetovka (Brašinskij 1980, 246 pl. XXXVIII, *12*).

BOWLS

Out-turned rim

B 102. U6 courtyard, V-3. 1971. Pls. 62, 72 and 76.

Deep bowl with straight upper wall, outwardly thickened rim, and high ring foot with grooved resting surface. Restored with plaster. Reserved resting surface and a reserved line at junction of foot and bowl. Rouletting in a circle of 4 rows around a central ornament consisting of 4 stamped leaves. Glaze black, dull, uneven. Clay light brown (7.5 YR 6/4), with some mica. H. 8.5 cm; D. 25.4 cm.

Attic.

Date: *c.* 325-300 B.C. Compare Rotroff 1997, nos. 867-868.

B 103. U6 courtyard, VG-2. 1971. Pls. 64 and 72.

Fragmentary bowl with high ring foot and 'bird-head' rim profile. Restored with plaster. Glaze partly peeled, greyish black, dull, thicker outside. Reserved underneath. Clay fine, pink (7.5 YR 7/4), with a little mica. H. 5.8 cm; D. 18.2 cm.

Attic.

Date: *c.* 325-300 B.C. Compare Rotroff 1997, no. 870.

B 104. U6 courtyard, E-5. 1974. Pl. 64.

Fragmentary bowl with slightly concave upper wall and 'bird-head' rim profile. Glaze of poor quality, dull and uneven, misfired from black on rim to red in lower part (result of stacking). Reserved inside foot and partly on resting surface. Clay fine, reddish yellow (5 YR 7/6), with some mica. H. 3.8 cm; D. 14.0 cm.

Date *c.* 300 B.C. Compare Rotroff 1997, no. 874.

B 105. U6 room 26. Find list 10/22. 1972. Pls. 64 and 72.

Small bowl with outwardly thickened rim profile. Nippled underside. Restored with plaster. No sharp junction between foot and underside of bowl (unfinished potter's work?). Glaze black, dull, somewhat uneven. Reserved resting surface. Clay light brown (7.5 YR 6/4), with some mica and limestone particles. The shape has sagged a little during drying. H. 5.0 cm; D. 16 cm.

Date *c.* 325-300 B.C. Compare Rotroff 1997, no. 868.

B 106. U6 courtyard, V-4. 1973. Pls. 64 and 72.

Fragmentary bowl with slightly concave upper wall and 'bird-head' rim profile than **B 102**. Nippled underside. Restored with plaster. Glaze black, dull, rather thick. Inside of foot reserved. Clay fine, pale brown (10 YR 6/3), with mica. H. 3.6 cm; D. 12.5 cm.

Attic.

Date: *c.* 300-290 B.C. Compare Rotroff 1997, no. 874.

B 107. U6 well, no. 191. 1977. Pls. 64 and 72.

Three adjoining fragments of a small bowl with concave upper wall. Reserved underneath. Glaze black, rather dull. Clay fine, pink (7.5 YR 7/4), with particles of limestone and some mica. H. 3.2 cm; D. 9.0 cm. Repair holes preserved.

Date: no close parallels from the Athenian agora; probably *c.* 300-270 B.C.

B 108. U6 courtyard, D-5. 1974. Pls. 65 and 72.

Small bowl with high ring foot and 'bird-head' rim profile. Restored with plaster. Glaze greyish black, dull, in lower part of bowl uneven. Reserved resting surface. Clay fine, light reddish brown (5 YR 6/4) with very small black particles. H. 4.5 cm; D. 14.6 cm. Five repair holes preserved. Graffito **H 79** inside foot.

Attic.

Date: *c.* 300-290 B.C. Compare Rotroff 1997, nos. 872 (300-290 B.C.) and 875 (300-290 B.C.).

B 109. U6 courtyard, E-5. 1974. Pl. 65.

Rim fragment of bowl with less-pronounced 'bird-head' rim profile. Glaze black, dull, partly worn. Clay fine, reddish yellow (5 YR 6/6), with tiny inclusions of mica. H. 3.6 cm; W. 4.1 cm; estimated D. 16 cm. Repair hole preserved.

Possibly Attic.

Date: *c.* 300-290 B.C. Compare Rotroff 1997, no. 875.

B 110. U6 courtyard, E-5. 1974. Pl. 65.

Rim fragment with 'bird-head' rim. Glaze black, dull and uneven. Clay fine, reddish yellow (7.5 YR 6/6), with some mica. H. 3.2 cm; estimated D. 20 cm; W. 5.6 cm.

Date: *c.* 300-290 B.C. Compare Rotroff 1997, no. 872.

B 111. U6 courtyard, VG-2. 1971. Pl. 65.

Rim fragment of large bowl with rounded, out-turned rim. Glaze black, of rather good quality with some sheen. Clay fine, light reddish brown (5 YR 6/4), with small inclusions of limestone. H. 2.1 cm; estimated D. 28 cm; W. 4.2 cm.

B 112. U6 courtyard, V-3. 1971. Pl. 65.

Rim fragment. Glaze rather dull, but black and even. Clay reddish yellow (7.5 YR 6/6), with some mica. H. 3.4 cm; estimated D. 16 cm; W. 6.1 cm.

Date: *c.* 300-290 B.C. Compare Rotroff 1997, no. 875.

B 113. U6 courtyard, V-4. 1973. Pl. 65.

Rim fragment with 'bird-head' rim profile. Glaze of rather poor quality, greyish black, dull. Clay fine, light reddish brown (5 YR 6/4), with no apparent inclusions. H. 2.8 cm; estimated D. 14 cm; W. 4.4 cm.

Attic.

Date: *c.* 300-290 B.C. Compare Rotroff 1997, no. 872.

B 114. U6 courtyard, B-5. 1971. Pl. 65.

Rim fragment. Glaze brownish, of rather poor quality, uneven and dull. Clay fine, reddish yellow (7.5 YR 7/6), with small limestone inclusions. H. 3.6 cm; estimated D. 14.0 cm; W. 5.7 cm.

Date *c.* 300-290 B.C. Compare Rotroff 1997, no. 875

B 115. U6 courtyard, D-2. 1973.

Rim fragment. Glaze of poor quality, uneven and brownish in parts. Clay fine, reddish yellow (5 YR 7/8), with mica. H. 3.3 cm; estimated D. 12 cm; W. 6.3 cm.

B 116. U6 courtyard, G-3. 1972 + courtyard, E-5. 1974.

Two rim fragments. Glaze greyish black, dull. Clay fine, reddish yellow (5 YR 6/6), with no apparent inclusions. Estimated D. 12 cm. Size of fragments: a) 1.8 × 3.2 cm; b) 2.1 × 4.1 cm. Repair hole preserved.

B 117. U6 courtyard, G-2. 1975.

Rim fragment. Glaze black, dull. Clay fine, light reddish brown (5 YR 6/4). H. 2.8 cm; W. 3.3 cm.

Attic.

B 118. U6 courtyard, G-2. 1975.

Rim fragment. Glaze of poor quality, uneven, partly peeled off. Clay fine, reddish yellow (5 YR 7/6). H. 1.9 cm; estimated D. 16 cm; W. 3.1 cm.

B 119. U6 courtyard, B-6. 1972.

Rim fragment. Glaze of medium quality, brownish inside, with some sheen. Clay fine, reddish yellow (5 YR 6/6). H. 1.6 cm; estimated D. 16 cm; W. 3.1 cm.

Attic.

B 120. U6 courtyard. 1975. Pls. 68 and 73.

Three adjoining fragments of upper part of bowl. Glaze red (2.5 YR 4/6), dull, uneven. Clay fine, light red (2.5 YR 6/6), with mica, dark brown and black inclusions. Preserved H. 2.5 cm; D. 13.2 cm.

Incurved rim

B 121. U6 courtyard, D-6. Find list 17/89. 1972. Pls. 65, 72 and 76.

Fragmentary shallow bowl with incurved rim. Restored with plaster. Reserved resting surface and reserved line at junction between foot and bowl. Glaze black, rather thick and dull, partly peeled. Inside, 2 × 2 rows of rouletting around stamped palmettes (two of four still preserved). Clay fine, reddish yellow (5 YR 6/6), with mica. H. 4.2 cm; D. max. 14.5 cm; D. of rim 13.5 cm. Three large repair holes preserved.

Attic.

Date: *c.* 325-300 B.C. Compare Rotroff 1997, no. 967 (which also has four palmettes within rouletting as decoration).

B 122. U6 courtyard, B-4. 1973.

Rim fragment of small bowl. Glaze greyish, dull, partly peeled on the outside. Clay fine, light brownish grey (10 YR 6/2), with tiny inclusions of mica. H. 3.2 cm; estimated D. of rim 8 cm; W. 4.6 cm.

B 123. U6 courtyard. 1975.

Rim fragment of bowl with slightly incurved rim. Glaze of very good quality, shiny (especially on outside); on the inside misfired in spots to red. Clay fine, light reddish brown (5 YR 6/4). Estimated D. of rim 14 cm; size of fragment: 4.1 × 3.3 cm.

Probably Attic.

B 124. U6 well, no. 192. 1977. Pl. 65.

Rim fragment. Glaze greyish black, rather thick, dull. Clay fine, brown (7.5 YR 5/4), with mica. Preserved H. 5.8 cm; W. 7.0 cm; estimated D. of rim 16 cm. Three large repair holes.

B 125. U6 courtyard, D-6. Find list 17/93. 1972.

Rim fragment. Glazed on the inside, partly glazed on the outside (one broad band). Glaze greenish brown, rather dull. Clay fine, reddish yellow (5 YR 7/6), with particles of limestone. Size of fragment: 4.7 × 5.5 cm. Remains of a repair hole.

B 126. U6 courtyard, V-4. 1973.

Rim fragment. Glaze dull, brownish inside. Clay fine, reddish yellow (5 YR 7/6), with tiny limestone inclusions and mica. Estimated D. of rim 10 cm; size of fragment: 4.6 × 5.6 cm.

B 127. U6 courtyard, V-3. 1971.

Rim fragment. Glaze of rather fine quality, lustrous outside, duller inside. Clay fine, reddish yellow (5 YR 6/6), with tiny dark brown inclusions. Estimated D. of rim 14 cm; size of fragment: 3.4 × 4.1 cm.

Compare *Histria* IV fig. 15 cat. 593 dated *c.* 375-350 B.C. However, the date of **B 127** is definitely not that early. The shallowness compared to Attic echinus bowls would instead suggest a much later date. In this case *c.* 270 B.C., the time of the destruction of the complex, must be considered as a *terminus ante quem.*

B 128. U6 courtyard, V-6. 1972.

Rim fragment. Glaze black, with some sheen, completely peeled on the outside. Clay fine, reddish yellow (5 YR 7/6), with a few limestone inclusions. Estimated D. of rim 14 cm; size of fragment: 4.1 × 3.0 cm.

Salt-cellars

B 129. U6 room 12. Find list 6/30. 1971. Pls. 65 and 73.

Salt-cellar of echinus bowl shape, with nippled underside. Glaze greenish black to brownish black, with sheen, similar to **B 188**. Clay medium fine, light brown (7.5 YR 6/4), with no apparent inclusions. H. 3.9 cm; D. of rim 7.2 cm. Graffito **H 25** under foot.

Attic.

Date: *c.* 300 B.C. (Compare Rotroff 1997, no. 1080). Two very similar specimens come from grave 43 in the necropolis of Nikolaevka (Meljukova 1975, 244 fig. 46, *3-4*).

B 130. U6 room 32. Find list 3/8. 1973 + well, no. 93. 1977. Pl. 65.

Rim and body fragment of salt-cellar, shape close to **B 129**. Glaze black, dull, partly peeled on the outside. Clay fine, brown (7.5 YR 5/4), with some mica. H. 3.8 cm; estimated D. of rim 6 cm.

B 131. U6, courtyard D-5. 1973. Pl. 73.

Salt-cellar of echinus bowl shape. Glaze black, dull. H. 3.7 cm; D. max. 7.2 cm; D. of rim 5.6 cm.

Date: compare Rotroff 1997, no. 1086, dated to second quarter of 3rd century B.C. **B 131** must antedate the destruction of U6, *i.e.* 270 B.C.

B 132. U6 courtyard. Pl. 73.

Salt-cellar of echinus bowl shape. Glaze very worn, dull. D. of rim 6.7 cm; D. max. 8.0 cm; D. of foot 4.3 cm; H. 3.2 cm. The open bowl and the shape of the foot may suggest a date in the second quarter of the 3rd century B.C. **B 132** must antedate the destruction of U6, *i.e.* 270 B.C.

Various bowls

B 133. U6 courtyard, E-2. 1975. Pl. 65.

Rim fragment of bowl with thickened rim. Glaze rather thick, more uneven on the inside, with metallic sheen. Clay fine, reddish yellow (5 YR 6/6), with very little mica. Preserved H. 2.0 cm; estimated D. 13.5 cm; size of fragment: 2.4 × 5.7 cm. Possibly Attic judging by clay, however, no parallels have been published from the Athenian agora (Rotroff 1997).

B 134. U6 courtyard, B-2. 1974. Pls. 65 and 73.

Small bowl with straight rim and ring foot. Glaze black, partly metallic inside. Reserved inside foot and on resting surface. Clay light brown (7.5 YR 6/4), with particles of limestone. H. 4.4 cm; D. 13.2 cm.

B 135. U6 well, no. 206. 1977. Pl. 65

Rim fragment of bowl with straight rim. Glaze black, rather dull. Clay medium fine, reddish yellow (5 YR 6/8). Preserved H. 2.2 cm; estimated D. 11 cm.

B 136. U6 courtyard, V-2, Zh-5. 1974. Pl. 73.

Small bowl with straight rim and ring foot. Restored with plaster. Glaze black, of poor quality, rather uneven. H. 3.3 cm; D. 9.0 cm; D of foot 4.8 cm.

B 137. U6 courtyard. 1975.

Rim fragment of bowl with straight rim. Glaze of rather good quality, black, with some sheen, partly worn. Clay fine, reddish yellow (5 YR 7/6), with some mica. Estimated D. of rim 20 cm; size of fragment: 3.0 × 5.2 cm.

B 138. U6 courtyard. 1975.

Body sherd of bowl. Glaze black, with some metallic sheen inside. Clay fine, reddish yellow (5YR 6/6), with tiny inclusions of mica. Size: 3.8 × 2.3 cm.

Probably Attic.

B 139. U6 courtyard, VG-2. 1971.

Body sherd of a bowl. Glaze of good quality, black and lustrous. Clay fine, reddish yellow (5 YR 7/6). Size: 4.6 × 2.2 cm.

Probably Attic, though not within the range of Munsell colours enumerated by Rotroff (1997) as characteristic of Attic hellenistic black-glazed pottery.

B 140. U6 courtyard, B-4. 1973.

Body fragment of a bowl. Glaze black with some sheen. Clay fine, reddish yellow (5 YR 6/8). Size: 3.0 × 3.2 cm.

B 141. U6 courtyard, B-4. 1973.

Body fragment of a bowl. Glaze of good quality, brownish black. Clay fine, reddish yellow (5 YR 6/6). Size: 3.6 × 3.5 cm.

B 142. U6 room 13. Find list 8/42. 1971. Pl. 76.

Floor of a bowl with ring foot. Decorated with four stamped palmettes. Grooved and reserved resting surface. A reserved line at the transition to the ring foot. Underneath, glazed and reserved circles with a central dot. Glaze of medium quality, with a greenish metallic sheen. Clay medium fine, reddish yellow (5 YR 6/6). H. of foot 1.5 cm; D. of foot 10.2 cm; 360° preserved.

Probably non-Attic.

Date: not later than very early in the 3rd century B.C.

B 143. U6 room 12. Find list 6/47. 1971. Pls. 65 and 76.

Fragment of a bowl. Unglazed, but decorated inside with

broad bands of black slip (one along the rim, *c.* 2 cm wide, and one further down). Clay light reddish brown (5 YR 6/4) to light brownish grey (10 YR 6/2), with inclusions of limestone. Size of fragment: 4.8 × 3.5 cm.

Probably Chersonesean.

MOULD-MADE BOWL

B 144. U6 courtyard. B-6. 1971. Pl. 73.

Four adjoining fragments of a mould-made (Megarian) bowl. Relief decoration of interlocking meanders, with egg-and-dart ornament underneath. Glaze red, medium fine. Clay medium fine, reddish yellow (5YR 6/8), with dark inclusions and mica. Size: 10.2 × 5.0 cm; estimated D. 14 cm. One repair hole preserved.

From a so-called 'Ionian' bowl, produced in a centre in western Asia Minor or the eastern Aegean. Compare, for instance, two fragments from Delos (Laumonier 1977, pl. 47 nos. 8020 and 8087). A fragment from the Athenian agora, classified as an import (Rotroff 1982 no. 391), is also very similar in decoration. In Crimea a very similar fragment has turned up in Pantikapaion (Bouzek 1990, pl. 18 no. 7).

Date: 2nd century B.C.

PHIALE

B 145. U6 room 12. Find list 6/31. 1971. Pls. 64 and 72.

Phiale with omphalos. Glaze red and thick. Clay light red (2.5 YR 6/8). H. 5.1 cm; D. of rim 12.6 cm. The type with flaring offset rim and shallow bowl is sometimes called an 'Achaemenid phiale' (see Strong 1966, 77). The shape is well established in Greece from the late Archaic period onwards (see Strong 1966, 82 and 99). The phiale is one of the shapes often produced as red-glazed instead of black-glazed (see Sparkes and Talcott 1970, 19-20; 105-106 and no. 520).

Non-Attic.

ONE-HANDLER

B 146. U6 room 12. Find list 6/28. 1971. Pls. 64 and 71.

Bowl with straight rim and one handle. Glaze greyish black, with some metallic sheen. Reserved under foot. Clay light yellowish (10 YR 6/4), with black inclusions and mica. Graffito **H 4** under foot. H. 5.6 cm; D. of rim 14.2 cm.

Date: according to Rotroff (1997), the shape survived in Athens only into the early years of the 3rd century B.C. **B 146** has a more open bowl than those published from the Athenian Agora, where the bowl is echinus-shaped. The same applies to the many specimens of this type found at Olynthos. For a one-handler with straight rim, see a specimen from Kozyrka II, dated to the third quarter of the 4th century B.C. (Danil'čenko 2000, 221, pl. II, *4*), which, however, has a rather different handle than **B 146**. Two vessels from the necropolis of Panskoye are closer in shape (Ščeglov 1987, 264 fig. 14, *5*; Monachov and Rogov 1990b, 142, pl. 5, M039, no. 89; 144, pl. 7, M033, no. 90; Rogov and Tunkina 1998, 166, fig. 4, *4-5*). Only one of them, no. 90 from Grave M033, was found together with datable pottery: a late red-figure lekythos of Ivanov's Type 6 (Ivanov 1963). Both graves at Panskoye have been dated to the period *c.* 375-350 B.C., *i.e.* close to the one-handlers with straight rim from Olynthos, Apollonia (Ivanov 1963, no. 451, fig. 75, pl. 102), and Elizavetovka (see Brašinskij 1980, 141, 226, pl. XVIII, *242* although this vessel is unglazed and made of grey clay). Characteristic of **B 146** is the slightly upturned handle, which is undoubtedly to be seen as a later development of the shape in the second half of the 4th century B.C. Compare the one-handler from grave 33 of the necropolis of Nikolaevka, dated by Meljukova to the third quarter of the 4th century B.C., which was found together with Herakleian amphorae bearing the stamps of the second and the third groups, according to Brašinskij (Meljukova 1975, 188, 243, fig. 45, *7*). The specimen from Nikolaevka differs from **B 146** in having two encircling glazed bands on the inside of the reserved ring-foot (Meljukova 1975, 163).

PLATES

B 147. U6 courtyard, V-2, G-2, D-6. Find list 17/88. 1971, 1972. Pls. 66 and 73.

Large plate with rolled rim. Grooved resting surface. Inside: four rings of rouletting in two distinctly different patterns around centre. Incised groove around the ring foot. Reserved resting surface. Glaze of rather good quality, black, shiny, partly misfired to brownish. Clay fine, yellowish red (5 YR 5/6), with some mica. H. 4.3 cm; D. 34 cm. Graffito **H 32** inside foot.

Date: late in the period 325-300 B.C. Compare Rotroff 1997 no. 641.

B 148. U6 courtyard, V-4. 1971. Pls. 66 and 73.

Fragmentary plate with rolled rim. Reserved resting surface. Inside: circular rouletting. Restored with plaster. Glaze brownish black, dull. Clay pink (7.5 YR 7/4), with mica. H. 3.5 cm; D. 28.2 cm.

Probably Attic.

Date: late in the period 320-300 B.C. Compare Rotroff 1997, no. 640.

B 149. U6 courtyard, E-2. Find list 2/7. 1969.

Two fragments of plate with rolled rim. Glaze black, in parts lustrous. Clay fine, yellowish red (5 YR 5/6), with some mica and dark brown inclusions. Estimated D. 26 cm; size of fragments: a) 10.2 × 4.7 cm; b) 7.0 × 4.5 cm.

Shape close to **B 147**.

B 150. U6 courtyard, V-2, G-2. 1971.

Rim fragment from a plate with rolled rim and profile underneath. Glaze rather dull and misfired to brownish. Clay fine, reddish yellow (5YR 6/6), with soma mica. Estimated D. 24 cm; size of fragment: 9.2 × 3.2 cm.

Shape close to **B 147**.

Attic.

B 151. U6 courtyard, G-2. 1970.

Fragment of plate with rolled rim. Glaze black, dull. Clay fine, brown (7.5 YR 5/2), with small particles of limestone. Size of fragment: 3.0 × 3.0 cm.

Shape close to **B 147**.

B 152. U6 courtyard, V-4. 1973. Pls. 66 and 73.

Fragmentary plate with rolled ring foot and profilation on outside below the rim. Grooved resting surface. Restored with plaster. Inside: circular, fine rouletting (*c.* 2.0 cm wide). Glaze black with sheen, brownish black on the outside. Clay light brown (7.5 YR 6/4), with small black inclusions and mica. H. 2.7 cm; D. 20.4 cm. Five repair holes preserved. Graffito **H 40a** on the outside of the foot.

Date: late in the period 325-300 B.C. Compare Rotroff 1997, no. 640.

B 153. U6 courtyard, V-3. 1971. Pls. 66 and 74.

Fragmentary plate with rolled rim. Nippled underside. Restored with plaster. Inside: a single rouletting around the centre. Glaze black, with some sheen. Clay grey (5Y 5/1), with some mica. H. 2.4 cm; D. 12.5 cm. Graffito **H 18** under foot.

Date: early in span of *c.* 325-300 B.C. Compare Rotroff 1997, nos. 635 and 637. Compare with plates from the well excavated 1972 at Gorgippia, dated to the first half of the third century B.C. (Alexeeva 1976, 48, fig. 3, *3*) and a specimen from Elizavetovka (Brašinskij 1980, 229 pl. XXI, *1*).

B 154. U6 courtyard, V-2, G-2, E-2. 1971. Pls. 66 and 74.

Fragmentary plate with rolled rim. Restored with plaster. Glaze dark grey, dull. Clay medium fine, brown (7.5 YR 5/2), with tiny inclusions of mica. H. 2.2 cm; D. 13.8 cm.

The shape has no exact parallel in the Agora publication; closest are Rotroff 1997, nos. 654 (300-275), 655 and 658 (both 275-250 B.C.; these have a characteristic bend on the outside of the wall, which is not seen in **B 154**); however, the foot, in particular, differs from these examples. Compare also with plates from the well excavated 1972 at Gorgippia, dated to the first half of the third century B.C. (Alexeeva 1976, 48, fig. 3, *3*).

Date: the destruction of U6, *c.* 270 B.C., must serve as a *terminus ante quem*.

B 155. U6 courtyard, V-2, G-2. 1971. Pl. 66.

Fragmentary plate with rolled rim. Restored with plaster. Glaze greyish black, dull, partly peeled. Resting surface reserved. Two encircling incisions in underside centre. Multiple incisions on the floor (from paring with a knife?). Clay brown (7.5 YR 5/4), with some mica. H. 2.1 cm; D. 14.5 cm.

The shape is very close to **B 154**.

B 156. U6 courtyard, G-2. 1971.

Rim fragment of plate with rolled rim. Glaze dull, black. Clay reddish yellow (5YR 6/8), with some mica. Estimated D. 22 cm; size of fragment: 5.2 × 3.8 cm. Two repair holes.

Possibly Attic.

Date: late in the period *c.* 325-300 B.C. Compare Rotroff 1997 no. 641.

B 157. U6 courtyard. 1975.

Rim fragment of plate with rolled rim. Glaze dull, black on underside, more brownish on upper side. Clay fine, very pale brown (10 YR 7/4), with tiny mica particles. Size of fragment: 2.9 × 3.1 cm. Remains of repair hole.

B 158. U6 courtyard, V-5. 1972.

Rim fragment of plate with rolled rim. Glaze black with some sheen. Clay fine, reddish yellow (5YR 6/6), with small dark brown inclusions and tiny mica particles. Estimated D. 22 cm; size of fragment: 3.6 × 2.5 cm.

B 159. U6 courtyard, B-6. 1972.

Two rim fragments of plate with slightly thickened rim. Glaze medium fine, rather thin, with some sheen, in parts misfired to brown. Clay fine, reddish yellow (5YR 6/8), with some mica and limestone inclusions. Estimated D. 24 cm.

B 160. U6 courtyard, D-5. 1974.

Rim fragment of small plate with slightly off-set rim. Glaze greyish black, on outside partly misfired to brownish. Clay fine, light brown (7.5 YR 6/4), with very little mica and few limestone particles. Estimated D. 14 cm; size of fragment: 4.5 × 1.7 cm.

B 161. U6 courtyard, E-5. 1974.

Body fragment of large plate. Glaze brownish, rather thin and dull. Clay fine, reddish yellow (5 YR 6/6), with small limestone inclusions and very little mica. Size of fragment: 5.1 × 3.3 cm.

B 162. U6 courtyard, V-4. Find list 1. 1973.

Rim fragment of plate. Glazed on the outside, inside surface not preserved. Glaze black, rather dull. Clay fine, light brownish grey (10 YR 6/2), with very little mica. Estimated D. 26 cm; size of fragment: 2.4 × 5.3 cm. Remains of repair hole.

B 163. U6 courtyard, VG-2. 1971.

Rim fragment of plate. Groove on outside *c.* 1 cm from rim. Glaze greyish black, dull. Clay fine, grey (10 YR 5/1), with very little mica. Estimated D. 16 cm; size of fragment: 4.2 × 1.6 cm.

B 164. U6 courtyard, V-4. 1973. Pl. 76.

Fragment from foot and floor of plate. Grooved resting surface. Reserved line at junction of foot and body. Stamped decoration at centre, with palmettes and six rows of rouletting. Glaze black, dull and worn. Clay fine, reddish yellow (5 YR 6/8), with some mica. Estimated D. 14 cm; size of fragment: 9.4 × 2.7 cm.

Date: the grooved resting surface suggests a date not later than *c.* 300 B.C. or the very beginning of the 3rd century B.C.

B 165. U6 courtyard, D-6. Find list 17/91. 1972. Pl. 76.

Fragment from floor of small plate (?). Stamped decoration with two palmettes on inside. Glaze thick, black, rather dull. Clay fine, reddish yellow (7.5 YR 6/6). Size of fragment: 4.8 × 2.6 cm. Graffito **H 30** on the underside. Repair hole.

B 166. U6 well, no. 188. 1977. Pl. 66.

Fragment from foot and part of floor of plate. Resting surface grooved and reserved. Decorated inside with rouletting (three rows preserved). Glaze black, thick and shiny on inside. Clay medium fine, reddish yellow (5 YR 7/6), with some mica. D. 12.0 cm; size of fragment: 1.8 × 3.5 cm.

Attic.

Date: the grooved resting surface suggests a date not later than *c.* 300 or the very beginning of the third century B.C.

B 167. U6 courtyard, D-6. 1972. Find list 17/92. Pl. 76.

Fragment from floor of plate. Fine stamped palmette (*c.* 1.1 × 1.7 cm) and traces of rouletting around centre. Glaze fine, black, lustrous. Clay fine, light reddish brown (5 YR 6/4), with some mica. Size of fragment: 4.2 × 3.1 cm.

For a close parallel to the stamp, see Rotroff 1997 no. 637 (dated 325-300 B.C., early in span?).

Attic

Date: *c.* 325-300 B.C.

B 168. U6 room 11. Find list 5/12. 1971. Pls. 68 and 74.

Two fragments of thick-walled plate with rilled rim. Glazed only on inside. Glaze red (2.5 YR 4/6), dull and rather thick. A thin brownish band at the edge. Clay light red, with very little mica, similar to the bowl **B 120** with out-turned rim. Estimated D. of rim 20 cm; 28° preserved.

FISH-PLATES

B 169. U6 courtyard, VG-2, V-4. 1971, 1973. Pl. 66.

Fragmentary fish-plate. Restored with plaster. Grooved resting surface. Glaze greyish black, dull. Scraped grooves along edge of floor, around central depression, and at junction between foot and plate. Decoration with reserved bands inside foot, compare **B 170**. Clay fine, light brown (7.5 YR 6/4), with some mica. D. 28.2 cm; H. 4.2cm.

Attic (?), though the decoration inside the foot is not consistent with Attic specimens of this period.

Date: *c.* 310-290 B.C. (*Cf.* **B 170**).

B 170. U6 courtyard, V-4. 1973. Pls. 66 and 74.

Fragmentary fish-plate. Restored with plaster. Grooved resting surface. Scraped groove around central depression, along edge of floor, and at junction of foot and plate. Two bands of glaze (1.2 and 0.3 cm wide) inside foot. For this trait compare Sparkes and Talcott 1970, no. 1067 and **B 169**; such a decoration is in fact characteristic of fish-plates from before the middle of the 4th century B.C. (Sparkes and Talcott 1970, 148). According to Rotroff (1997, 147), the underside is always totally glazed in fish-plates of the Hellenistic period. Compare a bowl from Olympia *OF* 27, 1996, no. 50 Abb. 1 Taf. 9. Glaze black, of rather good quality. D. 27.5 cm; D. of depression 7.0 cm; H. 4.5 cm.

Attic (?), though the decoration inside the foot is not consistent with Attic specimens of this period.

Date: *c.* 310-290 B.C. Compare Rotroff 1997, nos. 713-714.

B 171. U6 courtyard, VG-2. 1971. Pls. 66 and 74.

Fragmentary fish-plate. Restored with plaster. Scraped groove around central depression, along edge of floor, and at junction of foot and plate. Reserved resting surface. Glaze brownish black with some sheen, uneven, thicker on outside than inside. Clay yellowish red (5 YR 5/6), with some mica. D. 23.0 cm; D. of base 11.1 cm; H. 3.2 cm.

Attic.

Date: *c.* 310-290 B.C. Compare **B 169** and **B 170**.

B 172. U6 courtyard, VG-2. 1971.

Fish-plate. Shape somewhat irregular, foot coarse and uneven. Scraped groove along the edge of the floor. Glaze black, thin, almost 'transparent'. Decoration with reserved band on inside of foot. Clay fine, reddish brown (5 YR 5/4), with some mica. H. 2.4 cm; D. 22.7 cm.

B 173. U6 room 9. Find list 3/22. 1971.

Four adjoining fragments from fish-plate. Grooved resting surface. Scraped groove along edge of floor and around central depression. Decoration with reserved and glazed bands inside foot. Black glaze, medium fine, with some sheen. Clay fine, reddish yellow (5 YR 6/6), with very little mica. Estimated D. 22 cm.

Attic.

B 174. U6 courtyard, V-6. 1972.

Two fragments from floor of fish-plate. Glaze brownish black with some sheen. Clay fine, light reddish brown (5 YR 6/4), with no apparent inclusions.

B 175. U6 courtyard, V-3. 1971.

Small fragment from lower part of floor and transition to foot of fish-plate. Glaze black, dull. Clay fine, reddish yellow (5 YR 6/6), with some mica. Size of fragment: 3.4 × 1.7 cm.

B 176. U6 well, no. 186. 1977.

Rim and floor fragment of massive fish-plate. Scraped groove along edge of floor. Black glaze, of good quality, with some sheen. Clay medium fine, light reddish brown (5 YR 6/4), with some mica. Estimated D. 30 cm; size of fragment: 10.0 × 5.0 cm.

Attic.

B 177. U6 well, no. 190. 1977.

Fragmentary ring foot of fish-plate. Grooved and reserved resting surface. Glaze black, with some sheen, brownish underneath. Clay fine, reddish yellow (5 YR 6/6). H. 1.2 cm; size of fragment: 8.2 × 5.6 cm.

Attic.

Date: the grooved resting surface suggests a date not later than *c.* 300, or the very beginning of the third century B.C.

B 178. U6 well, no. 189. 1977.

Fragmentary foot of fish-plate. Resting surface grooved and partly reserved. Reserved line at junction of foot and plate. Clay medium fine, reddish yellow (5 YR 6/6), with mica. D. 12.0 cm; size of fragment: 9.5 × 2.3 cm.

Possibly Attic.

Date: see **B 177**.

B 179. U6 courtyard, VG-2. 1971.

Fragment of the foot of a fish-plate. Reserved resting surface. Scraped groove at junction of foot and plate. Glaze dull, black, brownish inside foot. Clay fine, reddish yellow (5 YR 6/6), with mica. Estimated D. 12 cm; size of fragment: 2.4 × 4.7 cm.

Attic.

B 180. U6 courtyard. 1975.

Floor fragment of fish-plate. Reserved line at junction of foot and body. Glaze uneven, partly red (from stacking?) on the inside. Clay fine, reddish yellow (7.5 YR 6/6), with some mica. Size of fragment: 5.6 × 2.5 cm.

Attic.

B 181. U6 room 27. Find list 11/11. 1972.

Fragment of floor of fish-plate with part of the central depression preserved. Glaze of good quality, black and lustrous. Clay fine, reddish yellow (2.5 YR 7/6), with no apparent inclusions. Size of fragment: 2.8 × 2.2 cm.

Possibly Attic, though outside the range of Munsell colours enumerated by Rotroff (1982 and 1997).

B 182. U6 well, no. 195. 1977.

Fragment from low ring foot of fish-plate (?). Scraped groove at junction of foot and plate. Glaze black, with some sheen. Clay fine, reddish yellow (7.5 YR 6/6), with some mica. Size of fragment: 2.8 × 2.2 cm.

B 183. U6 courtyard.

Fragment of ring foot of fish-plate (?). Only inner side of foot preserved, outer chipped off. Resting surface grooved and reserved. Glaze fine, black and shiny. Clay fine, light brown clay (7.5 YR 6/4), with negligible mica. Estimated D. of foot *c.* 14.0 cm; size of fragment: 3.7 × 1.9 cm;

Attic.

Date: see **B 177**.

OINOCHOAI

B 184. U6 courtyard, D-2, 5, E-5. 1974. Pls. 67 and 74.

Fragmentary oinochoe with ribbed body and plain neck. Handle triangular in section. Partly covered with thinned glaze (slip) inside. Underside of foot reserved (possibly a light brownish slip). Glaze fine, black and shiny, very worn. Decorated with garland of opposing myrtle in added clay on neck. Clay fine, light reddish brown (5 YR 6/4), with some mica. D. of base 10.0 cm.

Attic.

Date: 325-300 B.C. Compare Rotroff 1997, no. 473 (325-300 B.C.) and Sparkes and Talcott 1970, no. 131 (325-310 B.C.). The myrtle garland is typical of the early Hellenistic period. The reserved underside is an early trait, surviving from pre-Hellenistic times. The full-size oinochoe (chous) (28 cm high) is rarely made after 300, and disappears after *c.* 270 B.C. (*cf.* Rotroff 1997, 125-126). A similar oinochoe comes from the necropolis of Olbia (Belin de Ballu 1972, pl. XXXIX, 5.). Compare also a specimen from Histria (*Histria* II, 184 pl. 91, XXIX, *5* and *Histria* IV, 82 fig. 10), dated to the last quarter of the 4th century B.C., and the upper part of an oinochoe from Chaika (Karasev 1965, 137 fig. 48, *1*).

B 185. U6 courtyard, D-5. 1974.

Fragment from neck and handle of oinochoe. Strap handle (glazed only on outer surface of upper part). Glaze brownish black, thin and dull. Inner surface of rim unglazed. Clay fine, reddish yellow (5 YR 7/6), with some mica.

B 186. U6 courtyard, Zh-4. 1973.

Neck fragment, probably of an oinochoe. Glazed on both outside and inside. Glaze of good quality, even, lustrous, black. Clay medium fine, reddish yellow (7.5 YR 7/6), with dark brown inclusions. Size of fragment: 2.8 × 3.5 cm.

JUGS

B 187. U6 room 13. Find list 8/35. Pls. 67 and 74.

Small jug with pear-shaped body and flaring neck (mouth not preserved). Ring handle, oval in section. Foot entirely glazed. Neck also glazed inside. Glaze black to dark grey, with greenish metallic sheen. Clay pale brown (10 YR 6/3), with some mica. Preserved H. 8.3 cm; D. of body 7.2 cm.

Date: no obvious parallels from the Athenian agora, especially not for the ring handle, which is usually connected with gutti with narrow necks. But compare an olpe from Macedonia, dated to the 4th century B.C. (Drougou (ed.) 1991, 165 below), two jugs from Chersonesos (Belov and Jakobson 1953, 115 fig. 6, *b*; Gilevič 1999, 364 fig. 8, *II,4*), and a fragmentary specimen from the settlement of Elizavetovka (Brašinskij 1980, 244 pl. XXXVI, *11* = Marčenko, Žitnikov and Kopylov 2000, Abb. 66.11). The second of two vessels mentioned from Chersonesos was used as a hoard container for local coins of the late 4th century, offering us very good evidence for the dating of the type.

B 188. U6 room 12. Find list 6/32. 1971. Pls. 67 and 74.

Lower part of small jug with plain base. Remainder of lower handle attachment on shoulder. Glaze greenish with metallic sheen, similar to **B 130**. Reserved underside. Clay fine, reddish yellow (7.5 YR 7/6), with mica. Preserved H. 7.3 cm; D. of body 8.5 cm.

B 189. U6 courtyard, B-6. 1972. Pls. 67 and 74.

Jug. Upper handle attachment preserved on neck. Small flange below rim, which is not preserved. Raised base. Glaze black, with metallic sheen. Clay medium fine, reddish yellow (5 YR 6/8), with no apparent inclusions. Preserved H. 16.6 cm; estimated D. of body 10.8 cm.

B 190. U6 courtyard. 1975.

Shoulder fragment of jug, with handle attachment. Slipped on the outside. Slip dark grey, dull. Clay medium fine, very pale brown (10 YR 7/4), with larger dark brown inclusions and some mica. Size of fragment: 5.2 × 6.8 cm.

B 191. U6 courtyard, V-4. 1973.

Plain base of a jug. Glazed on the outside; inside surface not preserved. Lightly glazed underneath. Glaze of poor quality, dark grey, dull. Clay fine, reddish brown (5 YR 5/4), with a little mica. D. of base 5.5 cm.

B 192. U6 room 13. Find list 8/41. 1971.

Handle fragment of small jug. Glaze black, with metallic sheen. Clay light reddish brown (5 YR 6/4), with very little mica W. 1.8 cm.

LEKYTHOI

B 193. U6 courtyard, B-5. 1972. Pls. 67 and 75.

Fragmentary lekythos. Neck, rim, part of handle and shoulder preserved. Rim thick and flaring. Inside of rim and neck also glazed. Glaze black to dark grey, dull. Brown clay (7.5 YR 5/4). Preserved H. 5.2 cm; D. of rim 4.0 cm.

For the shape, compare Rotroff 1997 nos. 1756-1757, both

dated to period *c.* 325-300 B.C., and considered to be imports rather than local, though this cannot be excluded.

From the same workshop as **B 194-195** and **B 197-198**.

B 194. U6 courtyard, B-6. 1972. Pl. 75.

Fragmentary lekythos. Neck, rim, shoulder, and small part of handle preserved. Rim thick and flaring. Also glazed on inside of neck. Glaze of rather poor quality and varying colour: reddish brown, dark grey and black, shiny in parts. Clay fine, reddish yellow (5 YR 6/8), with small black inclusions and some mica. Preserved H. 6.8 cm; D. of rim 4.5 cm.

Same shape as **B 193**. From the same workshop as **B 193**, **B 195** and **B 197-198**.

See **B 193** for comments.

B 195. U6 courtyard, G-3. 1971.

Fragmentary lekythos. Neck and part of shoulder preserved. Glaze uneven black to brown, dull. Clay reddish yellow (7.5 YR 6/6), with tiny dark brown inclusions and abundant mica. H. 6.5 cm; D. 6.8 cm.

From the same workshop as **B 193-194** and **B 197-198**.

See **B 193** for comments.

B 196. U6 courtyard, E-4. 1973.

Part of rim, neck, and handle of lekythos. Glaze of very poor quality, black to dark brown. Clay fine, reddish yellow (5 YR 7/8), with small black inclusions and some mica. Preserved H. 3.2 cm; estimated D. of rim 4.0 cm.

Same shape as **B 193**.

B 197. U6 courtyard, V-6. Find list 16/100. 1972.

Shoulder fragment of lekythos. Glaze black, with little sheen. Clay fine, reddish yellow (5 YR 6/6), with some mica. Size of fragment: 5.3 × 5.2 cm.

From the same workshop as **B 193-195** and **198**.

See **B 193** for comments.

B 198. U6 courtyard, V-2. 1971.

Four body fragments of lekythos. Glaze very worn, but of good quality, black, lustrous. Though the glaze is of higher quality, the clay suggests that it comes from the same workshop as **B 193-195** and **B 197**.

B 199. U6 courtyard, B-3. Find list 16/13. 1972.

Part of rim and neck of small lekythos. Glaze black, with some sheen. Clay fine, reddish yellow (5 YR 7/6). Preserved H. 2.1 cm; D. of rim 2.3 cm.

B 200. U6 courtyard, D-5. 1974.

Neck and part of shoulder of small lekythos. Also glazed on the inside of the top of the neck. Glaze of poor quality, dull, dark grey. Clay reddish yellow (7.5 YR 6/6), with small dark brown inclusions and abundant mica. Preserved H. 5.8 cm.

B 201. U6 courtyard, G-3. 1971.

Fragment of flaring rim of lekythos. Glaze of rather poor quality, greyish, dull. Clay fine, reddish yellow (5 YR 7/6).

B 202. U6 courtyard. 1975.

Neck fragment of small lekythos. Glaze brownish black, uneven. Clay fine, reddish yellow (7.5 YR 6/6). Preserved H. 1.5 cm.

B 203. U6 courtyard, E-4. 1973.

Shoulder sherd of closed shape, probably lekythos. Glaze on the outside completely dull, more like a slip, dark grey to reddish brown. Clay fine, pink to light brown (7.5 YR 7/4 – 6/4), with small particles of limestone.

B 203a. U6 room 13. Findlist 8/27. 1971. Pl. 75.

Unguentarium. Clay reddish yellow (5YR 7/6), with brown to dark brown inclusions and a very small amount of mica. Glaze thick, brown (7.5YR 5/6). H. 6.1 cm; D. of rim 2.3 cm; D. of body 3.9 cm; D. of base 2.1 cm.

In shape comparable to Rotroff 1997 no. 1167 dated to the last quarter of the 4th century B.C.

UNIDENTIFIED SHAPES

B 204. U6 courtyard. Pls. 68 and 75.

Fragment of foot and part of bowl of a rather large open vessel. The foot has a heavy moulding at the transition to the bowl. Glazed inside and outside. Glaze of good quality, black, even, lustrous. The inside of the foot is glazed in a colour similar to that of the clay. Clay very fine, reddish yellow (5 YR 7/6). Preseved H. 6.0 cm.

Attic.

B 205. U6 well, no. 202. 1977. Pls. 68 and 75.

Spout of a large vessel (askos?). Heavy, thick ware. Glaze very fine, black, lustrous. Thin but shiny brown glaze on the inside of the vessel. Clay fine, reddish yellow (5 YR 6/6). Size of fragment: 7.2 × 4.2 cm.

Attic.

B 206. U6 courtyard, V-3. 1971.

Rim fragment. Groove under rim on the outside. Glazed on the outside. Original inside surface not preserved. Remains of decoration in added clay under the rim. Glaze black, of rather poor quality, dull and worn. Clay fine, reddish yellow (5 YR 7/6), with some mica. Size of fragment: 3.0 × 3.1 cm.

Compare with a fragment from the settlement of Elizavetovka (Brašinskij 1980, 246, pl. XXXVIII, *10*).

B 207. U6 courtyard. 1971.

Floor fragment of bowl or plate. Glazed with rouletting on (in)side; the original surface on the other side not preserved. Glaze black and rather dull. Clay fine, reddish brown (5 YR 5/4), with mica. Size of fragment: 2.5 × 1.8 cm.

B 208. U6 well, no 194. 1977. Pl. 66.

Fragmentary foot of plate or bowl. Inside of foot reserved. Glaze brownish grey. Clay fine, reddish yellow (5 YR 7/6). D. of foot 8.0 cm; size of fragment: 9.6 × 1.3 cm. Repair hole.

B 209. U6 courtyard, E-5. 1974.

Fragment from ring foot of a plate or bowl. Glaze of poor quality, uneven, greyish brown, dull. Clay fine, reddish yellow (5 YR 7/6), with a little mica. Estimated D. 6 cm; size of fragment: 1.2 × 2.1 cm.

B 210. U6 courtyard. 1975.

Low, lightly moulded foot of small open shape. Much worn and badly preserved. Glaze inside foot with a central reserved ring. Glaze black, dull, thinner on the inside. Clay fine, soapy, reddish yellow (7.5 YR 7/6), with mica. D. of base 5.4 cm.

B 211. U6 courtyard, D-5. 1974.

Body sherd of open vessel. Black, uneven, dull glaze, partly misfired to red. Clay fine, reddish yellow (5 YR 7/6). Size of fragment: 4.6 × 3.2 cm. Repair hole.

B 212. U6 room 22. Find list 6. 1972. Pl. 76.

Fragment of the floor of an open vessel, probably a bowl. Stamped decoration with palmettes (only one completely preserved) inside. Glaze black, of rather good quality, less well preserved on the outside. Clay fine, reddish yellow (7.5 YR 6/6). Size of fragment: 3.4 × 2.6 cm.

B 213. U6 courtyard, D-4. 1974. Pl. 67.

Rim fragment of jug or amphora. Rim very broad and flat. Glaze greyish black, dull. Clay fine, reddish yellow (5 YR 7/6), some mica. Preserved H. 2.4 cm; estimated D. of rim 9 cm.

B 214. U6 courtyard, E-3. 1974.

Strap handle fragment of jug or lekythos. Glazed on both sides. Glaze black, lustrous. Clay fine, reddish yellow (5 YR 7/6).

B 215. U6 courtyard, E-4. 1973.

Fragment from flat handle of jug or lekythos. Glaze of poor quality, dull, brownish. Clay fine, reddish yellow (5 YR 7/8), with little mica.

B 216. U6 courtyard, D-5. 1974.

Strap handle of small jug or lekythos. Completely glazed. Glaze mostly black, dull. Clay fine, reddish yellow (5 YR 6/6). W. 2.3 cm.

Attic.

B 217. U6 courtyard, D-2. 1973.

Strap handle of small jug or lekythos. Completely glazed. Glaze of poor quality, brownish, dull. Clay fine, reddish yellow (5 YR 6/6). W. 2.0 cm.

Attic.

B 218. U6 courtyard, V-2. 1971.

Strap handle of small jug or lekythos. Glaze and fabric similar to **B 238**. W. 2.0 cm.

B 219. U6 room 22. Find list 6/11. 1972.

Five adjoining fragments of closed vessel. Glaze black, shiny. Clay fine, reddish yellow (5 YR 6/8), with a little mica.

GREY WARE

KANTHAROI

B 220. U6 courtyard, B-2 + B-4. Find list 1/14. 1973. Pls. 68 and 75.

Five fragments (two adjoining) of kantharos with spur handle: handle, rim and transition from neck to bowl and upper part of bowl (plain) preserved. Traces of one repair hole preserved. Slip greyish brown inside, grey outside. Clay fine, grey (7.5 R 5), with tiny quartz or mica inclusions.

B 221. U6 room 33. Find list 4/5. 1973. Pl. 75.

Handle and part of bowl with transition to neck of kantharos, similar to **B 220**. Inside unslipped. Slip medium fine grey (10 YR 6/1) clay, with inclusions of calcite, dark brown and black particles. Size of fragment: 6.8 × 5.4 cm.

FISH-PLATES

B 222. U6 courtyard. 1973. Pl. 68.

Fish-plate. Thickened rim with two unequal grooves at edge. High ridge around central depression. Ring foot. Slip dull, grey. Clay grey with some quartz. H. 5.5 cm; D. 25.5 cm; D. of depression 7.0 cm; D. of foot 9.0 cm.

B 223. U6 courtyard, V-4. 1971. Pl. 69 and 75.

Fish-plate. Restored. Plain rim with two encircling grooves at edge. High ridge around central depression. Ring foot with flat resting surface. Repair holes. Slip grey, thin, dull. Inside surface of ring foot reserved. Clay grey, with tiny quartz inclusions. H. 6.0 cm; D. 26.0 cm; D. of depression 7.5 cm; D. of base 8.7 cm. *Cf.* Latyševa 1978, 57 fig. 4, *3*.

B 224. U6 room 29. Find list 13/19. 1972. Pl. 69.

Fish-plate. Restored. Plain rim with two grooves at edge. High ridge around central depression. Ring foot. Slip grey, dull. Clay grey, with tiny quartz inclusions. Heavily scorched in destruction fire. H. 5.6 cm; D. 24.5 cm; D. of depression 7.0 cm; D. of foot 7.6 cm.

B 225. U6 courtyard, E-5. 1973. Pl. 69.

Fish-plate. Restored. Plain rim with two encircling grooves at edge. High ridge around central depression. Ring foot. Remains of ancient repair. Slip grey, dull and very worn. Clay grey, with mica (?) and a few tiny quartz-sand grains. H. 5.8 cm; D. 26.0 cm; D. of central depression 7.5 cm; D. of foot 10.0 cm.

B 226. U6 courtyard. Pl. 69.

Fragments from wall, central depression, and massive ring foot of fish-plate. High ridge around central depression. Encircling groove between wall and ridge. Slip grey, dull and worn. Clay grey with tiny quartz or mica (?) particles. D. of central depression 7.0 cm; D. of foot 10.0 cm.

B 226a. U6 courtyard, Zh-2, 1975. Pl. 158.

Fragment from wall and central depression of fish-plate. Grey clay; dull, dark grey slip on upper surface. Graffito **H 39** under the foot.

B 227. U6 well, no. 187. 1977.

Rim fragment of fish-plate. Greyish black, dull slip. Fine grey clay with some mica. Size of fragment: 6.0 × 2.0 cm.

B 228. U6 courtyard.

Fragment of a fish-plate with two grooves along edge. Slip grey, soapy and dull. Clay fine, grey (5 Y 6/1), with dark inclusions. Estimated D. 24 cm; size of fragment: 5.7 × 4 cm.

B 229. U6 courtyard. 1971. Pl. 75.

Fish-plate. Central part with ring foot, floor, and depression preserved. High ridge around central depression. Very dull, dark grey slip. Clay medium fine to coarse, pale brown (10 YR 6/3), with tiny quartz inclusions. H. of foot with ridge around central depression 3.2 cm; D. of central depression 7.7 cm; D. of ring foot 7.7 cm; size of fragment: *c.* 9 × 10 cm.

B 230. U6 courtyard.

Ring foot of fish-plate, thickening towards centre. Slip grey, dull, uneven. Clay coarse, grey (5 Y 5/1), with dark brown inclusions. H. of foot: 1.7 cm; D. of foot: 8.9 cm.

B 231. U6 room 17. Find list 15/17. 1972. Pl. 69.

Fragment from ring foot and central depression of fish-plate. High ridge around depression. Flat resting surface. Slip grey, dull. Clay coarse, yellowish brown (10 YR 5/4). D. of foot 9.5 cm. Graffito **H 15** inside foot.

B 232. U6 room 12. Find list 6/50. 1971. Pl. 75.

Central part of fish-plate with ring foot and depression. High ridge around depression. Flat resting surface. Slip grey, dull. Clay coarse and heavy, pale brown (10 YR 6/3), with brown particles, calcite, and tiny quartz or mica (?) inclusions. Secondarily used as oil lamp (**E 11**). Preserved H. 3.5 cm; D. of foot 9.8 cm; D. of central depression 8.2 cm. Graffito **H 31** inside foot.

B 233. U6 room 20. Find list 4/37. 1972. Pl. 69.

Fragment from ring foot, central depression, and floor of fish-plate. High ridge around depression. Flat resting surface. Grey slip, dull and soapy. Clay coarse, brown (10 YR 5/3). Estimated D. of foot 10.0 cm. Graffito **H 3** inside foot.

B 234. U6 room 9. Find list 3/19. 1971.

Fragment of fish-plate with part of floor, ring foot, and central depression. High ridge around central depression. Flat ring foot. Slip greyish black, dull. No slip on underside. Clay medium fine, grey (5 Y 5/1), with dark brown and black particles, and some quartz.

B 235. U6 room 8. Find list 2/18. 1971. Pl. 69.

Fragment from rim and floor of plate with characteristic 'nail-head' rim. Slipped only on upper surface. Slip grey, dull. Clay fine, grey (5Y 6/1), with dark brown inclusions and tiny quartz or mica (?) particles. Estimated D. 23 cm; size of fragment: 6.5 × 5.9 cm.

BOWLS

B 236. U6 courtyard, D-6. Find list 17/85. 1972.

Rim fragment of deep bowl with out-turned rim. Slipped inside and out. Slip greyish black outside and grey inside. Clay fine, grey with small dark particles, some calcite and tiny quartz or mica (?) inclusions. Estimated D. 20 cm; size of fragment: 2.4 × 4.1 cm.

B 237. U6 room 8. Find list 2/22. 1971.

Rim-sherd of deep bowl with out-turned rim. Rather thick greyish black slip. Clay light grey (10 YR 7/2), with particles of calcite, some quartz and mica (?). Estimated D. *c.* 14 cm; size of fragment: 3.5 × 1.7 cm.

JUG

B 238. U6 courtyard, B-4. 1973. Pls. 67 and 75.

Small jug. Projecting rim and neck preserved. Horizontal ribbing on neck. Glazed inside and out. Glaze black, dull. Clay fine, reddish yellow (7.5 YR 6/6). Preserved H. 2.6 cm.

LEKYTHOS

B 239. U6 courtyard, VG-2. 1971.

Neck and shoulder fragment of lekythos (?). Glazed outside and slipped inside. Glaze greyish black, dull. Clay grey (10 YR 5/1). Size of fragment: 3.8 × 4.0 cm.

FEEDER

B 239a. U6 room 13. Find list 8/36. 1971. Pl. 75.

Feeder with moulded foot and loop handle. The handle is missing. Clay dark grey (5Y 4/1) with tiny inclusions of mica. Glaze black (5Y 2.5/1), looking more like a slip. H. 6.0 cm; D. of rim 2.4 cm; D. of body 6.4 cm; D. of foot 3.4 cm; L. of spout 1.9 cm.

UNIDENTIFIED SHAPES

B 240. U6 courtyard. 1975.

Flat ring foot of a plate or bowl. Entirely slipped, including the resting surface. Slip greyish black, thin. Clay grey, fine. D. of foot 7.5 cm.

B 241. U6 well, no. 196. 1977. Pl. 68.

Fragmentary foot of small closed vessel. Slipped on the outside. Slip dark grey, very dull. Clay coarse, yellow (10 YR 7/6), with dark brown inclusions, tiny quartz and mica (?) particles. D. of foot 5.0 cm.

B 242. U6 room 12. Find list 6/48. 1971.

Fragment of closed shape with part of ring foot and rather steep, straight wall. Slipped only on outside. Slip coarse, dark grey, dull. Small lump of clay incrusted on the inside before firing. Clay coarse, pale brown (10 YR 6/3), with rather large grains of quartz, dark brown inclusions, as well as some calcite and mica (?). Estimated D. of foot 6.0 cm; size of fragment: 5.2 × 3.5 cm.

NOTES

1. Rotroff 1997.
2. See, *e.g.* Brašinskij 1963; Bouzek 1990.
3. Rotroff 1997.
4. Rotroff 1997, 84.
5. It should be noted that the total for each type in the catalogue must be treated with some caution, since unfortunately a few boxes of the stored material disappeared at a certain time. For that reason, no statistics on the frequency of the various types of pottery have been prepared.
6. See Rotroff 1997, nos. 107 and 109.
7. See Bouzek 1993, fig. 15, *1-2* and Parovič-Pešikan 1974, 82, fig. 78, *1-3*.
8. The literature on the subject is vast. For a brief, informative account see Guldager Bilde 1993.
9. For the manufacture of the 'céramique grise' in Histria see *e.g.* Coja 1968, 305-329.
10. Knipovič 1940, 158-163.
11. Kul'skaja 1940, 171-184; Kul'skaja 1958, 77-91.
12. See also Krapivina 1987, 71-79; Gudkova and Krapivina 1988, 83. Unfortunately, special works by Čubova and Wetstein, devoted to the local grey ware of Olbia, still remain unpublished.
13. Knipovič 1940, 158 f.
14. Knipovič 1940, 158, 162.
15. Kul'skaja 1940, 176-178.
16. See Kul'skaja 1940, 180 table 6; Krapivina 1987, 71.
17. See Krapivina 1987, 71 ff.; Gudkova and Krapivina 1988, 82-103. Grey ware makes up about 95.5% of the locally produced table-ware from the Archaic period in Olbia (Krapivina 1987, 79).
18. Belov and Strželeckij 1953, 47, 51, 52, 58, 61; Belov, Strželeckij and Jakobson 1953, 164. Often this pottery is considered by scholars to be local, and dated to the second half of the 2nd century B.C. (see Belov and Strželeckij 1953, 51, 58). However, this is highly dubious, since in almost all cases, examples of this grey ware are found in levels dating within a very broad chronological frame, *i.e.* the 4th-2nd centuries B.C. or even broader. Unfortunately, due to lack of illustrations of these examples of grey ware vessels from Chersonesos, it is impossible to include them for direct comparison.
19. Samojlova and Strokin 1982, 142-145, fig. 1, *1-3*, *6*; fig 2, *1*; Karyškovskij and Klejman 1985, 57.
20. See Rotroff 1997, 183.
21. This feature apparently enabled the re-use of the central depression of broken fish-plates as oil lamps (see **E 11**).
22. Alexandrescu 1966, 286, 520 pl. 88, XXII, *16*. The date is far from certain.
23. See Meljukova 1975, 212, fig. 15, *15,* and 213, fig. 16, *18*.
24. Knipovič 1940, 161 f., type 52, pls. XXXXVIII, *8* and XXXIX, *9*.
25. Knipovič 1940, 162.
26. See Levi 1964a, 257.
27. See Latyševa 1978, 57, fig. 4, *3*. In accordance with G.D. Belov, she considers all finds of grey ware pottery to be Chersonesean imports (1978, 59), but without further arguing this point.

COMMONWARE

Sergei V. Kašaev

The term 'commonware' is used here for various groups of plain ware such as tableware, cooking ware, and toilet vessels. Not included are transport amphorae and pithoi (see Part II **A**). In this chapter 266 items are catalogued, including complete forms and fragments giving profiles; but no account is taken of body sherds. Each item of commonware is considered in terms of its shape and decoration, as well as of its production centre and visually discernible paste composition and colour. Identification of the latter may be complicated, since many finds were annealed during the fire that destroyed house U6.

All the finds are listed according to the vessel type, and are further graded on 'from a larger pot to a smaller one, from a complete vessel to a fragment'. Each description begins with the general shape of the item and ends with the shape of separate parts, beginning at the rim and working towards the base.

Some of the fragments and complete vessels have traces of repairs: they were broken sometime in antiquity and mended by means of lead clamps (*cf.* Part II **K**). The majority of the clamps melted in the fire but their presence is evidenced by holes preserved in the sherds.

Most of the items are drawn to a scale of 1:2 (except for the 'barrel' **C 265** and mortars/louteria drawn to a scale of 1:4). To achieve a more informative illustration, lid **C 185** is placed for a better visualisation together with the pot (**C 137**) to which it evidently belonged and not among the other lids.

It should be noted that some groups of vessels belonging formally to commonware (lamps, votive vessels, large containers, and vessels in grey ware with a coating resembling a poor-quality glaze) have not been included here but have been assigned to other chapters in the present volume (Part II **A**, **B**, **E**, **G**)

Classification of the commonware

The whole assemblage of commonware found during excavation of house U6 has been divided according to general function into four groups (A-D), which in their turn are divided into a total of fifteen subgroups according to the individual type of pot:

A. Table-ware
Two-handled closed shapes
Jugs
Beakers/cups
Fish-plates
Plates
Bowls

B. Toilet vessels
Lekythoi
Small bottles

A-B
Unidentified fragments of closed-shape vessels

C. Cooking ware
Pots
Lids

D. Household ware
Mortars/louteria

C-D
Unidentified fragments of open-shape vessels

E. Rare forms
Miscellaneous vessels

A. TABLE-WARE (**C 1-87**)

TWO-HANDLED CLOSED SHAPES (**C 1-6**)

This group comprises closed vessels resembling jugs in shape but provided with two vertical handles. They include pelikae and amphorae. The fragments recorded here come from a total of six two-handled specimens in all (**C 1-6**, Pls. 77 and 107).

C 1-3 represent large fragments of body and neck. Unfortunately the lower parts are missing, but we are nevertheless able to form some idea of their overall shape. Probably they had ring bases like *e.g.* those of jugs **C 12** and **C 13**.

The clay of **C 1** and **C 3** is of a reddish colour and contains fine particles of limestone; the body is decorated with five encircling bands of red paint. Sample **C 2** is of brown clay coated in a plain, greenish slip without any pattern. Judging by the peculiarities of the clay, slip, and patterns, items **C 1** and **C 3** came from ceramic workshops in Chersonesos. Vessels of a similar shape were found during excavations at the settlement of Chaika near Eupatoria in layers dated to the beginning of the 3rd century B.C. Reporting on these excavations, A.N. Karasev and I.V. Jacenko proposed a reconstruction of the shape of the vessels, which they considered to be products of Chersonesean potters.[1] The chronology of amphoras from Chaika corresponds well to the period of occupation of house U6.[2]

Fragments **C 4-6** are taken to be as rim edges of pelikai; it is difficult to arrive at a judgement as regards their complete shape.

JUGS (**C 7-23**)

Catalogued in this subgroup are 17 finds of jugs and jug fragments Pls. 77-80 and 107. Among the complete vessels, or those whose shape may be restored with a fair degree of probability, six varieties can be distinguished according to their morphological features:

a) Four jugs (**C 7-11**, Pls. 77-79) have a tall, broad neck, a spheroid body narrowing towards the base, a profiled rim, a vertical handle, and paste of similar composition – the main inclusions are fine particles of pyroxene and limestone. The colour of the clay varies from pink to red. Jugs **C 7** and **C 8** are decorated with three encircling bands of red paint, and **C 8-10** each have two encircling grooves around the neck. Quite a number of such jugs have been found in Chersonesos, at the settlement of Chaika, in Kalos Limen, at Bosporos, and in Gorgippia (modern Anapa). A jug of a shape resembling that under discussion, but coated with black glaze, was found in Olbia. Similar vessels are also represented in the material from the Athenian Agora.

b) Three jugs (**C 12-14**, Pls. 78-79 and 107) are similar in shape, decoration, and clay content to the first type (a). However, they look like reduced copies of the preceding specimens, with the proportionality of certain parts only slightly altered. The necks of **C 12-14** are larger in proportion to the bodies, and this is possibly due to technical peculiarities involved in their manufacture. Parallels are found in the material from the north-western Crimea (for references see **C 12** in the catalogue below).

Jugs similar to the two types described above are fairly common in levels of the late 4th-3rd century B.C. in Chersonesos and at settlements in its *chora*.[3] On the basis of her consideration of finds from Olbia, T.N. Knipovič distinguished such jugs as a special type no. 25 and, further, stressed that they are 'common everywhere'.[4] Various scholars date similar vessels to the period within the late 4th-3rd century B.C. The wide geographical spread of such jugs – from Olbia to Bosporos – indicates not only the 'popularity' of vessels of this shape but also that they were manufactured in a number of different centres.

c) The profile of jug **C 15** (pl. 79) is reconstructed simply on the evidence of the several fragments that are preserved and the result can therefore be only an approximation. Probably the complete vessel was similar to Sparkes and Talcott no. 280 from the Athenian Agora.[5]

d) Jugs **C 16-18** (Pls. 80 and 107) have a squat inflated body, a short neck, a rim of peculiar profile with a horizontal 'shelf', and sharply curved handle rising above the rim; the upper attachment point is located inside the rim. Vessels similar to **C 16-18** were widespread throughout the territories ruled by Chersonesos; they have been excavated at the settlement of Chaika, in Chersonesos, and elsewhere (for references see **C 16** in catalogue below). Similar forms have also been found at Olynthos.

Parallels to **C 16-18** are so frequent that it is justifiable to suppose a Chersonesean production of this shape. Various scholars have also emphasised the 'commonness' of the type and have dated it widely to the 4th-2nd century B.C.[6] The finds from Panskoye I are dated to a narrower period during the first third of the 3rd century B.C.[7]

e) Jug **C 19** (Pl. 80) has an egg-shaped body, a funnel-shaped neck with an inturned rim, and a handle rising above the flange. Probably, a jug from Chersonesos may be considered a parallel (*cf.* the reference at catalogue entry, below).

f) The profile of jug **C 20** (Pl. 80) is reconstructed on the basis of the fragments. The vessel is of a peculiar form – a broad funnel-shaped neck approximately equal to the body in height; the rim is straight; the joint between the neck and the body is emphasised by an encircling fillet modelled in relief. The vessel is provided with a ring foot. There are examples of a similar shape among the material from the Athenian Agora.[8] A parallel found in the

necropolis of Kerkinitis is black-glazed,[9] yet, it too has an encircling fillet at the joint between neck and body.

g) **C 21-23** are fragments of out-turned rims of jugs.

BEAKERS/CUPS (**C 24-27**)

This subgroup includes small vessels resembling cups in shape. They have a slightly out-turned rim, a spheroid body with flat or rounded bottom, and a small loop handle (Pl. 81).

Taken together, these specimens represent a number of varieties of 'cups'. A vessel resembling **C 24** was found in Gorgippia. Shapes close to **C 25** were found in a necropolis near Kerch; in the 3rd century B.C. level in Myrmekion – 'vessels with a spheroid base'[10] and in Olbia – pot of type 18, according to T.N. Knipovič.[11] Small vessels very close in shape to the examples listed here have been excavated at Olynthos. According to T.N. Knipovič it is type 28, and it was found in Olbia among material dated to the 3rd century B.C.[12] Pottery from Bosporos and Olbia provides parallels to **C 27**; it is T.N. Knipovič's type 16.

On the basis of consideration of the shape one may suggest the function of the cups. The round-bottomed ware like *e.g.* **C 25** may have served as bowls for heating small portions of food on a hearth. The flat-bottomed ones like **C 26** could be used for drinking. In both cases, the small capacity of such vessels is probably to be explained by their destination for children.

FISH-PLATES (**C 28-29**)

This group includes two red-ware fish-plates of differing shapes **C 28** and **C 29** (Pl. 81).

a) Similar shapes have been found in excavations in Chersonesos[13] and Olbia.

b) Fish-plates similar to **C 29** but without of undercutting round the central depression on the floor have been found during excavations in Olbia.

PLATES (**C 30**)

This group is confined to a single specimen, namely small plate **C 30** without depression in the floor, and having an offset horizontal lip decorated with two encircling grooves (Pl. 81). Very similar small plates have been found both in a necropolis near Kerch and in the 3rd century B.C. level in Myrmekion;[14] (in the publication of the latter excavation they are called 'saucers').

BOWLS (**C 31-87**)

The total number of finds catalogued in this group amounts to 57 items (**C 31-87**, Pls. 82-89). For this reason parallels are presented not in the individual catalogue entries but all together at the end of the following.

In terms of morphology bowls may be divided into two varieties:

1. Bowls with one handle, so-called 'one-handlers' **C 31-38** – have a flat or rounded base, an inturned or thickened rim and one horizontal loop handle. The handle is attached to the rim at a slight angle – tending upwards – and may be any one of the following shapes in section: round (**C 33**), oval (**C 37**), or flat with a central groove (**C 32** and **C 38**). Rim fragments (**C 35** and **C 36**) are included here because they preserve traces of the attachment of a now lost handle. It must therefore be borne in mind that the rims of 'one-handlers' that showed no traces of a handle attachment may in fact have been included in the second variety 'handleless bowls'.

2. Handleless bowls (**C 39-87**) have a ring base or a flat one and an inturned and/or thickened rim.

In terms of typology, the shape of the rim is to my mind the most important feature of both varieties of bowls, so it is according to this characteristic that they are grouped together in the catalogue entries below – first the 'one-handlers', then the plain, handleless specimens. Six kinds of bowl are distinguishable in terms of similarity of shape and form of rim.

a) With sharply incurving rim:
   – bowls with handle **C 31-34**;[15]
   – handleless bowls **C 39-60**.
b) Bowls with thickened interior rim:
   – bowls with handle **C 35**, **C 60**;[17]
   – handleless bowls **C 61-71**.[18]
c) With 'beak-shaped' rim:
   – no 'one-handler' with this feature has been found;
   – handleless bowls **C 72-75**.[19]
d) With rounded rim:
   – bowls with handle **C 37** and **C 38**;
   – handleless bowls **C 76-80**.[20]
e) Bowls with slightly curved walls and rounded rim:
   – no 'one-handlers' of this shape have been found;
   – handleless bowls **C 81-86**.[21]
f) With out-turned rim set off from the bowl:
   – no 'one-handlers' with this feature have been found;
   – handleless bowl **C 87**.[22]

The bowl bases may be divided into three types according to shape: a) rounded: found only on 'one-handlers', **C 32-34**; b) with ring base: on handleless bowls **C 42-46**; c) flat base with a small depression on the underside: on 'one-handler' **C 31**, and on handleless bowls **C 52-54**.

The fragment of bowl **C 56** is decorated on the outside with a groove encircling the body and, a little above this, a parallel row of incisions made before firing.

Bowls are fairly common in excavations of Greek sites; however, the published illustrations do not always enable us to form a clear idea of the details of their shape. Therefore, I list here additional references to similar vessels, but without any comparison of different varieties: Alekseeva 1991, 134, pl. 61; Belov 1938, 231, fig. 71; Belov 1950b, 228, fig. 2; Belov 1953, 292, fig. 6, *a*; Gajdukevič 1987, 76, figs. 92, 95; Kapošina 1959, 141, figs. 48-49; Karasev and Jacenko 1965, fig. 6; Kobylina 1951, 248, fig. 5; Marčenko 1956, 109, fig. 2, *9-10*;

Samojlova 1988, fig. 17, 7; Condurachi 1966, pl. 59; Robinson 1950, pl. 214, nos. 684, 687; Sparkes and Talcott 1970, no. 748.

B. TOILET VESSELS (**C 88-101**)

LEKYTHOI (**C 88-93**)

A total of six vessels (**C 88-93**, Pls. 90 and 107) are catalogued in this group. The two varieties of lekythoi met with are similar in body-shape, but the first type (a) differs in having a vertical handle.

a) The three lekythoi **C 88-90** are identical in shape – a round body on a ring foot, a vertical handle, and a funnel-shaped mouth; however, the composition of the paste differs, being either brick-red tempered with pyroxene or pinkish with inclusions of mica. Vessels similar to ours in shape have been excavated at the settlement of Chaika; they are also found among the material from the Athenian Agora and Olynthos.

b) The three lekythoi **C 91-93** are interesting for their standard shape: spheroid body on a ring foot, narrow, funnel-shaped neck, incurving rim, and identical fabric – reddish pink with inclusions of fine particles of mica and pyroxene. Probably the specimens came from ceramic workshops in Chersonesos. The closest parallel is a lekythos found in a burial in the Lower Bug area; however, the parallel has a small loop handle.

SMALL BOTTLES (**C 94-101**)

This subgroup comprises a total of eight items – both vessels (restored) and fragments showing the relevant profile (Pls. 91 and 107). They belong to a category of small closed shapes, *viz.* small bottles and unguentarii.

a) The small bottle **C 94** has a spheroid body, a loop handle, and a tall, narrow neck with a funnel-shaped mouth. The neck is not applied strictly vertically but leans slightly to one side. It may at first appear that this deviation was not intended but occurred by mere chance during drying before the vessel was put into the kiln. However, a number of finds of small bottles with such a 'defect' leads one to doubt the accidental character of this feature.
The clay is reddish pink and contains fine particles of pyroxene. Chersonesean production. Probably, the fragmentary necks **C 95** and **C 96** belong to similar vessels.

b) Unguentarii **C 97-101** have an egg-shaped body on a small flat base, a tall and narrow neck with horizontally out-turned rim. The neck and shoulder are decorated with encircling bands of black paint. Possibly the paint was red originally but was darkened in the fire. S.F. Strželeckij describes similar vessels with red ornamentation;[24] the clay of **C 97** has also changed colour, acquiring a greyish beige hue with pinkish stains.

Similar vessels were found in Chersonesos in a level of the late 4th-early 3rd century B.C.,[25], in the Lower Bug region in a tomb dated to the 4th century B.C.,[26] and in the necro-

polis of the early 3rd century B.C. at Olbia.[27] The small bottle **C 101** is very badly preserved; possibly it is from Asia Minor; Sparkes and Talcott 1970, no. 1491 from the Athenian Agora is a parallel.[28]

A-B (**C 102-121**)

UNIDENTIFIED FRAGMENTS OF CLOSED-SHAPE WARE (**C 102-121**)

This group comprises unattributed profiled fragments of closed shapes: jugs, lekythoi, *etc.* Such a grouping is justified because in most cases it is difficult to establish a firm correlation between certain shapes and certain types of fragments. For while the original form of a closed shape can be identified with a fair degree of probability from fragments of its rim, such a means of identification is considerably more difficult in the case of fragemtns of *e.g.* handles and bases, which are very much alike for quite different vessels. In total, sixteen finds (**C 102-121**, Pls. 91-92) – three handles and thirteen bases – are catalogued here.

The handle fragments (**C 102-104**) belonged to various closed shapes. When made, the handles were set vertically on the vessels of which they formed a part and were of an elongated or loop shape. The following types of cross-section are met with: a) oval (**C 102**); b) near to triangular (**C 103**); c) lens-shaped (**C 104**).

The state of preservation of the bases of closed shapes **C 105-121** varies. There are some small fragments and some almost complete bases of considerable size. In their form, the bases can be divided into two varieties: a) with ring foot (**C 105-109**); b) flat with a depression on the underside (**C 110-121**). The depression was formed when the vessel was removed from the potter's wheel, and it may be small as on **C 116**, or of considerable size as on **C 110**.

C. COOKING WARE (**C 122-187**)

POTS (**C 122-167**)

Vessels used for cooking meals on an open fire must be able to withstand continual exposure to high temperatures and have forms suitably adapted to the hearth or the stove. Vessels in this category have been given a number of different names in the Russian literature: 'cooking cauldrons',[29] 'bowls or pots with handles'[30], and so on. Such a variety of terms may cause a certain amount of confusion. In the present work, therefore, I have decided in favour of the general term 'cooking ware' as the most accommodating term, reflecting as it does both the purpose and the peculiarities of such ware.

In her report, T.N. Knipovič discusses the shapes 'of pots and bowls with handles and lids'[31] found during excavations in Olbia. There are parallels to the Olbian types 11 and 14 among the finds from U6; but interestingly there are no specimens resembling the Olbian types 10, 12, 13, and 15.[32] Probably, this can be explained by the differing traditions of the local potters at the respective sites.

The cooking vessels have various shapes of body from deep, spheroid to shallow, with flat or rounded base. The rims are modelled so as to provide a special ledge for the lid to rest

on. The handles may be vertical with flattened cross-section or they may be horizontal round-section loop handles. The smallness of the available sample of cooking ware has so far precluded the reliable identification of any regular combination of a certain shape of body with a particular type of handle.

According to the shape of the body, cooking ware may be divided into pots and less deep and more open vessels more like a pan. Both varieties may have a flat or rounded base. Accordingly, four types of cooking vessels may be distinguished: a) deep with flat base (**C 122-125**); b) deep round-bottomed (**C 126-128**); c) shallow with flat base (**C 129-131**); d) shallow round-bottomed (**C 132-134**). Of rims, three varieties are recorded: a) with a ledge to accommodate the lid (**C 122-127**); b) 'forked' rim (**C 128**); c) with a short vertical rim (**C 129** and **C 130**). The handles show four varieties, which are combinations of their shape, their section profile, and the means of attachment: a) oval (flattened) cross-section; angular (like Greek capital gamma) shape; attached to the rim and the body at the points of greatest diameter (**C 122**, **C 124-125**, and **C 127**); b) oval (flattened) section; vertical loop shape; attached to the rim and the body (**C 132-134**); c) round section; vertical loop shape; attached to the body at the point of greatest diameter (**C 126**); d) round section; horizontal loop shape; attached to the body at the point of greatest diameter (**C 128** and **C 129**). As mentioned above, the bases of the vessels are: a) flat (**C 125**, **C 157-159**, **C 164-165**), or b) rounded (**C 127-128**, **C 132-134**).

Four pot fragments (Pl. 93), including three rims (**C 164-166**) and one base (**C 167**), are recorded under this subgroup, since the presence of soot on the fragments and the high degree of exposure to heat and flame that they exhibit indicate that they were used for cooking. The fragment of base **C 167** is made from a paste identical to that of the rim **C 166**. The absence of complete shapes in the present case may be compensated for by a reconstruction made on the basis of fragments of the profiled parts **C 166** and **C 167** and some parallels. This specific group comprises vessels with a spheroid body, a flat or rounded base, and a profiled out-turned rim. Handles have not been recorded; however, it does not rule out the possibility of their having been present on the complete vessels. Similar ware has been found in Chersonesos,[33] at the Kimmerian Bosporos and at the town-site and necropolis of Olbia – according to T.N. Knipovič, it is type 16.[34]

LIDS (**C 168-187**)

This subgroup comprises 20 specimens (Pls. 97-98 and 108) in various states of preservation. The lids served for covering the mouths of various vessels, *e.g.* pans, and (as today) were indispensable items of kitchen equipment. Finds of lid fragments are rather uncommon at ancient sites; however, some are always present.[35]

To my mind, the most characteristic feature of lids is the shape of their edge. It is the latter that 'interacts' with the pot and may affect the shape of the latter's rim. Thus lids may be divided into three subgroups according to the shape of the edge: a) with the edge turned downwards (**C 168-170**); b) with rounded edge not set off from the lid itself (**C 171-174**); c) with an out-turned edge to fit tightly to the pan (**C 175-185**).

For the sake of convenience the lids were provided with a small handle on the top. The shape of the handle was most probably of no significance for the users but was possibly a decorative element. We know of specimens decorated with a pattern (*cf.* (b) below). Lid handles were made: a) with a rounded top **C 187**;[36] b) with a flat top, sometimes decorated with a pattern (**C 180** and **C 185**) or with a shallow depression (**C 181**); c) with a funnel-shaped depression (**C 171**, **C 177**, **C 183-184**, and **C 186**).

The illustrations of lids in the existing literature do not enable me to make reference in this catalogue to exact parallels. Therefore, I list here the publications containing photographs or drawings of the lids resembling our specimens: Alekseeva 1997, 338, pl. 56, *21-23, 25, 26*; Belov, Strželeckij and Jakobson 1953, 233, pl. V, *7*; Gajdukevič 1952, 202, fig. 113; Gajdukevič 1987, 80, fig. 98; Boriskovskaja 1999, 60, catalogue no. 136; Karasev and Jacenko 1964, fig. 21; Strželeckij 1961, 213, fig. 83; Robinson 1950, pl. 137, no. 217, pl. 223 no. 982.

D. HOUSEHOLD WARE (**C 188-224**)

MORTARS AND LOUTERIA (**C 188-224**)

This group comprise the heavy, open-shape vessels known in the literature as mortars[37] or louteria,[38] the difference between these two types being not always precisely defined. Both have a rounded body on a ring foot or a flat base, a profiled rim, two horizontal handles, and sometimes a spout.

In her study[39] N.A. Lejpunskaja takes 'louteria' to be 'small bathtubs', and points out that 'mortar' is not an appropriate term, since it gives no indication of the function of the vessels. As both terms are equally frequent in the literature, it seems reasonable, for our purposes, to accept that it is the presence of a spout that distinguishes a louterion from a mortar. Thus we can make the two categories more precise, and assume too that the function of the vessels with a spout may have been different from those without. In addition, a certain difference in proportions should also be noted, for, as a rule, unspouted mortars have a deeper reservoir than do louteria; and the handles differ between the two types of vessel: on mortars they are like 'sausages' applied to the rim, while on louteria they take the form of indentations or depressions to accommodate the fingers; in the latter case, flat strips of applied clay were sometimes used. The subdivision of the ware into the varieties presented here is made on the basis of the above considerations.

In total, 37 finds (Pls. 99-101 and 108) are recorded for this group. In terms of the profile of the rim and the shape of the handles and the presence or absence of a spout, three variants can be reliably distinguished.

a) Mortars (**C 188-201**) with rim of mushroom-shaped section. Peculiar to these specimens is a horizontal or more frequently sloping inner 'shelf' beneath the rim. They also have two symmetrical horizontal round-section handles that closely 'hug' the body; the presence of spouts has not been noted. The base may be flat with a small depression on the underside (**C 188-189**, **C 192-193**, **C 197-198**) or it may have a ring foot (**C 196**).

Such forms are fairly common in Chersonesos and at the settlements in its neighbourhood,[40] *e.g.* at the West-Donuzlav settlement.[41]

In works on the pottery of Olbia[42] similar ware is not reported, which probably indicates that such mortars were of Chersonesean manufacture. In addition to their shape, all vessels of this type show a similarity in the colour and composition of the paste: the clay is of orange-pink-red shades and is tempered with limestone, sand, and pyroxene; the slip is white, sometimes with a greenish hue. All these facts go to prove the Chersonesean origin of the ware. Other scholars are of the same opinion: 'louteria of a Chersonesean production with

the rim edge turned towards the centre'.[43] Some of the specimens are of brownish clay (**C 188** and **C 190**) with an admixture of pyroxene that possibly suggests their southern Pontic origin. Thus it is possible that some of the mortars came from Sinope or Herakleia – but judging by the known examples, most of them were manufactured in Chersonesos itself.

b) Louteria having a turned-down, beak-shaped rim with a low vertical wall on top of the rim, and horizontal handles applied in the form of flat strips of clay with three to five finger indentations; only these specimens have spouts (**C 202-214**). Most of the louteria, like *e.g.* **C 202**, have two symmetrically placed handles; however, one archaeologically complete specimen (**C 203**) has a single handle – opposite the spout. Only vessels with flat or slightly concave base of this variety were found in house U6. They have numerous parallels in Chersonesos and its *chora*, *e.g.* in Novo-Fedorovka and at the settlement of West-Donuzlav mentioned above. Of the material from Olbia the closest parallel is type 35,[44] a type distinguished on the basis of a single fragment discovered among material dated to the 4th-3rd centuries B.C. – which is an indication that such finds are rare in Olbia and probably of Crimean origin. This supposition is confirmed by the absence of shapes under discussion here from Lejpunskaja's report on Olbian louteria.[45] The ceramic paste of louteria is usually reddish in colour and contains particles of limestone and pyroxene. Probably most such louteria are of the same origin as the mortars described above – *i.e.* they come from Chersonesos. Some vessels, judging by the violet shade of the clay, come from Sinope, though the illustrations of Sinopean louteria of the 4th-3rd centuries B.C. presented by I.B. Zeest and I.D. Marčenko[46] only partly resemble the finds from Panskoye I and do not show direct parallels.

c) Mortars **C 215-220** with horizontally out-turned rim and two symmetrically placed round-section horizontal handles that closely 'hug' the body. No traces of spout are preserved. The only specimen of this type with its profile preserved completely (**C 215**) has a flat base. The ceramic paste of the vessels shows various tints of orange and is tempered with limestone and sand, or pyroxene and sand. Specimens of a similar shape are reported from the Kimmerian Bosporos but those are made of different clay and were considered by the researchers to be Herakleian.[47] In Olbia the parallels are represented by types 7 and 8;[48] on the basis of their fabric N.A. Lejpunskaja judged these vessels mostly to be of Sinopean production. In my opinion a southern Pontic origin for our mortars is the most probable.

Below, under the letters 'd' and 'e' are presented the vessels and fragments **C 221-224**, which do not belong to any of the varieties listed above. It is possible that if we had more material available for study, these specimens would be found to constitute new types of mortars/louteria on the territory of the Chersonesean state.

d) Louteria **C 221** and **C 222** differ in the shape of their rim and spout from the varieties identified above. These specimens have a thick, rounded, out-turned rim distinguished by a small vertical ridge (**C 221**) or a groove (**C 222**); the paste is brown.

Similar louteria were found in great quantity during excavations in Olbia, and were distinguished as special type 10.[49] Lejpunskaja points out that such vessels are made of red or brownish clay, possibly close to that of which the louteria from Panskoye I are made. The fact that only these few individual specimens differ from the other ware at U6 suggests that they were imported from Herakleia Pontike or some other centre. No finds of similar louteria are reported from any other site in the *chora* of Chersonesos.

e) Rims **C 223** and **C 224** belonged to extremely heavy, thick-walled vessels, the complete shape of which may be conjectured on the basis of similar ware from Olbia.[50]

C-D (**C 225-264**)

UNIDENTIFIED FRAGMENTS OF OPEN-SHAPE VESSELS (**C 225-264**)

The unidentified fragments of open-shape ware comprise only bases, since rims of bowls and mortars/louteria are readily identifiable and have therefore been included in the appropriate subgroups above. In contrast to rims, it is difficult to attribute bases reliably to any particular type of ware. In total 40 specimens (Pls. 102-105) are inventoried in this subgroup. As in the case of closed-shape ware, the bases of open shapes present two varieties: a) bases on a ring foot (**C 225-234**); b) flat bases **C 235-264** with small depressions on the underside.

E. RARE FORMS (**C 265-266**)

MISCELLANEOUS VESSELS (**C 265-266**)

This group includes atypical vessels (Pl. 106) of which any kind of parallels are rather rare at excavations of Greek-period settlements in the northern Black Sea area.

Of great interest is the unusual shape of the heavy fragment **C 265**. It has been hypothetically reconstructed as a 'barrel', though somewhat less than half the complete profile is preserved. My conjecture is based on the presence of the transition from body to neck near the loop handle. It is this transition as well as the find of a similar vessel in the *chora* of Chersonesos, which make the proposed reconstruction most attractive. However, a cone-shaped projection on the inside of the pot may run counter to my suggestion, since its purpose is wholly unclear and no traces of any such projection have been discovered elsewhere. Judging by the colour of the clay, the vessel is most probably of Chersonesean origin.

Flask **C 266** is restored; vessels of similar shape are not very common, being only occasionally found at ancient sites.

CATALOGUE

A. TABLE-WARE

TWO-HANDLED CLOSED SHAPES

C 1. U6 courtyard. Pl. 77.

Fragmentary Chersonesean amphora.

H. 14.2 cm, D. of rim 9.0 cm, D. of neck 6.8 cm, max. D. of body 20.6 cm. The rim is out-turned; the shoulder sloping. The two vertical handles are oval in section with a small semi-circular ridge on the outside. The clay is brick-red with sparse inclusions of limestone and sand. The slip is beige pink, cracked in some places due to the fire; the clay is also discoloured in such places.

Parallels: Karasev and Jacenko 1963a, fig. 45; Karasev and Jacenko 1964, fig. 45; Karasev 1965b, fig. 48, *5*.

C 2. U6 courtyard, E-4. 1973. Pl. 77.

Fragmentary amphora.

H. 11.2 cm, D. of rim 4.2 cm, D. of neck 3.4 cm, max. D. of the body 14.0 cm.

Out-turned rim; sloping shoulder. Two vertical handles, oval in section. The clay is very smooth, beige brown with sparse inclusions of fine sand. Greyish green slip.

C 3. U6 room 12. Find list 6/22. 1971. Pls. 77 and 107.

Fragmentary Chersonesean amphora.

H. of body 21.0 cm, D. of neck 6.4 cm, D. of body 19.0 cm.

The rim is out-turned; the neck elongated. One handle is oval in section, of the other only the attachment points are preserved. The clay is brick-red with inclusions of fine particles of limestone and pyroxene and some sparsely disseminated spangles (mica?). Reddish pink slip. There are five bands of red paint on the body.

Parallels: Karasev and Jacenko 1966, fig. 34.

C 4. U6 courtard, V-3. 1975. Pl. 77.

Rim fragment of Chersonesean pelike.

H. 18 cm, D. of rim 16.0 cm, max. D. 17.0 cm; 25° preserved.

This fragment belonged to a vessel with a broad mouth having a strongly out-turned rim, beak-shaped in section. The clay is red with inclusions of limestone and sparsely disseminated particles of pyroxene. Pink slip.

Parallels: Zujkov 1987, 72, fig. 2, *10*.

C 5. U6 courtyard, B-2. 1975. Pl. 77.

Rim fragment of a pelike.

H. 1.4 cm, D. of rim 16.0 cm, max. D. 17.6 cm; 25° preserved.

Same shape as **C 4** the only difference being that the wall of this fragment is thinner. The clay is greyish with inclusions of fine limestone. The slip is pale with a greenish hue.

For parallels see **C 4**.

6. U6 courtyard. 1975. Pl. 77.

Rim fragment of a Chersonesean (?) pelike.

H. 3.8 cm, D. of rim 11.0 cm; 90° preserved.

Shaped like a smoothly curved funnel, the rim is rounded. The clay is reddish pink with sparse inclusions of sand and spangles (mica?). Beige slip.

Parallels: Alekseeva 1997, 340, pl. 58, *13*; Zujkov 1987, 72, fig. 2, *8*.

JUGS

C 7. U6 room 13. Find list 8/17. 1971. Pl. 78.

Chersonesean jug.

H. 27.8 cm, D. of rim 10.8 cm, D. of neck 8.6 cm, D. of body 21.0 cm, D. of base 10.0 cm.

Restored. Tall, broad neck, rounded out-turned rim, rounded body, concave base; the handle is vertical and flattened in section. Reddish pink clay tempered with fine pyroxene. The slip is pale with a greenish hue; it is flaking off in some places. At the maximum diameter of the body three encircling bands of red paint.

Parallels: Borisova 1966b, 95, pl. 15, *1*; Belov 1950b, 229, fig. 3; Karasev and Jacenko 1964, fig. 44; Sparkes and Talcott 1970, nos. 188, 189, 1615.

C 8. U6 room 13. Find list 8/19. 1971. Pl. 78.

Chersonesean jug.

H. 29.0 cm, D. of rim 10.0 cm, D. of neck 9.0 cm, D. of body 20.4 cm, D. of base 10.8 cm. Restored. The shape is similar to that of **C 7**. The clay is reddish pink with inclusions of fine pyroxene. Pale greenish slip. Round the neck there are two grooves incised before firing. Three bands of red paint encircle the body.

Parallels: Alekseeva 1976, 49, figs. 4, *2-3*; Daševskaja 1967, 166, fig. 4, *2*; Kapošina 1959, 139, fig. 42; Karasev 1963b, 38, fig. 14, *2*; Kutajsov and Užencev 1994, 63, fig. 14, *4*; Karasev and Jacenko 1966, fig. 51; Latyševa 1978, 57, fig. 4, *4*; Strželeckij 1961, 216, fig. 86.

C 9. U6 room 12. Find list 6/20. 1971. Pl. 79.

Chersonesean jug.

H. 28.0 cm, D. of rim 8.0 cm, D. of neck 8.4 cm, D. of body 19.0 cm, D. of base 10.0 cm.

The clay is reddish pink. The slip is of the same colour as the clay. Two grooves incised before firing encircle the neck.

C 10. U6 well, no. 119. 1977. Pl. 79.

Fragmentary Chersonesean jug.

H. 25.0-26.0 cm, D. of rim 6.8 cm, D. of neck 6.0 cm, D. of body 18.0 cm, D. of base 9.0 cm.

The shape is restored on the basis of the fragments and is

similar to that of **C 7**. The clay is beige red with inclusions of fine limestone. The slip is pale beige pink. On the neck there are two encircling grooves incised before firing.

Parallels: Karasev 1963b, 38, fig. 14, *2*; *cf.* Dukati 1922, 479, fig. 348.

C 11. U6 room 12 Find list 6/4. 1971. Pl. 77.

Rim fragment of a Herakleian jug.

H. 8.0 cm, D. of rim 10.0 cm; 180° preserved.

There is a ridge on the neck; the beak-shaped rim is smoothly out-turned. The clay is red-brown with inclusions of mica, limestone, and potsherd. Greenish slip.

Parallels: Lancov 1994, 81, fig. 6.

C 12. U6 room 13. Find list 8/18. 1971. Pl. 78.

Chersonesean jug.

H. 18.2 cm, D. of rim 7.6 cm, D. of neck 6.6 cm, D. of body 14.8 cm, D. of base 7.4 cm.

Tall, broad neck; out-turned rim; rounded and slightly flattened body; concave base; vertical handle (only the attachment points are preserved). The clay is red and tempered with pyroxene, sparse grains of coarse sand, and limestone. Pink-red slip. Round the neck there are two bands of red paint and traces of white paint in between; there are three bands of red paint round the body.

Parallels: Daševskaja 1967, 166, fig. 4, *5*; Karasev and Jacenko 1964, fig. 39.

C 13. U6 room 24. Find list 8/13. 1973. Pl. 78.

Chersonesean jug.

H. 14.0 cm, D. of neck 5.6 cm, D. of body 13.6 cm, D. of base 7.6 cm.

Shape similar to **C 12**. The clay is reddish pink with inclusion of fine pyroxene. Slip of the same colour as the clay. There are three encircling bands of red paint on the body.

Parallels: see **C 12**.

C 14. U6 room12. Find liste 6/12. 1971. Pl. 79.

Fragmentary Chersonesean jug.

H. 12.5 cm, D. of neck 5.8 cm, D. of body 14.0 cm, D. of base 7.6 cm.

Similar to **C 12** in shape. The clay is coloured from red to dark beige; tempered with sand. The fragment was badly burnt in the fire, so that the clay changed colour. Pale slip. There are three encircling bands of red paint on the body.

Parallels: see **C 12**.

C 15. U6 courtyard. 1975. Pl. 79.

Fragmentary Herakleian jug.

H. *c.* 19.5 cm, min. D. of neck 7.6 cm, D. of rim 10 cm, D. of body 15.5 cm, D. of base 9.4 cm. The shape is restored. The rim is rounded; the neck is broad and shaped like a funnel with two shallow angles on the outside; the transition from the sloping shoulder to the body is smooth; the bottom is flat and has a small depression; there is a vertical loop handle. The clay is light brown with numerous inclusions of coarse pyroxene and sparsely disseminated grains of limestone. Unslipped.

Parallels: *cf.* Sparkes and Talcott 1970, no. 280.

C 16. U6 courtyard, D-2. 1973. Pls. 80 and 107.

Chersonesean jug.

H. 18.9 cm, D. of rim 7.2 cm, D. of neck 4.5 cm, D. of body 18.6 cm, D. of base 9.2 cm.

The specimen is restored; it has a short narrow neck, out-turned rim; the long sloping shoulder is continued into an balloon-shaped body; the base is concave; the vertical handle rises above the rim (only the attachment points are preserved). Reddish pink clay with sparse inclusion of coarse sand. Pale slip of greenish hue.

Parallels: Alekseeva 1997, 340, pl. 58, *1-2*; Belov 1953, 17, fig. 3; Belov and Strželeckij 1953, 43, fig. 9, *ж*; Karasev and Jacenko 1965a, fig. 29; Karasev and Jacenko 1966, fig. 55; Lancov 1994, 81, fig. 6; Samojlova 1988, fig. 17, *5*; Strželeckij 1961, 216, fig. 86; Robinson 1950, pl. 169, nos. 432, 437.

C 17. U6 courtyard, B-5. Find list 16/20. 1972.

Fragmentary jug.

H. 13.0 cm, D. of body 17.0 cm, D. of base 10.8 cm.

The body shape is similar to that of **C 16** but there is a ring foot instead of a concave base. Reddish pink clay with inclusion of coarse sand. White slip.

Parallels: *cf.* **C 16**.

C 18. U6 courtyard, D-3. 1975. Pl. 80.

Jug, rim fragment.

H. 2.6 cm, D. of rim 10.0 cm; 45° preserved.

The rim shape is similar to that of **C 16**. Greyish clay with very sparsely disseminated black inclusions. Slip of the same colour as the clay.

Parallels: *cf.* **C 16**.

C 19. U6 room 3. Find list 6/32. 1969. Pl. 80.

Jug.

H. 17.0 cm, D. of rim 6.8 cm, D. of neck 5.2 cm, D. of body 14.0 cm, D. of base 7.4 cm.

The shape is restored on the basis of the fragments. Greenish grey clay with inclusion of coarse sand. Slip of the same colour as the clay.

Parallels: *cf.* Belov and Strželeckij 1953, 43, fig. 9, *a*.

C 20. U6 courtyard, E-4-6. 1974. Pl. 80.

Juglet.

H. *c.* 10.5 cm, D. of rim 6.0 cm, D. of neck 4.8 cm, D. of body 8.4 cm, D. of base 5.0 cm.

The shape is restored on the basis of the fragments. Of the vertical handle only the upper attachment point is preserved. One of the base fragments is almost entirely vitrified (!) as a result of the fire. Grey clay with inclusion of disseminated limestone. On the shoulder is an encircling relief fillet of triangular section.

Parallels: *cf.* Michlin 1981, 188, fig. 6, *4*; Sparkes and Talcott 1970, nos. 177, 1389.

C 21. U6 courtyard, D-6. 1975. Pl. 80.

Jug, rim fragment.

H. 3.2 cm, D. of rim 8.0 cm; 30° preserved.

The rim is of nearly triangular section, out-turned like a small funnel. The clay is greyish with fine black inclusions. Dark grey slip.

C 22. U6 courtyard, D-3. 1975. Pl. 80.

Jug, rim fragment.

H. 2.8 cm, D. of rim 6.2 cm; 80° preserved.

Horizontally out-turned rim. Greyish clay.

C 23. U6 room 15. Find list 9/19. 1971. Pl. 80.

Jug, rim fragment.

H. 2.8 cm, D. of rim 7.0 cm; 50° preserved.

The heavy rim is slightly out-turned. Dark pink clay with inclusions of fine limestone and pyroxene. Light beige slip.

BEAKERS/CUPS

C 24. U6 courtyard, B-6. 1975. Pl. 81.

Mug.

H. 8.8 cm, D. of rim 7.0 cm, D. of mouth 5.2 cm, D. of body 10.0 cm.

Pear-shaped body; the rounded rim is out-turned; vertical handle of flattened section; the base is missing. Pale pink-beige clay with inclusion of numerous dark particles. Pale slip.

Parallels: Zujkov 1987, 72, fig. 2, *20*. *Cf.* Robinson 1950, pl. 134, no. 7.

C 25. U6 courtyard. 1975. Pl. 81.

Small mug.

H. 5.6 cm, D. of rim 5.4 cm, D. of mouth 4.2 cm, D. of body 9.6 cm.

Biconical body; the rounded rim is out-turned; rounded base; the handle is missing but the lower attachment point is preserved. Pink clay with inclusions of pyroxene and mica. Slip of the same colour as the clay.

Parallels: Belov 1981, 177, fig. 16; Knipovič 1940, 148, pl. XXXIV, *3*; Kruglikova 1984, 134, pl. XXXVI; Robinson 1950, pls. 148-149.

C 26. U6 room 12. Find list 6/45. 1971. Pl. 81.

Small mug.

H. 6.0 cm, D. of rim 4.8 cm, D. of body 8.0 cm, D. of base 4.5 cm.

In form the vessel is a small pot with a vertical loop handle. Reddish brown clay with inclusions of pyroxene and sand. The outer surface is so completely smooth that it has acquired a sheen.

Parallels: Gajdukevič 1952, 203, fig. 116, *1*; Kapošina 1959, 138, fig. 41; Knipovič 1940, 139, pl. XXXI, *5*.

C 27. U6 courtyard, V-4. 1973. Pl. 81.

Small mug.

H. 6.0 cm, D. of rim 3.5 cm, D. of body 6.8 cm.

The body is pear-shaped; straight sharpened rim; rounded base. The small poorly preserved fragments do not enable any suppositions to be made on the presence or absence of handles. Orange clay with inclusions of sparse particles of fine pyroxene, sand, and spangles. A very similar specimen was published by Strželetzkij; in his opinion it could have served as a measuring cup.[51]

Parallels: *cf.* Kapošina 1959, 136, fig. 36; Knipovič 1940, 139, pl. XXXI, *1-3*; Strželeckij 1961, 217, fig. 88.

FISH PLATES

C 28. U6 courtyard, V-4. Find list 1/11. 1973. Pl. 81.

Fragments of a fish-plate.

H. 5.2 cm, max. D. of rim 26.0 cm, D. of ring base 8.0 cm.

The shape is reconstructed on the basis of the fragments. Beige-brown clay with inclusions of mica and sand (quartz). Beige slip. The rim is not overhanging but straight with two grooves on the insite; on the outside there is a thickening below the rim. The depression in the middle of the floor has a pronounced ridge around it.

Parallels: Parovič-Pešikan 1974, 88, fig. 82, *9*.

C 29. U6 courtyard, V-4. 1973. Pl. 81.

Fish-plate fragments.

H. 4.4 cm, max. D. of rim 22.4 cm, D. of ring base edge 7.8 cm.

The shape is reconstructed on the basis of the fragments. The rim is overhanging; the depression in the floor is undercut. Brick-red clay with inclusions of fine limestone and mica.

Parallels: Maslennikov 1998, 85, fig. 43, *14*; Parovič-Pešikan 1974, 88, fig. 82, *10*.

PLATES

C 30. U6 room13. Find list 8/33. 1971. Pl. 81.

Small plate.

H. 1.5 cm, D. of lip 13.0 cm, D. of ring base 6.8 cm.

Restored. Small plate on a ring base; there are two encircling grooves on the lip. The clay is brownishred with inclusions of fine particles of limestone. There is an extremely thin brownish slip on the upper surface.

Parallels: Gaidukevič 1952, 202, fig. 115, *3*; Kapošina 1959, 141, fig. 48.

BOWLS

One-handlers

C 31. U6 courtyard, D-2, 3. 1973. Pl. 82.

One-handler.

H. 6.8 cm, D. of rim 20.4 cm, D. of body 23.5 cm.

Restored. The rim is strongly incurved, forming what is actually a biconical vessel. The base is flat; of the missing handle only the attachment points are preserved. Greyish pink clay with inclusions of fine pyroxene and sand. Pale slip of greenish hue on both inside and outside.

C 32. U6 well, no. 166. 1977. Pl. 82.

One-handler, a fragment.

H. 6.6 cm, D. of rim 20.0 cm.

The rim of the bowl is incurved. Horizontal loop handle C-shaped in section. The rounded base is partly missing. Pink clay with inclusions of sparsely disseminated limestone and sand. White slip.

C 33. U6 courtyard, B-5. Find list 16/26. 1972. Pl. 82.

One-handler, a fragment.

H. 3.5 cm, D. of rim 20.0 cm; 25° preserved.

Similar to **C 32** in shape; the round-section loop handle rises slightly above the rim; the base is missing. Greyish pink clay with inclusion of sand. Light grey slip.

C 34. U6 courtyard. Pl. 82.

One-handler, a fragment.

H. 5.4 cm, D. of rim 15.2 cm; 270° preserved.

Incurved rim. The round-section loop handle rises considerably above the rim; the base is missing. Pinkish red clay with inclusions of coarse quartz (?) and mica. Light pink slip.

C 35. U6 courtyard, V-4. 1973. Pl. 82.

One-handler, fragments.

H. 5.4 cm, D. of rim 30.0 cm.

Three fragments of the thickened rim with traces of the attachment of a horizontal loop handle are preserved. Pinkish orange clay with inclusions of pyroxene and ground grog (?). The vessel is coated with a thick, greenish slip.

C 36. U6 courtyard, B-3,V-5. 1975. Pl. 82.

One-handler, fragments.

H. 2.5 cm, D. of rim 20.0 cm; 45° preserved.

Fragments of thickened incurved rim; of the handle only the attachment point is preserved. Pink-beige clay with inclusions of coarse grains of pyroxene and sand (quartz). Light slip of greenish hue.

C 37. U6 courtyard. 1974. Pl. 83.

One-handler.

H. 14.0 cm, D. of rim 20.0 cm, D. of base 8.8 cm.

Restored. Rounded rim; concave base; the horizontal oval-section loop handle rises above the rim. Pinkish red clay with inclusion of coarse pyroxene. Pale-beige slip, badly worn.

C 38. U6 courtyard, G-3. 1971. Pl. 83.

One-handler, a fragment.

H. 4.5 cm, D. of rim 17.0 cm; 160° preserved.

Fragment of a rounded rim with a handle rising above the rim. Orange clay with inclusions of fine limestone and ground shells. Unslipped.

Bowls without handle

C 39. U6 courtyard, DE-6. Find list 17/80. 1972. Pl. 83.

Bowl rim, a fragment.

H. 8.8 cm, D. of rim *c.* 36.0 cm.

Orange clay with inclusions of limestone and potsherd. Light orange slip.

C 40. U6 courtyard, V-3. 1971. Pl. 83.

Bowl rim, a fragment.

H. 5.0 cm, D. of rim 34.0 cm (?); 50° preserved.

Orange clay with inclusions of coarsely ground limestone and grog (?). Slip of the same colour as the clay.

C 41. U6 courtyard, V-6. 1972. Pl. 83.

Bowl rim, a fragment.

H. 6.2 cm, D. of rim 34.0 cm (?); 50° preserved.

Brick-red clay with inclusions of fine limestone and sand. Light pink slip on both sides.

C 42. U6 courtyard, G-2, 3. 1973. Pl. 84.

Fragmentary bowl.

H. 9.0 cm, D. of rim 30.0 cm, D. of base 15.0 cm.

Similar in shape to **C 41**. Beige-orange clay with inclusion of coarse sand grains. Unslipped. Traces of mending.

C 43. U6 courtyard, D-6. 1975. Pl. 84.

Bowl.

H. 13.0 cm, D. of rim 30.0 cm, D. of body 32.5 cm, D. of base 13.0 cm.

Restored. Deep bowl with rounded rim and ring foot. Brick-red clay with inclusion of sand. White slip on the outside.

C 44. U6 room 12. Find list 6/25. 1971. Pl. 86.

Bowl.

H. 13.0 cm, D. of rim 30.0 cm, D. of body 32.5 cm, D. of base 13.0 cm.

Restored. Rounded, sharply incurved rim; concave base. Reddish pink clay with inclusions of pyroxene. Pale slip. Six repair-holes for mending-clamps are preserved.

C 45. U6 courtyard, V-3, 4. 1971, 1973. Pl. 84.

Bowl.

H. *c.* 12.5 cm, D. of rim 29.5 cm, D. of body 31.0 cm, D. of base 13.8 cm.

Shape reconstructed on the basis of the fragments. Rounded rim; ring foot. Pinkish orange clay with inclusions of pyroxene, limestone, and grog (?). Pale-yellow slip.

C 46. U6 courtyard, D-5. 1971. Pl. 84.

Bowl.

H. 12.0 cm, D. of rim 28.0 cm, D. of body 30.4 cm, D. of base 12.5 cm; 100° preserved.

Tapered incurved rim; ring base. Brick-red clay with inclusion of coarse quartz (?). Pale slip on the outside.

C 47. U6 courtyard, B-6. 1975. Pl. 83.

Rim fragments.

H. 4.5 cm, D. of rim 28.0 cm; 40° preserved.

Tapered incurved rim. Brick-red clay with inclusion of coarse quartz (?). Pale slip on the outside.

C 48. U6 courtyard, G-2. 1973. Pl. 85.

Rim fragment.

H. 3.5 cm, D. of rim 28.0 cm(?); 25° preserved;

Orange-red clay with inclusions of sand (quartz). Slip of the same colour as the clay.

C 49. U6 courtyard, V-6. Find list 16/149. 1972. Pl. 85.

Rim fragment.

H. 6.6 cm, D. of rim 24.8 cm, 40° preserved.

Red-orange clay with inclusions of ground shell and sand. Slip the same colour as the clay on outside.

C 50. U6 courtyard, E-6. 1972. Pl. 85.

Rim fragment.

H. 4.5 cm, D. of rim 23.3 cm; 22° preserved.

Orange clay with inclusions of sand (quartz) and spangles. Beige-orange slip.

C 51. U6 room 26. Find list 10/9. 1972. Pl. 85.

Rim fragment.

H. 6.8 cm, D. of rim 24.0 cm; 20° preserved.

Brick-red clay with inclusions of fine pyroxene and limestone. Slip of the same colour as the clay.

C 52. U6 courtyard, D-5. 1974. Pl. 86.
Fragmentary bowl.
H. 8.4 cm, D. of rim 21.5 cm, D. of body 23.5 cm, D. of base 10.2 cm; 90° preserved.
Rounded, incurved rim; slightly concave base. Brick-red clay with inclusion of coarse pyroxene. Pale slip on outside.

C 53. U6 courtyard, D-5. 1974. Pl. 86.
Bowl.
H. 7.0 cm, D. of rim 21.5 cm, D. of body 23.2 cm, D. of base 8.8 cm.
Restored. Similar to **C 52** in shape. Red-pink clay with inclusion of sand. Pale slip of greenish hue on outside.

C 54. U6 courtyard. 1971. Pl. 86.
Bowl.
H. 8.0 cm, D. of rim 20.8 cm, D. of body 22.5 cm, D. of base 10.0 cm
Restored. Similar to **C 52** in shape. Grey-green clay with inclusion of fine particles of pyroxene. Dark green slip with yellowish stains. Eight repair-holes for four lead mending-clamps.

C 55. U6 courtyard, V-4. 1975. Pl. 85.
Bowl fragment.
H. 10.0 cm, D. of rim 20.6 cm, D. of body 22.8 cm; 40° preserved.
Deep bowl with incurved rim. The clay is greyish in section with inclusion of limestone (?), and the texture of the fabric is very porous like that of bone. Bright red-orange slip.

C 56. U6 courtyard, V-2. 1975. Pl. 86.
Bowl fragment.
H. 4.0 cm, D. of rim 18.0 cm; 150° preserved.
Pink-beige clay with inclusion of fine limestone. Slip of the same colour as the clay. The fragment is decorated on the outside of the body with an encircling groove and, above this a row of incisions made before firing.

C 57. U6 courtyard, E-3. 1975. Pl. 85.
Rim fragment.
H. 3.8 cm, D. of rim 18.0 cm; 20° preserved.
Pinkish red clay with inclusions of pyroxene and a small amount of limestone. Pale slip. Traces of repair.

C 58. U6 courtyard, B-5. Find list 16/27. 1972. Pl. 86.
Bowl fragment.
H. 4.0 cm, D. of rim 18.0 cm; 150° preserved.
Pinkish beige clay with inclusion of fine sand grains. Pale beige slip.

C 59. U6 courtyard, VD-4. 1973. Pl. 85.
Rim fragment.
H. 2.3 cm, D. of rim 13.0 cm.
Pink clay with inclusion of fine sand grains. Pale slip.

C 60. U6 courtyard, V-4. 1973. Pl. 85.
Rim fragment.
H. 5.2 cm, D. of rim 12.0 cm; 120° preserved.
Orange clay with inclusion of unidentified sparse fine particles. Pale-orange slip.

C 61. U6 courtyard, V-4, 6, D-5. Find list 16/150. 1972. Pl. 87.
Bowl.
H. *c.* 11.0 cm, D. of rim 27.0 cm, D. of body 28.8 cm, D. of base 12.5 cm.
Restored. Incurved rim and concave base. Pink clay with inclusions of mica and sand (?). Pale slip. The bowl is carelessly modelled, with the measurement between rim and base varying considerably (from 10.5 to 11.5 cm). The imprint of a wooden splinter measuring 0.6-3.0 cm and burnt out during firing is preserved inside.

C 62. U6 courtyard, E-6. 1972. Pl. 87.
Rim fragment.
H. 2.0 cm, D. of rim 24.0 cm; 18° preserved.
Bright orange clay with inclusions of limestone and sparsely disseminated pyroxene. White slip. One repair-hole for a mending-clamp is preserved.

C 63. U6 courtyard. Pl. 87.
Rim fragment.
H. 3.6 cm, D. of rim 24.0 cm; 15° preserved.
Red-pink clay with sparse inclusion of pyroxene. The fragment is split lengthwise.

C 64. U6 courtyard. Pl. 87.
Rim fragment.
H. 2.3 cm, D. of rim 22.0 cm (?); 5° preserved.
Brick-red clay with inclusions of grog (?) and sand.

C 65. U6 courtyard, DE-6. find list 17/80. 1972.
Bowl rim fragment.
H. 4.0 cm, D. of rim 22.0 cm.
Beige clay with inclusions of limestone, pyroxene, and grog (?). Slip of the same colour as the clay.

C 66. U6 well, no. 165. 1977. Pl. 87.
Bowl rim fragment.
H. 3.5 cm, D. of rim 20.0 cm; 30° preserved.
Dark pink clay with inclusions of limestone and pyroxene (?). Thick coating of greenish slip on outside. One repair-hole for a mending-clamp is preserved.

C 67. U6 well, no. 165. 1977. Pl. 87.
Rim fragment.
H. 3.6 cm, D. of rim 20.0 cm; 20° preserved.
Pinkish beige clay with inclusion of limestone; porous fabric. Greenish slip.

C 68. U6 courtyard, E-2, 3. 1975. Pl. 87.
Fragmentary bowl.
H. 6.2 cm, D. of rim 16.5 cm, D. of body 18.2 cm, D. of base 7.0 cm; 35° of rim and 90° of base preserved.
The shape is reconstructed on the basis of the fragments. Interior thickened rim; almost flat base. Dark grey clay with inclusions of coarse pyroxene, limestone, and sand (?). Brown slip. The vessel is very coarsely and carelessly modelled.

C 69. U6 courtyard, D-3, 6. 1975. Pl. 87.
Rim fragment.
H. 2.5 cm, D. of rim 16.0 cm; 50° preserved.
Orange clay with inclusions of sand and limestone. Pale white slip.

C 70. U6 courtyard. Pl. 87.

Rim fragment.

H. 2.6 cm, D. of rim 16.0 cm; 25° preserved.

Brick-red clay with inclusion of sand. Pale slip of greenish hue.

C 71. U6 courtyard, D-5. 1975. Pl. 87.

Rim fragment.

H. 5.5 cm, D. of rim 16.4 cm, D. of body 17.5 cm, D. of base 5.5 cm; 45° preserved.

The shape is reconstructed; it is similar to that of **C 68**. Red-pink clay with inclusions of coarse and medium-sized particles of pyroxene. Pink slip. Repair-holes for mending-clamps are preserved.

C 72. U6 courtyard. Pl. 88.

Rim fragment.

H. 4.2 cm, D. of rim 25.0 cm; 75° preserved.

Incurving bevelled rim. Greyish clay with inclusion of sand (quartz). Pale slip of greenish hue.

C 73. U6 courtyard, B-2, 6; G-4. 1975. Pl. 88.

Rim fragment.

H. 6.0 cm, D. of rim 20.0 cm; 170° preserved.

Red-violet clay with inclusions of pyroxene and sand. Pale-beige slip. Traces of repairs.

C 74. U6 courtyard, E-4. 1975. Pl. 88.

Rim fragment.

H. 5.6 cm, D. of rim 18.0 cm; 50° preserved.

Pinkish brown clay with inclusions of sand. Pale slip. A groove is scratched round the inside beneath the rim.

C 75. U6 courtyard. 1973. Pl. 88.

Bowl rim fragment.

H. 3.5 cm, D. of rim 18.0 cm; 40° preserved.

Pinkish grey clay with inclusions of limestone and sand particles. Pale slip.

C 76. U6 courtyard, BE-3. 1975. Pl. 88.

Rim fragment.

H. 4.2 cm, D. of rim 22.0 cm; 60° preserved.

Brownish clay with an orange interlayer in the middle; inclusions of pyroxene and sand. Pale slip.

C 77. U6 courtyard, B-5,VGE-4. 1975. Pl. 88.

Rim fragments.

H. 2.0 cm, D. of rim 20.0 cm; 175° preserved.

Reddish orange clay with inclusion of coarse limestone. Pale slip.

C 78. U6 courtyard, V-4. 1972. Pl. 88.

Rim fragments.

H. 4.0 cm, D. of rim 16.0 cm; 90° preserved.

Light orange clay with abundant inclusions of pyroxene and potsherd (?). Greenish slip.

C 79. U6 courtyard, V-4. Find list 1/18. Pl. 88.

Bowl fragments.

H. 6.3 cm, D. of rim 13.6 cm, D. of rim 14.8 cm, D. of base 6.0 cm; 90° preserved.

Rounded rim; concave base. Greyish clay; inclusions are unidentifiable. Greenish slip.

C 80. U6 courtyard, V-4. 1975. Pl. 88.

Rim fragments.

H. 3.5 cm, D. of rim 12.0 cm; 75° preserved.

Rounded rim. Greyish clay; inclusions are unidentifiable. Greenish slip.

C 81. U6 room 3. Find list 6/36. 1969. Pl. 89.

Bowl.

H. 8.0 cm, D. of rim 23.5 cm, D. of base 10.6 cm.

Restored; rounded rim; ring foot. Grey-beige clay with inclusion of pyroxene. Greenish slip on the outside.

C 82. U6 room 13. Find list 8/32. 1971. Pl. 89.

Fragmentary bowl.

H. 7.8 cm, D. of rim 22.4 cm, D. of base 10.0 cm.

A fairly large fragment showing the complete profile is preserved. Rounded rim; concave base. The walls thicken gradually from the base towards the edge of the rim. The vessel was severely burnt during the fire: it is therefore difficult to identify the colour of the clay; traces of pale slip are preserved.

C 83. U6 courtyard, D-4. 1975. Pl. 89.

Rim fragment.

H. 2.8 cm, D. of rim 22.0 cm; 15° preserved.

Reddish orange clay with inclusion of extremely fine spangles. Red slip.

C 84. U6 courtyard, V-3. Pl. 89.

Rim fragment.

H. 2.0 cm, D. of rim 20.0 cm(?); 15° preserved.

Greyish red clay with inclusion of fine pyroxene. Light grey slip.

C 85. U6 courtyard, E-3. 1975. Pl. 89.

Rim fragments.

H. 3.5 cm, D. of rim 17.6 cm; 125° preserved.

As a result of the fire the clay became greyish; inclusions of pyroxene and sand. Pale slip. One of the fragments was vitrified in the fire.

C 86. U6 room 17. Find 13/15. 1973. Pl. 89.

Rim fragment.

H. 3.8 cm, D. of rim 15.0 cm; 20° preserved.

Dark brown clay with inclusions of fine limestone, pyroxene, and grog (?). Pale slip.

C 87. U6 courtyard, E-6. Find list 17/74. 1972. Pl. 89.

Bowl.

H. 8.5 cm, D. of rim 23.2 cm, D. of rim 24.8 cm, D. of base 11.0 cm.

Restored. Beak-shaped rim separated from the body by a groove; the base is almost flat. Brick-red clay with inclusions of extremely fine limestone and sand. Pale-pink slip. Four repair-holes for two lead mending-clamps are preserved.

Parallels: Alekseeva 1997, 353, pl. 71, *4*.

B. TOILET VESSELS

LEKYTHOI

C 88. U6 room 13. Find list 8/20. 1971. Pls. 90 and 107.
Lekythos.
H. 22.2 cm, D. of rim 5.6 cm, D. of mouth 3.5 cm, D. of body 16.6 cm, D. of foot 9.6 cm.
Restored. Slender, funnel-shaped mouth with a rib round the transition from neck to mouth; rounded incurving rim; spheroid body with sloping shoulder, on a ring foot; flat handle, almost rectangular in section. Brick-red clay with inclusions of fine pyroxene. Pale grey-beige slip.
Parallels: Karasev 1963, fig. 47; Karasev and Jacenko 1965, fig. 9; Sparkes and Talcott 1970, nos. 1108, 1684; Robinson 1950, pl. 157, no. 304.

C 89. U6 room 13. Find list 8/23. 1971. Pls. 90 and 107.
Chersonesean lekythos, a fragment.
H. 16.5 cm, D. of body 16.0 cm, D. of base 8.8 cm.
The body is restored. Similar to **C 88** in shape. Pink clay with inclusion of fine spangles of mica. Pale grey-beige slip.
Parallels: *cf.* **C 88**.

C 90. U6 courtyard, V-4. Find list 1. 1973. Pl. 90.
Fragment of mouth of lekythos
H. 3.0 cm, D. of rim 6.0 cm, D. of mouth 3.0 cm; 75° preserved.
Shape similar to **C 88**. Red clay.
Parallels: *cf.* **C 88**.

C 91. U6 room 3. Find list 6/31. 1969. Pls. 90 and 107.
Chersonesean lekythos.
H. 18.4 cm, D. of rim 3.2 cm, D. of mouth 2.2 cm, D. of body 15.0 cm, D. of foot 7.4 cm.
Restored. Short, funnel-shaped neck; incurving rim; spheroid body on ring foot. Reddish pink clay with inclusion of fine mica. Slip of the same colour as the clay.
Parallels: *cf.* Kapošina 1956, 233, fig. 13; Maslennikov 1998, 85, fig. 52, *9-10*; Onajko 1980, pl. XIII, *128*.

C 92. U6 room 13. Find list 8/22. 1971. Pls. 90 and 107.
Chersonesean lekythos.
H. 16.6 cm, D. of rim 3.2 cm, D. of mouth 2.2 cm, D. of body 13.0 cm, D. of foot 6.4 cm.
Restored. Shape similar to that of **C 91** except for slightly differing form of the ring foot. Reddish pink clay with inclusion of pyroxene and mica. Slip the same colour as the clay.
Parallels: *cf.* **C 91**.

C 93. U6 room 12. Find list 6/23. 1971. Pls. 90 and 107.
Chersonesean lekythos.
H. 17.0 cm, D. of rim 2.4 cm, D. of mouth 1.8 cm, D. of body 12.6 cm, D. of foot 7.6 cm.
Restored. Shape similar to that of **C 91** except for slightly differing form of the ring foot. Red clay.
Parallels: *cf.* **C 91**.

SMALL BOTTLES

C 94. U6 room 13. Find list 8/21. 1971. Pls. 90 and 107.
Chersonesean small bottle.
H. 13.8 cm, D. of neck 2.0 cm, D. of rim 2.6 cm, D. of body 10.0 cm, D. of base 5.0 cm.
Restored. Reddish pink clay.
Parallels: Karasev and Jacenko 1965, fig. 9a; Karasev and Jacenko 1966, figs. 24, 50, 74.

C 95. U6 courtyard, V-4. 1973. Pl. 91.
Neck of small bottle.
H. 4.2 cm, D. of rim 3.2 cm; 360° preserved.
Preserved complete except for the handle, of which only the upper point of attachment remains. The fabric contains quartz sand; the colour of the clay was altered during the fire but had probably been red.
Parallels: *cf.* **C 94**.

C 96. U6 courtyard, V-4. 1973. Pl. 91.
Neck of small bottle.
H. 4.4 cm, D. of rim 3.2 cm; 360° preserved.
Preserved complete. Orange clay with inclusion of fine limestone; the extremely loose fabric is crumbling. Pale slip.
Parallels: *cf.* **C 94**.

C 97. U6 courtyard, V-4. 1973. Pl. 91.
Fragmentary unguentarium.
H. *c.* 14.5 cm, D. of rim 2.6 cm, D. of body 8.0 cm, D. of base 2.8 cm.
Elongated oval body on a small foot with flat base; tall, narrow neck; out-turned rim. The clay has acquired a greyish beige colour, possibly under the effect of the fire; in some places pink stains – remains of the original colour – are faintly visible. The surface is carefully smoothed. Decorated with encircling bands of black paint on the neck.
Parallels: Belov 1938, 234, fig. 74; 247, fig. 90; Belov and Jakobson 1953, 114, fig. 5, *a-b*; Kapošina 1959, 137, fig. 39; Karasev and Jacenko 1966, fig. 47; Parovič-Pešikan 1974, 109, fig. 93; Strželeckij 1948a, 60, fig. 6; Strželeckij 1961, 214, fig. 84.

C 98. U6 courtyard, V-4. 1973. Pl. 91.
Neck of unguentarium.
H. 2.8 cm, D. of rim 2.6 cm; 360° preserved.
Complete neck. Shape is similar to that of **C 97**. Pinkish-red clay with inclusion of fine spangles. Slip of the same colour as the clay. The neck is decorated with two encircling red bands.
Parallels: *cf.* **C 97**.

C 99. U6 courtyard. 1975. Pl. 91.
Neck of unguentarium, a fragment.
H. 1.8 cm, D. of rim 2.6 cm, D. of neck 1.8 cm; 360° preserved.
Shape similar to that of **C 97** and **C 98**. Greyish brown clay.
Parallels: *cf.* **C 97**.

C 100. U6 courtyard. 1973. Pl. 91.
Fragments of unguentarium.

H. 6.5 cm, D. of body 8.0 cm, D. of base 2.8 cm.

Only the lower part is preserved. Shape similar to that of **C 97**. Orange clay with inclusions of sparsely disseminated particles of fine light and dark mineral and spangles of mica (?). Pale slip.

Parallels: *cf.* **C 97**.

C 101. U6 room 35. Find list 6/2. 1975. Pl. 91.

Fragmentary unguentarium.

H. *c.* 6.0 cm, D. of neck 1.6 cm, D. of body 4.0 cm, D. of base 2.0 cm.

Has not been restored. Very poorly preserved – the clay has completely flaked into discrete layers and crumbled. The shape is restored on the basis of the separate fragments: small egg-shaped body on flat base. Bright red-orange clay with inclusion of numerous fine spangles. Pale slip.

Parallels: Maslennikov 1998, 85, fig. 52, *5*; Sparkes and Talcott 1970, no. 1491.

A-B

UNIDENTIFIED FRAGMENTS OF CLOSED-SHAPE WARE

C 102. U6 room 13. Find list 8/26. 1971. Pl. 91.

Handle of a Chersonesean vessel.

Width 2.2 cm, thickness 1.0 cm.

Oval in section. Both attachment points are preserved. The colour of the clay varies from red (inside) to greenish (on the outside); there are inclusions of limestone and spangles (mica?).

C 103. U6 courtyard, V-6. 1975. Pl. 91.

Fragment of a handle.

Width 1.8 cm, thickness 1.0 cm.

Near to triangular in section; there is a shallow depression on the outside. Greyish clay with sparse inclusions of fine particles of pyroxene. Light grey slip.

C 104. U6 courtyard, E-5. 1975. Pl. 91.

Fragment of a handle.

Width 1.8 cm, thickness 0.8 cm.

Lens-shaped section. Greyish clay with inclusions of sparse coarse pyroxene.

C 105. U6 room 16. Find list 10/9. 1971. Pl. 91.

Ring foot of a closed shape.

H. 8.0 cm, D. of base 10.4 cm; 110° preserved.

Brick-red clay with abundant inclusions of pyroxene particles of various sizes. Unslipped.

C 106. U6 courtyard, G-3. 1975. Pl. 91.

Ring foot of a closed shape.

H. 2.5 cm, D. of base 9.0 cm; 155° preserved.

Brick-red clay with inclusions of sand (quartz). Pale slip.

C 107. U6 courtyard, G-2. 1975. Pl. 91.

Ring foot of a closed shape.

H. 2.4 cm, D. of base 8.8 cm; 90° preserved.

Orange-red clay. White slip. Traces of soot are visible on the inner surface.

C 108. U6 courtyard. 1975. Pl. 91.

Ring foot of a closed shape.

H. 3.2 cm, D. of base 4.8 cm; 360° preserved.

Beige-grey clay with inclusion of fine sand.

C 109. U6 well, no. 182. 1977. Pl. 91.

Ring foot of a closed shape.

H. 1.4 cm, D. of base 4.6 cm; 360° preserved.

Bright orange clay with sparse inclusions of sand grains (quartz). White slip on outside.

C 110. U6 courtyard, G-3. 1975. Pl. 92.

Bottom of a massive closed-shape vessel.

H. 4.6 cm, D. of edge 14.0 cm; 130° preserved.

Orange-red clay with inclusion of sand (quartz). Red-pink slip.

C 111. U6 well, no. 180. 1977. Pl. 92.

Base of a closed shape.

H. 1.5 cm, D. of base 8.5-9.0 cm; 360° preserved.

Three symmetrical holes for hanging are bored in the bottom; possibly the base was reused to suspend a hanging lamp. Orange clay with inclusion of fine limestone. White slip on outside.

C 112. U6 well, no. 134. 1977. Pl. 92.

Base of a Herakleian closed shape.

H. 7.6 cm, D. of base 8.5 cm; 360° preserved.

Greyish brown clay with inclusions of sparsely disseminated limestone and pyroxene. Slip of the same colour as the clay.

C 113. U6 room 15. Find list 9/17. 1971. Pl. 92.

Fragment of base of a closed shape.

H. 6.4 cm, D. of base 8.2 cm; 45° preserved.

Beige clay. Pale slip of greenish hue.

C 114. U6 room 13. Find list 8/24. 1971. Pl. 92.

Base of a closed shape.

H. 7.2 cm, D. of base 7.4 cm; 360° preserved.

Brick-red clay with sparse inclusions of sand. Pale slip.

C 115. U6 courtyard, D-5. 1975. Pl. 92.

Base of a closed shape.

H. 2.6 cm, D. of base 6.8 cm; 360° preserved.

Pink-orange clay. Greyish slip.

C 116. U6 well, no. 183. 1977. Pl. 92.

Base of a closed shape.

H. 1.2 cm, D. of edge 6.4 cm; 360° preserved.

Pinkish orange clay with inclusions of 'metallic' spangles.

C 117. U6 room 20. Find list 4/36. 1972. Pl. 92.

Base of a closed shape.

H. 1.6 cm, D. of base 6.0 cm; 360° preserved.

Red-pink clay with sparse inclusions of fine pyroxene.

C 118. U6 courtyard, G-2. 1975. Pl. 92.

Fragment of base of a closed shape.

H. 1.4 cm, D. of base 6.0 cm; 120° preserved.

Light brown well-levigated clay. Grey-brown slip.

C 119. U6 courtyard, E-6. 1975. Pl. 92.

Fragment of base of a closed shape.

H. 1.2 cm, D. of base 6.0 cm; 100° preserved.

Greyish clay. Slip of the same colour as the clay.

C 120. U6 courtyard, V-4. 1973. Pl. 92.

Fragment of base of a closed shape.

H. 1.8 cm, D. of base 4.8 cm; 180° preserved.

Orange clay with inclusions of fine pyroxene and sand (quartz).

C 121. U6 well, no. 181. 1977. Pl. 92.

Base of a Chersonesean closed shape.

H. 1.5 cm, D. of edge 5.0 cm; 360° preserved.

Pink clay with inclusions of limestone and sand.

C. COOKING WARE

POTS

C 122. U6 room 12. Find list 6/37. 1971. Pls. 93 and 108.

Fragmentary Herakleian pot.

H. 13.0 cm, D. of rim 20.5 cm, D. of mouth 18.5 cm, D. of body 23.5 cm, D. of base 7.0 cm.

Restored. Rounded body narrowing sharply towards the base; rim has a marked ledge to accommodate the lid; flat bottom; the vertical handles flattened in section rise above the rim. Red-pink clay with inclusions of pyroxene. Slip of the same colour as the clay.

Parallels: Alekseeva 1976, 46, fig. 2, *7*; Belov 1938, 231, fig. 71; Knipovič 1940, 138, pl. XXIX, *3-4*; Štitelman 1956, 265, fig. 7, *1*; Robinson 1950, pl. 137, no. 218.

C 123. U6 courtyard, D-6. Find list 17/100. 1972. Pl. 93.

Fragmentary pot.

H. *c.* 10.0 cm, D. of rim 19.5 cm, D. of mouth 16.0 cm, D. of base 7.0 cm.

Similar to **C 122** in shape. All the fragments are severely scorched by fire; there are traces of mending (holes) on the bottom. Brown-red clay with inclusions of fine mica. Black polish on the outer surface.

Parallels: *cf.* **C 122** and Knipovič and Slavin 1941, 55, fig. 80.

C 124. U6 courtyard, V-4. Find list 1/35. 1973. Pl. 93.

Fragments of pot.

H. 7.5 cm, D. of rim 15.5 cm, D. of mouth 13.0 cm; 135° preserved.

Similar to **C 122** in shape. Handles rise above the rim. The fragments are severely scorched. Brown-red clay with inclusions of spangles (mica) and coarse dark particles.

Parallels: Alekseeva 1976, 46, fig. 2, *10*; Gajdukevič 1987, 69, fig. 83; Štitelman 1956, 265, fig. 7, *5*.

C 125. U6 room 35. Find list 6/3. 1972. Pl. 94.

Fragmentary pot.

H. 14.3 cm, D. of rim 9.6 cm, D. of mouth 8.0 cm, D. of body 22.0 cm.

Rounded body; high rim with a ledge for lid; the flattened angular handle springs horizontally from the rim and its lower attachment is at the greatest diameter of the body. Base missing. Brick-red clay.

Parallels: Boriskovskaja 1999, 61, catalogue no. 132; Štitelman 1956, 265, fig. 7, *1*; Robinson 1950, pl. 137, no. 217.

C 126. U6 courtyard, G-3. Find list 17/100. 1972. Pl. 94.

Fragmentary Herakleian pot.

H. 10.8 cm, D. of rim 19.0 cm, D. of mouth 16.0 cm, D. of body 21.5 cm.

Similar to **C 122** in shape. Two round-section loop handles rise above the rim; base missing. Dark grey-brown clay with inclusions of fine spangles. Black polish on outside.

Parallels: Gajdukevič 1952, 201, fig. 112, *3*; Gajdukevič 1987, 44, fig. 44; Zujkov 1987, 72, fig. 2, *42*; Knipovič and Slavin 1941, 55, fig. 80.

C 127. U6 courtyard, B-6. Find list 16/108. 1972. Pl. 94.

Fragmentary pot.

H. *c.* 17.5-18.0 cm, D. of rim 17.0 cm, D. of mouth 13.5 cm, D. of body 23.5 cm.

Spheroid body; rim has a ledge for lid; flat vertical handle rises slightly above the rim. The middle part of the pot is missing, but the upper and the lower part undoubtedly belong to the same vessel. Red-brown clay tempered with fine limestone and grog (?). Dark grey slip. Body and handles are decorated with vertical black stripes.

Parallels: Belov, Strželeckij and Jakobson 1953, 233, pl. V, *7*; Knipovič and Slavin 1941, 55, fig. 80.

C 128. U6 room 12. Find list 6/38. 1971. Pls. 95 and 108.

Pot.

H. 13.4 cm, D. of rim 15.0 cm, D. of mouth 12.5 cm, D. of body 18.8 cm.

Restored. Spheroid body; the rim is bifurcated to support the lid; round-section loop handles rose above the rim. Of the handles only the attachment points are preserved. Brick-red clay.

Parallels: Belov, Strželeckij and Jakobson 1953, 233, pl. V, *7*; Knipovič 1940, 138, pl. XXX, *5*; XXXII, *6*.

C 129. U6 courtyard, B-6. find list 16/109. 1972. Pls. 95 and 108.

Herakleian pot.

H. 8.5 cm, D. of rim 22.0 cm, D. of body 26.0 cm, D. of base 18.5 cm.

Restored. Flattened body; rounded rim; flat base; two horizontal handles rose above the rim, but only the attachment points are preserved. The bottom and body are scorched and covered with soot. Reddish brown clay with inclusions of mica. Slip of the same colour as the clay.

Parallels: *cf.* Gajdukevič 1952, 201, fig. 112, *6*; Boriskovskaja 1999, 60, catalogue no. 133; Robinson 1950, pl. 203, no. 619.

C 130. U6 courtyard, V-4. Find list 1/19-22. 1973. Pl. 95.

Fragmentary pot.

H. 3.8 cm, D. of rim 14.0 cm, D. of body 16.0 cm, D. of base 11.5 cm.

Similar to **C 129** in shape but considerably smaller in size. A fragment of wall retaining the complete profile from rim to base is preserved. The fragment is scorched and covered

with soot. Grey-brown clay.
Parallels: *cf.* **C 129**.

C 131. U6 courtyard, E-3. 1975. Pl. 95.
Fragmentary pot.
H. 3.6 cm, D. of rim 15.6 cm, D. of mouth 13.5 cm, D. of base 11.0 cm; 145° of rim preserved.
The rim having a small ledge for lid is out-curving; shallow body. Attachment point of handle is preserved. There is an encircling groove beneath the rim. Grey clay with inclusions of fine spangles. Slip of the same colour as the clay.
Parallels: *cf.* Alekseeva 1976, 46, fig. 2, *3*; 48, fig. 3, *11*; Boriskovskaja 1999, 60, catalogue no. 134.

C 132. U6 room 29. Find list 13/9. 1972. Pls. 95 and 108.
Pot.
H. 7.0 cm, D. of rim 13.5 cm, D. of mouth 11.0 cm, D. of body 14.0 cm.
Restored. Rim has a ledge for lid; shallow body with rounded base; two flat-section loop handles rise markedly above the rim. Bright orange clay, very dense.
Parallels: *cf.* Alekseeva 1976, 46, fig. 2, *12*; Gajdukevič 1952, 201, fig. 112, *1*.

C 133. U6 courtyard, B-5, V-3, 5. Find list 16/44. 1972. Pl. 95.
Fragmentary pot.
H. 4.5 cm, D. of rim 12.0 cm, D. of mouth 10.0 cm.
The reconstructed shape is similar to that of **C 132**. Of the handles only the attachment points are preserved. Red-brown clay. Brown slip.
Parallels: *cf.* **C 132**.

C 134. U6 room 12. Find list 6/44. 1971.
Fragments of a Herakleian pot.
D. of rim *c.* 7.0 cm.
Not restored. Shape similar to that of **C 132**. Numerous small fragments of rim, body, and handle are preserved. Lightbrown clay with sparse inclusions of limestone.
Parallels: *cf.* **C 132**.

C 135. U6 courtyard, E-3. 1975. Pl. 95.
Pot, a fragment of rim.
H. 3.2 cm, D. of rim *c.* 28.0 cm; 5° preserved.
Reddish pink clay with inclusions of extremely fine spangles and limestone particles.

C 136. U6 courtyard, D-5. 1975. Pl. 96.
Pot, a fragment of rim.
H. 3.6 cm, D. of rim *c.* 26.0 cm; 30° preserved.
Bright orange clay with inclusions of spangles (mica?) and very fine sand. Slip of the same colour as the clay. There are remains of red paint on the inside of rim.

C 137. U6 courtyard, E-5. 1975. Pl. 96.
Pot, a fragment of rim.
H. 2.8 cm, D. of rim *c.* 24.0 cm; 10° preserved.
Bright orange clay with inclusions of fine sand (?). Slip of the same colour as the clay.

C 138. U6 courtyard, G-2. 1975. Pl. 96.
Pot, a fragment of rim.
H. 4.2 cm, D. of rim 23.0 cm; 35° preserved.
Light orange clay with inclusions of limestone, sand, and potsherd. Beige slip.

C 139. U6 courtyard, D-6. find list 17/99. 1972. Pl. 96.
Pot, a fragment of rim.
H. 5.8 cm, D. of rim 20.0 cm; 35° preserved.
Orange-red clay tempered with fine sand. Pinkish red slip.

C 140. U6 courtyard, V-4. 1975. Pl. 96.
Pot, fragments of rim.
H. 2.4 cm, D. of rim 20.0 cm; 20° preserved.
Brownish red clay with fine white inclusions and grog (?).

C 141. U6 courtyard, D-5. 1975. Pl. 96.
Pot, a fragment of rim.
H. 2.2 cm, D. of rim 20.0 cm; 18° preserved.
Grey-brown clay with inclusions of numerous fine spangles (mica?) and sand. The surface of the rim is carefully smoothed on inside; light brown slip on outside.

C 142. U6 courtyard, D-5. Pl. 96.
Pot, a fragment of rim.
H. 2.2 cm, D. of rim 17.5 cm; 15° preserved.
Grey-brown clay with inclusions of pyroxene and sand. Grey slip. Traces of soot on outside.

C 143. U6 courtyard, D-5. 1975. Pl. 96.
Pot, a fragment of rim.
H. 2.2 cm, D. of rim 15.6 cm; 10° preserved.
Brownish red clay with inclusion of extremely fine spangles. Brownish slip on outside.

C 144. U6 courtyard, V-4. Find list 1/19-22. 1973. Pl. 96.
Pot, a fragment of rim.
H. 2.2 cm, D. of rim *c.* 16.0 cm; 15° preserved.
Red clay with inclusion s of fine spangles and sand.

C 145. U6 room 12. Find list 6/38. 1971. Pl. 96.
Fragment of a pot.
H. 3.5 cm, D. of rim 12.0 cm, D. of mouth 10.6 cm.
A fragment of rim and shoulder with the transition to the body is preserved. Brick-red clay with inclusions of mica. Traces of soot on outside.

C 146. U6 courtyard, E-6. 1975. Pl. 96.
Pot, a fragment of rim.
H. 2.2 cm, D. of rim 12.0 cm, D. of mouth 10.8 cm; 15° preserved.
Pink-red clay with inclusions of pyroxene, grog (?), and sand. Slip of the same colour as the clay; badly worn.

C 147. U6 room 25. Find list 9/13. 1972. Pl. 96.
Pot, a fragment of rim.
H. 2.2 cm, D. of rim 8.4 cm, D. of mouth 7.4 cm.
Brown clay with inclusions of mica. Light brown slip.

C 148. U6 courtyard, G-3. 1975. Pl. 97.
Pot handle.
D. 2.0 cm.
Round in section. Brownish red clay with abundant inclusion of spangles (mica?). The surface is carefully

smoothed; slip of the same colour as the clay. Remains of red paint are preserved on the outer surface.

C 149. U6 courtyard, V-3. 1975. Pl. 97.
Fragment of pot handle.
D 1.6 cm.
Red-orange clay with inclusions of particles of limestone and sand.

C 150. U6 courtyard, V-4. 1975. Pl. 97.
Fragment of pot handle.
D 1.4 cm.
Greyish clay with inclusion of sand. Pale-beige slip.

C 151. U6 courtyard, E-6. 1975. Pl. 97.
Fragment of pot handle.
D 1.2 cm.
Orange-red clay with inclusions of fine sand. Slip of the same colour as the clay. The fragment is covered with a thick layer of soot.

C 152. U6 courtyard, E-4. 1975. Pl. 97.
Fragment of handle of pot
D 1.2 cm.
Reddish pink clay with inclusion of fine sand.

C 153. U6 courtyard, V-4. 1975. Pl. 97.
Fragment of pot handle.
D 1.2 cm.
Red-pink clay with inclusions of fine sand.

C 154. U6 courtyard, V-5. 1975. Pl. 97.
Fragment of pot handle.
D 1.0 cm.
Pink clay with inclusions of fine limestone. Remains of a dark coating or paint (?) are preserved around the attachment point.

C 155. U6 courtyard, D-5. Pl. 97.
Fragment of pot handle.
D 1.0 cm.
Reddish pink clay with inclusion of sand.

C 156. U6 courtyard, V-4. 1975. Pl. 97.
Fragment of pot handle.
Width 2.5 cm, thickness 1.1 cm.
Flattened in section. Greyish clay with inclusions of fine spangles (mica?).

C 157. U6 courtyard, V-4. 1975. Pl. 97.
Fragment of pot handle.
Width 2.4 cm, thickness 1.0 cm.
Greyish clay (?) – the fragment is severely scorched and the colour of the clay probably altered.

C 158. U6 courtyard, V-4. 1975. Pl. 97.
Pot handle (?)
Width 2.0 cm, thickness 0.8 cm.
Flattened in section. Greyish pink clay with sparse inclusions of pyroxene.

C 159. U6 courtyard, E-2. 1975. Pl. 97.
Fragment of a pot handle.
Width 1.6 cm, thickness 0.8 cm.
Pink-red clay with extremely fine dark inclusions. Slip of the same colour as the clay.

C 160. U6 courtyard, V-4. 1975. Pl. 97.
Fragment of a pot handle.
Width 1.6 cm, thickness 0.6 cm.
Only a small part of rim with the upper attachment point is preserved. Brick-red clay.

C 161. U6 courtyard, E-4. 1975. Pl. 97.
Fragment of pot base
H. 3.0 cm, D. of base 10.0 cm; 25° preserved.
Pinkish red clay with inclusion of coarse white sand-grains of quartz. Scorched and covered with soot on outside.

C 162. U6 courtyard, E-4. 1975. Pl. 96.
Fragment of pot base.
H. 2.0 cm, D. of base 8.0 cm; 55° preserved.
Pink clay with inclusions of fine black mineral particles and spangles (mica?). Slip of the same colour as the clay.

C 163. U6 courtyard, V-3. 1975. Pl. 96.
Fragment of pot base.
H. 3.2 cm, D. of base 6.0 cm; 90° preserved.
Pink clay with inclusion of numerous fine sand grains. Slip of the same colour as the clay. The fragment is very carefully smoothed on the outside.

C 164. U6 room 20. Find list 4/23. 1972. Pl. 93.
Fragment of pot rim.
H. 2.6 cm, D. of rim 16.0 cm; 33° preserved.
The rim is rounded and slightly out-turned. Pinkish red clay with inclusions of coarse particles of pyroxene and ground potsherd. White slip.
Parallels: Alekseeva 1976, 49, fig. 4, *12*; Zujkov 1987, 72, fig. 2, *14*; Parovič-Pešikan 1974, 100, fig. 89, *1*.

C 165. U6 courtyard, E-3. 1975. Pl. 93.
Fragment of pot rim.
H. 2.8 cm, D. of rim 12.0 cm; 45° preserved.
Rounded and out-turned rim; beneath it is a rough spot that may have been the attachment point of a handle. Light brown clay with inclusions of fine sand. Grey slips. Traces of soot on outside.
Parallels: Alekseeva 1976, 49, fig. 4, *12*; Zujkov 1987, 72, fig. 2, *15*, Kastanajan and Arsen'jeva 1984, pl. CXXXVIII, *10*.

C 166. U6 courtyard, D-6. Find list 17/106. 1972. Pl. 93.
Fragment of pot rim.
H. 4.2 cm, D. of rim 9.6 cm; 180° preserved.
Out-turned rim. A gradual transition from short neck to sloping shoulder. Brown clay with inclusions of spangles and sand. Dark grey-brown slip.
Parallels: Alekseeva 1976, 46, fig. 2, *8-9*; Belov and Strželeckij 1953, 120, fig. 11; Knipovič 1940, 139, pl. XXXI; Šelov 1984, 252, pl. LXV, *21*.

C 167. U6 courtyard, V-4. Find list 1/17. 1973. Pl. 93.
Fragment of pot base.
H. 2.8 cm, D. of base 11.4 cm (?); 45° preserved.
Flat base marked by exposure to the fierce heat of a

hearth. Possibly belongs to the same vessel as the pot rim **C 166**. Brown clay with inclusion of fine spangles. Grey-brown slip.

Parallels: *cf.* **C 166**.

LIDS

C 168. U6 courtyard, D-3. 1975. Pl. 97.

Fragment of lid rim.

H. 1.4 cm, D. of rim 26.0 cm; 15° preserved.

Fragment of a cone-shaped lid with angular rim. Reddish clay with inclusions of fine pyroxene. White slip.

C 169. U6 courtyard, B-6, G-3. Pl. 97.

Fragments of lid rim.

H. 1.8 cm, D. of rim 18.0 cm; 60° preserved.

Reddish clay with inclusions of coarse dark mineral particles and mica.

C 170. U6 courtyard, B-6. Pl. 97.

Fragment of lid rim.

H. 1.2 cm, D. of rim 11.0 cm; 45° preserved.

Reddish clay with inclusions of fine dark mineral particles and mica. Pale slip.

C 171. U6 courtyard. 1975. Pls. 97 and 108.

Lid.

H. 5.0 cm, D. of handle 4.8 cm, D. of rim 21.5 cm.

Restored. Cone-shaped; rounded rim. There is a funnel-shaped depression 0.8 cm deep on top of the handle and a corresponding small depression on the opposite side. Orange-red clay with inclusion of grog (?). Pale greenish slip.

C 172. U6 courtyard, B-2, V-3. 1975. Pl. 97.

Fragments of lid rim.

H. 2.2 cm, D. of rim 18.0 cm; 100° preserved.

Orange-red clay with inclusion of fine spangles (mica). The edges are scorched and covered with soot.

C 173. U6 courtyard, G-2. 1972. Pl. 97.

Fragment of lid rim.

H. 2.4 cm, D. of rim 16.0 cm; 40° preserved.

Beige clay with inclusion of pyroxene particles. Pale slip.

C 174. U6 room 12. Find list 6/46. 1971. Pl. 97.

Lid.

H. 4.5 cm, D. of handle 2.8 cm, D. of rim 10.4 cm.

Conical lid. Restored. Greyish clay with inclusion of mica. Slip of the same colour as the clay.

C 175. U6 courtyard, V-4. Find list 1/19-22. 1973. Pl. 97.

Fragments of lid rim.

H. 4.8 cm, D. of rim 26.0 cm; 35° preserved.

Rounded rim with flattened resting surface. Pinkish red clay with inclusions of limestone, sand, and spangles. Pale-beige slip. On the exterior two shallow grooves along the edge.

C 176. U6 courtyard, V-4. Find list 1/19-22. 1973. Pl. 98.

Fragment of lid rim.

H. 1.6 cm, D. of rim 22.0 cm; 30° preserved.

Light red clay with inclusions of fine sand and spangles. Pale slip.

C 177. U6 courtyard, D-6. Find list 17/102. 1972. Pl. 98.

Fragments of lid.

H. 5.5 cm, D. of handle 3.2 cm, D. of rim 21.4 cm.

The shape is restored on the basis of the fragments. There is a pronounced downward angle between the lid and its edge. The handle has a hemispherical depression in its top. A repair-hole is preserved. Pink clay with inclusions of fine black mineral particles and mica.

C 178. U6 courtyard, D-5. Pl. 98.

Fragment of the rim of a richly profiled lid.

H. 2.5 cm, D. of rim 20.0 cm; 45° preserved.

Beige clay containing a red interlayer; inclusions of fine sand and spangles. White slip. On the rim are remains of a circular band of black paint almost completely worn away.

C 179. U6 courtyard, D-6. Find list 17/100. 1972. Pl. 98.

Fragment of lid rim.

H. 0.8 cm, D. of rim 18.0 cm.

Badly scorched in the fire that destroyed U6; the colour of the clay cannot be determined; inclusion of fine spangles.

C 180. U6 courtyard, E-2, 3. 1975. Pl. 98.

Fragments of lid.

H. 3.2 cm, D. of handle 2.6 cm, D. of rim 14.4 cm; 25° preserved.

The shape is reconstructed on the basis of the fragments. The rim is thickened and out-turned. Orange-red clay with inclusions of sand. The top of the handle is decorated with a pattern in the form of volutes scratched in the clay before firing.

C 181. U6 courtyard, D-6. Find list 17/102. 1972. Pl. 98.

Lid.

H. 2.4 cm, D. of handle 3.6 cm, D. of rim 14.0 cm.

Reddish pink clay with inclusions of fine limestone and sand. Traces of soot on the rim.

C 182. U6 courtyard, V-4. Find list 1/36. 1973. Pl. 98.

Fragment of lid rim.

H. 0.7 cm, D. of rim 12.5 cm.

Light grey clay with inclusions of pyroxene and mica.

C 183. U6 courtyard, D-6. find list 17/101. 1972. Pl. 98.

Lid.

H. 3.2 cm, D. of handle 2.9 cm, D. of rim 12.2 cm.

Restored. Rounded rim; the handle has a funnel-shaped depression on top. Light grey clay of greenish hue; inclusions of mica and sand. Slip of the same colour as the clay.

C 184. U6 courtyard, V-4. Find list 1/36. 1973. Pl. 98.

Lid.

H. 3.4 cm, D. of handle 3.4 cm, D. of rim 11.6 cm.

The shape is reconstructed. Rounded rim; the handle is richly profiled and has a groove on top. Brick-red clay with inclusions of mica.

C 185. U6 courtyard, V-3, 4, BV-5. Find list 16/44. 1972.

Fragments of lid, *cf.* pan **C 137**.

H. *c.* 3.5 cm, D. of handle 2.8 cm, D. of rim 11.2 cm.

Only the upper part with handle is preserved. Diameter of the rim is reconstructed on the basis of diameter of the mouth of the pan. Red-brown clay. Brown slip. The top of the handle is decorated with volutes scratched in the clay before firing as on **C 180**.

C 186. U6 courtyard, B-6. Find list 16/110. 1972. Pl. 98.

Fragment of lid.

H. 3.8 cm, D. of handle 3.4 cm, H. of handle 1.0 cm.

The upper part with the handle is preserved; the rim is missing. The handle has a funnel-shaped depression. Brick-red clay with inclusions of mica.

C 187. U6 room 19. Find list 2/30. 1972. Pl. 98.

Lid handle.

H. 1.4 cm, max. D. 1.8 cm.

Biconical handle with convex top. Red-orange clay with inclusions of sand and mica.

D. HOUSEHOLD WARE

MORTARS AND LOUTERIA

C 188. U6 gate. Find list 3/38. 1972. Pls. 99 and 108.

Mortar.

H. 15.0 cm, D. of rim 41.0 cm, D. of body 43.0 cm, D. of base 15.0 cm.

Restored. Mushroom-shaped rim; concave base; two round-section handles attached to the rim. This is the largest vessel in the 'mortars/louteria' group. Red-brown clay with inclusion of very coarse sand or grit. Pale slip of yellow-greenish hue.

C 189. U6 well, no. 157. 1977. Pl. 99.

Fragmentary mortar.

H. *c.* 13.0 cm, D. of rim 40.0 cm, D. of body 43.0 cm, D. of base 20.0 cm.

The shape, restored on the basis of the fragments, is similar to that of **C 188**. There is a small 'shelf' beneath the rim on the inside. Pink-red clay with inclusions of sand. White slip.

Parallels: Belov and Jakobson 1953, 113, fig. 3; Belov, Strželeckij and Jakobson 1953, 232, pl. IV; Lancov 1994, 81, fig. 6.

C 190. U6 well, no. 156. 1977. Pl. 99.

Fragment of a Herakleian mortar.

H. 15.6 cm, D. of rim 40.0 cm, D. of body 42.0 cm; 15° preserved.

Shape similar to that of **C 189** except for slight difference in the profile of the rim. Red-brown clay with inclusions of sparsely disseminated limestone, pyroxene, and grog (?). White slip.

Parallels: *cf.* **C 189**.

C 191. U6 well, no. 156. 1977. Pl. 99.

Fragmentary mortar.

H. 6.0 cm, D. of rim 40.0 cm, D. of body 42.0 cm; 35° preserved.

Similar to **C 189** in shape except for slight difference in the profile of the rim. Red clay with inclusions of limestone, pyroxene, and grog (?). Pale slip of greenish hue.

Parallels: *cf.* **C 189**.

C 192. U6 courtyard, D-6. Find list 17/81. 1972. Pl. 99.

Mortar.

H. 14.0 cm, D. of rim 37.2 cm, D. of body 40.0 cm, D. of base 14.0 cm.

Restored; similar to **C 191** in shape. Pinkish red clay with inclusions of pyroxene. Slip: pale with a greenish hue on the outside, the same colour as the clay on the inside.

Parallels: *cf.* **C 189**.

C 193. U6 courtyard. 1975. Pl. 99.

Mortar.

H. 14.0 cm, D. of rim 37.2 cm, D. of body 40.0 cm, D. of base 13.6 cm.

Restored; similar to **C 191** in shape. Pinkish red clay with inclusions of pyroxene. Pale slip of greenish hue.

Parallels: *cf.* **C 189**.

C 194. U6 courtyard, D-6. Find list 17/76. 1972. Pl. 99.

Fragment of a mortar.

H. 13.2 cm, D. of rim 36.0 cm, D. of body 39.2 cm; 90° preserved.

Similar to **C 191** in shape. On the surface there are a number of large (up to 1.0-1.5 cm) cavities, possibly left by burnt away organic matter or decayed limestone. Brick-red clay with inclusions of limestone and sand. Pink slip.

Parallels: *cf.* **C 189**.

C 195. U6 courtyard, E-3. 1974. Pl. 99.

Fragment of a mortar.

H. 11.0 cm, D. of rim 35.0 cm, D. of body 38.0 cm.

Similar to **C 188** in shape. Greyish beige clay with inclusions of fine sand and sparsely disseminated spangles. Pale slip of greenish hue.

Parallels: *cf.* **C 189**.

C 196. U6 courtyard, D-6, E-4. Find list 17/79. 1972. Pl. 99.

Fragmentary mortar.

H. 10.0 cm, D. of rim 31.0 cm, D. of body 34.0 cm.

Similar to **C 190** in shape. Orange clay with inclusion of sand. There are remains of pale slip on the outside. Traces of repairs.

Parallels: *cf.* **C 189**.

C 197. U6 room 15. Find list 9/18. 1971. Pl. 99.

Fragmentary mortar.

H. 12.2 cm, D. of rim 34.0 cm, D. 36.0 cm, D. of base 13.0 cm.

Similar to **C 189** in shape. Brick-red clay with inclusion of fine pyroxene. Pale yellowish slip.

Parallels: *cf.* **C 189**.

C 198. U6 courtyard, E-6. Find list 17/75. 1972. Pls. 99 and 108.

Mortar.

H. 10.0 cm, D. of rim 28.8 cm, D. of body 29.6 cm, D. of base 11.2 cm.

Restored. Similar to **C 192** in shape. Traces of repairs are preserved: holes for four lead clamps and three more lead

clamps *in situ* (on clamps *cf.* Part II **K**). Greyish pink clay with inclusions of dark sand. Pale slip.

Parallels: *cf.* **C 189**.

C 199. U6 courtyard, Zh-2. 1975. Pl. 99.

Fragment of rim of a mortar.

H. 5.8 cm, D. of rim 24.0 cm, D. of body 25.0 cm; 20° preserved.

Similar to **C 189** in shape. Orange clay with inclusion of sparsely disseminated fine limestone. Slip of the same colour as the clay.

Parallels: *cf.* **C 189**.

C 200. U6 room 15. Find list 9/19. 1971. Pl. 99.

Fragment of rim of a mortar.

H. 24.0 cm, D. of rim 24.0 (?) cm, D. of body 25.0 (?) cm; 10° preserved.

Similar to **C 189** in shape. Dark pink clay with sparse inclusions of dark and white mineral particles. Greenish slip.

Parallels: *cf.* **C 189**.

C 201. U6 well, no. 160. 1977. Pl. 99.

Fragments of rim of a mortar.

H. 4.0 cm, D. of rim 24.0 cm; 70° preserved.

Similar to **C 189** in shape. Light red clay with inclusions of limestone and coarse sand. White slip.

Parallels: *cf.* **C 189**.

C 202. U6 courtyard, V-6. Find list 16/151. 1972. Pl. 100.

Louterion with a spout.

H. 9.0 cm, D. of rim 34.4 cm, D. of body 38.0 cm, D. of base 12.6 cm.

The vessel is restored. Shallow bowl; the beak-shaped rim is surmounted by a low vertical wall; flat base. The spout is missing but distinct traces of its attachment are preserved. The two handles are modelled as flat strips of applied clay with indentations for three fingers located symmetrically on either side of the spout. Greyish green clay with abundant inclusions of limestone and fine pyroxene. Slip of the same colour as the clay.

Parallels: Alekseeva 1997, 335, pl. 53, *28-29*; Belov 1938, 244, fig. 85, *a*; Belov and Strželeckij 1953, 44, fig. 10; Karasev 1963, fig. 69, *a-b*; Karasev and Jacenko 1964, fig. 64; Karasev and Jacenko 1965, fig. 22; Karasev 1965, 137, fig. 48, *7*; Knipovič 1940, 151, pl. XXXVI, *2*; Lancov 1994, 81, fig. 6.

C 203. U6 courtyard, D-5. 1974. Pls. 100 and 108.

Louterion with a spout.

H. 4.4 cm, D. of rim 34.4 cm, D. of lip 36.4 cm, D. of base 12.6 cm, length of spout 4.0 cm, width of spout 4.4 cm.

Restored. Similar in shape to **C 202** with the exception that it has only one handle in form of a flat strip of applied clay with three finger indentations located opposite the spout. Pale-beige clay with inclusions of fine sand. Pale slip of greenish hue. There are traces of ancient repairs – holes for four clamps.

Parallels: *cf.* **C 202**.

C 204. U6 courtyard, B-6. 1974. Pl. 100.

Louterion.

H. 9.0 cm, D. of rim 33.2 cm, D. of lip 36.0 cm, D. of base 14.6 cm.

Similar in shape to **C 202**. Red clay with sparse inclusions of dark sand. White slip. Traces of repairs.

Parallels: *cf.* **C 202**.

C 205. U6 courtyard, B-5. Find 16/23. 1972. Pl. 100.

Louterion.

H. 8.4 cm, D. of rim 30.0 cm, D. of lip 34.6 cm, D. of base 13.2 cm, length of spout preserved 5.0 cm, width of spout 6.0 cm.

Similar in shape to **C 202**. The tip of the spout is broken off. Red clay with inclusions of limestone and pyroxene. Pale slip of greenish hue. Traces of repairs.

Parallels: *cf.* **C 202**.

C 206. U6 courtyard, G-4. 1975. Pl. 100.

Fragmentary Sinopean (?) louterion.

H. 8.4 cm, D. of rim 30.0 cm, D. of lip 34.6 cm, D. of base 13.2 cm, length of spout preserved 5.0 cm, width of spout 6.0 cm.

Similar in shape to **C 202**. The clay is bright red in section, but of violet hue under the slip; inclusions of fine pyroxene. Pale slip.

Parallels: *cf.* **C 202**.

C 207. U6 well, nos. 161, 163. 1977. Pl. 100.

Fragmentary louterion.

H. 6.4 cm, D. of rim 24.4 cm, D. of lip 29.8 cm, D. of base 16.0 cm.

The shape is reconstructed on the basis of the fragments and is similar to that of **C 202**. Brick-red clay with inclusions of numerous coarse particles of pyroxene and limestone. White slip. Traces of repairs.

Parallels: *cf.* **C 202**.

C 208. U6 courtyard. 1975. Pl. 100.

Louterion.

H. 8.2 cm, D. of rim 26.4 cm, D. of lip 30.0 cm, D. of base 12.5 cm.

Restored. The rim differs of the rims of the preceding specimens: the vertical wall on top is only vestigial, and the out-turned part of the rim is very small. There are no applied strips for the handles, which simply take the form of two sets of five finger indentations. The spout is broken off along the joint with the body and only traces of the applied clay are preserved. Bright pink clay. Pale slip of greenish hue.

Parallels: *cf.* Smirnov 1958, 279, fig. 5, *8*; Robinson 1950, pl. 249, no. 1027A.

C 209. U6 well, no. 162. 1977. Pl. 100.

Fragments of rim of louterion.

H. 4.5 cm, D. 26.0 cm, D. of rim 28.0 cm, length of spout preserved 3.0 cm.

The shape is reconstructed on the basis of the fragments and is similar to that of **C 202**; however, the rim of **C 209** has the addition of a ledge on the outside. Brownish red clay with inclusions of limestone. Slip of the same colour as the clay.

Parallels: Sparkes and Talcott 1970, no. 1884.

C 210. U6 courtyard, D-8. 1977. Pl. 100.

Fragments of rim of louterion.

H. 6.0 cm, D. of rim 26.0 cm, D. of body 28.0 cm; 90° preserved.

The shape was probably similar to **C 202**. Brownish red clay with inclusions of limestone. Slip of the same colour as the clay.

Parallels: *cf.* **C 202**.

C 211. U6 courtyard, V-4, E-3. 1975. Pl. 100.

Fragments of rim of louterion.

H. 3.2 cm, D. of rim 26.0 cm, D. of body 28.0 cm; 30° preserved.

Similar in shape to **C 210**. Pinkish red clay with inclusions of limestone and sand. Slip of the same colour as the clay.

Parallels: *cf.* **C 202**.

C 212. U6 courtyard, V-4, G-1, 2. Find list 1/1. 1973. Pl. 100.

Louterion.

H. 6.0 cm, D. of rim 24.0 cm, D. of body 28.0, D. of base 12.6 cm.

The shape is reconstructed on the basis of the fragments and is similar to that of **C 207**. Dark grey clay with sparse inclusion of spangles (mica?). Slip of the same colour as the clay.

Parallels: *cf.* **C 202**.

C 213. U6 courtyard, E-2, D-3. 1975. Pl. 100.

Fragment of rim of louterion with a spout.

H. 3.2 cm, D. of rim 24.0 cm, D. of body 25.6 cm; 42° preserved.

Similar in shape to **C 208**. Brick-red clay with inclusions of fine limestone and pyroxene. Pale orange slip.

Parallels: *cf.* Smirnov 1958, 279, fig. 5, *8*; Robinson 1950, pl. 249, no. 1027A.

C 214. U6 room 17. Find list 15/14. 1972. Pl. 100.

Fragment of rim of louterion.

H. 3.0 cm, D. of rim 22.0 cm, D. of body 23.6 cm; 10° preserved.

Similar in shape to **C 210**. Brick-red clay with inclusion of fine limestone.

Parallels: *cf.* **C 202**.

C 215. U6 courtyard, D-5. 1974. Pl. 101.

Mortar.

H. 17.8 cm, D. of rim 37.2 cm, D. of lip 41.5 cm, D. of base 16.2 cm.

The vessel is restored. Horizontal handles, oval in section, rise slightly above the horizontally out-turned rim; the flat-bottomed bowl is tall and deep. Red-pink clay with inclusions of fine dark sand.

Parallels: Belov, Strželeckij and Jakobson 1953, 166, fig. 5; Gajdukevič 1952, 194, fig. 102; Zeest and Marčenko 1962, 158, fig. 10; Lejpuns'ka 1980, 37, fig. 2; Sparkes and Talcott 1970, no. 1818.

C 216. U6 well, no. 159. 1977. Pl. 101.

Fragments of a mortar.

H. 7.0 cm, D. of rim 37.5 cm; 60° preserved.

Similar in shape to **C 215**. Grey-pink clay with inclusions of limestone and sand. Greenish slip.

Parallels: *cf.* **C 215**.

C 217. U6 courtyard, V-5, D-2, E-4, 6. 1975. Pl. 101.

Fragments of a mortar.

H. 5.5 cm, D. of rim 32.0 cm; 135° preserved.

Similar in shape to **C 215**. Orange clay with inclusions of pyroxene and sand.

Parallels: *cf.* **C 215**.

C 218. U6 courtyard, G-2. 1975. Pl. 101.

Fragment of a mortar.

H. 6.0 cm, D. of rim 30.0 cm; 50° preserved.

Similar in shape to **C 215**. Red clay with inclusions of fine pyroxene and sand. Pale beige slip.

Parallels: *cf.* **C 215**.

C 219. U6 courtyard, E-5. 1975.

Fragment of a mortar.

H. 6.5 cm, D. of rim 30.0 cm; 15° preserved.

Similar in shape to **C 215**. Reddish orange clay with inclusions of fine limestone and sand.

Parallels: *cf.* **C 215**.

C 220. U6 courtyard, GE-3. 1975. Pl. 101.

Fragments of rim of a mortar.

H. 3.8 cm, D. of rim 28.0 cm; 50° preserved.

Similar in shape to **C 215**. Dark orange clay with inclusions of sparsely disseminated particles of fine limestone and sand (?). Pale beige-orange slip.

Parallels: *cf.* **C 215**.

C 221. U6 courtyard, V-4, G-3, E-5. 1977. Pl. 101.

Fragments of a louterion.

H. 7.8 cm, D. of rim 40.0 cm, D. of base 15.0 cm.

The shape is reconstructed. The rim is out-turned horizontally and is surmounted by low vertical ridge; the shallow bowl has a concave base. Beige-brown clay with inclusions of ground shells, grog, and spangles. On the rim there is the imprint of a complete snail shell 4 mm in diameter. Traces of repairs.

Parallels: Alekseeva 1997, 335, pl. 53, *31*; 378, pl. 96, *18*; Lejpuns'ka 1980, 37, fig. 2, *9-10*.

C 222. U6 courtyard, VG-4. 1973. Pl. 101.

Fragment of a spouted louterion.

H. 6.8 cm, D. of ridge on rim 31.5 cm, D. of rim 34.0 cm, length of spout 8.0 cm, width of spout 7.8 cm.

The rim is out-turned with a vertical ridge and a groove all round it; the handles and base are missing. A part of the body, together with the rim and spout, is restored. Grey-brown clay with inclusion of fine limestone. Pale slip of greenish hue.

Parallels: *cf.* **C 221**; Alekseeva 1997, 335, pl. 53, *26*.

C 223. U6 courtyard, Zh-3. 1975. Pl. 101.

Fragment of rim of a mortar.

D. of rim 35.0 cm; 20° preserved.

Reddish clay with inclusions of sand. Pale slip.

Parallels: Lejpuns'ka 1980, 34, fig. 1.

C 224. U6 courtyard. 1975. Pl. 101.

Fragment of rim of a mortar.

H. 5.0 cm, D. of rim 30.0 cm; 30° preserved.

Reddish orange clay with inclusions of limestone particles and sand. Traces of repairs.
Parallels: *cf.* **C 223**.

UNIDENTIFIED FRAGMENTS OF OPEN-SHAPE VESSELS

C 225. U6 courtyard, E-3. 1975. Pl. 102.
Ring foot of an open-shape vessel.
H. 3.0 cm, D. of foot 13.0 cm; 155° preserved.
Orange clay with inclusions of sand (quartz). Pale slip on outside.

C 226. U6 courtyard, G-3. 1975. Pl. 102.
Fragment of ring foot of an open-shape vessel
H. 3.0 cm, D. of foot 13.0 cm; 90° preserved.
Orange clay with inclusions of limestone and sand (quartz). White slip on both sides.

C 227. U6 courtyard, E-4, 5. 1975. Pl. 102.
Fragment of ring base of an open-shape vessel.
H. 6.0 cm, D. of base 13.0 cm; 180° preserved.
Red-orange clay with inclusions of sand (quartz). Pale slip on outside.

C 228. U6 courtyard, VD-4. 1973. Pl. 102.
Fragment of ring foot of an open-shape vessel.
H. 3.4 cm, D. of foot 12.6 cm; 80° preserved.
Reddish orange clay with inclusions of limestone and pyroxene. White slip.

C 229. U6 courtyard, Zh-3. 1975. Pl. 102.
Ring foot of an open-shape vessel.
H. 5.4 cm, D. of foot 12.5 cm.
Red clay with sparse inclusions of sand. Pink-beige slip.

C 230. U6 courtyard, B-5. 1973. Pl. 102.
Fragment of ring base of a Sinopean open-shape vessel.
H. 4.0 cm, D. of base 11.0 cm; 60° preserved.
Violet clay with inclusions of pyroxene and limestone. White slip on both sides. There is a circular groove scratched round the inside.

C 231. U6 courtyard, G-3. 1973. Pl. 102.
Fragment of ring foot of an open-shape vessel.
H. 3.5 cm, D. of foot 10.0 cm; 65° preserved.
Brownish red clay with inclusions of limestone, sand, and grog (?). Pale slip on both sides.

C 232. U6 room 15. Find list 9/19. 1971. Pl. 102.
Ring foot of an open-shape vessel.
H. 4.4 cm, D. of foot 8.8 cm; 360° preserved.
Light greenish yellow clay with admixture of fine limestone. Slip of the same colour as the clay.

C 233. U6 courtyard, B-2. 1975. Pl. 102.
Fragment of ring foot of an open-shape vessel.
H. 3.8 cm, D. of foot 7.0 cm; 180° preserved.
Orange clay with inclusions of fine spangles and sand. Light grey slip. There is a graffito scratched on the underside (**H 19**).

C 234. U6 courtyard. Pl. 102.
Fragment of ring foot of an open-shape vessel.
H. 3.3 cm, D. of foot 7.0 cm; 180° preserved.
Orange clay with inclusions of sand. Unslipped. Three rings of red paint on the inside.

C 235. U6 courtyard, D-5. 1971. Pl. 102.
Fragment of base of an open-shape vessel.
H. 4.0 cm, D. of base 17.0 cm; 30° preserved.
Pink-red clay. Pale slip on outside.

C 236. U6 courtyard, E-4. 1971. Pl. 103.
Fragment of base of an open-shaped vessel.
H. 3.5 cm, D. of base 17.0 cm; 20° preserved.
Dark red clay with inclusions of fine pyroxene. Pale slip on both sides.

C 237. U6 courtyard, E-3, G-3. 1971. Pl. 103.
Fragment of base of an open-shape vessel.
H. 3.5 cm, D. of base 15.0 cm; 125° preserved.
Red-orange clay with inclusions of pyroxene and limestone. Pale slip on outside.

C 238. U6 courtyard, V-3. 1975. Pl. 103.
Fragment of base of an open-shape vessel.
H. 4.8 cm, D. of edge 15.0 cm; 85° preserved.
Pink-brown clay with inclusions of fine limestone and coarse sand (quartz). Slip of the same colour as the clay.

C 239. U6 courtyard, D-6. 1975. Pl. 103.
Fragment of base of an open-shape vessel.
H. 4.8 cm, D. of base 15.0 cm 130° preserved.
Dark red clay with inclusions of pyroxene and coarse sand (quartz). Pink slip.

C 240. U6 courtyard, D-3. 1975. Pl. 103.
Fragment of base of an open-shape vessel.
H. 4.8 cm, D. of base 14.8 cm.
Red-orange clay with inclusions of coarse sand (quartz). Pink slip. A repair hole is preserved.

C 241. U6 courtyard, E-4. 1971. Pl. 103.
Fragment of base of a Sinopean open-shape vessel.
H. 3.5 cm, D. of base 17.0 cm; 20° preserved.
Violet clay with inclusion of fine pyroxene. Slip of the same colour as the clay.

C 242. U6 courtyard, E-3. 1971. Pl. 103.
Fragment of base of an open-shaped vessel.
H. 4.5 cm, D. of base 14.0 cm; 115° preserved.
Orange clay with inclusions of fine pyroxene and sand. Pale slip on both sides.

C 243. U6 courtyard, G-3. 1975. Pl. 103.
Fragment of base of an open-shape vessel.
H. 4.0 cm, D. of base 14.0.
Orange clay with inclusions of sparse pyroxene and sand. Pink slip.

C 244. U6 courtyard, G-3. 1971. Pl. 104.
Fragment of base of an open-shape vessel.

H. 2.0 cm, D. of base 14.0 cm; 90° preserved.
Orange clay with inclusions of fine pyroxene.

C 245. U6 courtyard, E-3. 1975. Pl. 105.
Base of an open-shape vessel.
H. 4.6 cm, D. of base 13.5 cm.
Pink-red clay with inclusions of coarse sand (quartz). The surface is carefully smoothed; Slip of the same colour as the clay. There is an encircling groove scratched round the outside.

C 246. U6 well, no. 162. 1977. Pl. 104.
Flat base of a vessel.
H. 4.8 cm, D. of base 13.5 cm.
Pinkish red clay with inclusions of limestone. Pale-beige slip.

C 247. U6 courtyard, D-5. 1971. Pl. 105.
Fragment of base of an open-shape vessel.
H. 5.0 cm, D. of base 13.0 cm.
Orange clay with inclusions of fine limestone and pyroxene. Slip on the outside only, the same colour as the clay.

C 248. U6 courtyard, D-2. 1975. Pl. 105.
Fragment of base of an open-shape vessel.
H. 3.2 cm, D. of base 13.0 cm; 90° preserved.
Greenish beige clay with inclusions of sand. Pale-beige slip.

C 249. U6 courtyard, E-2. 1971. Pl. 105.
Fragment of base of an open-shape vessel.
H. 3.0 cm, D. of base 12.0 cm; 75° preserved.
Red-brown clay with inclusion of sand. Grey-beige slip on both sides.

C 250. U6 courtyard, G-3. 1975. Pl. 104.
Base of an open-shape vessel.
H. 2.8 cm, D. of base 11.5 cm.
Red-orange clay with inclusions of pyroxene. Pale-pink slip on outside.

C 251. U6 courtyard, D-6. Find list 17/81. 1972. Pl. 104.
Base of a deep open-shape vessel.
H. 9.4 cm, D. of base 11.2 cm.
Orange clay with inclusions of fine pyroxene and sand. Pale slip on both sides.

C 252. U6 courtyard, V-4. 1971. Pl. 104.
Fragment of base of an open-shape vessel.
H. 3.0 cm, D. of base 11.0 cm; 80° preserved.
Greyish clay with inclusions of fine pale mineral particles. Slip of the same colour as the clay.

C 253. U6 courtyard, D-5. 1971. Pl. 105.
Fragment of base of an open-shaped vessel.
H. 5.0 cm, D. of base 11.0 cm; 130° preserved.
Brick-red clay with inclusions of pyroxene and sand (quartz). The outside surface is carefully smoothed.

C 254. U6 courtyard, B-3. 1971. Pl. 104.
Fragment of base of an open-shape vessel.
H. 4.5 cm, D. of base 11.0 cm; 130° preserved.
Orange clay with inclusions of coarse pyroxene and sand. Pale slip on both sides.

C 255. U6 courtyard, E-4. 1971. Pl. 105.
Fragment of base of an open-shape vessel.
H. 2.0 cm, D. of base 10.0 cm; 50° preserved.
Orange clay with inclusions of fine limestone. Pale slip on inside.

C 256. U6 courtyard. 1971. Pl. 104.
Fragment of base of an open-shape vessel.
H. 3.0 cm, D. of base 10.0 cm; 60° preserved.
Pinkish red clay with inclusions of fine pyroxene. Pale-beige slip on both sides.

C 257. U6 courtyard, V-4. 1971. Pl. 104.
Fragments of base of an open-shape vessel.
H. 3.0 cm, D. of base 10.0 cm; 270° preserved.
Orange clay with inclusions of pyroxene. Pale slip on both sides. Traces of repairs.

C 258. U6 courtyard, E-3. 1975. Pl. 104.
Base of an open-shape vessel.
H. 2.8 cm, D. of base 10.0 cm.
Pink clay with inclusions of pyroxene and sand.

C 259. U6 courtyard, E-3. 1975. Pl. 105.
Base of an open-shape vessel.
H. 2.4 cm, D. of base 10.0 cm.
Dark red clay with inclusions of limestone. White slip.

C 260. U6 room 17. Find list 15/16. 1972. Pl. 104.
Fragment of base of an open-shape vessel.
H. 5.5 cm, D. of base 9.5 cm; 100° preserved.
Brick-red clay with inclusions of fine limestone and pyroxene. Pale slip.

C 261. U6 courtyard, E-5. 1971. Pl. 105.
Fragment of base of an open-shape vessel.
H. 4.0 cm, D. of base 9.0 cm; 130° preserved.
Beige-orange clay with sparse inclusion of pyroxene. Pale slip, badly worn.

C 262. U6 courtyard, D-5. 1975. Pl. 104.
Base of a deep open-shape vessel.
H. 3.8 cm, D. of base 9.0 cm.
Brick-red clay with sparse inclusion of sand. White slip on both sides.

C 263. U6 courtyard, Zh-3. 1971. Pl. 105.
Base of an open-shape vessel.
H. 4.5 cm, D. of base 14.0 cm.
Brick-red clay with inclusions of ground shells and sand. Pale slip on both sides.

C 264. U6 courtyard, G-3. 1975. Pl. 105.
Base of an open-shape vessel.
H. 3.2 cm, D. of base 7.5 cm.
Red-brown clay with inclusion of spangles (mica).

E. RARE FORMS

MISCELLANEOUS VESSELS

C 265. U6 courtyard, V-6. Find list 16/160. 1972. Pl. 106.
Fragmentary 'barrel'.

H. *c.* 28.0 cm, max. D. of body 21.2 cm, the supposed length about 51.0 cm, min. D. of body 8.4 cm.

A part of body together with a round bunghole is preserved. The original shape and function of the vessel are not completely clear. If one accepts the proposed reconstruction – which seems to me to be the most probable – the barrel must have had a biconical body, a vertical neck and two vertical loop handles. Pink-red clay with inclusions of limestone. The slip is pale with a slightly greenish hue.

Parallels: *cf.* Kutajsov and Užencev 1994, 62, fig. 13, *7*.

C 266. U6 room 13. Find list 8/34. 1971. Pl. 106.
Flask.

H. 18.0 cm, D. of body 15.2 cm, body width 6.8 cm, max. D. of rim 4.8 cm.

Restored. The body is lentoid; of the two vertical loop handles only the attachment points are preserved; the neck is cylindrical and straight. Round the body there is a shallow groove formed in the process of drying the flask on a support. Greyish pink clay. Slip of the same colour as the clay.

Parallels: Alekseeva 1997, 298, pl. 18, *18*; Daševskaja 1967, 166, fig. 4, *3*; Karasev 1963, fig. 65, *a-b*; Karasev and Jacenko1966, fig. 52; Kutajsov and Užencev 1994, 62, fig. 13, *5*.

NOTES

1. Karasev 1965b, 137, fig. 48, *5*.
2. *Cf.* Part I by A.N. Ščeglov in this volume.
3. Belov 1950a, 108.
4. Knipovič 1940, 147.
5. Sparkes and Talcott 1970.
6. Belov and Strželeckij 1953, 42-43.
7. *Cf.* Ščeglov, in this volume.
8. Sparkes and Talcott 1970, nos. 177 and 1389.
9. Michlin 1981, 188, fig. 6, *4*.
10. Gajdukevič 1952, 202.
11. Knipovič 1940, 139.
12. Knipovič 1940, 148.
13. Borisova 1966, 15.
14. Gajdukevič 1952, 202.
15. Belov, Strželeckij and Jakobson 1953, 232, pl. IV, *2*; Karasev and Jacenko 1965, fig. 8.
16. Gajdukevič 1952, 202, fig. 115, *8*; Dolgorukov 1984, 137, pl. XXXIX; Korovina 1984, 146, pl. XLVIII; Lancov 1994, 81, fig. 6; Šelov 1984, 252, pl. XLV, *19*.
17. Lancov 1994, 81, fig. 6.
18. Gajdukevič 1952, 80, fig. 98, *1*; Karasev and Jacenko 1966, fig. 35.
19. Zujkov 1987, 72, fig. 2, *30*.
20. Dolgorukov 1984, 137, pl. XXXIX, *15*; Zujkov 1987, 72, fig. 2, *33*.
21. Gajdukevič 1952, 80, fig. 98, *2*; Zujkov 1987, 72, fig. 2, *36*; Šurgaja 1984, 130, pl. XXXII, *5*.
22. *Cf.* Alekseeva 1976, 48, fig. 3, *1*.
23. Kapošina 1959, 144, fig. 55; Karasev and Jacenko 1965, fig. 9a; Karasev and Jacenko 1966, figs. 24, 50, 74.
24. Strželeckij 1948a, 60.
25. Belov and Jakobson 1953, 114.
26. Kapošina 1959, 137 fig. 39.
27. Parovič-Pešikan 1974, 108.

28. Sparkes and Talcott 1970.
29. Levi 1964, 161, fig. 30.
30. Levi 1964, 169, fig. 40; Gajdukevič 1952, 158.
31. Knipovič 1940, 138.
32. Knipovič 1940, 137, 138.
33. Kastanajan and Arsen'jeva 1984, 229.
34. Knipovič 1940, 139.
35. Kastanajan and Arsen'jeva 1984, 229.
36. 'Button-shaped' according to Gajdukevič 1952, 201.
37. Lancov 1994, 81.
38. Borisova 1966a, 15.
39. Lejpuns'ka 1980, 32.
40. Belov and Jakobson 1953, 112.
41. I am grateful to A.S. Golenzov for his kind permission to examine the material from the settlement of West-Donuzlav.
42. Knipovič 1940; Lejpuns'ka 1980.
43. Belov and Strželeckij 1953, 43.
44. Knipovič 1940, 151.
45. Lejpuns'ka 1980.
46. Zeest and Marčenko 1962, 159.
47. Zeest and Marčenko 1962, 158.
48. Lejpuns'ka 1980, 39.
49. Lejpuns'ka 1980, 39, 40.
50. Lejpuns'ka 1980, 34.
51. Strželeckij 1961, 217.

HANDMADE POTTERY

Vladimir F. Stolba

Coarse hand-shaped pottery makes up one of the largest groups among the material found during the excavation of U6. The present chapter includes a catalogue of 130 items. In the catalogue all the complete and archaeologically complete shapes, as well as the fragments of parts reflecting the profiles and giving some idea of the morphology of the objects, have been listed. The numerous body sherds have not been taken into account, except in those cases where, on the basis of similarity of the clay texture, firing peculiarities, and fabric, it was possible to assign them to certain vessels.

In contrast to the wheel-thrown ware represented either by ceramic items imported from other cities or by the products of Chersonesean ceramic workshops, the bulk of the handmade pottery discussed here was undoubtedly manufactured by the inhabitants of the settlement themselves. The traces of such manufacture have been discovered at Panskoye I, in the northern part of building U6. Here, during the excavation of 1971, a room was discovered that may be supposed with a high degree of probability to have been the workshop of a local potter (*room 7*; *cf.* the description of the building complexes above). Along with various items of finished handmade ware (**D 12**, **D 34**, **D 91**, **D 99**), a stock of grog (Pl. 134, *a*) and a small kiln were discovered here.[1]

Similar primitive workshops, doubtless intended to satisfy the domestic needs, are also known at other settlements in the territory of Chersonesos. One of them has been investigated by V.A. Latyševa at the settlement of Masliny (Vladimirovka) situated about 26 kilometres to the north-east of Panskoye.[2]

Although discoveries of such a kind prove the local nature of handmade pottery production, we are only rarely presented with detailed evidence of the technological processes involved, and finds of pottery as such still remain the basic source. The available material will be discussed below in terms of its technology, morphology, and ethno-cultural relations, as well as its role in the whole ceramic assemblage of building U6.

TECHNOLOGY

The main principles of the manufacturing technique for coarse clay pots have shared much in common in various civilisations over many centuries. The general features, therefore, can be reconstructed reliably enough on the basis of ethnological data.[3] As a rule, the technological process includes the following basic stages: (a) preparing the plastic mass; (b) shaping the article; (c) finishing the surface; (d) executing the decoration; (e) drying the vessel; (f) treating cracks caused by deformation of the vessel in drying; (g) firing.

Preparing the paste. In terms of paste composition, the collection of handmade pottery from building U6 is highly heterogeneous. For more detailed investigation of the differences, which in most cases were actually visible to the eye, 34 samples were studied in standard petrographic thin sections using a MP-3 polarizing microscope. These samples cover the whole spectrum of the clay composition of the ceramic assemblage. The results of these studies, made by Dr. G.M. Kovnurko (Petrophysical Laboratory of the Institute of the Earth's Crust,

St Petersburg State University) are presented in Appendix III. Analysis of the material in thin sections showed that during the preparation of the paste, both fat clays (*e.g. A-11*, *A-25*, *A-26*) and lean Quaternary ones were used, the latter evidently prevailing over the former. In the lean clays, aleurite (silt) and quartz-feldspar sands as well as basalts or augites containing sand appear as natural inclusions. The use of a carbonaceous clay was identified in the case of four samples (*A-9, A-22, A-34, A-35*). Of the artificial additives mixed to a clay to improve its working, drying, or firing properties, crushed rock, grog (crushed potsherds) and sand appeared most often. The use of organic materials was found to have been much more uncommon.

Crushed Rock. The local limestone served most often as the source for this material. It was crushed, it seems, without any subsequent attempt at calibration, as evidenced by an essential variation (from fractions of a millimetre up to nine millimetres) of the particle sizes of the nonplastic material within the fabric of each vessel. In certain exceptional cases such non-autochthonous rocks as basalt were used instead of limestone (**D 27** = *A-1*; Pl. 190, *2*).

Grog. Sherds of wheel-thrown pottery were prevailingly used as the raw material for the preparation of grog. The ready availability of ancient sherds for grinding up as temper was an important factor for local potters. As mentioned above, a pile of such grog along with a limestone plate for its production was discovered in *room 7*. Only in a few rare cases (**D 22**, **D 46**, **D 77** and **D 81**) can we identify grog produced from handmade ceramics. Like the crushed rock, the grog was evidently not subjected to any form of calibration.

All the pastes prepared by tempering with potsherds and crushed rock are classified as coarse.

Sand. Sand as artificial temper to the paste was recorded in a considerable number of cases. In low concentration it may be regarded as a natural inclusion (sand interlayers dividing clay layers).[4] The mineralogical composition of the sand can vary very noticeably from one sample to another. Petrographic analysis has identified the following types of sand as additives: (***1***) quartz-feldspar sand with an inclusion of magmatic-type rocks (*A-2*, *A-5*); (***2***) quartz-feldspar sand with admixtures of shell-sand and minerals of magmatic origin (*A-31*); (***3***) shell-sand with a small inclusion of quartz, feldspar, and (or) oolitic limestone (*A-4*, *A-6;* Pl. 190*, 1*); (***4***) sand based on minerals of volcanic rock with small inclusions of quartz and feldspar.

Of all the types of sand enumerated, only type ***3*** can be connected with the local beach sands of the Bay of Yarylgach, which consist mainly of shell debris and oolitic kernels washed out from Neogene rocks during the break down of the latter.[5] By contrast, the quartz sands are peculiar to the coastal areas lying to the north of the Bay of Yarylgach (in the region of the Bakal spit), and mainly to the beach alluvia in the eastern part of the Bay of Eupatoria.[6] The latter area with its sands brought from the south by alluvial flows represents a distinctly different mineralogical province, the characteristic feature of which is a considerable content of pyroxenes.[7] In the case of type ***1*** sands used in the preparation of the pastes, the connection with the area to the south of Eupatoria is corroborated by the granulometric composition of the pastes and, first and foremost, by the presence of separate grains of quartz gravel in them (**D 104**). These grains, as has been noted by V.P. Zenkovič,[8] can be found within three or four kilometres of Eupatoria in the coastal alluvia, where the latter gradually yield to pebbly beaches.

Sands of type ***4*** are also foreign to the north-western shores of Tarkhankut. Inclusions of augite, zonal plagioclase, and basaltic hornblende, as well as of basaltic debris in their composition, are related to volcanic rocks. In the Crimea the latter are found in a number of separate areas along the Main Ridge between the Baidar Gate and Kara-Dag. The grains are virtually unsmoothed on the surface and thus offer no evidence of having been carried over any great distance to the alluvial and proluvial deposits formed by products of weathering.

As a result of analysis, the four main compositions of the clay pastes of the handmade ware from U6 have been identified. Depending on the use of a single artificial temper or several added nonplastics, the pastes may be divided into composite and unmixed. The pastes that have been composed according to the following formulae: *1) clay + crushed rock*, and *2) clay + sand*, belong to the unmixed type. The presence of different type of sand in the samples is not, in my opinion, a deliberate technological refinement, but merely reflects the migration of representatives of the same cultural and technological tradition, and their adaptation to new sources of raw materials. The two other formulae *3) clay + potsherd + grass*, and *4) clay + potsherd + crushed rock + grass*, are to be classified as composite pastes. The brief historical period during which building U6 existed (see Part I) and the conditions of the ceramic finds prevent us from tracing the development of these paste formulae over time. However, it seems quite probable, that formula (*4*) arose as a result of the interrelation of two different traditions represented by formulae (*1*) and (*3*).

Shaping. Shaping the vessels was the next stage in the production process. As observations show, the pottery was hand-formed by means of the traditional coiling technique. As a rule, the seams between the coils were obliterated by later finishing treatments, although in a number of cases (**D 10**, **D 41**, **D 97**) the disintegration of such seams could be observed (Pl. 134, *b-c*). Where it was possible to trace the individual stages of working the initial mass of paste (**D 2**, **D 13**, **D 17**, **D 41**, **D 108**), it could be seen that the forming of the pot began from the base.[9] The separately modelled rim was attached to the body after it had been completed. The surface of the vessel was smoothed with a wet cloth or a handful of grass (Pl. 134, *d-e*) and then covered with a decoration.

To facilitate the lifting of vessels from the working table, some shredded grass or straw was placed under the base. The imprints left by such material were more than once identified on the surface (Pl. 134, *f*).

It should be noted, however, that alongside the entirely hand-shaped items, some of the vessels also show evidence of limited use of the primitive potter's wheel, its rapid rotation being employed simply for modelling some of the rims and sometimes for finishing the surface. At the same time, the skill of sculpturally modelling of the hollow bodies of vessels was essentially retained (for example **D 5**, **D 9-11**, **D 20**, **D 29**, **D 31**, **D 66**, **D 71**, **D 106**, **D 113-114**, **D 122**, **D 127**); this is shown clearly in vessel **D 20**. Such features as a small depression (evidently the imprint of the wheel spindle) in the central area of the base (Pl. 135, *a*), a number of rapid rotation traces round the neck (Pl. 135, *b-c*), and long folds formed by flow of paste (Pl. 135, *d*), point to the use of a potter's wheel in the early stages of its development (the transitional period between the second and the third stage, according to the classification devised by Bobrinskij).[10]

Decoration. The individual techniques and types of decoration will be detailed below, when the various shapes of the handmade ware are described. We need only note here that the set of tools and appliances used for decorating was not large. It included: a knife, a two- to six-pronged comb, as well as wooden 'spikes' with straight- or slant-cut butt-ends, and a hollow tube, such as a reed or bone (Pl. 136). At the same time the bulk of ornamented vessels were decorated with the usual impressions produced by the thumb, finger, or fingernail.

In characterising the technology of manufacturing handmade pottery in U6, mention must also be made of a small group of vessels in which the surface was completely or partially polished after drying. The group includes **D 35**, **D 101**, **D 104-109**.

Firing. No pottery kilns or any other constructions for firing pottery were discovered during the excavation of Panskoye I. A considerable amount of hand-made pottery from U6 was evidently fired at rather low temperatures (below 700°C), as suggested by the greyish black or black colour of the clay in cross section, an effect produced by unburnt carbon soot. How-

ever, in the majority of cases we cannot be certain about the firing temperature. Only for those vessels where traces of dissociation of carbonaceous minerals have been observed in the clay may one be satisfied that firing took place at 800°C or higher.

An analysis of the main components of the manufacturing process for handmade pottery showed that, along with some common features of the technique used for different groups of ceramics, there was always something specific in them. Taking into account such criteria as the composition of the paste, the finish of the outer surface, and the type of decoration, the handmade pottery may be divided into four technological groups (TG) three mutually distinct and one hybrid group combining the features of several others.

1. Decorated and undecorated vessels with either coarse or polished surface. Decoration: combing or the 'spike' marks, with flange appliqués on the shoulder and body. The clay is grey, dark brown, or orange-brown. The paste is tempered with sand.
2. Decorated and undecorated vessels with coarse unpolished surface. Decoration: impressions made with thumb or finger along the vessel edge. The paste is tempered with crushed rock.
3. Both decorated and undecorated vessels. Decoration: cutting, thumb impressing, punctation made with finger, or fingernail and/or other tools, as well as flange appliqués round the rim and shoulders. No polishing. The composite paste is tempered with crushed potsherds and plant material.
4. Vessels bearing the decorations characteristic of groups 2 and 3, or lacking any decoration. No polishing. The paste includes grog, crushed rock (limestone), and ground plant material in varying proportions.

The first three groups represent quite independent technological tendencies. However, the last TG, combining the features of the second and third groups, appears as a technological innovation. Taking into account that many of the technological peculiarities of primitive ceramics should be considered a manifestation of ethnic specificity,[11] this innovation may be explained by relatively long-term cultural and production contacts between different ethnic groups living as neighbours in the same locality.

The problem of ethno-cultural attribution of the different technological tendencies and traditions will be discussed below, after the morphological analysis and classification of the ceramics.

CLASSIFICATION OF HANDMADE POTTERY

The classification of the handmade pottery was based on visually identifiable differences in the shape and decoration of the vessels.

A. CLOSED SHAPES

TYPE 1. (**D 1-87**) *Pots* with rounded, bulbous body tapering towards the base, flat base, and outcurved rim. The maximum diameter (D) varies from 9.3 to 33.5 centimetres. The height (H) varies within a range from 10.0 to 33.0 cm. The base diameter (d_4) is as a rule two-thirds of the vessel-mouth diameter (d_1). The extent to which the rims curve outwards varies considerably and the rims themselves are either tapered, or rounded or ground flat on the top. The main

linear parameters show a correlation within a given type of vessel (Pl. 110). On the basis of these observations, three main size-groups of type 1 pots may, in my opinion, be distinguished: (a) large vessels ($d_1 > 18.0$ cm, $D > 23.0$ cm, $d_4 \geq 12.0$ cm); (b) medium-sized ($d_1 = 11.0$-18.0 cm, $D = 14.0$-23.0 cm, $d_4 = 8.0$-12.0 cm); (c) small ($d_1 < 11.0$ cm, $D \leq 13.0$ cm, $d_4 < 8.0$ cm).

The clear majority of the vessels have a rough, unpolished, fawn, grey, or black surface. The lower body of some of the medium-sized pots is covered with a great deal of soot, which suggests that this group was mainly used for cooking. The large-size vessels were more likely used for the storage of provisions.

About 40% of the pots of this type are decorated. Simple impressions produced by a thumb or finger and indentations made with a wedge-shaped stick, hollow reed, finger, or fingernail were set in one or two horizontal rows round either the rim or shoulder (Pl. 136, *a-b*, *f*). On some vessels both rim and shoulder are decorated. Along with this type of decoration, a decoration in the form of densely repeated knife cuts round the outer edge of the rim is common in type 1.

The small group of vessels decorated on the shoulder with an appliquéd flange (**D 68-70**) deserves special attention (Pls. 123-124, 136, *c-e*). In the north Black Sea area such a tradition, characteristic of the Archaic period, goes back to pottery of the Bronze Age. The finds from Panskoye I, however, proves that this type of decoration could still be in use even in the early Hellenistic period. On two examples the flange itself was decorated with close-set indentations made with a stick. All the vessels were found in the courtyard of building U6.

Coming back to the morphology of the type, we may distinguish three variants differentiated from one another by the shape of the neck as follows. *Variant A*: outwards curving neck. This group is the most numerous (**D 1-64**). Within the group some differences can be identified in the convexity of the bodies of the vessels. *Variant B*: out-turned neck clearly set off from the body. All the vessels of this group have medium-sized bulbous bodies (**D 65-85**). *Variant C* includes vessels with cylindrical neck. No complete shapes were found. The available fragments give an idea only about the profile of the upper part (**D 86-87**).

With the exception of *Variant-C* vessels belonging to TG4 only, pots of type 1 are represented in all the four technological groups.

In general, type-1 pots significantly outnumber the other types, amounting to about 67% of the total collection of handmade pottery from U6. Such a situation is typical not only for Panskoye I but also for all the Scythian sites between the Bug and Don rivers, and it is in the material from the latter region that this class of vessel finds its closest parallels. Likewise, pots of similar type considerably outnumber other shapes in the handmade pottery assemblages from Greek cities and the settlements in their agrarian territories throughout the area from Olbia to the Kimmerian Bosporos.

The closeness of type-1 handmade pots from Panskoye I to vessels from the Scythian steppe sites shows itself not only in the range of shapes but also in the most common types and techniques of their decoration (knife cuts round the rim and shoulder, rows of finger and fingernail impressions, or indentations). However, certain types of decoration on the pots from Panskoye enable us to identify one or two specific features along with the common ones. Thus, for example, the presence of vessels decorated with an appliquéd flange on the shoulder suggests some connection with the region of the Lower Bug and the Dnieper, this technique of decoration being very typical of that region, though not wholly confined to it.[12]

TYPE 2 (**D 88**). Undecorated *pots* with rounded, smoothly out-curved rim. This type is represented by a single specimen only. The colour of the clay is red-brown, appearing brown in thin section. The vessel belongs to TG1. The paste is distinctively tempered with shell sand with an admixture of quartz sand.

TYPE 3 (**D 89**). *A pot* with very short neck and rounded, out-curved rim. The type is represented by a single specimen only. The clay colour and the paste texture resemble those of type 2.

TYPE 4 (**D 104**). *Large Storage Jar.* Like the two preceding types this type is represented by a single specimen, the fragments of which were found in *room 3* and in the courtyard (square B-2). For vessels of this type the tall, relatively narrow neck and bulbous body with combed decoration are typical. The lower butt of an applied loop-shaped vertical handle is preserved at the level of the body's greatest diameter. The neck of the vessel is grey-polished. The paste was tempered with sand including quartz, augite, and basalt.

Fragments of handmade grey- or black-polished vessels with combed decoration that are very similar to the large type-4 pot from U6 are common enough (though not actually numerous) in the excavations in the Chersonesean *chora* and the city itself.[13] Such decoration is typical of the latest period of the Kizil-Koba culture;[14] and, besides the finds from Chersonesos[15] and its immediate vicinity on the Herakleian Peninsula,[16] fragments and even complete shapes of this pottery have been recorded in Kerkinitis;[17] at the settlement of Chaika; among the pottery from the farmhouses near the Eupatoria lighthouse;[18] at the settlement of Peschanka;[19] at the town-site of Yuzhno-Donuzlav;[20] at the settlement of Masliny[21] and in the unpublished material from the excavation of the farmhouse near the Bay of Vetrenaya. Isolated fragments of vessels with a similar decoration were found during excavation of Scythian Neapolis.[22]

TYPE 5 (**D 105**). *Large piriform Storage Jar.* The neck is tall and of a truncated cone shape. The body is spherical. The slightly out-curved rim is ground flat on top. Again, the type is represented by fragments of a single vessel only. The outer surface is black-brown and thoroughly polished. There is no decoration. The paste is typical of the TG1 group and was tempered with quartz sand with an addition of limestone sand. There is every reason to suppose that this type of large, polished storage jar has its origin in the so-called 'pear-shaped' vessels of the Kizil-Koba culture.[23]

TYPE 6 (**D 106-110**). *Jugs.* These vessels have a relatively tall neck with rounded out-turned rim. The mouth diameter varies from 9.0 to 11.0 cm. A vertical flattened handle is attached directly to the rim of the vessel. All the vessels of this type, with the exception of a single handle fragment (**D 110**), have a polished surface. The interior of the upper part of the vessels is burnished too. Quartz-limestone sand was used as temper for the paste. All the pottery of this type at U6, with the exception of **D 110**, was found in the courtyard.

TYPE 7 (**D 111**). *A scoop* with a rather short almost cylindrical neck and squat, radish-shaped body. The vertical loop-shaped handle is raised high above the rim. The vessel is unpolished. The composition of the paste is unknown. The only vessel constituting a basis for identifying this type comes from *room 13.* Some wheat was found in the scoop.

This shape has its origin as early as the late Bronze Age or early Iron Age, like types 4 and 5, and finds its closest parallels among the Kizil-Koba ceramics of the south-western Crimea.[24] A vessel from the 1964 excavation at the townsite of Chaika is also close to our specimen in both shape and date.[25]

B. OPEN SHAPES

TYPE 8 (**D 112-115**). *Cooking pans* with out-curved lip, bulbous body, and convex base. All the vessels have a flange to accommodate the lid. The horizontal loop-shaped handle may be raised above the rim or be at the same level as the latter. For this type, a coarse unpolished surface is typical. The parameter values for d_1 vary from 18.5 to 22.0 cm.

This shape undoubtedly belongs among a number of types of handmade wares that imitate Greek wheel-thrown ceramic vessels.

Handmade cooking pans imitating Hellenistic wares are well known from the excavations of Greek centres in the north Black Sea region.[26] In addition, the presence of this type among the handmade pottery from the townsite of Elizavetovskoye should be noted.[27]

The first appearance of similar handmade forms in pottery from Olbia can be assigned to the second half or the end of the 4th century B.C. However, according to K.K. Marčenko, production of such imitations actually began in the Lower Bug region in the late Archaic period.[28]

TYPE 9 (**D 116-125**). *Bowls* with rounded body, and off-set or incurved rim. The rims are variously shaped, being either rounded, sometimes flattened on a primitive potter's wheel. The rim diameter varies from 19.0 to 33.5 cm. It is not possible to formulate any definitive ideas about the shape of the base owing to a lack of complete vessels.

Decoration and burnish are not typical for this type, though a thorough smoothing of the surface by means of a rapidly rotating wheel can be observed on some specimens (**D 119**, **D 122**) (Pl. 137, *a*).

This type is among the most frequent of the handmade shapes found at the settlement, being second only to pots of type 1. Ten vessels of this type are recorded from U6.

Judging from the available material, this type of handmade pottery was used at Panskoye I from at least the second half of the 4th century B.C. up to the last days of the settlement's life. It is fairly probable that the upper date will need substantial correction, once the more ancient layers of the site have been investigated.

Similar bowls were of fairly widespread occurrence during the Scythian ascendancy, extending over almost the whole steppe zone of the northern Black Sea coasts. However, they played different roles in the ceramic assemblages of different regions.

As N.A. Gavriljuk points out, the majority of the Scythian burials containing this type of bowl is concentrated in the Lower Dnieper region.[29] Such bowls are much less common in Olbia and settlements of the Lower Bug,[30] and to all appearances, the type did not play any significant role in the ceramic complex of the inhabitants of the Don region.[31] Unfortunately, the handmade pottery of Chersonesos and its immediate surroundings still remains unpublished; thus we do not yet have enough material at our disposal to make any comparisons. The type-9 vessels from U6 are not uniform in terms of their technological group, though the majority of the bowls were made of clay tempered with sand. This fact suggests their closeness to ceramics of the Kizil-Koba type (types 2, 3, 4, 5, 6, 7 above), which were very similar in composition.

TYPE 10 (**D 126**). *Salt-cellars*. This type is represented by a single specimen (of TG2) in the shape of an upturned truncated cone with a tapered rim. The surface of the vessel is coarse and without decoration.

Morphologically this type may be compared with handmade bowls of truncated-cone shape. Such bowls were widespread in the second half of the first millennium B.C. throughout almost the whole of the northern Black Sea region. Individual finds of such bowls were

recorded more than once in the funerary sets of Scythian kurgan burials in the steppe zone,[32] as well as in those of the Elizavetovskoye and Aktash burial sites;[33] and similar bowls are known from 3rd-2nd century B.C. Myrmekion.[34] But first and foremost this shape is represented among the pottery from the Elizavetovskoye town-site, where the upturned truncated-cone shape accounted for 90% of all bowls.[35] They are also recorded from the Kamenskoye town-site.[36] At the same time, this type of bowl is relatively rare at the sites of the Lower Bug region. For example, in Olbia this shape is represented by a single specimen only, dated broadly to the period from the 5th to 2nd century B.C.[37]

TYPE 11 (**D 127**). A hemispherical *mortar* with sharply out-curved rim. The type is represented by a single specimen only, found in the courtyard (square B-6). The surface of the vessel is thoroughly smoothed. The paste composition is typical of TG2 ceramics. The vessel undoubtedly imitates the shape of Greek wheel-thrown mortars.

C. SPECIAL SHAPES

TYPE 12 (**D 128-129**). Cone-shaped *lids* with a 'knob-shaped' handle. This type is represented by two specimens. The paste composition identified for one of the vessels belongs to TG4.

TYPE 13 (**D 130**). *Altars.* The single specimen belonging to this type comes from the household sanctuary (*room 12*), and is represented by a small bowl-shaped altar on a high foot. The paste was tempered with sandstone sand.

An exact parallel to our example, both in shape and dimensions, is to be seen in a find from the building-period II level (room D, inventory list no. Ch. 63/430) in the Chersonesean settlement of Chaika situated to the west of Eupatoria.[38] Another object similar to ours comes from the 1965 excavation at Chaika, where it was found in the building-period III level (end of the 2nd century B.C.; room VIII);[39] and a small altar from the late Scythian town-site of Bulganak is evidently of the same date.[40] In the neighbourhood of Olbia such objects correspond to a still later period (late 1st century B.C. to mid-2nd century A.D.).[41] Although miniature handmade items of this type are known in the archaeological literature under the name of 'incense burners' or 'lamps' they were actually neither the one nor the other: the absence of any traces of burning is evidence of that. The fact that the only example of type 13 found at Panskoye I comes from the household sanctuary confirms the use of this shape as an altar.

One of the principal aims in studying plain handmade ware is, of course, to determine the intended functions of the various shapes. On the basis of their normal household purposes, the majority of the types described above may be tentatively divided into the following traditional groups: (a) cooking ware (the medium and small examples of types 1 to 3, and cooking pans of type 8); (b) tableware (bowls, salt-cellars, *etc.*); (c) household pottery, including storage vessels (large-size type-1 pots, large storage jars, scoops, mortars, *etc.*); (d) religious objects (altars).

Some researchers have attempted a considerably more detailed classification of Scythian handmade pottery according to function – seeking to distinguish the individual types of vessel used for the cooking and serving of meat, or vegetables, or milk products, *etc.*[42] However, such an identification is to a large extent arbitrary, because of the possible polyfunctionality of some of the shapes.

In considering the question of the main ethno-cultural components of the handmade ceramics from Panskoye I/U6, it is necessary to compare the results of the technological and

morphological analyses discussed above. As became evident from the investigation of the vessel shapes, decoration, and traditions of paste preparation, three large though unequal groups of handmade ware are to be distinguished. The first and most numerous group (types 1, 9, 10, 12) includes mainly those vessels representing the well-known Scythian shapes that were typical of the entire steppe zone of the northern Black Sea region between the Don and Dniester rivers. All these items belong to TG 2, 3, and 4.

The second group comprises polished and unpolished vessels often ornamented with applied or combed decoration (types 2, 3, 4, 5, 6, 7), all of which, without exception, belong to TG1. Both the shapes and the ornamentation of this ware, together with the use of some typical technical methods, enable us to connect this group in general with the ceramics of the late period of the Kizil-Koba culture (according to the periodisation system developed by A.M. Leskov). In the light of their technological identity (TG1), the series of undecorated vessels of types 1 and 9 (morphologically close to ceramics of 'Scythian' appearance) should probably also be assigned to the Kizil-Koba group (**D 8-11**, **D 48**, **D 61**, **D 68**, **D 70**, **D 118-119**, **D 122-123**). There can be little doubt that the appearance of this second group of pottery at Panskoye I is to be connected with the penetration of Chersonesean colonists together with some Taurian or Tauro-Scythian population dependent upon them. However, it cannot be ruled out that certain elements of this culture could have existed on this site even earlier. Only an investigation of the more ancient levels of the settlement will provide an answer to the question.

The third group of handmade vessels comprises items that, to a greater or lesser extent, imitate Greek wheel-thrown ceramics.[43] This group includes types 8 and 11, and in those cases where it was possible to identify the composition of the clay paste, we found we were dealing with TG 2. The presence of such imitations suggests not only the close acquaintance of the local potters with the main forms of Greek pottery but also the rather common everyday use of the latter by the non-Greek element among the inhabitants of Panskoye I.

However, another explanation of these imitations is also possible. As is clear from the numerous finds of lead clamps and vessels with repair-holes (*cf.* **K 6-12**, **B 50**, **B 59**, **B 99**, **B 107-109**, **B 116**, **B 121**, **B 124-125**, **B 144**, **B 152**, **B 156-157**, **B 162**, **B 165**, **B 208**, **B 211**, **B 220**, **B 223**, **B 225**, **C 44**, **C 54**, **C 57**, **C 62**, **C 66**, **C 71**, **C 73**, **C 87**, **C 127**, **C 196**, **C 198**, **C 203-205**, **C 207**, **C 221**, **C 224**, **C 240**, **C 257**), the household at U6 lived in rather poor circumstances. Because of the relative poverty of most of the Panskoye I population and the high cost of imported ceramics, as suggested by the graffiti (see **H 39**, **H 41**, **H 44(b)**), broken or damaged ware could not be immediately replaced by fine quality Greek products, and secondary use of the pottery, after mending solved shortages in part only. The ware intended for cooking hot food was obviously not at all suitable for repairing, since the lead used for mending has too low a melting-point. It therefore seems quite probable that in such circumstances the deficit of more 'costly' ware could have been made up with locally produced handmade pottery.

It has already been mentioned above that, besides the continued employment of the sculptural modelling technique, a number of vessels (including types 8, 11) show traces of the use the potter's-wheel at the early stage of its development (DWF[44] 2-3, according to Bobrinskij). This fact suggests a more advanced economic stage of pottery production than that required to satisfy mere domestic needs – and hence a wider circle of buyers. Therefore, the appearance of imitations of Greek wheel-thrown pottery was probably the potters' response to the demands not only of the ethnically related collectives but also to willing Greek buyers among the inhabitants of the settlement.

On the basis of what has been said above, two main routes or original vectors along which the penetration of the non-Greek ethno-cultural and technological traditions identified for the ceramic assemblage of U6 took place may be singled out with a fair degree of cer-

tainty: the north-western route – from the steppe of the Bug and Dnieper regions – and the southern one – from the western (south of Kerkinitis) and south-western Taurica and the immediate surroundings of Chersonesos. Accordingly, the question of the ethnic origin of the bearers of these traditions also finds its solution. We should note among the inhabitants of Panskoye I the much higher degree of Hellenization of the Scythian element (though we are probably dealing here with a highly interbred Graeco-Scythian population) when compared with the representatives of the Taurian ethnos that had been brought to the site. This is clearly reflected both in the general cultural features of the settlement and in the material from its associated necropolis.

CATALOGUE

See Pl. 109 for measuring points of D, $d_{1\text{-}4}$ and H, $h_{1\text{-}2}$.

POTS

Type 1A

1A-1. Large Vessels

D 1. U6 courtyard. 1972. Pl. 111.

Large pot decorated with finger impressions on the rim; linear finger impressions on the shoulder. The surface is black-coloured on the upper part of the vessel and brown on the lower part.

Fabric: clay tempered with crushed potsherd.

Dimensions: d_1 22.5 cm; d_2 21.5 cm; d_3 23 cm; d_4 14.5 cm; D 33 cm; H 28 cm; h_1 3.7 cm; h_2 6 cm.

D 2. U6 room 12. Find list 6/39. 1971. *Thin section A-16*. Pl. 111.

Large fragmented pot (125 fragments). The rim is flattened on top, and decorated with closely set finger impressions. At the junction of the base and wall characteristic 'burrs' protrude, indicating that the pot was formed from the base upwards. Well-fired dense clay, uniformly fawn on the surface and in cross section.

Fabric: clay tempered with crushed limestone, potsherds, and fine quartzite.

Dimensions: d_1 20 cm; d_2 19 cm; d_3 20 cm; d_4 14 cm; D 33.5 cm; h_1 4.3 cm; h_2 9 cm; H *c.* 33 cm.

Find-spot: in the breakdown of the hearth, at the sides and inside.

D 3. U6 room 20. Find list 4/38. 1972. Pl. 111.

Large pot decorated with finger impressions around the rim. Irregularly fired, the surface is dappled, ranging from yellow-brown to black.

Fabric: clay tempered with considerable admixtures of crushed potsherd; occasional pores evidently indicate tempering with calcite that has been burnt, or leached, out.

Dimensions: d_1 20 cm; d_2 18 cm; d_3 18.5 cm; d_4 13 × 14.5 cm; D 28 cm; H 29 cm; h_1 4.3 cm; h_2 10 cm.

Find-spot: on the floor in the west corner of the room.

D 4. U6 room 20. Find list 4/39a. 1972. *Thin section A-15*. Pl. 111.

Fragmented pot, lacking base. The rim is rounded, and smoothly out-curved. Decoration: linear finger indentations on the shoulder. The sherd is bi-coloured in cross section: yellow-brown outside, black inside. Numerous imprints of shredded plants are visible on the surface.

Fabric: clay tempered with coarsely crushed potsherd (particles up to 6 mm) and shredded plants.

Dimensions: d_1 15 cm; d_2 13 cm; d_3 15 cm; D 30 cm; h_1 5 cm; h_2 9 cm.

D 5. U6 room 16. Find list 10/12. 1971. Pl. 112.

Large undecorated pot: rim and base fragments only. A potter's wheel was used in part for modelling the upper profile of the vessel. The rim is flattened on top. All sherds acquired a homogeneous orange colour as a result of a secondary high-temperature firing (in an accidental fire?); the rim fragments have been deformed by fire.

Fabric: clay tempered with a considerable quantity of crushed potsherd.

Dimensions: d_1 19 cm; d_2 17 cm; d_3 18 cm; d_4 12 cm; D *c.* 27 cm; H 28 cm; h_1 6.5 cm.

D 6. U6 courtyard. 1972. Pl. 112.

Pot: fragments of a massive rim and neck. Decoration: deep fingernail indentations under the rim. The colour of the clay is variable: fawn to red-brown; the upper part of the rim black.

Fabric: clay tempered with coarsely ground potsherd (particles up to 6 mm) and crushed limestone.

Dimensions: d_1 *c.* 20 cm; d_2 *c.* 18.5 cm; d_3 *c.* 20.5 cm; h_1 5 cm.

D 7. U6 room 13. Find list 8/46. 1971. *Thin section A-8*. Pl. 112.

Upper body of a large pot lacking any significant salience of profile. The rim is rounded. Decoration: linear fingernail indentations in two rows under the rim and on the shoulder, evidently made by a female hand as may be judged from their size.

Fabric: clay tempered with crushed potsherd.

Dimensions: d_1 22.5 cm; d_2 19.5 cm; d_3 20 cm; D 26 cm; h_1 7.0 cm; h_2 12 cm.

Find-spot: on the floor, on top of louterion **C 82**.

D 8. U6 courtyard, V-4, 5. 1973. Pl. 113.

Large vessel: fragments of a boldly out-curved rim and wall only. The rim is rounded, partly flattened from outside. The clay is red-brown with numerous fine pores left by limestone leaching out during cleaning.

Fabric: clay tempered with limestone sand with admixtures of quartz.

Dimensions: d_1 32 cm; d_2 24.5 cm; d_3 25 cm; h_1 6 cm.

D 9. U6 courtyard, V-4. Find list 1. 1973. Pls. 113 and 135, *d*.

Large pot: rim (about 90° preserved) and neck fragments only. The rim was flattened on top, resulting in the formation of a peculiar excrescence on the outside.

Fabric and firing are similar to those of vessel **D 89**.

Dimensions: d_1 24 cm; d_2 20 cm; d_3 *c.* 21 cm; h_1 5 cm.

D 10. U6 courtyard, V-4, 5. 1975. *Thin section A-26*. Pl. 113.

Pot: rim (about 90° preserved) and body fragments. The rim was partly flattened on a wheel, resulting in the formation of peculiar excrescences on the outside and inside. Traces of the coil junctions are not completely smoothed down on the outside. The vessel is distinguished by the skilful firing that is characteristic of the Kizil-Koba type pottery. The clay surface is of a regular red-brown colour.

Fabric: clay tempered with fine shell-rock sand.

Dimensions: d_1 19 cm; d_2 16.5 cm; d_3 17.2 cm; h_1 6 cm.

It is highly likely that the pot was made by the same potter as vessels **D 11** and **D 88**.

D 11. U6 courtyard V-4. 1975. *Thin section A-31*. Pl. 113.

Pot: fragments of strongly out-curved rim. The rim edge was flattened with the aid of a rotating wheel. The clay is grey-black on the surface and well smoothed.

Fabric: clay tempered with limestone-quartz sand and crushed potsherd.

Dimensions: d_1 *c.* 21 cm; d_2 *c.* 17 cm.

The vessel was evidently made by the same potter as **D 10** and **D 88**.

1A-2. Medium-sized Vessels

a) with maximum diameter in the upper section

D 12. U6 room 7. Find list 1/45. 1971. Pl. 113.

Pot with a rounded rim decorated with nips. The lower body of the vessel is blackened with soot.

Fabric: clay tempered with finely ground potsherd and crushed rock.

Dimensions: d_1 14 cm; d_2 12 cm; d_3 13 cm; d_4 9.5 cm; D 21 cm; h_1 3 cm; h_2 6 cm; H 21.5 cm.

Find-spot: on a pile of fired clay in the southern corner.

D 13. U6 room 16. Find list 10/12. 1971. Pl. 114.

Pot: fragments of rim (approx. 100° preserved) and bottom (approx. 180° preserved) with part of the lower body joining the base. The rounded rim is smoothly out-curved; no decoration. The whole vessel is distinguished by black-coloured clay (both inside and out) except for a fawn shade on the outside of the rim.

Fabric: clay tempered with ground potsherd and calcite.

Dimensions: d_1 13 cm; d_2 12.2 cm; d_3 13 cm; d_4 8.5 cm; D *c.* 16 cm; h_1 3 cm.

D 14. U6 courtyard, B-6. Find list 16/112. 1972. Pl. 114.

Pot: rim (approx. 120° preserved) and base (approx. 180° preserved). The undecorated rim is slightly flattened on top. The clay is of variable colour: fawn and black on the outside and grey in cross section.

Fabric: clay tempered with approximately equal amounts of ground potsherd (particles up to 3 mm) and crushed limestone (dissolved during cleaning in HCl) with particle size up to 4 mm.

Dimensions: d_1 14.5 cm; d_2 13.2 cm; d_3 14 cm; h_1 5.2 cm.

D 15. U6 room 16. Find list 10/12. 1971. Pl. 115.

Fragmented pot with a low, rounded rim; no decoration.

Fabric: clay tempered with ground potsherd.

Dimensions: d_1 12 cm; d_2 11 cm; d_3 12 cm; d_4 9 cm; D *c.* 17 cm; h_1 3.5 cm; h_2 5 cm; H *c.* 19 cm.

D 16. U6 well, no. 207. 1977. *Thin section A-30*. Pl. 115.

Pot: rim and base fragments. The clay is black both on the surface and in cross section, and is blackened with soot on the outside. Inside, both on the bottom and the rim there are traces of a reddish violet pigment that was evidently kept in the vessel.

Fabric: lean clay tempered with crushed organogenic limestone.

Dimensions: d_1 18 cm; d_2 *c.* 16 cm; d_3 17 cm; d_4 12 cm; D *c.* 21.5 cm; h_1 *c.* 5 cm; H *c.* 22 cm.

D 17. U6 courtyard, B-6. Find list 16/112. 1972. Pl. 116.

Pot: fragments of rim (approx. 45° preserved), shoulder, and base (approx. 360° preserved). The rim is slightly flattened on top, and there is a linear finger-tip indentation on the shoulder. Traces of smoothing the surface on a wheel are visible on the interior of the shoulder. Peculiar burrs protrude at the point where the base is stuck to the body. The vessel surface is mainly of a dark grey colour, but fawn near the base.

Fabric: clay tempered mostly with ground potsherd.

Dimensions: d_1 *c.* 16 cm; d_2 13.3 cm; d_3 14 cm; d_4 10.5 cm; D *c.* 21 cm; h_1 5 cm; H *c.* 24 cm.

b) with maximum diameter in central section

D 18. U6 courtyard, B-6. Find list 16/162. 1972. Pl. 116.

Fragmented pot, lacking base. The rim is flattened on top, and beneath its edge there is a peculiar clay excrescence.

Dimensions: d_1 18 cm; d_2 15.5 cm; d_3 17 cm; D 22.5 cm; h_1 4.8 cm; h_2 6 cm.

Find-spot: close to the filling of a doorway.

D 19. U6 room 32. Find list 3/5. 1973. Pls. 117 and 137.

Massive thick-walled pot ornamented with nips along the rim. The surface is yellow-brown and brown.

Fabric: clay tempered with large quantities of ground potsherd.

Dimensions: d_1 14 cm; d_2 12 cm; d_3 13 cm; d_4 9 cm; D 17 cm; h_1 4 cm; h_2 5 cm; H 19 cm.

Find-spot: on the floor.

D 20. U6 room 13. Find list 8/44. 1971. *Thin section A-11*. Pls. 117, 134, *d-e*, 135, *a-c* and 137.

Pot with rounded and smoothly out-curved rim. The vessel

illustrates the transitional phase between the 2nd and 3rd stages of development of the potter's wheel (DWF) according to A.A. Bobrinskij's classification.[45] Traces of the spill for separating the vessel from the modelling tray can be observed on the base and a deepening is visible in the centre (evidently an imprint of the wheel's axis). There is evidence of horizontal ridges formed in the process of shaping the vessel on the wheel, and a long wrinkle of protruding clay formed by the process of modelling the profile with partial use of the wheel is visible too. Some traces of manual smoothing of the surface are also present. The clay is well fired. The surface is fawn on the outside (with a large black spot on one side) and orange-brown inside.

Fabric: lean clay tempered with crushed organogenic limestone, quartz, and ground potsherd.

Dimensions: d_1 12 cm; d_2 10 cm; d_3 11 cm; d_4 8 cm; D 16.5 cm; h_1 3.3 cm; h_2 6 cm; h_3 9 cm; H 18 cm.

Find-spot: on the floor.

D 21. U6 courtyard, V-4. Find list 1/52. 1975. *Thin section A-24*. Pls. 118 and 136, *b*.

Fragmented pot. The rim is rounded and decorated along the edge with knife notches. On the neck there is a row of shallow nicks made with a knife-point. The clay is grey in cross section, fawn and light brown on the surface.

Fabric: lean clay (with a high content of aleurite) tempered with ground potsherd and crushed limestone.

Dimensions: d_1 11 cm; d_2 9.5 cm; d_3 10.2 cm; d_4 9 cm; D *c.* 15 cm; h_1 4 cm; h_2 *c.* 4 cm; H *c.* 17 cm.

D 22. U6 courtyard, Zh-3. 1973. *Thin section A-12*. Pls. 118 and 137.

Fragmented undecorated pot, base lacking. The clay is of a regular dark grey colour.

Fabric: clay tempered mainly with ground potsherd.

Dimensions: d_1 12 cm; d_2 10.4 cm; d_3 11 cm; h_1 2.3 cm; h_2 5 cm; D 15.4 cm.

D 23. U6 room 12. Find list 6/41. 1971. Pl. 118

Pot: fragments of the upper body. The rim is rounded and has no decoration.

Dimensions: d_1 11 cm; d_2 10.4 cm; d_3 10.8 cm; D 15.5 cm; h_1 2.3 cm; h_2 4.7cm.

Find-spot: in the northern corner of the room.

D 24. U6 room 12. Find list 6/41a. 1972. Pl. 118.

The upper body of an undecorated pot. The clay is black in cross section; the surface is grey, light brown, and black.

Fabric: clay tempered with finely ground potsherd and shredded plants.

Dimensions: d_1 12 cm; d_2 10 cm; d_3 11 cm; D 14 cm; h_1 3 cm; h_2 4 cm.

Find-spot: the northern corner of the room.

D 25. U6 courtyard, V-4. 1973. Pl. 118.

Fragmented broad-based pot; the rim is rounded and has no decoration.

Regularly fired. Clay orange-brown, friable, and with numerous pores.

Fabric: clay tempered with crushed limestone.

Dimensions: d_1 13 cm; d_2 11.7 cm; d_3 12.7 cm; d_4 10 cm; D *c.* 17 cm; h_1 3 cm; h_2 *c.* 4 cm; H *c.* 15.5 cm.

D 26. U6 courtyard. 1975. Pl. 118.

Pot: fragments of rounded undecorated rim (approx. 50° preserved) and base (approx. 15°). Clay grey-black both on the surface and in cross section.

Fabric: clay tempered with coarsely ground potsherd (particles up to 4 mm) and crushed limestone (grains up to 2 mm).

Dimensions: d_1 13 cm; d_2 11.3 cm; d_3 12 cm; d_4 *c.* 9.5 cm; D *c.* 15 cm; h_1 4 cm; h_2 *c.* 9 cm; H *c.* 16 cm.

D 27. U6 courtyard, V-4. 1975. *Thin section A-1*. Pl. 119.

Pot: fragments of upper body with rounded rim; no decoration. The clay is three-layered in cross section: dark grey (10YR 4/1) in the middle, very pale brown (10YR 8/3) on the surface.

Fabric: lean clay (with a high content of aleurite) tempered with coarse grains of basalt.

Dimensions: d_1 12 cm; d_2 10.4 cm; d_3 11 cm; D *c.* 18.5 cm; h_1 3 cm; h_2 *c.* 7.5 cm.

D 28. U6 room 33. Find list 4/9. 1973.

Fragmented pot, decorated with finger indentations along the lip. The clay colour varies from light brown to black, and is grey in cross section.

Fabric: clay tempered with potsherd and finely pounded plants.

Dimensions: d_1 16 cm; d_2 14.5 cm; d_3 15.5 cm; d_4 9.5 cm; D *c.* 22 cm; h_1 5.5 cm.

Find-spot: the floor.

c) place of maximum diameter impossible to determine

D 29. U6 courtyard, V-4. Find list 1/50. 1973. Pl. 119.

Pot: fragmented high rim (*c.* 270° preserved). Decorated with oblique impressions made with a stick along the outer edge. In the process of flattening the outside of the rim a clay excrescence formed, apparently indicating partial use of a potter's wheel for modelling the profile of the upper body. The clay surface is spotted (grey, fawn, orange).

Fabric: clay tempered mainly with ground potsherd; inclusions of crushed limestone are also visible.

The fabric, firing, and decoration peculiarities are similar to those of vessels **D 37** and **D 40**.

Dimensions: d_1 16.5 cm; d_2 14.5 cm; d_3 18 cm; h_1 8 cm.

D 30. U6 courtyard, V-4, V-5. 1975. *Thin section A-28*. Pl. 119.

Pot: rounded rim and neck fragments. The outer edge of the rim is decorated with oblique impressions made with a blunt stick or knife-back. The clay is three-layered in cross section: grey in the middle, orange-brown on the surface.

Fabric: lean clay (with a high content of aleurite) tempered with ground potsherd; scattered pores on the surface evidently indicate the presence of crushed limestone in the paste. Probably some admixtures of shredded plants were also added.

Dimensions: d_1 15 cm; d_2 13.5 cm; d_3 15 cm; h_1 5 cm.

D 31. U6 room 9. Find list 3/23. 1971. Pl. 119.

Rim, shoulder, and body fragments of a pot. Beneath the rim edge a distinctive clay excrescence is visible as a result of flattening on a wheel. The shoulder is decorated with a row of finger impressions. One of the wall sherds has been

drilled evidently for repair purposes. The diameter of the hole is 2 mm. The clay is grey in section and light brown on the surface, with black-coloured spots.

Fabric: clay tempered with ground potsherd, crushed limestone, and shredded plants of which numerous imprints are also visible on both the internal and external surfaces of the sherds.

Dimensions: d_1 13 cm; d_2 11.6 cm; d_3 12.8 cm; h_1 3.5 cm.

Find-spot: on the floor in the northern corner of the room.

D 32. U6 courtyard, B-6. Find list 16/114. 1972. Pl. 120.

Pot: rounded rim fragments (*c.* 90° preserved). The clay is irregularly coloured: grey, fawn, red-brown inside; grey, fawn, and yellow outside; grey in cross section.

Fabric: mainly coarse crushed limestone (particle size up to 6 mm) was used for tempering the clay, with medium-sized ground potsherd with the grain size up to 2 mm as additional temper.

Dimensions: d_1 13 cm; d_2 11.2 cm; d_3 13 cm; h_1 5 cm.

D 33. U6 courtyard, B-6. Find list 16/114. 1973 + U6 courtyard, V-4. Find list 1. 1975. Pl. 120.

Pot: two fragments of rounded rim (*c.* 70° preserved). Decoration: finger and fingernail impressions along the outer edge. The clay surface is grey inside and grey-brown outside.

Fabric: clay includes coarsely ground potsherd (particles up to 4 mm). Scattered pores left by leached out limestone are also present on the surface and in section.

Dimensions: d_1 13 cm; d_2 11 cm.

D 34. U6 courtyard, V-4. 1975 + U6 room 7. Find list 1/47. 1971. Pl. 120.

Pot: rounded rim decorated beneath the edge with fingernail impressions.

Fabric: clay tempered with considerable admixtures of ground potsherd containing pyroxenes.

Dimensions: d_1 11.5 cm; d_2 10.5 cm; d_3 11 cm; h_1 3 cm.

D 35. U6 room 13. Find list 8/49. 1971. *Thin section A-23*. Pl. 120.

Pot: fragments of rim (approx. 45° preserved) and walls of the lower part of the vessel. The rim is rather low, rounded, and smoothly out-curved; no decoration. The surface of the vessel was thoroughly polished both inside and out (the polish being matt outside and lustrous inside). The clay near the rim is black in cross section. The clay and polish are red-brown (no lustre on the outside). On the inside a black spot is visible that runs through almost the whole thickness of the sherd.

Fabric: clay tempered with crushed limestone and quartz sand.

Dimensions: d_1 11.5 cm; d_2 10.9 cm; d_3 11.5 cm; h_1 3 cm.

D 36. U6 room 16. Find list 10/12. 1971. Pl. 120.

Pot: fragment of a rim. There are rather shallow nips beneath the edge. The clay is very dense and resonates on striking. The colour is light brown.

Dimensions: d_1 15 cm; d_2 14.2 cm; d_3 15 cm; h_1 3 cm.

D 37. U6 courtyard, V-4, 5. Find list 1. 1975. Pl. 120.

Pot: fragments of a high rim slightly out-curved (approx. 70° preserved). The rim has been flattened on top, and decorated round the outer edge with slanting impressions made with a stick or knife-back.

The fabric, clay colour, and decoration are similar to those of vessels **D 29** and **D 40**.

Dimensions: d_1 17 cm; d_2 16.2 cm; d_3 17 cm; h_1 7 cm.

D 38. U6 courtyard, B-6. Find list 16/114. 1972. Pl. 120.

Pot: two joining fragments of rounded rim (approx. 55° preserved); no decoration. Clay light brown outside and grey inside.

Fabric: clay tempered with ground potsherd and crushed limestone.

Dimensions: d_1 *c.* 16 cm; d_2 *c.* 14 cm.

D 39. U6 room 4. Find list 4/16. 1969 + U6 courtyard, B-6. Find list 16/114. 1972. Pl. 120.

Pot: fragments of rim flattened on top (approx. 95° preserved). Clay grey and black.

Fabric: clay tempered with ground potsherd and crushed limestone.

Dimensions: d_1 18 cm; d_2 16.6 cm; d_3 17 cm; h_1 5 cm.

D 40. U6 courtyard, D-6. Find list 17/108. 1972. Pl. 120.

Pot: fragments of rim (*c.* 70° preserved) flattened on top and decorated round the outer edge with slanting impressions made with a stick or knife-back. The clay is yellow both on the surface and in cross section.

Fabric, firing peculiarities and decoration are similar to those of vessels **D 29** and **D 37**, which perhaps indicates the same potter.

Dimensions: d_1 11 cm; d_2 9.6 cm; d_3 10.5 cm; h_1 3.5 cm.

1A-3. Small Vessels

D 41. U6 courtyard. 1975. *Thin section A-29*. Pl. 120.

Fragmented thin-walled pot (approx. 200° of the rim and 360° of the base are preserved). The rim is rounded and has no decoration. The wall fragments indicate exfoliation of coil junctions. The firing is irregular. The clay colour varies both on the surface and in cross section (grey, black, fawn, brick-red). Numerous small and very large pores (as well as actual holes) left by the process of leaching out of limestone during cleaning are visible on the surface and in section.

Fabric: lean clay (with a high content of silt) tempered with coarse crushed limestone (particle size up to 6 mm).

Dimensions: d_1 10.6 cm; d_2 8.9 cm; d_3 9.8 cm; d_4 7.5 cm; D 12.7 cm; h_1 3 cm; h_2 *c.* 7 cm; H *c.* 12.5 cm.

D 42. U6 courtyard, B-6. Find list 16/111. 1972. *Thin section A-25*. Pl. 120.

Fragmented small pot. The rounded rim is decorated beneath the edge with impressions made with a tubular bone. The clay is greyish black both outside and in cross section.

Fabric: clay tempered with crushed oolitic limestone, potsherd, and shredded plants.

Dimensions: d_1 7 cm; d_2 6.5 cm; d_3 7 cm; d_4 *c.* 5.5 cm; D 11 cm; h_1 2 cm; h_2 5.5 cm; H *c.* 11.5 cm.

D 43. U6 room 12. Find list 6/42. 1971. Pl. 120.

Fragmented undecorated pot.

Dimensions: d_1 10 cm; d_2 9.2 cm; d_3 9.5 cm; d_4 7 cm; h_1 2.8 cm; H *c.* 15.5 cm.

Find-spot: on and close beside the threshold.

D 44. U6 courtyard, E-5. 1974. Pl. 121.

Fragmented pot with rather low neck.

Dimensions: d_1 10 cm; d_2 9.8 cm; d_3 9.9 cm; D 12.8 cm; h_1 1.5 cm; h_2 3 cm.

D 45. U6 courtyard, B-6. Find list 16/114. 1976 + U6 courtyard, V-4. Find list 1. 1975. Pl. 121.

Small pot: fragments of rounded rim. The clay is fawn with black spots on the outside, and grey in cross section.

Fabric: clay tempered with crushed limestone and potsherd.

Dimensions: d_1 *c.* 10 cm; d_2 *c.* 9.4 cm; d_3 *c.* 10 cm; h_1 2.5 cm.

D 46. U6 courtyard, V-4. 1975. Pl. 121.

Pot: fragment of rounded and smoothly out-curved rim. The clay is greyish fawn on the interior; grey-brown and brown outside.

Fabric: clay tempered with large (up to 4 mm) grains of crushed home-made pottery sherds (?). The presence of pores suggests too the addition of crushed limestone, later leached out by washing; the amount, however, was not very large.

Dimensions: d_1 10 cm; d_2 9 cm; d_3 10 cm; h_1 3.8 cm.

1A. Main parameters unknown

D 47. U6 courtyard. 1972. Pl. 121.

Large pot: a fragment of rounded rim; no decoration. The clay is grey, the interior surface light brown.

Fabric: clay tempered with crushed oolitic limestone.

Dimensions: h_1 *c.* 6 cm.

D 48. U6 courtyard, D-4. 1974. Pl. 121.

Pot: small fragment of rounded, undecorated rim. The clay is well fired; uniformly brick-coloured on the outer surface and the interior.

Fabric: clay tempered with fine limestone-quartz sand.

D 49. U6 courtyard, B-6. Find list 16/114. 1972. Pl. 121.

Pot: fragments of rim slightly flattened on top. The clay surface is fawn and black; in cross section, grey-black. There are numerous pores including very large ones (up to 4 mm) left by dissolved limestone.

Fabric: clay tempered with crushed limestone.

D 50. U6 courtyard, B-6. Find list 16/111. 1972. Pl. 121.

Small fragment of rounded rim. The clay is fawn on the surface, grey in cross section.

Fabric: clay tempered with coarsely ground potsherd.

D 51. U6 room 26. Find list 10/12. 1972. Pl. 121.

Pot: small fragment (approx. 10° preserved) of rounded rim, decorated beneath the outer edge with finger impressions. Clay grey-brown.

Fabric: clay tempered with coarsely ground potsherd and crushed limestone.

D 52. U6 courtyard, V-4. Find list 1. 1973. Pl. 121.

Pot: rounded rim fragment; no decoration. Clay grey in cross section and fawn outside.

Fabric: clay tempered with potsherd and finely crushed limestone.

Dimensions: h_1 *c.* 3.5 cm.

D 53. U6 courtyard, V-4. Find list 1. 1973. Pl. 121.

Pot: rounded rim fragments. Clay grey.

Fabric: clay tempered with potsherd.

Dimensions: h_1 *c.* 3 cm.

D 54. U6 room 24. Find list 8/16. 1972. Pl. 121.

Small fragment of rounded rim; finger impressions along the edge. Clay grey; outside yellow-brown.

Fabric: clay tempered with finely ground potsherd (grain size approx. 1.5 mm), crushed limestone (approx. 1.5 mm) and pounded plants. Imprints of the latter are visible both on the surface and in cross section.

Dimensions: h_1 4 cm.

D 55. U6 courtyard, V-4. Find list 1. 1975. Pl. 121.

Very small sherd of rim, decorated round the edge with fingernail impressions. Clay yellow.

Fabric: clay tempered with crushed limestone.

D 56. U6 courtyard, V-4. Find list 1. 1973. Pl. 121.

Pot: small fragment of undecorated rim. Clay yellow; light brown in cross section.

Fabric: clay tempered with finely crushed limestone.

D 57. U6 courtyard, V-4. Find list 1. 1975. Pl. 121.

Pot: small fragment of rounded undecorated rim (approx. 30° preserved). Clay yellow on the surface and in cross section. There are scattered pores (up to 1 mm) of leached-out limestone on the surface.

Fabric: clay tempered with fine grains of ground potsherd and limestone sand.

Dimensions: h_1 *c.* 3.5 cm.

D 58. U6 courtyard. 1975. Pl. 121.

Pot: small fragment of rounded undecorated rim (approx. 30° preserved). The clay shows fine pores left by dissolved limestone; it is grey-fawn outside, fawn inside, and grey in cross section.

Fabric: clay tempered with ground potsherd (particle size up to 3 mm) and limestone sand.

Dimensions: h_1 *c.* 3.5 cm.

D 59. U6 courtyard, E-6. 1974. Pl. 121.

Pot: small fragment of rounded undecorated rim (approx. 20-25° preserved). The surface is coloured bright brown both inside and out with numerous pores left by leached-out limestone.

Fabric: clay tempered with crushed limestone.

D 60. U6 courtyard, E-3. 1974. Pl. 121.

Thin-walled small pot: small fragment of rounded undecorated rim. The surface is coloured grey-brown on the outside and fawn on the inside.

Fabric: clay tempered with finely crushed limestone.

D 61. U6 room 16. Find list 10/12. Pl. 121.

Pot: small rim fragment. Rather shallow impressions run

around the top edge. The clay is a dense, fawn-grey on the surface, and grey in cross section.

Fabric: clay tempered mainly with oolitic limestone sand with fairly small inclusions of quartz sand.

D 62. U6 courtyard, B-6. Find list 16/117. 1972. Pl. 121.

Pot: a small fragment of rounded rim (approx. 30° preserved). The clay is grey-black both on the surface and in cross section.

Fabric: clay tempered with ground potsherd (particles up to 3 mm) and pounded plants, the imprints of which are visible both in cross section and on the surface of the fragment.

D 63. U6 room 12. Find list 6/40-41 (a). 1971.

Pot: a small fragment of rounded rim; no decoration. The clay is homogeneous black in cross section.

Fabric: clay tempered with finely crushed limestone and quartz (?).

Find-spot: the northern corner of the room.

D 64. U6 room 26. Find list 10/12. 1972.

Pot: small fragment (approx. 20° preserved) of rim flattened on top; finger impressions are visible beneath the outer edge. Clay grey both on the surface and in cross section.

Fabric: clay tempered with potsherd and crushed limestone.

Type 1B

1B-1. Large Vessels

D 65. U6 courtyard, V-4. 1975. Pl. 122.

Pot: fragments of rim, slightly flattened on top, and neck fragments. The clay is three-layered in cross section: grey-black in the middle, fawn on the surfaces; includes numerous fine and very large pores left by leached-out limestone.

Fabric: clay tempered with crushed limestone.

Dimensions: d_1 18 cm; d_2 15 cm; d_3 16 cm; h_1 5 cm.

D 66. U6 room 20. Find list 4/39b. 1972. *Thin section A-27.* Pl. 122.

Fragmented pot. The rim is smoothly flattened on top (evidently achieved using a potter's wheel), and the outer edge is decorated with oblique notches made with a stick or knife-back; an additional decoration in the form of a row of finger impressions is visible on the shoulder. Numerous imprints of shredded plants can be seen on the surface of the pot.

Fabric: clay tempered with coarsely ground potsherd, shredded plants and a small amount of crushed limestone.

Dimensions: d_1 18 cm; d_2 16.5 cm; d_3 16.5 cm; d_4 11 cm; D 26 cm; h_1 4 cm; h_2 11 cm; H 29 cm.

D 67. U6 room 32. Find list 3/4. 1973. *Thin section A-10.* Pl. 123.

Large fragmented pot decorated with finger impressions round the rim. The vessel is regularly fired, and the clay is of a uniform yellow-brown.

Fabric: clay tempered with potsherd and crushed limestone.

Dimensions: d_1 19 cm; d_2 16.5 cm; d_3 19 cm; d_4 13 cm; D *c.* 27.5 cm; h_1 8.5 cm; h_2 *c.* 5.5 cm; H *c.* 32 cm.

Find-spot: lying on the floor.

D 68. U6 courtyard. 1975. *Thin section A-35.* Pls. 123 and 136, *c.*

Large pot: rim fragments flattened on top, and wall fragments. An applied flange on the neck is decorated with stick impressions. The clay is black in cross section, with a light brown surface.

Fabric: very lean carbonate clay with high content of silt and augite-basalt sand. Practically without artificial additives.

Dimensions: d_1 *c.* 22; d_2 *c.* 20; d_3 *c.* 21; h_1 *c.* 6.

1B-2. Medium-sized Vessels

D 69. U6 courtyard, E-3. 1974 + U6 courtyard, V-4, 5. Find list 1/50. 1973. *Thin section A-3.* Pls. 124 and 136, *d.*

Upper body of a pot with sharply out-curved rim flattened on top; applied flange on the shoulder decorated with oblique stick impressions. The clay is three-layered in cross section: black in the middle and from yellowish brown to dark grey on the outer surfaces.

Fabric: lean clay (more than 25% of silt) tempered with potsherd and crushed organogenic limestone.

Dimensions: d_1 14.5 cm; d_2 11.3 cm; d_3 13.5 cm; D *c.* 22 cm; h_1 5.5 cm; h_2 *c.* 6 cm.

D 70. U6 courtyard, V-4. 1975. *Thin section A-4.* Pls. 124 and 136, *e.*

Pot: upper body with rounded and sharply out-curved rim. An undivided bolster of applied clay runs round the shoulder. The clay is regularly fired. The colour on the surface and in cross section varies from orange-brown to grey-yellow and black. Numerous pores left by limestone sand dissolved during cleaning are visible both on the inner and outer surface.

Fabric: lean clay (less than 25% aleurite) tempered with oolitic limestone sand.

Dimensions: d_1 15 cm; d_2 11.7 cm; d_3 13.5 cm; D 22 cm; h_1 5 cm; h_2 6.5 cm.

D 71. U6 courtyard, V-4. 1975. Pl. 124.

Pot: fragments of sharply out-curved rim flattened on top; no decoration. The clay is orange-brown, with a dark grey interlayer in some places and spots of similar colour on the surface.

Dimensions: d_1 16 cm; d_2 13.6 cm; d_3 15 cm; h_1 5 cm.

D 72. U6 room 32. Find list 3/6. 1973. *Thin section A-14.* Pls. 125 and 137.

Massive pot decorated with oblique notches along the shoulder. The surface is light brown with dark spots.

Fabric: lean clay (with natural content of quartz-feldspar and augite sand) tempered with crushed limestone.

Dimensions: d_1 13.5 cm; d_2 12 cm; d_3 12 cm; d_4 8 cm; D 17 cm; h_1 3.8 cm; h_2 4 cm; H 20 cm.

Find-spot: on the floor.

D 73. U6 room 9. Find list 3/23. 1971 + U6 courtyard, V-4. Find list 1. 1975. Pl. 125.

Upper body of a pot. Linear indentations made with a stick on the shoulder. The rim is flattened on top. Regularly fired. The clay is yellow in cross section, and orange with pores left by leached-out limestone on the surface (both inside and outside).

Fabric: clay tempered with potsherd and crushed limestone.

Dimensions: d_1 16.8 cm; d_2 15 cm; d_3 15 cm; D *c.* 23.5 cm; h_1 4.0 cm; h_2 *c.* 8 cm.

Find-spot: on the floor in the northern corner of the room.

D 74. U6 room 12. Find list 6/40. 1971. *Thin section A-19*. Pl. 126.

Fragmented pot. Oblique notches made with a stick or knife-back run round the rim. The clay is three-layered in cross section: orange on the outside surfaces, grey-black in the middle. Traces of soot are visible on the surface.

Fabric: clay tempered with limestone-quartz sand and ground potsherd.

Dimensions: d_1 13 cm; d_2 11.4 cm; d_3 12 cm; d_4 8.5 cm; D *c.* 18 cm; h_1 4 cm; H *c.* 20.5 cm.

Find-spot: in the northern corner; possibly it originally stood on a shelf. Entirely fragmented.

D 75. U6 courtyard, B-6. Find list 16/112. 1972. Pl. 126.

Fragmented pot: approx. 200° of the rim and 270° of the base preserved; rim flattened on top. The surface of the vessel is spotted: light brown, fawn, and black.

Fabric: clay dense, tempered with potsherd and crushed limestone partly leached out by washing.

Dimensions: d_1 15.5 cm; d_2 13 cm; d_3 14 cm; d_4 11.5 cm; D *c.* 20 cm; h_1 5 cm; H *c.* 22 cm.

D 76. U6 courtyard, B-6. Find list 16/112. 1972. Pl. 127

Pot: fragments of rim (*c.* 80° preserved). The rim was flattened on top. The clay is light grey both on inner and outer surfaces, and grey in cross-section.

Fabric: clay containing ground potsherd as well as numerous fine and medium-sized grains of pyroxene. In the present case the latter does not constitute a special additive but simply indicates that pounded amphorae sherds of South-Pontic production (*e.g.* Sinope), traditionally including pyroxene in their fabric, were apparently used as temper.

Dimensions: d_1 17 cm; d_2 15 cm; d_3 15.5 cm; h_1 4 cm.

D 77. U6 curtyard, V-4. Find list 1. 1975. *Thin section A-34*. Pl. 127.

Thin-walled pot: rim (*c.* 80° preserved) and body fragments. The rim is rounded and without decoration. The colour is dirty-yellow both on the surface and in cross section. The clay is brittle and covered with cracks on the surface.

Fabric: carbonate clay. The pores indicate the initial presence of crushed limestone in the paste; but that was not the main temper, which evidently consisted of sherds of home-made pottery.

Dimensions: d_1 16 cm; d_2 14.4 cm; d_3 15 cm; h_1 3.5 cm.

D 78. U6 room 16. Find list 10/12. 1971. Pl. 127.

Pot, rim and base fragments. The rim is sharpened and out-curved in the shape of a bell. The clay is irregular in cross section: grey-brown outside and grey-black on interior.

Fabric: clay tempered with potsherd and crushed limestone.

Dimensions: d_1 17 cm; d_2 13.2 cm; d_3 15 cm; d_4 10 cm; D *c.* 20 cm; h_1 5 cm; H *c.* 22 cm.

D 79. U6 room 12. Find list 6/40-41 (b). 1971 + Find list 6/42. *Thin section A-20*. Pl. 127.

Fragmented pot; no decoration. The clay is a regular grey-black in cross section, and has a smoothed surface.

Fabric: lean clay tempered with coarse-grained shell-rock and ground potsherd.

Dimensions: d_1 15.5 cm; d_2 12 cm; d_3 12.5 cm; d_4 9.2 cm; D 23 cm; h_1 4.5 cm; h_2 7 cm.

Find-spot: the northern corner of the room.

1B-3. Small Vessels

D 80. U6 room 17. Find list 15/27. 1972. *Thin section A-9*. Pl. 127.

Pot with sharply out-curved and rounded rim. The vessel surface is light brown.

Fabric: lean clay tempered with crushed limestone and potsherd.

Dimensions: d_1 9.5 cm; d_2 7.8 cm; d_3 8 cm; d_4 8 cm; D 12.6 cm; h_1 2.3 cm; h_2 5 cm; H 13.2 cm.

D 81. U6 room 13. Find list 8/43. 1971. *Thin section A-13*. Pls. 127 and 137.

Small pot. The surface is black, with imprints of grass.

Fabric: clay tempered with potsherd, crushed limestone, and quartz.

Dimensions: d_1 7.5 cm; d_2 6 cm; d_3 6.2 cm; d_4 5 cm; D 9.3 cm; h_1 1.5 cm; h_2 3.5 cm; H 10 cm.

Find-spot: on the floor.

1B. Main Features Unknown

D 82. U6 courtyard, B-6. Find list 16/115. 1972. Pl. 128.

Pot: small fragment of rounded rim (approx. 15° preserved). The clay is brown on the outside surfaces and light brown in cross section.

Fabric: clay tempered with coarsely crushed limestone with particle size up to 9 mm.

D 83. U6 room 20. Find list 4/25. 1972. Pl. 128.

Small fragment of rim flattened on top; decorated round the edge with oblique stick impressions. The surface is carefully smoothed. The clay is dense, regularly fired, and uniformly orange-brown in cross section.

Fabric: clay tempered with limestone and quartz sand (?).

D 84. U6 room 12. Find list 6/40-41 (a). 1971. Pl. 128.

A fragment of rather low, rounded rim.

D 85. U6 courtyard, V-4. Find list 1. 1973.

Pot: a fragment of neck, with hole drilled through it (for hanging the vessel up). Clay brown.

Fabric: clay tempered with coarsely crushed limestone (grain size up to 3 mm).

Type 1C

1C-2. Medium-sized Vessels

D 86. U6 room 13. Find list 8/47-48. 1971. Pl. 128.

Pot: fragments of rim (approx. 60%), shoulder, and base with lower body. The rim is decorated with finger impressions round the edge. The clay is black both on the surface and in cross section.

Fabric: clay tempered with coarsely ground potsherd (grain size up to 4 mm) and crushed limestone (particles up to 3 mm).

Dimensions: d_1 13 cm; d_2 12.7 cm; d_3 14.5 cm; d_4 11 cm; h_1 5 cm.

1C-3. Small Vessels

D 87. U6 courtyard V-4. 1973. Pl. 128.

Pot: fragments of rim and shoulder.

Dimensions: d_1 6.1 cm; d_2 6.1 cm; d_3 6.5 cm; D 11 cm.

Type 2

D 88. U6 courtyard, V-4. 1975. Pl. 128.

Fragments of rounded, smoothly out-curved rim; no decoration. Clay red-brown.

Fabric: clay tempered with shell sand containing a little quartz sand.

Dimensions: d_1 17 cm; d_2 15.8 cm; d_3 17 cm; h_1 3.5 cm.

It is highly probable that the vessel was made by the same potter as **D 10** and **D 11**.

Type 3

D 89. U6 courtyard, V-4. Find list 1. 1973. Pl. 128.

Pot: rim (approx. 30° preserved) and wall fragments. The rim is very low, rounded, and out-curved. Clay brick-red on surfaces and brown in cross section.

Fabric: clay tempered with fine limestone sand and fairly small admixtures of quartz sand.

Fabric and firing peculiarities are similar to those of vessel **D 9**.

Dimensions: d_1 *c.* 18 cm; d_2 *c.* 17.8 cm; d_3 *c.* 18 cm; h_1 2 cm.

Type Impossible to Define

D 90. U6 room 32. Find list 3/7. 1973.

Pot base (360° preserved). The clay is black and bears evidence of soot deposits.

Fabric: clay tempered with crushed limestone.

Dimensions: d_4 11 × 13.5 cm.

D 91. U6 room 7. Find list 1/47. 1972. Pl. 128.

Pot base.

Fabric: clay tempered with ground potsherd.

Dimensions: d_4 11.5 cm.

Find-spot: on the floor near wall 2.

D 92. U6 gate. Find list 3/57. 1972. Pl. 128.

Pot or deep bowl: fragment of thin-walled base. The outer surface of the clay is grey; the interior surface is irregularly coloured (fawn, red-brown); and the cross section is brown or red-brown.

Fabric: clay tempered with fine homogeneous limestone sand.

Dimensions: d_4 *c.* 10 cm.

D 93. U6 room 12. Find list 6/42a. 1971. Pl. 128.

Pot: fragmented base.

Dimensions: d_4 9 cm.

Find-spot: on and near the threshold.

D 94. U6 courtyard, B-6. Find list 16/116. 1972. Pl. 129.

Pot: fragments of shoulder and base. Decorated on the shoulder with a row of finger impressions. On the bottom are imprints of shredded grass introduced as a means of separating the vessel from the modelling tray. The clay is fawn on the outside surface (terracotta-coloured on the bottom), and grey on the interior and in section.

Fabric: clay tempered with potsherd (particles up to 3 mm) and crushed limestone (particles up to 3.5 mm) in roughly equal ratio.

Dimensions: d_4 *c.* 7.5 cm.

D 95. U6 courtyard, V-4. 1975. Pl. 129.

Pot: small fragment of base. The clay is red-brown, the section is grey.

Fabric: clay tempered with potsherd and crushed limestone.

D 96. U6 courtyard, V-4. 1975. Pl. 129.

Pot: small fragment of base. The clay is light yellow.

Fabric: clay tempered with crushed limestone and potsherd.

D 97. U6 courtyard, V-4. 1975. Pl. 129.

Pot: fragment of lower body with part of the base. Coil junctions are visible on the surface of the sherd as well as the place where the first coil joins the base. The clay is fawn outside and orange inside.

Fabric: clay tempered with crushed limestone. The particles are sized from a fraction of a millimetre up to 3 mm.

D 98. U6 room 3. Find list 6/41. 1969.

Fragments of flat-based pot.

D 99. U6 room 7. Find list 1/46. 1971.

Fragmented pot with a decoration of pits and fingernail impressions round the rim.

Find-spot: on the floor in the middle of the room.

D 100. U6 room 17. Find list 15/26. 1972.

Home-made pot.

Find-spot: on the floor.

D 101. U6 room 17. Find list 15/28. 1972.

Fragments of a large red-burnished vessel decorated with small applied spikes.

D 102. U6 room 17. Find list 15/29. 1972.

Large thick-walled pot without decoration or polish; rim and base fragments.

D 103. U6 courtyard, DE-6. Find list 17/107. 1972.

Fragmented pot.

LARGE STORAGE JARS WITH COMBED DECORATION

Type 4

D 104. U6 room 3. Find list 6/40. 1969 + U6 courtyard, V-2. 1971. *Thin section A-32*. Pls. 129 and 136, *g*.

Fragmented storage jar. The shoulder and body of the vessel are decorated with lines and indentations made with a two- or three-toothed stamp ('comb') on the raw clay; the neck is polished. The surface of the clay is grey-black outside and orange inside.

Fabric: clay tempered with sand containing quartz, augite, and basalt.

Dimensions: d_2 10.3 cm; d_3 13 cm; D 30.5 cm.

LARGE PIRIFORM STORAGE JAR

Type 5

D 105. U6 room 9. Find list 3/24. 1971. *Thin section A-33*. Pl. 130.

The upper body of a vessel with a high neck widening towards the shoulder; rim flattened on top and slightly out-curved. The surface of the vessel is black-brown and has a lustrous polish.

Fabric: clay tempered with quartz sand.

Dimensions: d_1 8.5 cm; d_2 8 cm; d_3 12 cm; h_1 8 cm; h_2 8 cm; D *c.* 20 cm.

Find-spot: on the floor near wall 2.

JUGS

Type 6

D 106. U6 courtyard. 1972 + U6 courtyard, V-4. Find list 1/62. 1973 + U6 courtyard, V-4. Find list 1/52. 1975. *Thin section A-2*. Pl. 130.

Fragmented polished jug with high neck; upper body of the vessel is polished inside, too. Two parallel horizontal ridges on the inner surface running round the circumference of the lower part, may indicate the use of a potter's wheel of the DWF-2 stage in A.A. Bobrinskij's classification.[46]

The clay surface varies in colour from light brown to black; the cross section is black.

Fabric: clay tempered with quartz sand containing a small quantity of calcite.

Dimensions: d_1 9 cm; d_2 6.5 cm; d_3 7.5 cm; d_4 6 cm; D 12 cm; h_1 6 cm; h_2 4.5 cm; H 16.5 cm.

D 107. U6 courtyard, V-4. 1975. *Thin section A-5*. Pl. 130.

Jug: fragments of rounded undecorated rim. Matt red-brown polish is visible on the outside and on the interior of the upper body. The clay is dark brown in cross section.

Fabric: clay tempered with quartz and limestone sand.

Dimensions: d_1 11 cm; d_2 7.7 cm; d_3 9 cm; h_1 5.5 cm.

D 108. U6 courtyard, V-4. 1975. Pl. 130.

Polished jug: base and lower part of vessel.

Fabric: clay tempered with quartz and limestone sand.

Dimensions: d_4 7 cm.

D 109. U6 courtyard, D-6. Find list 17/106. 1972. Pl. 130.

A fragment of the base and lower part of a closed vessel; approx. 50° preserved. The clay is dense, black in section, and grey on the surface; carefully smoothed. The bottom shows a lustrous polish on the outside.

Fabric: clay tempered with quartz-limestone sand and also with occasional grains (up to 2 mm) of ground potsherd.

Dimensions: d_4 9 cm.

D 110. U6 room 4. Find list 4/15. 1969.

Fragment of middle part of jug handle. The clay is yellow-brown without polish.

Fabric: clay tempered with finely ground potsherd and crushed limestone.

Dimensions: thickness 1.5 cm; width 2.7 cm.

SCOOPS

Type 7

D 111. U6 room 13. Find list 8/45. 1971. Pls. 130 and 137.

Scoop with loop-shaped handle raised above the edge. The rim is rounded and slightly out-curved; no polish. The clay was overfired.

Dimensions: d_1 12.2 cm; d_2 11.7 cm; d_3 12 cm; d_4 9 cm; D 16.5 cm; h_1 3 cm; h_2 3.5 cm; H 11 cm.

Find-spot: almost in the centre of the room on the floor.

PANS

Type 8

D 112. U6 courtyard, E-3. 1974. Pl. 131.

Pan: lip and shoulder fragments; the lip is flanged to accommodate the lid. The horizontal loop-shaped handle is slightly raised above the edge.

Dimensions: d_1 22 cm; d_{flange} 20.5 cm; D *c.* 24 cm.

D 113. U6 courtyard, E-3. 1974. Pl. 185.

Pan: lip and shoulder fragments. The lip is flattened on top and has a flange to accommodate the lid; the horizontal loop-shaped handle is not raised above the edge.

Dimensions: d_1 18.5 cm; d_{flange} 16.5 cm; D *c.* 21.5 cm.

D 114. U6 courtyard, D-6. Find list 17/110. 1972. *Thin section A-22*. Pl. 131.

Fragmented pan; approx. 110° of the rim preserved. Inside there is a pronounced flange to accommodate the lid. The nature of the fracture lines indicate that the coiling technique was employed in the formation of the vessel. Profiling of the upper part and smoothing of the surface were achieved partly by use of a potter's wheel. The clay is uniformly greyish fawn.

Fabric: carbonate clay tempered with crushed limestone.

Dimensions: d_1 20 cm; d_{mouth} 17 cm; d_2 19 cm; d_3 18.6 cm; D 21.5 cm; h_1 3 cm; h_2 5.5 cm.

D 115. U6 courtyard, E-5. 1974. Pl. 131.

Pan: fragments of lip and shoulder. The lip is flattened on top with a flange inside to accommodate the lid.

Dimensions: d_1 21 cm; d_{mouth} 19.5 cm; D 23 cm.

BOWLS

Type 9

D 116. U6 courtyard, B-6. Find list 16/120. 1972. Pl. 132.

Fragment of a bowl with the rim flattened on top.

Dimensions: d_1 19.5 cm; D 21.2 cm; h_2 3.5 cm.

D 117. U6 courtyard, E-5. 1974. Pl. 132.

A fragment of a bowl lip flattened on top.

Dimensions: d_1 29 cm; D 31 cm; h_2 4 cm.

D 118. U6 room 25. Find list 9/16. 1972 + U6 courtyard, V-4. Pl. 132.

Fragments of bowl lip flattened on top. The clay is red-brown; broken surfaces are grey-brown.

Fabric: clay tempered with fine limestone sand.

Dimensions: d_1 20 cm; D 20.5 cm; h_2 1 cm.

D 119. U6 courtyard, V-4. 1975. *Thin section A-7*. Pl. 132.

Fragments of a bowl lip flattened on top. The surface is smoothed and coated on the interior of the vessel with engobe of an intensive brown. The clay is a regular dark grey in cross section.

Fabric: clay tempered with limestone sand with a small inclusion of quartz sand.

Dimensions: d_1=D 19 cm.

D 120. U6 courtyard, E-6. 1974. Pl. 132.

Fragments of a bowl lip.

Dimensions: d_1 33.5 cm; D 35 cm; h_2 3 cm.

D 121. U6 courtyard, E-4. 1974. Pl. 133.

Fragment of a lip flattened on top and with a slightly incurved edge.

Dimensions: d_1 20.7 cm; D 21.8 cm; h_2 1.7 cm.

D 122. U6 courtyard, V-4. 1975. *Thin section A-6*. Pl. 133.

Bowl: fragments of a rounded and incurved lip. Traces of partial use of a potter's wheel for modelling the profile of the upper part of the vessel and for smoothing the surface are visible on the sherd. The firing is regular. The clay surface is dark brown; broken surfaces are brown.

Fabric: clay tempered with limestone-quartz sand.

Dimensions: d_1 24 cm; D 24.6 cm; h_2 1 cm.

D 123. U6 well, no. 208. 1977. Pl. 133.

Bowl: rounded lip fragment (approx. 30° preserved). The clay is friable, grey-lilac; broken surfaces are grey.

Fabric: clay tempered with shell sand.

Dimensions: d_1 *c.* 22 cm; D *c.* 23 cm; h_2 1 cm.

D 124. U6 courtyard, E-6. 1974. Pl. 133.

Thin-walled bowl: small fragment of rounded lip. The clay surface is fawn; broken surfaces are grey.

Fabric: clay tempered with potsherd and crushed limestone.

D 125. U6 courtyard, B-6. Find list 16/120. 1972. Pl. 133.

Bowl: small fragment of rounded lip (approx. 15° preserved). The interior surface and broken surfaces are grey; the outer surface is light brown. The fragment is broken at the junction of two coils.

Fabric: clay tempered with coarsely ground potsherd (particles up to 6 mm); scattered pores indicate that finely crushed limestone was also added.

Dimensions: d_1 = D.

SALT-CELLARS

Type 10

D 126. U6 room 20. Find list 4/39. 1972. *Thin section A-17*. Pls. 133 and 137.

Small salt-cellar of a truncated cone shape with tapering edge. The surface is greyish brown to very pale brown; broken surfaces are yellowish brown.

Fabric: extremely sandy clay tempered with crushed limestone.

Dimensions: d_1 7.5 cm; d_4 4 cm; H 3.5 cm.

MORTARS

Type 11

D 127. U6 courtyard, V-6. 1972. Pl. 133.

Mortar: small lip fragment. The surface is uniformly smoothed. The clay is cream-coloured, in some places grey.

Fabric: clay tempered with crushed limestone.

Dimensions: d_1 *c.* 25 cm.

LIDS

Type 12

D 128. U6 courtyard, D-4. 1973. Pl. 133.

Fragmented lid of a pot.

Dimensions: D 8.3 cm.

D 129. U6 room 13. Find list 8/46. 1971.

Small fragment of lid edge. The clay is grey-brown.

Fabric: clay tempered with crushed limestone and potsherd (?).

ALTARS

Type 13

D 130. U6 room 12. Find list 6/53. 1971. *Thin section A-18*. Pl. 133.

See also **G 11**.

Fairly small cup-shaped altar on a high foot widening towards the base. Coarsely modelled. The surface is engobe-coated with light brown finely levigated clay.

Fabric: lean clay tempered with limestone (shell-rock) sand.

Dimensions: H 6.7 cm.

Find-spot: on the floor.

LIST OF THIN SECTIONS

A-1	=	**D 27**	*A-18*	=	**D 130**
A-2	=	**D 106**	*A-19*	=	**D 74**
A-3	=	**D 69**	*A-20*	=	**D 79**
A-4	=	**D 70**	*A-22*	=	**D 114**
A-5	=	**D 107**	*A-23*	=	**D 35**
A-6	=	**D 122**	*A-24*	=	**D 21**
A-7	=	**D 119**	*A-25*	=	**D 42**
A-8	=	**D 7**	*A-26*	=	**D 10**
A-9	=	**D 80**	*A-27*	=	**D 66**
A-10	=	**D 67**	*A-28*	=	**D 30**
A-11	=	**D 20**	*A-29*	=	**D 41**
A-12	=	**D 22**	*A-30*	=	**D 16**
A-13	=	**D 81**	*A-31*	=	**D 11**
A-14	=	**D 72**	*A-32*	=	**D 104**
A-15	=	**D 4**	*A-33*	=	**D 105**
A-16	=	**D 2**	*A-34*	=	**D 77**
A-17	=	**D 126**	*A-35*	=	**D 68**

NOTES

1. Ščeglov 1976, 136; Ščeglov, Podol'skij, Gilevič and Kac 1972, 342; Chtcheglov 1992, 172.
2. Latyševa 1997, 57.
3. See for example: Peščereva 1959; Drost 1967; Bobrinskij 1978; Rye 1981; Rice 1987. *Cf.* Hampe and Winter 1962; 1965.
4. On the criteria for distinguishing added temper from natural inclusions in clays, see *e.g.* Shepard 1956; Braun 1982, 183 ff.; Rice 1987, 409-412. *Cf.* Magetti 1982, 122.
5. See Longinov 1955, 151-165; Zenkovič 1960, 144.

6. Zenkovič 1960, 118, 166, 172.
7. Zenkovič 1960, 195.
8. Zenkovič 1958, 151.
9. The so-called base program, according to A.A. Bobrinskij (1978, 114, 130-135, *cf.* fig. 43, *5*).
10. Bobrinskij 1978, 44.
11. See, for example, Matson 1951, 105; Shepard 1956, 348 ff.; Nicklin 1971, 29 ff.; Bobrinskij 1978; Kožin 1989, 60 ff.
12. Kapošina 1956, 161; Štitel'man 1956, 262; Marčenko 1988, figs. 3-7.
13. *Cf.* Daševskaja 1963, 205-209, figs. 1-2.
14. See Leskov 1965, 128.
15. Belov and Strželetskij 1953, 47, fig. 17, *3*; Savelja 1970, 48 ff.; Senatorov 1987, 7; Senatorov 1988, 99 ff.
16. Grinevič 1929, 24; Strželetskij 1961, 161 ff.
17. Nalivkina 1955, 65 fig. 21, *1*; Kutajsov 1987, 27-40; Golencov 1981, 227-232.
18. Daševskaja 1963, 208; Jacenko 1983, 200.
19. Kovalenko 1991, 23.
20. Daševskaja 1961, 56; Daševskaja 1963, 209 fig. 1, *3-7*, fig. 2, *7*.
21. Daševskaja 1963, 209, fig. 2, *8*; Latyševa 1997, 58.
22. Daševskaja 1963, 206 ff., fig. 2, *3-5*.
23. Kris 1981, pl. 20, *2, 6*; Kolotuchin 1996.
24. *Cf.* Kris 1981, pl. 27, *6*; Kolotukhin 1990, 79, figs. 11, 12.
25. Bessonova 1964, 17, list 27.
26. Knipovič 1940, 135, pl. XXVI, *6*; Marčenko 1988, fig. 16; Kastanajan 1952, 254, fig. 6, *1-2*.
27. Marčenko 1972, figs. 3-4.
28. Marčenko and Domanskij 1983, fig. 8, *20*; Marčenko 1988, 87.
29. Gavriljuk 1989, 58, fig. 17, *7-13*.
30. Kapošina 1956b, 162, 169; Kapošina 1956a, 244, 247; Marčenko 1975, 71, fig. 1, *25*, 74; Marčenko 1988, 97; Domanskij and Marčenko 1980, 31.
31. Marčenko 1972, 125, figs. 2, 10, 11, 131; Kopylov and Marčenko 1980, 159.
32. Gavriljuk 1989, 58, fig. 17, *1-6*.
33. Kopylov and Marčenko 1980, 158, fig. 1, *12-14*; Bessonova, Bunjatjan and Gavriljuk 1988, fig. 17, *14*, fig. 37, *1-2*.
34. Kastanajan 1981, pl. II, *5*.
35. Marčenko 1972, 131, fig. 2, *9*.
36. Grakov 1954, 74, pl. V, *2*.
37. Marčenko 1988, 100, fig. 31, *4*. *Cf.* Kapošina 1956a, 244, 247.
38. Karasev 1963a, 28, fig. 83.
39. Karasev and Jacenko 1965, 60, fig. 115.
40. Chrapunov 1991, 9, 202, fig. 20, *8*; Vlasov 1997, 273 ff. pl., VIII, *5*.
41. Burakov 1962, 74, pl. V, *11*.
42. Gavriljuk 1989, 40-60.
43. For such imitations in the handmade ware from Histria, Olbia, and Elizavetovskoye see Coja 1970, 107, fig. 3, *34-35*, 108 f.; Marčenko 1988, 87; Marčenko 1972, fig. 3, *4*.
44. **D**evelopment of the pottery **W**heel **F**unctions.
45. Bobrinskij 1978, 27, 44.
46. Bobrinskij 1978, 44.

LAMPS

Lise Hannestad

About a dozen lamps or fragments of lamps were recorded in U6. Most were found in the courtyard, three in *room 13*, one in *room 12*, the sanctuary for agrarian divinities, and one in *room 19*.

One of the lamps (**E 11**, found in *room 12*) is rather unorthodox, being made from the base of a fish-plate (**B 232**), where a bed for the wick has been cut in the ridge around the central depression in the floor. This suggests that lamps were scarce, at least in the final phase of U6.[1]

One lamp, **E 12**, is black glazed, probably an Athenian import. **E 8** has a dull brown slip, and may also be an import from outside the northern Black Sea area, whereas **E 5-6** and **E 11** have a dull grey slip on the surface similar to that on the grey ware characteristic of the north-western part of the Black Sea region (see Part II **B**). Other lamps have a pale slip or no slip at all. The ware of most of them contains mica in varying amounts; some also pyroxene.[2] The colour of the ware varies from light grey to reddish brown. The lamps (**E 2-5** and **E 7**) tempered with mica may derive from Eastern Crimea (*cf.* Bailey 1975, 74), though mica rather suggests an origin in the Aegean or Asian Minor. A few (**E 1**, **E 6** and **E 9**) may have been manufactured in Chersonesos or perhaps Kerkinitis (though it yet remains to identify ceramic productions from Kerkinitis).

All the lamps are wheel-made. Most common is a type with a short neck (nos. **E 3-4**, **E 7**), which is common in the Crimea (*cf.* Bailey 1975, 73-78; Zabelina 1992, pl. I, *6-11*). Two of them (**E 3** and **E 7**) have preserved the rounded base, which is a trait often seen in this Crimean type (see also Gajdukevič 1952, fig. 107, *4* for an example from Myrmekion; for a related type – though with a different base – from Gorgippia in the Taman Peninsula, see Alekseeva 1976 fig. 4, *8,* dated to the first half of the 3rd century B.C. This flat base is also seen among lamps from Pantikapaion, *cf.* Zabelina 1992, 300 pl. I, *8*). The type often has the same handle as **E 2**. According to Knipovič (1940, 145 note 1; see also Levi 1956, 82, fig. 51) this type of lamp (called type 21) is very common in Olbia (17 specimens found in a single excavation plot in the period 1935-36). The type is probably connected with Howland types 36A[3] – called 'nicht-attische Kannen-Lampen' by Scheibler (1976) – and 36B. Shapes similar to Howland type 36B are common in the Near East in the Hellenistic period (see, *e.g.*, Hannestad 1983, 73 f.) though the characteristic rounded base on the lamps from the Crimea is not found here. **E 2**, **E 5** and **E 9** have a rounded body and no neck; they may be compared with Bailey 1975, Q 119, though their body is deeper, a development characteristic of lamps from the Crimea in the late Classical – early Hellenistic period. Two fragments of lamps from 'Masliny' (V.A. Latyševa, Otčet o raskopkach expedicii Char'kovskogo universiteta v 1973 g., Archives IA NANU, f.-e, 1973/117, pl. XXIII, *2*) have a related shape with strongly rounded body and no neck, but the rim has a profile (only the part with the nozzle is preserved so it is not known whether they had the same type of handle as **E 2**). This shape may be related to Howland type 28 (Corinth type IX).

The fragment **E 8** suggests a shape related to Howland type 23 with its inward sloping rim.

The large flat-based lamp **E 1**, which may be compared with Olbia type 20 (Levi 1956, 145, fig. 101 and pl. XXXIII, *4*), may be a local development of Howland type 21. Bailey (1975) Q119, possibly from Pantikapaion, is closer in shape to Howland type 21 and probably earlier than **E 1**.

CATALOGUE

E 1. U6 courtyard, D-6. Find list 17/104. 1972. Pl. 138.
Lamp fragment.
Estimated dimensions: H. 3.4 cm; L. with spout 13.4 cm; D. of body 10.8 cm; D. of opening 6.6 cm. Clay light grey, with small particles of pyroxene. Light beige slip.

E 2. U6 courtyard, D-6. Find list 17/103. 1972. Pl. 138.
Fragmentary lamp (fragments of body, base and handle).
Dimensions: H. of body 3.0 cm; H. with handle 5.2 cm; estimated D. of body 7.8 cm; D. of opening 4.0 cm; D. of base 2.2 cm. Clay reddish brown, with inclusions of pyroxene and mica. No slip.

E 3. U6 courtyard, G-3. 1971. Pl. 138.
Lamp. Restored, handle missing.
Dimensions: H. 3.4 cm; L. with spout 9.2 cm; D. of body 7.4 cm; D. of opening 4.0 cm. Clay rose, with inclusions of mica. Light beige slip. Remains of snuff on the spout.

E 4. U6 room 19. Find list 2/31. 1972 + U6 well, no. 179. 1977. Pl. 138.
Fragments of lamp.
Estimated dimensions: H. 3.0 cm; L. with spout 8.6 cm; D. of body 7.4 cm; D. of opening 4.0 cm. Clay yellowish beige, with inclusions of mica. White slip.

E 5. U6 courtyard. Pl. 138.
Lamp, fragment of body with a handle.
Dimensions: preserved H. 2.4 cm; D. of body 7.4 cm; D. of opening 4.4 cm. Clay light grey, with particles of mica. Light grey slip.

E 6. U6 courtyard, V-4. 1973. Pl. 138.
Fragment of lamp.
Dimensions: estimated H. 2.8 cm; L. with spout 8.7 cm; D. of body 7.2 cm; D. of opening 4.0 cm. Clay greyish, with pyroxene particles. Greyish slip.

E 7. U6 courtyard, E-3. 1974. Pl. 138.
Fragment of lamp.
Dimensions: H. 3.2 cm; L. with spout 9.0 cm; D. of body 7.0 cm; D. of opening 4.0 cm. Clay light grey, with particles of sand and mica. No slip.

E 8. U6 courtyard, D-6, E-4. Find list 17/95b. 1972. Pl. 138.
Fragments of one (?) lamp.
Estimated dimensions: H. 2.0 cm; D. of body 7.0 cm; D. of opening 3.0 cm. Clay reddish orange, with inclusions of mica. Dull brown slip. Possibly an import; V. Stolba has suggested that it may come from Asia Minor.

E 9. U6 room 13. Find list 8/68. 1971. Pl. 138.
Lamp fragment.
Estimated dimensions: H. 1.6 cm; D. of body 6.0 cm; D. of opening 3.0 cm. Clay reddish rose, with rare sand particles. Reddish rose slip.

E 10. U6 room 13. Find list 8/25. 1971.
Handle fragment of a lamp.
Dimensions: W. 1.4 cm; thickness 0.6 cm. Clay rose. Clay-coloured slip.

E 11 (= **B 232**). U6 room 12. Find list 6/50. 1971. Pl. 75.
Saltcellar and ring foot from massive fish-plate, re-used as a lamp. A bed for the wick has been cut in the wall of the salt compartment. Remains of soot. Clay coarse and heavy, pale brown (10YR 5/3), with brown particles, calcite and tiny inclusions of quartz or mica (?). Slip grey and dull.
Dimensions: H. 3.5 cm; D. of base 9.8 cm; D. of central depression 8.2 cm.
Graffito **H 31** inside ring foot.

E 12. U6 room 13. Find list 8/37. 1971. Pl. 138.
Well preserved black-glazed lamp.
Dimensions: largest D. 6 cm; D. of foot 3.8 cm; length of spout 3.5 cm.
Clay very fine, reddish yellow (5YR 6/6), with a small amount of mica.
Howland type 25B.
Date: *c.* 350-280 B.C. for Howland type 25B. For a very similar lamp, apparently 'wrapped' in a sheet of lead, see Karasev 1965, 137, fig. 48, *4*.

NOTES

1. The many repairs of broken vessels (see chapters II **B**-**D**) also suggest that the supply of pottery was scarce during the late phase of U6.
2. Pyroxene is the most characteristic additive in the ceramics of the southern Black Sea region (see Ščeglov and Selivanova 1992, 39 f. (Herakleia, Sinope, and Amastris) and Appendix II, below. In small amounts, it may also indicate Chersonesos as the place of origin, *cf.* Ščeglov and Selivanova 1992, 40, 57 (Chersonesos IV); Whitbread 1995, 239 ff. on the amphorae from Chersonesos.
3. Only two specimens are recorded by Howland, one of which is considered an eastern import (Howland 1958, 115).

TERRACOTTAS

Lise Hannestad

The terracottas found at Panskoye I fall into two groups: handmade and mould-made, of which the second is by far the largest. Virtually all the terracottas were found in the settlement, *i.e.* in the houses or their courtyards, whereas only two come from the necropolis.[1] A similar picture is seen at Olbia, where very few terracottas were found in the tombs, among them a winged Eros and a Demeter protome (Parovič-Pešikan 1974 and Kozub 1974).[2] The number of graves from the fourth century and the Hellenistic period containing terracottas seems to be larger in Chersonesos, the other main city connected with Panskoye.[3] But actually the number of terracottas found in graves on many sites in Greece is small, compared with the finds from the settlement. Thus at Olynthos (Robinson 1952, 43), less than a fourth of the terracottas were found in tombs, in only 62 out of 598 excavated tombs, most often in children's graves.

No moulds or fragments of moulds have yet been found in any of the complexes at Panskoye I, and it is thus most probable that the terracottas were imports. Many of the mould-made types have parallels from other sites in the region.

A very popular type is a female protome, often of the so-called Demeter or Kore type, attesting the importance of corn-growing on the site. Another type found in several specimens is a youthful Eros, but otherwise male deities are very rare among the terracottas. Popular types are also figurines of women in 'Tanagra' style.

The number of terracottas recorded in U6 is quite large when compared with the finds from complex U7 *(*see *Panskoye I* vol. III, forthcoming[4]*)*. A concentration of seven was found in *room 12* (**F 1**-**7**) (see Part I, Description of the building complex), which seems to have remained more or less intact during the destruction. A significant number were also found in the courtyard, where they had fallen in the collapse of the second floor of the building (see Part I, Description of the building complex).[5] One female figurine (**F 8**) was found in *room 23*, and one Eros protome (**F 9**) in *room 26*. Apart from the terracottas listed in the catalogue, a number of small fragments, definitely from terracottas, but otherwise unidentifiable, were found in the complex, particularly in the courtyard.

F 1. Female protome. Pl. 139.
Room 12.
Find list 6/59. 1971.
Dimensions: H. 13.1 cm; W. at base 5.8 cm.
Clay: yellowish red (5 YR 5/6). White slip preserved.
On the back, a suspension arch[6] with a vertical hole.
Modelling flattened at the base. The central part of the body is missing.

The woman is depicted to just above her knees. On her head is a large diadem, or perhaps rather a kind of headdress (compare, for instance, a mirror in British Museum, inv. no. 289 (*LIMC* II, Aphrodite fig. 1343), and a figurine in the museum of Konstanza (Canarache 1969a, 90)). She wears earrings and is dressed in a chiton. The left underarm and hand are raised, holding a veil (or cloak); the veil is blowing over her head, and sweeps across the body to cover the lower part. Of the right arm, only the upper part is preserved. The protome is from the same mould as two protomes from the complex U7, their faces having ex-

actly the same dimensions (length 2 cm). The lower part of a similar protome was found in the courtyard of U6, see **F 22**. This protome and the two from U7 all show that the woman carries an object in her right hand, probably a bird rather than a pomegranate or an apple, since the shape is oblong. The type is also attested in Kerkinitis (Romancenko 1907, 184, fig. 25; Nalivkina 1970, 67, no. 10 and pl. 5, *4*), identified as Aphrodite and dated to the 4th-3rd centuries B.C., and in Olbia (both in the settlement and in the necropolis) (see Levi 1970, 33, no. 43 and pl. 32, *7*), here identified as a Kore protome, and dated to the 4th-3rd centuries B.C. The type is also seen with some variations in Chersonesos (Belov 1970, 70 and pl. 10, *2*), identified as Aphrodite, and dated to the 4th century B.C.

Second half of the 4th-early 3rd century B.C.

F 2. Female protome. Pl. 139.
Room 12.
Find list 6/58. 1971.
Dimensions: H. *c.* 15.5 cm; W. *c.* 10 cm.
Clay: reddish yellow (5YR 6/8) with white and dark inclusions, related to the clay of **F 1**. Traces of white slip. Mould rather worn. On the back, fingerprints from smoothing. Suspension arch with one vertical hole.

She wears a polos, and her hair is parted over the forehead, with locks hanging over her shoulders. She is possibly dressed in a chiton, but the mould is too worn to show any trace of the edge of a chiton around the neck. She may be wearing earrings, but again, the mould is too worn to say anything definite on this point. Her hands are cupping her breasts. On her left side, traces of drapery are held by the hand holding the breast, probably the veil blowing above her head and forming the rounded upper end of the protome. The same type is found in Olbia, clearly showing the left arm covered by drapery (Levi 1959, 14-15, fig. 5, *3-4*; Levi 1970, 33, no. 43 and pl. 20, *3*), and identified as a Demeter protome, dated to the 3rd century B.C.;[7] and in Chersonesos, again clearly showing a cloak covering the left arm, and also the sleeve of a chiton on the right arm (Pharmakowsky 1906, 115, Abb. 3, identified as Persephone). Belov (1970, 73, no. 3 and pl. 8, *2*) identifies it as Demeter, and dates it to the 3rd century B.C. According to Pharmakowsky, this protome is one of a pair, and shows traces of colour (white, blue and pink). A variant in headdress is seen in a protome from Chersonesos (Belov 1970, 70 and pl. 9), dated to the end of the 5th century B.C. A protome from Chaika (Jacenko 1970, 69, no. 1 and pl. 7, *2*), said to represent Demeter or Kore and dated to the end of the 4th or early 3rd century B.C. is also related.

Second half of the 4th-early 3rd century B.C.

F 3. Fragment of female protome. Pl. 139.
Room 12.
Find list 6/55. 1971.
Dimensions: Preserved H. *c.* 11 cm; W. at diadem *c.* 12 cm.
Clay: reddish yellow (5YR 7/8), blackened from second firing (probably during the final destruction of U6), the original clay colour preserved only in parts on the back. The suspension arch is cracked from the clay being too dry or drying too fast.
Mould rather worn.
Suspension arch with two vertical holes.
Only the head is preserved.

She wears a diadem, which forms the upper edge of the protome. From the diadem, a veil hangs on either side of her head. The hair seems to be parted over the forehead and drawn

back. On her right side, the ear, or rather a disc-shaped earring, can be seen. A similar protome from Theodosia is on display in the Hermitage; there is also some resemblance to a specimen from Nymphaion (Skudnova 1970, 87, no. 20 and pl. 30, *3*), identified as a goddess. See also a related example from the temenos in Olbia (Levi 1970, p. 35 and pl. 15, *3*), dated to the 5th century B.C.

Second half of 4th-early 3rd century B.C.

F 4. Draped Female figurine. Pl. 139.
Room 12.
Find List 6/57. 1971.
Dimensions: H. *c.* 13 cm; W. at bottom *c.* 4.5 cm.
Clay: reddish yellow (7.5YR 6/6), very similar to, *e.g.*, **F 1**. The clay indicates an origin in Chersonesos, where this type of clay is common. Traces of white slip. The figurine is hollow from the base to about the level of the breasts. Back mould-made but not retouched. No vent in the back. Retouching particularly visible on the right hip.
Head, bits of the drapery, and part of the right foot are missing.

She is dressed in chiton and mantle. The mantle crosses her body diagonally, from a bunch of folds on her left side towards her right foot. Arms and hands are covered by the mantle. The lower part of her right leg stands out under the cloak as if this were transparent, whereas there is no suggestion at all of her left leg beneath the dress.

Female figurines in 'Tanagra' style were popular in the northern Black Sea, as witnessed by examples from, *e.g.*, Olbia (Levi 1970, pl. 24, *5*), Chersonesos (Belov 1970, 71 and pl. 14), Theodosia (Klejman *et al.* 1970, 81 nos. 12 ff. and pls. 24-26), and Kallatis (Canarache 1969b nos. 178 ff.)

Early 3rd century B.C.

F 5. Female figurine. Pl. 139.
Room 12.
Find list 6/56.
Dimensions: H. *c.* 14.5 cm; largest W. *c.* 8.5 cm.
Clay: reddish yellow (5YR 7/6) with few impurities. It is paler than **F 1** and **F 4**, and may not be Chersonesean. Possibly a few traces of white slip, but otherwise the surface is very worn.
The lower part of the figure is missing. The back very summarily rendered, with distinct transition between mould-made front and back. The body has very thin walls, while the head is nearly massive. Traces of vent on the back.

Her hairstyle seems to be the melon coiffure, though the two locks of hair falling over each shoulder are an unusual trait in combination with this hair style. On top of her head are two spirals, probably a diadem rather than hair tied in a knot. A veil fastened to the diadem falls down her back and is barely visible from the front. The lower part of ears and earrings is indicated. She is wrapped in a mantle, also covering the right hand, which is held on her right breast. Her left hand is resting on her hip and is holding a bird (dove?).

Early 3rd century B.C.

F 6. Head and neck of a large female figurine. Pl. 139.
Room 12.
Find list 6/54. 1971.
Dimensions: H. *c.* 12 cm.
Clay originally reddish brown (5YR 4/4) with many impurities;

blackened from second firing (probably during the final destruction of U6). Probably Chersonesean.
Back plain. Hollow, a firing vent in the back of the head (*c.* 4.0 x 2.7 cm). Clearly retouched after moulding, particularly the hair, which may partly have been added after moulding.

The elegant melon coiffure is parted over the forehead and combed back in deep waves. It ends abruptly, and is simply folded in on the back of the head. On the top of the head something square in cross section is broken off, very similar to a break on a head of a Socrates or a silen figurine from Chersonesos in the Hermitage. This could be due to the use of an adapted mould, as suggested by Yu.P. Kalašnik.[8] The original function may have been a kind of suspension device, or more probably a handle. Thus it may be a mould originally used for mould-made vases. The vent on the back of the head, however, proves that this was not a plastic vessel, but a figurine. Another possibility might be that she carried a bowl or a kalathos on her head, like a Demeter from the agora in Olbia (Levi 1970, 34 and pl. 13, *2*), or a head of a Demeter figurine (Chudjak 1940, 89, fig. 66), or a half-figurine of Demeter (Chudjak 1940, 90, fig. 68), both also from Olbia; a parallel may also be seen in a Hellenistic figurine of a woman/Demeter with kalathos on her head from Cyrenaica (Higgins 1967, pl. 64E).[9] Alternatively it may just be a break from where, for instance, a sun hat was attached to the head.

Early 3rd century B.C.

F 7. Apple. Pl. 141.
Room 12.
Find list 6/51. 1971.
Dimensions: H. *c.* 6-5.7 cm; W *c.* 7 cm. Restored with plaster.
Clay reddish yellow (5YR 6/6).
Hole at both ends. Only one leaf preserved at the hole in the 'flower' end.

A similar apple, **F 21**, probably from the same mould (similar dimensions and the same type of clay), was found in the courtyard. Terracotta apples are found, *e.g.* in Rhodos and Boeotia from the late archaic period (see, for instance, Higgins 1954, nos. 198-200 (all from the same mould) from Kamiros on Rhodos, dated to the early 5th century; Breitenstein 1941, no. 170 from Boeotia and dated to the late archaic period; for an example from Delos, see Laumonier 1956, pl. 21 nos. 191 and 218 (dated to the archaic period). See also Breitenstein 1941, no. 711 for an example from Southern Italy, dated to the Hellenistic period), but are rare compared to the pomegranate, which is popular from the archaic through the Hellenistic period in many parts of the Greek world.[10] No other example of this type from the Black Sea area has yet been published.

F 8. Female figurine. Pl. 139.
Room 23.
Dimensions: H. 19.5 cm; max. W. 7-8 cm.
Clay light yellowish brown (10YR 6/4) with small dark impurities and holes from inclusions; blackened on the back, and in spots on the front, from second firing (probably during the final destruction of U6). A few traces of white slip.
Back plain but mould-made. Walls thin. Vent hole in back. Seems to be retouched, particularly visible on her left arm.
Head and lower part missing.

She is dressed in chiton and mantle, in which she is wrapped, and which may also have covered her head. The right arm is raised inside the mantle to just below the neck, as if to keep the mantle adjusted. Her left hand seems to come out through a fold in the mantle, which crosses her breast diagonally from her right hand to her left arm.

Related pose in a figurine from Chersonesos (Belov 1970, 75, no. 32 and pl. 14, *2*) dated to the 4th century B.C. The motif, *i.e.* the position of the arms, is popular among female figurines of the 'Tanagra' style of the 3rd century B.C. (see, for instance, specimens from Kallatis (Canarache 1969b, no. 187) and Myrrina (Mollard Besques 1963, pl. 120 ff.)).

Early 3rd century B.C.

F 9. Eros plaque. Pl. 139.
Room 26.
Find list 10/15. 1972.
Dimensions: H. 10.7 cm; W. 5.6 cm.
Clay: reddish yellow (5YR 6/6) with a little mica, and white inclusions; partly blackened in second firing (probably during the final destruction of U6). Made only in a front mould.
Suspension arch (without vertical hole) on the back.
Lower part missing.

The youthful god wears a polos. His right arm is held along the body, the left arm bent; the hand appears to be resting on the hip. He seems to be holding a fold of a cloak with his right hand.

Probably from the same mould as fragment **F 18**.

This Eros type – a youth with cloak and polos – is a popular type among western and northern Black Sea terracottas (found *e.g.* in Kallatis (Karanache 1969b, nos. 41-44 and 46); Tyras (Klejman 1980, 98, no. 6 fig. 1, *6*); Nikonion (Klejman 1966, 96, fig. 2, *13-14*; Klejman 1970, 28 and pl. 6, *3*, called Eros-Thanatos and dated to the second half of the 4th century B.C.; Klejman 1976, 120 f., no. 5 fig. 4 (dated to the 4th-3rd centuries B.C.); Sekerskaja 1989, 108 f., (fig. 65, *4*) mentions three terracottas of this type from Nikonion); Olbia, where more than 70 fragments from at least 40 different specimens were found in the cult cistern in the central temenos (Levi 1959, 14-15, fig. 5, *3-4*; Levi 1964, 170, fig. 41, *2*; Levi 1970, 46, nos. 36 and 37, pl. 20, *5* and 20, *6* called Eros and dated 4th-3rd centuries B.C. and 3rd century BC. respectively; Rusjaeva 1979, 66 ff., fig. 36 (she incorrectly states that only 40 fragments were found)); Chersonesos (Belov 1970, 70-71 and pls. 10, *5* and 13, *5* called Eros-Thanatos and dated to the 3rd century B.C.); Kerkinitis (Romancenko 1907, 184, fig. 24; Nalivkina 1970, 68, no. 11, pl. 5, *1*); Odessos (Mirtchev 1956, 29, fig. 34); Apollonia Pontike).[11]The type is found together with Demeter (and Kore) protomes on many of these sites, in houses, in sanctuaries, or in graves. Thus at Masliny (Latyševa 1994), three examples were found in a house sanctuary in the southern tower, together with a Demeter protome and a figurine of a seated goddess. Latyševa interprets the type as an Eros-Thanatos, stressing both the chthonic and the agricultural aspect of the type. The type is unknown in the Kimmerian Bosporos area. For a related type of Eros from Olynthos, but with a support on his left side, see Robinson 1952, 203, nos. 260-61,[12] dated to the first half of the 4th century B.C.

A.S. Rusjaeva (1982) has studied this type and connected it with two graffiti from Olbia, in which are mentioned a triad of Demeter, Kore and Iachos, for which reason she identifies the type as Eros-Iachos instead of the traditional Eros-Thanatos. This interpretation makes more sense, though it must be stressed that what little we know of the iconography of Iachos (see *LIMC*) does not agree with our type of terracotta, since Iachos usually carries a torch,

something that is never seen in this type. Whether this identification of the type as Eros-Iachos is correct or not, the fact that the type is very often found together with Demeter protomes clearly attests that it is not to be identified as Eros, the son of Aphrodite, but as Eros in his other aspect as an ancient nature god, as he is listed in Hesiod's Theogony (Hes. Th. 120 ff.), where Chaos is followed by Gaia and Eros, described as 'fairest among the deathless gods, who unnerves the limbs and overcomes the mind and wise counsels of all gods and all men within them'.[13]

This aspect of Eros was honoured at a few cult sites, the most famous probably being the one at Thespiai in Boeotia, where the cult image was an aniconic stone (Paus. IX.27.1). Apart from Thespiai, there was another famous Eros sanctuary at Parion in Troas (see Paus. IX.27.2), for which Praxiteles made a statue in marble (Pliny NH 36.22). This statue is depicted on coins from Parion, from the second half of the 2nd, and the early 3rd century A.D. (See *LIMC* Eros no. 453), and various Eros types have been considered copies of it (*LIMC* Eros no. 7). Filow (1909) has published a Roman Eros marble statue from Nicopolis ad Istrum and connected it with the Parion statue. However, the terracottas so frequent in the western and northern Black Sea regions do not have any striking resemblance to the statue depicted on the coins from Parion, and if, indeed, they depict a well-known cult statue, this must come from another sanctuary, probably within the Black Sea region itself.

Eros wearing a polos is an unusual motif outside this group from the western and northern Black Sea area. An example is a terracotta from Attica (Besques 1971-1972, pl. 1 b, no. D1), where the god also wears a cloak and has one foot on a stool.

Late 4th – early 3rd century B.C.

F 10. Fragment of female protome. Pl. 140.
From the courtyard, B-4.
1973.
Dimensions: H. *c.* 11 cm; max. W. 8.9 cm.
Clay yellow (10YR 7/8), very micaceous and with many inclusions – completely different, *e.g.* from the clay of **F 1** and **F 4**.
The back shows an unusually large suspension arch with one hole. The arch is placed at the level of the shoulders, not, as usual, at the level of the head.

Her head with a polos or diadem is preserved. The hair seems to be drawn back (in a knot), since no locks are seen on the shoulders. She probably wears a chiton. With her raised right arm (hand not preserved), she lifts a veil hanging from the polos or diadem. The veil hangs down from her left shoulder; the left arm is not preserved.

Related in a general way to Winter's eastern group of standing females (Winter 1903 II, 67 ff.).

4th century B.C.

F 11. Fragment of female protome. Pl. 140.
From the courtyard, E-5.
1973.
Dimensions: H. 10.5 cm; max. W. *c.* 8.5 cm.
Clay: reddish yellow (5YR 6/8). Traces of white slip.
Only head and neck preserved. Suspension arch on the back, with one vertical hole. (The hole seen below the chin is not pierced through, and is an inclusion which has flaked off).

Her hair is indicated as a rounded mass (drawn back from the face). She seems to wear a large diadem (only very soft rounded forms to be seen) and disc earrings.

The closest parallel is perhaps a protome from the necropolis of Olbia (Levi 1970, 37 and pl. 32, *1*).

4th century B.C.

F 12. Fragment of a female protome. Pl. 140.
From the courtyard.
No find list no. or year recorded.
Size: H. 10.7 cm. W. 15 cm.
Clay: reddish yellow (5YR 6/6). Surface not cleaned, but white slip seems preserved. Repair hole. The upper part of the protome is missing.

She is dressed in a chiton. The left underarm and hand are raised, holding a veil (or cloak), which framed her head; the veil sweeps across the body to cover the lower part. The right arm is held between the breasts. The protome is of the same type as nos. **F 1** and **F 22**. See **F 1** for further discussion of the type.

F 13. Fragments of a female protome.
From the courtyard, D-2, 3.
1973.
Clay: reddish yellow (5YR 6/6) on the surface, grey in the core.
Suspension arch on the back, with one vertical hole.
Preserved H. 6.8 cm; preserved W. 5.4 cm of three adjoining fragments.

The fragments show the upper part of her body with breasts and her right arm, which is bent; the hand, which is not preserved, was probably placed between the breasts.

Yet another fragment (preserved H. 4.5 cm; W. 4.6 cm), showing part of a head and the upper curve of a protome, may belong together with these fragments.

F 14. Very fragmentary protome. Pl. 140.
From the courtyard, B-4, 5.
Find list 1/5. 1973.
Dimensions: H. 7.3 cm; W. 5 cm.
Clay: pink-reddish yellow (5YR 7/4-7/6) and greyish on surface from second firing (probably during the final destruction of U6).

The surface is completely flaked off. It seems to be a female head with high polos or crown, a tiny part of a band (?) with small pearl-like knobs is preserved between hair and crown.

F 15. Very fragmentary protome. Pl. 140.
From the courtyard. B-4, 5.
Find list 1/4. 1973.
Dimensions: H. 11.8 cm; W. 7.2 cm.
Clay light red (2.5YR 6/8), micaceous, partly turned grey and black from second firing.
Suspension arch on the back, with one vertical hole.

One can recognize the right corner of the protome, with a raised left hand, part of the chest with the left breast, part of the suspension arch, and yet another fragment from the back of the protome. Probably a Demeter protome of the same type as nos. **F 1** and **F 22**.

F 16. Fragment of a male deity protome. Pl. 140.
From the courtyard, V-3.
Find list 12/1. 1971.
Dimensions: H. 8.5 cm; preserved W. 4.6 cm.
Clay: light yellowish brown (10YR 6/4), with some mica and inclusions. Clay definitely not Chersonesean. Back plain, no trace of suspension arch.

Only the right half of his head is preserved. The hair hangs in wavy locks to about the level of his (not preserved) mouth. He is bearded and wears a large wreath.

Type probably of the early 4th century B.C. For related protomes see Winter 1903 I, 248, nos. 4-5 from Athens and Boeotia respectively, identified as Dionysos protomes. See also *LIMC* Dionysos s. 424 B2, in particular nos. 56-61. The fact that Dionysos is not attested in inscriptions on the site makes it possible that the protome should be identified as Sabazios, who could be identified with Dionysos (see *RE s.v.* Sabazios). For the earliest recorded dedication to Sabazios, see **H 2**. An identification as Dionysos-Sabazios is also suggested by Ščeglov (2000, 71).

F 17. Lower part of naked male. Pl. 140.
From the courtyard, B-4.
1973.
Dimensions: H. 7.5 cm.
Clay originally light brown to reddish yellow (7.5 YR 6/4-6/6), micaceous; partly darkened by second firing (probably during the final destruction of U6).
Back plain.

Lower part of body and legs until ankles preserved, a cloak seems to be flanking him on either side. Probably part of an Eros (*cf.* **F 9**). Proportions clearly larger than this better preserved specimen.

Second half of 4th-early 3rd century B.C. See **F 9** for further discussion of the type.

F 18. Small fragment of naked male. Pl. 140.
From the courtyard.
1973.
Dimensions: H. 4.8 cm; W. 3.4 cm.
Clay completely misfired, dark all through (probably during the final destruction of U6), light brownish grey (10 YR 6/2).
Back plain.

Only his right hip, upper leg and lower arm-hand are preserved. The arm is held slightly out from the body, and behind it is seen a cloak or a wing. Same proportions as the better preserved Eros **F 9** – possibly from the same mould.

Late 4th-early 3rd century B.C. See **F 9** for further discussion of the type.

F 19. Female head from a figurine (?). Pl. 140.
From the courtyard.
Dimensions: H. 3.7 cm; W. 2.5 cm.
Clay reddish yellow (7.5 YR 6/6).

Only the front part (mould-made) preserved. Walls thinner and finer than the other protomes, and there are no traces of a suspension arch; the head is therefore probably from a figurine rather than a protome.

Very similar in type to some of the protome heads, *e.g.* **F 1**. Very worn, hair an undifferentiated mass. She may be wearing a diadem.

Second half of 4th-early 3rd century B.C.

F 20. Fragment of a figurine. Pl. 141.
From the courtyard, D-5.
1972.
Size: H. *c.* 7.5 cm; W. 11.5 cm.
Clay: yellow, micaceous, many inclusions (10YR 7/8). Very similar to the clay of **F 10**.
Made only in a front mould.

Part of a base is preserved, with a figurine, probably standing frontally, of which only the feet (clad in shoes) and part of the chiton of a woman are preserved. To the right of this figure is a small base on which are preserved the feet of a figure. The motif may have been Aphrodite and Eros. Normally, however, the smaller figurine (Eros) stands on a taller base than this.

Probably early 3rd century B.C.

F 21. Apple. Pl. 141.
From the courtyard.
1975.
The larger fragments (three fragments with joints) H. 6 cm; W. 7.5 cm. Separate sherd with the flower 4.2 x 3.8 cm.
Clay: very pale brown, fine, with very small black particles and some mica (10YR 7/4).

See **F 7**.

F 22. Female protome. Pl. 141.
Courtyard, V-4.
Find list 1/3. 1973.
Size: H. 9.6 cm; W. 8.9 cm.
Clay: reddish yellow, micaceous (7.5YR 6/6-7/6).
The upper part of the protome, including her head, is missing.

The protome is of the same type as **F 1** (see this for further description).

Second half of 4th-early 3rd century B.C.

F 23. Fragment of a male beard (?). Pl. 141.
No find list no. or year recorded.
Size: preserved L. 3.8 cm; preserved W. 2.1 cm.

The style of the beard seems cruder than on the Sabazios mask (**F 16**). It indicates the existence of yet another male protome (?).

NOTES

1. Few graves in the excavated necropolis belong to the final phase of the settlement, which suggests that there must be another, as yet undetected, necropolis connected with the settlement. The excavated necropolis will be published in *Panskoye I* vol. II (forthcoming).
2. Parovič-Pešikan 1974, 130, note 246 mentions four graves (43/1906; 4/1908; 1/1956; 5/1928) with terracottas, but states that of the terracottas, only a winged Eros from grave 4/1908, and a Demeter or Kore protome from grave 1/1956 can be classified as figurines. In the two other graves there are only insignificant fragments or terracottas that were part of the ornamental decoration on the sarcophagi. To these can be added three more graves with terracottas (Kozub 1974, 103-105): nos. 1926/17 (a pig and a lion), 1911/30 (a seated Cybele), and 1912/2 (a dove). Terracottas were apparently more common in the graves at Olbia in the archaic period, see Skudnova 1988, 29 (the graves excavated by Farmakovskij 1902-1915 include nine graves with terracottas).
3. Information kindly supplied by V. Stolba.
4. For some of the terracottas found in U7, see Sčeglov 1987 and 1992.
5. There is no indication that any of the terracottas had originally been placed in the courtyard, as may have been the case with, for instance, the two winged Eros figurines found in the courtyard of the House of the Twin Erotes at Olynthos (Robinson 1946, 227-228 and 1952, 203).
6. For this type of suspension see also, *e.g.*, Winter 1903, 247, no. 1 (from Athens).
7. See also Vinogradov and Kryžickij 1995, fig. 109, *4*.
8. Personal communication.
9. A Serapis head from Tyras (Klejman 1970, 25 and pl. 2, *2*) shows a similar break from the modius characteristic of this god, but in Egypt also of Ptolemaic queens (and kings). The Serapis head is related in style to the head from Panskoye I.
10. *E.g.*, Robinson 1952, pl. 108 cat. no. 355, for a mould for a pomegranate; Mollard Besques 1971 III, 1, pl. 105, nos. D480 and D481-D483 (from Amisos); Higgins 1954, pl. 34, nos. 201-203 (Rhodos) with references to further examples.
11. Winter 1903, 188, no. 7 from Cabinet des Medailles, which is of the same type, is said to be from Greece – but may derive from the Black Sea.
12. Made in the same mould. Yet another example of terracottas in pairs.
13. Translation by H.G. Evelyn-White in Loeb Classical Library. For Eros as an ancient nature god see *RE*.

CULT SCULPTURE, ALTARS, SACRED VESSELS AND VOTIVES

Alexander N. Ščeglov

The group of finds catalogued here are heterogeneous in material and form yet at the same time quite homogeneous in their intended purpose. Thus while these are made variously of stone, clay, metal, and glass, it appears that all were intended exclusively for the performance of cultic rites and served no other purpose in the life of the building's inhabitants. The objects constituting the assemblage published here are distributed among the following subgroups: 1) dedications made of stone (**G 1**-**2**); 2) stone altars (**G 3**-**6**); 3) small portable ceramic altars (**G 7**-**13**); 4) ritual vessels (**G 14**-**15**); 5) various other votives made of metal (**G 17**), and coloured glass (**G 18**-**19**). Pl. 142.

Certain everyday vessels for table and domestic use that were brought to the household sanctuaries (see Part I p. 45-52) as votive gifts – some with dedicatory inscriptions (*e.g.* a black-glazed cup kantharos with a dedication to Sabazios scratched on it (see **B 98** and **H 2**) and others without are not discussed or catalogued here, nor are the terracottas, nor the ceramic containers found in the sanctuaries; all these are dealt with, instead, in the relevant sections (Part II **A**-**D**, **F**).

The relief of Herakles (**G 1**) discovered in the sanctuary dedicated to him in *room 14* is so far the only representation of the hero found in the settlement (Pl. 143). Stylistically the schematised image is of extreme flatness and sketchiness, with considerable violation of proportionality (*e.g.* shoulders too wide in comparison with the narrow pelvis); the work was executed on a limestone slab which had been only very roughly prepared. Taking into account the local origin of the slab and the manner of execution, it must be concluded that the relief was made on the site. The artist was apparently not a professional sculptor: most probably he was a self-taught artisan – a local stonecutter who was familiar with the sculptural representations and patterns popular in his times.

Although the relief published here is a unique specimen, it should, in view of its style and manner of execution, be included among the typical Chersonesean sculptural representations of Herakles (here provisionally labelled 'rural') produced by local, non-professional sculptors at the remote settlements in the *chora* of Chersonesos.

Limestone reliefs and free-standing statues and statuettes (both stone and terracotta) representing a Herakles *en face* are typical of the urban sculpture of Chersonesos proper from the 4th century B.C. and repeat a statuary image that was widespread in the Greek world in general.[1] But in the rural settlements of north-western Crimea it was another image that prevailed in sculptural reliefs. There, the hero was depicted reclining and feasting.[2] However, besides the example from Panskoye I, there is one other relief of the standing Herakles among the very representative series of finds from north-western Crimea. This was found at the Chersonesean settlement of 'Chaika' near Eupatoria.[3] But of all the examples so far published, our relief is closer in its technical execution and stylistic peculiarities to one depicting a reclining and feasting Herakles from N.F. Romančenko's excavation near Lake Moinak in Eupatoria.[4]

The chronological proximity of all the so far known Chersonesean 'rural' reliefs can hardly be doubted. On the evidence of the recorded contexts of their discovery, and stylistic indications as well, the reliefs showing 'primitive' representations of Herakles can be

dated in general to the period spanning the last third of the 4th to the first third of the 3rd century B.C. (about 330-270 B.C.) (see also Stolba 1989, 59; Ščeglov 1994a, 144). The relief published here, it may be conjectured, hung on a wall of the first building period. Taking into account the stratigraphy, we would date it to the last third or quarter of the 4th century B.C., but not later than the turn of the 4th-3rd centuries (about 330/325-300 B.C.).

Subgroup 2 is made up of limestone altars. The non-portable altar in the form of a rectangular stone block from the sanctuary of Herakles in *room 14* (**G 3**) as well as the altar **G 3a** from the sanctuary for Demeter and Sabazios in *room 12* (Pls. 143-144) are matched in other buildings at Panskoye I during its last period of existence. For instance, some quite similar altars were discovered in several houses and in the central area U7 (unpublished). It should be noted that they all differ from the funerary altars of 'Olbian' type that were set up in the necropolis. The tops of the latter altars always had a bowl-shaped depression in the centre, with or without an omphalos, and a groove for drainage.[5] Such a feature has never been established for Chersonesean altars, either in the city itself or at any of the settlements on its territory.

The stratigraphical and planigraphical position of the altars (see Part I, pp. 46 and 51) enables us to date its manufacture to 320-310 B.C. (*i.e.* it was put in place during the first building period).

The portable and small-sized domestic altars made of limestone are represented by two kinds.

1. The altar with a pediment and acroteria (**G 4**) belongs to type 2 according to the classification developed by Yu.A. Babinov.[6] Pl. 144. As this author observed, 'Chersonesos should be placed first among cities in the northern Black Sea area as regards the small domestic altars [made of stone]'. And certainly neither the material nor the sculptural treatment runs counter to this statement.[7] The typically Crimean dense limestone of the Sarmatian layer provides fairly convincing proof of the Chersonesean origin of the altar.

2. Two identical altars made of local limestone (**G 5** and **G 6**), both forming a rough representation of a bird. Pls. 145-146. The shape of the birds' heads, with short thick beaks, as well as their bodies and fan-shaped tails suggest an attempt at a naturalistic (though extremely crude) portrayal either of one of the passerines (Passeriformes), which are common in Crimea, or one of the columbines (Columbiformes).[8] We know of no parallels to these altars apart from a very roughly and schematically executed small altar, also from Panskoye I (from U7). There can be hardly any doubt that altars **G 5** and **G 6** were carved on the spot at Panskoye I, and it is assumed that they are of a specifically local type of portable household altar related to some domestic (?) cult (see also Hannestad 2002, 147). Both the altars were discovered in the southern range of rooms in which two terracottas **F 8** and **F 9** and a votive representing a snake (**G 17 = K 188**) were also found.

The archaeological context suggests a date around 300-280/270 B.C. for the altars.

Subgroup 3, comprising small, domestic, portable ceramic altars is represented by three varieties.

1. (**G 7**). 'Eschara'. Pl. 146. This is the only known example of Chersonesean production. There are no direct parallels among the Black Sea material at the present; moreover, according to the corpus compiled by K.I. Zajceva, who assigned this altar to the ritual bowl-type, it is of a kind that is unique to the settlement of Panskoye I.[9]

2. (**G 8-11**). Open incense burners (*thymiateria*) in the shape of a bowl set on a stem (Pl. 147); according to Zajceva's typology they are ritual bowls. **G 8-10** belong to vessels of Cherson-

esean production. Typologically they compose a single group that differs in its formal features from the contemporary *thymiateria* from Olbia and the Bosporan cities but is typical of Chersonesos.[10] Also to be subsumed into this are the fragments of a small handmade ceramic altar of local production from the sanctuary of Demeter and Sabazios in *room 12* (**G 11 = D 130**). Handmade altars of similar type were fairly common in the northern Black Sea region, and finds have been recorded both in the Greek cities and at the rural settlements.[11]

3. (**G 12-13**). Incense burners in the shape of a kantharos or krater, with or without a lid. (Pls. 147-149). Both our examples belong to group 2 in Zajceva's classification,[12] and judging by the shape of its rim, the first of them (**G 12**), had a conical lid that was perforated to let the fragrant smoke escape; the second specimen (**G 13**) on the other hand shows no traces of ever having had a lid. On the evidence of their ceramic paste, both burners are of Chersonesean production though among the Greek centres of the Black Sea region, incense burners of this type seem to have been most common in Olbia.

Taking into consideration their places of discovery, all the portable ceramic altars found during the excavation of U6 can be dated to the period 300-280/270 B.C.

Subgroup 4 is composed of two large and extremely unusual bell-shaped vessels (or fragments thereof) (**G 14** and **G 15**). Pls. 147-148. The first identification of such vessels as related to some cult was proposed by S.F. Strželeckij.[13] Later B.A. Sparkes and L. Talcott considered a similarly shaped vessel of the last quarter of the 5th century B.C. (425-400) and related fragments from the Athenian Agora as having served for some household purpose, and included them among 'tubs'. Referring to certain other scholars they supposed that this specific type could have been a σμῆνος (beehive) or κυψέλη (any hollow vessel, chest, box).[14] E. Crane and A.J. Graham[15] also interpreted it as a beehive, but, in my view, such an identification seems unlikely. Earlier, J.E. Jones, A.J. Graham, L.H. Sacket, and M.I. Geroulanos had convincingly proved that the ceramic beehives of Classical and Hellenistic Greece were of quite different proportions.[16] Positively identified specimens of beehives have a much greater longitudinal axis than either **G 14-15** or similar ones of Chersonesean production or the one from the Athenian Agora.[17] Moreover, the form of the rim and bottom of the real beehives is another point of difference. Thus the identification of the Athenian vessel as a beehive on the evidence of its width-to-length ratio and certain other features must obviously be considered erroneous. My own suggestion is that **G 14** and **G 15** were primarily intended for the performance of certain religious rites – though the possibility that they were also used for storage cannot be ruled out.

The fact that vessel **G 14** with a dipinto HP in a retrograde ligature (see **H 1**) was found actually standing on the altar and in the same room as the relief of Herakles (**G 1**) excludes any interpretation of its purpose other than a ritual one. Consideration of the archaeological contexts in which the two similar Chersonesean vessels mentioned above were found suggests that such bell-shaped vessels were most often connected with the performance of household rituals, mainly those dedicated to Herakles – at least in Chersonesos and its territories. The fact that a similar vessel and a fragment of a *thymiaterion* bearing the graffito ΗΡΑΚΛΗΣ on its bowl[18] were found in one and the same room of a dwelling in the northern region of Chersonesos (city block XVIII) is another strong indication of this supposition. However, it should also be noted that a fragment of the same type of vessel was found in a public square in the same region of the city during the excavation of a monumental altar (city block XIII).[19]

Among the vessels whose primary function was religious should also be mentioned the two phialai (**G 16 = B 145** and **N 15**) which were probably used for libations. They were

both found on the floor near the altar **G 3a** in *room 12*. No example of a phiale was found in any other room in the building.

Subgroup 5, the last group of the finds considered here, is composed of votives. Of course, all sorts of very different objects fall into this category, and so the votives might include everyday vessels as well as a variety of other things.[20] For instance, the accumulations of seashells (*Cardium* and *Pecten*, see p. 46) quite obviously served as votives. However, only those objects that were quite definitely originally intended as votives are included in the present catalogue.

The first item is a small, naturally occurring stone (**G 2**) with an accidental resemblance to a human half-figure (Pls. 143-144). This stone comes from the sanctuary of Demeter and Sabazios.

On the one hand, this 'figurine' is typologically similar to the Chersonesean anthropomorphic gravestones that are well known from excavations both in the city of Chersonesos itself and in its *chora* in north-western Crimea, including the necropolis of Panskoye I.[21] Gravestones from kurgan 2, the graves of which are dated to the late 4th or early 3rd century B.C., are the closest parallels to our 'figurine': these are also made from unworked or only slightly worked stones whose natural shapes chanced to bear a strong resemblance to the traditional Chersonesean funerary sculptures.[22]

On the other hand, in a very plain and simplified manner, the figurine published here resembles the widely known and popular terracotta protomes of female divinities (*e.g.* protomes representing Demeter-Kore-Persephone). In the present case we are probably dealing with a phenomenon whereby an accidentally found piece of rock which was close in shape to the familiar image of a divinity was consequently connected with that divinity, sacralised, and, as such, brought to a sanctuary. Since all the relevant material suggests that it was a sanctuary of Demeter and Sabazios that was located in *room 12* it is quite likely that our figurine was brought there as a votive gift to Demeter or Kore. Irrespective of the interpretation, we may be fairly certain that this figurine was connected with chthonic concepts, with cults related to Earth and Fertility.

The miniature representation of a coiled and bearded silver snake with a head and neck made of gold foil (**G 17**) also belongs in the votive category (Pl. 149). Only one close parallel is known to us: a quite similar votive from the excavation of room 'Щ' at the rural settlement of Andreevka-Yuzhnaya in eastern Crimea (the Kerch Peninsula that at one time constituted the territory of the Bosporan Kingdom); the scholar who published the find dated it to the 5th century B.C., but that date is doubtful.[23] A find of a miniature snake of the same type but entirely of bronze and without a beard is reported from a domestic shrine of the 4th-3rd centuries B.C. in Eretria;[24] and a bronze figurine of a bearded snake dated to the 1st century B.C. or 1st century A.D. from a sanctuary situated on the pass of Gurzufskoye-Sedlo[25] is typologically close to our specimen, but represents another variety of the type. A different and more complex composition, with the body wound in several coils, is represented by a bronze beardless snake of the 1st century B.C. from a kurgan near Kerch[26] and by a 2nd-3rd century B.C. marble statuette of snake from Konstanza (ancient Tomis).[27] On the evidence of the dated specimens, it may be supposed that the production period of the miniature plastic representations of snakes of our type (*viz.* **G 17**) does not exceed the bounds of 4th-3rd centuries B.C. As to **G 17** itself (and likewise its parallel from Andreevka-Yuzhnaya, above), it may be roughly dated to 330-270 B.C.

It is of importance that our silver and gold snake was found among certain other objects of ritual purpose all of which had evidently once constituted a single set. A.M. Gilevič assigned the snake to the cult of Sabazios whose worship at U6 was confirmed most evidently by graffito **H 2** on the black-glazed cup **B 98** found in *room 12* (Pls. 71, 156). This association

with the Sabazios cult certainly seems very probable,[28] though it cannot be ruled out that the snake was connected with some other chthonic cult, including that of Demeter proper,[29] or possibly the cult of Asklepios and Hygieia (*cf.* below).

Finally, mention must be made of two large cylindrical 'beads' of coloured glass decorated with double representations of bearded human faces (**G 18-19**). These beads were found in the sanctuary of Demeter and Sabazios and are finds of special importance (Pls. 149, 176). They were made by means of the core process and belong to Group 6 according to classification developed by T.E. Haevernick (Röhrenperlen),[30] to Type F_1 according to M. Seefried's classification (beads with masks),[31] and to Type 469 in E.M. Alekseeva's ('proniz').[32] Our two specimens belong to the category of so-called 'beads with masks'. The term 'spacer-bead' (or 'proniz' in Russian scientific literature) seems the most adequate for this type of object, so I shall adopt it here; and I shall simply use the term 'pendants' ('podveska' in Russian) for the mask-embellished pendants with suspension loops at the top.

The centre (or perhaps centres) of production of coloured glass spacer-beads and pendants representing bearded faces with 'Semitic' or 'Punic' features has/have not been precisely identified. But on the basis of stylistic and anthropological considerations we may suppose that these objects were produced somewhere in the Near East (Judaea, Syria, or perhaps Babylon).[33] However, almost seventy years after A. Kisa's classic work, T.E. Haevernick in a special study came to the conclusion that pendants and spacer-beads of this type were manufactured mainly in Carthage.[34]

The find of a quantity of mask pendants together with an amphora of the 'Punic' type at the town-site of Elizavetovskoye, in the Don delta, is, perhaps, an additional indication that these were produced in Carthage and imported into the north-eastern (or the entire northern) Black Sea region.[35]

But, at the same time, we cannot rule out the possibility that the pendants were in fact manufactured in the eastern Mediterranean – as suggested in particular by the remains of glass production found on Rhodos.[36] Moreover, neither Alekseeva nor N.Z. Kunina excludes the idea of an Eastern Mediterranean (or Near Eastern) origin for these pendants.[37]

As to the *spacer-beads* of the type under consideration, Alekseeva supposes them to be of Near Eastern origin,[38] while Kunina is more cautious in her conclusions, and rules out neither Carthage nor the Syrian or Phoenician coasts as possible production centres.[39] It should, however, be noted that spacer-beads of Haevernick's Group 6 are recorded for the Near East only on the basis of a few isolated finds, one from Egypt (Giza) and the other from northern Syria (Al Mina).[40] By contrast, the six specimens from Carthage itself and the three from Ibiza (the Pityussae Islands)[41] account for 12 per cent of all such finds known to us (see Table 1). These facts may perhaps be taken as good evidence in favour of Haevernick's hypothesis of a mainly Carthaginian origin.

Even if it is not possible at present to identify the precise place or area where spacer-beads of the type in question were produced, we may yet make a fairly accurate guess at the volume of imports and the main channels by which they were brought into different regions of the Mediterranean and into the Pontic area and its hinterland. The relevant data are presented in Table 1.[42]

To get more precise picture it is necessary to generalise the quantitative geographical data and consider larger regions (Table 2).

Table 2 shows that the Black Sea regions absorbed more than 60 per cent of imported cylindrical spacer-beads – yet even within this area the distribution is not uniform. No finds of spacer-beads have been reported from the southern coasts of the Black Sea or from northern Anatolia, and we know of only three finds from the coastal cities of the West Pontos (Mesembria, Kallatis and Histria).[43] It was rather to the northern and eastern Black Sea re-

Table 1. Find distribution of the 'beads with masks' in the Black Sea area and the Mediterranean.

	Area	**Quantity of finds**	**%**
I.	North Africa, western Mediterranean (Carthage, Ibiza)	9	11.69
II.	Near East (Syria, Egypt)	2	2.60
III.	Central Italy (the western coasts: Anzio, Latium, Cumae, Erice, Paestum)	5	6.49
IV.	North-western Adriatic (Illyria: the region in the neighbourhood of Otočac)	5	6.49
V.	North Aegean area (Olynthos, Salonika)	2	2.60
VI.	Central Europe (modern Hungary, Poland, Czechoslovakia)	5	6.49
VII.	Western Black Sea area (Mesembria, Kallatis)	2	2.60
VIII.	Western and north-western Black Sea area (Histria, Olbia)	9	11.69
IX.	Crimea (Chersonesean state, Bosporos, central Crimea)	10	12.99
X.	Eastern Europe (the steppe and forest-steppe zones (Scythians and Scythian-like archaeological cultures))	5	6.49
XI.	North-eastern Black Sea area (the west Caucasian foothills (river Kuban basin) (Maeotic archaeological culture))	6	7.79
XII.	North-eastern Black Sea area (Ureki, Pichvnari)	2	2.60
XIII.	Trans-Caucasus (Kazbegi, Samtavro)	15	19.48

Table 2. General find distribution of the 'beads with masks'.

	Region	**Quantity of finds**	**%**
A	Carthage, western Mediterranean (the Pityussae Islands) and eastern Mediterranean, Egypt	11	14.29
B	Central and northern Mediterranean: Italy, Illyria (modern Croatia); northern Aegean area (modern Greece)	2	15.58
C	Central Europe (modern Hungary, Czechoslovakia and Poland)	5	6.49
D	Black Sea and adjoining steppe zone of the Black Sea coast and forest-steppe zone of Eastern Europe, Caucasian foothills and Transcaucasia (modern Bulgaria, Romania, Russia, Ukraine, and Georgia)	49	63.64
Total:		**77**	**100**

gions that the main trade in these beads was directed; and from these parts they subsequently reached inland areas. Thus eight spacer-beads were found in Olbia,[44] which is situated in the maritime centre of the forest-steppe zone; so it was probably from Olbia that single specimens came into the hands of nomads in the steppes on the left bank of the Lower Dnieper, and found their way to the settled population in the steppe-forest zone of the central Dnieper regions.[45] In total, ten spacer-beads including the ones published here have been found in Crimea. Of those, three were found in north-western Crimea in the territory of the Chersonesean state and the other seven in eastern Crimea in the region of Bosporos (mainly in Pantikapaion and its surroundings).[46] It is highly probable that it was by the way of Bosporos that spacer-beads reached the Scythians of the Crimean steppes (two specimens), and that by the same channel there was a significant flow to the Kuban region and the northern Caucasus (see Table 1), as well as up the Don (most probably through the settlement of Elizavetovskoye at the delta) and far to the north into the forest-steppe zone in the region of modern Voronezh (two specimens).[47] It is clear that the many spacer-beads now recorded (see Table 1) in the inner regions of Transcaucasia were imported through coastal centres in the eastern Black Sea area (Pichvnari, Ureki *etc.*).

On the basis of the geographical distribution of space-bead finds given above, the following hypothesis may be proposed. From the fact that cylindrical spacer-beads are not found in the interior of Thrace it probably follows that the local population did not appreciate these objects. This would explain why imports into Greek cities of the western Pontos were not numerous. On the contrary, in the northern and eastern Black Sea area the spacer-beads were in great demand not only among the inhabitants of Greek towns but also among the varied social strata of the steppe-zone nomads (Scythian culture) and the agricultural and pastoral population of the forest-steppe zone of Eastern Europe (Scythian-like cultures). Such beads were especially sought after by the agricultural tribes of the Sindo-Maeotian group in the western Caucasus (who became part of the Bosporan State in the 4th century B.C.) as well as by the ancient population of the inmost regions of Transcaucasia. In this connection it seems necessary to turn our attention to two pressing questions: During what period were the spacer-beads imported to the northern and north-eastern Black Sea coasts? And why were they so popular in the areas under consideration?[48]

Most scholars date the spacer-beads to the 4th or 3rd centuries B.C.,[49] but it now seems possible to propose more precise dates. Although the securely dated (so-called 'closed') archaeological contexts that include such spacer-beads are few in number, they nevertheless enable us to make certain observations both on the absolute dates of the beads and on the development of their type.

In the northern Black Sea area, the first finds to be reliably dated through independent data to the first half of the 4th century B.C. come from grave 30 in the necropolis of Olbia (excavation of B.V. Pharmakovskij in 1911)[50] and from a Scythian kurgan in the steppe on the left bank of the lower Dnieper.[51] These rather short and very fat beads are close to the Carthaginian specimens presented by Haevernick.[52] For our present purpose this variety is distinguished by the letter A – thus type of Haevernick 6A/ Seefried F_1A / Alekseeva 462A. The ratio of height (L) to diameter (D) varies in the range 1:1.19 to 1:1.5. Beads of such proportions probably continued to be imported into the northern Black Sea area and its hinterland during the third quarter of the 4th century B.C. too.[53] However, at some period not later than the last third of that century, larger and longer beads (L/D 1:1.66 to 1:1.79) appeared among the imports.[54] **G 18** and **G 19** belong to the latter type, and are distinguished by the letter B. Later, it appears, both the Haevernick 6A / Seefried F_1A and the type B beads became even more elongated and the masks that decorated them lost their artistic expressiveness. Thus the single specimen reported from Mesembria and reliably dated to the second

half of the 3rd century B.C. has an L/D ratio of 1:1.95 and debased type of mask. Similar proportions (*c.* 1:2) are to be seen on a specimen from grave M_1 in the necropolis of Kallatis (excavations of 1973-1980). The grave has been dated to the first half of the 3rd century B.C. However, this latest type apparently failed to reach the northern and north-eastern Black Sea regions. The reason could be that the workshops producing these beads had connections with different trade routes. This, however, to me seems less probable.

So three typological and chronological variants may be distinguished among spacer-beads with masks. Of these three, only the first two variants (A and B) have as yet been reported from the northern and north-eastern Black Sea regions and the adjacent inland zones of eastern Europe and the western Caucasus (the Kuban region). All duly recorded archaeological sets suggest that cessation of imports of cylindrical spacer-beads to the northern Black Sea area (both to the *chorai* of Greek coastal cities and to the barbarian hinterland) occurred in the first or the early second quarter of the 3rd century B.C. but not later than 270 B.C. The latter date is suggested by the set from Panskoye I in particular. This interruption of imports would seem to be connected with the fact that in the early 3rd century B.C. there was a sudden change in the demographic situation of the steppe and forest-steppe zones of eastern Europe. The abrupt disappearance of sites of the classical Scythian culture in these parts as well as the devastation of the *chorai* of the Greek states[55] are indications of this change.

Both spacer-beads and pendants with masks are usually published among the category of beads and ornaments for everyday use. These objects were defined at first as 'grotesques' *etc.*,[56] but in special studies of the last decades they have come to be considered as amulets worn to protect their owners against evil influences.[57]

Leaving aside pendants, we will consider the possible purpose of the spacer-beads. In the first place, they were used in burial rituals. Consideration of all those finds and contexts that are recorded in sufficient detail show that spacer-beads of the type under discussion, unlike pendants, *never* composed necklaces of beads. It was always only a *single* spacer-bead that was put into individual graves in urban and rural Greek necropoleis, into the non-Greek burials in kurgans of the Scythian and Scythian-like agricultural and pastoral cultures, and into the graves of the agricultural tribes of the western Caucasus; the same may be observed of the necropoleis in the eastern Black Sea area. Hence we may be quite justified in supposing that these objects reflect some chthonic concepts connected with the cult of the dead.

Secondly, the spacer-beads found in 'closed' sets at Greek settlements compose a group that is very small in number.[58] Basing herself on my own view of the spacer-beads as sacral objects connected with the cults of Demeter and Sabazios, and also on a find of a 'mask' pendant in a sanctuary in Israel, Alekseeva has suggested that both types of objects (pendants and spacer-beads) were linked specifically with fertility cults.[59] Gilevič hypothetically assigned the spacer-beads published here to the cult of Sabazios,[60] but although such a supposition seems quite probable it cannot, of course, be considered as finally proved. At present, before further careful study has been carried out, the finds made at sanctuaries and burials permit us to suppose only that these objects reflect particular (though possibly cognate) chthonic concepts that probably varied quite considerably among Black Sea Greeks, steppe nomads, and settled agricultural tribes. Be that as it may, the spacer-beads published here were undoubtedly brought to the sanctuary of Demeter and Sabazios as ritual gifts, and therefore should most probably be connected with a fertility cult.[61]

ADDENDUM

An egg-shaped ceramic object (**G 20 = M 22**) no doubt also had a religious function. It was found on the floor of *room 13* together with the incense burner **G 12** and the unguentarium **B 203a**. The three objects found together could perhaps be taken as evidence for yet another cult in U6, namely that of Asklepios and Hygieia.

CATALOGUE

DEDICATIONS (STONE)

G 1. U6 room 14. Find list 7/1. 1971.

Relief. Standing Herakles. Pl. 143.

Height 5.55 cm; width 44.0 cm; thickness 9.0 cm; thickness of upper part 12.0 cm. The upper left corner is broken off. Local dense limestone-shellrock of the Maeotic layer (Neogene, N^{m}_{1}).

Flat relief. The slab is shaped so that its projecting upper edge resembles a cornice above the image. The right end of the cornice is cut by a semicircular groove, and there was a similar groove at the left end. The back of the slab is very even. All these features (as well as the position of the block when found) suggest that the relief was placed fairly high up on the wall of the sanctuary. Evidently it stood on a flat support (a shelf?), and at the top was fastened to the wall by means of two hooks that fitted into the semicircular grooves mentioned above.

The front of the block is coarsely worked, and traces left by a pointed tool and narrow chisel which should have been removed in the finishing process are clearly visible on its surface. Much of the roughness of the 'background', especially at the lower left, was not removed at all, and (in contrast to the relief image itself) the background remained almost entirely unsmoothed.

The figure is shown in very low and extremely sketchy relief. The max. depth of the relief is only 1.5 cm. Herakles is represented *en face* resting most of his weight on his left foot, with his relaxed right leg extended slightly to the side. He holds his club (rather awkwardly) in his extended left hand, and it is possibly his lion-skin that it rendered behind the club. His right arm hangs down beside his body. The surface of the face and the upper part of the breast were exposed to fire resulting in the formation of a layer of unslaked lime, and are therefore obliterated.

Publications: Ščeglov 1976, 138, 135 fig.; Ščeglov 1978, 124, fig. 66; Ščeglov 1987, 246, 266, fig. 16, *1*; Chtcheglov 1992, 170; Hannestad 1999, 170 f., fig. 6; Hannestad 2002, 146, fig. 3.

G 2. U6 room 12. Find list 6/89. 1971.

Votive: a primitive anthropomorphic stone figurine. Pls. 143-144.

Height 5.6 cm; width 4.5 cm; thickness 9.0 cm. Local limestone-shellrock (Neogene, Pontic layer, N^{p}_{2}).

The figurine is a sketchy representation of a head and upper body. The shape is of natural origin (having simply split off a limestone slab as a result of weathering) and the piece is very perfunctorily finished (at the top, shoulder, and lower extremity). Traces of soot are preserved on the lower part.

STONE ALTARS

G 3. U6 room 14. 1971.

Stone altar. Pls. 143-144.

Length 38.5 cm; height 17.0 cm; depth 38.0 cm. Local limestone of the Sarmatian layer (N_{1}^{srm3}). There is no rock so dense in the vicinity of the settlement, but outcrops occur some four or five kilometres to the south, on the heights of the Ğangul Ridge. Some detached blocks can be found on the slope of the Ridge and in the valley.

A rectangular block well worked on all sides.

G 3a. U6 room 12. 1971.

Non-portable stone altar. Pl. 144.

L. 32.5 cm; W. 18 cm; H. 12 cm. Local limestone of the Sarmatian layer (N_{1}^{srm3}).

A rectangular block well worked on all sides.

G 4. U6 courtyard, E-2. 1973.

Stone altar. Pl. 144.

Height 9.0 cm; width 6.0 cm; thickness 3.0 cm. Dense local limestone of the Sarmatian layer (N_{1}^{srm3}). The surfaces of the upper part and left side were subjected to fierce heat and have therefore flaked off.

Found near the entrance to room 34.

A small altar of rectangular shape with profiled base, a cornice, and a pediment with *acroteria*. The top side has a rectangular recess (3.5 x 1.8 x 0.5 cm) for the reception of sacrificial offerings. Traces of soot are visible on the bottom of this recess.

Parallels: Babinov 1974, 21 f., fig. 3.

G 5. U6 room 25. Find list 9/18. 1972.

Portable stone altar. Pls. 145-146.

Length 17.5 cm; width 10.0 cm; height 6.5 cm. Dense local limestone of the Sarmatian layer (N_{1}^{srm3}).

Found in the doorway between rooms 24 and 25.

The altar is roughly carved to represent a bird with a rounded body that flattens out at the top. The head with a short beak and drilled eyes and the tail of pentagonal plan are more carefully executed. On the upper surface there is a slightly rounded depression (max. depth 4.8 mm) in which traces of soot are preserved.

G 6. U6 courtyard, E-6. 1974.

Portable stone altar. Pl. 146.

Length 11.0 cm; width 8.0 cm; height 5.8 cm. Dense local limestone of the Sarmatian layer (N_1^{srm3}). Fragmentary.

The altar is crudely sculpted to represent a bird. Similar to **G 5**. The head and tail are broken off.

CERAMIC ALTARS

G 7. U6 room 12. Find list 6/52. 1971.

Portable ceramic altar (*eschara*). Pl. 146.

Height 6.1 cm; diameter of upper surface 6.0 cm; max. diameter of receptacle 6.8 cm; diameter of foot 2.5 cm; diameter of support 7.4 cm.

The upper part, in form of a bowl with an offset vertical rim, passes to a low wide foot and then on to a wide, profiled, cone-shaped base. A hole 1.8 cm in diameter runs right through the vessel from top to bottom. The clay is light red with inclusions of fine white limestone. The surface is covered with light-coloured almost white slip wiped off in some places. Visible over the slip are traces of seven encircling rings in red-brown and yellow-brown mineral-based (ochre) water paint – though these actually wore away in antiquity. Judging by its fabric, slip, painting, and shape, the vessel is of Chersonesean production.

Publication: Zajceva 1997, pl. 5, *86*.

G 8. U6 room 15. Find list 9/33. 1971.

Fragment of the bowl of a portable ceramic altar. Pl. 147.

Height 3.3 cm; estimated diameter of the rim 8.0 cm; max. estimated diameter of receptacle 9.2 cm; the bowl depth 2.2 cm.

Originally the altar was in the form of a bowl set on a foot. In shape it was probably similar to **G 7**, though it had no hole through the centre of the bowl. The clay is greyish pink with inclusions of fine pyroxene and extremely fine particles of lime. The surface of the fragment is badly burnt, and that has evidently changed the original colour of the ceramic mass; there is a slip same colour as the clay. Judging from the fabric and shape it is of Chersonesean production.

Parallels: Zajceva 1997, pl. 3, *53*; pl. 5, *88*; Kutajsov and Užencev 1994, fig. 12, *2*.

G 9. U6 courtyard, E-3. 1971.

Fragment of a portable ceramic altar. Pl. 147.

Height 3.0 cm; diameter 6.5 cm.

Pedestal of a rather low altar. The piece has a complex outline. There is a depression preserved inside the bowl. The fabric is similar to that of **G 8** with inclusions of fine lime particles and pyroxene; there is a slip of the same colour as the clay. Judging by the general appearance and shape of the fragment, the original piece was of Chersonesean production.

Parallels: possibly, Zajceva 1997, pl. 5, *88*; Kutajsov and Užencev 1994, fig. 12, *2*.

G 10. U6 courtyard, D-6. Find list 17/105. 1972.

Foot of a portable ceramic altar. Pl. 147.

Height 6.5 cm; diameter of stem 1.1 cm; diameter of support 8.3 cm.

Pedestal of complex profile belonging to a tall altar. The clay is red-pink with inclusions of fine sand, limestone, and pyroxene; there is a light-coloured slip.

Publication: Zajceva 1997, pl. 5, *87* (the reference in the article is incorrect).

Parallels: Kutajsov and Užencev 1994, fig. 12, *2, 5*.

G 11 = D 130. U6 room 12. Find list 6/89. 1971.

Fragments of a portable ceramic altar. Pl. 133.

For a detailed description see **D 130**.

G 12. U6 room 13. Find list 8/30. 1971.

Portable ceramic altar (*eschara*). Pls. 147, 149.

Height 9.0 cm; diameter of the rim 8.4 cm; diameter of receptacle 6.8 cm; diameter of neck 4.3 cm. The foot is missing.

Kantharos-shaped vessel with a wide profiled rim on which are preserved some portions of a vertical flange to accommodate a lid. The original colour of the fabric has changed to greenish grey as a result of exposure to high temperature. Traces of a light-coloured slip and encircling rings of red, yellow and white (?) paint are preserved on the surface.

Parallels: Zajceva 1962, figs. 6, *2*; 8, *3*.

G 13. U6 courtyard. 1975.

Portable ceramic altar. Pl. 147.

Height 8.0 cm; diameter of rim 8.8 cm; diameter of receptacle 8.5 cm; diameter of neck 7.0 cm. The foot is missing.

Found in the north-western part of the courtyard.

It is similar to **G 12** in shape but has a straight, slightly outturned rim. The clay is brick-red with inclusions of pyroxene. No slip.

RITUAL VESSELS

G 14 = H 1. U6 room 14. Find list 7/2. 1971.

Ritual vessel. Pls. 148, 150.

Height 28.0 cm; diameter of rim 23.8 cm; diameter of body 23.2 cm; diameter of bottom 19.0 cm.

Found on altar **G 3**.

Bell-shaped vessel made of typical Chersonesean clay with white inclusions. Two horizontal curved handles ap-

plied to the body below the rim. The bottom is set on a rather low circular support. No slip. The vessel evidently suffered damage in antiquity, for ten (out of twelve) holes drilled for repair-clamps are preserved. The upper part of the body has a dipinto (**H 1**): retrograde H and P in ligature in red mineral-based paint.

Parallels: Belov, Strželeckij and Jakobson 1953, figs. 7-9; Sparkes and Talcott 1970, no. 1853.

G 15. U6 room 3. Find list 6/33. 1969.

Fragment of a ritual vessel. Pl. 147.

Height 16.2 cm; diameter of body 19.0 cm; diameter of base 11.0 cm.

The lower body of a bell-shaped vessel made of typical Chersonesean clay with white inclusions. Encircling the body are three broad red rings of mineral-based water paint.

G 16 = B 145. U6 room 12. Find list 6/31. 1971.

Phiale. Pls. 64, 72, 149.

Height 5.0 cm; rim diameter 12.9 cm; neck diameter 9.6 cm; diameter of body 11.0 cm; diameter of base 3.7 cm.

The clay is orange, three-layered in section (black in the middle) with numerous inclusions of white lime. The surface is covered with red glaze.

For a detailed description see **B 145**.

G16a = N 16. U6 room 12. Find list 6/60. 1971.

Fragmentary bowl of transparent glass. Pls. 149, 176.

Preserved height 4.9 cm; diameter of rim 10.9 cm. Find-spot: on the floor near the altar **G 3a**. For a detailed description see **N 16**.

VOTIVES

G 17 = K 188. U6 courtyard, D-5. 1974.

Votive representing a snake. Pls. 149, 167.

Height 21.8 cm; diameter 22.8 cm. Silver, gold. The tip of the tail is missing. The silver is oxidised.

The body, which is coiled into three loops, is made of silver wire 2 – 2.45 mm in diameter. The neck supporting the down-turned head is raised 16 mm above the coils that form the body. The head and neck are made of very thin gold foil. Although the head has dimensions measured only in millimetres it shows the muzzle with well-defined nostrils, jaws, and eyes. The length of the golden neck and head together is 11.6 mm; length of head 5.2 mm; width of head 4.4 mm.

Publication: Gilevič 1988, 73, fig. 1, *3*.

Parallels: Kruglikova 1969, 308, fig.; Kruglikova 1975, 81, fig. 35, *2*.

G 18 = N 14. U6 room 12. Find list 6/61. 1971.

Spacer-bead decorated with two representations of human faces. Pls. 149, 176.

Height 3.4 cm; diameter 1.9-2.0 cm; diameter of bore 0.9-1.0 mm. Coloured glass.

Badly burnt, iridiscent.

Cylindrical bead with a wide bore; produced by core process; traces of the core are preserved inside the bore. The glass is opaque dark blue. On both sides of the bead there is a relief representation of a human face. The faces are white with big blue-and-white eyes and are framed by hair and beards of dark blue glass fused together. Around both the upper and lower ends of the bead is a row of six white balls (some of which have broken off). The faces are separated from each other by thin applied cylinders of white glass.

Publication: Gilevič 1988, 73, fig. 1, *2* (to the left).

Parallels: Haevernick 1977, type 6; Seefried 1979, type F_1 (var.); Alekseeva 1982, 41, type 469, pl. 47; Kunina 1997, no. 45 var.

G 19 = N 15. U6 room 12. Find list 6/62. 1971.

Bead with two representations of human faces. Pls. 149, 176.

Height 3.1 cm; diameter 1.8 cm; bore diameter 0.9 cm. Coloured glass.

Badly burnt, iridescent.

Similar to **G 18**.

Publications: Alekseeva 1982, 41, pl. 47, *5*; Gilevič 1988, 73, fig. 1, *2* (to the right).

Parallels: Haevernick 1977, type 6; Seefried 1979, type F_1 (var.); Alekseeva 1982, 41, type 469, pl. 47; Kunina 1997, no. 45 var.

G 20. U6 room 13. Find list 8/51. 1971.

Terracotta egg. Pls. 149, 175.

For details see **M 22**.

Find-spot: on the floor together with **G 12** and **B 203a**.

NOTES

1. Ivanova, Čubova, Ščeglov *et al.* 1976, no. 60; Ščeglov 1994a, 140.
2. Nalivkina 1940; Karasev 1965; Vysotskaja 1968; Ščeglov 1978, 124 f., fig. 66; Ščeglov 1994.
3. Popova and Kovalenko 1996; Popova and Kovalenko 1997.
4. Nalivkina 1940, 111 ff., fig. 3.
5. Ščeglov 1987, fig. 14.
6. Babinov 1974, 21 f.
7. Babinov 1974, 22. Here the author deals only with finds from the northern Black Sea area.
8. The *Passeriformes* are the most widespread and numerous order of bird in Crimea: 111 species are known. See Ptušenko 1948, pls.; Sungurov 1966, 51. We should note that the only find of an accumulation of bird bones in western Crimea (at the settlement of Tarpanchi (2nd century B.C.)) contained 196 bones and belonged to 34 birds. Of those, 23 (67.6%) were birds of the order of passerines.
9. Zajceva 1997, pl. 5.
10. *Cf.* Zajceva 1997, *passim*, pl. 5. For new finds in north-western Crimea (Kalos Limen) see Kutajsov and Užencev 1994, fig. 12, *2, 3*.
11. Zajceva has recorded 37 samples found in Olbia and its territories, in Chersonesos, and in the cities and settlements of Bosporos. The chronological range of handmade *thymiateria* is from the 6th to 1st centuries B.C. I would like to take this opportunity of thanking Dr. Zajceva for her kind permission to use the MS of her 'Late 6th-1st century B.C. handmade bowls on stems from the northern Black Sea area' (in Russian).
12. Zajceva 1962, 188-194, figs. 6-9.
13. Belov, Strželeckij and Jakobson 1953, 168, 170, figs. 7-9.
14. Sparkes and Talcott 1970, 217 f., no. 1853.
15. Crane and Graham 1985, fig. 9A.
16. Jones, Graham and Sacket 1973, 391 ff., fig. 12; 397 ff. (The height of beehive no. 135 (p. 391) is given incorrectly in their publication as 0.36 m; according to the drawing on p. 392 (fig. 13) it must be 0.46 m.). Ceramic beehives and fragments of such from Trachones (Geroulanos: Appendix I) and Sounion, Attica (Jones: Appendix II) are published in the same work. See also Jones 1976, 80 ff.
17. See Crane and Graham 1985, 20, pl. 2. As it can be seen from the plate, the maximum body width (excluding the rim width) of the beehives in relation to their length varies in the range 1:1.53 – 1:1.67 and more for the latest ones (taking into account the correction in the length of the vessel from Vari – *cf.* note above). The vessel from the Athenian Agora (Sparkes and Talcott 1970, no. 1853) and one of the pieces from Chersonesos (Belov, Strželeckij and Jakobson 1953, fig. 7) have the proportions of 1:13 – 1:14; another vessel from Chersonesos (Belov, Strželeckij and Jakobson 1953, fig. 9) and **G 14** are about 1:1.2 – 1:1.22.
18. Belov, Strželeckij and Jakobson 1953, 168, fig. 2a, 7. Probably a sanctuary of Herakles existed here too. The set of coins and other objects from this house are dated to the second half of the 3rd or beginning of the 2nd century B.C.; however, the stratigraphy and constructional remains suggest the second half or the last quarter of the 4th century B.C. as the date of the building of the house.
19. Belov and Strželeckij 1953, 45 ff., fig. 16.
20. They are described in the catalogues of other sections. Particulars of the sanctuaries and the material from them are presented on pp. 45-52.
21. Ivanova, Cubova, Ščeglov *et al.* 1976, 79-95; Kolesnikova 1973, 37-47; Ščeglov 1978, 48 ff.

22. Ščeglov 1978, fig. 19, *4, 5*.
23. Kruglikova 1969, 308; Kruglikova 1975, 80. The date proposed by this author is *extremely* doubtful. *All objects* published belong to the 4th century B.C. The composition of the set of objects gives us to suppose that there was probably a household sanctuary here. *Cf.* note 58 below.
24. Kassapoglou 1993, 253, B 179, fig. 7. The author dates the complex to not later than the second half of the 3rd century B.C. (1993, 248). There are, at any rate, good grounds to suppose that there had been a home sanctuary in room *x* where an accumulation of ritual objects was found.
25. Novičenkova 1993, 62, fig. 5, *4*. *Cf.* also: Trejster 1998, 77, fig. 11.
26. *Anticnaja chudozestvennaja bronza* 1973, 92, cat. no. 225 (Z.A. Bilimovič).
27. Canarache *et al.* 1963, 109 f., figs. 55-57. The authors admit that it may be a representation of Glykon.
28. Gilevič 1989, 73 ff. In addition to the arguments of this author, *cf.* Zlatkovskaja 1974, 102, 106 ff.
29. *Cf. e.g.* Küster 1913; Zlatkovskaja 1974 (snake in the cults of Dionysos, Asklepios, Demeter, Thracian divinities, *etc.*). On the association of snakes with chthonic cults see also Bodson 1978, 70. Kassapoglou tentatively assigns the ritual set of small bronzes from Eretria to the cult of Isis (Kassapoglou 1993, 251 ff.).
30. Haevernick 1977, 161, 159, Abb. 3, 200 ff., nos. 378-462 (catalogue).
31. Seefried 1979, 19, fig. 19.
32. Alekseeva 1982, 47.
33. *Cf. e.g. MAR* 13, 1894, 75 (A.S. Lappo-Danilevskij); Kisa 1908, 93.
34. Haevernick 1977, see also Gorochovskaja and Zyrkin 1985, *passim.* The latter authors accepted Haevernick's hypothesis. Their consideration of the Black Sea material is based wholly on her catalogue, and takes no account of Alekseeva's corpus.
35. Pendants of Type C2 according to Seefried's classification (1979, 19 f., fig. 8) were found in building complex XVIII at Elizavetovskoye, and the amphora was in the fill of the pit of the contiguous building complex XVI. Both complexes were probably related. See Brašinskij 1981, 98; Žitnikov and Marčenko 1984, 167 ff., fig. 5, *3, 5*. For parallels to the amphora see Eiseman 1973, 17 ff., figs. 7, 18, 20 (The Porticello shipwreck which yielded amphorae of Type 2E and Type 2F; the latter are the most similar parallels in terms of the shape of their bases); also Cerda 1987, 483 ff., nos. 671-673, fig. 138 (The El Sec shipwreck which yielded amphorae of Type Sec C'). The fact that Mendean amphorae were found together with the Punic ones in the wreck at Porticello is a helpful indicator for tracing shipping routes (Eiseman 1973, 13 ff., figs. 1-3). The material from El Sec – the site of a supposed shipwreck near the coast of Majorca – is still more indicative. Greco-Italian and Korinthian amphorae as well as examples from other Aegean centres – Samos, Mende, Thasos *etc.*, (see Cerda 1987) – were recovered from the sea together with amphorae of the Punic type. The most important thing for us is that among these finds was the neck of a Sinopean amphora bearing a stamp of Grakov's first group (see Cerda 1987, 472 ff., no. 631, fig. 128, pl. XVII; the stamp is misread here). The latter fact suggests that ships carrying cargoes from the western Mediterranean including Carthage possibly also visited the Black Sea.
36. *Cf.* Weinberg 1971, 146, pl. 80a. Pendants of Type D2 according to Seefried's classification (1979, 19, fig. 13) were manufactured in the glass-making workshop on Rhodos. The workshop is dated to the late 3rd or early 2nd century B.C. (Weinberg 1971, 151).
37. Alekseeva 1982, 34 ff.; Kunina 1997, 253, nos. 41-44 (this scholar assigned the production of pendants of Seefried's type C2 to the eastern Mediterranean area).
38. Alekseeva 1982.
39. Kunina 1997, 29, 254, no. 45.
40. Haevernick 1977, 202, nos. 406, 407.
41. Haevernick 1977, 200, nos. 378-386.

42. Table 1 is based on Haevernick's catalogue and on my own supplements to Alekseeva's corpus, as well as some other data. Haevernick (1977, 200-205, nos. 378-443) includes 67 finds with recorded provenances and two with the general definition 'Südrussland'. Having excluded these latter, I have added the specimens that were published after Haevernick's work had appeared or that were communicated to us by the publishers of other excavations.
    Unfortunately, we have to note numerous factual errors in Haevernick's catalogue, which must therefore be treated with great caution. Some errors were pointed out by N.Z. Kunina (1997, 254, no. 41 = Haevernick 1977, no. 425). We may add one further example. The find of spacer-beads in the kurgan of Karagodeuashkh (near the Cossack village of Krymskaya in the region of the Lower Kuban, *i.e.* in the western foothills of Caucasus) was transferred by Haevernick (1977, 203, nos. 412, 413) to Novosibirsk (Siberia) *i.e.* almost 4000 kilometres to the east of the actual place of discovery! There have been no finds of spacer-beads anywhere in Siberia.
43. See Čimbuleva 1964, 58, no. 10, fig. 8a; Haevernick 1977, no. 398. For the find from Kallatis see Bărlădeanu-Zavatin 1980, 217 ff., pl. II, *1* (the grave has been dated to the first half of the 3rd century B.C.). Here I assign Histria to the western Pontos instead of the north-western economic and geographic region of the Black Sea, as is normally the case in modern Russian studies. The reason for this is that the principal social and trading contacts of Histria were with the Thraco-Dacian population of the Carpathian and Danubean regions, rather than with the nomads of the steppe zone.
44. *Cf.* Haevernick 1977, 204 f., nos. 434-441.
45. *E.g.* kurgans near the village in Lyubimovka of the Kakhovka Region Khersonskaya Oblast', Kanev, Cherkasskaya Oblast'; the town-site of Basovskoye in Sumskaya Oblast'; Haevernick 1977, 202 f., nos. 409, 411 (this scholar did not consider the find at Basovskoye. *Cf.* Illins'ka 1965, 60, fig. 10, *12*).
46. *Cf.* Alekseeva 1982.
47. Alekseeva 1982.
48. In what follows, I take no account of the Transcaucasian region, since it is a special subject.
49. *Cf.* Haevernick 1977, 168 (on the basis of the publications consulted, she dated the majority of beads to the 4th century B.C., and only the spacer-bead from the necropolis of Mesembria was assigned to the 3rd century B.C.). Seefried (1979, 18, fig. 1) settled on a very wide time-span for the beads: 500-250 B.C. Kunina (1997, 254) prefers the summary dating of 4th-3rd century B.C. However, taking our determination of the period of existence of the sanctuary in building U6, Alekseeva (1982, 34) assigned all cylindrical spacer-beads (and pendants) with masks to the late 4th century B.C.
50. *Cf.* Farmakovskij 1914, grave 30; Kozub 1974, 153, no. 164. On the basis of an Attic stemless black-glazed kylix (*cf.* Sparkes and Talcott 1970, no. 494) and a lekythos with grid decoration discovered therein, the grave is dated to the end of the 5th or beginning of the 4th century B.C.
51. Excavations by A.M. Leskov in the Kakhovka Region of the Khersonskaya Oblast'. Central grave no. 3 at kurgan no. 38 of the group of kurgans near the village of Lyubimovka (see Leskov 1972, 53, fig. 23; Leskov 1974, 63, fig. 52 (the author dates the burial summarily to the 4th century B.C.). Haevernick 1977, 202, no. 409 (but no provenance or other information). The grave contained a black-glazed lekythos with encircling bands of the same colour as the clay (and close in shape Sparkes and Talcott 1970, no. 1126).
52. Haevernick 1977, 159, Abb. 3. *Cf.* Seefried 1979, 22, fig. 19.
53. Finds from the Karagodeuashkh kurgans, *e.g.*, have L/D ratios of 1:1.19 and 1:1.5 (*MAR* 13, 1894, *passim*; Lappo-Danilevskij and Malmberg 1894, 75, fig. 55; also Haevernick 1977, 203, nos. 412 and 413, with adjustment for the error in stating the provenance, *cf.* note 42 above). *Cf. e.g.* the finds from the kurgan of Karagodeuashkh and from kurgan 1 at the village of Mastyugino near Voronezh (Liberov 1965, pl. 37, *31* – L/D=1:1.39; Haevernick 1977, 204, no. 433). However, we dismisss the possibility that some earlier imports were put into burials.

54. An example is a find from kurgan 1 belonging to the 'Chastye Kurgany' group near Voronezh (Zamjatnin 1946, 16, fig. 2, *5*; Haevernick 1977, 202, no. 408 with incorrect dimensions).
55. *Cf.* Ščeglov 1985, 190 ff.
56. *Cf. e.g.* Kisa 1908, 94; Haevernick 1977, 152 (with references).
57. *Cf.* Seefried 1979, 26. L.P. Gorochovskaya and Yu.B. Zyrkin (Gorochovskaja and Zyrkin 1985, 207) share this view. Alekseeva (1982, 34 ff.) considers the pendants to have a cult meaning, Kunina (1997, 29) takes them to be amulets. As to the spacer-beads, Kunina believes that 'their purpose is not altogether clear: since the beads had a wide central hole, they possibly served as finger-rings' (*ibid.*).
58. In addition to the examples published here, see Kruglikova 1975, 80 ff., figs. 35, 36. Judging by Kruglikova's description and the actual material from room marked 'ШЦ' at the settlement of Andreevka-Yuzhnaya in eastern Crimea (the territory of Bosporos), we are dealing in that case with a household sanctuary similar to that of Demeter and Sabazios in building U6. In addition to the spacer-bead, a figured pendant and a small silver snake were found there (*cf.* note 21 above).
59. Alekseeva 1982, 34.
60. Gilevič 1989, 72.
61. Their disposition as discovered *in situ* suggested that they were originally suspended vertically.

GRAFFITI AND DIPINTI

Vladimir F. Stolba

In addition to the large quantity of artefacts considered in other sections of this volume, excavations in house U6 yielded a representative collection of scratched or painted inscriptions and marks of various kinds, amounting to 81 items in all. The vast majority of these inscriptions were examined by me *de visu*; however, in those cases where they were inaccessible or lost, the descriptions and the graffiti and dipinti themselves are presented according to the field inventory list. With the exception of two graffiti on astragali (**H 27**, **H 29**) and a single mark on the handle of a stone louterion **H 17** all the inscriptions appear on tableware or transport amphorae.

The chronological range of the inscriptions is rather narrow and covers the period from the middle of the 4th century B.C. to the 70s of the 3rd century B.C. when the whole settlement suddenly ceased to exist. However, in each case the date has been assigned not only on the basis of the context of the find but also with the regard to the dating and possible reuse of the object bearing the inscription; and, where possible, or applicable – *e.g.* for containers or vessels such as amphorae – the relevant catalogue entry gives details of the measured or reconstructed volume or capacity. Palaeographic data played an auxiliary role here.

Taking into consideration the general chronology of the building, we may suppose that slight variations in the form of certain letters were due to individual peculiarities of the handwriting and the material, as well as to the implements used by each writer. Only in a few isolated instances (*theta* and *omicron* equal in their size to other letters – **H 24**, *pi* with a short right *hasta*, and squat *omega* with the wide 'gates' – **H 31**), and when, moreover, there is no doubt of the vessel having been reused, can these peculiarities be considered as a chronological indication. But in general, the characters in most of the inscriptions are typical to their time. The one point worthy of special note is that the lunate sigma, though totally dominant in the dipinti (**H 52-53**, **H 56-60**, **H 69**), occurs only in the final position in the graffiti (**H 32**).

The material available characterises various aspects of the life of a remote rural district of Chersonesos; however, it does not show any great diversity of types, and can be subdivided into just four categories of varying size. These categories are presented as follows in the catalogue below.

1. *Dedications*
2. *Owners' marks*

2A. Private ownership
2B. Public ownership

3. *Numerical and Commercial marks*

3A. Indications of Capacity
3B. Price Marks
3C. Client Names

4. *Varia*

Except for the very large group of 'Client names' (items **H 42-72**), the reasons for distinguishing which will be explained in the relevant introduction, all the other categories are fairly traditional for publications of this kind. Within each group the inscriptions are ordered alphabetically.

1. DEDICATIONS (**H 1-2**)

Both of the two inscriptions that make up this group were found in the western corner of house U6 – in *rooms 14* and *12*. Judging by the material found here, these rooms had the status of domestic sanctuaries, and were accordingly connected with the worship of Herakles as the patron of the Chersonesean territory as well as with the worship of deities in the agricultural sphere (Demeter and Sabazios). Evidence of the special role played by the cult of Herakles in the life of the rural population of Chersonesos is represented in quite a number of reliefs depicting the hero and in dedication graffiti found at several different settlements. One such dedication to Herakles Soter from house U7 at Panskoye I, along with various aspects of the corresponding cult in the territory of the Chersonesean state I have already discussed in detail elsewhere.[1]

Of special interest is graffito **H 2** on a black-glazed cup-skyphos which, to my knowledge, is the earliest evidence of the cult of Sabazios not only in Chersonesos but in the Black Sea area in general. According to A.M. Gilevič, also to be connected with the cult of Sabazios are the two figured pendants representing a multi-faced bearded head from the same assemblage, as well as the coiled snake made of silver wire[2] found in the courtyard of U6 near the entrance to *room 27*.

H 1. U6 room 14. Find list 7/2. 1971. Pl. 150.

Bell-shaped ritual vessel (**G 14**). Typical Chersonesean clay with white lime inclusions. Size: H. 28.0, D. of rim 23.8, D. of body 23.2, D. of base 1.9 cm. Traces of repair. Dipinto in red on upper part of body. Height of letters: *c.* 5.5 cm.

c. 300 B.C.: ˙Ηρ(ακλεῖ vel -άκλεος) (ligature, retrograde).

As mentioned above, the vessel comes from a cult assemblage where it was found *in situ* along with a limestone relief representing the standing Herakles (see **G 1**). The latter fact enables us to take the ligature as the abbreviated name of this hero. Possibly, the reason for the retrograde writing in this case was to stress the difference between the abbreviation of hero's name and the similar abbreviations of personal names frequent on amphorae. Moreover, the inscription under discussion is done in paint, which may indicate its having already been executed before the vessel was brought to the settlement, like the dipinti on amphorae.

H 2. U6 room 12. Find list 6/29. 1971. Pls. 150 and 156.

Black-glazed thin-walled cup-skyphos (**B 98**), base not preserved. H. *c.* 8.5, D. of rim 15.8 cm. Graffito on upper part of body, starting at the handle and ending at the another one. Height of letters varies from 1.0 to 1.7 cm. Publications: Ščeglov 1976, 139, 142, fig.; Ščeglov 1987, 266, fig. 17, *1*; Chtcheglov 1992, 177, fig.; Solomonik 1984, 11; Gilevič 1989, 71 ff., 128, fig. 1; Hannestad 2002, 148, fig. 8. Findspot: northern part of the room, under handmade vessels.

c. 325-300 B.C.: ἱερὰ Σαβαζίου

i.e.: 'The sacred (kylix) of Sabazios'. Although ware of such a type has been given the name 'cup-skyphos' in the literature, the *gen. fem.* ἱερά indicates that the inmates of the house possibly used less specialised terms in the everyday life *e.g.* ἡ κύλιξ or – ἡ κοτύλη – which in ancient times may have collectively signified vessels that, though different in type, were similar in shape and use.

2. OWNERS' MARKS (**H 3-32**)

2A. PRIVATE OWNERSHIP

This group of inscriptions is one of the most representative, yielding first place in terms of number to 'Client Names' alone. In addition to graffiti on ceramic objects of various different types, two marks on astragali (**H 27** and **H 29**) and an inscription on the handle of a stone louterion (**H 17**) are also included in this group. The marks under discussion are, as a rule, just single letters or the initial syllables (up to four symbols) of personal names (PN). Fairly common are ligatures (A and Π (**H 8-9**), A and P (**H 10**, **H 12**), A and N (**H 18**), E and ϒ (**H 18**), H and P (**H 20-21**), N and E (**H 28**), Π and P (**H 30**)), as well as monograms (**H 7**, **H 26**). Although our collection contains no example of an owner's name given in its full form, the frequent repetition of the same initials on different kinds of ware from a single room, or from a group of adjacent ones, enable us to identify these symbols as nothing other than owner's marks. The actual location of the majority of the inscriptions serves as further proof for this conviction. With the exception of **H 16** and **H 17**, where the marks are on the handles, all owners' graffiti on tableware are on the bottom or underside of the article (**H 3-4**, **H 10**, **H 15**, **H 18-19**, **H 22**, **H 24-25**, **H 30-31**). Amphorae by contrast, as a rule reused as storage jars at the settlement, invariably bear their marks of ownership on the lower part of the neck or on the shoulder (**H 5-9**, **H 11-14**, **H 20-21**, **H 23**, **H 26**, **H 33(a)**). Several non-verbal graffiti in the form of simple crosses on amphora necks from Herakleia and Chersonesos which are included in the 'Varia' category (**H 77-78**, possibly also **H 38(a)**) can probably also be interpreted as owners' marks. The cross, being one of the most elementary and widespread signs, served to meet the need of an owner for individualisation of his vessel at a fairly early period. Well-known examples are the vessels of the late Bronze Age from Bogazköy[3] marked with crosses. In the 6th-4th centuries B.C. the cross, as an owner's mark, is represented in abundance *e.g.* on Phrygian ware from Gordion.[4] As L. Roller states, the practice of using signs and symbols as owners' marks was at its most widespread in Gordion during the period of the hegemony and independence of the Phrygian and Lydian kingdoms, as well as during the Achaemenid domination in Anatolia, while the decreases of this practice, from the second half of the 4th century B.C., coincided with the rise of Greek influence here.[5] In this connection, it seems tempting to propose that crosslike marks on amphorae from U6 may have served as the marks of ownership of an illiterate or a non-Greek. We may compare here the 'signatures' of illiterate Russians in the first years of the Soviet government. It is also of interest to note that both the crosslike marks (**H 77-78**) were found within the area near the gate. However, it need hardly be said that these marks may well have had some quite different origin.

It is of course natural to suppose that the overwhelming majority of the owner's graffiti (except for the marks **H 27** and **H 29** on the above-mentioned astragali, which served for spooling threads) contain abbreviations of masculine personal names. However, notwithstanding the fairly large number of graffiti included in the present group, the actual total of names represented by them is rather small. The names, of varying degrees of completeness, enable us to identify the following individuals: ᾽Απη( ), Αρ( ), Β ( ), Εὐ( ), ᾽Ηρο( ), ᾽Ηρακ( ), Θα( ), Θεοκ( ), Θευ( ), Κρα( ), Λ( ), Νε( ), Π( ), Πρω( ), of which Εὐ( ), Β( ), ᾽Ηρακ( ) are the most frequent. Taking into account the fairly long period of occupation of the house, these names must have belonged to at least two generations of inmates.

Mapping of the inscriptions that make up the group under consideration shows that their distribution throughout the area of the building is extremely irregular. The main concentra-

tion of graffiti is in the rooms of the south-western range, which is cut by the gate into two almost symmetrical household blocks. Moreover, the contiguous *rooms 13*, *16*, *17*, and *18,* located to the north-west of the gate, are given a certain special unity by the find there of three inscriptions (**H 15**, **H 17**, and **H 33(a)**) all bearing the same initial '**E**', under which the name of the master of this household is undoubtedly concealed. Two dipinti (**H 61** and **H 63**) with the same abbreviation and also from *room 13*, offer additional evidence in favour of this supposition. On the other hand, the almost total absence of inscriptions from the rooms in the rest of the house is striking. The only exception is *room 3* in the north-western range. It probably served as a storeroom for collective use.[6] In the store there were 37 amphorae of which 30, including 15 with stamps, were from Chersonesos. Six amphorae-graffiti, showing abbreviations of at least three different owners' names, come from this room (**H 5**, **H 7-9**, **H 21**, and **H 23**).

See also **H 33(a)**, **H 36**, **H 40(a)**, **H 77-78**.

H 3. U6 room 20. Find list 4/37. 1972. Pl. 150.

Fragment from salt-cellar and foot of fish-plate (**B 233**). Grey clay, containing lime, quartz, and feldspar particles. Dull, dark grey slip. Graffito on underside of ring foot.

Late 4th cent. B.C.: A( )

H 4. U6 room 12. Find list 6/28. 1971. Pls. 150 and 156.

One-handled cup (**B 146**), glazed inside and out, except under foot. Glaze with graphite tint. Graffito on bottom. Height of letter: 1.1 cm. Find spot: in the debris of hearth.

320-300 B.C.: A( )

H 5. U6 room 3. Find list 6/23. 1969.

Shoulder fragment of Chersonesean transport amphora with graffito. *Non vidi*; represented here according to drawing in the find list. Find spot: among the debris.

320-270 B.C.: A( )

H 6. U6 well, no. 11. 1977. Pl. 150.

Fragment from neck and shoulder of Chersonesean transport amphora. Graffito on shoulder: faint and carelessly executed. Height of mark: 2.5 cm.

320-270 B.C.: A( )

H 7. U6 room 3. Find list 6/2. 1969.

Chersonesean transport amphora **Ad 10** stamped with the mark of the astynomos *Dioskouridas* (**Ae 52a**). The jar belongs to the type Monachov 1989, I-Б. V.I. Kac places stamps of *Dioskouridas* in group 1B,[7] which enables us to date the vessel to 300-285 B.C. Publication of the jar: Kac and Monachov 1977, 99, fig. 2, *6*; Monachov 1980, no. 30; Brašinskij 1984, 202, no. 14; Monachov 1989, 147, no. 26, pl. 6; Monachov 1999a, 498, pl. 211, 7. Graffito on lower part of neck.

300-270 B.C.: ᾽Aπη( ) (monogram)

Of the names so beginning, only ᾽Απήμαντος found twice in inscriptions of the 4th- early 3rd century B.C. from Chersonesos (*NEPCh* II 135, 172 = *IOSPE* I² 710. Cp. *GACh* 241) need be considered. The amphora, of which the measured capacity was 19.25 l, contained grain, *cf.* Appendix IV.

H 8. U6 room 3. Find list 6/21. 1969. Pl. 150.

Fragment from neck of Chersonesean transport amphora (**Ad 18**), preserving one handle with a stamp ΣΩΠΟΛΙΟΣ | ΑΣΤΥΝ[ΟΜΟΥ] (**Ae 73**). Graffito on lower part of neck. *Non vidi*; represented here according to drawing in the find list. Findspot: among the debris.

325-270 B.C.: ᾽Aπ( ) (ligature)

The same individual as in **H 7**. The earliest date of the inscription results from the dating of the stamp, which belongs to group 1A according to V.I. Kac's classification.[8] Because of the possible reuse of the amphora, it cannot be ruled out that the graffito was made much later than the vessel itself.

H 9. U6 room 3. Find list 6/22. 1969. Pls. 150 and 156.

Neck sherd of Chersonesean transport amphora. Graffito deep and carefully incised on lower part. Height of letters: 2.3 cm. Findspot: among the debris.

325-270 B.C.: ᾽Aπ( ) (ligature)

This graffito is not only similar to **H 8** but also comes from the same room. This fact allows us to suppose here an abbreviation of the name of the same individual, and to date both inscriptions accordingly.

H 10. U6 well, no. 201. 1977 + U6 courtyard, V-2. 1973. Pls. 150 and 156.

Two adjoining sherds from foot of brown-glazed kantharos (**B 75**). Graffito on underside. Height of letter: 1.0 cm.

300-270 B.C.: ᾽Aρ( ) (ligature)

Cf. **H 12** and **H 44(a)**.

H 11. U6. 1972. Pls. 150 and 156.

Neck fragment of a transport amphora with traces of greasy soot on the surface. Incised deeply and carefully. Height of letter: 1.4 cm.

320-270 B.C.: B( )

Cf. **H 12**, as well as a series of BIC-dipinti.

H 12. U6 gate. Find list 3/25. 1972. Pl. 150.

Upper part and foot of Amastrian transport amphora (**Ad 77**) with an englyphic stamp on neck: AMACT | P[IO]C and 'ivy-leaf' (**Ae 115**). Estimated capacity of the jar is *c.* 21-23 l. Publications of the amphora: Ščeglov 1986, 367, fig. 1, *1*; Kac, Pavlenkov and Ščeglov 1989, 24, 16 fig. 1, *3*, catalogue no. 3. Graffito on lower part of neck. Height of letters: 2.6 cm.

300-270 B.C.: BAP (A and P in ligature)

Presumably, initial letters of two personal names (name and patronymic?): B( ) and ᾽Aρ( ). *Cf.* graffito AP (in ligature) on the kantharos foot from the well (**H 10**), as well as an analogous dipinto on a Chersonesean amphora neck (**H 44**).

H 13. U6 courtyard, DE-6. Find list 17/26. 1972. Pl. 150.

Upper part of I-A-3 type Chersonesean transport amphora (**Ad 2**) with a stamp B]AΘYΛΛ[OY] | A]ΣTYNOM[OY (**Ae 32**). Estimated capacity of the amphora is *c.* 29.6 l.[9] Graffito on neck. Height of letter: 1.5 cm. Publications: Kac and Monachov 1977, 96, fig. 2, *2*; Monachov 1989, pl. III, *15*; 1999a, 498, pl. 211, *2*; Gilevič and Ščeglov 1996, 104, fig. 2, *2*, 105.

c. 325-300 B.C.: E( )

V.I. Kac includes stamps of *Bathyllos* in group 1A and dates them to 325-315 B.C.[10] This dating therefore gives the chronological range for the graffito too. A.N. Ščeglov, pointing out the presence of traces of greasy soot on the inner surface of the vessel, considers the inscription to be an abbreviation of ἔλαιον.[11] However, on second examination of the amphora I was not able to discern any traces of soot, either on the outer or the inner surfaces. And, the frequent repetition of the graffito 'E' on both amphora and tableware, as well as on the stone louterion **H 17**, all found in this part of the house, suggests rather an abbreviation of the householder's name.

H 14. U6 courtyard, DE-6. Find list 17/36. 1972. Pls. 150 and 156.

Neck and shoulder of Chersonesean transport amphora. Typical Chersonesean clay with lime particles. Light yellowish green engobe. Graffito on shoulder. Height of letter: 1.5 cm.

320-270 B.C.: E( )

H 14a. U6 room 12. Find list 6/10a. 1971. Pls. 150 and 156.

Fragmentary transport amphora (**Ad 87**). Mediterranean atelier. Clay light brown, micaceous. Main dimensions: H 82.0 cm; H_0 8.0 cm; H_1 33.0 cm; H_3 22.0 cm; D 43.0 cm; d_1 8.4 cm. The capacity of the jar is 38.16 l. Fragmentary graffito on shoulder. Height of letter: *c.* 3.5 cm.

320-270 BC: E( )

Owner's mark. Perhaps the same individual as **H 13-17**, **H 33**(a).

H 15. U6 room 17. Find list 15/17. 1972. Pls. 151 and 156.

Fragment from salt-cellar of fish-plate (**B 231**). Clay light brown. Dull, dark grey slip. D. of base 8.5 cm. The edges of the salt compartment are covered with soot, which suggests reuse as lamp, *cf.* **H 31**. Graffito on underside. Height of letter: 1.2 cm.

Second half of 4th cent. B.C.: E( )

H 16. U6 from the courtyard. Pl. 151.

Handle of a black-glazed kantharos (**B 63**). Graffito on upper surface. Height of letter: 0.6 cm.

325-270 B.C.: E[

H 17. U6 room 16. Find list 10. 1971. Pl. 174.

Massive limestone louterion (**L 28**). Mark on upper surface of handle. Height of letter: 4.0 cm.

325-270 B.C.: E( )

The numerous repetitions of the sign both on tableware and on amphorae from different production centres found only in this part of the building leave no doubt that it is an abbreviation of the owner's name.

H 18. U6 courtyard, V-3. 1971. Pl. 151.

Black-glazed plate with stamped decoration on the upper surface (**B 153**). Dull glaze. Graffiti on underside of ring foot. Height of letters: 1.2 cm.

325-270 B.C.: (a) Eὐ( ) (ligature)
(b) ᾽Aν( ) (ligature)

Possibly (b) was scratched by a different hand. Probably these are the names of two successive owners (father and son?).

H 19. U6 courtyard, B-2. 1972. Pl. 151.

Fragment of deep bowl with ring foot (**C 233**). Graffito on underside. Height of letters: 1.2 cm.

320-270 B.C.: ᾽Hρ( )

Cf. graffito **H 20**, which resembles this one. However, in view of the fact that the horizontal of the *eta* is not complete and the semicircle of *rho* is incised less deeply than the vertical lines, it is possible that the inscription is an adaptation of a price mark, ꟸ I, *i.e.* 1 drachm and 1 obol.

H 20. U6 room 3. Find list 6/71. 1969.

Neck fragment of Chersonesean transport amphora with graffito. *Non vidi*; represented here according to drawing in the find list.

320-270 B.C.: ᾽Hρα( ) (H and P in ligature)

Cf. dipinti **H 65-67**.

H 21. U6 room 3. Find list 6/70. 1969. Pl. 151.

Fragment from neck of Chersonesean transport amphora. Graffito on lower part. Height of letters: 1.8 cm.

320-270 B.C.: ʽΗρακ( ) (H and P in ligature)

The *kappa* is drawn so lightly that it is wholly discernible only under a binocular magnifier.

H 22. U6 courtyard, DE-6. Find list 17/87. 1972. Pls. 151 and 157.

Foot of a black-glazed kantharos (**B 21**). D. 5.2 cm. Rose clay; lustrous black glaze. Graffiti on underside – in the centre of the base and on the vault of the foot. Height of letters: 0.4-1.4 cm. The *omicron* is less than half the size of the other letters.

320-270 B.C.: (a) […]I
(b) H
ʽΗρο( )

The graffito (a) undoubtedly comprised the initial letters of the former owner's name which were later thoroughly scratched out. Judging by the dimensions of the final *iota* the initial inscription consisted of approximately 3-4 letters. When re-marking the vessel (b) the new owner intended to begin the inscription at the very centre of the bottom. Having noted, however, that there was not enough space he crossed out the initial *eta* and executed the signature in complete form nearby.

H 23. U6 room 3. Find list 6/76. 1969. Pls. 151 and 157.

Fragment of Sinopean (?) transport amphora. Graffito on neck. Height of letters: 0.5-1.2 cm.

320-270 B.C.: Θα( )

Cf. dipinto **H 68**. Similar anlaut in the Chersonesean onomasticon is known only in Θάσιος (patronymic, mid-3rd century B.C.: Kac 1994, 109, no. 98), and Θάγων (patronymic, late 3rd cent. B.C.: Kac 1994, 93, no. 39; *NO* 26, 5),[12] as well as in graffiti Θα( ) on the bases of black-glazed vessels from Chersonesos (late 4th century B.C.: *GACh* 906; Jajlenko 1987, 240) and the settlement of Chaika (late 4th cent. B.C.: find list Ch. 66/583; unpublished).

H 24. U6 room 22. Find list 6/10. 1972. Pls. 151 and 157.

Profiled foot of a black-glazed kantharos (**B 67**). Dull glaze. A hole of truncated-cone shape in the middle of the foot indicates its reuse as a spindle whorl. Graffito on underside of foot. Height of letters: 0.7-1.1 cm.

c. 320-310 B.C.: Θεοκ( )

Judging by the large size of the *omicron*, the inscription was made while the vessel was still complete. For the personal name *cf.* the Chersonesean compounds Θεο-κλῆς and Θεο-κύδης (*IOSPE* I^2 403 A, 8, 10 = *SEG* XL 615 A, 12-13; third quarter of 3rd cent. B.C.).

H 25. U6 room 12. Find list 6/30. 1971. Pl. 151.

Brown-glazed salt-cellar (**B 129**). H. 4 cm, D. of rim 5.8 cm. Graffito on underside of ring foot. Height of letters: 0.5-0.7 cm. Find spot: beside **H 2**.

300-270 B.C.: Θευ( )

H 26. U6. 1972. Pls. 151 and 157.

Neck sherd of a transport amphora with graffito. Height of mark: 1.9 cm.

320-270 B.C.: Κρα( ) (monogram)

H 27. U6 room 3. Find list 6/59. 1969.

Astragalus with graffito. *Non vidi*; represented here according to drawing in the find list.

300-270 B.C.: Λ( )

Probably an abbreviation of owner's name (a child?).

H 28. U6 courtyard, D-2, 3. 1975. Pls. 151 and 157.

Fragment from neck of Chersonesean (?) transport amphora. Graffito on lower part of neck. Height of letters: 1.0-1.2 cm.

320-270 B.C.: Νε( ) (ligature)

Abbreviation of personal name (PN), such as Νευπόλιος, Νευμήνιος, *et sim.*, which are well known *inter alia* in the Chersonesean onomasticon.

H 29. U6 room 3. Find list 6/63. 1969.

A large astragalus with ground surfaces; used as a spooling reel. *Non vidi*; represented here according to the find list.

300-270 B.C.: Π( )

Perhaps an abbreviation of owner's name (a woman?).

H 30. U6 courtyard, D-6. Find list 17/91. 1972. Pls. 151 and 157.

Pierced fragment from floor of a black-glazed open vessel, decorated with stamped palmettes (**B 165**). Graffito on underside. Height of letter: 0.9 cm.

320-270 B.C.: Πρ( ) (ligature)

Cf. **H 31**.

H 31. U6 room 12. Find list 6/50. 1971. Pls. 75, 151 and 157.

Salt-cellar and ring foot from massive fish-plate (**B 232**). Dull, grey slip. The fragment was reused as a lamp (see **E 11**). A socket for the wick has been cut into the wall of the salt compartment; the edge is covered with soot. Graffito on underside of ring foot. Height of letters varies from 0.3 to 1.4 cm. Find spot: on the floor.

350-325 B.C.: Πρω( )

The fact of the vessel's reuse and the squat shape of the *omega* with its broad 'gate' seem to justify the early dating of the inscription. Possibly, the PN is of the type of Πρώτιππος (*cf.* Anochin 1977, no. 95; early 3rd cent. B.C.), or something similar beginning with Πρωτ-.

2B. PUBLIC OWNERSHIP

Here there is only one inscription (**H 32**) to be commented upon. As in the case of numerous graffiti in the preceding section, the reconstruction of a PN, of the type Δαμοσθένης, Δαμόστρατος, *et sim.*, might be considered a possibility. However, the unusually large size of the dish suggests, rather, its use for public feasts – making it similar to numerous finds of tableware with the abbreviation δε(μόσιον) from the Athenian Agora.[13] I would also refer to an example from Korinth where the inscription δαμόσιον appears on an oinochoe shoulder;[14] a similar graffito (ΔΕΜΟΣΙΕ) on a kylix base from excavations at Polychrono in the Chalcidice[15] is dated to the first half of the 5th century B.C. In the northern Black Sea area in general, graffiti designating public property dating to the 6-5th centuries are known from Berezan'.[16] In 1968-1970 a series of inscriptions ΠΟ, ΠΟΛΕ, and ΠΟΛΕΟΣ on *polis*-owned black-glazed pottery dating to 525-475 was found during excavation of the *gymnasion* in Olbia.[17] But among the entire assemblage of Chersonesean epigraphy, the graffito from Panskoye published here is as yet the only inscription of its kind – though in the 'public domain' one can point to stamps ΔΑΜΟΣΙΟΝ on amphorae from Chersonesos dated by V.I. Kac to the end of 4th – beginning of the 3rd century B.C.;[18] probably these amphorae were produced in public *ergasteria.*[19] Recently Yu.G. Vinogradov related one other graffito to this group – an example on the foot of a black-glazed kantharos found in grave MO 47 in the necropolis of Panskoye I. On studying the photograph of this graffito he read it as δάμο ἐκ πόλε(ος) – '(Gefäss) des Volkes aus der Stadt'.[20] However, a *de visu* examination of the inscription, which is preserved in IIMK RAS, leaves no doubt that Vinogradov misread as an 'inverted' *kappa* what is actually an *upsilon* with the glaze peeled off to the left of its vertical *hasta.* Hence, the graffito should be read as the *gen.* of a personal name with patronymic: Δαμο( ) Εὐπολέ(μου).

H 32. U6 courtyard, VG-2. 1971. Pls. 41, 152 and 157.
Large black-glazed plate with rolled rim (**B 147**). Four lines of rouletting. Grooved resting surface. Dull glaze. D. 34.0 cm, D. of base 19 cm. Graffito on underside of ring foot. Height of letters: 0.4-0.7 cm.

c. 300 B.C.: δαμόσ(ιον)

The *sigma* is of the lunate shape well attested in amphora stamps of Chersonesos dated to the same period.[21] The Doric vocalism of the inscription should also be noted.

3. NUMERICAL AND COMMERCIAL MARKS (**H 33-72**)

3A. INDICATIONS OF CAPACITY

Only six inscriptions have been included in this group. All the marks of this type are found on amphorae, and are represented exclusively by graffiti executed at the base of the neck or on the shoulder of the vessels. For the most part, we have nothing more than small fragments; however, in just two cases (**H 33** and **H 34**) completely preserved amphorae of Chersonesean and Rhodian manufacture *are* available to us, and the actual capacity of these two specimens was of course measured and used for interpretation of all the graffiti.

Although various methods of marking have been identified in our inscriptions, they are all based on the acrophonic-numeric system. In one case (**H 33**), we encounter a recording method that combines acrophonic numerals with simple strokes to designate the number of unit-measures fewer than five and their fractions. Another method is represented by a com-

bination of acrophonic numerals (with an indication of the number of basic unit-measures) and acrophonic signs of the fractional units. Of these fractional units, possibly *aryster* (**H 35**) and *oxybaphon* (?) (**H 36**) may be reconstructed.

A comparison of the true capacity of the completely preserved amphorae with the marks inscribed on them shows that the capacity of these vessels was calculated up to the rim, using dry measures – *choinikes* – as the main units. This fact possibly indicates that the capacity inscriptions were made in connection with the secondary use of the amphorae: that is, for storing grain – as confirmed by the find of a Chersonesean amphora containing rye and wheat in *room 3* (**H 7**, find list 6/2; see also Appendix IV). And this supposition would also explain the fact that, notwithstanding the known engagement in agricultural production at house U6, pithoi, which were traditionally used for storing grain are practically absent from the material from the house.[22] Moreover, the measuring of a great quantity of ware carried out by S.Yu. Monachov[23] seems to confirm the use of the *choinix* in calculating amphora-capacity standards in Hellenistic Chersonesos.[24] This fact would find its logical explanation in the supposition that amphora production in the city was directed not only towards the needs of the wine trade but also towards the transportation of grain.

H 33. U6 room 13. Find list 8/2. 1971. Pls. 152 and 157.
Chersonesean transport amphora **Ad 1** with a stamp ΒΑ]ΘΥΛΛ[ΟΥ] | ΑΣΤΥΝ[ΟΜΟΥ (**Ae 33**). Type: Monachov 1989, I-A-3. Light brown engobe. Graffiti on lower part of neck (a) and on opposite shoulder (b). Publications: Ščeglov 1974a, 49; Kac and Monachov 1977, 95 f.; Monachov 1980, 164, fig. 8, cat. no. 37; 1989, no. 12; 1999, 498, pl. 211, *1*; Brašinskij 1984, 201, no. 2; Gilevič and Ščeglov 1996, 104, fig. 2, 105.

c. 325-300 B.C.: (a) Ε( )
(b) ΔΔΠ|||| =

For the date *cf.* **H 13**. The vessel was found along with 17 other amphorae from a burnt-down foodstore originally located above *room 13*. It is in this part of house U6 that the fire was at its fiercest. This circumstance as well as the runnels of greasy soot discernible on the inner surface of most of the pots have led to the inference that 'E' in the present case designates their contents: ἔλαιον.[25] Accordingly, the second graffito was interpreted as indicating either the price[26] or the volume of the stored stuff;[27] and, taking into account that the capacity of the amphora is 31.43 l., the numeric mark (b) most probably indicates the capacity of the vessel: 29 *choinikes* and 2 *kotyles*. If this supposition is correct then we have for the Chersonesean *choinix* a value of about 1.065 l: that is, slightly less than the volume of the corresponding Attic unit. However, the supposition that there existed a local standard of capacity in Chersonesos demands further verification on the basis of a much larger body of material which, for the present, is not available to us.

Moreover, the isolated *epsilon* on the opposite side of the vessel is quite probably *not* an indication of its contents. Repetition of this mark not only on amphorae but also on tableware and stone objects found in this part of U6 suggests an abbreviation of the name of a single individual, *i.e.* the householder.

H 34. U6 room 13. Find list 8/14. 1971. Pl. 48.
Rodian transport amphora (**Ad 84**). Main dimensions: H. 63.0 cm; H. of upper part 32.0 cm; D. of body 42.0 cm; D. of rim (estim.) 9.0 cm. Graffito on shoulder. Publication of the jar: Monachov 1999, 501, pl. 214, *5*.

300-270 B.C.: ΔΔΔ

Like graffito **H 33**(**b**) this is probably an indication of the vessel's capacity: 30 *choinikes*. If we are justified in proposing that a *choinix*, or some related local unit of about 1.065 l. was the basis of the measuring system, then the capacity must have been 32 l. The capacity of the amphora calculated on the basis of its reconstructed parameters according to Heron's formula for 'pithoide' ($11/14 \times H \times ((D_{body}+d_{rim})/2)^2$) is 32.18 l. This value is close to the similar standard capacity established for 'proto-Rhodian' amphorae[28] and considerably exceeds that of later Rhodian amphorae.[29]

H 35. U6 courtyard. 1971. Pls. 152 and 158.
Small fragment from neck of southern Pontic transport amphora. Graffito on lower part of neck. Height of marks: 1.0 cm.

c. 325-300 B.C.:]ΔΔΑΑ

The mark designated 20, or if there is in fact one character missing at the break, 30, *choinikes* and 2 smaller units of which the name is concealed under abbreviation 'A': this should possibly be understood as a term ἀρυστήρ, attested by Herodotus (Hdt. II, 168) and Alcaeus (Alc. fr. 58, 9 Voigt. *Cf.* Callim. fr. 178, 17 Pfeiffer; EM 151, 2) as a liquid measure. It seems from Herodotus that *aryster* was the East Greek or Ionian equivalent of the Attic *kotyle*.[30] Hesychius also relates it to *kotyle* (Hesych. A 7564: ἀρυστήρ· οἴνου ἀρυστήρ. κοτύλη). In addition to certain previously identified examples,[31] *aryster* as a measure of volume may be reconstructed in the case of several numerical marks on pithoi from the settlement of Chaika: Δ||| Ꞥ (complete? Č-89 /969; Jefremow 1998, 74 and note 12); Δ|||| Ꞥ [– – –] (*GChCh* 274, 3rd cent. B.C.); [– – –]ΑΔΠ (*GChCh* 271); ΔΔ|||ΑΔΠ|| (*GChCh* 278); Ⴀ ||| Ꞥ [– – –] (*GChCh* 285); Ⴀ Π| Ꞥ ϒΔ

(*GChCh* 287, 3rd cent. B.C.). As may be judged from the comments of E.I. Solomonik, who published these graffiti, the repeated abbreviations A, Ⱥ, ⱺϒ, undoubtedly designating the same unit in all cases, remained unclear to her. *Cf.* now also Jefremow 1998, 71-92, who argues that the monogram Ⱥ stands here for ἀμφορεύς, and reads *GChCh* 287 respectively: ΠΔΙ ἀ(μφο)ρ(έων) ὔδ(ατος). However, the comparison with *GChCh* 271 and 278 clearly indicates that the last Δ is a numeral, not a letter. In this case the ϒ seems more likely to be part of the same unit name starting with an A. But what could explain appearance of the term *aryster* in inscriptions from Chaika and Panskoye and its complete absence from the epigraphy of the city of Chersonesos? The possible reason is that even after the seizure of the western Crimea by Chersonesos, a total replacement of population did not occur at either of the settlements (Chaika and Panskoye), which had been founded by Ionian Greeks at the turn of 5th- 4th century B.C.

H 36. U6 room 12. Find list 6/8. 1971.
Upper part of Chersonesean transport amphora of the typ IБ according to Monachov 1989 (**Ad 33**). Graffito on shoulder. *Non vidi*; represented here according to drawing in the find list.

320-270 B.C.: ΔO

It is unclear if the inscription is complete or broken off at the left or right. If the inscription did continue at the left, then it could have been a capacity mark, *e.g.* ΔΔ]ΔO *i.e.* 30 *choinikes* and 1 *oxybaphon* (for O as abbreviation of *oxybaphon cf.* Lang 1956, 13 no. 59).[32] It is, however, possible that the inscription is incorrectly reproduced in the field inventory and that it was an abbreviation of the owner's name, *e.g.* Διο.

H 37. U6 courtyard, VG-2. 1971. Pls. 152 and 158.
Shoulder fragment of southern Pontic transport amphora, with graffito. Height of marks: *c.* 1.5 cm.

320-270 B.C.:]ΔΠ[

Judging by the proportions of the vessel we may suppose the loss of a further delta, *i.e.* Δ]ΔΠ[.

H 38. U6 courtyard, D-3. 1974. Pls. 152 and 158.
Neck fragment of Chersonesean amphora. Graffiti on lower part of neck. Height of marks: (a) 1.5 cm; (b) *c.* 3.5 cm. A deep slanting line crosses the sherd, about 5 cm to the left of these marks.

320-270 B.C.: (a) cross
(b) Δ[

3B. PRICE MARKS

As well as graffiti **H 39-41** listed below as price marks, this group can be taken to include **H 44(b)** and possibly **H 19**, which are discussed in other sections. The extremely small amount of material considered here naturally precludes us from any possible general conclusions. Unfortunately, it is not certain in every case whether the price indicated is that of the single vessel on which it appears or that of a whole consignment of similar ware. Therefore I shall limit myself to comments within the individual catalogue entries.

H 39. U6 courtyard, Zh-2. 1975. Pls. 152 and 158.
Fragment of fish-plate (**B 226a**). Grey clay; dull, dark grey slip on upper surface. Graffito on underside, lightly incised. Height of marks: 1.2-1.5 cm.

c. 325-300 B.C.: (a) I (outside of ring foot)
(b) H]HI (inside of ring foot, nearby (a))

The position of the single stroke (a) as well as its dimensions and thickness of line indicate that it was not only drawn at the same time as inscription (b) but was also connected with the latter in sense. In that case the mark on the inside of the base could designate the (rather high) price of a single plate: half a drachm and 1 obol (*i.e.* 4 obols in total). The numerous finds of ceramic objects repaired at home with lead clamps provide further confirmation of the high cost of imported ware.

H 40. U6 courtyard, V-4. Find list 1/9. 1973. Pls. 152 and 158.
Foot of a black-glazed kantharos (**B 71**). Graffiti on underside. Height of marks: 0.7 cm.

300-270 B.C.: (a)]A (at one side)
(b) H (at other side)

As in all the graffiti of this type from house U6 the drachm sign is incised lightly but legibly. However, 1 drachm could not have been the price of a single kantharos, which must have cost much less.[33] Possibly, the mark indicats the price of a consignment of similar vessels; their number, in contrast to the graffito published by M. Lang (1976, E13), is not specified. *Cf.* H ΔΔ on the base of a red-figured skyphos dating to the first half of the 4th century B.C. from Chersonesos[34] and the graffito on a black-glazed saucer from Theodosia.[35] In the light of a series of graffiti presented by Johnston,[36] where the price starts with *alpha*,[37] it might be supposed that in our case too *alpha* was associated with the drachm sign, *e.g.* as the Doric form of the symbol used for designating the half denominations, *i.e.* ἀ ἀμίσεια δραχμά, *cf.* Lesbian αἰμισέων, αἰμιθέων, αἰμιόνοις for ἡμι-.[38] *Cf.* **H 39(b)**. However, the fact that the letter is carved some distance away from (b) and somewhat deeper suggests that it may have been added later, as an abbreviation of the owner's name.

H 40a. U6 courtyard, V-4. Find list 1. 1973. Pl. 152.

Fragmentary, probably Attic, black-glazed plate with thickened rim and ring foot (**B 152**). Restored with plaster. Traces of ancient repair. Graffito on outer surface near the foot. The incision is neat and easily legible. Height of mark: 0.5 cm.

320-300 B.C.: Ⱶ

As in **H 40** it is difficult to accept the drachma sign on the plate as a price for an individual piece. Most likely we should see it as a price indication for a fixed set of probably similar shapes.

H 41. U6 room 3. Find list 6/72. 1969. Pl. 152.

Fragment from neck of Chersonesean transport amphora. Traces of fierce burning on inside of neck. Graffito on neck. Height of marks: 2.0-2.5 cm.

320-270 B.C.: **C**I

The peculiar semicircle frequently reported as the hemiobol sign would suggest that the graffito was a price mark. The vertical line to its right probably corresponds to a smaller denomination, *i.e.* chalcon. Such a low price – 1 hemiobol and 1 chalcon – can hardly be related to any contents but is rather the cost of the empty jar intended for reuse. In urban centres with their own established ceramic production, the price of such goods must have been considerably lower. Thus, *e.g.* in Athens in the late 5th century, 21 empty amphorae, though possibly smaller and of poorer quality than the specimen represented by our fragment, were sold at a total price of 3 obols.[39]

3C. CLIENT NAMES

'Client names' constitute the third and most numerous group within our category of Numerical and Commercial Marks. Although one never meets a section so called in any of the existing classifications of Greek ceramic inscriptions, a series of facts revealed through comparison of various items in the epigraphic collection from U6 suggest the proposed interpretation of the material grouped together here.

All inscriptions in this group are dipinti on amphorae. And most of these (**H 42-59**, **H 63-65**, **H 68**, **H 70-71**) appear on pottery of Chersonesean manufacture. Two of the marks, however, were found on amphorae from Sinope (**H 66** and **H 69**); one on each of the amphora from Thasos (**H 61**) and that of the Solokha-I type (**H 60**); and three on vessels of unidentified origin (**H 62**, **H 67**, and **H 72**).

The location of the inscriptions on the vessels does not show much diversity. In all cases the dipinti are drawn on the lower part of the neck or occasionally on the shoulder of amphorae, but, since there is no marked transition between these two areas, they may be taken as the same position. The direction of writing is always parallel to the rim. The dipinti are mostly extremely laconic, being intended for persons who were anyway perfectly familiar with their purpose. Only in one case (**H 60**) does the record consist of more than three signs. As with owners' marks, the letters often form ligatures: A and P (**H 44**), H and P (**H 65-67**), Π and P (**H 71**). The paint used for writing varies from light to dark red in colour. The height of the letters as well as the breadth of the lines (*i.e.* the brush-strokes) also vary from inscription to inscription in the range 1.3 to 5.0 cm and 1.5 to 4.0 mm respectively. In some cases these objective criteria, along with the style of writing, enable us not only to identify certain groups of marks associated by time of execution and author but also to distinguish the work of at least three or four different writers overall.

The lack of studies on amphora dipinti from other sites[40] and, in our case, the additional problems created by the fragmentary state or simple brevity of the texts (often consisting of just one letter) are factors that make their interpretation difficult and open the way for widely differing explanations. Thus B. Böttger and D. B. Šelov[41] having studied more than 3000 dipinti of the late antique period from Tanais proposed the following list of information which may have been inserted in the inscriptions:

1. For transportation and sale:
   a) the nature of the amphora contents;
   b) the quality and/or origin of the contents;

c) the volume and/or weight of the contents;
d) capacity and/or weight of the empty amphora;
e) name of the owner or seller of the goods.

2. For storing:
a) owner's name;
b) the volume and/or weight of the contents;
c) enumeration of the stored goods;
d) designation of contents substituted for original contents of the amphora;

In our case the range of possible interpretations must be much narrower. Firstly, the possibility of any connection between the marks and contents of the vessels is to be rejected. As mentioned above, the overwhelming majority of the marked ware comes from ceramic workshops in Chersonesos. Even boldest imagination would hardly suppose that the range of goods imported in this ware could have been so great as to explain the diversity of the inscriptions preserved. The same may be said concerning the possible indication of the provenance, volume, or age of the goods (most often wine). Considering the rather strict standardisation of transport amphorae, which often bear the stamps of successive, annually-serving astynomoi, any additional record of that kind would seem superfluous. Our arguments are confirmed in particular by the presence of identical marks on vessels of different capacity and contents (**H 61** and **H 63-64**, **H 65** and **H 66**), and by the absence of parallels to our dipinti at other settlements in the *chora* or in Chersonesos itself. Still less tenable would be a proposal that the dipinti constitute some kind of numerical record.

A key to understanding the inscriptions of this group is the supposition that they are abbreviations of the personal names of inmates of house U6. A comparison of the dipinti with the list of owners' graffiti (**H 3-31**, above) seems to corroborate this hypothesis. The painted inscriptions in fact point to the same circle of individuals already known to us from the owners' marks: ᾽Αρ( ) (**H 44**), Β( ) (**H 45-55**), Εὐφ( ) (**H 61-64**), ῾Ηρ( ) (**H 65-67**), Θα( ) (**H 68**), Πρ( ) (**H 71**), *etc*. Identical marks, albeit made by different means, are found sometimes in the same room or household unit (Εὐ( ) – Εὐφ( ) in *room 13*; Θα( ) – Θ( ) in *room 3*). Moreover, as in the case of the graffiti, it can hardly be mere chance that Β( ), Εὐφ( ), and ῾Ηρ( ) are represented in the majority of the inscriptions.

However, it would be a mistake to lump together both these groups according to their function and to see the difference only in the technique. Dipinti, which by their nature would have been thought of as only temporary, were intended for merely utilitarian purposes. Unlike graffiti, they would not have been sufficiently effective and durable as owners' marks, being easily removed; and it is for that reason that we do not find dipinti being used in this, or any other, way on the table- and household ware from U6. What, then can explain the same repertory of names in inscriptions on both of the groups?

The only interpretation consistent with the facts seems to be to consider the dipinti as commercial records, and the abbreviations and *sigilli* appearing on amphorae as a means of labelling the goods according to the customers' names. That wine came to Panskoye not only as a retail item but also in wholesale lots has already been convincingly proved by A.N. Ščeglov on the basis of amphora stamps from two storerooms in U6.[42] One further argument in favour of our hypothesis is the series of dipinti of the same type, executed by the same hand and possibly at the same time. It must be said, however, that the commercial transaction identified in connection with house U6 is the first instance of a sale based on remote ordering of goods that we know of.[43] Depending on the extent to which the trading network had developed, the consignments of wine or other goods (including imports) transported in amphorae could be collected both from Chersonesos proper and from the neighbouring seaports such as Kalos Limen or Kerkinitis.

H 42. U6 room 13. Find list 8/8. 1971.

Fragments of Chersonesean transport amphora. Dipinto in red on lower part of neck. *Non vidi*; represented here according to drawing in the find list.

320-270 B.C.: A( )

H 43. U6 courtyard, V-6. 1973. Pl. 153.

Neck fragment of Chersonesean transport amphora. Dipinto in red. Height of letter: 2.5 cm; breadth of brush-stroke: 0.3 cm.

320-270 B.C.: A( )

H 44. U6 courtyard, B-5. Find list 16/4. 1972. Pls. 153 and 158

Neck fragment of Chersonesean transport amphora. Light brown clay; lime and pyroxene particles. Dipinto in red on lower part of neck (a). To right, nearby, graffito (b). Height of dipinto: 4.5 cm; breadth of brush-stroke: 0.5 cm.

320-270 B.C.: a) ᾽Αρ( ) (ligature)

b) ⊀

The repetition of this ligature as a graffito too suggests here the initials of some inmate of the farmhouse. *Cf.* **H 10** and **H 12**. Less tenable seems the supposition that the abbreviation indicated the quality of the wine: ἄριστος – 'the best', 'first-rate', or ἀρχαῖος – 'old', seasoned wine.

Mark (b) is of later origin and possibly indicates the price of the empty amphora: 1 ½ obols (?). For a horizontal stroke as an obol sign *cf.* Lang 1976, 22 E 4; Johnston 1978, 222 f.; 1979, Type 14 F, 15 E, fig. 12c; Scheibler 1995, 147, Abb. 129.

H 45. U6 courtyard, VG-2, 3 (0). 1971. Pls. 153 and 158.

Fragment from neck of Chersonesean transport amphora. Dipinto in red on lower part. Height of letter: 3.1 cm; breadth of brush-stroke: 0.4 cm.

320-270 B.C.: B( )

The handwriting differs from that of similar letters made with a broad brush on other vessels. For the mark as well for all the whole series of B/BIC dipinti compare **H 11-12**.

H 46. U6 courtyard, VG-2, 3 (10). 1971. Pls. 153 and 158.

Neck sherd of Chersonesean transport amphora. Dipinto in red. Height of letter: 3.4 cm; breadth of brush-stroke: 0.3-0.4 cm.

320-270 B.C.: B( )

H 47. U6 courtyard, DE-6. Find liste 17. 1972. Pl. 153.

Neck fragment of small Chersonesean amphora. Presumably similar to Monachov 1989, Type II. Dipinto in red on lower part of neck. Height of letter: *c.* 5.0 cm; breadth of brush-stroke: *c.* 0.8 cm.

320-270 B.C.: B[

H 48. U6 courtyard, VG-2, 3 (3). 1971. Pl. 153.

Neck fragment of Chersonesean transport amphora. Dipinto in red on lower part of neck. Estimated height of letter: *c.* 3.0 cm; breadth of brush-stroke: 0.4 cm.

320-270 B.C.: B[

H 49. U6 courtyard, VG-2, 3 (4). 1971. Pl. 153.

Fragment of small Chersonesean amphora. Presumably similar to Monachov 1989, Type II. Remains of dipinto in red on lower part of neck. Estimated height of letter: *c.* 4.0 cm; breadth of brush-stroke: 0.6 cm.

320-270 B.C.: B[

H 50. U6 courtyard, VG-2, 3 (6). 1971. Pl. 154.

Small fragment from neck of Chersonesean transport amphora. Dipinto in red. Height of letter: *c.* 4.0 cm; breadth of brush-stroke: 0.3-0.4 cm.

320-270 B.C.: B[

H 51. U6 courtyard, VG-2, 3 (7). 1971. Pl. 154.

Neck sherd of Chersonesean transport amphora. Remains of dipinto in red. Estimated height of letter: *c.* 3.5 cm; breadth of brush-stroke: 0.4 cm.

320-270 B.C.: B[

H 52. U6 courtyard, VG-2, 3 (2). 1971. Pl. 154.

Neck fragment of Chersonesean transport amphora. Dipinto in red. Height of letters: 2.2-3.0 cm; breadth of brush-stroke: 0.3-0.4 cm.

320-270 B.C.: BIC

The inscription may be read as an abbreviation either of a single name (*cf.*, *e.g.*, Chersonesean Βισθᾶς[44]) or of a name with patronymic – *i.e.* B( ) ᾽Ισ( ). However, the rarity of names beginning with Βισ-, as well as the example of **H 69**, in which ᾽Ισ( ) is indubitable, inspire more enthusiasm for the latter reading.

H 53. U6 courtyard, V-4. 1973. Pl. 154.

Small fragment from neck of Chersonesean transport amphora. Remains of dipinto in red. Breadth of brush-stroke: *c.* 0.6 cm.

320-270 B.C.: BIC

See **H 52**.

H 54. U6 courtyard, VG-2, 3 (1). 1971. Pls. 154 and 158.

Neck fragment of Chersonesean transport amphora, with dipinto in red on lower part. Height of letters: 4.0 cm; breadth of brush-stroke: 0.4 cm.

320-270 B.C.: BI[

This dipinto seems to be analogous to **H 53-54** – as suggested by the colour of the paint, the breadth of the brush-stroke, and the shape of the letters. Presumably an abbreviation of a name with patronymic, *i.e.* B( ) ᾽I[σ]( ). For ᾽Ισ( ) compare **H 69**.

H 55. U6 room 3. Find list 6/73. 1969. Pls. 154 and 159.
Fragment from shoulder and neck of Chersonesean transport amphora. Remains of dipinto in red. Height of letters: *c.* 4.0 cm; breadth of brush-stroke: 0.6 cm.

320-270 B.C.: BI[

H 56. U6 courtyard, VG-2, 3 (5). 1971. Pls. 154 and 159.
Neck fragment of small Chersonesean amphora like **H 47** and **H 49**. Dipinto in red on lower part of neck. Height of letters: *c.* 3.0 cm; breadth of brush-stroke: 0.3 cm.

320-270 B.C.:]IC

Cf. **H 52-55**, also **H 69**.

H 57. U6 room 12. Find list 6/13 (1). 1971. Pl. 154.
Neck sherd of Chersonesean transport amphora. Dipinto in red. Estimated height of letters: *c.* 2.0-2.5 cm; breadth of brush-stroke: 0.3-0.4 cm.

320-270 B.C.:]IC

Cf. **H 52-55**, also **H 69**.

H 58. U6 courtyard, VG-2, 3 (8). 1971.
Neck fragment of Chersonesean transport amphora. Remains of dipinto in red. Height of letter: *c.* 2.0 cm.

320-270 B.C.:]C

Cf. **H 52-55**, also **H 69**.

H 59. U6 courtyard, VG-2, 3 (9). 1971. Pl. 154.
Fragment from neck of Chersonesean transport amphora. Dipinto in red. Height of letter: *c.* 2.5 cm; breadth of brush-stroke: 0.3 cm.

320-270 B.C.:]C

Cf. **H 52-55**, also **H 69**.

H 60. U6 courtyard, DE-6. Find list 17/50. 1972. Pls. 154 and 159.
Fragmentary transport amphora with the mushroom-shaped rim (**Ad 89**). Upper part with both handles is preserved. Dimensions: H. preserv. 24.3 cm; H. of upper part *c.* 25.0 cm; H. of neck 13.5 cm; D. of body *c.* 34.0 cm; D. of rim 8.5 cm. Clay yellowish with many inclusions of mica. Dipinto in red on neck. Height of letters: 2.0-3.0 cm; breadth of brush-stroke: 0.2 cm.

325-270 B.C.:]ONCI

The inscription starts from near the handle and can thus hardly be a mistake for Δι]ονυσι. *Cf.* **H 36**. If the inscription is preserved completely, then an abbreviation of a name and patronymic: *e.g.* Ὀν( ) Σι( ) is possible. Of names with similar anlaut only Ὀνασικλῆς (Ἀκὶς Γέροντος Ὀνασικλέος γυνά, gravestone, *IOSPE* I² 504, 4th or 3rd cent. B.C.) is attested in Chersonesos.

Brašinskij 1980, 26, 122, no. 134; 1984, 138 f. dates transport amphorae of this type (the so-called Solocha-I type) to the middle or third quarter of the 4th century B.C. However, amphorae with a characteristic mushroom-shaped rim which evidently came into fashion during that period were manufactured in a quite a number of centres including Samos, Rhodos, Naxos, Paros, Knidos *et al.*[45] They are common in ceramic container assemblages dated to the last quarter of the 4th and first quarter of the 3rd century B.C. See Monachov 1999a, 427-531; 1999b, 161-172.

H 61. U6 room 13. Find list 8/13. 1971.
Neck fragment of Thasian transport amphora. Dipinto in red. *Non vidi*; represented here according to drawing in the find list.

320-270 B.C.: E( )

H 62. U6 courtyard, D-6. Find list 17/84. 1972. Pl. 155.
Neck fragment of transport amphora. Greyish brown clay with lime and mica particles. Dipinto in red. Height of letter: 1.8 cm; breadth of brush-stroke: 0.15-0.2 cm.

320-270 B.C.: E[

H 63. U6 room 13. Find list 8/9. 1971. Pl. 155.
Neck fragment of Chersonesean transport amphora. No engobe. Brown clay; lime particles. Runnels of greasy soot on surface of the jar. Dipinto in red. Height of letter: 1.5 cm; breadth of brush-stroke: 0.15 cm.

320-270 B.C.: Εὐ( )
Of the second letter only the lower part of the vertical *hasta* is preserved. *Cf.* the next item and graffiti **H 13-18**.

H 64. U6 room 3. Find list 6/75. 1969. Pl. 155.
Fragment of Chersonesean (?) transport amphora. Dipinto in red on lower part of neck. Height of letters: 0.8-1.1 cm; breadth of brush-stroke: 0.15 cm.

320-270 B.C.: Εὐφ( )

Most probably this represents a client's name, *e.g.* Εὐφρόνης, Εὐφρόνιος, not infrequently attested in Chersonesos, or Εὐφάνης, *vel sim.* with the second element beginning with φ-. In the light of Hesychius' gloss: εὔφρων· ἡδύς… (Hes. *s.v.*), we might also suppose this abbreviation to indicate that the amphora contained sweet wine. *Cf.* Il. 3, 246: εὔφρων οἶνος. However, in view of absence of any parallels at other sites in the Chersonesean *chora*, the later hypothesis seems less tenable.

H 65. U6 courtyard, VG-2, 3. 1971. Pl. 155.
Neck fragment of Chersonesean transport amphora. Light brown clay; no visible temper. Dipinto in red. Height of letters: 2.7 cm; breadth of brush-stroke: 0.3-0.4 cm.

320-270 B.C.: ʽΗρ( ) (ligature)

H 66. U6 courtyard, D-6. Find list 17/43. 1972.
Neck fragment of Sinopean transport amphora. Light brown slip. Dipinto in red. Height of letters: 3.0 cm.

320-270 B.C.: ʼHρ( ) (ligature)

H 67. U6 room 12. Find list 6/13 (3). 1971. Pl. 155.
Small neck fragment of a transport amphora. Dipinto in red. Height of letter: 1.3 cm; breadth of brush-stroke: 0.2 cm.

320-270 B.C.: ʼH[ρ?]( ) (ligature?)

H 68. U6 room 3. Find list 6/74. 1969. Pl. 155.
Fragment from neck of Chersonesean (?) transport amphora. Reddish brown clay; lime particles. There is a streak of burnt stuff on the inside of the neck. Dipinto in red on shoulder. Height of letters: 1.8 cm; breadth of brush-stroke: 0.4 cm.

320-270 B.C.: Θα[

Of the *alpha* only the lower part of the left *hasta* is preserved. The amphora neck fragment with graffito ΘΑ (**H 23**) was found in the same room. *Cf.* also **H 24-25**.

H 69. U6 courtyard, D-6. Find list 17. 1972.
Fragment from neck and shoulder of Sinopean (?) transport amphora. Remains of dipinto in red.

320-270 B.C.: ʼIσ( )

H 70. U6 room 13. Find list 8/3. 1971. Pl. 155.
Chersonesean transport amphora **Ad 13**. Type Monachov 1989, I-Б. The capacity of the vessel is 19.60 l. Dipinto in red on neck. Height of letter: 2.3 cm; breadth of brush-stroke: 0.2 cm. Publications: Kac and Monachov 1977, 96, fig. 2,3; Monachov 1980, 164, fig. 5, cat. no. 32; 1989, 111, pl. V, *25*; 1999a, 499, pl. 212, *3*.

320-270 B.C.: M( )

Various interpretations are possible, but probably, as in other cases, this mark served to label a consignment of goods with the customers' name.

H 71. U6 courtyard, VG-2, 3. 1971. Pls. 155 and 159.
Small neck fragment of Chersonesean transport amphora. Remains of dipinto in red. Estimated height of mark: *c.* 2.0 cm; breadth of brush-stroke: 0.3 cm.

320-270 B.C.: Πρ( ) (ligature)

Possibly an abbreviation of the same personal name as in **H 30-31**.

H 72. U6 room 12. Find list 6/13(2). 1971.
Neck sherd of a transport amphora. Remains of dipinto in red. Brown clay; lime particles.

320-270 B.C.: Φ( )

4. VARIA (**H 73-79**)

The category 'varia' is composed of those inscriptions that it was not possible to assign to any of the preceding categories. With the exception of graffito **H 79** on the bottom of a black-glazed bowl these are marks scratched or painted on amphorae.

H 73. U6 room 13. Find list 8/5. 1971. Pls. 155 and 159.
Chersonesean transport amphora **Ad 22**. Type: Monachov 1989, I-Б. The capacity of the amphora is 19.0 l. Publications of jar: Kac and Monachov 1977, 99, pl. 1, no. 5; Monachov 1980, 176, cat. no. 26; 1989, 147, no. 41, pl. VII, *41*. Dipinto in red in two lines on neck. Height of letters: 1.5-1.8 cm; breadth of brush-stroke: 0.1 cm.

320-270 B.C.: A
XI

Different interpretations are possible. The *alpha* is probably, as in other cases the initial of the customer's name. The second line is difficult to explain: the vessel parameters preclude consideration of it as an indication of the volume in *choes* or *choinikes*.

H 74. U6 room 3. Find list 6/77. 1969. Pl. 155.
Neck fragment of a transport amphora. Light brown clay; lime particles. Traces of fierce burning on the inside. Dipinto in red on lower part of neck. Height of mark: 2.2 cm; breadth of brush-stroke: 0.3 cm.

320-270 B.C.: A'

The apostrophe to the right of the *alpha* suggests here a numerical mark, possibly related to the 'serial' labelling of a consignment of goods, *etc.*

H 75. U6 courtyard, B-2. 1971. Pl. 155.
Fragment from neck of Sinopean transport amphora. Dipinto in red on lower part of neck. Height of letters: 1.5 cm; breadth of brush-stroke: 0.2 cm.

320-270 B.C.: A
A

Only the lower part of the first sign is discernible. Nevertheless, the peculiar incline of the lateral *hastae* and traces of paint undoubtedly indicate an *alpha*. Various explanations are possible.

H 76. U6 courtyard, D-6. 1975.

Neck fragment of Sinopean transport amphora. Remains of dipinto (lower part of vertical *hasta*) in red.

H 77. U6 gate. Find list 3/21. 1972. Pls. 155 and 159.

Neck sherd of Herakleian transport amphora. Graffito on lower part of neck. Height of mark: 3.2 cm.

320-270 B.C.: cross

Marks of such a kind could be employed for a number of different purposes, and it is not impossible that they served as ownership marks for some illiterate proprietors (*cf.* 'Private ownership' section, above). An identical mark (**H 78**) was found near the gate.

H 78. U6 gate. Find list 3/5. 1972. Pl. 155.

Fragment from neck and shoulder of Chersonesean transport amphora. Graffito on shoulder. Height of mark: 2.3 cm.

320-270 B.C.: cross

Cf. **H 77**. During the drawing of the horizontal, the point of the spike evidently slipped and made an irregular line which was then retouched more accurately.

H 79. U6 courtyard, D-5. 1974. Pl. 155.

Black-glazed bowl with traces of repair (**B 108**). Dull glaze. D. 14.7 cm, D. of base 8 cm. Graffito on underside of ring foot. Height of mark: 1.3 cm.

300-270 B.C.: K(?) or Φ(?)

A. Johnston places such signs among trademarks (*cf.* Johnston 1979, 85, Type 32 A, IV). However, their meaning remains rather unclear. In our graffito **H 79** the horizontal strokes are not parallel, however. Joining on the left of the vertical, they diverge at a slight angle on its right. This gives some grounds to suppose a *kappa* here, and to consider it as the initial of one of the inmate's names (*cf.* **H 26**). For comparison we may refer to a graffito on a black-glazed jug from the settlement of Chaika (unpublished, inventory no. Ch. 66/672) in which the lateral *hastae* of the *kappa* form an angle of 15° and join at the left of the vertical. Also a *kappa* with practically parallel lateral *hastae* is known from the legend on the obverse of Kerkinitian coins dating to the turn of the 4th-3rd century B.C.[46]

Of similar shape are some marks on vessels from Berezan'[47] and Chersonesos (*GACh* 1620). In the case of *GACh* 1620, such a sign repeated twice on the base of a single vessel is undoubtedly a variant of *phi*, for at the second occurrence it is the initial letter of the PN Φορμίων (*cf.* *GACh* 1622: Φορ( ) where *phi* has a similar shape. *Cf.* also Guarducci 1967, 383).

NOTES

1. Stolba 1989, 55 ff. = *SEG* XXXIX 703.
2. Gilevič 1989, 72 f.
3. Seidl 1972, no. B 9-18.
4. Roller 1987, nos. 2A-8, 2A-11, 2A-37, 2A-42, 2A-61, 2A-66, 2A-94, 2A-110, 2A-115, 2A-117, 2A-122-124, 2A-133, 2A-170. *Cf.* also crosslike marks on archaic pottery from Naxos (Manni Piraino 1987, 40 no. 23, 42 no. 27, 43 nos. 28-29) and Kamarina (Manni Piraino 1987a, 92 tav. XI 2, 99 tav. XV 3, 100 tav. XV 5).
5. Roller 1987, 9.
6. Ščeglov 1974a, 49; Kac and Monachov 1977, 91, n. 3. B. Böttger and D. B. Šelov, considering dipinti from Tanais, also noted joint use of storerooms (Böttger and Šelov 1998, 126/127).
7. Kac 1994, 76, 93, no. 40.
8. Kac 1994, 113, no. 112.
9. Monachov 1989, 142, no. 15. According to A. Ščeglov (Gilevič and Ščeglov 1996, 105) the capacity of the amphora is *c.* 31-32 l.
10. Kac 1994, 91, no. 32.
11. Gilevič and Ščeglov 1996, 105.
12. For the name, see esp. Stolba 1996a, 449, no. 15; Tochtas'ev 1997, 380.
13. In the Athenian Agora *c.* fifty such marks with *delta-epsilon* ligature have been found (see Talcott 1936, 353 f. with reference to a kylix from the National Museum with an inscription ΔΕΜΟΣΙΑ in full on the underside of the foot; *cf.* Corbett 1949, 341, no. 138). See also Guarducci 1967, 402,

403, fig. 217; Lang 1976, 51-52, Fa 1-26, Fb 1-3; Roberts 1986, 25, no. 41, fig. 13; Rotroff and Oakley 1992, 36 ff., fig. 21, *147*, *160*, *169-173*, *206*, *215-216*, *268-269*, pl. 53, *268-269*. The same ligature occurs also on vases from the Acropolis and possibly from the Pnyx, see Graef and Langlotz 1925-1933, 127 f., nos. 1517, 1523; Davidson and Thompson 1943, 32, nos. 13(?), 15, fig. 15.

14. Williams and Fisher 1971, 31, no. 33, pl. 8.
15. Vokotopoulou, Pappa and Tsigarida 1988, 322, 329, fig. 16; Vokotopoulou 1990, 79.
16. Jajlenko 1982, 284, no. 30 (Berezan').
17 Vinogradov 1983, 386; Vinogradov 1989, 62, 63, fig. 4.
18. Kac 1994, 80, 132 Type C, no. 1, pl. CX.
19. But *cf.* Borisova 1974, 110, and Monachov 1989, 58 ff., 85, in whose opinion amphorae with such stamps were standards for manufacturing similar ware.
20. Vinogradov 1990, 59; Vinogradov 1997a, 489. For the photo, see Rogov 1986, 297 fig.; Ščeglov 1987, 266, fig. 17, *3*.
21. Beginning with group 1Б: 315-300 B.C. See Kac 1994, 50.
22. The only exceptions are one small vessel of Sinopean manufacture (**Ac 3**; U6 room 3, Find list 6/1), the capacity of which does not exceed that of a medium-sized Chersonesean amphora, and the single fragment of pithos rim from *room 13* (**Ac 1**).
23. Monachov 1989, 79.
24. *Cf.* the graffito ΧΓ on a fragment of 1st cent. B.C. jug neck from the settlement near the village of Mikhailovka. The publishers suppose the mark to be a 'designation of the volume unit – 3 *choes* – or designation of price – 3 *chalcoi*' (Jemec and Peters 1994, 168, fig. 2, *9*). However, the complete jug would have been too small for 3 *choes*, suggesting that for it too, as in the case of Chersonesean graffiti **H 33(b)**, **H 34**, **H 36**, the units of measurement might have been *choinikes*. Evidence from the Athenian Agora may here be added: *tryblion* as another name for the *choinix* appears in two capacity marks on the base of a black-glazed oinochoe and on an amphora neck (Lang 1956, 13, nos. 60-61).
25. Ščeglov 1974a, 49; Kac and Monachov 1977, 95 ff.; Solomonik 1984, 18.
26. Ščeglov 1974a, 49 f. On the price of oil see especially Pease 1937, 2472-2474; Pritchett 1956, 184.
27. Gilevič and Ščeglov 1996, 105 f.
28. Grace 1963, 323, fig. 1, 333 no. 1 (according to the dimensions given by Grace, the capacity of the amphora from the Benaki collection is *c.* 30 l.); Empereur and Hesnard 1987, 58, pl. 2, *8*.
29. Grace 1965, 7; Brašinskij 1978, 11 ff.; Wallece Matheson and Wallece 1982, 293 ff.
30. *Cf.* Johnston 1979, 224; Vos 1981, 35, 37 (= *SEG* XXXIII 63); Tochtas'ev 1985, 291 f.
31. Lang 1976, 91 f. L 25 (dipinto on amphora shoulder, 1st cent. A.D.); Johnston 1979, 153 Type 2F, nos. 47-48, 154 Type 4F, nos. 1-5; Vos 1981, 36, fig. 1, pl. 14 C (graffiti on Panathenaic amphorae). *Cf.* also the graffito on a fragment of a Megarian bowl of the 2nd century B.C. from Tyras, which instead of ἡμὶ ἀρυστὴρ [τοῦ δεῖνου] proposed by V.P. Jajlenko (Jajlenko 1982, 268, n. 23; Yaylenko 1995, 250, no. 13 = *SEG* XLV 1029), should evidently be read as ἡμιαρυστήρ[ιον] by analogy with ἡμικοτύλιον, ἡμίχοον, ἡμιαμφόριον, *etc. Cf.* now also J.G. Vinogradov (*SEG* XLV ad 1029), who reads in the same sense: ἡμιαρυστῆρ(ος).
32. For other references on oxybaphon, see Wolf 1995, 353 f., *SEG* XLV 2345.
33. On the prices of ceramic vessels in Classical Greece, see Amyx 1958, 275-280; Johnston 1978, 222 f.; 1979, 33-35; 1991, 224-228. *Cf.* also Scheibler 1995, 144 ff.
34. *GACh* 548. Less probable is the reading proposed by Solomonik: 20 drachms.
35. Stern 1897, 29, no. 84, pl. III.
36. Johnston 1979, 18C, 59 and 63, fig. 6b-c; 24F, 2, fig. 13m; fig. 14t.
37. Possibly the same applies to the inscription on a kylix base from Nymphaion: AΓEH[(unpublished; the State Hermitage Museum, Nymph.-51.274) and to a graffito of the 6th century B.C. from Berezan' (Jajlenko 1982, 303, no. 174, 231, fig.). Judging from the figure, the inscription from

Berezan' should evidently be read retrogradely: | AIE. EϒAI, with the retrograde *epsilon* proposed by the publisher, is doubtful because of a clear drachm sign to the left of the *alpha*, and because the vertical line on the right is three times longer than the other letters, so could hardly be an *iota*.

38. Buck 1955, 25.
39. Amyx 1958, 174 f.
40. Unfortunately, most of the dipinti from the Athenian Agora were left out of the publication by M. Lang (see Lang 1976, 1). Among recent works *cf.* Böttger and Šelov 1998. Although the dipinti were considered there according to the archaeological assemblages, they were not evaluated in relation to any other group of Tanais inscriptions such as graffiti; this fact in my view reduces the possibilities for full and accurate interpretation.
41. Böttger and Šelov 1998, 52/53.
42. Ščeglov 1974a, 49.
43. Possibly, the well-known graffito of a 'Postenaufrechnung' on a red-figure pelike from Naples may be considered as evidence of such trade relations, see Scheibler 1995, 147, Abb. 129, discussed earlier by Johnston 1978, 222 ff.; 1979, 229, fig. 12: 14F, 15 (E).
44. On this name in Chersonesos, see esp. Stolba 1996a, 445 f.
45. See, *e.g.*, Grace 1963, 322; Grace 1971, 67, pl. 15; Tölle-Kastenbein 1974, 158, Abb. 259A; Empereur and Picon, 1986, 495 ff.; Van der Mersch 1986, 569 f., fig. 1-2; Avram, 1989, 247 ff.
46. Anochin 1989, no. 417.
47. Jajlenko 1982, 286, nos. 75-76.

COINS

Anna M. Gilevič

All of the nine coins found during the excavation of building U6 came to light in the rooms and the courtyard. Such a small number of coins from a relatively large excavated area (1450 sq metres) and in a single architectural and building complex (1250 sq metres) should not surprise us. A similar yield is characteristic of the rural settlements located not only in the *chora* of Chersonesos but also in the agricultural territory of other Greek settlements, at least in those situated on the northern shores of the Black Sea. The coin finds are generally meagre there, except in the case of hoards or collective finds.

Putting aside examples not related to the state of Chersonesos, I shall limit myself to presenting data from excavations of rural settlements in the territory that formed part of the possessions of Chersonesos in the second half of the 4th century B.C. – the first third of the 3rd century B.C. (using the chronological system devised by A.N. Ščeglov)[1]. In the case of the farmland lying close to Chersonesos itself, coin finds from excavations on country estates of that period have proved extremely rare. For example, no coins at all were found in the 'farmhouse' in area 25 near Chersonesos; this building was contemporary with U6 and has long been a classical model.[2] In all the other farmhouses investigated in the same district, either no coins were found or only very few.[3] And the same applies to the settlements located in the more distant parts of the *chora* of Chersonesos. Thus, for instance, not a single coin was found in the one-towered, fortified house on the shore of the Bay of Bolshoi Kastel nor in the unfortified house at Panskoye III. In other places coin finds have been rare – for example at the settlements of South-Donuzlav, Belyaus, and Kulchuk; the farmhouse on the Bay of Vetrenaya near Kalos Limen; the farmhouse of Groty; and the fortified settlement of Vladimirovka. Down to the present time, only three exceptions to the general rule are known. One is the settlement of 'Mayak' ('Lighthouse') on the Cape of Eupatoria. This consists of two rural dwellings that are typical Chersonesean in their lay-out but constructed as a single block. During excavation, 40 coins were found of which 20 fall into the class termed 'accumulations of unclaimed money' (a variety of 'hoards').[4] The other exceptions are our settlement of Panskoye I, where a grand total of 63 coins have been found, and the fortress of 'Chaika' located near the town of Eupatoria to the west of Kerkinitis (the material from this site has as yet been only incompletely published).

All the coins from building U6 are copper and were minted in Chersonesos. A varied assortment of finds is typical for the settlements of the Western Crimea of the second half of the 4th – the first third of the 3rd century B.C. It was suggested long ago, purely on the basis of archaeological and numismatic evidence, that the coinage, which actually circulated throughout the territory in the period under discussion, was primarily based on Chersonesean copper.[5] Now this thesis seems even more obviously true and may be regarded as proved. Hitherto only one specimen of a Chersonesean silver coin, from the site of South-Donuzlav near the village of Popovka, has been found during excavations of fortified and unfortified settlements in the North-Western Crimea.[6] Another silver coin comes from a hoard found by chance in the settlement of Novo-Fedorovka (to the south of the town of Saki), but the composition and chronology of the hoard remains unclear.[7] Obviously these two finds do not change the general distribution pattern.

The coins published here were found only in the south-west part of building U6, in

squares A-5-7 – Zh-5-7 (Pl. 160). Five coins (**I 2-4**, **I 6**, **I 9**) were found lying together and mixed up with broken and crushed pottery and other objects in a thin, ashy layer bearing traces of fire and occurring at a number of different points on the surface of the courtyard. One coin (**I 1**) was found on the surface of the floor of *room 12* (the household sanctuary). The three remaining coins (**I 5**, **I 7-8**) were found in a layer of buried soil beneath the floors of *rooms 22* and *24* located on the south-west side of the building.

It should be noted that none of the coins was found in the topsoil layers that covered the accumulations of crushed pottery lying on the surface of the courtyard. Nor were there any coins in the mud and loam filling of the rooms formed from the decay of mud-brick walls. This rules out any possibility of the coins having got into the archaeological context at some later time. The context included only those objects that had been in use at the time of the fire and destruction of the building, and this circumstance certainly confirms that the coins of various issues found on the surface of the courtyard were actually in circulation at the moment the building met its catastrophic end. Exceptions to this might be the specimens from *beneath* the floors of *rooms 22* and *24*, but even they are not at variance with the general picture, for they correlate with the types found in the fire layer.

Most of the coins were extremely poorly preserved. However, it was possible to identify all of them, or at least their types. We were able to do that owing to the fact that the identification was carried out in three stages. Initially, the coins were identified in the field, at the moment of discovery, by means of mild mechanical cleaning of their surfaces. After that, their chemical cleaning was monitored in the laboratory. During that process the appearance of certain images and legends could be observed, while others unavoidably vanished along with the removed oxides. After cleaning had been completed all the observations were compared.

The first peculiarity of the coin assemblage under discussion is the total absence of coins from Kerkinitis or Pantikapaion. This is what distinguishes building U6 from other buildings at Panskoye I and other settlements in the agricultural territory of Chersonesos in the North-Western Crimea. Coins from these two centres have been recorded in the contemporary buildings and blocks of buildings in layer A of areas U7 and U2 at Panskoye I, as well as in the country house on the Bay of Vetrenaya near Chernomorskoye (Kalos Limen) and at the settlement of 'Mayak'. Moreover, another coin from Olbia (a so-called 'borysthenes') was found in layer A (upper horizon) of area U7. A likely hypothesis is thus that only Chersonesean copper coinage was used in the monetary economy of the inhabitants of building U6 – though, if so, the coin assemblage under discussion was a peculiar one for the settlement. On the one hand, it corresponds precisely with collections from those sites in the Chersonesean *chora* on the Herakleian Peninsula that are summarily dated to the last third of the 4th- the first third of the 3rd century B.C., where only coins from Chersonesos have been found. On the other hand, however, it differs completely not only from the coin compositions of other upper-horizon areas at the settlement of Panskoye I but also from the assemblages of a number of other sites in the North-Western Crimea, where coins from other cities are present.

The second peculiarity is that the coins, although found in a single archaeological context, belong to different types and, accordingly, to issues of different periods. The question as to whether they were all coins that were actually in circulation at (or around) the time of the settlement's destruction, or whether some earlier coins that had already gone out of circulation could have got there accidentally, should be answered in favour of the first alternative. That is certainly clear from the stratigraphy of the coin finds, and above all from the datings of their archaeological contexts (plain and black-glazed pottery, amphora stamps *etc.*) as is shown in Table 1.

Table 1.

Nos. in Catalogue	Type According to Zograf and Anochin	Place and Conditions of Discovery	Date of the Archaelogical Context
I 1	Z XXXV, 10, var. An 50	Square A-7. Room 12, sanctuary Fire layer. On the floor	Set of pottery of about 330-270 B.C.
I 2	Z XXXV, 10 An 36-56	Square E-5. Courtyard, near the doorway of room 27, on the paved surface, together with **I 6**. Fire layer	Upper part of red-figured askos **B 3** and pottery of the first third of the 3rd century B.C.
I 3	Z XXXV, 16 An 60-62	In the same square as, and near to **I 2** and **I 6**	Same material
I 4	Z XXXV, 23 An 76	Square B-6, near the doorway of room 11	Pottery of the first third of the 3rd century B.C.
I 5	Z XXXV, 23 An 76	Square Zh-7. Room 24. Beneath the floor	No material for dating
I 6	Z XXXV, 24 An 77-81	Square E-5. Courtyard, near the doorway of room 27. Together with **I 2**	As **I 2**
I 7	Z XXXV, 24 An 80, var.	Square D-7. Room 22. Beneath the floor, together with **I 8**	No material for dating
I 8	Z XXXV, 24-25 An 77-81	Square D-7. Room 22. Beneath the floor, together with **I 7**	No material for dating
I 9	Z XXXV, 24-25 An 80 var.	Square G-5. The surface of the courtyard. Fire layer	First third of the 3rd century B.C.

All the coins presented in Table 1 belong to types issued from about the middle of the 4th up to the beginning of the 3rd century B.C. It should be stressed once again that all these types were still in circulation at the moment of the sudden destruction of the building. At the same time, however, the fact that the finds do not include coins of earlier issues minted during the second quarter of the 4th century B.C. should engage our attention. Such coins have been recorded in other buildings in the adjoining area U7 (types Zograf XXXV, 3, 12, 14, 15). Moreover, it should be noted that all the copper coins of the earlier issues were found in an earlier layer (layer B) of area U7, together with pottery dated to a period not later than the second third or third quarter of the 4th century B.C.[8] This can hardly be accidental, thus we may suppose that the copper coins issued in the second quarter of the 4th century and circulating at the settlement in the third quarter (or more widely in the second third) of the century had either gone out of use or been withdrawn from circulation at the time of the construction of building U6. However, if such a supposition is justified, then, according to the numismatic evidence, the construction could not have taken place any earlier than the withdrawal of the copper issued in the second quarter of the 4th century B.C. Here it should also

be stressed that among the coins in building U6 there were no denominations smaller than the two coins of type Zograf XXXV, 10 – *i.e.* there no coins of type Zograf XXXV, 11 with the Janus-head on the obverse and a lion rending a bull and the inscription XEP on the reverse. On the other hand, coins of that type did come to light in the adjoining excavated area (U7), but, as stated above, in an earlier layer (layer B).[9] It cannot be ruled out that these denominations might have been issued in a relatively small quantity and had gone out of circulation earlier than the coins with the Parthenos in a quadriga and the bearded kneeling warrior on the reverse (type Zograf XXXV, 10).[10] The latter type of coin, as has often been pointed out, was evidently minted on a very large scale: it is quite a common find in excavations as well as in the hoards of the late 4th and early 3rd centuries B.C. All the evidence indicates that this full-weight copper coin circulated for a very long period, and, in our case, the very worn coin of type Zograf XXXV, 10, from the sanctuary (**I 1**) provides striking confirmation of this fact.

One other aspect of the coins from building U6 is noteworthy. The latest coins from the collection are represented by dichalcoi minted in the name of the magistrate *Klemytadas* (**I 7**, **I 9**). An analysis of the dies of the Kuchuk-Moinak hoard from the vicinity of Eupatoria, which I carried out some time ago, gives us reason to suppose that *Klemytadas* was possibly the next to last in the college of magistrates responsible for issuing the coins of the copper series representing the Parthenos spearing the hind on the obverse and a butting bull on the reverse. The last magistrate issuing this series was probably *Theochares*; and either *Diagoras* or, possibly, *Syriskos* was predecessor of *Klemytadas* (this can be elicited only on the basis of the die-linkage study of the Chersonesean copper coinage in *corpus*).[11] As A.N. Zograf has already observed, it was under *Eudromos*, the first magistrate in the series under discussion, that the change of types took place. The coins of the preceding issue, bearing representations of a griffin on the obverse and a kneeling Parthenos on the reverse, and also minted in the name of *Eudromos*, occur among our finds as well.

Zograf dated the series of copper coins with the Parthenos spearing the hind and the reverse with the butting bull to the first half of the 3rd century B.C.[12] On the basis of my own observations, the upper limit for the issuing of the coins of that type should be pushed back from the middle of the 3rd century B.C. to the very beginning of that century, so long as we accept that there were no long interruptions in their minting.[13] Later, V.A. Anochin, evidently on the basis of my analysis of the dies and his a priori supposition of decennial emission cycles, dated the series under discussion to around 300-280 B.C.[14] And although his method of fixing absolute dates, based on the extremely arbitrary subdivision of issues into equal ten-year intervals, seems a very dubious one and has been subjected to severe criticism,[15] the date deduced by him is considerably more precise than Zograf's rather broad time-span. However, on the basis of certain other considerations, V.F. Stolba has recently pushed back the minting-period for coins of type Zograf XXXV, 24 somewhat further, into the late 4th century B.C.[16] The latter date contradicts neither the stratigraphy nor any other archaeological evidence from the excavation of building U6, and I believe it should be accepted, for the minting of coins of this type bearing the name of *Eudromos* can evidently be dated with a fair degree of probability either to the very end of the 4th century B.C. or to not later than the actual turn into the 3rd century.

In this connection, it seems important to consider the stratigraphical and planigraphical position of the spot where the three coins of types Zograf XXXV, 23 and 24-25 (**I 5**, **I 7-8**) were found. They were actually in a layer of 'buried soil' below the level of the floors of two adjoining rooms of the first building-period (see Part I, pp. 59-61). In A.N. Ščeglov's opinion, the presence of coins beneath the floor inside these rooms is not a mere chance occurrence. According to the stratigraphy, their being put or dropped there must either precede the start

Table 2. The qualitative and quantitative compositions of the coin assemblage together with their dates of issue.

Descriptions of Type	**Number of specimens**	**Nos. in the Catalogue**	**Types and Dates (B.C.) according to Zograf, (Z), Anochin(An), Stolba (S), Gilevič (G)**
Obv. Quadriga r.; in the chariot standing figure of Parthenos holding torch in hand Rev. XEP Nude kneeling bearded warrior l., with shield and spear in hands	2	**I 1-2**	Z XXXV, 10: 350-330 An 35-59: 350-330 G: about the middle of the 4th century
Obv. Griffin l. Rev. XEP. Kneeling Parthenos r., bow and arrow in hand	1	**I 3**	Z XXXV, 16: 340-330 An 60-62: 330-320 G: last third of the 4th century
Obv. XEP. Griffin l. Rev. Kneeling Parthenos r., holding bow and arrow in hand; below in exergue: EϒΔPOMO or EϒΔPOMOϒ	2	**I 4-5**	Z XXXV, 23: the end of the 4th century An 75-76: 320-300 G: end of the 4th century
Obv. XEP. Parthenos striking down hind with spear l. Rev. Butting bull l., KΛEMϒTAΔA with club beneath	4	**I 6-9**	Z XXXV, 24-25: 300-250 An 78-81: 300-290 S: end of the 4th century G: end of the 4th or turn of the 4th and 3rd century

of the construction or be contemporary with it (*Cf.* Part I, p. 60). If the proposed dates of minting are correct, then the coin finds under discussion could present indirect evidence in favour of supposing that the construction of the building could not have taken place before the late 4th or the turn of the 4th and 3rd centuries B.C. At least, the coin issued in the time of *Klemytadas* (**I 7**) was not worn, whereas the coin found in the sanctuary (*room 12*) was very worn.

In their totality the coins reflect the practically unvarying composition of the monetary circulation in the economy under consideration, from the construction of the building down to the end of its existence in the first third of the 3rd century B.C. (not much later than 270 B.C.). This composition, however, differs from that of the coin-set from the rest of this settlement as well as from other settlements in the North-Western Crimea, being in fact more characteristic of the compositions of coin-sets found in country houses of the last third of the 4th – the first third of the 3rd century B.C. in the immediate vicinity of Chersonesos itself. Nevertheless, the coins from U6 do not contradict the opinion advanced some time ago: that copper coins continued in circulation in the distant parts of the Chersonesean *chora* rather longer than in Chersonesos itself.[17]

CATALOGUE

The arrangement of the data in the catalogue is as follows: description of specimen; its diameter (D); weight (W); the correlation of axes; state of preservation (G – good, B – bad, VB – very bad); coin type: according to Zograf, Z (Zograf 1951 = Zograf 1977); according to Anochin, An (Anochin 1977 = Anokhin 1980); year and place of discovery; archaeological context; no. according to the find lists; the present location; publications.

I 1. Obv.: Quadriga r.; in the chariot, standing figure of Parthenos holding reins in the left hand and a torch in the right.

Rev.: [XEP]. Nude kneeling bearded warrior l., with shield and spear, helmet on head.

Under the right elbow of the warrior, the letter M.

D. 20 mm; W. 5.756 gr.; ↖; B. Worn; the milling is sharp. The stamps of both sides are slightly worn.

Type: Z XXXV, 10, var.; An 50.

1971. Room 12; on the floor surface 0.4 m from the S-W wall and 1.8 m from the N-W wall.

Find list 6/64. Coin Inv. TE-70-72, no. 2.

Gilevič 1998, no. 3.

I 2. Obv.: Quadriga r.

Rev.: [XEP. Kneeling warrior l., holding shield and spear in hands].

D. 18 mm; W. 5.07 gr.; VB. Completely corroded. In the course of mechanically cleaning the surface of chlorine compounds in the field, outlines of a quadriga and a warrior were clearly seen. They vanished almost completely during a chemical restoration. The specimen turned out to be swollen and split apart by protoxides as is typical for the coins of this particular type.

Type: Z XXXV, 10, var.; An 36-56.

1973. Courtyard, E-5; on the surface of paving stones near the doorway of room 27, at the same spot as **I 6**.

Inv. TE-73, no. 3.

Gilevič 1998, no. 12.

I 3. Obv.: [Griffin l.].

Rev.: Kneeling Parthenos r.; in exergue: XE[P. The name behind back is unclear.

D. 20-22 mm; W. 5.06 gr.; B. Rounded milling. Slightly worn.

Type: Z XXXV, 16; An 60-62.

1974. Courtyard, E-5; in an interstice between flagstones of the courtyard paving near doorway of room 27, and 0.8 m from coins **I 2** and **I 6**.

Inv. TE-74 no. 3.

Gilevič 1998, no. 16.

I 4. Obv.: Griffin l.

Rev.: Kneeling Parthenos r.; in exergue: [EYΔ]POM[O.

D. 20 mm; W. 1.43 gr.; ↑; VB. Broken. Rounded milling. Worn. Badly damaged by chlorous and chloric oxides. The images and magistrate's name were identified during the preliminary mechanical cleaning in the field and distinguished more precisely in the course of the chemical cleaning in the laboratory. The coin disintegrated in the process of restoration.

Type: Z XXXV, 23; An 76.

1972. Courtyard, B-6; at the edge of an ash-deposit, lying on the surface of the courtyard, near the doorway of room 11.

Inv. TE-70-72, no. 9.

Gilevič 1998, no. 6.

I 5. Obv.: [XEP]. Griffin l.

Rev.: Kneeling Parthenos r.; in exergue: E]YΔPOM[O.

D. 18 mm; W. 4.116 gr.; ↓; B. Rounded and vertical milling. Struck by a worn die, slightly worn in circulation. Part of the edge is 'eaten away' by chlorous and chloric oxides.

The magistrate's name was read with a fair degree of certainty before the chemical cleaning.

Type: Z XXXV, 23; An 76.

1972. Room 24; under mud floor in a layer of buried soil above the rock.

Inv. TE-70-72, no. 8.

Gilevič 1998, no. 7.

I 6. Obv.: Parthenos striking down hind with spear l., in her left hand a bow; below [XEP].

Rev.: [Butting bull on club l.]. EYΔ]POM[OY.

D. 22 mm; W. 6.56 gr.; →; VB. Rounded milling, sharp. Swollen, badly damaged by cuprous oxides. The magistrate's name was identified both in the field and in the course of chemical cleaning.

Type: Z XXXV, 24-25; An 77-81.

1973. Courtyard, E-5; on the surface of the stone paving, near the doorway of room 27, and close to **I 2**.

Inv. TE-73 no. 2.

Gilevič 1998, no. 11.

I 7. Obv.: Parthenos striking down hind with spear l., in her left hand a bow; below [XE]P.

Rev.: Butting bull on club l. KΛ]EMYT[AΔA. Bow and quiver.

D. 20 mm; W. 4.642 gr.; ↑; G. The milling is slanting, sharp. Struck with new dies on both sides. Unworn in circulation.

Type: Z XXXV, 24; An 80 var.

1972. Room 22; beneath the floor, together with **I 8**.

Gilevič 1998, no. 8.

I 8. Obv.: Parthenos striking down hind with spear l., in her left hand a bow; below [XE]P.

Rev.: the name of the magistrate is unclear.

D. 23 mm; W. 2.85 gr.; →; VB. Half of the coin was destroyed during cleaning.

Type: Z XXXV, 24-25; An 77-81.

1972. Room 22; under the floor in the top layer of buried soil. Found together with **I 7**.

Inv. TE-70-72 no. 7.

Gilevič 1998, no. 9.

I 9. Obv.: Parthenos striking down hind l.; below XE[P.

Rev.: Butting bull on club l. KΛEM[YTA]ΔA. Bow and quiver.

D. 20 mm; W. 8.06 gr.; ↓; Rounded milling. Slightly worn; not much worn in circulation.

Type: Z XXXV, 24; An 80 var.

1973. Courtyard, G-5; on the surface of the courtyard.

Inv. TE-73 no. 1.

Gilevič 1998, no. 10.

NOTES

1. Ščeglov 1978.
2. Strželeckij 1961, 98-102. *Cf.* Dufková, Pecírca 1970.
3. Turovskij 1994, 10.
4. Kolesnikov 1991, 186 ff.
5. Golenko and Ščeglov 1971, 44 f.; Ščeglov 1974a, 47 f.
6. Daševskaja 1964, 50 f. *On another Chersonesean silver coin of the same type (*Zograf XXXV, 22 var. = *SNG BM* 778-782*) found 1989 during excavations at Chaika see* Stolba and Golencov 2000, 276. – (*Eds.*)
7. Lancov 1994, 73. *For the Novo-Fedorovka hoard see now* Stolba and Golencov 2000, note 6. – (*Eds.*).
8. For a complete summary of the coins from excavations of the settlement and necropolis of Panskoye I *cf.* Gilevič 1998. The attempt of N.N. Grandemaison (Grandmezon 1982, 35) to assign the issue of coins of type Z XXXV, 12, An 27-32, 'to the entire second half of the 4th B.C.' are not proved by the stratigraphy and by materials from the excavation of Chersonesean necropolis.
9. *For further references see recently:* Stolba 1991, 84; 1996b, 239 f. – (*Eds.*)
10. *Cf.* already Stolba 1990, 148; 1996, 231, 237.
11. Gilevič 1970, 14, fig. 2.
12. Zograf 1951, 149.
13. Gilevič 1970, 9-11.
14. Anochin 1977, 139. Arguing against him N.N. Grandemaison dated this series to the second half of the 3rd century B.C. (Grandmezon 1982, 36), with which we cannot agree.
15. See Noonan 1980; Grandmezon 1982, 36; Frolova 1988, 124; Stolba 1989, 62.
16. Stolba 1989, 63, 67.
17. Gilevič 1987, 55.

METAL OBJECTS

Eugenii Ya. Rogov

The collection of metal objects from the excavation of building U6 is fairly large and varied. In terms of their total number, the finds yield place only to the collection of pottery and other ceramic objects, and, in addition to items quite common at other ancient sites, they include a series of specimens of a unique nature that have been found nowhere else in such a combination.

Metal being subject to corrosion, a great number of the objects found during the excavation had deteriorated to such an extent that it was difficult, if not altogether impossible to identify their original shape, to say nothing of their intended function(s).

The collection presented here includes objects made of various metals – iron, bronze, lead, and silver. Undoubtedly the individual characteristics of metals were well known to the artisans of the time, and so determined the selection of a particular metal for a particular object. For that reason the arrangement of the catalogue that follows is based on the type of material and not on the shape of the objects, and thus comprises four sections: lead objects, bronze objects, iron objects, and silver objects. All the finds are numbered consecutively in one single sequence. It will be noted that no objects made of gold or electrum were found during the excavations, which, in my view is further evidence of the poor material circumstances of the settlement's inhabitants – though if they had actually possessed any small trinkets made of precious metals, it is more than likely that precisely those objects would have been the first to be removed by those fleeing before impending danger.

Mapping of the metal finds on the excavation plan reveals at least one extremely odd feature, which is that the metal objects are not distributed uniformly within the building. Indeed, in the majority of rooms no metal objects or their remains were found at all: there was no metal in the rooms of the north-eastern range, with the exception of *rooms 2* and *3*; and the same was true of *rooms 7* to *10* in the north-western range. However, certain rooms in the south-west and south-east ranges of the building contained numerous metal objects. First in order of the number of finds were *room 12* (the sanctuary) and *room 13* adjoining it, then came *rooms 21-25*, *27*, *29*, and *30*; though in this part of the building too there were also many *rooms* (nos. *15-18*, *19*, *20*, *26*, *28*) where no metal objects were found. In the courtyard most of the objects of this type were found in the squares lying alongside the rooms of the south-west range, in the central area and especially in square V-4. On the other hand, no metal was found in squares B-2, G-2, V-3, G-3, B-4, G-4, Zh-4, and B-5.

The metal objects found in squares of the fifth and sixth grid-rows were possibly thrown there during the attack or shortly afterwards when the building was plundered.

One further observation concerning the distribution of finds within the confines of U6 is that no areas with a concentration of a single metal were discovered – in every case iron objects were found together with bronze ones. Moreover, no zones could be singled out where metal objects connected with one particular activity were grouped together.

In my opinion, such a state of disorder among the finds is additional evidence of a total pillage of the building.

LEAD OBJECTS (**K 1-18**)

Lead is a metal with a low melting-point; therefore it was possible to cast lead objects in simple domestic conditions using an ordinary hearth or even a bonfire. Although no moulds were discovered during the excavation, the lead pot-repair clamps that have been found are evidence that such a form of metalworking was indeed practised. It is, after all, hardly possible that such work was done anywhere other than on the spot, or that the settlement inhabitants bought vessels that had already been mended.

A relatively small number of objects made of this soft metal were found during the excavation. Undoubtedly, their quantity must originally have been much greater, but during the attack and ensuing fire many of the objects naturally melted and were found in the form of shapeless ingots.

Owing to its softness, the metal was not of course a suitable material for making tools, and therefore lead was utilised on only a very limited scale.

K 1. U6 courtyard, V-4. Find list 1/72. 1973. Pl. 161.

Cone-shaped spindle-whorl. Height 1.6 cm; base diameter 2.3 cm; diameter of the central hole for fixing on the spindle axis 0.4 cm.

K 2. U6 courtyard, D-5. 1974. Pl. 161.

Ring evidently cast in an open mould. Diameter 6.0 cm; inner diameter 3.7 cm.

K 3. U6 well, no. 262. 1974. Pl. 167.

Ring of asymmetrical shape. One half is thicker than the other. Diameter 6.6 cm; inner diameter 5 cm.

Rings of similar shape but of cast iron are known from sites dating to before Hellenistic times.[1] Such rings were also found during excavation of U6 (*cf.* **K 172-173**).

K 4. U6 room 33. Find list 4/12. 1973. Pl. 167.

Flat weight, almost square with rounded sides, cut off at one side. Length 5 cm; width 5.2-5.6 cm; thickness 1.6 cm. Weight 444.61 g.

Similar weights are very common at ancient sites in the northern Black Sea area.[2]

K 5. U6 courtyard, D-4. 1974. Pl. 161.

Fragments of a thin plate bent double. Probably a billet for some other object. Length 2 cm; width 1.4-1.7 cm; thickness 0.2 cm.

K 6. U6 courtyard, E-4. 1973. Pl. 161.

Fragment of a flat lead plate. Both surfaces are smooth and even. The object is cut off at one end; probably a billet. Length 7-8.5 cm; width 3.9-4.5 cm; thickness 0.3 cm.

K 7. U6 courtyard. Pls. 161 and 167.

Double-sided clamp with a pair of connecting legs. Judging by its dimensions it was used for mending a large ceramic vessel. Length of the upper clamp-plate 9.4 cm; width 1.2 cm; length of the lower clamp-rod 11.3 cm; width 2.2 cm; semi-cylindrical in shape.

K 8. U6 courtyard, E-3. 1974. Pl. 161.

Double-sided clamp with a pair of connecting legs. Length of the upper clamp-rod 5.4 cm; width 0.8 cm. Length of the lower clamp-rod 4.8 cm; width 0.7 cm. Both legs are cylindrical.

K 9. U6 courtyard, V-4. Find list 1/79. 1973.

Fragment of a clamp (single plate with part of one leg). Length 2.9 cm; width 1.4 cm.

K 10. U6 courtyard, V-4. Find list 1/79. 1973.

Fragment of a large clamp. Flat plate with part of one leg. Length 4.1 cm; width 3.1 cm; thickness of plate 0.7 cm.

K 11. U6 courtyard, V-2. 1971. Pl. 161.

Fragment of a semi-cylindrical clamp. Length 4.9 cm; width 0.9 cm; thickness 0.4 cm. Found in a layer of pottery breakdown.

K 12. U6 well, no. 262. 1974. Pl. 167.

Fragment of bent clamp-plate with two legs. Length 5.4 cm; width 0.7 cm; length of the legs 1 cm.

K 13. U6 courtyard, D-2, 3. 1973. Pl. 161.

Plate with the edges on two sides bent inwards, probably a billet. Length 4.2 cm; width 2.3 cm; thickness 0.3 cm.

K 14. U6 courtyard, E-6. Find list 17/127. 1972. Pl. 167.

Ingot of molten lead.

K 15. U6 courtyard, D-6. Find list 17. 1972.

Ingot of molten lead. The bottom surface took on the imprint of some straw during solidification.

K 16. U6 courtyard, G-5. Find list 1/79. 1973.

Ingot of molten lead.

K 17. U6 courtyard, D-6. Find list 17. 1972.

Ingot of molten lead.

K 18. U6 courtyard, D-6. Find list 17. 1972.

Ingot of molten lead.

BRONZE OBJECTS (**K 19-95**)

Objects made of bronze played an important role in the life of the settlement's inhabitants. Both objects necessary to the routines of daily life and work and miscellaneous personal ornaments – rings, earrings, bracelets, *etc.* – were manufactured of this metal.

Naturally the state of preservation of the objects is not uniformly equal: some have survived only in fragments, while others have been badly corroded; therefore it is not possible to identify unambiguously the purpose, which a number of the specimens served.

NAILS

Nails are the best represented of the various objects in our collection; in terms of their size and the shape of their heads they may be divided into three distinct types. All three types find numerous parallels both at sites in the northern Black Sea area[3] and at sites in Greece proper.[4] Moreover, it should be noted that Olynthian nails and most of those in our collection are such close parallels that the possibility of their having been made in the same workshop cannot be ignored.

Type 1 nails are 15-16 cm long with circular shafts and hemispherical heads. Judging from the way their shafts are bent, these nails were used for fastening beams or thick boards; all the evidence indeed points to their being carpenter's spikes.

What is interesting, however, is that no such spikes were found within any of the rooms, not even in the corner ones. From this it must follow that they were not used for fastening the supporting structures of the building – for instance, ceiling beams. The ceiling beams must therefore have been fixed by some other means, without the use of either bronze or even iron nails. All nails of this first type, identified as carpenter's spikes were found in the courtyard, and therefore were obviously employed in the construction of certain wooden buildings put up in that area.

K 19. U6 courtyard, D-2. 1974. Pl. 161.

Nail with a circular shaft and slightly flattened hemispherical head. Length 16.0 cm; diameter of head 2.0 cm; shaft diameter 0.4-0.7 cm. The shaft is bent at an angle of 90 degrees. Probably used for fastening a timber.

K 20. U6 courtyard, D-2. 1974. Pl. 167.

Nail with a circular shaft and a slightly flattened hemispherical head. Length 14.5 cm; diameter of head 1.8 cm; shaft diameter 0.5-0.8 cm. Bent at an obtuse angle.

K 21. U6 room 3. Find list 6/49. 1971.

Nail with a flattened hemispherical head and circular shaft. Length 12 cm; diameter of head 1.8 cm. Bent.

K 22. U6 room 3. Find list 6/50. 1971. Pl. 167.

Nail with a circular shaft and hemispherical head. Length 12 cm; diameter of head 1.8 cm.

K 23. U6 room 3. Find list 6/49. 1971.

Nail with a flattened hemispherical head and circular shaft. Preserved length 4.8 cm; diameter of head 1.4 cm. The shaft is broken off but clearly originally bent at a right angle.

K 24. U6 courtyard, D-2. 1973. Pls. 161 and 167.

Nail with a circular shaft and a flattened hemispherical head. Length 6.7 cm; diameter of head 1.8 cm; shaft diameter 0.3-0.7 cm. The tip of the shaft is pointed.

K 25. U6 courtyard, E-3. 1973. Pl. 161.

Fragment of a nail-shaft. The head and the end of the shaft are missing. Length 3.7 cm; diameter 0.7 cm.

K 26. U6 courtyard, BV-6. 1974. Pls. 161 and 167.

Fragment of a circular nail-shaft. The head and the end of the shaft are missing. Length 3.6 cm; diameter 0.7 cm.

K 27. U6 courtyard, D-6. Find list 17/122. 1972. Pl. 161.

Fragment of a nail with a circular shaft and hemispherical head. The edge of the head is thin and drawn downwards. The tip has not been preserved. Length 5.8 cm; diameter of head 1.8 cm; diameter of shaft 0.7 cm.

K 28. U6 courtyard, D-3. 1974. Pl. 161.

Fragment of nail with a hemispherical flattened head and a circular shaft. Broken. Length 4.2 cm; diameter of head 2.0 cm; shaft diameter 0.6 cm.

K 29. U6 courtyard, D-3. 1974. Pl. 161.

Fragment of a nail with a hemispherical head and a circular shaft. Length 4.3 cm; diameter of head 1.2 cm; shaft diameter 0.5 cm.

K 30. U6 courtyard, V-4. Find list 1/65. 1973. Pl. 161.

Fragment of a nail with a hemispherical head and circular shaft. The tip is broken off. Length 3.5 cm; diameter of head 1.4 cm; shaft diameter 0.5 cm.

K 31. U6 courtyard, V-4. Find list 1/64. 1973. Pls. 161 and 167.

Fragment of a nail with a hemispherical flattened head and a circular shaft. Length 3.5 cm; diameter of head 1.6 cm; shaft diameter 0.6 cm.

K 32. U6 courtyard, Zh-3. 1973.

Fragment of a nail with a hemispherical head and circular shaft. The head is swaged round the edge so that it forms a skirting. The nail is broken. Preserved length 2.9 cm; diameter of head 1.7 cm; shaft diameter 0.6 cm.

K 33. U6 courtyard, V-4. Find list 1/65. 1973. Pl. 167.

Nail with a flattened hemispherical head and circular shaft. The nail is broken. Length preserved 4.3 cm; diameter of head 2.1 cm; shaft diameter 0.5 cm.

Nails of the second type are short (length up to 3.5 cm) and thin with a small flat head; the shafts of some of these nails are not circular but forged square in section. It is highly possible that nails of this variety were used in joinery rather than carpentry.[5] One of the specimens (**K 34**) was found in the doorway of *room 22*, which probably indicates that such nails were used in the making of doors.

K 34. U6 room 22. Find list 6/24. 1972. Pl. 161.

Nail with a tiny flat head. The shaft is square in section with a slight thickening directly below the head. Length 3.5 cm; diameter of head 0.9 cm; cross-section of shaft is 0.4 x 0.4 cm.

K 35. U6 courtyard, V-4. Find list 1/65. 1973.

Fragment of a circular nail-shaft. The head is missing. Length 2.9 cm; diameter of shaft 0.3 cm.

K 36. U6 courtyard, Zh-3. 1974. Pl. 161.

Fragment of a nail-shaft of square section (0.2 x 0.2 cm). The upper part including the head is broken off. Length preserved 2.3 cm.

K 37. U6 courtyard, V-6. 1974. Pl. 161.

Fragment of a nail-shaft of square section (0.4 x 0.4 cm). The head is broken off. Length 3.7 cm.

K 38. U6 courtyard, V-6. 1974.

Fragment of a nail-shaft of square section (0.2 x 0.2 cm). Length 3.7 cm.

K 39. U6 room 29. 1972. Pl. 161.

Fragment of a nail-shaft of square section (0.4 x 0.4 cm). The upper part including the head is broken off. Length 3.1 cm. The nail is bent and twisted. Found inside a black-glazed kantharos. B 24

Nails of the third type are characterised by a flat or slightly convex head and a rather short, thin, and sharply tapered shaft. This type includes two varieties of nails: A (**K 40-44**) and B (**K 45-47**), which differ in length of shaft and size of head. Both varieties most likely served for fastening plaques onto a wooden or other kind frame, *i.e.* they were used in joinery. Both variants are very similar to nails found in Olynthos.[6]

K 40. U6 courtyard, E-3. 1974. Pl. 162.

Nail with a broad flat head and circular, sharply pointed shaft. Length 2.9 cm; diameter of head 1.7 cm; shaft diameter just below the head 0.3 cm.

K 41. U6 courtyard, E-3. 1974. Pl. 167.

Nail with a broad flat head and circular shaft. Length 2.9 cm; diameter of head 1.7 cm; shaft diameter just below the head 0.3 cm.

K 42. U6 courtyard, G-6. 1974. Pl. 167.

Nail with a flat head and circular shaft. Length 2.0 cm; diameter of head 1.0 cm; shaft diameter just below the head 0.2 cm.

K 43. U6 courtyard. Pl. 167.

Tiny nail with a broad flat head and circular shaft. Length 1.8 cm; diameter of head 1.3 cm; shaft diameter near head 0.3 cm. The shaft is slightly bent.

K 44. U6 courtyard. Pl. 167.

Tiny nail with a broad flat head and circular shaft. Length 1.9 cm; diameter of head 1.1 cm; shaft diameter near head 0.15 cm. Bent.

K 45. U6 courtyard, Zh-3. 1973. Pl. 162.

Tiny nail with a broad flat head and short sharply pointed shaft of square section. Length 1.1 cm; diameter of head 1.8 cm; cross-section of shaft 0.4 x 0.4 cm.

K 46. U6 courtyard, Zh-3. 1973. Pls. 162 and 167.

Fragment of a tiny nail with a broad flat head and circular shaft. Length 0.8 cm; diameter of head 1.4 cm; shaft diameter 0.3 cm. Broken.

K 47. U6 courtyard, B-6. 1974. Pl. 162.

Tiny nail with a slightly flattened hemispherical head; the shaft is short and sharply pointed. Length 1.9 cm; diameter of head 1.8 cm; shaft diameter 0.3 cm.

IMPLEMENTS CONNECTED WITH HOUSEHOLD ACTIVITIES: A NEEDLE, BODKINS, A PUNCH

Our collection of bronzes includes a few miscellaneous small implements connected with everyday household activities.

Sewing needles were in use throughout the ancient period; the outward appearance and manufacturing technique are same in all areas.[7]

K 48. U6 courtyard. 1974. Pl. 162.

Sewing needle. Made from a short length of bronze wire 0.1-0.3 cm in diameter. One end is pointed, the other slightly flattened, with an eye for the thread. Length 6.7 cm. Restored from three separate fragments.

K 49. U6 courtyard, G-6. 1974. Pl. 162.

Unidentifiable implement. Bronze shaft of heptahedral section. One end is rounded, the other broken off. Length 3.6 cm; diameter 0.6 cm. Probably this object was a punch, the pointed end of which is not preserved.

K 50. U6 courtyard, V-4. Find list 1/65. 1973. Pl. 162.

Fragment of a bodkin of square section (0.3 x 0.3 cm). Length 3.1 cm.

K 51. U6 room 23. Find list 7/80. 1972. Pl. 162.

Fragment of a bodkin or awl. One end is pointed, the other broken off. Length 2.9 cm; diameter 0.15-0.30 cm.

PERSONAL ORNAMENTS

The rather wide use of bronze for manufacturing miscellaneous small ornaments can probably be explained, first, by the relative cheapness of this metal and, secondly, perhaps by the fact that it eventually acquires a beautiful dark patina. Plain earrings (fashioned from a loop or loop and a half of bronze wire), pendants, finger-rings, seals, and bracelets were much in demand, being especially popular among citizens of moderate means. Such ornaments not only sold well in cities and villages alike, but were also successfully exported to the barbarians of the steppe regions. Just the same types of bronze ornaments that have been found in Greek cities are reported from sites in the steppe zone of the northern Black Sea area.[8]

Pin, pendants, earrings

K *52*. U6 room 12. Find list 6/11. 1971. Pl. 162.

Pin. Made from a length of thick circular wire 0.2-0.4 cm in diameter. One end is thickened, the other broken off. Length 8.9 cm. Nail-shaped variety of pin, type 5, variant 2 (Petrenko 1978, pl. 4, *5*).

K *53*. U6 room 22. Find list 6. 1972. Pl. 162.

Pendant. Made from a length of circular wire coiled into one and a half loops. Thickness of wire 0.3-0.4 cm. One end is thinner than the other. Loop diameter 2.3 cm. Type 23 (Petrenko 1978, pl. 27, *1*; Robinson 1941, pl. XVIII, nos. 317, 318).

K *54*. U6 room 2. Find list 3. 1969. Pl. 162.

Pendant made from a length of thick wire coiled into one and a half loops. Thickness of wire 0.3 cm. One end is thinner than the other. Loop diameter 2.1 cm. Same type as **K *53***.

K *55*. U6 courtyard, D-4. 1974. Pl. 162.

Pendant made from a length of flat wire coiled into one and half loops. Thickness of wire 0.15 cm. One end is thinner than the other. Loop diameter 2.0 cm. Same type as **K *53***.

K *56*. U6 room 22. Find list 6. 1972. Pl. 162.

Fragment of a pendant. Made from a length of thick wire 0.3 cm in diameter. The ends are broken off; therefore its type can only be conjectured. Perhaps it matched **K *53***. Loop diameter 2.3 cm.

All the pendants listed are of a type of earring-pendant that was very common in the ancient period throughout the northern Black Sea area. They are all of a single type, though made from wire of different thicknesses and profile. The pendants are rather heavy and must have been suspended by means of a small thin ring or 'shackle' fixed directly into the pierced ear lobe.

K *57*. U6 courtyard, E-6. Find list 17/117. 1972. Pl. 162.

Miniature earring. A loop of thin circular wire whose ends

do not meet in a full circle. Diameter of wire 0.10-0.15 cm; loop diameter 1.0 cm. This item belongs to type 22, variant 2 (Petrenko 1978). It is highly probable that pendants in the style of **K 53** (above) were suspended from the ear by means of such miniature rings as this.

K 58. U6 courtyard, E-6. Find list 17/119. 1972.

Fragment of an earring made from thin circular wire 0.10-0.15 cm in diameter. It is not possible to define its type.

K 59. U6 courtyard, E-6. Find list 17. 1972. Pl. 162.

Fragment of earring-pendant made from thin flat wire 0.10-0.15 cm thick (*cf.* Petrenko 1978, type 28).

K 60. U6 courtyard. E-6. 1974. Pl. 162.

Fragment of an earring-pendant made from thin flat wire 0.10-0.15 cm thick (*cf.* Petrenko 1978, type 31).

Rings and seal-rings

The collection from U6 includes a few specimens of bronze finger-rings and seals, a couple of which are complete. Some of them were manufactured with much care, while others are very coarse, consisting of just a length of wire bent into a circle. It is probable that one or two of these objects were not actually ornaments but served some other purpose. Thus the fragments of two bronze tetrahedral rings (**K 61** and **K 62**) are unlikely to have been ornaments, since both are four-sided in section and would therefore seem rather inconvenient for wearing on the finger. Unfortunately, there are no complete specimens of such rings in our collection and therefore it is difficult to determine their exact function.

K 61. U6 room 22. Find list 6/23. 1972. Pl. 162.

Fragment of a ring made from a length of wire of square section (0.3 x 0.3 cm). Diameter 2.5 cm (Petrenko 1978, section I, Wire Rings, type 1).

K 62. U6 room 1. Find list 1/7. 1969. Pl. 162.

Fragment of a finger-ring made from a length of wire of square section (0.3 x 0.3 cm). Diameter 2.1 cm (Petrenko 1978, section I, Wire Rings, type 1).

K 63. U6 courtyard, E-6. Find list 17/116. 1972. Pl. 162.

Fragment of a finger-ring. Only the thin, badly corroded bezel is preserved. The outer surface is smooth. Originally the bezel was oval (1.8 x 1.1 cm). Attachment-points for the band were fixed to the underside of the bezel. For the shape *Cf.* Petrenko 1978, section I, Type 1; Robinson 1941, no. 483, 488.

K 64. U6 courtyard, E-6. Find list 17/118. 1972. Pl. 162.

Fragment of a finger-ring. A band with the points of attachment to the bezel is preserved; the bezel itself is missing. The band is made of circular wire 0.2 cm in diameter. The ends of the band are thickened at the points of attachment to the bezel. Ring diameter 1.5 cm.

K 65. U6 room 13. Find list 8. 1971. Pl. 162.

Cast ring of circular section. Diameter of band 0.20-0.25 cm; ring diameter 1.8 cm.

K 66. U6 courtyard, E-6. Find list 17/15. 1972. Pl. 167.

Finger-ring with a flat round bezel. The bezel is decorated with two concentric grooves and has a hollow 0.8 cm in diameter for a glass insert in the centre. The tie is circular in section. Diameter of bezel 2.2 cm; ring diameter 2.0 cm.

K 67. U6 courtyard, Zh-3. 1974. Pl. 162.

Fragment of the band of a ring made from wire of square section (0.3 x 0.3 cm). Conjectural ring diameter 2.8-3.0 cm.

Bracelets

K 68. U6 courtyard, G-5. Find list 16. 1972. Pl. 162.

Fragment of a bracelet made from a length of thin wire of square section (0.2 x 0.2 cm) (*cf.* Petrenko 1978, section II, Lamellate Bracelets).

K 69. U6 courtyard, B-2. 1973. Pl. 162.

Fragment of a bracelet made of a length of rod 0.5 cm in diameter (*cf.* Petrenko 1978, section I, Rod Bracelets).

K 70. U6 courtyard, E-6. 1972. Pl. 162.

Fragmentary bracelet consisting of a length of wire of square section (0.3 x 0.3 cm). The shape is an ellipse about 4.0 cm in diameter. Two-thirds of the entire band are preserved. Found lying on the stone paving of the yard (*cf.* Petrenko 1978, section II, Lamellate Bracelets).

K 71. U6 courtyard. Pl. 162.

Fragment of a bracelet made from a length of thick circular wire 0.3 cm in diameter. Portion of circumference preserved 3.1 cm.

K 72. U6 courtyard. Pl. 162.

Fragment of a bracelet made from a length of thick circular wire 0.3 cm in diameter. Portion of circumference preserved 2.3 cm.

K 73. U6 courtyard. Pl. 162.

Fragment of a bracelet made from a length of thick circular wire 0.4 cm in diameter. Portion of circumference preserved 4.4 cm.

WEAPONS

The bronze weapons consist solely of arrowheads. Their number is not great, the total collection amounting to only fourteen specimens. These are the three-bladed and trihedral (three-sided) arrowheads with a usually very short socket. Such as were common at the time.

By contrast to what is observed in burials, where quiver sets comprising several matching arrowheads are fairly common, our collection contains no sets of arrowheads. It is highly probable that most of the arrowheads did not actually belong to the inhabitants of the settlement. The plans showing the positions of the arrowheads in the excavation area of U6 reveal that eight out of fourteen finds come from outside the rooms of the building – four being found on the outer north-eastern side of the building near the wall or within the fabric of the wall itself; the same number again were recovered from the courtyard. Moreover, all the arrowheads were found with their points directed towards the west, south-west, and south, suggesting that the arrows could only have been shot from the north-east – and so most probably by the assailants during the attack. Only six specimens were found inside rooms; however, we cannot be certain that they actually belonged to the defenders, *i.e.* the inmates of the house.

K 74. U6, square V-0. 1973. Pl. 167.
Arrowhead. Three-bladed type with fairly long socket. The tip of the point is missing. Length 1.3 cm.

K 75. U6, square V-0. 1972. Pl. 162.
Arrowhead. Three-sided type with hollow central core. Length 3.4 cm.

K 76. U6, square D-0. Find list 1. 1972. Pl. 162.
Arrowhead. Three-bladed type with short socket. The blades are separated by grooves. Length 2.9 cm.

K 77. U6, square Z-0. 1972. Pl. 167.
Arrowhead. Three-bladed type with recessed socket. The blades are separated by grooves. Length 2.4 cm.

K 78. U6 courtyard, E-4. 1973. Pl. 167.
Arrowhead. Three-bladed type with recessed socket. The blades are separated by grooves. Length 3 cm.

K 79. U6 courtyard, E-5. 1972. Pl. 162.
Arrowhead. Three-bladed type with socket. The blades are separated by grooves. Length 3.2 cm.

K 80. U6 courtyard, D-6. 1972. Pl. 167.
Arrowhead. Three-sided type with socket; edges are even and smooth. Length 2.8 cm.

K 81. U6 courtyard, E-6. Find list 17. 1972. Pl. 167.
Arrowhead. Three-bladed type with short protruding socket. The blades are separated by grooves. Length 3.7 cm.

K 82. U6 room 3. Find list 6/53. 1969. Pl. 167.
Fragmentary arrowhead. Three-bladed type with short solid tang; the blades are separated by grooves. The tip of the point is missing. Length 2.2 cm.

K 83. U6 room 31. 1973. Pl. 167.
Three-sided arrowhead with recessed socket. The tip of the point is bent. Length 2.1 cm.

K 84. U6 room 30. Find list 14. 1972.
Three-bladed arrowhead with short head and protruding socket. Partly disintegrated, restored. Length 2.8 cm.

K 85. U6 room 10. Find list 4. 1971. Pl. 167.
Three-bladed arrowhead with a pronounced socket. The blades are sharp and of different lengths. Length of the arrowhead 2.4 cm.

K 86. U6 room 18. Find list 1. 1972. Pl. 162.
Three-sided arrowhead with hollow central core. Length 2.2 cm.

K 87. U6 room 30. Find list 14. 1972. Pl. 167.
Fragment of an arrowhead. Three-bladed type. The tip of the point and the end of the protruding socket are broken off. Length 1.2 cm.

MISCELLANEOUS

K 88. U6 room 12. Find list 6. 1971. Pl. 162.
Buckle. Made from a thin narrow strip (0.4 cm x 0.2 cm) bent to form a rectangle (though the ends do not actually meet). Length 2.2 cm; width 0.9 cm. Probably intended for a belt to be threaded through and thus secured.

K 89. U6 room 12. Find list 6. 1971.
Small fragments of a buckle similar to the preceding.

K 90. U6 room 12. Find list 6/67. 1971. Pl. 162.
Fragmentary buckle. Made from thin narrow strip (0.5 cm x 0.2 cm) bent to form a rectangle. Only half preserved. Length 3.1 cm. Probably intended for a belt to be threaded through and thus secured.

K 91. U6 room 12. Find list 6/67. 1971. Pl. 162.
Two fragmentary buckles welded together, both of the same

type as **K 88** and made from thin narrow strips (0.3-0.4 cm x 0.2 cm). Length 2.7 cm; width 1.1 cm.

K 92. U6 courtyard, E-6. Find list 17/120. 1972. Pl. 163.
Flat strip 0.2 cm thick. Length 3.8 cm; width 2.0 cm. The edges are ragged. The strip is slightly bent. The purpose is unknown.

K 93. U6 room 29. Find list 13. 1972.
Flat strip 0.2 cm thick. Length 6 cm; width 2.5-3.5 cm. One edge is cleanly cut. The purpose is unknown.

K 94. U6 room 29. Find list 13. 1972.
Flat strip 0.2 cm thick. Maximum dimensions: length 3.0 cm; width 2.5 cm. The edges are ragged. The purpose is unknown.

K 95. U6 courtyard, E-2. 1973. Pl. 162.
Tiny cast figurine of a dolphin. The tail is missing. The eyes are represented by incised points on both sides of the head; the fins are not indicated. Length 2.2 cm; height 1.2 cm.

IRON OBJECTS (**K 96-183**)

Finds of iron objects were very common in the excavation of building U6. However, they were less completely preserved than objects of lead or bronze, almost all of them being much corroded, and, in some instances, too badly so to survive cleaning; thus the original shape could be reconstructed only with the greatest difficulties. Nevertheless, this section of the catalogue includes all the iron artefacts actually found.

Iron naturally surpasses bronze in its working qualities, and for that reason implements of importance were made of iron. At present it remains impossible to determine reliably where the settlement's inhabitants acquired such iron household utensils as they needed. We do not know whether there was a small specialised workshop within the settlement itself – some kind of forge or smithy – or whether iron objects had to be purchased in the markets of large urban centres, *e.g.* Olbia or Chersonesos, or from travelling merchants. In fact a combination of all three sources is highly probable.

However they were actually obtained, we must not overlook the high degree of standardisation among our iron objects, nor, indeed, the great number of very close parallels found at various other sites in the Black Sea area. These factors naturally suggest the existence of certain common standards for such objects.

NAILS

The largest part of our collection of iron objects consists of complete or fragmentary nails. Like bronze nails the iron ones may be divided into at least three distinct types. However, the peculiarity of our iron nails is that they were evidently used exclusively for carpentry *i.e.* for structural purposes; thus no small-sized iron nails whatsoever have been found within the building area.

The first type includes large nails 8 to 14 cm long. They have a hemispherical head and a forged shaft of square section. Owing to corrosion it is almost always impossible to determine the original thickness of the shafts; therefore all parameters given in the catalogue are related to the present state of the artefacts.

K 96. U6 courtyard, E-6. Find list 17/124. 1972. Pl. 163.
Nail with hemispherical head and square-section forged shaft (0.6-1.2 cm thick). Length 10.6 cm; diameter of head 2.1 cm. Bent at an angle of 90 degrees. Like the large (type 1) bronze nails this was probably used for fastening structural timbers.

K 97. U6 courtyard, E-5. 1974. Pl. 163.
Nail with hemispherical head and square-section forged shaft (0.7-1.5 cm thick). Length 11.2 cm; diameter of head 3.2 cm. The end of the nail is bent.

K 98. U6 courtyard, E-2. 1974. Pl. 163.

Nail with hemispherical head and square-section shaft (0.6-1.1 cm thick). Length 9.2 cm; diameter of head 2.4 cm. The end is bent.

K 99. U6 courtyard, V-4. Find list 1/70-71. 1973. Pl. 163.

Fragment of forged square-section nail-shaft (0.6-1.0 cm thick). The head is missing. Length 10.7 cm.

K 100. U6 courtyard, V-4. Find list 1/71. 1973. Pl. 163.

Fragment of forged square-section nail-shaft (0.6 cm thick). The head is missing. Length 9.8 cm.

K 101. U6 courtyard, V-4. Find list 1/70-71. 1973. Pl. 163.

Fragment of forged square-section nail-shaft (0.8 cm thick). The head is missing. Length 13.8 cm. The shaft is bent at an angle of 90 degrees, and is further bent at the tip.

K 102. U6 courtyard, B-6. Find list 16/123. 1972. Pl. 163.

Fragmentary nail with hemispherical head and square-section forged shaft (0.9-1.1 cm thick). End broken off. Length 7.7 cm; diameter of head 1.8 cm.

K 103. U6 courtyard, V-4. Find list 1/70-71. 1974. Pl. 163.

Nail with hemispherical head and square-section forged shaft (0.5-0.9 cm thick). Length 6.3 cm; diameter of head 2.0 cm.

K 104. U6 courtyard, V-2. 1973. Pl. 163.

Fragmentary nail with hemispherical head and square-section forged shaft (1.2 cm thick). End broken off. Length 6 cm; diameter of head 2.1 cm.

K 105. U6 courtyard. 1972. Pl. 163.

Fragmentary nail with hemispherical head and square-section forged shaft. End broken off. Length 5.7 cm; diameter of head 2.8 cm.

K 106. U6 courtyard, E-3. Pls. 163 and 167.

Fragmentary nail with hemispherical head and forged square-section shaft. End broken off. Length 6.4 cm; diameter of head 2.4 cm.

K 107. U6 courtyard, D-2. 1972. Pl. 163.

Fragmentary nail with hemispherical head and square-section forged shaft. Length 3.2 cm; diameter of head 1.8 cm.

K 108. U6 courtyard, D-2. 1972. Pl. 163.

Fragmentary nail with hemispherical head and circular forged shaft. End broken off. Length 3.0 cm; diameter of head 2.0 cm.

K 109. U6 courtyard, V-4. Find list 1/66-69. 1973. Pl. 163.

Fragment of a nail with hemispherical head and circular forged shaft (diam. 1.3 cm). End broken off. Length 4.0 cm; diameter of head 1.5 cm.

K 110. U6 courtyard, D-2. 1974. Pl. 163.

Fragment of a nail with hemispherical head and square-section forged shaft. Length 3.2 cm; diameter of head 1.7 cm.

K 111. U6 courtyard, D-6. Find list 17. 1972. Pl. 163.

Fragmentary nail with hemispherical head and circular forged shaft (diam. 1.3 cm). The shaft is short and tapering. Length 4.0 cm; diameter of head 2.0 cm. Possibly, this is a shorter variety of our type 1 nail.

K 112. U6 courtyard, D-5. 1973. Pl. 163.

Fragmentary nail with hemispherical head and circular forged shaft (diam. 1.0 cm). End broken off. Length 2.8 cm; diameter of head 1.8 cm.

K 113. U6 courtyard, V-2. 1971.

Fragmentary nail with hemispherical head and circular forged shaft (diam. 1.3 cm). End broken off. Length 4.0 cm; diameter of head 2.2 cm.

Iron nails of the second type are up to 5.0 cm long with flat or flattened hemispherical heads. The shafts of these nails are thinner than those of the type-1 iron nail. The number of type-2 nails found is very small; they perhaps served for fastening together thin boards.

K 114. U6 courtyard, B-5. 1973. Pl. 163.

Fragmentary nail with broad flat head and thin circular shaft (diam. 0.3-0.9 cm). The pointed end is broken off. Length 3.5 cm; diameter of head 1.8 cm.

K 115. U6 room 13. Find list 8/60. 1972. Pl. 164.

Nail with small flat head and circular shaft (diam. 0.4-0.8 cm). Length 4.5 cm; diameter of head 1.0 cm.

K 116. U6 room 24. Find list 8/18. 1972. Pl. 164.

Fragmentary nail with small flat head and forged square-section shaft (0.5 cm thick). Corrosion has partly destroyed the head. Length 4.2 cm; diameter of head 0.9 cm.

Only two specimens of the type-3 iron nail were found. These are heavy nails with a flat, very broad head and circular shaft. Like a couple of the type-2 nails, the type-3 ones were found inside one of the rooms rather than in the courtyard; hence they were probably only used for finishing interior parts of the building.

K 117. U6 room 13. Find list 8/61. 1971. Pl. 164.
Nail with a heavy flat head and circular shaft (diam. 0.6-1.4 cm). Length 3.9 cm; diameter of head 5.2 cm.

K 118. U6 room 13. Find list 8/61. 1971. Pl. 164.
Nail with a heavy, broad, flat head and a circular shaft (diam. 0.6-1.4 cm). Length 7.3 cm; diameter of head 4.8 cm.

It was impossible to assign quite a number of very poorly preserved nail fragments to any of the three types described above; for that reason they are catalogued in the following section without a type attribution.

K 119. U6 room 12. Find list 6/73. 1971. Pl. 164.
Fragment of square-section shaft of a forged nail. Length 10.5 cm. The fragment is bent at right angle, and further bent at its pointed tip.

K 120. U6 room 14. Find list 7. 1971. Pl. 164.
Fragment of circular nail-shaft (diam. 0.6 cm). Length 6.7 cm.

K 121. U6 courtyard, V-4. Find list 1/66-69. 1973. Pl. 164.
Fragment of square in section shaft of a nail (0.8 cm thick). Length 6.5 cm. The lower end is bent at an angle of 100 degrees.

K 122. U6 courtyard, V-4. Find list 1/66-69. 1973. Pl. 164.
Fragment of square-section shaft of forged nail (1.0 x 1.0 cm). Length 6.3 cm.

K 123. U6 courtyard, G-5. Find list 16. 1972. Pl. 164.
Fragment of circular shaft of a nail (diam. 0.8 cm). Length 6.8 cm. Bent at right angle.

K 124. U6 room 25. Find list 9. 1972. Pl. 164.
Fragment of square-section shaft of forged nail (0.7 x 0.7 cm). Length 5.6 cm.

K 125. U6 room 25. Find list 9. 1972. Pl. 164.
Fragment of square-section shaft of a nail (0.7 x 0.7 cm). Length 6.1 cm. Bent.

K 126. U6 room 12. Find list 6/73. 1973. Pl. 164.
Fragment of square-section shaft of forged nail (0.8 x 0.8 cm). Length preserved 5.2 cm.

K 127. U6 courtyard, D-6. Find list 17. 1972. Pl. 164.
Fragment of square-shaft of forged nail. Length 2.5 cm.

K 128. U6 courtyard, V-4. 1973. Pl. 164.
Fragment of square-section shaft of forged nail. Length 2.9 cm.

K 129. U6 room 23. Find list 7/29. 1972. Pl. 164.
Fragment of circular shaft of a nail (diam. 0.7 cm). Length 3.8 cm.

K 130. U6 courtyard, V-5. 1973. Pl. 164.
Fragment of square-section shaft of a forged nail (0.9 cm thick). Length 5.7 cm.

K 131. U6 courtyard, V-4. Find list 1/66-69. 1973. Pl. 164.
Fragment of square-section shaft of forged nail (0.7 x 0.7 cm). Length 3.4 cm. Bent.

K 132. U6 courtyard, V-2. 1973. Pl. 164.
Fragment of square-section shaft of forged nail (0.7 cm thick). Length 2.5 cm.

K 133. U6 courtyard, V-2. 1973. Pl. 164.
Fragment of circular shaft of a nail (diam. 0.9 cm). Length 2.3 cm.

K 134. U6 courtyard, V-2. 1973. Pl. 164.
Fragment of square-section shaft of forged nail (0.8 x 0.6 cm). Length 3.5 cm

K 135. U6 courtyard, V-2. 1973. Pl. 164.
Fragment of square-section shaft of forged nail (0.6 x 0.9 cm). Length 2.8 cm.

K 136. U6 courtyard, V-2. 1973. Pl. 164.
Fragment of square-section shaft of forged nail (0.6 x 0.6 cm). Length 3.2 cm.

K 137. U6 courtyard, V-2. 1973. Pl. 164.
Fragment of square-section shaft of forged nail (0.8 x 0.8 cm). Length 2.8 cm.

K 138. U6 courtyard, V-2. 1973.
Fragment of square-section shaft of forged nail (0.6 x 0.6 cm). Length 3.3 cm.

K 139. U6 room 23. Find list 7/29. 1972.
Fragment of an iron object, possibly a nail. So badly corroded that the original shape is impossible to determine. Diameter 1.8-2.0 cm; length 4.8 cm.

K 140. U6 room 24. Find list 8/19. 1972.
Fragment of an iron object, possibly a thin nail. Diameter 0.4 cm; length 1.9 cm.

AGRICULTURAL TOOLS

At present several types of sickle are known from excavations of ancient sites in the northern Black Sea area. The archaic sickles from the Lower Bug regions had no clamps or sockets for attaching the blade to the handle; instead, the near end of the blade was simply inserted into the handle,[9] the sickle of the early Hellenistic period from the settlement of Kozyrka XII was slightly more sophisticated in that it had a tang for insertion into the handle. The closest parallel to our sickles is a fragment of a sickle with an open handle clamp from the settlement of Kholm A near Kimmerikon.[10] Sickles of later periods are somewhat different in shape from those found during excavation of U6.[11]

K 141. U6 room 3. Find list 6/48. 1969. Pl. 168.

Sickle. The curved blade up to 3.0 cm wide tapers smoothly to the tip and the heel is fashioned to form an open clamp-like socket into which a wooden handle was inserted secured by means of iron rivets. Length along the back together with the handle 42.0 cm. Length of the blade 29.0-30.0 cm; length of the clamp-socket 7.0 cm. The piece is to be classed as an asymmetrical sickle. First published by A.N. Ščeglov.[12]

K 142. U6. Pl. 168.

Fragmentary sickle with its slightly curved blade complete. The handle is missing. Length along back of sickle 17.0 cm. The blade is 1.8 cm wide, and tapers smoothly towards the tip.

K 143. U6 room 3. Find list 6/43-44. 1969. Pl. 168.

Two fragments of a sickle; the middle section of the blade is missing. The blade is slightly curved; it is 2.6 cm wide and tapers smoothly towards the tip. Like **K 141** the heel was furnished with a clamp-socket for the insertion of a wooden handle. Length of the clamp 6.0 cm.

K 144. U6.

Fragment of a sickle. A section of the blade with an open clamp-socket for the handle is preserved. Length 17.0 cm; blade width 3.0 cm. First published by A.N. Ščeglov.[13]

K 145. U6 room 12. Find list 6/72. 1971. Pl. 165.

Fragment of a sickle blade. The handle and most of the sharply curved blade are missing. It is impossible to determine the original dimensions. The back or outer edge is 0.5 cm thick, while the cutting edge is thin and sharp. Length preserved 14.0 cm; blade width 2.2 cm.

K 146. U6 room 11. Find list 5/14. 1971. Pl. 165.

Fragment of a falx (or cutting hook) with slightly curved blade. The thickness of the back or outer edge is up to 0.8 cm; however, the cutting edge is incompletely preserved because of corrosion. The blade now is 2.0 cm wide, but was evidently wider originally. Length of the fragment preserved 12.3 cm. The implement may probably have been a scythe.

K 147. U6 courtyard, Zh-3. 1973. Pl. 168.

Plough-share; forged from an iron bar not less than 29.0 cm long and 5.0 to 8.0 cm wide. The operative part is rounded and flattened like a trowel 8.0 cm wide and constituted the cutting blade (or sole) of a heavy primitive plough. Published by A.N. Ščeglov.[14]

Quite a number of pruning knives, often also called vine-dresser's knives, have been found in the Black Sea area;[15] these knives, however, differ from the single specimen in our collection in having wider and more sharply curved blades.[16] Nevertheless, in view of its general proportions and the manner in which the wooden handle was secured, our piece should certainly be classed as a knife intended for horticultural purposes.

K 148. U6 courtyard, D-5. 1973. Pl. 168.

Pruning knife with a wide blade and clamp-socket for attachment of a wooden handle. The back of the blade is sharply curved; the cutting edge is straight. Length of the knife 12.0 cm; width of the widest part 3.0 cm; length of the cutting edge, excluding the clamp-socket, 7.5 cm. The clamp makes a single whole with the blade and consists of two semi-cylindrical projections between which the wooden handle was secured.

K 149. U6 room 13. Find list 8/55. 1971. Pl. 168.

Hoe. The blade is forged from an iron sheet 32.8 x 10.5 cm to which is welded a long socket for the insertion of a wooden shaft. Length of the socket 18.0 cm; diameter 3.5 cm; inner diameter 2.0 cm. The working edge of the blade is sharp and rounded, and the shoulders of the blade are equal in size (13.0 cm). No similar implements from excavations of ancient sites in the northern Black Sea area are known to us.

KNIVES

K 150. U6 room 24. Find list 8/20. 1972. Pls. 165 and 169.

Fragments of a large knife. The point of the blade and the tang are missing. The back is slightly curved; the cutting edge of the blade is straight. Thickness of the back 0.6 cm; width of the blade 2.5 cm; length 13.0 cm. Similar blades are known from Olynthos.[17]

K 151. U6. Pl. 169.

Fragment of the tang and a part of the blade of a knife. The tang curves slightly downwards; the blade is wider than the tang and both are forged from a single flat bar of metal. Length preserved 14.4 cm; tang width 1.5-1.7 cm; blade width 1.9 cm.[18]

K 152. U6 courtyard, D-6. Find list 17/125. 1972. Pls. 165 and 169.

Fragments of a knife. The point of the blade and the tang are missing. The back of the blade is slightly curved; the cutting edge is worn and slightly curved. Length 11.5 cm; blade width 2.2 cm. The transition between the blade and tang is preserved; the tang is thinner than the blade and has two smooth ledge-like projections at the point of transition.

K 153. U6. Pl. 169.

Fragmentary knife with a slightly curved back. The point and part of the tang are missing. At the junction between tang and blade a hole for a rivet is preserved. Length 9.4 cm; blade width 2.0 cm; tang width 1.0 cm. The cutting edge is thin, smooth, and almost straight, though slightly worn.

K 154. U6 room 13. Find list 8/54. 1971. Pl. 169.

Knife with a humped back. The cutting edge is straight and smooth; the blade is separated from the tang by a small ledge-like projection. Length 6.7 cm; blade width 1.6 cm; tang width 1.0 cm.

K 155. U6. Pl. 169.

Knife with a humped back. The cutting edge is straight and slightly worn. The blade is separated from the tang by a small ledge-like projection. Length 10.2 cm; blade width 2.1 cm; tang width 1.3 cm.

K 156. U6. Pl. 169.

Knife with a humped back. The cutting edge is badly worn. The blade is separated from the tang by a smoothly curving ledge-like projection. Length 9.6 cm; width 1.8 cm; tang width 0.9 cm.

K 157. U6 courtyard, B-6. 1971. Pl. 165.

Fragment of a blade point. The back is slightly curved; the cutting edge is straight. Length 5.2 cm; width 1.9 cm.

K 158. U6 courtyard, B-3. 1971. Pl. 165.

Fragment of a blade point. Length 3.9 cm; blade width 1.5 cm.

K 159. U6 room 29. Find list 13/15. 1972. Pl. 165.

Fragment of tang of a knife with a part of the blade. The tang is separated from the blade by a small ledge-like projection. Length 7.3 cm; blade width 1.8 cm. The tang bears traces of the wooden facings that had formed the handle.

K 160. U6 room 33. Find list 4. 1973. Pl. 165.

Fragment of tang of a knife with a part of the blade. The tang is the same width as the blade. Length 7.2 cm; width 2 cm. Three iron rivets for securing a wooden handle are still attached to the tang.

K 161. U6 room 13. Find list 8/66. 1973. Pls. 165 and 169.

Iron facing of a knife handle. This consists of a thin plate bent in half thus forming a type of sheath or socket into which the tang was inserted; three rivets for securing the tang are still in place. Twelve holes are bored through the facing making two rows – six holes in each row. Length 7.0 cm; width 1.5 cm.

HOOKS

K 162. U6 courtyard, Zh-2. 1973. Pl. 170.

S-shaped hook made from a length of circular rod 1.0-1.5 cm in diameter. One curve of the S is small and forms a small hook bent at an acute angle; the opposite curve is broader and deeper, but also ends in a hook bent at an acute angle. Length 24.0 cm.

K 163. U6. Pl. 165.

Fragmentary hook made from a rod of oval section (mean diameter 1.8 cm). Only part of it, 6.5 cm long, is preserved. The curve of the hook is tight and bent at an acute angle.

S-shaped hooks were of course needed in any house for various practical purposes; however, finds of hooks are not all that common in excavations. Fragments of hooks dated to the first centuries A.D. have been found in Olbia;[19] and we may also note a hook found at Olynthos[20] which, however, differs from those from Panskoye I in having one end in the form of a round eye for threading a rope through or for the insertion of a rod. The specimens from U6 were intended to have one end hooked over a fixed support, probably a wooden rod, though we should not rule out the possibility that some of the hooks were suspended from a rope or line.

TOOLS

The set of tools described below (**K 164-169**) is unique in the entire northern Black Sea region and perhaps also the whole Mediterranean. Most of the items are connected with woodworking, a fact that is not surprising when we take account of the wide dissemination of woodworking skills and the demand for good carpenters in the construction of settlements on a large scale in the north-western Crimea in the late 4th and early 3rd centuries B.C. What may surprise us, however, is not only the well-preserved state but also the composition of the set, which includes all the tools needed by a carpenter, from drills to axes.

K 164. U6 courtyard, E-6. Find list 17/126. 1972. Pl. 166.

Iron tool, probably a narrow chisel, made from a bar of rectangular section (0.6 x 0.9 cm). One end is flat and sharp. Length 18 cm.

K 165. U6 room 21. Find list 13/10. 1972. Pl. 166.

Broad chisel, consisting of a bar of rectangular section (0.8 x 2.0 cm). Length 18.2 cm. One end is pointed and slightly bent.

K 166. U6 courtyard, B-6. 1971. Pl. 166.

Chisel, consisting of a blade with rounded corners (0.2-0.3 cm thick). The two edges of the blade are bent towards each other but do not meet. Both ends of the tool may have been the operative parts since both are sharp. Length 8.3 cm; diameter 2.0 cm.

Chisel finds are rare; however, all known parallels are of a similar type to our **K 164-166**. Chisels of this shape come from Grave no. 88 in the necropolis of Zolotoye[21] and from Olbia.[22]

K 167. U6 room 13. Find list 8. 1971. Pl. 169.

Bow-drill, basically consisting of a flat narrow iron bar 0.9 cm wide and 0.6 cm thick. One end is rounded and pierced by a hole 0.3 cm in diameter, and the other end is pointed; while the central section 16.0 cm long, is of circular section and seems to have had a threading for the accommodation of the bow-string necessary for the drilling process. Length of drill 39.0 cm.

K 168. U6 room 13. Find list 8/57. 1971. Pl. 170.

Forged axe. The socket for the insertion of the handle is placed off-centre towards the butt. The top side of the axe curves slightly downwards at the butt, whereas the under side forms a pronounced concave curve, which means that the cutting edge is prolonged up to 4.5 cm. Length 18.8 cm; width 5.0 cm; height 4.3-4.5 cm; diameter of socket 1.8 cm.

K 169. U6 courtyard, D-6. 1973. Pl. 166.

Fragment of the head of an axe. Badly corroded. It is impossible to determine the type. Length preserved 6.7 cm; diameter 3.9 cm.

IRON BUCKLES

Ring-like buckles of both iron and bronze were made in Classical and Hellenistic times and are quite widespread in the steppe zone of the northern Black Sea area. Some scholars consider them to be, specifically, belt buckles[23] and point out that they were used over a wide area from Pannonia to Urals during the entire Scythian period up to the Middle Ages.[24] However, there are certain iron rings among the Olynthian material that, although very close to such iron buckles in both shape and size, were obviously not connected with wearing apparel but served some other purpose.[25] This assessment looks all the more probable since numerous fragments of several other similar rings (**K 172-173**) were found at U6 near buckle **K 171**. Moreover, the latter buckle itself was agglomerated with one of these fragments, which, judging by what survives, belonged to large rings 10-12 cm in diameter.

K 170. U6 room 13. Find list 8/59. 1971. Pl. 165.

Buckle. Made from a length of rod (0.7 cm thick); the ends of the rod do not actually meet and are bent in opposite directions from each other. Diameter 5.9 cm; inner diameter 4.7 cm.

K 171. U6 courtyard, B-6. 1973. Pl. 166.

Buckle. Made from a length of rod (0.7-0.9 cm thick); the ends of the rod do not actually meet and are bent in opposite directions from each other and flattened at the tips to form a pair of finial knobs. Diameter 6.0 cm; inner diameter 4.4 cm.

K 172. U6 courtyard, B-6. 1971.

Fragment of iron ring or buckle of the same type as **K 171**. Made from a length of rod (0.7-0.9 cm thick). Length 4.2 cm; diameter of ring 5.0 cm.

K 173. U6 courtyard, B-6. 1971. Pl. 166.
Twelve fragments of rings. The fragments are of an equal size; some have agglomerated together. All the fragments consist of lengths of rod 0.5-0.6 cm in diameter. Judging by the configuration and number of fragments there were originally no fewer than two rings 10-12 cm in diameter.

WEAPONS

K 174. U6 room 12. 1971. Pl. 170.
Iron machaira. The sword has a single-edged slightly curved blade that broadens out midway along its length. The pointed tip is broken off; the hilt is crumpled and broken; and the cutting edge is chipped and bent. Length 50.0 cm; width of the blade in its widest point 6.0 cm.

Only a few specimens of this type of sword have been found in the northern Black Sea area, most of them fragmentary.[26] A fairly complete example comes from a grave near Karantinnoe Highway in Kerch,[27] and another, complete, specimen was found in Grave no. 41 in the necropolis of Gorgippia;[28] a fragment of the blade of a *machaira* was found at the settlement of Kozyrka II near Olbia.[29]

K 175. U6 courtyard, E-4. 1973. Pl. 166.
Dart-head. A three-sided head makes up one third of the total length of the dart. It is rhomboid in section and has prominent ribs. The head has a tang for the insertion into the shaft. Length 13.6 cm; length of the head 4.2 cm; width of the blade 2.0 cm; width of tang 0.5-1.0 cm. Darts with tangs for insertion into the shaft are not characteristic of sites in the northern Black Sea area where the prevailing majority of spears and darts have hollow ferrules for the insertion of the shaft. Spears and darts with solid tangs, on the other hand, are common among Greek weapons. Our specimen belongs to type E according to Robinson.[30]

K 176. U6 room 35. 1973. Pls. 166, 170.
Cone-shaped hollow spear butt-end. Length 7.0 cm; diameter 1.9 cm.

K 177. U6. Pl. 170.
Spear butt-end in the form of a cylindrical pipe with a cone-shaped tip. Length 9.8 cm; diameter 1.4 cm.

K 177a. U6. Pl. 167.
Arrowhead. Three-bladed type with long socket. Lenght 4.1 cm.

MISCELLANEOUS IRON OBJECTS

K 178. U6 room 3. Find list 6/48. 1969. Pl. 170.
Five-pronged fork. This item is made from a forged bar 32.0 cm long and 1.2 cm in diameter, towards one end of which four prongs are welded symmetrically to form a five-pointed star-like whole. The length of the prongs is 4-5 cm; two of them are broken off.

No other implements such type have been reported from the northern Black Sea area. D.M. Robinson considered a similar fork, though made of bronze, to be a hook for removing hot meat from a boiling pot, and refers for confirmation both to numerous examples of such utensils represented on vases and to parallels found during excavations and kept in various collections.[31]

K 179. U6 room 12. Find list 6/66. 1971. Pl. 170.
Part of a lock-attachment plate 8.8 x 10.6 cm; a hole for the key is cut through the centre. Most probably the lock was mounted on a chest rather than a door.[32]

K 180. U6 room 12. Find list 6/69. 1971. Pl. 170.
Folding clamp that formed part of a locking device. A quite similar clamp, though of a different size, was found in Grave no. 57 in the necropolis of Gorgippia among metal parts of a box.[33]

OBJECTS OF UNDEFINED PURPOSE

K 181. U6 well, no. 103. 1974. Pl. 166.

Fragment of a badly corroded object. It is oval in section (2.2 x 1.0 cm). Length 4.6 cm.

K 182. U6 room 29. Find list 13/16-17. 1972. Pl. 166.

Fragment of iron plate 0.3 cm thick. Length 5.4 cm; width 2.5 cm.

K 183. U6 room 13. Find list 8/54. 1971. Pl. 166.

Fragment of an object consisting of three rods all attached to a single base. Diameter of the rods 0.9 cm; length 3.1 cm; width 2.3 cm.

SILVER OBJECTS (**K 184-188**)

Our collection includes only a few objects made of silver. This is just as we might expect, since silver was an expensive metal and was used only in the manufacture of ceremonial, prestigious, or sacral articles.

K 184. U6 room 13. Find list 8. 1971.

Small finger-ring of circular section. Diameter 1.9 cm; inner diameter 1.2 cm. Disintegrated during cleaning.

K 185. U6 room 27. Find list 11/14. 1972. Pl. 166.

Pendant. Made from a length of circular wire bent to form a loop; the ends are each bent round again. Dimensions 2.5 x 1.4 cm.

K 186. U6 room 12. Find list 6/26. 1971. Pl. 166.

Fragments of two lamination plates (one complete plate and two fragments of a second plate) probably intended as applied decoration for a wooden box. Small nail-shaped projections or pegs are soldered to the back or lower side of the complete plate as a means of attaching it to its base or wooden backing. The plates are thin and smooth and have rounded corners. Length of the complete specimen 4.3 cm; width 1.0 cm; thickness 0.2 cm. Dimensions of the fragments are 1.5 x 0.8 cm and 1.0 x 0.7 cm; both 0.2 cm thick.

K 187. U6 room 12. Find list 6/65. 1971. Pl. 166.

Disintegrated silver plate in three fragments probably for applied decoration of a wooden box. Small nail-shaped pegs are soldered to the back or lower side as a means of attachment. Dimensions preserved: length 6.1 cm; width 2.0 cm. A representation of a human leg modelled in low relief is preserved on the front or upper face. The length of the leg down to the knee-joint is 3.2 cm suggesting that the total height of the figure as originally shown was not less than 10 cm. Plates **K 186** and **K 187** in all likelihood served as applied decorations for a wooden box.

K 188. U6 courtyard, D-5. 1974. Pls. 149 and 167.

Figurine of a coiled snake with upraised head (for particulars see **G 17**). A close parallel was found during excavation of the rural settlement of Andreevka-Yuzhnaya in the eastern Crimea.[34]

ADDENDA

K 189. U6 room 13. Find list 8. 1971.

Iron rod. Length 85.0 cm. One end is round in section with the diameter of 1.0 cm. The other end is thicker and hammered square in section with an average side of 2.0 cm. The tip is shaped shelf-like and sharpened. The purpose of the object is not quite clear. Most probably it was used in agriculture for planting.

NOTES

1. Robinson 1941, nos. 2626-28, 2632, 2633.
2. For comparisons, see the exhaustive summary of finds of lead weights from Olbia and Chersonesos by V.V. Krapivina 1980, 83-98; 1988, 188-194; 1997, 63-65.
3. Krapivina 1993, 133.
4. For variant A, *cf.* Robinson 1941, nos. 1361-1394, pls. XCI-XCII; for variant B, *cf.* Robinson 1941, nos. 1454-1482. pl. XCIV.
5. *Cf.* Cvetajeva 1951, 70; Arsen'jeva 1977, pl. XXXIX; Parovič -Pešikan 1974, 138; Kozub 1974, 144, fig. 59; Skudnova 1988, 24. *etc.*
6. *Cf.* Petrenko 1978.
7. *Cf.* Kryžyckij *et al.* 1989, figs. 28, *1, 3, 5-8.*
8. Kruglikova 1975, fig. 80; for particulars *cf.* Ščeglov 1978, 108.
9. *Cf.* Kryžyckij *et al* 1989, figs. 28, *1, 3, 5-8.*
10. Kruglikova 1975, fig. 80; for particulars *cf.* Ščeglov 1978, 108.
11. *Cf.* Šelov 1972, 77-78; Krapivina 1993, fig. 84; Alekseeva 1997, pls. 116, *10*, 250, *5, 6.*
12. Ščeglov 1978, fig. 58.
13. Ščeglov 1978, fig. 58.
14. Ščeglov 1978, 107, fig. 57; on plough-share finds in the northern Black Sea area, *cf.* Kruglikova 1975, 163-168.
15. Kruglikova 1975, 178-180, figs. 84-87.
16. Ščeglov 1978, fig. 62.
17. Robinson 1941, nos. 1601, 607.
18. *Cf.* Robinson 1941, no. 1603.
19. Krapivina 1993, figs. 87, *2, 3, 5, 7, 9.*
20. Robinson 1941, no. 2645, pl. CLXX.
21. Korpusova 1983, fig. 9, *9.*
22. Krapivina 1983, fig. 86, *11.*
23. Korpusova 1987, 69, pl. 20, *4.*
24. Korpusova 1987, 69, *cf.* also the references.
25. Robinson 1941, pl. CLXIX, 2637.
26. *Cf.* Sokol'skij 1954, 142 ff.
27. Ašik 1849, pl. II, fig. I.
28. Alekseeva 1982, fig. 31.
29. Domanskij and Marčenko 1980, 37, fig. 12, *21.*
30. Robinson 1941, F 392.
31. See Robinson 1941, 198. pl. L, 623.
32. On ancient locks, *cf.* Diels 1934, 41-55.
33. Alekseeva 1982, fig. 51, *5.*
34. Kruglikova 1975, 80, fig. 35, *2.*

STONE OBJECTS

Eugenii Ya. Rogov

The collection of articles made from different kinds of stone is relatively small – it amounts to only thirty catalogued items. As regards the intended application of the stone objects, we should distinguish, first a group of stone implements (**L 1-26**), then two objects that fall into the category of stone pottery – a louterion and a mortar (**L 28-29**) – and finally a stone counterbalance (**L 30**). All these objects are related to the everyday domestic life of the settlement inhabitants. The only other item in our collection (**L 27**) is a fragment of some architectural detail, and it was probably just chance that brought it to building U6 for reuse, since no other details connected with its particular order of architecture have been found there.

The largest and most representative group is made up of stone implements used for various different purposes in the household. It should be noted that here for the first time we have a truly comprehensive set of implements to be found during the excavation of such an architectural complex as building U6. It is a matter of no less importance that in order to elucidate the functional purpose of each tool or implement all such items have been examined in the Laboratory of Archaeological Technology at the Institute of the History of Material Culture of the Russian AS. This research was carried out by Dr. N.N. Skakun; the rock identification was the work of the geologist G.M. Kovnurko.

Rocks of varying degrees of hardness were used as the raw material for making the tools included in our collection: metamorphic sandstone, diabase, organogenic limestone, gneiss. None of these rocks is found in the vicinity of the settlement or, indeed, anywhere else within the Tarkhankut Peninsula area, so we must conclude that all our objects were imported here either as half-finished products or as completed articles. The nearest region where these rocks are to be found in any abundance is the south coast of the Crimean peninsula. However, it cannot be excluded that they could have come from the southern Black Sea coast.

Some of the implements were shaped as cubes or discs – for this purpose the *piquage* technique (that is, gradual chipping away be repeated strokes with a pointed implement), smoothing with an abrader, or sometimes even polishing was used.

Noteworthy is the distribution of the find-spots of the stone implements within the area of building U6. The majority of the implements were found lying on the floors of rooms and only some isolated examples were in the courtyard. In the rooms, the find-spots of the stone objects were irregularly distributed. Thus eight abrading-tools and graters were found in *room 12* (the sanctuary) and *room 13* adjoining it; in *room 3*, there were six objects; three specimens were found on the floor of *room 33*, and one in each of *rooms 1* and *28*. There were no stone tools in any of the other rooms of building U6. It is quite reasonable to suppose that whetting and sharpening of the cutting edges of metal tools was done in the places where such tools were actually used.

The analysis of find-spots given above enabled us to identify the functions of the majority of the stone objects. However, in three cases (**L 8**, **L 11**, **L 23**) an exact identification of function was not possible because the tools were evidently not in use for any length of time, and so there are very few physical signs of the use(s) they might have been put to. Another of the objects (**L 4**) indeed showed no traces of use at all; judging by its shape it was a plug for stopping certain narrow-mouthed vessels – most probably amphorae.

The identifiable tools most strongly represented in our collection are, first, two different

types of abraders (whetstones or grindstones), for whetting and sharpening the blades of metal tools (13 specimens), closely followed by graters (*palettes*) for grinding both organic and mineral materials (8 specimens). Tools that evidently had multiple functions were also identified. Thus two items showed traces of having been used both as abrading-tools and as graters; three others had been used as small hammers for light smithery and also as abraders; and yet another was simultaneously an anvil and an abrader. On the surface of some of the objects microscopic particles of copper or bronze oxides are preserved; on the operative parts of most of the abraders there were iron oxides; and on one of the implements microscopic remains of ochre have been identified.

CATALOGUE

L 1. U6 room 1. Find list 1/9. 1969. Pl. 171.

Stone tool made from a smooth round pebble. Bifunctional: 1, used as a percussive tool (small hammer) – there are traces of one of the butt-ends having been worn out by constant use, the other end is broken off; 2, used as an abrader for sharpening metal tools.

Operative parts: the three flat faces.

Material: dense metamorphic sandstone.

Dimensions: length 13.2 cm, width 6.7 cm, thickness 5.0 cm.

L 2. U6 room 3. Find list 6/57. 1969. Pl. 171.

Stone tool. An abrader for the fine grinding (whetting) of blades of metal tools.

Operative parts: the two opposite flat faces.

Material: crystal slate (probably gneiss).

Dimensions: length 7.5 cm, width 7.2 cm, thickness 3 cm.

L 3. U6 room 3. Find list 6/57. 1969. Pl. 171.

Implement made from a smooth pebble. An abrader for sharpening metal tools.

Operative parts: the two opposite flat faces.

Material: dense metamorphic sandstone of nearly square shape; the four flat surfaces were worked by means of the *piquage* technique.

Dimensions: length 7.4 cm, width 6.6 cm, thickness 4.3 cm.

L 4. U6 room 3. Find list 6/56. 1969. Pl. 171.

Stone plug shaped as truncated cone. The sides were worked by means of the *piquage* technique.

Material: dense organogenic limestone.

Dimensions: upper-plane diameter 6 cm, lower-plane diameter 8.2 cm, height 4.6 cm.

L 5. U6 room 3. Find list 6/58. 1969. Pl. 171.

Stone implement made from a smooth pebble. Grater (palette) for grinding ochre.

Operative parts: the two opposite flat faces. On one of the faces is a natural pit where microscopic remains of ochre are preserved. On the opposite face, remains of mineral pigment have also been identified.

Material: medium-grained metamorphic laminated sandstone.

Dimensions: length 12.4 cm, width 3.3-5.8 cm, thickness 1.9 cm.

L 6. U6 room 3. Find list 6/58. 1969. Pl. 171.

Stone implement made from a flat pebble. Bifunctional: 1, used as a grater (palette) for grinding pigment, the operative parts are the two opposite flat faces; 2, used as an abrader for sharpening the blades of metal tools.

Material: dense medium-grained metamorphic sandstone.

Dimensions: length 15.9 cm, width 7.8 cm, thickness 1.9-2.6 cm.

L 7. U6 room 12. Find list 6/78. 1971. Pl. 172.

Stone implement made from a disc-shaped pebble. Bifunctional: 1, used as an anvil for smithing small objects, both the opposite flat faces of the stone being employed for the purpose; 2, used as a grater.

Material: dense metamorphic feldspar sandstone.

Dimensions: length about 7.6 cm, width 4.2 cm.

L 8. U6 room 12. Find list 6/70. 1971. Pl. 173.

Stone implement made from a round-shaped pebble. Grater (?); the fact that it was evidently not in use for any length of time makes it difficult to define the precise function(s) of this implement.

Material: metamorphic quartz-feldspar sandstone.

Dimensions: diameter 9.3 cm, thickness 3.9 cm.

L 9. U6 room 12. Find list 6/32. 1971.

Stone tool. An abrader for sharpening metal tools.

Operative parts: three faces.

Material: organogenic limestone.

Dimensions: length 8.9 cm, width 6.5 cm, thickness 2.8 cm.

L 10. U6 room 12. Find list 6/80. 1971. Pl. 173.

Stone tool. An abrader for sharpening the cutting edges of metal tools.

Operative parts: the two opposite flat faces.

Material: organogenic limestone with clearly discernible platelets of mica.

Dimensions: length 10.9 cm, width 9.6 cm, thickness 6.3 cm.

L 11. U6 room 12. Find list 6/81. 1969. Pl. 172.

Stone tool made from a flat rectangular pebble. Bifunctional: 1, used as a small hammer; the operative parts were both butt-end surfaces; 2, the two opposite flat faces were used as an abrader for sharpening the blades of metal tools. On one of these faces, particles of copper or bronze oxides are preserved.

Material: dense fine-grained metamorphic sandstone.

Dimensions: length 10.0 cm, width 5.5 cm, thickness 2.3-2.5 cm.

L 12. U6 room 3. Find list 6/58. 1971. Pl. 172.

Stone tool made from an oblong pebble. An abrader for sharpening the cutting edges of metal tools.

Operative parts: the two opposite flat faces; microscopic particles of ferrous oxide are preserved on both faces.

Material: dense metamorphic sandstone.

Dimensions: length 6.8 cm, width 3.2-4.6 cm, thickness 2.8 cm.

L 13. U6 room 13. Find list 8/63. 1971. Pl. 173.

Stone tool. A cylindrical pestle. One end is convex, polished to a lustre; the other end – the operative part – was used for grinding solids. Fashioned by means of an abrader and *piquage*.

Material: hard organogenic limestone.

Dimensions: length 11 cm, diameter 4.6-4.9 cm.

L 14. U6 room 13. Find list 2/64. 1971. Pl. 174.

Stone tool made from a flat pebble. An abrader for whetting the cutting edges of metal tools.

Operative parts: two opposite flat faces and one other side were utilized. On all three faces, particles of ferrous and copper oxides are preserved.

Material: fine-grained metamorphic sandstone.

Dimensions: length 12.0 cm, width 3.4 cm, thickness 0.9 cm.

L 15. U6 room 28. Find list 12/3. 1972. Pl. 172.

Stone tool. Bifunctional: 1, a grater for grinding mineral pigment; 2, an abrader for whetting the cutting edges of metal tools.

Operative parts: the two opposite flat faces. The sides and angles of the butt-end show traces of reuse, having been worn down by some hard material.

Material: dense metamorphic sandstone with a stratified structure.

Dimensions: length 15.9 cm, width 7.8 cm, thickness 1.9-2.6 cm.

L 16. U6 room 33. Find list 4/16. 1973. Pl. 172.

Stone tool. Bifunctional: 1, used as a small hammer; the operative parts were both the butt-end surfaces of the stone; 2, an abrader for whetting the cutting edges of metal tools; the operative parts were the two opposite flat faces.

Material: fine-grained metamorphic sandstone.

Dimensions: length 11.2 cm, width 5.6 cm, thickness 3.0 cm.

L 17. U6 room 33. Find list 4/14. 1973. Pl. 172.

Stone implement made from a disc-shaped pebble. A grater for grinding vegetable materials.

Operative parts: the flat faces.

Material: fine-grained metamorphic sandstone.

Dimensions: diameter 8.3 cm.

L 18. U6 room 33. Find list 4/15. 1973. Pl. 173.

Stone implement made from a globular pebble; the angles have been fashioned by means of *piquage*. A grater for grinding mineral pigments.

Operative parts: the four flat faces.

Material: dense fine-grained metamorphic sandstone.

Dimensions: length 5.9 cm, width 5.8 cm, height 5.5 cm.

L 19. U6 courtyard, B-6. Find list 16/124. 1972. Pl. 172.

Fragmented stone tool made from a flat pebble. An abrader for whetting the cutting edges of metal tools.

Operative parts: the two opposite flat faces.

Material: dense-grained metamorphic sandstone with inclusion of quartz grains.

Dimensions: preserved length 6.5 cm, width 4.3 cm, thickness 1.6 cm.

L 20. U6 courtyard, B-5. 1973. Pl. 173.

Stone tool made from a disc-shaped pebble. Bifunctional: 1, one of the flat faces was smoothed and polished, and used for grinding solid materials to powder; 2, the second flat face was used as a small hammer.

Material: dense laminated organogenic limestone.

Dimensions: diameter 5.3 cm, thickness 4.0 cm.

L 21. U6 courtyard, E-6. Find list 17/130. 1972. Pl. 173.

Egg-shaped pestle. The rounded end is polished.

Operative part: the cone-shaped butt-end, where cracks are clearly visible. It was used for grinding hard materials to powder.

Material: greenish diabase.

Dimensions: length 6.1 cm, diameter from 4.5 cm.

L 22. U6 courtyard, B-4. Find list 1/71. 1973. Pl. 172.

Fragmented stone tool made from a flat pebble. An abrader for whetting the blades of metal tools.

Operative parts: the two opposite flat faces.

Material: dense fine-grained metamorphic sandstone.

Dimensions: preserved length 6.5 cm, width 8.3 cm, thickness 2.6 cm.

L 23. U6 courtyard, B-4. Find list 1/125. 1973. Pl. 172.

Fragment of a stone tool in the shape of a truncated cone. On the surface, traces of sawing are clearly recognisable; the stone was polished with an abrader. The function has not been identified.

Material: dense fine-grained metamorphic sandstone.

Dimensions: preserved length 3.5 cm, diameter 1.4 cm.

L 24. U6 courtyard, B-4. 1973. Pl. 173.

Fragment of a stone tool made from a flat pebble. An abrader for whetting the blades of metal tools.

Material: dense fine-grained metamorphic sandstone.

L 25. U6 courtyard, B-6. Find list 6/124. 1972. Pl. 173.

Fragment of a stone tool made from a flat pebble. It has not been possible to identify the function; possibly an abrader.

Material: dense metamorphic sandstone.

Dimensions: 5 cm × 2.8 cm × 3 cm.

L 26. U6 room 12. Find list 6/44. 1971.

Stone tool made from a cube-shaped pebble. The angles have been rounded by means of *piquage*. A grater for grinding mineral pigment (ochre) to powder.

The operative surfaces are all the six faces of the stone; however, there are two opposite faces that are more worn by use than any of the others.

Material: hard laminated metamorphic sandstone.

Dimensions: 6.8 cm × 6.1 cm × 5.3 cm.

L 27. U6 room 11. Find list 5/63. 1971. Pl. 174.

Fragment of an architectural detail: more exact attribution is not possible. All sides of the stone are neatly worked; the back has been split off.

Material: dense fine-grained limestone of yellowish white colour (the so-called *Inkerman* rock).

Dimensions: height 8 cm, width 3.2 cm.

L 28. U6 room 16. Find list 10. 1971. Pl. 174.

Limestone louterion; the rim is upright and rounded on top; massively thick walls run smoothly down to the flat bottom. The two flattened handle-supports are just at the rim. One of handles has an incised mark E (see **H 17**).

Dimensions: mouth diameter 43.0 cm; bottom diameter 25.0 cm; height 18.0 cm; wall thickness 3.0-5.0 cm. Dimensions of handles: length 8.0 cm, thickness 4.0 cm, width 5.0 cm.

The vessel was cut from a single limestone block; both the inner and outer surfaces bear clearly visible traces of tool-marks. Split into several fragments at some time in antiquity, then restored.

L 29. U6 room 12. Find list 6. 1971. Pl. 174.

Oval limestone trough. The upright rim is cut off flat on top; massive walls run smoothly down to the flat bottom.

The dimensions of handles show slight differences. First handle: length 16.0 cm, width 11.0 cm, thickness at the wall surface 6.0 cm. The second handle is more massive: height 18.0 cm, width 19.0 cm. Dimensions of the vessel: maximum length 68.0 cm; maximum width 36.0 cm; height 33.0 cm. The trough is cut from a single block of Pontic limestone. Both the inner and outer surfaces, bear clearly visible traces of tool-marks. The vessel was split into several fragments; restored after excavation.

L 30. U6 room 12. Find list 6. 1971.

Counterweight. Made from a single fragment of limestone-shellrock. The corners of the stone are cut away thus rounding its shape. The lower side is flattened and crossed by a groove 3.0 cm wide and up to 0.5 cm deep for the accommodation of a wooden rod. The counterweight was fixed onto the rod by means of cords running round and over the upper side of the stone. Four additional grooves were gouged across the surface of the stone (at right-angles to the direction of the rod), thus providing slots in which to fix the encircling cords more securely. The width of these grooves is 2.0-2.5 cm and the depth up to 1.0 cm.

CERAMIC OBJECTS

Eugenii Ya. Rogov

There is one series of ceramic finds that is directly connected with the everyday economic activities of the settlement inhabitants – these are fishing-net weights, loomweights, *etc.* Some of these objects were made on the spot from a material that was always available and free – that is to say, clay, outcrops of which still exist today in the shoreline bluffs. Ordinary domestic hearths were evidently employed for the firing. Other objects in this series were made from parts of vessels that were broken or otherwise unfit for their normal use: thus kantharos feet, walls and feet of amphorae, *etc.* were adapted for new and different purposes. It should be noted that such utilisation of broken or defective ceramic vessels is a further indication of an extreme thriftiness if not stinginess among those who lived here.

The first category of these finds includes barrel- and disc-shaped spindle whorls used for increasing the weight of the spindles when twisting woollen yarn. Similar spindle whorls are very common on the sites of the northern Black Sea region, both in cities and rural settlements. Generally, they were made on the spot, although the high degree of standardisation among them does not rule out the possibility of specialised production.

M 1. U6 room 39. 1975. Pl. 175.

Hand-made barrel-shaped ceramic spindle whorl of dense well-kneaded paste that assumed a greyish black colour on firing. The surface is well smoothed. A hole, 0.6 cm in diameter, runs from top to bottom. Dimensions: D. 3.3 cm; H. 2.5 mm.

M 2. U6 courtyard, V-2. 1971. Pl. 175.

Hand-made barrel-shaped ceramic spindle whorl of greyish brown clay. The paste is dense and well-kneaded; uniformly fired. The surface is smoothed. A hole, 0.3 cm in diameter, runs right through the centre. Dimensions: D. 2.1 cm; H. 2.0 cm.

M 3. U6 courtyard, V-4. 1973. Pl. 175.

Ceramic spindle whorl of truncated bi-conical shape; made by hand from clay that assumed a greyish black colour on firing. The surface is smoothed. The paste is friable and tempered with finely ground sea-shells; poorly fired. The item is fragmented, the lower part having flaked off. Dimensions: D. of central hole 5.0 cm; maximum D. 6.9 cm; H. 4.0 cm.

M 4. U6 courtyard, V-4. 1973. Pl. 175.

Flat, disc-shaped ceramic spindle whorl; made by hand of poorly kneaded paste tempered with sea sand and pounded lime. On firing the colour became greyish black; judging by its imperfect hardness the article was poorly and irregularly fired. Dimensions: D. of central hole *c.* 0.5 cm; maximum D. 4.8 cm; thickness 1.2 cm.

As noted above, some of the spindle whorls were fashioned from fragments of ceramic vessels that were broken or had otherwise become unfit for use (**M 5-10**). Of those, four were made from black-glazed kantharoi feet,[1] and one (**M 11**) from the foot of a Chian amphora;[2] another (**M 12**) was made from the wall of a grey-ware jug.

M 5. U6 room 13. Find list 8/39. 1971. Pls. 63, 71 and 175.

Ceramic spindle whorl made from the foot of a black-glazed kantharos. The fracture surface (at the top) smoothed down. Dimensions: D. of central hole 0.5 cm; maximum D. 4.4 cm; H. 2.5 cm. *Cf.* **B 31**.

M 6. U6 room 22. Find list 6/10. 1972. Pls. 63, 71 and 175.

Ceramic spindle whorl made from the foot of a black-glazed kantharos. The fracture surface (at the top) rubbed down and smoothed with an abrader. Dimensions: D. of central hole 0.6 cm; maximum D. 4.0 cm; H. 2.4 cm. *Cf.* **B 67** and **H 24**.

M 7. U6 courtyard, B-6. Find list 16/105. 1972. Pl. 175.

Ceramic spindle whorl made from the foot of a black-glazed kantharos. The fracture surface (at the top) neatly smoothed with an abrader. Dimensions: D. of central hole 0.6 cm; maximum D. 4.0 cm; H. 2.4 cm. *Cf.* **B 86**.

M 8. U6 courtyard, B-6. 1971. Pl. 175.

Ceramic spindle whorl made from the foot of a black-glazed kantharos. The fracture surface (at the top) neatly smoothed with an abrader. Dimensions: D. of central hole 0.6 cm; maximum D. 4.0 cm; H. 2.7 cm. *Cf.* **B 83**.

M 9. U6 courtyard, D-2. 1973. Pl. 175.
Ceramic spindle whorl made from a Chian amphora foot. The fracture surfaces neatly smoothed with an abrader. Dimensions: D. of central hole 0.6 cm; maximum D. 4.3 cm; H. 2.9 cm.

M 10. U6 square A-1. Find list 17/112. 1972. Pl. 175.
Disc-shaped ceramic spindle whorl made from the wall of a grey-ware jug. The fragment was neatly chipped and smoothed round its edge to make it circular. Dimensions: D. of central hole 0.6 cm; maximum D. 3.5 cm; thickness 0.5 cm. Parallel and perpendicular grooves for some undefined purpose were scratched on both upper and lower surfaces of the disc.

A special group of finds comprises pyramidal ceramic weights. There is no generally accepted idea concerning the function of objects of this type. Some scholars regard them as sinkers for fishing-nets, while not ruling out their use for other purposes;[3] others consider them to be children's toys, supports used for cooking, components of cow-bells, objects connected with the fire-cult, or supports for spooling threads.[4] However, their main use was undoubtedly in weaving where they served as weights for tensioning the warp-threads of upright looms. The close link between weaving and domestic activities means of course that these weights formed an item of household equipment most commonly associated with the women of the house.[5]

At the same time, a considerable number of household articles of this kind were offered as votive gifts by their owners.[6] Imitations of such things as loomweights, it may be said, were presented to sanctuaries by the poorest members of the population, who lacked the means to buy expensive votive vessels.[7]

It seems highly probable that it is precisely in such a cultic context that the finds of pyramidal weights from the excavation of building U6 should be regarded. There are sufficiently good reasons for such a supposition. First and foremost, we must take into account exactly where these finds came to light: the majority were found in the western corner of the building; or, more precisely, four examples were found in *room 13*; and one in the neighbouring *room 17*; both *rooms 13* and *17*, it will be recalled, are situated close to the sanctuary and indeed seem to have been directly connected with it. Only one other, badly fragmented example, was found, and that was in the centre of the courtyard.

A second point in favour of a cultic, rather than a practical, use is that all the weights that make up our set differ in size, and accordingly in mass, thus any attempt to use them for uniform tensioning of the warp-threads of a loom would have been problematical (to say the least) and would certainly have resulted in a poor-quality cloth. And there is yet another reason why their use for tensioning threads was hardly possible or perhaps even completely impossible – they were all made from extremely poorly kneaded paste tempered with a large quantity of sea sand, and so imperfectly hardened that we cannot even be sure that the firing was carried out in kilns, rather than just by chance during some incidental fire; one thing that is certain, however, is that these items easily crumble to pieces. Finally, the fact that only seven of these small pyramidal weights have been found within the U6 area cannot be disregarded, since so small a number would hardly have sufficed for tensioning cloth.

All these points taken together would therefore suggest that the weights were never originally intended for any practical purpose, but were made as votive models imitating the corresponding household article.

M 11. U6 courtyard, V-4. 1973. Pl. 175.
Fragmented ceramic pyramidal weight made of porous greyish brown clay tempered with sea sand and crushed stone. The sides are smoothed; the upper part is not preserved. H. 4.4 cm. The break occurred at the point where the weight was traversed by a hole 0.4 cm in diameter.

M 12. U6 room 17. Find list 15/30. 1972. Pl. 175.
Ceramic pyramidal weight made of coarse poorly kneaded paste tempered with sea sand and pounded limestone; ir-

regularly and inadequately fired. Dimensions: H. 7.8 cm; base 5.4 x 5.6 cm; flat top 2.3 x 2.3 cm. The upper part of the weight is traversed by a hole 0.6 cm in diameter.

M 13. U6 room 13. Find list 8/52. 1972. Pl. 175.

Ceramic pyramidal weight made of non-homogeneous poorly kneaded paste tempered with sea sand and pounded limestone; irregularly fired; dirty grey in colour. Dimensions: H. 5.7 cm; base 3.0 x 3.4 cm; flat top 2.0 x 2.3 cm. The upper part of the weight is traversed by an oval hole 0.6 cm in diameter.

M 14. U6 room 13. Find list 8/52. 1971. Pl. 175.

Ceramic pyramidal weight made of non-homogeneous friable paste tempered with sea sand and pounded sea-shells; irregularly fired; greyish black in colour. The sides are smoothed. Dimensions: H. 5.8 cm; preserved W. of base 3.0 cm; flat top 1.8 x 2.1 cm. The upper part of the weight is traversed by an oval hole 0.3 cm in diameter.

M 15. U6 room 13. Find list 8/52. 1971. Pl. 175.

Ceramic pyramidal weight made of non-homogeneous friable paste tempered with pounded limestone, sea-shells, and sand; irregularly fired; greyish black in colour. Dimensions: H. 7.0 cm; base 4.7 x 4.7 cm; flat top 3.5 x 3.5 cm. The upper part of the weight is traversed by an oval hole 0.5 cm in diameter.

M 16. U6 room 13. Find list 8/52. 1971. Pl. 175.

Pyramid weight made of friable clay tempered with pounded limestone, sea-shells, and sand; inadequately fired; greyish black in colour. Dimensions: H. 6.9 cm; base 4.0 x 4.4 cm; flat top 3.5 x 3.5 cm. The upper part of the weight is traversed by a hole 0.8 cm in diameter.

M 17. U6. 1971. Pl. 175.

Fragmented pyramidal weight made of dense greyish brown clay tempered with pounded limestone and sand; regularly and finely fired. Only the lower part of the weight is preserved. Dimensions: preserved H. 5.0 cm; base 5.1 x 5.2 cm.

The spindle whorls found during the excavation point to the existence of home industry, in particular wool-working and the weaving of cloth, by the inhabitants of the settlement. Another series of objects forming part of our collection indicates that there was also a fishery here, for the flat ceramic discs with holes near their edges could only have been used as sinkers for fishing nets. The use of stones and fragments of amphora walls for making the bottoms of nets heavier (and therefore easier to set) was quite common; however, during the excavation of the farmhouse only one such improvised sinker was discovered (**M 18**), while of the specially made disc-shaped weights with holes near the edge for fixing them to the net there were three examples found. All three (two complete and one fragmented) were made of dense, well-kneaded paste tempered with fine admixtures, and had been well and uniformly fired. The holes for fixing the weights to the net were not drilled after firing but made in the raw clay.

M 18. U6 room 12. Find list 6/43. 1971. Pl. 175.

Fishing-net sinker made from an amphora wall from some unidentified centre in the Mediterranean area. The clay is brownish red with inclusions of mica. The broken edges of the fragment were shaped to form a disc and smoothed with an abrader; a hole 0.5 cm in diameter was drilled near the edge. D. of sinker 5.8 cm.

M 19. U6 courtyard, E-6. Find list 17/111. 1972. Pl. 175.

Disc-shaped ceramic net-weight made of dense red-orange clay with fine lime inclusions, very similar to certain Chersonesean types in its composition. Near the edge there is a hole 0.3 cm in diameter. D. of weight 6.7 cm; thickness 1.5 cm.

M 20. U6 room 7. 1969. Pl. 175.

Disc-shaped ceramic net-weight made of dense red-orange clay with fine lime inclusions, similar to certain Chersonesean types in its composition. Near the edge there is a hole 0.6 cm in diameter. D. of disc 5.3 cm; thickness 1.4 cm.

M 21. U6 courtyard, E-6. 1972. Pl. 175.

Disc-shaped ceramic net-weight of dense brown clay with fine inclusions of sand and pounded sea-shells. The surface of the weight is neatly smoothed. D. of weight 6.5 cm; thickness 1.7 cm; D. of hole 0.7 cm.

M 22. U6 room 13. Find list 8/51. 1971. Pls. 149 and 175.

Ceramic imitation of a hen's egg; hand-modelled from brick-red clay. The surface is neatly smoothed. L. 4.5 cm; maximum D. 3.3 cm. *Cf.* also **G 20**.

Judging by the fact that both the imitation hen's egg and one of the weights were found in *rooms 13* and *12*, respectively *i.e.* the sanctuary and a room directly connected with it, it is quite possible that both objects (**M 18** and **M 22**) were actually votives.

NOTES

1. On the dating of the kantharoi, see section II **B**.
2. The original amphora was of the Chian straight-necked type. *Cf.* Brašinskij 1984, pl. X, *3-5*.
3. Onajko 1956, 155.
4. For details, *cf.* Gajdukevič 1952, 397-98.
5. Gajdukevič 1952a, 410.
6. Gajdukevič 1952a, 401.
7. Solomonik 1994, 144.

GLASS OBJECTS

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Only sixteen objects made of glass or glass paste have been found during all the years of excavation at building U6. Most of the finds are beads and there is only one item that falls under the 'glass vessels' – which are, in fact, extremely rare for the early Hellenistic period. This is a glass bowl found in *room 12* (the sanctuary) and it probably belonged among a number of other objects intended for some ritual purpose.

As regards the beads, no regularity in the pattern of their distribution over the excavation area has been identified. Most of them were found in the courtyard and only four specimens were discovered inside the rooms of the building (**N 3**, **N 7**, **N 9**, **N 13**). All these items had most probably been lost at some time or other by inmates of the building (most likely women). None of the beads that were found formed complete necklaces or any other set pieces but were in every case just isolated specimens of various different types: spotted or 'eye-beads', ribbed, cone-shaped, and pendant ones, *etc.* Two beads, however, are exceptional: they are spacer-beads with anthropomorphic faces, and the fact that they were found in *room 12*, the sanctuary, suggests their votive character.[1]

Most of the beads are made from opaque glass, though the spotted beads and spacer-beads are of opaque glass-like paste.[2]

N 1. U6 courtyard, B-2. 1974.

Bead made from a piece of red coral. The shape is elongated and there is a small projection through which a hole is pierced for threading on a necklace or bracelet. Length 1.9 cm; diameter 0.4 cm.

N 2. U6 courtyard, V-4. 1973.

Fragmentary spotted bead. Barrel-shaped, with uneven surface; prominent knobs surround the edges of the threading holes. The bead consists of a dark blue glass-like porous paste. The 'eyes' are round and elongated and made of white and yellowish paste. One quarter of the bead is preserved. Supposed original diameter 1.8 cm (Alekseeva 1975, Type 19).

N 3. U6 room 13. Find list 8/53. 1971.

Spotted bead in the shape of an irregular oblate spheroid made of yellow opaque glass-like paste. The 'eyes' are white with a blue stripe in the middle. Diameter 1.7 cm; length of main axis 1.0 cm.

N 4. U6 courtyard, D-6. Find list 17/128-129. 1972.

Spotted bead of yellowish opaque glass-like paste. The core has a dense spiral structure. The surface is decorated with three applied spots of greenish paste. Diameter 1.2 cm; length of main axis 0.9 cm.

N 5. U6 courtyard, D-5. 1974.

Cone-shaped bead of dark blue, almost black, opaque glass. The base is decorated with transverse grooves. Diameter of the base 0.6 cm; length of main axis 0.5 cm.

N 6. U6 courtyard, D-6. Find list 17/128-129. 1972.

Cone-shaped bead of dark blue, almost black, opaque glass. Diameter of the base 0.6 cm; length of main axis 0.5 cm.

N 7. U6 room 20. 1972.

Truncated pyramid-shaped bead of dark blue opaque glass. Dimensions: base 0.7×0.7 cm; upper surface 0.2×0.2 cm; length of main axis 1.8 cm.

N 8. U6 courtyard, V-5. 1973.

Bead with rounded ribs made of opaque dark-blue glass. The surface is divided into sections by the solid oval ribs. Diameter 1.5 cm; length of main axis 0.8 cm. (Alekseeva 1975, Type 16).

N 9. U6 room 12. Find list 6/63. 1973.

Amphora-shaped pendant made of light green transparent glass. Height 1.2 cm; diameter 0.7 cm (Alekseeva 1975, pl. 4, *15*).

N 10. U6 courtyard, D-5. 1974.

Amphora-shaped pendant made of light green transparent glass. The upper part is broken off. Height 0.8 cm; diameter 0.9 cm (Alekseeva 1975, pl. 4, *15*).

N 11. U6 courtyard, V-2. 1971.

Amphora-shaped pendant made of white transparent glass. Height 1.7 cm; diameter 1.2 cm (Alekseeva 1975, pl. 4, *15*).

N 12. U6 courtyard, D-5. 1974.

Fragment of elongated spacer-bead of opaque dark blue

glass. Decorated with festoons of opaque yellowish white paste and 'eyes' of the same paste with blue centers. Length of the fragment preserved 1.7 cm; diameter 0.9 cm.

N 13. U6 room 33. Find list 4/13. 1973.

Figured pendant-bead of dark blue opaque glass representing a bird. There is a suspension loop on the back of the figurine. The grooves of the tail plumage are marked on both the upper and under sides by stripes of dark green paste infilling. Length 2.7 cm; height 1.5 cm. (Alekseeva 1975, pl. 4, *15*).

N 14. U6 room 12. Find list 6/61. 1971. Pls. 149 and 176.

Cylinder-shaped figured spacer-bead 3.4 cm high and 1.9-2.0 cm in diameter; diameter of the central threading hole 0.9-1.0 cm. The bead was manufactured by the core process from dark blue opaque glass; the traces of the core are preserved inside the hole. On the surface there are applied relief representations of human faces. Published: Gilevič 1988, fig. 1. (For further details, *cf.* **G 18**).

N 15. U6 room 12. Find list 6/62. 1971. Pls. 149 and 176.

Figured spacer-bead similar to **N 14**. Height 3.1 cm; diameter 1.8 cm; diameter of the hole 0.9 cm. (For further details, *cf.* **G 19**).

N 16. U6 room 12. Find list 6/60. 1971. Pls. 149 and 176.

Fragmentary bowl of light transparent glass with a cylinder-shaped lip and out-turned rim passing smoothly into the walls, which narrow towards the bottom. From the fragments found it was possible to glue together the complete upper part with the transition to base. The base itself is missing, but the shape of the transition from wall to base suggests that the bottom was flat. The wall is smooth and even and devoid of any relief decoration. The vessel was mould-made from monochrome transparent glass and is highly iridescent. Height preserved 4.9 cm; diameter of rim 10.9 cm; thickness of walls 0.15-0.25 cm. See also **G 16a**.

This vessel is a unique specimen of early Hellenistic glassware. As far as I am aware it is the first find of such a kind in the northern Black Sea area. Moreover, both in shape and decorative treatment this bowl differs considerably from other contemporaneous glass vessels. It is known that early monochrome glass vessels were produced in the eastern Mediterranean,[3] and as regards surviving specimens they are represented either by low, broad phialai with relief decoration of rosettes,[4] or by thick-walled hemispherical bowls without any such decoration[5] – both types of vessel being produced by the mould-pressing process.[6] In its shape the bowl from *room 12* resembles rather those specimens of glass vessels dated to the first centuries A.D.[7] which are also of hemispherical shape with a smoothly out-turned lip, though for their production the process of glass-blowing was already being employed. Our specimen, to all appearances, is of an origin other than eastern, and thus it enables us to push back by some centuries the first appearance in more westerly parts of the Mediterranean of glass vessels in the form of tall hemispherical bowls with smoothly out-turned lips.

NOTES

1. For details, *cf.* Part II **G**.
2. On the whole subject of bead-making techniques, see Alekseeva 1975, with many references.
3. Kunina 1997, 31 ff.
4. Grose 1989, 86-87; Weinberg 1970; 1973, 35-51; Oliver 1970, 9-12.
5. Kunina 1997, nos. 50-52.
6. On the manufacturing technique, *cf.* Grose 1989; Soldern 1982; Kunina 1997.
7. Kunina 1997, no. 290.

BONE OBJECTS

Eugenii Ya. Rogov

During the excavation of building U6 a very small number of objects made of bone were discovered. In fact, the list amounts to just a few finds. But this does not necessarily mean that the settlement inhabitants did not use such a convenient and handy material as bone, or that they used it only on a limited scale. Judging by the numerous bone articles and the quantity of debris left over from bone-carving found at other sites in the northern Black Sea region, such articles were in very wide use and the bone-carving industry was fairly well developed. The small number of bone objects from U6 evidently finds its explanation in the conditions that characterise the site under consideration. We may well suppose that some of the bone objects were destroyed in the fire, or, having been partially burnt in it, decayed soon after. We must also take into consideration the high lime content of the soil, which would certainly not be favourable to the preservation of such a material as bone.

Those bone objects that have survived represent quite common everyday articles that have numerous parallels from the sites of the ancient period in the northern Black Sea region. Particularly widespread are bone haft-plates (or plaques) for knife-handles: these were fashioned from animal ribs or tubular bones and fixed on both sides of the tang by means of iron or bronze rivets.[1]

O 1. U6 courtyard, E-3. 1969. Pl. 176.

Knife-handle haft-plate made from a hollow bone. It has a segment-shaped cross-section, and was originally secured to the matching second plate by means of iron rivets, of which only one has survived. The inner surface is flat, while the outer one is convex and has been polished and decorated with concentric circles with a dot in the centre; there are eight circles in all, making three rows. One end of the haft-plate has decayed. Dimensions: length 7.7 cm; width 1.9 cm; thickness 0.9 cm.

O 2. U6 courtyard, E-3. 1969. Pl. 176.

Knife-handle haft-plate made from a hollow bone. It was originally secured to the matching second plate with three iron rivets, of which two are still fixed to the iron tang. Part of the tang has preserved. The inner surface of the plate is flat, while the outer one is convex and has been polished and decorated with five concentric circles with a dot in the centre. Dimensions: length 9 cm; width 1.7 cm; thickness 0.6 cm.

Decoration of the type described above is not uncommon on bone articles – in the collection of the Chersonesos Museum there is a stylos decorated with exactly similar concentric circles.[2]

O 3. U6 courtyard. Pl. 176.

Bone spindle whorl in the form of a flat profiled disc that was originally part of a bone spindle. Dark brown polished bone. Dimensions: diameter 0.7 cm; diameter of hole 0.6 cm.

Similar whorls and spindles are known from excavations of many sites, they are met with in Pantikapaion, Olbia, and Chersonesos.[3]

O 4. U6 well. 1973. Pl. 176.

Bone spindle whorl made from the knee-cap of some animal. Fragmented. Dimensions: preserved height 2.3 cm; diameter 3.5 cm. A hole 0.6 cm in diameter is bored through the centre.

O 5. U6 courtyard, B-6. 1972. Pl. 176.

Bone rod made from a hollow bone cleft lengthways. One end is pointed, while the other is blunt and sawed flat. The blunt end has a notch at one side. Dimensions: length 6.0 cm; diameter 0.6 cm.

O 6. U6 courtyard, B-6. 1972. Pl. 176.

Fragment of a bone rod similar to **O 5**. Only a part of the upper blunt end with a notch is preserved. It is made from a hollow bone cleft lengthways. Dimensions: length 2.2 cm; thickness 0.6 cm.

O 7. U6 courtyard, B-6. 1972. Pl. 176.
Fragment of a bone rod similar to **O 5**. Only a part of the upper blunt end with a notch has survived. It is made from a hollow bone cleft lengthways. Length 1.1 cm.

O 8. U6 courtyard, B-6. 1972. Pl. 176.
Fragment of middle section of a bone rod similar to **O 5**. The upper and lower ends are broken off. It is made from a hollow bone cleft lengthways. Length 1.8 cm.

O 9. U6 room 15. 1971. Pl. 176.
Fragment of a bone rod similar to **O 5**. The pointed end is broken off; and the blunt end too is incompletely preserved – only part of the notch has survived. It is made from a hollow bone cleft lengthways. Length 4.4 cm.

Finds of similar rods having one end pointed and the other blunt with a notch in it are quite common in excavations at sites in the northern Black Sea region. There is no generally accepted opinion as to their purpose. Some scholars interpret them as bone awls,[4] or as some similar implement for boring holes.[5] The discovery of similar rods among tableware has led to the suggestion that they were used as utensils for cooking and eating solid food.[6] Recently the identification of these objects as multifunctional implements become more popular.[7]

O 10. U6 courtyard. Pl. 176.
Stylos made from a cleft animal bone. The pointed end is broken off. Dimensions: length 9.7 cm; diameter 0.6-0.8 cm. It is less carefully finished than the *styloi* found during excavations at other sites in the northern Black Sea region.[8]

NOTES

1. *Cf.*, *e.g.*, Nalivkina 1940; Šelov 1972, 90-92.
2. Peters 1986, pl. XII, *19*.
3. *Cf.* Peters 1986, pl. XI, *1-26*.
4. Belov 1941, 261.
5. Kruglikova 1966, 136; Burakov 1976, 126.
6. Peters and Efimova 1967, 222.
7. Peters 1986, 56; Krapivina 1993, 137.
8. *Cf.* Peters 1986, pl. XII, 1-22.

CONCLUSION

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We have not yet explained our choice of the term 'the monumental building' to designate U6. Initially, in the annual communications on the excavations, and in the first preliminary publications, the building was described as a 'farmhouse'. This term reflected our opinion that the building was similar to the large farmhouses which had been investigated at that time, first and foremost by S.F. Strželeckij, on the Herakleian Peninsula in the immediate vicinity of Chersonesos. However, when the special character of the building, compared with the other buildings on the site, later became clear, we were forced to find a term that took into consideration the position of the building in the settlement, its size, layout, building technique, and the variety of artefacts found in it. For that reason the Russian term *'usad'ba'* was chosen, meaning an estate, rural or urban, with a courtyard attached to it (including structures such as a well and various outbuildings), and already well established in the archaeological vocabulary. In the end, this was translated into English as 'the monumental building'.

Such a term may evoke ideas of an aristocratic palace or a costly public building. However, no costly materials and no traits such as columns or walls built completely of well-dressed ashlars were used in the erection of U6. The building was thoroughly utilitarian. While the term clearly underlines the role of the building in the settlement, it also conveys a certain vagueness. The fortress U7, built in the very beginning of the 4th century B.C., (*i.e.* the stratigraphical horizon B, see Part I, p. 24) was certainly larger, and more effort was probably expended on its erection. However, the four rounded corner-towers of U7 clearly define the building as a fortress. U6 may have served a similar purpose in the last period of the settlement (horizon A), but if this was the case, it is mainly indicated by the fact that it was built in strict correspondence with U7, that its walls are more monumental than those of the contemporary buildings on the site, and that it had only one entrance from the outside, the gate leading into the courtyard.

The short life-span, a fairly firm chronology, and the fact that the building was destroyed after an attack and a fire, leaving the larger part of the movables still inside, though often in a very broken state, and seldom *in situ*, combined with the lack of any later building activity on the site provide us with a unique opportunity of studying in detail a rural complex of the *chora* of a Greek city-state (and a very large one) from the early Hellenistic period. We are able to examine aspects such as the divinities worshipped by the inhabitants, or the food supplies they had stored in the building (since the destruction took place in late spring or early summer, these supplies were most probably for use by the inhabitants of U6 themselves, not for export to the city proper, or elsewhere).

The chronology of the building is primarily based on the chronologies established for amphorae stamps of the Black Sea cities (Chersonesos, Herakleia, Amastris, and Sinope) and of Thasos, together with the Chersonesean coin series. These chronologies are supported by an independent chronology, that of Attic black-glaze pottery of the Hellenistic period (for this we have depended on the chronology established by S. Rotroff, see most recently Rotroff 1997). Whereas the time of destruction is well established to *c.* 270 B.C. on the basis of the latest amphorae stamps from Chersonesos, Sinope, and Thasos – a date not disputed by the Attic black-glaze pottery (for an explanation for the fragment of a mould-made bowl (**B 144**) see Part II, pp. 129-130) – it has been far more difficult to establish the exact date of the con-

struction of the building. This date depends on, firstly, the date of the first major group of amphora stamps from the building, which is a group of 34 Chersonesean stamps of the chronological group 1A (according to V.I. Kac), dated to the period 325-315 B.C. (see part II **A**). Also most important is the find of three coins (**I 5**, **I 7**, and **I 8**) under the floors of *rooms 22* and *24*, which may have ended up there during the construction of the building. Of these Chersonesean copper coins, **I 5** belongs at the end of the series showing a kneeling Parthenos, while **I 7** and **I 8** belong at the beginning of the next series with a butting bull (for the date of the last type, see Stolba 1989, 67). This means that the construction date of U6 can be fixed to some time during the decade 320-10 B.C.

U6 was not the first building to be erected on the site after the destruction of U7 and the conquest of the region by Tauric Chersonesos. The earliest building of the Chersonesean phase seems to be the so-called extramural house, on the extreme north-western edge of the fortress (see Stolba 1991). This house was destroyed after a fairly short period of time. The fortress was partly rebuilt, probably in the 340s or 330's, and other buildings, such as U2 (partly excavated), were erected in the last third of the 4th century B.C. At some point during the period 320-10 B.C., U6 was constructed on the eastern fringe of the then existing settlement, at a site where there had apparently never been any building activity, and where finds in the layer beneath the floors of the building suggest that neither was this a cultivated area, since trees or shrubs grew here before U6 was constructed (see Part I, p. 79). U6 differs from the other building complexes in several respects: primarily, as already stated, through its layout and size; it contained especially large rooms for storage (*cf.* Part I), two connected sanctuaries, one for Herakles, and one for a number of agrarian divinities, and last but not least, apart from apartments of one or two rooms (on the ground floor) in the original layout, it also contained what must have been a common dining room (the room above *room 5*; see Part I, p. 75).

There is no doubt that U6 (and the settlement to which it belonged) was part of the *chora* of Chersonesos. The evidence includes the layout and construction techniques of the building, which are typical of house-building in Chersonesos; the total predominance of both Chersonesean transport amphorae and commonware pottery; the Doric vocalism in the graffiti; and the cult of Herakles, which is especially popular in Chersonesos and its *chora*. That U6 was erected on public initiative by the Chersonesean state is confirmed, not only by its layout and the quality of its construction, compared with other buildings of the period when Panskoye I formed part of the *chora* of Chersonesos, but also by the graffito **H 32** on a black glaze plate (**B 147**) which had been part of the dinner set of the common dining room. It also seems evident that the building was intended to have, and probably did have, a special status in the settlement, though we are unable to say in what way. Possibly it had some control functions, at least in its initial phase. The strong economic ties with Chersonesos suggested by the exclusive finds of Chersonesean coins in the building are confirmed by the pattern of the amphorae (see Part II **A**), since out of an estimated maximum of 216 amphorae, 168 are Chersonesean, whereas the second most frequent amphorae (from Sinope) amount to only 12. The economic connection of the building (and the site) with the outside world was probably mainly through Chersonesos or cities such as Kerkinitis and Kalos Limen. Panskoye I had its own harbour, and in fact, connections by sea, *e.g.* with Olbia, must also have been very simple.

An analysis of the evidence of social stratification in the building reveals no incontestable corroboration of a clear social ranking. In Part I, Discussion A. Ščeglov has suggested that the apartment originally consisting of *rooms 13* and *17* may have been the main apartment of the building, consistent with its size and its placing between the gate and the two sanctuaries in the west corner; and that the head of the family living here was of higher rank than the

other people in the complex. Later, when two more *rooms* (*16* and *18*) had been added to the apartment, and changes in other parts of the building provided apartments of similar size, details such as differentiation in rank could no longer be distinguished on the basis of the archaeological finds. We shall never be able to reconstruct precisely what happened at the time of the destruction; the comparatively small number of arrowheads (14 specimens) found in U6 suggests that the aggressors did not meet any fierce resistance by the occupants of the building. Probably most of the inmates were away at the time of the attack, or at least they had time to escape in haste – possibly by ship, leaving virtually all their belongings behind.

Who were the people living in U6? From the skeletons found, we know that they included both men, women and children. In fact, from the rebuilding of some of the rooms, it also looks as if there may have been a change towards more family-like units living in the complex, although the common dining room above *room 5* apparently continued in use, even in the final phase. The evidence of the pottery, encompassing at one end of the scale imported Greek black-glaze pottery, of which at least part was produced in Athens, and at the other end, handmade pottery manufactured on the site, may, as stressed by V. Stolba (Part II **D**), provide evidence for a mixed population, some of whom identified themselves as Greeks, whereas others were either Scythians or Taurians, and as such categorised by the Greeks as barbarians. However, nothing suggests that these two groups lived in separate parts of the complex, *i.e.* we cannot identify the barbarian element as exclusively slaves or serfs. The finds instead suggest that the groups were mixed by Greek men taking barbarian women as wives.

In general, the finds from U6 bear witness to the modest living conditions of the inhabitants. Luxury goods are few, mainly consisting of imported Greek pottery. Of course, things like jewellery may have been carried away by those who looted the complex, probably a group of nomads (see Part I, p. 81). Such modest living conditions are also characteristic of other settlements in the *chora* of Chersonesos, including Kerkinitis and Kalos Limen.

The analysis of the black-glazed pottery (Part II **B**) shows that most of it dates to the early years of building, with no continued import on the same level until the destruction. That there was no such continued import also seems confirmed by the fact that a very large part of this pottery shows signs of repair. This may suggest that there was a decline, even in the rather modest prosperity at the time of the foundation of U6, a supposition confirmed by the analysis of the amphora stamps, which show that 64 of the stamped amphorae are to be dated before *c.* 300 B.C., whereas 21 belong to the period 300-285, and only 2 to the period 285-272 B.C. (see Part II **A**, Table 1). However, there is no evidence of a total economic decline, even in the last years of the existence of the building, as indicated by the plentiful food supplies, including imported olive oil, which were kept in the building.

Appendices I-V

I. ARCHAEOLOGICAL, PALAEOGEOGRAPHIC, AND GEOMORPHOLOGICAL RESEARCHES IN THE LAKE SASYK (PANSKOYE) REGION[1]

Nikolai S. Blagovolin, Alexander N. Ščeglov

From 1965 the Palaeogeographic Detachment of the Tarkhankut Expedition headed by the authors of this section investigated Lake Sasyk (Panskoye)[2] and its close neighbourhood. At first, the object of the investigations was defined as collecting data for the reconstruction of the ancient natural landscape in the vicinity of the lake contemporaneous to those Greek settlements of the 4th and early 3rd centuries B.C. that had been identified in our preliminary surveys. However, during the progress of this work the original task was necessarily enlarged. The investigations resulted in the discovery of more or less certain additional information on the centuries-old history of the formation of the lake and landscape of the micro-region under consideration embracing the area of about 25 square kilometres on the south coast of the Karkinitskiy Bay.

Earlier, the lake and its neighbourhood had been studied by the geographer A.I. Dzens-Litovskij[3] in 1932, the oceanologist V.V. Longinov[4] in 1947, and the geographer P.D. Podgorodeckij[5] in the late 1950s. They established that the lake was probably formed at a late stage of the Quaternary period as a result of ingression of the sea into a synclinal vale. However, these scholars had no absolute chronology benchmarks to provide a reliable basis for identifying the detailed geomorphological and landscapical evolution. Only archaeological objects could present such benchmarks but those had not yet been discovered. Therefore the proposed hypotheses on the lake's formation in the late Holocene were not reliably dated on the absolute scale.[6] The discovery in 1962-1975 of settlements dating to different periods – from the Neolithic to the early Hellenistic – enabled us to obtain 'narrow' chronological benchmarks and to propose a new chronological and qualitative model of the evolution of the micro-region. However, it was necessary for this purpose to carry out new interdisciplinary research, and the results of our work are presented here.

1. A Brief Geomorphological Description of the Lake Sasyk (Panskoye) Region

The shallow, saltwater Lake Sasyk (Panskoye) is situated at latitude 45° 33' 45" north and longitude 32° 45' 30" east. It occupies a shallow basin stretching from south-west to north-east. Its northern section is separated from the western creek of the Bay of Yarylgach (called Sasyk Bay) by a sand and shell barrier (Pls. 177-179, *A*).

The barrier is 0.75-0.8 kilometres long and 160 m wide.[7] The lake is 4.3 kilometres long; the maximum width, in the north-western sector, is 2.175 kilometres, while the average width is 1.1-1.25 kilometres; the maximum depth, in the centre (before the digging of a channel through the barrier), was 1.0 m.[8] The area of the lake's surface is about 4.5 sq kilometres and the total area of the catchment basin is 57-58 sq kilometres.[9]

The first exact topographical map of the lake and its neighbourhood was drawn (to a scale of 1 : 42 000) in 1890 and published in 1899 (Pl. 178). It remains an important source both for palaeolandscapical analysis and for identifying archaeological objects, and was also

used in the preparation of the contemporary 1 : 10 000 general archaeological and topographical chart.

In general, the region of the lake coincides in terms of its structure with the Yarylgach Syncline which runs from west-south-west to east-north-east. To the east, the synclinal axis crosses the low isthmus between the lake and the southern creek (called Lake Maloye-Solenoye) of the Bay of Yarylgach (Pl. 177).

Stretching along the north-western side of the lake there is a rather low flat-topped plateau with gentle slopes that in some places reach up to 20 m above sea level (Pl. 179, *A*).[10] This plateau, 1.25-1.5 kilometres wide, separates the basin occupied by the lake from the sea. Facing onto Karkinitskiy Bay, and formed of limestone, the whole northern coast of the plateau is being intensely eroded and is therefore receding at a fairly considerable rate. The southern side, which slopes gently down to the lake, is more stable. The erosion platforms with active cliffs alternate here with shores of accumulated material consisting of sandy or soft mud beaches. The whole area described above is covered by a thin but very productive horizon of soils of the southern chestnut-coloured chernozem type containing detritus minerals.

To the south, the lake is bordered by a low-lying plain about 2.5 kilometres wide. It rises smoothly to the south and is bounded by the heights of the Ğangul *Uval* having a maximum elevation of 137 m.[11] The northern slopes of the uval are furrowed by *balkas* (gullies) (Pl. 178). The largest of these – the Karlav Balka – originates at the top of the *uval* and, running down its slope, falls into the south-eastern corner of the lake. A gently sloping gully designates the origin of another – the Sasyk Balka – which falls into the western corner of the lake. The beds of several more *balkas* are hidden under Holocene sediments. During periods of intense rain solid materials are washed steadily down the *balkas* and gullies from the northern slopes of the Ğangul *Uval* to the plain, levelling the latter and forming its soil layer. Fine grained sediment is transported to the lake, and together with sediment supplied from the north it gradually fills the lake basin.

The area surrounding the lake is formed of upper Miocene or lower Pliocene (N^3_{1m}-N^1_{2p}) limestones in slightly sloping layers. To the south this area is limited by the Ğangul Anticline (or Kara-Burun Anticline after A.I. Dzens-Litovskij), the vault of which has outcrops of dense Sarmatian limestone (N^1_{3srm}). On the southern and south-western sides of the lake the Pontic limestones/shell-rocks (N^1_{2p}) are covered with a fairly thick (1.5-2 m) layer of loose Quaternary deluvial and proluvial sediments ($Q^1_{del}{}^{a}$). The latter consist of red-brown and yellow clays and loams.

In the northernmost part of the isthmus between the lake and the southern side of the Bay of Yarylgach the loose sediments are very scanty. Only a thin mineral soil layer has developed on loams (southern chestnut-coloured chernozems) on the bedrock of limestones of the Pontic layer.

The territory's relief clearly reflects its geological structure, to which the system of ancient settlement is excellently well matched. Greek settlements and rural houses of Panskoye I, II, III, and IV, as well as Stone Age sites (the Yarylgach-Northern Site), and those of the late Bronze Age of the 4th and 3rd centuries B.C. and of the early Medieval periods (the Yarylgach Eastern Settlement) are either located on a low structural denudation plain not exceeding 0-3 m above sea level, or actually lie below the present-day sea level (Pl. 179, *A*). Such a concentration of ancient sites can hardly be accidental.

2. DESCRIPTION OF THE ACTIVE CLIFFS ON THE SHORES OF YARYLGACH BAY AND LAKE PANSKOYE

V.V. Longinov's, V.P. Zenkovič's, and P.D. Podgorodeckij's descriptions present only the most general characteristics of the eroded shoreline of the south-western inlet of the Bay of Yarylgach and Lake Panskoye, and do not go into any detail. To check our previous observations we made a detailed description of the three active cliffs on the eroded shoreline. On two of the cliffs there are remains of archaeological objects.

I. The active cliff of the northern eroded shore of the isthmus, 100 m from the boundary of the Panskoye I necropolis (Pls. 179, *B*, 180, *1-3*). The height is 2 m above the shoreline. In its base it has pronounced wave-cut niches. The shore is subject to continuous erosion and is receding. Our long-term observations have shown that the rate of the retreat reaches about 0.05 m per year, which coincides approximately with the rate observed by us at other areas on the north-western coast of the Tarkhankut Peninsula.[12] The stratigraphy of the cliff is as follows:

1. Loose spongy limestone/shellrock (N^1_{2p}). The upper horizon is strongly weathered (so called '*knock-down rock*'). It is being actively destroyed by the surf, especially during storms.
2. Humus-enriched (detritus-containing) grey turf-covered loam. This forms the soil, and reaches a thickness of 0.5 m; small pebbles worn smooth by the sea sometimes occur within the layer. Among individual finds the fauna of the period of the neo-Black Sea transgression (shells or fragments of *Venus*, *Pecten*, *Ostrea*, very seldom *Solen*) is represented. Flint chips and tools of the Crimean Neolithic or Aeneolithic (?) periods are found in the layer, and these were mixed up with sea-worn pebbles, fragments of the '*knock-down rock*', and shells (Pl. 179, *A.VI*). However, the tools are washed out only from the upper horizon 0.2-0.4 m below the surface. A closer study showed that all the materials are most probably redeposited. There is no pronounced archaeological layer nor are there any pottery finds here. The area over which the flint tools and chips are disseminated stretches about 50 m along the shore and up to 10-20 m inland. In terms of shape and type, the flint chips and tools found here do not differ much from those from sites identified as the late Mesolithic or Neolithic Crimean culture of the 'Shell Accumulations' type (Pl. 180, *4*). However, in contrast to other known sites, shells of such typical land snails as *Helix* have not been found here.

II. The active cliff on the northern bank of Lake Sasyk (Panskoye) near rural house Panskoye III (Pls. 179, *B*, 181, *1*). The height is 2 m above the lake level.

1. Loose red limestone/shellrock of the Maeotis (N^3_{1m}). The upper part passes gradually without a pronounced boundary into:
2. Eluvial horizon: cartilaginous heavy red-brown loam containing detritus of limestone. The transition to the above layer is gradual.
3. Thin 'velvety' loess-like plastic loam typically pink, containing carbonate inclusions. In its upper part it is enriched with humus. The loam may be used for pottery-making.
   The floor of the lake is only 0.6 m deep (August, 1976) when measured 15 m from the precipice of the cliff. The floor consists of a limestone bench devoid of covering sediments. Further out a layer of grey lacustrine silts begins (very thin at first, then thickening towards the centre of the lake) and covers the surface of the limestone bed. At a dis-

tance of 3.5 m from the brink, fragments of stone roof tiles were found at the bottom, and approximately 5 m from the shoreline – dressed stones from buildings destroyed as a result of the erosion.

Panskoye III, as it was found, is the remains of an individual rural house of the second half of the 4th century B.C., situated on an inclined surface in otherwise flat country. It was excavated in 1978.[13] The house was deserted and disassembled probably at the turn of the 4th and 3rd centuries B.C. but we have no reason to suppose that it stood on the bank of the lake. Such a supposition would contradict not only the presence of wall remains and roof tiles which had fallen onto the bottom of the lake from a height of about two metres, but also the orography of the area (the outlines of the relief of this area and the neighbouring lower bank areas), as well as the features of the flat bench. All of this enables us to suppose that the bank which is being actively destroyed by the waters of the lake and approaching the ruins of the long deserted Greek rural house is a relatively new formation dating to the period when the lake level was higher than the present-day one. Possibly the absence of wave-cut niches in the base of the brink also provides evidence in favour of such a supposition.

III. Active cliff on the south-eastern bank of Lake Panskoye (Pls. 179, *B*, 180, *5*). The height of the brink is 2.5 m. After digging a channel through the barrier and some lowering of the water level in the lake, the erosion of the banks stopped (according to our 10 year-long observations).

1. Basic red limestone/shellrock (N^3_{1m}). In its upper part it has a gradual transition into:
2. Bright-pink crumbly, heavy and viscous, loam with inclusion of limestone debris. The fragments have a varying extent of weathering: with some only bright-red stains with fine crumbles are preserved. The layer is 0.8 m thick. It passes gradually but with a marked boundary into:
3. Horizon of dark grey loam with sparse crumbles and fragments of limestone; in its upper part the layer contains humus. Thickness 1.7 m.

After levigation the loam from layer 2 is quite suitable for ceramic production.

3. RESEARCH ON THE WESTERN BANK OF LAKE MALOYE-SOLENOYE (THE SETTLEMENT OF YARYLGACH-EASTERN)

In 1975 the settlement of Yarylgach-Eastern[14] was discovered and investigated 0.8 kilometres east of the settlement of Panskoye I on the opposite side of the isthmus between Lakes Sasyk and Maloye Solenoye (Pl. 179, *A.VII*). The settlement is located on a low shore partly inundated by the sea during storms and seasonal wind-tide fluctuations of sea level (Pl. 181, *2-3*) at marks from 0 to +0.5 m above the sea level (from -0.4 to +0.1 m in the Baltic heights system). A considerable part of the settlement's cultural layer has probably now been washed out and its remains are at the bottom of Lake Maloye-Solenoye. We discovered pottery and flint tools at the bottom of the lake as far as marks -0.2-0.3 m (relative to the sea level registered in August, 1975) at a distance of 8 m from the shoreline.

The ceramic material gathered from the surface of the settlement, on the bank and adjacent lake floor, is mixed. Most of it is dated to the late Bronze Age period. However, single finds (including those from the bottom) belong to the early Hellenistic period (in general the 4th-3rd centuries B.C.) and to the early Medieval Age (7th-8th centuries A.D.). To gain insight into the cultural and natural evolution of the area we sank three stratigraphic pits.

Pit 1. 2 × 2 m, 0.70 m deep. The pit is located 125 m from the shoreline at the boundary between the steppe area and the plough-land, at mark +1 m above sea level. The surface is covered mostly with grey Crimean steppe wormwood of Lerche (*Artemisia lerchiana*).

In the western half of the pit, from the surface down to the depth of 0.30 m, there is light grey loam containing humus, fine shells and sand; in the upper part it is turf-covered. It was formed directly on the surface of dense yellow loam and is cropping out in the eastern part of the pit where it gives place to humus-containing grey loam down to a depth of 0.30 m. Similar to the sandy loam, it is turf-covered and also composes the present soil which has been formed on pure yellow loams. In total, 19 very fine fragments of hand-made pottery dating to the late Bronze Age period were found in both layers.

The sand loam layer most probably indicates the existence of a beach at the mark of about +0.5 - +1 m, relative to the present sea level. In the western half of the test pit the sand loam is absent. All these facts seem to indicate, therefore, that the ancient coastline was related to a higher sea level than the present.

Pit 2. 3 × 5 m, depth 0.20 m. It is situated 100 m from the shoreline at the mark of about +0.75 m above sea level. On all this area, in the turf horizon at the same level 0.20 m below the surface, there are small flat limestone fragments lying pell-mell and mixed with pottery, sea and land shells and the small animal bones. This layer lies on yellow-grey humus-containing loam.

Over a hundred small fragments of handmade pottery dating to the late Bronze Age period (Pl. 181, *5*) and several flint flakes were found between the stones. The manner in which the stones are scattered resembles the pattern found on the floor of the lake not far from the banks. Probably, here too, these are remains of structures submerged and eroded sometime in antiquity.

Pit 3. 2 × 3 m, depth 0.70 m. It is situated 40 m from the still-water boundary, at the edge of an area of sloping bank which is being inundated and eroded (during storms the bank is flooded and washed out). On a wide stretch of beach along the edge of the bank (0.1 to 0.7 m high) small flat stones (Quaternary limestones) washed out from the eroded layer are scattered among tussocks covered with *Salicornia*. Also here fragments of handmade and wheel-made pottery, flint flakes, as well as single fragments of Chersonesean and Herakleian amphorae, small fragments of black-glazed vessels and rims of fish-plates, were picked up from the surface.

The stratigraphy of the pit (when measured from the present-day surface) is the following (Pl. 181, *4*):

1. 0.00-0.10/0.20 m. Turf pierced with *Salicornia* roots. In contact with the lower layer there are irregularly-lying small flat stones (limestone). The finds are represented by wall fragments of early Hellenistic Chersonesean and early Medieval amphorae.
2. 0.10/0.20-0.35 m. Dark grey humus-containing loam. In the layer, small fragments of seashells were found. On the sole, ashy spots were revealed. There are fragments of early Hellenistic and Medieval pottery, those of a glass bracelet, and handmade pottery of the late Bronze Age.
3. 0.35-0.40/0.45 m. Grey debris-containing loam. In this layer, late Bronze Age pottery and several flakes were found.
4. From the depth of 0.40-0.45 m viscous loams containing limestone begin.

Thus, during the existence of late Bronze Age settlements and a settlement of the 'Saltovo-Mayatskaya' Culture many centuries later, the sea level must have been lower than it is now.

Later, when the 'Saltovo-Mayatskaya' settlement came to an end, this level rose to about 1-1.5 m higher than the present-day level, inundating and eroding a part of the latest settlement.

4. Investigation of the North-Eastern Lagoon of the Lake (the Settlement of Panskoye I)

All the scholars mentioned above gave quite similar descriptions of the broad accumulative sand-and-shell barrier, which separated the lake from the Bay of Yarylgach, and of the eroded shorelines of the bay and lake with active cliffs. However, the boggy lagoon at the north-eastern part of the lake with inactive cliffs facing towards the lake remained totally unheeded. The lagoon is separated from the lake by a secondary narrow barrier of undoubtedly later origin than the principal one. Already this fact is a direct indication that the lake level was higher in the period when the secondary barrier was forming than the present-day level. Judging by the inactive cliffs on the lagoon's banks, this level may have exceeded the level of 1967 by more than 0.5-1 m. At the end of the 19th and beginning of the 20th century one could extract table salt from the lagoon and the contiguous part of the lake. Here special pools were established to evaporate the lake-salt. Remains of the former are preserved at the lake bottom and are clearly discernible in aerial photographs. Judging from aerial photographs taken in 1956 and 1972, as well as our regular observations which started in 1965, it was only in the second half of the 20th century that the lake level lowered, and the lagoon was considerably reduced in size. After the lake joins the sea by way of a navigation canal, the level of the lagoon was even more reduced. By 1969 a small islet remained in the lagoon which was found to be the remains of a house submerged and destroyed by erosion in the northern outskirts of the settlement of Panskoye I (house U14).

By 1969 the islet in the lagoon (Pl. 182) had a length of about 30 m, with low shoal banks which were flooded during seasonal fluctuations of the water level. In the centre of the islet a precipitous residual rock 0.7 m high remained, bounded on all sides by low active vertical cliffs. By 1970 the dimensions of the residual rock were 9.4×5.5 m, its area was about 35 sq m. At first glance the islet seemed to be a natural formation. However, careful examination and subsequent excavation of the residual rock showed that there had been a house typical of the second half of the 4th and turn of the 4th and 3rd centuries B.C. at Panskoye I. Several walls of the house were preserved in its northern part.

The geological and archaeological stratigraphy of the residual rock containing the remains of house U14 (Pl. 183, *1*) is as follows:

I. limestones and shellrocks of the upper Pontic layer;
II. 'destroyed rock' (the surface of the limestones which are being eroded and destroyed, mixed with yellow loam). Thickness about 0.1 m;
III. pure pale-yellow plastic loam. The layer thickness is about 0.3 m;
IV. buried soil, 0.12-0.15 m thick, formed on layer III;
V. archaeological cultural layer formed by remains of a 4th century B.C. house (U14). Thickness 0.4 m. The layer contained shells of Helix;
VI. turf layer formed over the remains of house U14 (0.1-0.15 m).

Layers III-VI are strongly saline. Halophytes prevail among the vegetation covering the surface of the islet, and in the upper part of the soil layer present-day seashells are found.

Thus, before the eroding began of the remains of house U14, located now in the centre

of the lagoon, the level of the water surface in the lake must have been lower than the present-day by minimally 2-4 m or even more (if one takes into account the thickness of the sand and shell sediments in the secondary barrier). The house undoubtedly stood on land which was not then flooded or submerged. Later, at a time unknown to us, and after the house had fallen into ruin (evidently in a fire at the turn of the 4th and 3rd centuries B.C., and not for any natural reasons) the lake level rose considerably and became 0.5-1 m higher than it is now. By the time of our studies, however, the water level in the lagoon again lowered.

On the north-east of the described islet in the lagoon – at the northern edge of the settlement – there are remains of the northernmost house at Panskoye I (house U13). They lie on the edge of an inactive and turf-covered cliff up to +2 m high above the lake level of 1970. In antiquity (but after house U13 fell into ruin in the 3rd century B.C.), the remains of the cliff were subjected to active erosion. Later, however, this ceased. The water level in the lake abruptly sank. By the beginning of our excavations less than half the structural remains of the building were preserved, the other remains were washed out by the previously higher water levels.

In addition to the area described (U13), inactive cliffs were identified by us on the lagoon banks, both in the northern and north-western areas of the settlement. They were registered also at the south-western side of area U7 where during the excavations a 'beach' layer of fine lacustrine shell-sand was found covering the remains of the building dating to the early 3rd century B.C. and the cultural layer corresponding to these remains. The lower layers of the settlement together with the building remains are submerged and stretch under the sediments into the lagoon to a depth of one m. Finally, analysis of aerial photographs enabled us to identify the remains of buildings that had covered a considerable part of the present-day lagoon and which were situated in positions that followed the general layout of the settlement. This indicates that sometime between the early 3rd century B.C. (when Panskoye I fell into ruin) and the present century, the water level in the lake for a considerable period was higher than the present level. Probably it was during that period that the western and north-western parts of Panskoye I were submerged and destroyed by erosion; also the shallow lagoon in the north-eastern part of the lake and the secondary narrow sand and shell barrier which separated the lagoon from the rest of the lake were formed. Later the lake level gradually lowered until reaching the present-day mark.

5. Visual and Geo-Acoustical Investigation of the Bottom in the South-Western Part of the Bay of Yarylgach

The present-day entrance into the Bay is bounded by two low promontories with a distance of 3.3 kilometres between them. The Bay cuts 2.7 kilometres inland. According to V.V. Longinov and V.P. Zenkovič, the limestones are traced down to a depth of nine m at the bay bed (the bench) and farther down they are covered by a layer of sand and shells. Opposite the barrier of Lake Panskoye, the sands protrude more than a kilometre reaching a depth of 10 m. It is in this place that the south-western spur of the Bay separated from Lake Panskoye by the barrier is formed.

In 1969 the bench adjoining the shore near cliff 1 (*cf.* above) was visually examined. At a distance of about 200 m from the shore, and at a depth of 2-3 m, a terrace in the limestones was discovered stretching parallel to the shore. In the base of the terrace the remains of what seemed to be wave-cut niches were discovered. This gave reason to suppose that the bottom of the south-western spur of the Bay of Yarylgach could have preserved traces of submerged, eroded steep shores in the limestone bedrock.

In 1972 visual underwater examinations using echo depth-sounder PEL-3 were carried out.[15] The instrument enabled us to observe on the registering paper two sequentially reflected signals – from the bottom surface and from hard rocks below the sediments down to a depth of 5-8 m. Two profiles were taken: 1) – in the west-east direction across the Sasyk Bay at its broadest part parallel to the barrier of Lake Panskoye (profile length 1225 m); 2) – east-west, 330-180 m south of profile 1 (length 1020 m). The results of deciphering the records are presented on Plate 183, *2*. They confirm the visual observations. The presence of underwater terraces and the possible remains of wave-cut niches suggests that the sea level in the Holocene period was either constantly rising or fluctuating to an unknown degree, but tending in general to rise.

6. Resistivity Survey at the Barrier between the Lake and the Bay

Resistivity surveying, according to the Palaeogeographic Detachment program, was carried out in 1970.[16] The object was to determine the general character of the relief of the bedrock (limestone) below the loose accumulative sediments in the barrier. For that purpose resistivity surveys using Method of Symmetrical Electroprofiles (AMNB apparatus) were conducted along the middle of the barrier. At three points along the profile line, vertical electric sensing was carried out. The curve of the apparent resistance obtained through the surveys showed that the surface of the bedrock under the barrier has two abrupt dips. One is near the western edge of the barrier. The second is nearer to the eastern edge, very close to the remains of the settlement of Panskoye I (Pl. 184, *1*).

Analysis of the geophysical records, combined with consideration of the region's morphology, enabled us to suppose that two *balkas* cut deeply down into the limestone possibly lie below the barrier. However, this supposition could be checked only by core drilling.

7. Drilling in the Lake Bed and Barrier

The first drilling on the barrier and the lake bed was carried out by A.I. Dzens-Litovskij in 1933. He drilled one borehole on the barrier and two boreholes in the lake.[17] In 1972 large-scale drilling works on the barrier and in the lake were carried out by the Crimean Interdisciplinary Geological Prospecting Expedition.[18] In total, 85 boreholes were drilled, of which 72 were made through two profiles along the barrier and 13 in the lake (Pl. 184, *2*). The latter were made using a sea pontoon percussion drilling device. The boreholes were sunk along two profiles crossing the northern part of the lake parallel to the barrier. The first profile was located 225 m and the second 350 m south of the barrier. All the boreholes, both at the barrier and in the lake, were taken down to the bedrock limestone. This afforded us the opportunity to examine the materials from the drillings,[19] which enabled us to build the surface relief of the bedrock covered with silt and sand deposits.

Two more boreholes in the lake were drilled by order of the Palaeogeographic Detachment of the Tarkhankut Expedition. Here is their description:[20]

Borehole 1 (Pl. 184, *2-4*). It is located 350 m south of the barrier and 1050 m south-west of the settlement of Panskoye I. The depth reached from the water level in the lake was 17 m. The following layers were passed:

1. 0-0.90 m – brine (salt water with high salt concentration)
2. 0.90 – silty fine sand containing shells
3. 2.40 – pure sand of middle size with a rich content of shells
4. 4.90 – greenish grey silt with a rich content of broken and intact shells
5. 5.60 – grey loamy silt with intercalations of sand and very small quantity of broken shells
6. 7.50 – greenish grey silt with frequent intercalations of sand containing broken and intact shells and organic remains; there was a smell of hydrogen sulphide
7. 13.60 – dark grey silt with intercalations of shells
8. 14.40 – light grey pure loam
9. 16.40 – surface of limestone N^3_{1m}

Borehole 2. Located 455 m south of the barrier and 1100 m south-west of Panskoye I. The depth reached from the lake level was 11.5 m. There were the following layers:

1. 0-0.90 m – brine
2. 1.0 – grey thin silt
3. 2.90 – silty sand containing shells
4. 3.30 – greenish grey silt
5. 4.30 – grey loamy silt
6. 5.60 – greenish grey silt containing organic remains and smelling of sulphuric hydrogen
7. 11.00 – surface of limestone N^3_{1m}

The relief of the surface of the bedrock, drawn by us on the basis of the results of the drillings, showed that in the northern part of the lake and below the bulk of the barrier there are beds of two buried *balkas* deeply cut into the tertiary bedrock limestone (Pl. 185, *1*). One of the *balkas* – the Palaeo-Sasyk Balka – stretches along the modern north-western bank of the lake and runs farther along the long axis of the latter. At its point of origin which may be traced on land, the *balka* falls into the south-western corner of the lake. The depth of the *balka* under the barrier and in the lake reaches 17.4-16.0 m below the lake level of 1972. The other – Palaeo-Karlav balka – runs along the north-eastern and eastern banks of the lake. It is the lower submerged part of the Karlav Balka, which takes its origin at the northern slope of the Ğangul Rise near its top and now falls into the south-eastern corner of the lake (*cf.* Part I, p. 20). The maximal depth of the buried *balka* – cut deeply into the limestone in the lake – is 16 m, and under the northern part of the barrier it reaches 19 m. The bed of the *balka* stretches along the present-day bank (an inactive cliff) within 300-350 m south-west of the settlement of Panskoye I. In the south-western part of Yarylgach Bay, both of the *balkas* buried under the sea and the lake sediments merge together. This can be clearly seen from the isobaths of the surface of the shell and sand deposits in the Bay (Pl. 185, *1*).

8. Dredging Works

After the geological prospecting, also in 1972, building of a maritime canal across the barrier for an intended sea port started.[21] During works at a distance of 175 to 210 m south of the southern bank of the barrier, and 750 m west of the bank at Panskoye I (in the lagoon with the inactive cliff), different archaeological artefacts were found in the dredger buckets. From a depth of 3.5 m the following objects were picked up, mixed with greenish grey lacustrine silts (corresponding to layer 4 in boreholes *1* and *2*, *cf.* above) which covered the ancient surface of the bedrock limestone.[22]

1. Stones with dressed surfaces evidently used in masonry (the main bulk of the material found).
2. Fragments of flat Sinopean rooftile – 6 pieces.
3. Fragmentary amphorae. Over 300 fragments, mostly from walls. The overwhelming majority of the identifiable fragments (rims, stems and handles) belonged to Chersonesean amphorae of the first and second type, according to S.Yu. Monachov's classification.[23] A small number of fragments of amphorae from Herakleia Pontike (?) and Sinope were found. It was impossible to identify a considerable part of the material because of strong salinity and the corresponding structural changes in the sherds.
4. Fragments of wheel-made commonware of various closed and open shapes. Over 50 samples. According to their formal features they are all similar to the vessels from house U6 at Panskoye I.
5. Small body sherds of black-glazed ware. 8 samples. Very poorly preserved.

The materials from the lake floor undoubtedly indicate that some settlement (a rural house similar to Panskoye III?) existed at this place – the watershed between two *balkas* near the left slope of the eastern *balka* (Pl. 185, *2*). This settlement must have existed simultaneously with the settlements of Panskoye I and Panskoye III. Later, probably some time after its ruination, the settlement was submerged and covered by lacustrine sediments and the barrier which shifted to the south. Exactly when this event took place is unknown, but it is fairly certain that it was considerably later than the 3rd century B.C.

DISCUSSION

A.I. Dzens-Litovskij's hypothesis (1936) on the formation of Lake Panskoye and confirmed by V.V. Longinov's (1955) and V.P. Zenkovič's (1958, 1960) works, is true in its general lines. The lake was formed by the ingression of the sea into a synclinal depression. However, the natural history and correspondingly the change of landscapes, at least during the period under discussion, proved to be considerably more complex than it had seemed earlier. Thus, for instance, it is impossible to prove P.D. Podgorodeckij's hypothesis (1960) about a continuous expansion of the lake's bed during the historical period and, in that scholar's opinion, continuing even now owing to exclusively tectonic processes.[24] The results described above enable us to suppose, with a fair degree of probability, that the formation of the lake and the fluctuations of its water level in the prehistoric and historic (the late Holocene) periods, are not connected with tectonic factors but rather are connected first and foremost with secular fluctuations of the Black Sea level, the amplitude of which is probably influenced by the general process of the secular rise of the level of the great ocean. With regard to the neo-tectonic movements in the late Holocene period, these evidently remained insignificant on the Tarkhankut Peninsula.[25] Judging from long-term measurements of the water levels, and geodesic observations, the tectonically active region of the mountainous Crimea is subjected to a relative rising of the water level at a rate of about +1 mm per annum (not taking into account the eustatic factor!). Hence the probable present-day positive movement of the core of the Ğangul Anticline must occur at a rate not exceeding 0 – +1 mm per annum.[26] At the same time, according to long-term observations, the sea level continues to rise in all parts with a considerable average rate of 30 cm per century. At several monitoring stations located on the northern and north-eastern coasts of the Black Sea, *i.e.* both in neutral and active tectonic zones, a sea level rising rate of 20-50 cm per century has been registered.[27] Therefore, changes in landscape, inundation, submersion, and erosion of ancient seaside settlements

and sites should be accounted for by fluctuations of the water level in the Black Sea during the Holocene period, rather than tectonic phenomena.[28]

The drilling data showed that the abruptly falling beds of the two main *balkas* (and their lateral branches) which merge in the northern part of the lake are deeply cut into the bedrock (tertiary limestones). The *balkas* in their lower part are filled with silt and sand and shell matter of the barrier down to depths of -16 – -19 m relative to the sea level at the moment of drilling. It means that the formation of the *balkas* took place during the period when the level of the Black Sea was considerably lower than the values mentioned above. Most probably the *balkas* were formed during the period of the intensive thawing of glaciers in the East-European Plain. The glaciers actually made gorges in rocks, which were in due course transformed into rias owing to the rising sea level, and later, in the course of secular fluctuations of the water level, were buried under loose sediments and then under the lake formed above. We suppose that these *balkas*, as well as the similar short and steeply falling *balkas* with 'suspended' mouths situated on active limestone cliffs on the northern coast of the Tarkhankut Peninsula (seven *balkas* on the Ğangul landslip coast), are the remnants of the upper reaches of the remaining tributaries of the original Dnieper which had been active until the glacier thawing ceased and the Black Sea level approached that of the present day.[29]

Probably, the history of the formation of the contemporary Lake Panskoye (Sasyk) begins only after the break of Mediterranean waters through the southern straits (Bosporos) which is supposed to have taken place about 4000-5000 years ago[30] and the transformation of the Black Sea from a closed neo-Euxine basin into an open one with a gradual rise in its water level.

Examination of the morphology of the coast to the north of the necropolis of Panskoye I (*cf.* description of cliff 1) shows that there was a Neolithic site – the settlement of Yarylgach-Northern. The flint inventory which contains microliths – Kukrek type inserts and points (Pl. 180, *4*) – finding direct parallels in the upper layer of the Shan-Koba cave in the foothills of the south-western Crimea and at the settlement of Frontovoye I in the eastern Crimea – enabled us to suppose that the site (settlement?) was occupied during the second half of the Boreal period, *i.e.* about 6000-5500 B.C. [31] E.N. Nevesskij proposed a theory which describes the general course of the transgression of the Black Sea (that in his opinion was uninterrupted). According to this theory the period of the site's occupation coincides with the Neo-Euxine stage of the transgression, identified by Nevesskij on the basis of sample sediments from the bottom of the shelf. According to Nevesskij's data, during the mentioned period, *i.e.* about 7500-8000 years ago, the sea level within the waters of the present-day Karkinitskiy Bay must have been 40 to 35 m lower than it is now.[32] The eustatic curve proposed later by V.A. Karpov on the basis of studies of the shelf in the north-western Black Sea area, suggests that at the same time a regression took place. For the period from 8000 to 7500 years ago the sea level dropped from -12 to -22 m.[33] In any case, if either one of the mentioned calculations is true, the Neolithic site or settlement was evidently at the watershed between the two large *balkas*. Judging by the data obtained from the drillings in the lake, the bed of the original Karlav Balka on the west of the Neolithic site was at that time filled with water and grey-green silts were accumulated on the bottom.

If one assumes P.V. Fedorov's hypothesis on fluctuations in the Black Sea level during the Holocene period to be correct, then in the period of the *neo-Black Sea transgression* the sea level exceeded the present-day one by about 2-2.5 m.[34] Fedorov dated the maximum level of this transgression first to the second, and later, to the third millennium B.C. Such evaluations of the sea level seem to find confirmation in the investigations of K.K. Šilik on the western coast of the Bug liman (neighbourhood of the ancient Olbia) which is not far from the region under discussion.[35] If it is so, then about four millennia ago the area of the Neolithic site of Yaryl-

gach-Northern must have been situated on a shallow sea bed, submerged and eroded. In terms of Fedorov's hypothesis, the re-deposited state of the flint inventory mixed with sea fauna, as well as the presence of sandy loam in the soil layer, may find their logical explanation.[36]

The materials from the Yarylgach-Northern site do not enable us to prove or disprove the absolute date of the maximum stage of the neo-Black Sea transgression according to Fedorov's scheme. These materials just corroborate Fedorov's evaluation of the general dynamics of the sea level fluctuations in the late Holocene period and suggest that during the neo-Black Sea transgression the whole area of the synclinal basin now occupied by the lake was inundated by the sea. The drillings showed that the barrier must have existed in that period. However, the barrier had probably moved further to the south and had a gap. Hence, one can be fairly certain in supposing that the general landscape of the region under consideration at the stage of the neo-Black Sea transgression, according to Fedorov's hypotheses, must have corresponded roughly to the third stage (B) of the Bay of Yarylgach development according to Zenkovič's extrapolation. The difference is, though, that Zenkovič on the basis of the contemporary average rate of rising sea level supposes that such landscape could be formed in the remote future in the case of uninterrupted transgression.[37] However, our data suggest that Zenkovič's third stage (B) already existed in antiquity and corresponded to Fedorov's neo-Black Sea transgression stage, at which stage the Black Sea level was higher by about 2-2.5 m than it is now.

E.N. Nevesskij also assumes that during the period (which he calls the *Kalamitan*) of an acceleration of the continuous transgression, there was probably a brief time where the Black Sea level exceded the contemporary one. According to his calculations this occurred about 2500-3000 years ago, but one may not rule out that it was still earlier – about 3000-3500 years ago.[38] In the latter case, Nevesskij points out, that his 'graph of the transgression becomes in essence very close to that of Fedorov and the maximal rise of the sea level in the Kalamitan period may correlate with the neo-Black Sea (after Fedorov) peak of the transgression (at its second stage)'.[39] However, concerning the water area under discussion (Karkinitskiy Bay), Nevesskij supposed that 3000-2000 years ago the sea level here was from -12 to -9 m lower than the present-day level, and during 'the Kalamitan Transgressional Rise' in the second millennium B.C. (about 4000-3000 years ago) it rose from -20 to -12 m.[40] This supposition of Nevesskii concerning the Karkinitskiy Bay, and correspondingly the Bay of Yarylgach, is at complete variance with both Fedorov's curve and our data obtained on the basis of examining the Neolithic site of Yarylgach-Northern. The first date proposed by Nevesskij for his Kalamitan period does not actually correspond to the neo-Black Sea transgression of Nevesskij but rather to the Phanagorian transgression of Fedorov when the Black Sea level dropped below its present-day value. The latter period may be characterised by the following data and conclusions:

The second stage of the formation of the landscape in the micro-region studied is characterised by materials from test pits at the settlement of Yarylgach-Eastern. In comparison with the present-day sea level, these materials directly indicate a considerably lower level during the period when a large stationary settlement existed dating to the late Bronze Age. Closest parallels to the pottery from this settlement, represented by fragments of decorated handmade vessels (Pl. 181, *5*) and flint inventory, are to be found among the Lower Dnieper variety of the Multi-Cylinder Pottery Culture.[41] Chronologically speaking, researchers of that particular culture date the pottery within the range 1650-1500 B.C., *i.e.* about 3600-3700 years ago.[42] This date corresponds to the end of the Kalamitan period when, according to Nevesskij's theory, a slowing down of the transgression took place; that is to the period when, according to his calculations, the sea level in the Karkinitskiy Bay would have been lower

than the present level by -8 to -7.5 m.[43] The same period corresponds to the original stage of the Phanagorian regression according to Fedorov. From Fedorov's curve – improved by Šilik – it follows that the sea level may have been lower in approximately the last quarter of the second millennium B.C. by 1 to 3 m than it is now.[44] However, the settlement, as it is mentioned above, is dated to the second quarter of the second millennium B.C. Hence, the time of the neo-Black Sea's minimum regression would seem to vary by about 500 years.

The considerations presented above do not, however, confirm the eustatic curve proposed by P.F. Gožik and V.A. Karpov and obtained on the basis of studying the bottom sediments on the north-western Black Sea shelf. According to this curve the supposed Black Sea level in the period under discussion was about 0 to +1 m.[45] If this was correct, dwellings covering at least half of the area of the Yarylgach-Eastern settlement would have been submerged.

As evident from the above discussion, the maximum of the neo-Black Sea transgression can hardly be dated to the second millennium B.C. Most probably it took place earlier – in the third (if not the fourth) millennium B.C., as it was pointed out *inter alia* by Fedorov in his paper of 1963. Already in the first half of the second millennium B.C. an intensive process of the lowering of the sea level had probably begun. The settlement of the Multi-Cylinder Pottery Culture, situated on the flat country could only have been occupied when the sea level dropped considerably lower than present-day levels. At that time Lake Maloye-Solenoye could not have existed. Instead, there must have been a low, flat maritime vale, the bed of which was 1-2 m lower than the present shoreline. Accordingly, most of the area occupied by the modern Lake Panskoye must have been drained and the barrier must have been situated north of its present-day location. It would seem that our data concurs with the initial stage of the Phanagorian regression when, according to P.V. Fedorov, the sea level began to go down.[46]

The draining of the basin occupied now by Lake Panskoye, which began in the second millennium B.C. during the Phanagorian regression, was probably completed by the beginning of the first millennium. According to the original hypothesis of Fedorov, assumed by many scholars, minimum regression must have occurred towards the middle of the first millennium B.C. However, on the basis of the above considerations, as to the beginning of the Phanagorian regression, its minimum stage must be dated not to the middle but to the first half or even the beginning of the first millennium B.C. In other words, this minimum regression probably coincided with the original stage of the Greek colonisation of the coasts of Pontos in the seventh century B.C.[47]

There is no common opinion on the level of minimum Phanagorian regression relative the average present-day 'zero' of the Black Sea. It is evident now that the first evaluations of -2 to -3 m (apropos, those proposed by archaeologist A.N. Karasev on the basis of studies of the submerged remains of the Lower City in Olbia, and then assumed by P.V. Fedorov and most other scholars)[48] were understated. Later, Fedorov cautiously supposed that the sea level lowered to about -3 to -5 m.[49] According to our subsequent evaluations the level in the Karkinitskiy Bay was about -4 m in the fourth century B.C.[50] On the basis of geomorphological studies of the Lower Bug area Fedorov and Šilik first defined the minimum Phanagorian regression as equal to -6 m.[51] Later on, Šilik decided in favour of A.B. Ostrovskij's hypothesis based on studies of the Caucasian coast of the Black Sea (a regression ranging from -8 to -10 m).[52] Based on these values, Šilik supposed the sea level to be lower than the present-day level by 8 to11 or even 12 m.[53] Recently, based on the newest Gožik-Karpov's curve, I.V. Brujako and V.A. Karpov supposed that the minimum Phanagorian depression (-12 to -13 m) had been reached already at the turn of the second and first millennia B.C., and by the

beginning of the Greek colonisation of the northern Black Sea coasts, *i.e.* by the seventh century B.C., the sea level was 10-12 m lower than it is now, remaining relatively stable until the third-second centuries B.C.[54]

Our benchmarks are dated to the fourth – early third centuries B.C. Firstly, the present-day bed of Lake Maloye-Solenoye (the max. depth of which is about 0.5 to 1 m) was undoubtedly dry land then. This is evidenced by traces of the Greek occupation of the area dating to the late Bronze Age period which cover the remains of the settlement of Yarylgach-Eastern. Secondly, the whole western part of Panskoye I is now submerged by the lake within an area of not less than two hectares.[55] Thirdly, the remains of the settlement (or rural house) of Panskoye IV dating to the fourth or early third century B.C. were found at the watershed between ancient *balkas* at a depth of 3.5 m and were covered with lacustrine sediments. All this suggests that the water level in the lake was a minimum of 4 to 5 m, or probably more, lower in the fourth century B.C. than it is now. Taking into account the depths in the centre of the lake and the accumulation rate of sediments (formation of the lacustrine silts) of about 1 to 2 mm per annum, obtained as a result of studies of a typologically similar group of salt lakes in the north-western Crimea,[56] it can be assumed with a fair degree of probability that by the time Greek settlements began to appear here at the turn of the fifth and fourth centuries B.C. the lake did not exist. Probably, in its place there was a low maritime vale furrowed with deep *balkas*. The barrier had probably moved further out into the sea and one cannot rule out that it was broken and that the mouths of the *balkas* presented ria-like inlets. An approximate reconstruction of the topography of the region of Panskoye I and Panskoye IV corresponding to sea levels of -4 and -8 m is shown on Plate 186.

A low sea level probably remained some time after the settlements of Panskoye I, III and IV had fallen into ruin around 270 B.C. These ruins were situated on dry land. Then, the sea level began to rise and evidently exceeded the present one. This resulted in a submerging of the basin and the formation of Lake Panskoye and the Bay of Yarylgach widened considerably and the barrier between the lake and the bay moved to the south. It was possibly in that period that the formation of a landscape similar to that of the present took place.

After that, there was a period during which the water levels in the sea, and correspondingly in the lake, exceeded the contemporary level by a minimum of 0.5 to 1 m. This is directly indicated by the formation of a secondary barrier in the northern corner of the lake and the separation from it of the lagoon which submerged the western part of Panskoye I including the inactive cliffs facing the lake and the remains of house U14 that are now in the drained lagoon. The same is also suggested by the traces of buried sand and shell, undoubtedly accumulative beach drifts in the south-western lake-side area (U7) of Panskoye I and at the settlement of Yarylgach-Eastern. These drifts directly indicate the existence of a beach at mark +1 m relative the modern level.

Most probably this second rise of the waters which submerged most of the settlement of Yarylgach-Eastern, together with a layer of late Bronze Age and materials of the fourth and third centuries B.C. which covered the settlement, may be assigned to the Nymphaeum transgression proposed by Fedorov. It would seem, however, that the latter transgression reached its maximum earlier than Fedorov supposed in his monograph (*i.e.*, about 1000 years ago).[57] The correction proposed by Šilik, who supposed that the maximal level of the Nymphaeum transgression (fourth century B.C.) was about 0.7 m lower than the present-day one,[58] contradicts our data. Our data conform rather to the hypothesis that the peak of the Nymphaeum transgression ended at about the middle of the first millennium B.C. having reached the mark of 0 to +1 m.[59] It was probably during that period that the waters of Lake Panskoye expanded to their maximal dimensions. This resulted, as mentioned above, in the formation of the north-eastern lagoon which submerged and eroded the northern and west-

ern parts of Panskoye I. Simultaneously the formation of the secondary – inner (lake-side) – barrier, which separated the lagoon from the rest of the lake possibly took place. It is also during that period that a rapid 'wearing down' of the northern coast of the lake was possibly occurring.

Then a new regression evidently began. It was identified by K.K. Šilik who called it the Korsun' Regression. On the basis of materials from excavations in Chersonesos, he dated its beginning to the fifth-sixth centuries B.C. and its minimum (-3 m) to the 13th-17th centuries A.D.[60] The occupation of the settlement of Yarylgach-Eastern – including its now submerged part – in the early Middle Ages (600-700 A.D.), indicates that the minimum regression was evidently reached earlier. [61]

A new rise in the water level – the transgression which still continues – began according to some conceptions in the 13th-14th centuries A.D.,[62] and according to others in the 17th-18th centuries.[63] The latter date seems hardly possible, though. Judging by maps the lake already existed almost within its present-day limits at the end of the 18th or the beginning of the 19th centuries.

CONCLUSION

All the considerations stated above enable us to suppose with great assurance that the lake did not exist when the first Greek settlements appeared in the micro-region discussed at about the turn of the 5th and 4th centuries B.C. In its place there was a flat, low maritime vale (basin) with very fertile soils formed on silts, and carbonate chestnut-coloured soils of the southern chernozem type at more elevated parts of the vale. The basin itself was furrowed with a system of fairly deep and narrow *balkas*. It is highly possible that the lower mouth parts of these *balkas* were filled with water and presented narrow ria-like bays typical of a bay coast (Pl. 186). The Bay of Yarylgach was considerably lower. The barrier evidently existed but had moved to the north. It is quite possible that it was not closed. On the north, and on the south, the basin was protected by low, slightly sloping heights which provided for a very propitious microclimate, milder than that on the surrounding heights. The palaeobotanic evidence shows that the beds of the *balkas* were covered with bush and forest vegetation. Some of these plants were identified as downy oak (*Quercus pubescens* Willd.), beech (*Fagus sp.*), juniper (*Juniperus sp.*), fruits of wild oleaster and possibly of wild almond-tree, and also seeds of wild-growing vines (*Vitis silvestris* L.).[64]

The fertile soils and microclimate were favourable for growing grain and legume crops, as well as vines. The bush and forest vegetation gave fuel and building materials. There was an abundance of both common building stone and dense rock (Sarmatian limestones) for stone artefacts, as well as of clay. Therefore, taking all these facts into consideration, occupation of the described microregion would have been most attractive. That is why it was here that something like an oasis arose with Greek rural settlements, the core of which being the large coastal settlement of Panskoye I. It is quite possible also that there are remains of other rural houses or small villages on the bottom of the lake.

NOTES

1. Sections 1 and 2 are by N.S. Blagovolin and A.N. Ščeglov; the rest by A.N. Ščeglov.
2. This lake appears under three names in the geographic nomenclature of the Crimea. On maps of the 19th and first half of the 20th centuries it is designated with a neutral word *Sasyk* (*cf.*, *e.g.*, the military topographical map of the Tavricheskaya Province, scale 1 : 42 000, sheet VIII-3 (1899); Map of the Crimea (scale 1 : 1 000 000) published in 1820 by the Military Topographic Department; also: Kurnakov, Kuznecov, Dzens-Litovskij and Ravič 1936, 108). This Turkic hydronym designated in the local toponymy different nameless shallow sea-side salt lakes and lagoons. At the beginning of the 20th century the lake acquired in the literature the parallel formal name of 'The Public Sasyk Salt-Marsh' (Kurnakov, Kuznecov, Dzens-Litovskij and Ravič 1936, *ibid.*); however, about the same time it began to be called Lake *Panskoye* (*i.e.*: *the landlord's lake*) in the local Russian and Tartar milieus. It is this, the latest by origin hydronym, that became fixed in modern cartography (*cf.*, *e.g.*, Map of the Crimea, scale 1 : 200 000, published by the Ukrainian Aero-Geodesic Enterprise, Kiev 1993). In the scientific literature both of the names – *Sasyk* and *Panskoye* – are used.
3. Kurnakov, Kuznecov, Dzens-Litovskij and Ravič 1936, 108-110.
4. Longinov 1955, 151-165; Zenkovič 1958, 147 ff.; 1960, 142-145.
5. Pidgorodec'kyj 1961, 181-183.
6. Thus neither V.V. Longinov nor V.P. Zenkovič, *e.g.*, mention the chronology of the events in their works. Zenkovič (Zenkovič 1958, 147 ff., fig. 81) describes the supposed stages of the development of the Bay of Yarylgach and the positions of the barrier between the latter and the lake at both lower and higher than present sea levels but does not mention the corresponding absolute dates. P.D. Podgorodeckij (Pidgorodec'kyj 1961, 181) outlines in general terms that the formation of the bays that were later separated from the sea by barriers took place at the end of the Quaternary period owing to a transgression of the sea.
7. The width of the barrier (from 450 to 600 m) stated by P.D. Podgorodeckij (Pidgorodec'kyj 1961, 181) is erroneous.
8. The values stated differ slightly from the data presented by Dzens-Litovskij who made the first description of the lake (*cf.* Kurnakov, Kuznecov, Dzens-Litovskij and Ravič 1936, 108 ff.). This author, evidently basing his data on a map of an old plane-table survey at his disposal, indicated the lake's length as equal to 4.5 km and the width 2.15 km. However, he personally measured the maximal depth of the lake (1.05 m). Our data are based on contemporary topographic maps at scales of 1 : 25 000 and 1 : 10 000, and on our own depth measurements.
9. Kurnakov, Kuznecov, Dzens-Litovskij and Ravič 1936, 108 (57.5 sq km).
10. The height marks of dry land are presented in the Baltic system of heights if measurements relative the present-day sea level of 1969-1972 are not specially specified. In terms of the Baltic system of heights, the long-term mean level of the Black Sea taken by us as zero is equal to -0.4 m. Actually, the mean sea level by 1972 was -0.46 m relative to the Baltic 'zero' according to observations of the Hydrologic Service (Archives of the Institute 'Chernomorproekt', Odessa, inventory no. 179002).
11. In the Baltic system of heights.
12. *Cf.* Ščeglov 1967, 244; 1978, 19.
13. *Cf.* Ščeglov 1987, 240, fig. 2, *II*.
14. The settlement was discovered by A.N. Ščeglov; test pits were sunk by an exploratory detachment of the Expedition (M.Yu. Vachtina, N.K. Žižina). See Ščeglov, Balt, Vachtina *et al.* 1976, 410.
15. The work was carried out by hydrologist G.V. Bazov.
16. The explorations were carried out by students: geophysicist V.V. Glazunov, archaeologists A.I. Aibabin and E.V. Cuckin.
17. On the description, *cf.* Kurnakov, Kuznecov, Dzens-Litovskij and Ravič 1936, 93, 108, 109 fig. 38.

18. The geological prospecting was carried out for designing a canal through the barrier and dredging work in the lake for the intended construction of a sea port in the northern part of the lake. The head of the expedition: N.M. Lovcov.
19. The material obtained from the drillings is preserved in the Research Institute of Sea Design 'Chernomorproekt' (Odessa). The head of the Research Department, P.A. Oskol'skij, kindly put this material at our disposal for examination. We also profited by consultations with the Chief Expert on Geology, E.V. Mal'kovskij. We express our gratitude to both.
20. Drilling was carried out from a sea pontoon percussion drilling device by boring master M.I. Grigoraščenko.
21. The dredging work was done by the dredging convoy 'Yuzhnaya' (captain-director M.G. Lisin). Mr. Lisin, after examining our map of the relief of the bedrock, was of the opinion that the data obtained during the dredging proved our map to be correct and that it was more precise than the technical design documents (geological profile sections) prepared in the 'Chernomorniiproekt' Institute in Odessa.
22. I am grateful to Mr. M.G. Lisin for his kind and prompt invitation aboard the dredger and permission to register the finds.
23. *Cf.* Monachov 1989, 140, pls. I and II.
24. Pidgorodec'kyj 1961, *passim.* The same concerns an incorrect citing of our paper without a reference (Ščeglov 1978): Podgorodeckij 1997, 156.
25. Along the foothills of the Ğangul Rise and around Lake Panskoye, the isobase with the 'zero' value runs on the map of summary amplitudes of neotectonic movements during the Neogene-Quaternary period. *Cf. Ukraina i Moldavija* 1972, fig. 9.
26. *Cf.*, *e.g.*, Blagovolin and Ščeglov 1969, 452. P.D. Podgorodeckij's (Podgorodeckij 1997) conclusion that traces of the settlement of Panskoye IV would indicate the tectonic sinking of the lake's bed at a rate of 2.5 mm per annum during the last 2300 years being based on my summarising publication (Ščeglov 1978) does not follow from the latter. The same applies to E.V. L'vova's supposition that the south-western coast of the Tarkhankut Peninsula sank by 1.5-2 m owing to neo-tectonics during the last 2000 years (L'vova 1978, 99 ff.). The error resulted from incorrectly registered and conceived data from the excavation of a well in tower IV dating to the early 3rd century B.C. at the town-site of Belyaus (*cf.* Daševskaja 1969, 89). Earlier, at the very beginning of our archaeological and palaeogeographic studies we calculated hypothetically the contemporary relative rate of sinking of the northern coast of the Herakleian Peninsula in the south-western Crimea as equal to 2.5-3.0 mm per annum (Blagovolin and Ščeglov 1969, 452). However, it was the total value, which comprised the rate of vertical movements in the tectonically active area of the mountainous Crimea and the supposed rate of the contemporary transgression. It is incorrect to assign this value to vertical movements in the north-western Crimea.
27. *Cf.* Zenkovič 1958a, 106. In the monograph, data obtained during 30 to 35-year observations at three stations (in the cities of Poti, Feodosia and Odessa, *i.e.* in differing neo-tectonic zones) are presented (fig. 38). It is only natural that the graphs do not coincide, however the general trend is undoubtedly indicating in favour of the prevailing effect of eustatic factors. It is a pity that the more recent information has so far not been published.
28. It is very indicative that on the map showing rates of contemporary vertical movements of the earth's crust, not only the region described but also the whole maritime territory of the western Crimea (as well as the north-western Black Sea area), are subjected to sinking at the rate of 0-2 mm per annum. However, the relative rise of the vaulted parts of the ridges on the Tarkhankut Peninsula is equal to 0.2 mm per annum. *Cf.* Sokolovskij and Volkov 1965; *Ukraina i Moldavija* 1972, 51, fig. 10. Thus, the values stated indicate the present-day rise of the sea level rather than any contemporary tectonic movements. Although we do not deny the influence of the latter, their vertical rate is however too insignificant for these movements alone to explain the contemporary advance of the sea.
29. *Cf.*, *e.g.*, Brujako, Karpov and Petrenko 1991, fig. 2.

30. *Cf.*, *e.g.*, Eremeeva 1965, 12.
31. The Mesolithic and Neolithic periods in the Crimean steppe are little known. We have to base our considerations on ancient sites at the foothills of the south-western, central, as well as the steppe zone of eastern Crimea. Our microliths are contemporaneous to the second layer of the sites of Shan-Koba and to the first and second layers of the Alimovsky Cornice (*cf.* Bibikov, Stanko and Koen 1994, 165). *Cf.* also Mackevoj 1977, 69, fig. 12 (Frontovoye I), where, similar to our case, inserts of the Kukrek type were found.
32. *Cf.* Nevesskij 1967, 224, fig. 90. One should take into account that Nevesskij's absolute dates are too roughly defined for Holocene. They are based on changes in sea fauna.
33. Brujako, Karpov and Petrenko 1991, 16. The authors defined the age of the sediments on the bottom of the shelf using the C14 method.
34. Fedorov 1963, 141.
35. *Cf.* Fedorov and Šilik 1968, 90 ff.; Šilik 1975a, 68 ff.
36. We must add that 250 m south of the described outcrop there were accumulations of rounded pebbles and sea fauna found at the same level (about +2 m) in the area of the necropolis of Panskoye I.
37. Zenkovič 1958, 148, fig. 81. This scholar supposed that the event will occur when the sea level rises above 2 to 3 m in the future, if the present mean rate of rising lasts.
38. Nevesskij 1967, 227.
39. Nevesskij 1967, 227.
40. Nevesskij 1967, 224, fig. 90; see also 151 ff., fig. 63, e, ž.
41. *Cf.*, *e.g.*, Berezanskaja *et al.* 1986, 29 ff., figs. 10-13, also with many references.
42. Berezanskaja *et al.* 1986, 39.
43. Nevesskij 1967, fig. 90.
44. Šilik 1975, table (inset). For building the improved Fedorov's curve, K.K. Šilik took into consideration our observations at the settlement of Yarylgach-Eastern, but he erroneously assigned it to the end of the first millennium B.C. instead of to the end of the first half of that millennium, as follows from dating of the archaeological material.
45. Brujako, Karpov and Petrenko 1991, 17; Brujako and Karpov 1992, 88, the table.
46. Fedorov 1959; *Cf.* Šilik 1975, 5 ff.
47. Evidence of this is *inter alia* the material from the archaic Taganrog settlement (the second half of the 7th-6th centuries B.C.) destroyed by the sea in the north-eastern corner of the Azov Sea.
48. Karasev 1948; Fedorov 1959; Blavatskij 1962; Pravotorov 1967; Blagovolin and Ščeglov 1968; Blagovolin and Ščeglov 1969.
49. Fedorov 1963, 141.
50. Ščeglov 1978, 16.
51. Fedorov and Šilik 1968, 92 f.
52. Ostrovskij 1968.
53. *Cf.* Šilik 1972, 1157 ff., fig. 1; 1975, 12; 1975a, 72 f., fig. 11; 1977, 160 f.
54. Brujako, Karpov and Petrenko 1991, 11; Brujako and Karpov 1992, 89.
55. Ščeglov 1987.
56. Pervolf 1953.
57. Fedorov 1963, 141. According to him it took place about 1000 years ago.
58. Šilik 1975, 12.
59. Brujako, Karpov and Petrenko 1991, 13.
60. Šilik 1975, 6 f., the diagram in the inset.
61. According to Bruyako, Karpov and Petrenko (1991, 14) the magnitude of the regression fluctuated within the range of minus 5-6 to minus 2-3 m.
62. *Ibid.* 7. The date given in the text differs from that on the curve in the inset.
63. Brujako, Karpov and Petrenko 1991, 14.
64. Ščeglov, Januševič, Kuz'minova and Čavčavadze 1989, 53, 62, 65.

II. PETROGRAPHIC ANALYSIS OF STAMPED AMPHORAE

Alexander N. Ščeglov, Natalya B. Selivanova

1. The Objectives of the Research

The present investigation was carried out as a part of a project entitled 'Optical petrography studies of the pottery produced at Greek centres in the Black Sea area'.[1] The choice of the petrographic method was not accidental. Firstly, optical petrographic studies have been used in archaeology for a long time.[2] Secondly, such studies have been periodically attempted during the investigation of Greek pottery from excavations at the cities in the Black Sea area ever since the 1940s.[3] In those experiments it was proved that petrographic analysis is most certainly applicable to the study of mass ceramic material and especially amphorae.

However, the experiments mentioned above were intended to identify petrographic peculiarities of the pottery of a single local production centre. We set another target in this study: namely, to compare samples of different amphorae whose production centres were reliably established and which were found in a single building dated to a relatively narrow chronological range. We supposed that on the basis of a fairly small set of comparable signs it would be possible to identify more accurately the features of the ceramic paste peculiar to a certain production centre.

We proceeded from the assumption that it was not the natural composition of the pastes – which can show considerable variation even within a single deposit – that should be taken as an indicator but rather the mineral tempers that had been added by the potter to improve the technological qualities of the paste. If groups of tempers specific in terms of their qualitative and quantitative composition could actually be shown to correlate with certain groups of ceramic pastes produced in securely identified centres, then it would be possible to define a reference scale of signs for that class of amphorae. Subsequently this scale could be used both for distinguishing amphorae of unknown provenance and for identifying centres of production of different popular household ware.

Reliably attributed samples were needed for checking this supposition. Such samples are well represented by amphorae with stamps. After identification of the petrographic features specific to each established production centre it would be possible to consider unstamped amphorae as well as different kinds of plain household ware made from paste of similar composition to that of amphorae. Pottery of the latter type along with amphorae, complete or in fragments, constitutes the majority of the archaeological material obtained during excavations.

2. Selection and Description of the Samples

For analysis, 22 chips were chosen, selected from fragments of stamped amphorae produced in four reliably identified Black Sea centres: Herakleia Pontike, Sinope, Chersonesos, and Amastris. The first three centres carried out regular stamping of their amphorae on a large scale and for a long time. Thus Herakleia stamped its amphorae during the 4th- early 3rd centuries B.C.[4] and Sinope during the 4th- the first half of the 2nd century B.C.[5] In Chersonesos

stamping of amphorae began not earlier than the last third or quarter of the 4th century B.C. and ceased not later than the first quarter or half of the 2nd century B.C.[6] By contrast, it seems that Amastris carried out stamping for a short period only, at the very beginning of the 3rd century B.C. (*c.* 300-285).[7]

The fragments of stamped amphorae produced in the centres listed above were not all synchronous, although they were found in a single archaeological context reliably dated to the late 4th or early 3rd century B.C. Thus, for example, the small fragments of stamped Herakleian amphorae, with the exception of sample **9**, were present as filling in the structure of pavements or hearth walls and were dated to an earlier period. To make the selected set more synchronous we also excluded from consideration those fragments of amphorae and tiles bearing Sinopean marks belonging to Grakov's group I because it was evident that they had all been reused in the building. As to the fragments of Chersonesean amphorae and of Sinopean ones with stamps of Grakov's groups II and III or those from Amastris, they seem all to be synchronous. These vessels were actually in use in the building at the time of its sudden destruction.

All samples taken from amphorae fragments with Herakleian stamps show the visual features characteristic of this centre: brown-red colour with shades varying from light to dark, the surface of fractures rough to the touch like an emery grinder, and a considerable quantity of fine mineral inclusions of black, white, or reddish colour.

The series of chips cut from Sinopean stamped amphora handles are visually very homogeneous in their composition and colour. The dense ceramic texture in the fractures has slightly lilac or yellow-lilac shades, against the background of which is distinguishable quite a large quantity of disseminated acute-angled shining black particles; and even with the naked eye the presence of pyroxenes may be guessed at among the latter.

Dense, well-fired clay of various shades of red (from orange to deep red) with different carbonaceous inclusions is characteristic of the series of samples taken from Chersonesean stamped amphorae. The inclusions are homogeneously distributed; their quantity, however, varies considerably, as does the colour of the clay. Moreover, certain correlations may be observed between the visually discernible features of the paste and the magistrates' stamps. Thus the amphora fragments with the marks of the astynomos *Bathyllos* (no. **1**) always include fine white calcareous tempers with grains of regular size, and their very dense and excellently fired clay is coloured deep red. The paste samples taken from amphora handles with stamps of *Apollonios* (nos. **4** and **5**) contain almost no visible admixtures. The clay is soft and 'soapy' to the touch; the paste is light reddish-yellowish in section. The light red and very dense clay of the amphora fragments bearing the marks of the astynomos *Xanthos* (nos. **6** and **7**) contains a considerable admixture of acute-angled black grains along with a small quantity of white calcareous inclusions; this makes these fragments similar to the pottery of Sinope.

The samples taken from Amastrian amphorae (nos. **21** and **22**) have a dense texture containing a great quantity of fine black and white inclusions homogeneously distributed. In section the clay is light pink or red, and therefore resembles in colour the fragments of Sinopean stamped amphorae.

3. THE METHOD OF INVESTIGATION

The samples were studied in transparent thin sections. The percentage ratio of different admixtures in the paste as well as the mineral composition, shape, and dimensions of the grains were determined.

4. RESULTS

It was found that the ceramic material of amphorae from Chersonesos, Sinope, and Herakleia is not uniform in terms of its petrographic composition, and even in specimens from a single centre it can be divided into a number of groups. However, certain groups from different production centres constitute very close petrographic parallels. As will be shown below the Amastrian amphorae, though they are represented by only two samples, are no exception either to these general rules.

The tempers in the samples studied are represented by fragments of quartz, plagioclase, pyroxenes, basaltic hornblende, effusive rocks, quartzite, and limestones. Potsherd is very common too.

The size of the individual granules of temper varies from 0.01 to 1 mm. As a rule they are of acute-angled shape which suggests that most of the grains are those of artificially ground tempers. However the finest of the granules (about 0.05 mm) dispersed throughout the whole fabric were in most cases introduced with the natural clay.

Andesite porphyrites prevail among the fragments of effusives. Felsites and dacites are also found. In a number of cases effusives may, with a fair degree of probability, be considered to be present in the form of larger fragments as the source of grains of plagioclase and pyroxenes in the mineral tempers. As a result of the crushing of the coarse grains of effusive rocks, zonal plagioclases similar to those disseminated in porphyrite, as well as pyroxenes similar to the phenocrystals of pyroxene in porphyrites, were separated out.

Ground quartzite, which is sometimes found in larger particles in the same samples, often serves as a source of quartz grains. However, such a connection between monomineral fractions of the temper with some larger fraction (*i.e.* rock fragments) has not been revealed in all the samples studied. Thus it seems that the source of tempers in the ceramic pastes of amphorae from Sinope was coarse-grained pyroxenite; this is apparent from the fact that the largest grains are the fragments of yet larger crystals.

In a number of groups calcite in the form of finely smoothed fragments is found, along with secondary minerals which fill the hollows or (less frequently) produce pseudomorphes on some prismatic minerals or sometimes on organic inclusions (?). This component probably does not belong to an artificial temper but was introduced with the original clay.

5. DISCUSSION OF THE RESULTS

The most important finding was the discovery of analogies between the petrographically identified groups from different production centres. As mentioned above, the mineral composition of the inclusions was assumed as the main criterion because it is precisely this feature that reflects the technological composition of the tempers. The grain size was considered as a minor indication and was of importance only when it differed considerably from the norm.

Characteristics of the paste of stamped amphorae from each production centre are listed below:

Herakleia Pontike (Pl. 187, *1*). Three petrographic groups were identified.[8] The pastes of amphorae belonging to groups *Herakleia I* (Pl. 187, *1*) and *Herakleia II* (Pl. 187, *2*, *4*) are petrographically fairly homogeneous in terms of their mineral additives, for which a multi-componential composition is characteristic. Fragments of pyroxenes, quartz, feldspars, effusive rocks, hornblende, and limestone are present in these additives. The differences are limited

to variations in the quantitative ratio of the added components (nonplastics). The total absence of quartz fragments and the prevalence of fragments of plagioclase (up to 14%) are peculiar to group *Herakleia III* (Pl. 187, *3*).[9]

The data obtained are listed in Table 1.

Sinope (Pl. 188). Homogeneity of the composition of mineral additives, the closeness to each other of the two groups identified, and almost monomineral admixtures of which above two-thirds are composed of pyroxene fragments are peculiar to the paste of amphorae from this centre. The data are listed in Table 2.[10]

Amastris. The two samples from U6 show a great similarity to those of Sinopean amphorae. They contain 10-15% mineral additives, with the prevailing fragments being 0.3 mm (min. 0.05, max. 0.7) mostly angular; a few individual grains have traces of rounding. Of the additives 5-13% are composed of pyroxenes of rhombic enstatite-bronzite series (*cf. Sinope II*). The rest of the minerals are represented by quartz (3%), plagioclase (1%), and ore minerals (2%). Of rock fragments up to 3% limestones, 1% tuffites, and single dispersed grains of quartzites, endisites, and acid effusives were discovered. In addition, a secondary carbonate (about 1%) was identified. This group was later designated as *Amastris V*.[11]

Chersonesos (Pl. 189). Petrographically the paste of Chersonesean amphorae is fairly inhomogeneous. Four groups were distinguished each differing markedly from the other. Their characteristics are as follow (see also Table 3).

The common feature of the pastes used in Chersonesean amphorae production is the high concentration of secondary calcite it contains. Probably this feature is a result of the natural clay composition. One other peculiarity has been identified: a direct correlation between the petrographic groups recognized and the names of the astynomoi on the corresponding magistrate's stamps. Thus group *Chersonesos I* (astynomos *Bathyllos*) is distinguished in general by its very low content of tempers, which are composed almost solely of quartz. In that it is close to group *Chersonesos III* (astynomos *Apollonios*) also tempered practically solely with quartz; the latter, however, in contrast to group *Chersonesos I*, is extremely finely ground. In its general features group *Chersonesos II* (astynomos *Dioskouridas*) most nearly resembles group *Amastris IV* identified later. Group *Chersonesos IV* (astynomos *Xanthos*) differs from the other Chersonesean samples in having a considerable content of non-ferrous metals in the temper. In the diversity of its composition and texture the latter group is most similar to groups *Herakleia I* and *Amastris IV*.

Table 1.

Petrographic group *Herakleia*		**I**	**II**	**III**
Sample Nos.		**8, 9**	**10, 11**	**12, 13**
Temper content (%)		25	up to 30	12-18
Size of granules (millimetres):				
Prevailing		0.3	0.4	0.4
Min.		0.1	0.01	0.01
Max.		0.9	0.5	0.7
Rounding:				
Angular		+	+	+
Traces of rounding		single coarse grains	acute-angled –	acute-angled –
Rounded		–	–	–
Fragments of minerals				
***Pyroxenes*:**				
a. Monoclinic of the diopside-goethenbergite series	biaxial positive $2V < 60°$ Ng – Np=0.023-0.028	–	3-4%	–
	biaxial positive $2V = ?$ Ng – Np=0.017-0.020	1%	–	single grains
b. rhombic enstatite-bronzite series	biaxial positive $2V > 70°$ Ng – Np=0.011-0.012	2%	–	2%
Basaltic hornblende		2%	–	2%
Quartz		8%	7%	single grains
Plagioclase		3%	7%	14%
Ore minerals		–	–	–
Rock fragments:				
Quartzite		Single grains	2%	single grains
Vulcanites:				
Andesites		Single grains	–	5%
Effusives of acid composition		2-3%	2-3%	–
Tuffites		Single grains	–	–
Potsherd		1-2%	1%	–
Secondary carbonate		+	–	1%

Table 2.

Petrographic group *Sinope*		**I**	**II**
Sample Nos.		**14, 15, 16, 18, 20**	**17, 19**
Temper content (%)		15	12
Size of granules (millimetres):			
Prevailing		0.3-0.4	0.5-0.7
Min.		0.1	0.1
Max.		0.6	0.8
Rounding:			
Angular		+ acute-angled	+ acute-angled
Traces of rounding		–	–
Rounded		–	–
Fragments of minerals			
***Pyroxenes*:**			
a. Monoclinic of the diopside-goethenbergite series	biaxial positive $2V < 60°$ Ng – Np=0.023-0.028	–	11%
	biaxial positive $2V = ?$ Ng – Np=0.017-0.020	–	–
b. rhombic enstatite-bronzite series	biaxial positive $2V > 70°$ Ng – Np=0.011-0.012	–	9%
Basaltic hornblende		–	–
Quartz		single grains	–
Plagioclase		1%	2%
Ore minerals		single grains	1%
Rock fragments:			
Quartzite		Single grains	–
Vulcanites:			
Andesites		1%	–
Effusives of acid composition		1%	–
Tuffites		–	–
Potsherd		3%	3%
Secondary carbonate		–	–

Table 3.

Petrographic group *Chersonesos*	**I**	**II**	**III**	**IV**
Sample Nos.	**1**	**2, 3**	**4, 5**	**6, 7**
Temper content (%)	5	15-18	10	20
Size of granules (millimetres):				
Prevailing	0.3	0.1	0.1	0.4
Min.	0.01	0.01	0.01	0.05
Max.	0.7	1.5	0.3	1.0
Rounding:				
Angular	+ acute-angled	+ acute-angled	+ acute-angled	angular
Traces of rounding	single grains	single grains	frequent	single grains
Rounded	–	single grains (quartz 0.8 mm)	–	–
Fragments of minerals				
***Pyroxenes*:**				
a. Monoclinic of the diopside-goethenbergite series	biaxial positive 2V < 60° Ng – Np=0.023-0.028	–	–	–	–
	biaxial positive 2V = ? Ng – Np=0.017-0.020	single grains	–	–	single grains
b. rhombic enstatite-bronzite series	biaxial positive 2V > 70° Ng – Np=0.011-0.012	single grains	–	–	2%
Basaltic hornblende		–	single grains	–	single grains
Quartz		3%	8%	10%	3%
Plagioclase		single grains	7%	–	7%
Ore minerals		single grains	–	–	–
Rock fragments:					
Quartzite		single grains	single grains	–	–
Vulcanites:					
Andesites		1%	–	–	5%
Effusives of acid composition		single grains	–	single grains	–
Tuffites		–	–	–	single grains
Potsherd		1%	3%	1%	single grains
Secondary carbonate		5%	single grains	1-2%	2-4%

6. PETROGRAPHIC SUMMARY

The paste used for the production of Sinopean amphorae seems fairly homogeneous in terms of the composition of its tempers. To a lesser extent this is also true of the amphorae production of Herakleia Pontike, but we are dealing with quite another situation when considering the pastes of amphorae from Amastris and Chersonesos. The Amastrian samples from U6 are nearest to the Sinopean pastes in terms of their temper composition – though, in general, a marked diversity of composition is characteristic of amphorae from Chersonesos and Amastris. On the other hand, certain groups from Chersonesos and Amastris do find parallels in the pastes of Sinope and Herakleia.

A comparative description of the petrographic groups considered is given below (Table 4).

Table 4.

Petrographic groups, sample nos.	**Peculiar features**
Sinope I. Nos. 14, 15, 16, 18, 20	The additives consist mostly of monoclinic pyroxene of diopside goetherbergite series with strong birefringence, and a small amount of potsherd. Group *Sinope I* is close to groups *Amastris II* and *III* in terms of the content and composition of pyroxenes.
Sinope I. Nos. 17, 19; *Amastris V*. Nos. 21, 22	The mineral additives in the paste consist almost entirely of rhombic roxene of the hystatite - bronzite series with low birefringence. *Amastris* is identical to *Sinope* in the quantity and composition of pyroxenes but differs sharply in the multicomponential composition of nonplastics.
Herakleia I. Nos. 8, 9; *Chersonesos V* . Nos. 6, 7	The mineral nonplastic material is multicomponential: viz. pyroxene (small amount, low birefringence), quartz, zonal plagioclase, ore minerals, limestone, effusives. In addition, *Herakleia* contains basaltic hornblende. Close to the groups described is that of *Amastris*
Chersonesos II . Nos. 2, 3	Quartz and plagioclase prevail. The mineral tempers are not homogeneous in grain size: among fine fragments of quartz and plagioclase are coarse fragments of effusives and quartzite. These groups are close to that of *Amastris VI*. However, in the latter are present the finest grains of polymorphic carbonate that were a constituent of local clays.

7. The Archaeological Interpretation

In what way can the results of the 'optical petrography study' be explained in terms of archaeological science?

First, we will consider the stamped amphorae of Herakleia Pontike.[12] The petrographic group *Herakleia III* includes amphora fragments bearing stamps of the first group (sample **12**) and the late phase of group 2 (sample **13**) according to the typological classification of I.B. Brašinskij. That author assigned the first typological group to the first period (A) of amphora stamping (the first-beginning of the second quarter of the 4th century B.C.). The late phase of group 2 of stamps was dated by him to the third quarter of the same century. To the latter typological group belong also both the samples comprising petrographical group *Herakleia II* (nos. **10** and **11**).

The two samples that make up petrographical group *Herakleia I* demand special consideration. The anepigraphic stamp (sample **8**) belongs to Brašinskij's seventh typological group and to the first (A) or second (B) period of stamping, *i.e.* to the period from the early 4th century B.C. to the beginning of the last quarter of that century. Sample **9**, another neck fragment from a small amphora, bears an engraved stamp from the late sub-group of Brašinskij's fifth group. The latter assigned this group to the third and final period (C) of amphora stamping in Herakleia (late 4th – first quarter of the 3rd century B.C.).

Thus we may suppose that certain differences between the petrographic groups most probably reflect not a chronological series but a compositional one. In this connection a question arises as to whether different workshops had their own particular sources of the raw materials used for tempering the pastes, or adhered to their own traditional compositions of the tempers. This question may be solved only after analysing a sufficiently representative sampling of fragments from stamped amphorae.

The ceramic body of Sinopean amphorae, as has already been said, is remarkable for constancy of composition of its mineral tempers both in qualitative and quantitative terms, and the fact that this constancy continued over a long period that began with the practice of stamping vessels. The same constancy has been recorded in the stamped amphorae of Grakov's chronological groups I to III (the groups later than these could not have been included in the experiment). We should probably connect the fine mineralogical differences revealed between the petrographical groups *Sinope III* and *Sinope I*, on the one hand, and *Sinope II*, on the other hand, with different sources of raw materials and, moreover, with those used simultaneously in different workshops. Such a supposition is suggested by the fact that during the time when the astynomos *Mnesikles* was in office a 'manufacturer' named *Apollonios* (sample **15**) used pyroxenes with high birefringence as tempers while another 'manufacturer' called *Philokrates* (sample **16**) used those with low birefringence. Both workshops were operating simultaneously.

Only two examples of stamped amphorae from Amastris come from building U6. It was in fact at this very site that such amphorae were identified for the first time. Both items belonged to vessels close to Sinopean amphorae with stamps of Grakov's chronological group III and, as it subsequently emerged, were also petrographically close to them (*cf.* Table 4). Later we compiled a corpus of stamps and rims of Amastrian amphorae and conducted a special typological, chronological, and petrographical analysis of stamped Amastrian amphorae found at various sites in the northern Black Sea area.[13] This analysis showed that the two types of amphorae from Amastris were related to amphorae from both Herakleia and Sinope. Moreover, the petrographical parallels between the pastes of Amastris and Herakleia, on the one hand, and Amastris and Sinope, on the other, were clearly revealed.

It is known that the city of Amastris, which lay between Herakleia and Sinope, was

founded by Amastris – the female ruler of Herakleia – in about 300 B.C. According to Strabo (XII. 3. 10), the city was composed of four settlements – Sesamos, Kytoros, Kromna, and Tios. Of those, Kytoros was originally the *emporion* of Sinope. Hence it is probable that the early population of Amastris included both Dorian Greeks – 'Herakleiotes' – and Ionian Greeks – 'Sinopeans'. This is further suggested no only by the morphology of the two types of vessels (imitating the Herakleian and Sinopean wine amphorae) but also by the presence of engraved stamps (typical of Herakleia) and the relief ones (typical of Sinope). It is therefore justifiable to suppose that natives of both Herakleia and Sinope were among the Amastrian potters. They must have brought their technical secrets with them along with the two standard types of wine amphorae, and this fact is evidently reflected in the composition of the mineral tempers.[14]

As mentioned above, mass production of stamped Chersonesean amphorae with pointed bottoms (for wine) began in the last quarter of the 4th century B.C. [15] From that time on were produced vessels of two basic types (and associated varieties) which evidently imitated the standard shapes of Sinopean and Herakleian amphorae.[16] This imitation could have been deliberate but we cannot rule out the possibility that there were potters in Chersonesos who originated both from the metropolis and from Sinope. However, in the series studied the most closely paralleled petrographically were the Herakleian and especially the Amastrian amphorae (*cf.* Table 4). This fact is hardly a mere coincidence. The following observations are also to be noted.

1. The mineral composition of tempers in the fabric of Chersonesean amphorae is clearly not of local (or even wider Crimean) origin.[17] Moreover, a great variety of temper compositions can be observed (which is not typical for *e.g.* Sinope). Hence we may suppose that the raw materials for the tempers probably came from other regions, including possibly the southern Black Sea area. This would account for the special petrographical similarity in the fabric of contemporaneous amphorae from Chersonesos and Amastris. It is from within the *chora* of Chersonesos that the most numerous finds of Amastrian amphorae or their fragments and stamps have been reported in the northern Black Sea area (Kimmerian Bosporos, Chersonesos, Olbia).[18] This fact indicates intensive importation of certain goods carried in amphorae from Amastris to Chersonesos and its territory during the period covering about 300-285 B.C.

At Chersonesos as well as in other Greek cities and rural settlements in the northern Black Sea area there are constant finds of 'exotic' rock species that come from deposits of Northern Anatolia or the islands of the Aegean. These finds are not limited to stone artefacts, and indeed the majority of these imported rock species are represented by unworked blocks mostly rounded by sea – in other words, natural cobbles and pebbles. Possibly this material was used as ships' ballast.[19] Such stones are fairly common in excavations of the walls of buildings and in the pavements of courtyards and streets, and it is possible that they could also have served as the source of raw minerals for Chersonesean potters. On the other hand, however, if we take into account the technological traditions of the potters, we cannot rule out the possibility of organized importation of the necessary raw materials.

2. Each of the four petrographical groups identified in the Chersonesean amphorae is rigidly connected to the name of only one particular astynomos. Firstly, this provides additional evidence that the goods contained in the Chersonesean transport amphorae came to the settlement of Panskoye I as a number of homogeneous lots. Secondly, it suggests that the amphorae from a single lot stamped with the name of one particular astynomos were manufactured in a single workshop.

3. If the samples are arranged in order of increasing content of tempers (taking into account the diversity of the mineralogical composition of the latter) the following sequence of astynomoi emerges: *Bathyllos* (5%) – *Apollonios* (10%) – *Dioskouridas* (15-18%) –*Xanthos* (20%). The pastes of amphorae stamped with the name of *Bathyllos* (*Chersonesos I*) and *Apollonios* (*Chersonesos III*) are extremely close to each other in the character of their almost monomineral quartz temper. According to the typological classification developed by V.I. Kac the stamps of the four above-mentioned astynomoi should all be assigned to different sub-groups of the first chronological group, and he dates the boundaries of this group to 325-285 B.C. Thus he assigns *Bathyllos* (*Chersonesos I*) to sub-group IA (325-315 B.C.), *Apollonios* (*Chersonesos III*) and *Xanthos* (*Chersonesos IV*) to sub-group IБ (315-300 B.C.), and *Dioskouridas* (*Chersonesos II*) to sub-group IB (300-285 B.C.). As we can see here the sequence suggested by using petrographic data differ somewhat from this. Hence the question arises as to whether it is reasonable to use petrographic data obtained on a representative sampling for a further improvement of the chronological classification of Chersonesean amphora stamps?

8. CONCLUSION

All conclusions reached in the present study are based on a rather limited amount of material, as was also the case with the earlier petrographical studies of pottery from Black Sea centres mentioned at the beginning of this appendix. Therefore these conclusions are simply of a preliminary character and demand further examination on the basis of a sufficiently large volume of representative sampling.

Nevertheless these results are encouraging, even though they are not exactly what was expected. The situation is fairly complex. One is justified in supposing that the two independent centres producing stamped transport amphorae – Sinope and Herakleia – gave birth to two further centres – Chersonesos and Amastris, – whither perhaps were transported not only the standards and shapes of the wine amphorae together with the bearers of the technological traditions and some other factors unknown to us, but also the peculiarities of stamping as well as the technological formulae.

CATALOGUE

Chersonesos

1 (2). U6 courtyard, DE-6. Find list 17/26. 1972.

Sample from an amphora fragment (**Ad 2**). On the shoulder of the amphora there is graffito **H 13**. On the handle a relief stamp (**Ae 32**):

Βαθύλλου
ἀστυνόμου

Ceramic paste very dense; brick-red; contains regularly dispersed fine white (seemingly carbonaceous) inclusions. High-quality of firing.

Achmerov 1959, group I; Michlin 1979, group I; Kac 1994, group IA.

2 (9). U6 room 3. Find list 6/8. 1969. Pl. 56.

Sample from an amphora handle with a stamp (**Ae 35**):

Διοσκουρίδ[α
ἀστυνόμ[ου

Ceramic paste very dense; greyish-greenish and reddish in section; slightly resembles some specimens of stamped Sinope handles in colour.

Achmerov 1959, group II; Michlin 1979, group II; Kac, 1994, group IB.

3 (10). U6 room 3. Find list 6/9. 1969. Pl. 56.

Sample from an amphora handle with a stamp (**Ae 36**):

Διοσκουρίδα
ἀστυνόμου

Achmerov 1959, group II; Michlin 1979, group II; Kac, 1994, group IB.

4 (11). U6 courtyard, V-4. 1973.

Sample from an amphora handle with a stamp (**Ae 13**):

Ἀπολλωνίου
ἀστυνόμου

Achmerov 1959, group III; Michlin 1979, group II; Kac, 1994, group IБ.

5 (12). U6 courtyard, VG-4. 1967. Pl. 55.

Sample from an amphora handle with a stamp (**Ae 15**).
᾽Απολλωνίου
ἀστυνόμου
Achmerov 1959, group III; Michlin 1979, group II; Kac, 1994, group IБ.

6 (13). U6 courtyard, D-6. 1972.

Sample from an amphora handle with a stamp (**Ae 66**).
Ξά[νθου
ἀστ[υνόμου
Achmerov 1959, group I; Michlin 1979, group II; Kac, 1994, group IБ.

7 (14). U6 courtyard, D-2. 1973.

Sample from an amphora handle with a stamp (**Ae 64**).
Ξάνθο[υ
ἀστυνόμ[ου
Achmerov 1959, group I; Michlin 1979, group I; Kac, 1994, group IБ.

Herakleia Pontike

8 (7). U6 courtyard, V-2. Find list 11/14. 1971. Pl. 61.

Sample from a fragment of amphora neck with an anepigraphic engraved stamp in the form of a cross with equal arms (**Ae 132**).
Brašinskij 1980, group 6.

9 (8). U6 courtyard, D-6. Find list 17/45. 1972. Pl. 60.

Sample from a fragment of amphora neck with an engraved stamp (**Ae 121**):
ΚΕΡ
Retrograde, enclosed inside an ivy leaf.
Brašinskij 1980, group 2-3.

10 (21). U6 courtyard, E-6. 1973. Pl. 60.

Sample from a fragment of amphora neck with an engraved stamp (**Ae 120**):
᾽Ηρακ[λείδα
Retrograde.
Grakov 1926, group I; Brašinskij 1980, group 2 late.

11 (22). U6 courtyard, G-5. 1973. Pl. 60.

Sample from a fragment of amphora neck with an engraved stamp (**Ae 119**):
᾽Ηρ[α( )
Grakov 1926, group I; Brašinskij 1980, group 2 late.

12 (23). U6 courtyard, Zh-7. 1972. Pl. 60.

Sample from a fragment of amphora neck with an engraved stamp (**Ae 124**):
Διο]ν-
υσί]ο ᾽Ηρ( )
Grakov 1926, group I; Brašinskij 1980, group 2 late.

13 (24). U6 courtyard, G-6. Find list 3/20. 1972. Pl. 60.

Sample from a fragment of a neck with an engraved stamp (**Ae 123**):
Θε]οξέν-
ο ᾽Αριστ[ο-
κλέο[ς
Grakov 1926, group I; Brašinskij 1980, group 1.

Sinope

14 (5). U6 room 13. Find list 8/11. 1971. Pl. 59.

Sample from an amphora handle with a relief stamp (**Ae 105**):
Μικρίου ἀστυνο-
μοῦντος
Θυός Horse
Grakov 1929, group III.

15 (6). U6 room 13. Find list 8/12. 1971. Pl. 59.

Sample from an amphora handle (traces of an illegible relief stamp are visible).

16 (15). U6 courtyard, V-4. 1973. Pl. 59.

Sample from an amphora handle with a relief stamp (**Ae 106**):
ἀστυνόμου
Μνησικλέου[ς
᾽Απολλωνίο leaf
Grakov 1929, group III.

17 (16). U6 square Z-7. 1973. Pl. 59.

Sample from an amphora handle with a relief stamp (**Ae 110**):
ἀστυνόμου
Μνησικλέου<ο>ς
Φιλοκράτους Grape
Grakov 1929, group III.

18 (17). U6 courtyard, E-3. 1973. Pl. 59.

Sample from an amphora handle with a relief stamp (**Ae 103**):
Θευπε]ίθου
ἀστυν]όμου Wreath
[– – – –]
Grakov 1929, group II.

19 (18). U6 courtyard, D-6. Find list 17/42. 1972. Pl. 59.

Sample from an amphora handle with a relief stamp (**Ae 112**):
[Πυθ]ο[κλέους]
ἀστυνόμο
Π]οσειδωνίου Satyr head
Grakov 1929, group III.

20 (19). U6 courtyard, V-4. 1973.

Sample from an amphora handle with a relief stamp (broken off, illegible).
According to stamp type: Grakov 1929, group II or III.

Amastris

21 (3). U6 gate. Find list 3/25. 1972. Pl. 60.

Sample from an amphora wall with an engraved stamp on the neck (**Ae 115**).

᾽Αμάστ-
ριος Ivy leaf

Pridik 1917, no. 170; Ščeglov 1986; Kac, Pavlenkov and Ščeglov 1989, stamp 1.

22 (4). U6 gate. Find list 3/73. 1973. Pl. 60.

Sample from an amphora wall with an engraved stamp on the neck (**Ae 116**):

᾽Αμάστ-
ριος Ivy leaf

Pridik 1917, no. 170; Ščeglov 1986; Kac, Pavlenkov and Ščeglov 1989, stamp 1.

NOTES

1. The study was carried out in the Department of Classical Archaeology and the Laboratory of Archaeological Technology of the LOIA, AS USSR (now IIMK RAS). The results are published in: Ščeglov and Selivanova 1992, 32-67.
2. *Cf.*, *e.g.*, Peacock 1970, 375-389; Whitbread 1986, 95-101. Of the recent general works, note in particular the following handbooks: Caprio 1985; Rice 1987; and especially the important study presented by Whitbread 1995.
3. In particular, for the purpose of identifying ware produced in local North-Black-Sea Greek centres, and for studying certain technological peculiarities of pottery manufacture. Kul'skaja 1940, 171-185; Kul'skaja, 1958; Krug 1960, 128-132; Krug and Četverikov 1961, 34-44; Bogdanova-Berezovskaja, Naumov and Kovnurko 1964, 314-319; Kadeev and Šumenko 1967, 271-276. Of the recent studies see Vnukov 1992, 68-89.
4. The typological and chronological classification of Herakleian stamps was developed by B.N. Grakov in 1926 (Grakov 1926). Later this chronology was defined more precisely, see I.B. Brašinskij 1965; Brašinskij 1984, 82-89; Brašinskij 1984a; Vasilenko 1970. The material known to us suggests that in Herakleia Pontike stamping of amphorae ceased about 280-270 B.C.
5. B.N. Grakov precisely identified the location of Sinopean amphorae production and developed the typology of the stamps (Grakov 1929). Grakov's typology has not been subjected to any changes, but the chronology (in absolute dates) has been extensively corrected. See Brašinskij 1963; Cechmistrenko 1963; Vasilenko 1971; Šelov 1975, 134-139.
6. The first classification was developed by R.B. Achmerov (1949). Later it was improved: Borisova 1974; Michlin 1979; Kac 1985; 1994. The latter work encountered sharp criticism. See Gilevič and Ščeglov 1996; Tochtas'jev 1997. It is impossible to use V.I. Kac's handbook in a practical study because of inaccuracy of the tables, and thus the author's brilliant idea – in itself – has been spoilt by the technical production of the tables as well as by other faults pointed out in S.R. Tochtas'ev's article. Nevertheless, it seems that the earliest and latest dates of stamping amphorae in Chersonesos proposed by Kac are fairly reliable.
7. Ščeglov 1986; Kac, Pavlenkov and Ščeglov 1989. On another dating of the stamps, see Saprykin and Kruglikova 1991, 92.
8. Later one further group was added – *Herakleia IV*. See Ščeglov and Selivanova 1992, 34, table 3.
9. For a typical example of the group *Herakleia III*, see Ščeglov and Selivanova 1992, 60, fig. 4.
10. Compare these with the results of the independent analysis: Whitbread 1995, 236 ff. We detail three petrographical groups. See Ščeglov and Selivanova 1992, 39 f.
11. For the other petrographical groups of Amastrian amphorae and their interpretation, see especially Kac, Pavlenkov and Ščeglov 1989; Ščeglov and Selivanova 1992, 44-46, tabs. 1 and 3.

12. Here we accept the typology and chronology of Herakleian stamps according to Brašinskij 1984.
13. Kac, Pavlenkov and Ščeglov 1989.
14. See Ščeglov 1986.
15. Borisova 1974, 100; Kac (1994, 100) dates the beginning of stamping to about 325 B.C. on the strength of his more precise chronology.
16. Borisova 1974, 101.
17. See Petrun' 1967, 149 ff.
18. See Kac, Pavlenkov and Ščeglov 1989, the catalogue and fig. 5.
19. Petrun' 1967, 144-150.

III. PETROPHYSICAL STUDY OF THE HANDMADE POTTERY

Gennadii M. Kovnurko

In terms of tectonics, the north-western Crimea belongs to the platform structure. Near the Bay of Yarylgach and Lake Ğarylgach lower chalky clays possessing high plasticity are bedded at a great depth. On the surface there are outcrops of Neogenic depositions of the Sarmatian, Maeotian, and Pontic layers. These are depositions of the shallow sea represented by interjacent clays, loams, sands, marls, and limestones. The composition and thickness of these sedimentaries vary. The Quaternary depositions here are of a lacustrine and marine origin and in terms of their lithological composition they are close to the Neogenic ones.

Three types of clay were used for making the pottery studied in thin sections (see Table 1):[1]

1) Fat clay in which admixtures of nonplastic are small or indiscernible, *e.g.* samples *A-6*, *A-12*, *A-2*.
2) Lean clay with powdered (aleurite/silt) admixture uniformly distributed throughout the fabric. The grains of the inclusion measure less than 0.05 mm, and are only slightly smoothed and rounded by water; in the fabric, particles of quartz-feldspar material prevail. The percentage of silt (aleurite) content varies continuously from one clay sample to another (*e.g.* samples *A-24*, *A-28, etc.*).
3) Carbonaceous (lime-containing) clay including admixtures of calcite, remains of foraminifera with calcite skeletons; examples are *e.g. A-32* and *A-35*.

The products of firing the clay minerals are a latent-crystalline mass, in thin sections of which minute micaceous minerals are discernible. In the sections there is a thin layer of a relatively transparent ceramic mass on the outer surface of the vessels; in this layer, iron compounds give oxidic trivalent forms through the action of the ambient oxygen, and the finely dispersed carbonaceous substance burns out. In the inner part of the vessel material there is not enough oxygen for these changes. Among the examples of bicoloured texture are samples *A-10*, *A-19*, and *A-28*. In samples *A-24*, *A-34*, and similar, the clay fabric appears spotted. This is possibly the effect of using finely interlaid clays of various compositions. In certain thin sections, *e.g. A-14*, brightening of the texture along latent cracks is noticeable.

The temper added to the paste has many peculiar features. By the aid of thin sections it is possible to study the mineral composition, the shape, and the size of separate particles of inclusions, as well as the extent to which they are rounded, and their relative content. The most common inclusions are various organogenic and oolitic limestones, shell fragments, fine-grained calcite, quartz and feldspar, potsherd, basalts, clinopyroxenes, basaltic hornblende. Fragments of argillite, aleurolite, and ore minerals are found much more rarely.

A number of samples in which potsherd is the main component of the temper was identified in the collection. By examining the samples tempered with potsherd under a microscope it was possible to identify two distinct groups in this type of pottery. In the first group, crushed potsherd made in the same workshop was used as grog: the composition of the grog is identical to that of the ceramic paste in which it is included (*A-12* and *A-13*). In the other group, ceramics differing in their clay and temper(s) from the actual fragments of vessels under examination had been subjected to crushing: an example is sample *A-27*. A further

group of pottery is represented by fabric containing sea sand, the latter being identifiable by the extent to which the grains are rounded. In almost all the thin sections investigated the rounding of the particles was poor or medium. Only in one thin section (Pl. 190, *1*) were ideally rounded particles of carbonate composition observed: namely, in sample *A-4*, where small regular spheres of carbonate composition formed through the decomposition of poorly aggregated oolitic limestone could be discerned; however, their roundness was not due to the action of water upon the particles. The grain size in most cases does not exceed 1.5-2.0 mm. Only in one or two of the samples (*A-1* and *A-28*) have particles 4-5 mm in diameter been discovered.

On the surface of several vessels the imprints of plants are fairly plainly visible. The feasibility of distinguishing burnt-out plants in thin sections depends on the orientation of the stalks relative to the plane of the section. The plant remains are easily discernible when the stalks are positioned at acute angles to the section plane (*A-15*; Pl. 190, *3*).

Of the great variety of physical properties, the water-absorption value, the density, and the magnetic susceptibility of the ceramics were chosen for determination. These properties were investigated using the samples of irregular shape and small size that remained after the preparation of thin sections. In determining density, the sequence of operations was as follows: (*a*) weighing of the samples in air, correct to within 0.01 g – m_c; (*b*) weighing of the samples in water, to the same degree of precision – m_b; (*c*) determination of the sample volume according to the formula: m_c-m_b; (*d*) calculation of the sample density: $p = m_c/(m_c\text{-}m_b)$.

The value of water absorption is an indirect indication of the hidden porosity of the ceramic material. In determining this quantity, the operations were carried out in the following sequence: (*a*) weighing of the samples in air, correct to within 0.01 g – m_c; (*b*) saturation of the samples with water over periods of 1, 3, 5, and 10 days; (*c*) weighing of the samples saturated with moisture at the expiration of each of these periods – m_b; (*d*) determination of the water absorption: $W_a = (m_b\text{-}m_c)/m_c$.

It should be noted that there was practically no difference between the water-absorption values corresponding to the 1-, 3-, 5-, and 10-day cycles, *i.e.* the full saturation of the samples with water was complete within the first twenty-four hours.

The measurements showed that the water-absorption values fluctuated within a very wide range – from 7.3% to 34.0%. The ceramic-material density was determined by two parameters: the density of the mineral skeleton of the ceramics and the value of inaccessible porosity. The samples with low density not exceeding 2.0 g/cm,^{3} were evidently characterised by high inaccessible porosity. The material of which the density exceeded 2.2 g/cm^3 had low latent porosity.

Magnetic susceptibility was measured with a kappameter. It was found that the minimum values did not exceed 6000 units SI, the maximum values being greater than 18000 units SI.

In order to develop a classification of the pottery samples, the results of the microscopical examinations were compared with physical properties of the samples. It has been stated that the low-density ceramic materials (samples *A-12*, *A-15*, *A-18*, and similar) contain numerous imprints of burnt-out plant matter. The addition of grass or straw to the paste probably caused a high inaccessible porosity, which in its turn resulted in the material being of low density.

For the collection examined it was not possible to determine any correlation between the magnetic susceptibility values and the features of composition and structure of the ceramic materials.

The water-absorption values showed a good correlation with the mineral composition of the clays and tempers.

A combined treatment of the various data pertaining to the composition of clays and tem-

Table 2. Pottery classification according to the clay and temper composition.

		Clay			Temper, %							
Group	Colour	Aleurite (silt), %	Dispersed calcite	Foraminifera	Potsherd	Limestone, shell fragments	Basalt and clinopyroxenes	Quartz + feldspars	Other	Rounding	Plant remains	Water-absorption value, %
1	brown biscuit	5	–	+	90-100	–	–	–	–	poor	numerous	20-25
2	brown, brownish-red, spotted, bicoloured	>5	±	±	40-60	60-40	–	–	–	poor	+	25-30
3	brownish-red	<5	+	±	–	80-90	–	<5	<5	medium, poor	+	<20
4	brown, yellowish-red, one-colour, bicoloured	>5	–	–	–	<20	up to 80	–	–	poor, medium.	single	<20
5	brown, brownish-red, one-colour, bicoloured	>5	–	–	–	<10	–	up to 85	<10	medium, poor	–	<20
6	brown-biscuit, red	<5	–	±	40-60	60-40	–	–	<5	poor	+	<20

pers and their physical properties enables us to single out several relatively uniform groups having, albeit, rather indistinct boundaries. For, in terms of their composition and properties, many of the ceramic samples occupy an intermediate place, while some possess unique individual characteristics.

The essential features assumed as the basis for dividing the material into groups are listed in Table 2. Table 3 gives the numbers of the samples possessing the properties most characteristic for each group, and in the same table are also listed those samples close to one or other of the 'typical' groups but possessing certain individual peculiarities.

The percentage of temper was determined in the thin sections visually: therefore the quantitative characteristics presented in the table are approximate. In the 'Other' column the content of minerals and rocks that are found in single thin sections is noted, *i.e.* fragments of argillite, aleurolite, *etc.* The content of nonplastic (aleurite + temper) varies in the range 30-40%, and is not indicated in the table. Only in two samples (*A-5*, *A-26*) does the amount of temper reach 45%. The contents of individual temper components listed in Tables 1 and 2 are rounded down, so as to give an aggregate of 100%. A precise evaluation of the amount of plant remains was not possible.

Table 3. Distribution of pottery samples according to petrographic groups.

Group nos.	Typical samples	Close in composition	Notes
1	***A-8***, ***A-12***, ***A-13***, ***A-15***, ***A-27***	***A-3***, ***A-19***, ***A-24***, ***A-28***	***A-3*** may be included into group 6
2	***A-9***, ***A-22***, ***A-34***		
3	***A-6***, ***A-7***, ***A-16***, ***A-26***, ***A-30***	***A-4***, ***A-18***	
4	***A-1***, ***A-32***, ***A-33***, ***A-35***	***A-10***, ***A-14***	
5	***A-2***, ***A-5***, ***A-31***		
6	***A-19***, ***A-20***, ***A-23***, ***A-25***	***A-11***, ***A-28***	***A-23*** and ***A-25*** are close to group 1

A brief description of thin sections by group is presented below.

GROUP 1

The ceramic material in thin sections is brown biscuit; the fired clay is semi-transparent, and slightly birefringent. The inclusion of aleurite (silt) is insignificant – the clay is fat. There is no finely dispersed calcite in the clay. Foraminifera are present in varying quantities.

The distinctive feature of this group is the use of potsherd as temper. Particles of the potsherd usually have acute-angled or elongated contours and reach 2.5 mm in size. In thin section *A-13* fine single crystals of calcite were found. In thin sections *A-12* and *A-13* the potsherd clay does not differ in composition from the clay to which it had been added. In thin section *A-27*, however, the potsherd composition does vary: some of its particles include single grains of clinopyroxenes.

Another characteristic feature of this group of pottery is a considerable number of imprints of plant additives. When plants burn out during firing, formation of pores occurs; the latter look dark and semi-transparent under a microscope as they evidently contain fine-grained carbon. In thin section *A-7* the clay is similar to that of *A-12*, *A-13*, and *A-27*, but besides potsherd the clay also contains coarse grains of oolitic limestone. In thin section *A-28* the fabric is of a reddish shade and contains a slightly greater quantity of aleurite (silt). As in *A-3*, the ceramic material includes fragmented grains of limestone (*i.e.* these two samples may be included in group 6). Another characteristic peculiarity of this group is the fact that water absorption varies within the narrow range 20-25%.

GROUP 2

The ceramic material in this group is irregularly coloured in brown and brownish red shades. The fabric contains minute particles of calcite. In thin sections, coarse pores are visible, around which a reaction border is discernible (Pl. 190, *4-5*), the result of the calcite dissociating during firing (*A-9*, *A-22*). The fine calcite particles were formed through regeneration after firing. The dissociation of calcite with formation of calcium oxide and carbon dioxide

begins at 800°C and may be used in thermometry. A very high water-absorption value is a characteristic peculiarity of this group.

Besides the dissociated and regenerated carbonate, the ceramic material of this group contains potsherd and traces of burnt-out plant additives. Possibly, directly before modelling of the vessels, dry clay was added to the paste.

Group 3

In thin sections of this group of ceramics the material is yellowish red or brownish red. The latently-crystalline mass is birefringent owing to the presence of minute grains of lamellar silicates. The content of aleurite is not great. In the composition of the temper, grains of limestone and crushed shells prevail. The limestone is represented by various structural modifications: oolitic, organogenic, *etc.* The rounding of the grains is medium, more rarely poor, which indicates the use of limestone sand along with crushed limestone. Sand grains of 0.5 to 1.5 mm in size prevail; however, particles up to 3.0 mm in diameter are also encountered.

In some samples the temper content reaches 40-45%. Along with carbonate rock particles the temper includes occasional grains of quartz and aleurite particles. The presence of potsherd is not a feature of this group. In a number of samples, imprints of burnt-out plants are visible. The addition of latently-crystalline calcite uniformly distributed throughout the paste is discernible in *A-18*.

Group 4

This group includes brown and yellowish red ceramics. Mainly lean clays were used for producing the vessels. A characteristic peculiarity of this type of ceramic is the presence in the temper of basalt and minerals of magmatogenic origin: *viz.* augite, basaltic hornblende, zonal plagioclase. Having been formed during the middle Jurassic period as a result of underwater eruptions, volcanic rocks in the Crimea are found in certain isolated areas along the Main Ridge between the Baidar Gates and Kara Dag. The thickness of these rock layers reaches some hundreds of metres; intrusive massifs are located in the zone to the west of Alushta. The mechanical weathering of the magmatic formations led to the build-up of alluvial and proluvial deposits at a short distance from the Main Ridge, and it is probable that these deposits included the minerals mentioned above. Poor rounding of the grains found in the ceramics under examination indicates that the products of weathering were not carried any great distance.

Thin sections *A-32* and *A-35*, containing dispersed carbonate mineral, are very similar in their clay composition. The other samples have individual peculiarities. Besides basalt and augite, the ceramic material of this group includes, among other rocks, quartz, aleurolite, and limestone. Plant remains have been found only in *A-14*.

Group 5

The ceramic material is brown and brownish red, and made of lean clay. A characteristic feature of this group is the prevailing content of quartz and feldspar particles in the temper, amounting to 65-85% by volume of the artificial additive. Beside these minerals, particles of limestone, aleurolite, and sparse grains of basalt are also encountered. Traces of burnt-out plants are not a feature of this group.

GROUP 6

The clay is brownish red or brown, the latter type being characterised by a smaller content of aleurite (silt). A special feature of this group is the presence of approximately equal quantities of potsherd and limestone particles in the temper. In terms of its clay properties and temper composition this material is close to group 1.

The petrophysical characteristics of two of the collection samples (*A-17* and *A-29*) being unique to themselves, it was not possible to include these samples in any of the groups 1-6. The fabric of sample *A-17* is composed of a non-homogeneous clay. In thin section the clay is chocolate-brown. A semi-transparent birefringent mass is connected by a gradual transition to a dark brown and almost opaque isotropic clayey material. Both clay varieties contain much powdered (aleuritic) inclusion of quartz-feldspar type. The lean clay includes single grains of limestone of medium rounding. In *A-29* the basis of the fabric is a sandy clay. The natural admixture includes particles of quartz, feldspars, and limestone. The nonplastic is uniformly distributed throughout the ceramic volume. Along with the natural nonplastic are found coarse grains of limestone. The size of some fragments exceeds 4.0 mm; the rounding is medium.

NOTE

1. All samples were chosen by V.F. Stolba.

Table 1a.

		Clay			Temper, %									
Thin section nos.	Colour	Aleurite (silt), %	Dispersed calcite	Foraminifera	Potsherd	Limestone	Shell fragments	Basalt and clinopyroxenes	Quartz + feldspars	Other	Rounding	Plant remains	Homogeneity	**Notes**
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Brown two-coloured	5	-	-	-	-	-	70	10–15	~5	poor	-	good	
2	Brown two-coloured	<5	-	-	-	5	single	-	80	10–15 ore aleurite	medium, poor	-	good	
3	Brown biscuit two-coloured	5–10	+	-	65–70	20–25	-	-	-	~5	poor	rare	medium	
4	Brown one-coloured	<5	-	-	-	95	-	-	-	~5	good	-	good	oolite limestone
5	Reddish-brown two-coloured	<5	-	-	-	20	single	single	70	10 ore aleurite	medium, poor	-	good	
6	Brown-red one-coloured	<5	-	-	single	10-15	70-75	-	10-15	~5	medium, poor	-	good	
7	Brown-red one-coloured	<5	-	-	-	45-50	~35	-	<10	~5	medium	-	good	
8	Brown one-coloured	5-10	-	single	80	-	-	5-10	-	~5	poor	-	medium	
9	Brown one-coloured	5-10	-	5-10	40-45	35-40	-	-	10-15	~5	poor	-	poor	dissociated limestone

Table 1b.

Thin section nos.	Clay: Colour	Clay: Aleurite (silt), %	Clay: Dispersed calcite	Clay: Foraminifera	Temper, %: Potsherd	Temper, %: Limestone	Temper, %: Shell fragments	Temper, %: Basalt and clinopyroxenes	Temper, %: Quartz + feldspars	Temper, %: Other	Temper, %: Rounding	Temper, %: Plant remains	Homogeneity	Notes
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
10	Spotty two-coloured	>5	-	-	-	20-25	~10	~10	~10	40 aleurite	poor	-	poor	fragments of basalt and pyroxene in aleurite
11	Brown-yellow spotty	>5	-	-	single	45-50	-	-	~10	30-35	poor	single	poor	possibly two clays: lean and sandy
12	Brown biscuit one-coloured	<5	-	numerous	95	-	-	-	-	-	poor	numerous	good	potsherd same as main clay
13	Brown biscuit one-coloured	<5	-	+	95	single	-	-	-	-	poor	+	good	same composition of potsherd and main clay
14	Brown biscuit inhomogeneous along the cracks	>5	-	-	?	-	-	+	-	?	poor	single	poor	indiscernible if it is potsherd or aleurite
15	Brown biscuit one-coloured	<5	-	-	70-75	-	-	single	-	-	poor	numerous	medium	
16	Light-beige inhomogenous	>5	?	-	?	>80	single	-	-	-	poor	?	medium	

Table 1c.

Thin section nos.	Clay: Colour	Clay: Aleurite (silt), %	Clay: Dispersed calcite	Clay: Foraminifera	Temper, %: Potsherd	Temper, %: Limestone	Temper, %: Shell fragments	Temper, %: Basalt and clinopyroxenes	Temper, %: Quartz + feldspars	Temper, %: Other	Temper, %: Rounding	Temper, %: Plant remains	Temper, %: Homogeneity	Notes
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
17	Brown brightened along the cracks	>5	?	-	-	single coarse	-	-	-	-	medium	-	poor	
18	Red-brown one-coloured	>5	+	?	-	single coarse	?	-	-	-	medium, poor	single	poor	carbonaceous clay
19	Brown semi-transparent spotted	>5	-	+	45-55	55-45	?	-	-	-	medium, poor	+	poor	
20	Brown biscuit semi-transparent	>5	-	-	40-45	50-55	?	single	-	~5	poor	+	poor	
21														
22	Reddish-brown spotted	<5	+	numerous	50-55	10-15	?	-	-	-	poor	-	poor	
23	Brown biscuit one-coloured	>5	-	-	50-55	40-45	-	-	-	-	poor	?	poor	
24	Brown biscuit spotted	>>10	-	-	50	single coarse	-	-	-	-	poor	-	poor	
25	Brown biscuit one-coloured	~5	-	numerous	45-40	55-60 oolites	-	-	-	-	poor	numerous	poor	
26	Red-brown one-coloured	~5	-	-	single	60-65	35-30	-	-	5	medium, poor	single	medium	
27	Brown biscuit one-coloured	<5	-	+	85-90	single	-	-	-	5-10	poor	numerous	medium	

Table 1d.

Thin section nos.	Clay: Colour	Clay: Aleurite (silt), %	Clay: Dispersed calcite	Clay: Foraminifera	Temper, %: Potsherd	Temper, %: Limestone	Temper, %: Shell fragments	Temper, %: Basalt and clinopyroxenes	Temper, %: Quartz + feldspars	Temper, %: Other	Temper, %: Rounding	Temper, %: Plant remains	Homogeneity	Notes
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
28	Red-brown two-coloured	>5	-	-	40-45	45-50	single	-	-	~5	poor	?	poor	
29	Red-brown two-coloured	>>5	-	-	-	85-90	-	-	-	~5	medium, poor	+	poor	loam
30	Beige inhomogeneous	>5	-	-	-	45-50	50-45	-	-	~5	medium, poor	+	poor	
31	Brown	>5	-	+	Single	20-25	15-20	-	50-55	5-10	medium, poor	-	medium	
32	Red-brown two-coloured	~5	-	-	-	-	-	50-55	15-20	10-15	medium, poor	-	medium	
33	Red-brown two-coloured	>5	-	-	-	-	-	5-10	80-85	5-10	medium, poor	-	medium	
34	Red-brown spotted	>5	-	-	20-25	60-65	-	-	-	-	medium, poor	-	poor	
35	Brown inhomogeneous	~5	-	-	?	10-15	-	60-65	~5	10-15	medium, poor	?	poor	

IV. PALAEOETHNOBOTANICAL MATERIAL[1]

Zoya V. Januševič, Alexander N. Ščeglov

During the excavation two large accumulations of charred cereal grains were found in *rooms 3* and *13*. Each accumulation contained not less than 30,000-50,000 grains, and evidently constituted the remains of the grain stocks that were stored in the house and had escaped being completely reduced to ash. One other find represented the charred remains of a vegetable meal, probably just prepared before the destruction. Also, some vegetal remains were found 'preserved' in the water of the well in the centre of the courtyard. A sample statistical analysis of the seeds of field-crop cultures from the two rooms and a numerical analysis of the finds from the well gave the ratios listed below.

Room 3. A sample was taken from the shattered Chersonesean amphora **Ad 10** stamped with the mark of the astynomos *Dioskouridas* (**Ae 52a**). Composition as follows:

Soft-dwarf wheat *Triticum aestivo-compactum*	18.1%
Durum of the *Triticum durum* Desf. type	single grains
Einkorn *Triticum monococcum*	1 grain
Emmer *Triticum dicoccum*	1 grain
Rye *Secale cereale*	81.9%
Pellicular many-rowed barley *Hordeum vulgare*	single grains

Room 13. The grain was found in the handmade vessel **D 111** standing on the floor of the room. Composition as follows:

Soft-dwarf wheat like *Triticum aestivo-compactum*	26.8%
Wheat of the *Triticum durum* Desf. type	3 grains
Wheat of the einkorn type *Triticum monococcum* (?)	1 grain
Rye *Secale cereale*	73.2%
Pellicular many-rowed barley *Hordeum vulgare*	single grains
Huskless barley *Hordeum vulgare*	2 grains

In the same room some remains of millet flour or gruel (*Panicum sp.*) were found inside a handmade vessel. The find had a volume of 200 ml.

The courtyard well. The following remains were found in the silty layer at the bottom of the well, below the level of the subsoil water:

1. Fragments of stems of cultivated vine *Vitis vinifera* L.: 8 specimens.
2. Fragments of beech (*Fagus sp.*): 12 specimens.
3. Fragments of oak (*Quercus sp.* and *Quercus pubescens* Willd.(?)): 5/2 specimens.

Table 1. Average dimensions of the wheat grains of *Triticum aestivo-compactum*.

Provenance	**Length L (mm)**	**Width B (mm)**	**Index L/B**
Room 3	4. 60	3. 31	1. 39
Room 13	4. 12	3. 04	1. 38

I. FIELD CROPS

I.1. Wheats. The wheats are represented mostly by naked-grain types. They may be defined as a population consisting of two varieties – a soft species and a dwarfish species – and also a number of intermediate forms. The average dimensions of the grains are shown in Table 1.

In the light of recent studies by a group of palaeoethnobotanists[2] it is probably less correct to call the charred and badly deformed grains of the huskless wheat a population of *Tr. aestivo-compactum* – as originally identified by us – and rather to unite them under the common name of *Triticum aestivum s. l.*, among which are included *Tr. Vulgare* Vill., *Tr. compactum* Host., *Tr. vulgare antiquorum* Heer., *Tr. aestivum grex aestivo-compactum* Schiem.

Probably single grains of durum *Tr. durum* and the pellicular wheats *Tr. monococcum* and *Tr. dicoccum* are natural admixtures to the crops of soft wheats.

If the average sizes of the grains of the population of soft wheats without husk from U6 are compared with similar data reported from other rural settlements within the *chora* of the Chersonesean state, our seeds are found to be the smallest.[3] This is possibly an indication that originally (many years before U6 was built) wheat was grown near the settlement of Panskoye I as a spring crop. When sown in spring the plants are exposed to less favourable conditions (drought, high temperatures and so on) during an important stage of their development and the grains are always smaller than those of wheat planted in autumn. However, the presence of a great number of rye grains among the finds is a strong indication that in the early 3rd century B.C. the inmates of U6 cultivated winter crops and not spring ones.

I.2. Rye. The average dimensions of the rye grains are presented in Table 2.

In terms of morphology the grains of rye are of a single type. They are narrow and pointed at the base with obtuse tops. Like the wheat grains they too are characterized by their small size. In these features they resemble the wild rye *Secale cereale* Roshev, which is a known pest among crops of soft wheat. Finds of rye with similar morphology of the grains and occurring with finds of wheat are reported from other settlements in Crimea including those on the agricultural territory of Chersonesos both in south-western and north-western Crimea.[4]

Table 2. Average dimensions of the rye grains of *Secale cereale*.

Provenience	**Length L (mm)**	**Width B (mm)**	**Index L/B**
Room 3	4. 60	2. 08	2. 21
Room 13	4. 60	2. 10	2. 19

Table 3. Average dimensions of the berries of *Hordeum vulgare*.

Provenance	Length L (mm)	Width B (mm)	Index L/B
Room 3	6. 23	3. 33	1. 87
Room 13	6. 36	3. 30	1. 90

However, in our case, the proportion of rye is so great (73-82%) that the designation 'weed' is hardly appropriate. Elsewhere, a similar state of affairs has been observed only at the settlement of Vladimirovka (excavations by V.A. Latyševa), which is located 23 kilometres north-east of Panskoye I in the same landscape zone. Here the proportion of rye reached 95% in the mixture with wheat, *i.e.* the latter was finally crowded out by rye, which became an independent, cultivated crop.[5]

I.3. Barley. Only single charred grains of barley were found. They were present as a slight admixture among grains of wheat and rye. Their dimensions are shown in Table 3.

The grains of barley are of a single type in terms of morphology; most of them still had remains of scales preserved on their bodies, which indicates their belonging to pellicular barley. Moreover, the structure of the central groove is clearly visible on all seeds of this type; this groove widens from the base to the top and in some cases shows traces of asymmetry. All these features are characteristic of the grains of pellicular many-rowed barley. Only two grains among the material analysed were identified as those of huskless barley (*room 13*).

The finds published here lead us to suppose either that the dwellers of U6 did not cultivate barley as a pure crop, or that barley grain was for some reason not represented in the material from the excavation. However, palaeoethnobotanical finds of the same period made during excavations of other areas and buildings at Panskoye I suggest that pure barley plantations did exist in the vicinity of the settlement.[6]

I.4. Millet. Though no actual grains of millet have been found, the remains of millet flour or gruel in a vessel from *room 13* are a clear indication that pure millet crops were indeed harvested here.

II. VINE CLIPPINGS

The finds were preserved in the silt layer on the bottom of the well. They are represented by small pieces (up to 5 cm in length) of thin shoots with internodes, twigs, and leaf stalks. On two of them traces of cutting are still clearly to be seen. Judging by the morphological features and traces of cutting, all these sprouts belong to cultivated vine *Vitis vinifera* L.

III. TIMBER REMAINS

The partially (or considerably) charred fragments of beech and oak preserved in the filling layer of the well, below the level of the subsoil waters, are most probably the remains of the wooden well curb destroyed by the fire when the site was sacked. Some of the least charred pieces still show one or two worked planes, *i.e.* they are remains of beams or boards; they

were found mixed up with animal bones, pottery, and soil that had slipped down from the adjacent courtyard area, and this fact is a further indication of their having been an integral part of the well.

CONCLUSION

The material from U6 published here enables us to suppose with a fair degree of probability that at the beginning of the 3rd century B.C. wheat was the main cereal. Moreover, through comparison with other finds both from the same settlement and from other rural settlements in the western Crimea it is possible to reconstruct the agricultural system and harvests of the major cereal crops hypothetically.

It seems that originally spring wheat was planted near the settlement. At the same time, however, there were two separate ecological processes going on – the wheat grains were becoming smaller and the amount of the rye harvested was increasing. Winter crops were evidently taking the place of the spring ones, and at the end of 4th and the beginning of the 3rd century B.C. the spring crops were finally replaced by the winter wheat. Simultaneously, wheat was gradually being crowded out by rye as a more enduring species on those fields that had been continuously cultivated over the long time since the appearance of the settlement. By the time of the sudden destruction of U6 rye had ousted wheat almost completely and become an independent species. The same thing happened at the settlement of Vladimirovka ('Masliny').

It should be noted that the process just described has been identified only in one landscape zone on the Tarkhankut Peninsula. In other regions of the same peninsula, where there were probably somewhat different and more favourable micro-climatic conditions (*e.g.* the area of the bay of Chernomorskoye and the southern coast), and in the south-western Crimea too (*i.e.* the Herakleian Peninsula), rye represented only an insignificant admixture to the grain harvested.[7]

According to N.I. Vavilov, the Crimea and the north-eastern Black Sea area were possibly among the regions where rye became an independent cereal crop at approximately the beginning of our era.[8] Our material might perhaps add some details to our understanding of this process and indicate its irregular character.

Finds of millet grains at rural settlements of the western Crimea as well as at other Greek sites of the northern Black Sea area are not numerous. Therefore the question as to whether millet was cultivated as a pure crop remains unresolved, though possibly in the case of the U6 household the answer may be positive.

In addition to the vine clippings from the well, charred vine seeds found in other areas of the settlement are a further indication of the existence of vineyards in the vicinity of the site.[9]

In the light of the rests of charred remains of trees and shrubs found elsewhere during excavations of settlements of the 4th century B.C. – first centuries A.D. in the north-western Crimea, and the results of pollen analysis too, it is reasonable to suppose a local provenance for the wooden remains. The presence of wood and scrub in this region in the period under consideration can hardly be doubted.[10]

NOTES

1. A preliminary identification of the cereal grains was carried out by A.N. Ščeglov; a detailed analysis was conducted by Z.V. Janušević (Botanical Gardens of the AS of the Moldavian SSR, Kishinev). Identification of the vegetal remains from the well was carried out by E.S. Čavčavadze (Botanical Institute of the USSR AS, St Petersburg). *Cf.* Janušević 1976, 90, table 17; 134-138, tables 23, 24; Ščeglov 1978, 104 ff.; Janušević 1986, tables 10, 11; Ščeglov, Janušević, Kuz'minova and Čavčavadze 1989.
2. Wasylikova, Carciumaru, Hajnalova, Pashkevich *et al.* 1991, 209.
3. Ščeglov, Janušević, Kuz'minova and Čavčavadze 1989, 58, tables 3, 4.
4. Janušević 1986, 53 ff.
5. Janušević 1976, 134, table 23.
6. This is indicated by the imprints of barley grains and traces of barley husks (left behind after threshing). *Cf.* Ščeglov, Janušević, Kuz'minova and Čavčavadze 1989, 60.
7. Janušević 1986, 42 ff., table 9.
8. Vavilov 1967, 143-157.
9. *Cf.* Ščeglov, Janušević, Kuz'minova and Čavčavadze 1989, 62 ff.
10. *Cf.* Ščeglov 1978, 24 ff. (with many references); Ščeglov, Janušević, Kuz'minova and Čavčavadze 1989, 53; Maslov 1991, 76-81.

V. OSSEOUS REMAINS

Aleksei K. Kasparov

Almost all the osseous remains found in the course of the excavation of building U6 at the settlement of Panskoye I came from the well in the centre of the courtyard; and this, regrettably, was the only spot to yield what might be regarded as an actual collection of osseous remains for study. It should be noted that our faunal finds were not the general, everyday waste that always accumulates (often in a redeposited form) in the cultural layers of any settlement but the refuse from perhaps just a few meals buried *in situ*.

Thus the finds described here do not enable us to reach any definite conclusion regarding, for instance, the composition of the flocks of domestic animals at the settlement, the character of the inmates' hunting activities, or the economic structure of the community, *etc.* In my view the osseous remains discovered in the well reflect the food ration of the inhabitants in the early 3rd century B.C. only, and possibly for a period that itself was not very long. As mentioned elsewhere, the settlement that included building U6 was destroyed during some military operation, and we can only guess who the attackers were. Therefore it is highly probable that the bones found in the well were the remains of a victory feast held by whoever had seized the settlement. The specific composition of the faunal remains is presented in Table 1.

As the table shows, most of the bones were horse. It is remarkable that only in the case of these horse remains can we be absolutely confident that we are dealing here with the refuse of a meal and not *e.g.* with the burial of dead animals, for many of the ribs and some fragments of the neck vertebrae bear the characteristic traces of a knife suggesting that somebody cut the meat from the bones. As can be seen from the table, the quanitity of identifiable bones is rather small, and probably, the modest number of individuals which we have been able to identify is fairly close to the real one. Thus it is clear that the proportion of horse meat in the diet of those who left these food remains behind was fairly great.

It should be noted that the Greek population did not use much horse as food. Thus *e.g.* in Geroevka – an out-of-town settlement in the Nymphaion *chora* on the opposite side of the peninsula – the small cavicorns (sheep, goats) predominate among the material from household pits, cows take the second place, pig is the third, and horse remains are very few. The predominance of sheep and goats among the osseous remains in the levels of the Hellenistic period at settlements in the north-pontic area has been reported more than once by different scholars.[1]

It will be observed that there are no remains of pig among the refuse from the well of U6. However, in the light of the spontaneous and singular formation of this particular accumulation any judgements made on the basis of this fact would be unjustified.

Among the other osseous remains taken from the well were numerous small bones from the hind legs of the large jerboa or 'earth-hare' (*Allactaga jaculus* Pall.). Quite a number of complete thigh-bones and tibias (Pl. 191) were found, too, and there were also two small fragments of pelvis and three fragments of the upper parts of metapodii. No other bones or bone fragments of jerboa are represented in this collection.

The earth-hare is the largest of the jerboas found in the territory of the former USSR. Its body length reaches 260 millimetres and its weight 500 grammes. Naturally, the meat-rich hind legs of this large rodent would have been used as food when other forms of sustenance were scarce. The bones found in the well belonged to mature or half grown animals in which

Table 1. Faunal finds from buiding U6.

Species	**Bones / Individuals**	%
Horse	141 / 3	58.3
Cow	16 / 2	6.6
Sheep, goats	28 / 2	11.5
Pig	–	–
Dog	–	–
Jerboa	48 / 18	13.6
Birds	9	2.6
Number of identified bones	242	100
Number of bones impossible to identify	352	

both or only the lower of the epiphyses are absent, while the size of the bones already corresponds to that of a fully mature animal. Such close age grouping suggests that these jerboas were caught during a single, short period, at a time when the young had not yet appeared or were not active, and those born in the previous year had already reached, or almost reached, maturity.

It is probably safe enough to assume that earth-hares were hunted in the spring. When the first night frosts begin these animals go into hibernation from which they do not emerge until the end of March or some time in April. Therefore we may very approximately time the destruction of the settlement to late spring or early summer.

Since the large jerboa is active only at night, it is most easily caught by means of snares set near the mouth of its burrow. There were no traces of the knife on the jerboa bones; probably there was no need of a blade for taking off the meat. Small 'hams' of the animal were eaten whole without any additional preparation.

The avian remains were identified by A.V. Panteleev (Zoological Institute, RAS). It was possible to identify only eight bone fragments. Three of them belonged to the black-throated diver (*Gavia arctica*), one – to the ferruginous duck (*Aytha nyroca*), and four – to the saker falcon (*Falco cherrug*). All these birds are wild and most probably represent a chance bag. It is difficult to tell if they were all used as food, though such a supposition is highly possible in the light of the origin and peculiarities of the deposition of the remains. However, the idea of eating such a species as the saker falcon, which is certainly not normally thought of as a game bird, may occasion surprise.

The presence of bones of the large jerboa is also surprising, for it is highly improbable that armed intruders having first destroyed the settlement would then start hunting earth-hare among its ruins, or, even less likely, engage in the laborious business of setting snares. Probably, it was the surviving inhabitants of the settlement who, having been robbed of all their property and food supplies, attempted to live on wild birds and jerboa after the withdrawal of the enemy.

NOTE

1. Calcin 1960; Liberov 1960; Kasparov 1995.

CONCORDANCE

Tiles (**Aa**), Tile Stamps (**Ab**), Pithoi and Storage-Jars (**Ac**), Amphoras (**Ad**), Amphora Stamps (**Ae**), Black-glazed, Red-figure and Grey Ware Pottery (**B**), Commonware (**C**), Handmade Pottery (**D**), Lamps (**E**), Terracottas (**F**), Cult Objects (**G**), Graffiti and Dipinti (**H**), Coins (**I**), Metal Objects (**K**), Stone Objects (**L**), Ceramic Objects (**M**), Glass Objects (**N**), Bone Objects(**O**))

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1/9 – **L 1**

Room 2 (Find list 3)
3/ – **K 54**

Room 3 (Find list 6)
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6/2 – **Ad 10**, **Ae 52a**, **H 7**
6/3a – **Ad 45**
6/3b – **Ad 53**
6/3c – **Ad 64**
6/3d-g – **Ad 54-57**
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6/4b – **Ad 47**
6/4c-g – **Ad 48-52**
6/5a – **Ad 58**
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6/14 – **Ad 19**, **Ae 84**
6/15 – **Ae 85**
6/16 – **Ad 17**, **Ae 86**
6/17 – **Ae 87**
6/18 – **Ae 88**
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6/20 – **Ae 2**
6/21 – **Ad 18**, **Ae 73**, **H 8**
6/22 – **H 9**
6/23 – **H 5**
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6/31 – **C 91**
6/32 – **C 19**
6/33 – **G 15**
6/36 – **C 81**
6/37 – **Ac 2**
6/40 – **D 104**
6/41 – **D 98**
6/43-44 – **K 143**
6/48 – **K 141**, **K 178**
6/49 – **K 21**, **K 23**
6/50 – **K 22**
6/53 – **K 82**
6/56 – **L 4**
6/57 – **L 2-3**
6/58 – **L 5-6**, **L 12**
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6/63 – **H 29**
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6/71 – **H 20**
6/72 – **H 41**
6/73 – **H 55**
6/74 – **H 68**
6/75 – **H 64**
6/76 – **H 23**
6/77 – **H 74**

Room 4 (Find list 4)
4/1 – **Aa 10**, **Ab 2**
4/15 – **D 110**
4/16 – **D 39**
Ae 143

Room 7 (Find list 1)
1/31 – **Ad 36**
1/45 – **D 12**
1/46 – **D 99**
1/47 – **D 34**, **D 91**
M 20

Room 8 (Find list 2)
2/18 – **B 235**
2/20 – **B 33**, **B 54**
2/21 – **B 35**
2/22 – **B 237**

Room 9 (Find list 3)
3/2 – **Ad 39**
3/4 – **Ad 42**
3/8 – **Ae 126**
3/19 – **B 234**
3/21 – **B 1**
3/22 – **B 173**
3/23 – **D 31**, **D 73**
3/24 – **D 105**

Room 10 (Find list 4)
K 85

Room 11 (Find list 5)
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5/12 – **B 168**
5/14 – **K 146**
5/63 – **L 27**

Room 12 (Find list 6)
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6/2 – **Aa 2-9**
6/2a – **Aa 12-14**
6/3 – **N 9**
6/4 – **C 11**
6/5 – **Ad 38, Ae 82**
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6/11 – **Ad 6, K** *5*2
6/12 – **C 14**
6/13 – **H** *57*, **H 67, H** *72*
6/18 – **Ae 123**
6/20 – **C 9**
6/22 – **C 3**
6/23 – **C 93**
6/25 – **C 44**
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6/40 – **D** *74*, **D 79, D 84**
6/41 – **D 23, D 79, D 84**
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6/42 – **D 43, D 79**
6/42a – **D 93**
6/43 – **M 18**
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6/45 – **C 26**
6/46 – **C 174**
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6/53 – **D 130, G 11**
6/54 – **F 6**
6/55 – **F 3**
6/56 – **F** *5*
6/57 – **F 4**
6/58 – **F 2**
6/59 – **F 1**
6/60 – **G 16a, N 16**
6/61 – **G 18, N 14**
6/62 – **G 19, N** *15*
6/63 – **B 44**
6/64 – **I 1**
6/65 – **K 187**
6/66 – **K 179**
6/67 – **K 90-91**
6/69 – **K 180**
6/70 – **L 8**
6/72 – **K** *145*
6/73 – **K 119, K 126**
6/74 – **L 26**
6/78 – **L 7**
6/80 – **L 10**
6/81 – **L 11**
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L 29-30

Room 13 (Find list 8)
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8/3 – **Ad 13, H 70**
8/4 – **Ad 12, Ad 44**
8/5 – **Ad 22, H 73**
8/6 – **Ad 7**
8/7 – **Ad 14**
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8/11 – **Ae 105**
8/13 – **Ad 32, H 61**
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8/23 – **C 89**
8/24 – **C 114**
8/25 – **E 10**
8/26 – **C 102**
8/27 – **B 203a**
8/28 – **Ac** *5*
8/29 – **Ac 6**
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8/33 – **C 30**
8/34 – **C 266**
8/35 – **B 187**
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8/37 – **E 12**
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8/44 – **D 20**
8/45 – **D 111**
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8/47 – **D 86**
8/48 – **D 86**
8/49 – **D** *35*
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8/68 – **E 9**
Ac 1
K *65*, **K 167, K 184, K 189**

Room 14 (Find list 7)
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7/2 – **G 14**, **H 1**
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9/33 – **G 8**
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Room 16 (Find list 10)
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15/28 – **D 101**
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Room 19 (Find list 2)
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2/31 – **E 4**

Room 20 (Find list 4)
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4/36 – **C 117**
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Room 22 (Find list 6)
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Room 23 (Find list 7)
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Room 24 (Find list 8)
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8/20 – **K 150**
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Room 25 (Find list 9)
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Room 26 (Find list 10)
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Room 27 (Find list 11)
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Room 29 (Find list 13)
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Room 31
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Room 32 (Find list 3)
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3/8 – **B 130**

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Ae 96

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C 5, **C 73**, **C 172**, **C 233**
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N 1

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1/5 – **F 14**
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1/124 – **L 25**
1/125 – **L 23**
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L 24

Square B-5 (Find list 16)
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16/23 – **C 205**
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16/27 – **C 58**
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K 114
L 20

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16/105 – **B 86**, **M 7**
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16/109 – **C 129**
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16/114 – **D 32-33**, **D 38-39**, **D 45**, **D 49**
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O 6-8

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C 56
D 104
H 10, **H 32**, **H 37**, **H 45-46**, **H 48-52**, **H 54**, **H 56**, **H 58-59**, **H 65**, **H 71**

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1/14 – **B 61**
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1/62 – **D 106**
1/64 – **K 31**
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1/79 – **K 9-10**
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E 6
H 40a
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M 3-4, **M 11**
N 2

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D 8, **D 10**, **D 30**, **D 37**, **D 69**
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N 8

Square V-6 (Find list 16)

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16/150 – **C 61**
16/151 – **C 202**
16/160 – **C 265**
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H 43
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C 212

Square G-2

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C 38, **C 42**, **C 106**, **C 110**, **C 148**, **C 169**, **C 221**, **C 226**, **C 231**, **C 237**, **C 243-244**, **C 250**, **C 264**
E 3
H 45-46, **H 48-52**, **H 54**, **H 56**, **H 58-59**, **H 65**, **H 71**

Square G-4

Ae 5, **Ae 14-15**, **Ae 17-18**, **Ae 28**, **Ae 74**, **Ae 83**, **Ae 125**
C 73, **C 77**, **C 206**, **C 222**

Square G-5 (Find list 1)

1/79 – **K 16**
Ae 28, **Ae 113**, **Ae 119**
B 20
I 9
K 68, **K 123**

Square G-6

Ab 9
K 42, **K 49**

Square D-0

K 76

Square D-2

Ae 20, **Ae 64**
B 115, **B 184**, **B 217**
C 16, **C 31**, **C 217**, **C 248**
F 13
H 28
K 13, **K 19-20**, **K 24**, **K 107-108**, **K 110**
M 9

Square D-3

Ae 29, **Ae 64**, **Ae 108**
B 14, **B 23**
C 18, **C 22**, **C 31**, **C 69**, **C 168**, **C 213**, **C 240**
F 13
H 28, **H 38**
K 13, **K 28-29**

Square D-4

Ac 4
Ae 62
B 213
C 59, **C 83**, **C 228**
D 48, **D 128**
K 5, **K 55**

Square D-5 (Find list 17)

17/35 – **Ae 50**
Ab 3, **Ab 6**
Ac 4
Ad 4, **Ad 82**
Ae 57, **Ae 69**, **Ae 79**, **Ae 100**, **Ae 112**, **Ae 134-135**
B 23, **B 31**, **B 34**, **B 41**, **B 63**, **B 79-80**, **B 108**, **B 131**, **B 160**, **B 185**, **B 200**, **B 211**, **B 216**
C 46, **C 52-53**, **C 61**, **C 71**, **C 115**, **C 136**, **C 141-143**, **C 155**, **C 178**, **C 203**, **C 215**, **C 235**, **C 247**, **C 253**, **C 262**

F 20
G 17
H 79
K 2, K 112,
K 148,
K 188
N 5, N 10,
N 12

Square D-6 (Find list 17)

17/26 – **Ad 2, Ae 32,**
H 13
17/27 – **Ad 37, Ae 81**
17/34 – **Ad 5, Ae 53**
17/36 – **H 14**
17/45 – **Ae 121**
17/50 – **Ad 89, H 60**
17/76 – **C 194**
17/79 – **C 196**
17/80 – **C 39, C 65**
17/81 – **C 192, C 251**
17/85 – **B 236**
17/87 – **B 21, H 22**
17/88 – **B 147**
17/89 – **B 121**
17/91 – **B 165, H 30**
17/92 – **B 167**
17/93 – **B 125**
17/94 – **B 37**
17/95a – **B 19**
17/95b – **E 8**
17/99 – **C 139**
17/100 – **C 123, C 179**
17/101 – **C 183**
17/102 – **C 177, C 181**
17/103 – **E 2**
17/104 – **E 1**
17/105 – **G 10**
17/106 – **C 166, D 109**
17/107 – **D 103**
17/110 – **D 114**
17/125 – **K 152**
17/128 – **N 4**
17/129 – **N 6**
17/168 – **B 7**
Ae 49,
Ae 63,
Ae 66
Ae 112
C 21, C 43,
C 239
H 47, H 62,
H 66, H 69,
H 76
K 15, K 17-
18, K 27,
K 80, K 111,
K 127,
K 169

Square D-8

C 210

Square E-2 (Find list 2)

2/7 – **B 149**
Ab 7
Ae 91,
Ae 99
B 10, B 101,
B 133, B 154
C 159,
C 180,
C 213,
C 249
G 4
K 95, K 98

Square E-3

Ae 1, Ae 103-
104, Ae 107,
Ae 111, Ae
140-141
B 11, B 17,
B 49-50, B 60,
B 64, B 88,
B 214
C 57, C 68,
C 76, C 85,
C 165, C 131,
C 135, C 180,
C 195, C 211,
C 220, C 225,
C 237, C 242,
C 245, C 258-
259
D 60, D 69,
D 112-113
E 7
G 9
K 8, K 25,
K 40-41, K 106
O 1-2

Square E-4

Ac 4a
Ae 21, Ae 30,
Ae 117
B 32, B 50,
B 62, B 100,
B 196, B 203,
B 215
C 2, C 20,
C 74, C 77,
C 152, C 161-
162,
C 196, C 217,
C 227, C 236,
C 241, C 255
D 121
E 8
K 6, K 78,
K 175

Square E-5

Ae 52, Ae 69,
Ae 79, Ae 92
B 3, B 104,
B 109-110,
B 116, B 161,
B 184, B 209,
B 225
C 104, C 137,
C 219, C 221,
C 227, C 261
D 44, D 115,
D 117
F 11
I 2-3, I 6-7
K 79, K 97

Square E-6 (Find list 17)

17/1 – **Ab 1**
17/15 – **K 66**
17/19 – **Aa 11**
17/26 – **Ad 2, Ae 32,**
H 13

17/34 – **Ad 5**, **Ae 53**
17/36 – **H 14**
17/50 – **Ad 89**, **H 60**
17/74 – **C 87**
17/75 – **C 198**
17/80 – **C 39**, **C 65**
17/87 – **B 21**, **H 22**
17/91 – **H 30**
17/107 – **D 103**
17/111 – **M 19**
17/116 – **K 63**
17/117 – **K 57**
17/118 – **K 64**
17/119 – **K 58**
17/120 – **K 92**
17/124 – **K 96**
17/126 – **K 164**
17/127 – **K 14**
17/130 – **L 21**

Square Zh-2
Ac 4
Ad 21, **Ad 41**
Ae 31, **Ae 120**, **Ae 129**
B 91
C 50, **C 62**, **C 119**, **C 146**, **C 151**, **C 217**
D 59, **D 120**, **D 124**
H 47
G 6
K 59-60, **K 70**, **K 81**
M 21

Square Zh-2
B 226a
C 199
H 39
K 162

Square Zh-3
B 38, **B 50**, **B 84**, **B 88**
C 223, **C 229**, **C 263**
D 22
K 32, **K 36**, **K 45-46**, **K 67**, **K 147**

Square Zh-4
B 186

Square Zh-5
B 136

Square Zh-7
Ae 124

Square Z-0
K 77

Square Z-7
Ae 22, **Ae 97**, **Ae 110**

Courtyard (without squares number)
Ad 9, **Ad 23**, **Ad 29**
Ae 56, **Ae 67**, **Ae 114**, **Ae 137**
B 30, **B 35**, **B 52**, **B 59**, **B 77-78**, **B 85**, **B 93**, **B 95**, **B 97**, **B 99**, **B 120**, **B 123**, **B 132**, **B 137-138**, **B 157**, **B 180**, **B 183**, **B 190**, **B 202**, **B 204**, **B 207**, **B 210**, **B 222**, **B 226**, **B 228-230**, **B 240**
C 1, **C 6**, **C 15**, **C 25**, **C 34**, **C 37**, **C 54**, **C 63-64**, **C 70**, **C 72**, **C 75**, **C 100**, **C 108**, **C 171**, **C 193**, **C 208**, **C 224**, **C 256**
D 1, **D 6**, **D 26**, **D 41**, **D 47**, **D 58**, **D 68**, **D 106**
E 5
F 18-19, **F 21**
G 13
H 16, **H 35**
K 7, **K 43-44**, **K 48**, **K 71-73**, **K 105**, **K 163**
O 3, **O 10**

Gate (Find list 3)
3/5 – **Ad 36a**, **H 78**
3/6 – **Ad 31**
3/8 – **Ae 94**
3/15 – **Ad 63**
3/17 – **Ad 6a**
3/20 – **Ae 123**
3/21 – **H 77**
3/25 – **Ad 77**, **Ae 115**, **H 12**
3/38 – **C 188**
3/57 – **D 92**
3/73 – **Ae 116**

Well
no. 11 – **H 6**
no. 39 – **Ae 19**
no. 51 – **Ad 75**
no. 62 – **Ad 43**
no. 75 – **Ad 88**
no. 88 – **Ad 76**
no. 93 – **B 130**
no. 102 – **Ad 91**
no. 103 – **Ad 92**, **K 181**
no. 104 – **B 96**
no. 109 – **Ad 83**
no. 119 – **C 10**
no. 134 – **C 112**
no. 156 – **C 190-191**
no. 157 – **C 189**
no. 159 – **C 216**
no. 160 – **C 201**

no. 161 – **C 207**
no. 162 – **C 209**, **C 246**
no. 163 – **C 207**
no. 165 – **C 67**
no. 166 – **C 32**
no. 180 – **C 111**
no. 181 – **C 121**
no. 182 – **C 109**
no. 183 – **C 116**
no. 186 – **B 176**
no. 187 – **B 227**
no. 189 – **B 178**
no. 190 – **B 177**
no. 191 – **B 107**
no. 192 – **B 124**
no. 194 – **B 208**
no. 195 – **B 182**
no. 196 – **B 241**
no. 197 – **B 27**, **B 74**
no. 199 – **B 56**
no. 200 – **B 76**
no. 201 – **B 75**, **H 10**
no. 202 – **B 205**
no. 203 – B **11**
no. 206 – **B 135**
no. 207 – **D 16**
no. 208 – **D 123**
no. 262 – **K 3**, **K 12**
Ae 80,
Ae 93,
Ae 98
O 4

U6 (without find list number)
Ad 85
H 11, **H 26**
K 142, **K 144**,
K 151,
K 153, **K 155-156**, **K 177-177a**
M 17

ABBREVIATIONS

AA	–	Archäologischer Anzeiger
Agora	–	Athenian Agora
AJA	–	American Journal of Archaeology
AMA	–	Antičnyj mir i archeologija
AO	–	Archeologičeskie otkrytija, Moskva
APamKiiv	–	Archeologični pamjatki URSR
ArchDelt	–	Archaiologiko deltion
ArcheologijaKiiv	–	Archeologija, Kiiv
ArcheologijaSof	–	Archeologija, Sofia
ArcheologiaWarsz	–	Archeologia, Warszawa
ASbor	–	Archeologičeskij sbornik Gosudarstvennogo Ermitaža
BAR	–	British Archaeological Reports
BCH	–	Bulletin de correspondance hellénique
BSA	–	The Annual of the British School at Athens
BullSAVarna	–	Bulletin de la société archéologique a Varna
ChSbor	–	Chersonesskij sbornik
DialHistAnc	–	Dialogues d'histoire ancienne
Doklady AN SSSR	–	Doklady Akademii nauk SSSR
Drevnosti	–	Drevnosti. Kharkov historical and archaeological Annual, Charkov
Eirene	–	Eirene. Studia Graeca et Latina, Praha
Hyp	–	Hyperboreus. Studia classica Petropolitana
IAK	–	Izvestija imperatorskoj Archeologičeskoj Komissii, St Peterburg
IIMK RAS	–	Institut istorii material'noj kul'tury (= Institute of the History of Material Culture), Russian Academy of Sciences
IstMit	–	Istanbuler Mitteilungen
Izvestija AN SSSR	–	Izvestija Akademii nauk SSSR
JdI	–	Jahrbuch des Deutschen Archäologischen Instituts
JFieldA	–	Journal of Field Archaeology
JGS	–	Journal of Glass Studies
KSIA	–	Kratkie soobščenija Instituta Archeologii AN SSSR
KSOGAM	–	Kratkie soobščenija o polevych archeologičeskich issledovanijach OGAM
MAR	–	Materialy po archeologii Rossii
MarbWP	–	Marburger Winckelmann Programm
MatIsslA	–	Materialy i issledovanija po archeologii SSSR
MEFRA	–	Mélanges de l'Ecole française de Rome. Antiquité
MM	–	Madrider Mitteilungen
MünstBeitr	–	Münstersche Beiträge zur antiken Handelsgeschichte
NumEpigr	–	Numizmatika i epigrafika
OAK	–	Otčety imperatorskoj Archeologičeskoj Komissii, St Peterburg/Petrograd

OudhMeded	–	Oudhedkundige mededelingen uit het Rijksmuseum van Oudheden te Leiden
RE	–	Realencyclopaedie der Altertumswissenschaft
RosA	–	Rossijskaja Archeologija (until 1992 Sovetskaja Archeologija)
SAI	–	Svod archeologičeskich istočnikov
SoobMuzChersones	–	Soobščenija Chersonesskogo muzeja
SoobMuzMoskva	–	Soobščenija muzeja izobrazitel'nych iskusstv imeni A.S. Puškina, Moskva
SovA	–	Sovetskaja Archeologija (since 1992 Rossijskaja Archeologija)
StCercIstorV	–	Studii şi cercetàri de istorie veche şi arheologie
TransactAmPhilosSoc	–	Transactions of the American Philosophical Society
TrudyGE	–	Trudy Gosudarstvennogo Ermitaža
TrudyGIM	–	Trudy Gosudarstvennogo Istoričeskogo Muzeja
VDI	–	Vestnik Drevnej Istorii
VestnikLU	–	Vestnik Leningradskogo Universiteta
VestnikMU	–	Vestnik Moskovskogo Universiteta
WorldA	–	World Archaeology
ZOAO	–	Zapiski Odesskogo archeologičeskogo obščestva
ZOOID	–	Zapiski Odesskogo obščestva istorii i drevnostej

BIBLIOGRAPHY

Abramov, A.P. 1993. Antičnye amfory. Periodizacija i chronologija, *Bosporskij sbornik* 3, Moskva, 4-135.

Achmerov, R.B. 1949. Ob astinomnych klejmach ellinističeskogo Chersonesa, *VDI* 4, 99-123.

Achmerov, R.B. 1951. O klejmach keramičeskich masterov ellinističeskogo Chersonesa, *VDI* 3, 77-84.

Alekseev, S.A., Vnučkov, G.A., Glazunov, V.V. *et al.* 1980. Metodika precisionnoj magnitnoj s'jemki antičnych poselenij, *Issledovanija kosmičeskoj plazmy.* Moskva, 184-192.

Alekseeva, E.M. 1975. *Antičnye busy Severnogo Pričernomor'ja*. Moskva. (*SAI* G1-12)

Alekseeva, E.M. 1976. Keramičeskij kompleks pervoj poloviny III v. do n.e. iz Gorgippii, *KSIA* 145, 44-50.

Alekseeva, E.M. 1982. *Antičnye busy Severnogo Pričernomor'ja* 3. Moskva. (*SAI* G1-12)

Alekseeva, E.M. 1982a. Jugo-vostočnaja čast' nekropolja Gorgippii, *Gorgippija* II. Krasnodar, 5-116.

Alekseeva, E.M. 1991. *Grečeskaja kolonizacija Severo-Zapadnogo Kavkaza*. Moskva.

Alekseeva, E.M. 1997. *Antičnyj gorod Gorgippija.* Moskva.

Alexandrescu, P. 1978. *Histria IV: La céramique d'époque archaïque et classique (VII^{e}-IV^{e} s.); avec la collaboration de S. Dimitriu et M. Coja.* Bucureşti.

Amyx, D.A. 1958. The Attic Stelai. Part III, *Hesperia* 27, 163-254.

Anochin, V.A. 1977. *Monetnoe delo Chersonesa (IV v. do n.e. – XII v. n.e.)*. Kiev.

Anokhin, V.A. 1980. *The Coinage of Chersonesus*. Oxford. (*BAR International Series* 69*)*.

Anochin, V.A. 1989. *Monety antičnych gorodov Severo-Zapadnogo Pričernomor'ja*. Kiev.

Antičnaja chudožestvennaja bronza. Katalog vystavki. 1973. Leningrad.

Arribas, A., Trias, Mth G., Cerda, D., De la Hoz, J. 1987. *El Barco de El Sec (Costa de Calvia, Mallorca). Estudio de los materiales*. Mallorca.

Arsen'jeva, T.M. 1977. *Nekropol' Tanaisa*. Moskva.

Artamonov, M.I. 1948. Skifskoje carstvo v Krymu, *VestnikLU* 8, 56-78.

Ascani, K. *et al.* (eds.) 2002. *Ancient History Matters. Studies Presented to Jens Erik Skydsgaard on His Seventieth Birthday*. Romae.

ASCh 1976: Ivanova, Čubova, Ščeglov *et al.* 1976.

Ašik, A.B. 1849. *Bosporskoje carstvo.* Vol. III. St Peterburg.

Avram, A. 1989. Wo sind die Amphoren vom Typ "Solocha I" hergestellt worden?, *Dacia* 33, 1-2, 1989.

Babinov, Ju.A. 1974. Ellinističeskie domašnie altari, *Chersones Tavričeskij: remeslo i kul'tura.* Kiev, 19-25.

Bailey, D.M. 1975. *A Catalogue of the Lamps in the British Museum I, Greek, Hellenistic, and Early Roman Lamps.* London.

Balabanov, P. 1985. Analiz i datirovanie amfornych pečatej Geraklei Pontiki, *Thracia Pontica* II, 12-23.

Bărlădeanu-Zavatin, E. 1980. Noi descoperiri în necropolele callatiene, 1. Mormînte de epocă greacă şi elenistică, *Pontica* 13, 216-240.

Belin de Ballu, E. 1972. *Olbia, cité antique du littoral nord de la mer Noire.* Leiden.

Beljaev, S.A. 1968. Pozdneantičnyje nadpisi na amforach iz raskopok Chersonesa 1961 g., *NumEpigr* 7, 127-143.
Belov, G.D. 1938. *Otčet o raskopkach v Chersonese za 1935-36 gg.* Sevastopol.
Belov, G.D. 1941. Raskopki v severnoj časti Chersonesa v 1931-1933 gg., *MatIsslA* 4, 202-267.
Belov, G.D. 1950a. Antičnyj dom v Chersonese, *VDI* 2, 108-121.
Belov, G.D. 1950b. Archeologičeskije raskopki v Chersonese v 1949 g., *VDI* 2, 227-231.
Belov, G.D. 1953. Ellinističeskaja mozaika, *MatIsslA* 34, 279-295.
Belov, G.D. 1959. Otčet o raskopkach v Chersonese v 1953 godu, *ChSbor* V, Simferopol, 13-69.
Belov, G.D. 1970. Terrakoty iz Chersonesa, *Terrakoty Severnogo Pričernomor'ja*. Moskva, 70-77 (*SAI* G1-11).
Belov, G.D. 1981. Nekropol' Chersonesa klassičeskoj epochi, *SovA* 3, 163-180.
Belov, G.D., Strželeckij, S.F. 1953. Kvartaly XV-XVI. Raskop 1937 g., *MatIsslA* 34, 32-108.
Belov, G.D., Jakobson, A.L. 1953. Kvartal XVII. Raskopki 1940 g., *MatIsslA* 34, 109-159.
Belov, G.D., Strželeckij, S.F., Jakobson, A.L. 1953. Kvartal XVIII (Raskopki 1941, 1947 i 1948 gg.), *MatIsslA* 34, 160-236.
Berezanskaja, S.S., Otroščenko V.V., Čeredničenko, N.N., Šarafutdinova, I.N. 1986. *Kul'tury epochi bronzy na territorii Ukrainy.* Kiev.
Besques, S. 1971-1972. *Catalogue raisonné des figurines et reliefs en terre-cuite grecs, étrusques et romains. III. Époques hellénistique et romaine. Grèce et Asie Mineure.* Paris.
Bessonova, S.S. 1964. *Dnevnik raskopok gorodišča Čajka v 1964 g. Archiv of IIMK RAS,* St Peterburg, f. 35, op. 1, delo 116.
Bessonova, S.S., Bunjatjan, E.P., Gavriljuk, N.A. 1988. *Aktašskij mogil'nik skifskogo vremeni v Vostočnom Krymu*. Kiev.
Bibikov, S.N., Stanko, V.N., Koen, V.Ju. 1994. *Final'nyj paleolit i mezolit Gornogo Kryma.* Odessa.
Bikerman, E. 1985. *Gosudarstvo Selevkidov.* Moskva.
Bilde, P., Engberg-Pedersen, T., Hannestad, L. *et al.* (eds.) 1993. *Centre and Periphery in the Hellenistic World.* Aarhus. (*Studies in the Hellenistic Civilization*, 4).
Blagovolin, N.S., Ščeglov, A.N. 1968. Kolebanija urovnja Černogo morja po dannym archeologo-geomorfologičeskich issledovanij v Jugo-Zapadnom Krymu, *Izvestija Akademii nauk SSSR. Serija geografičeskaja* 2, 49-58.
Blagovolin, N.S., Ščeglov, A.N. 1969. Primenenie archeologo-geomorfologičeskogo metoda dlja analiza sovremennych deformacij zemnoj poverchnosti i kolebanij urovnja morja, *Problems of Recent Cructal Movements of the Earth. Third International Symposium, Leningrad, USSR, 1968.* Moskva, 447-453.
Blavatskij, V.D. 1953. *Istorija antičnoj raspisnoj keramiki.* Moskva.
Blavatskij, V.D. 1962. Podvodnye razvedki v Ol'vii, *SovA* 3, 255-234.
Blegen, C.W., Palmer, H., Young, R.S. 1964. *Corinth. Vol. XIII. The North Cemetery.* Princeton.
Bobrinskij, A.A. 1978. *Gončarnoe proizvodstvo Vostočnoj Evropy.* Moskva.
Bodson, L. 1978. *Ιερα ζωια. Contribution à l'étude de la place de l'animal dans la religion grecque ancienne.* Bruxelles.
Bogdanova-Berezovskaja, I.V., Naumov, D.V., Kovnurko, G.M. 1964. Chimiko-petrografičeskoje issledovanije čerepic iz Ol'vii, *Ol'vija. Temenos i agora*. Moskva-Leningrad, 314-319.
Bogoljubova, O.Ju. 1988. Keramičeskije klejma poselenija Bol'šoj Kastel, *Problemy antičnoj kul'tury. Tezisy dokladov Krymskoj naučnoj konferencii 19-24 sentjabrja 1988 g.* III. Simferopol, 235.
Boriskovskaja, S.P. (ed.) 1999. *Drevnij gorod Nimfej. Katalog vystavki.* St Peterburg.

Borisova, V.V. 1958. Gončarnye masterskie Chersonesa (po materialam raskopok 1955-1957 godov), *SovA* 4, 144-153.
Borisova, V.V. 1966a. *Keramičeskoje proizvodstvo antičnogo Chersonesa. Abstract from the thesis for degree of Candidate of Historical Sciences*. Leningrad.
Borisova, V.V. 1966b. *Keramičeskoje proizvodstvo i antičnye keramičeskije stroitel'nye materialy*. Moskva. *(SAI* G1-20).
Borisova, V.V. 1974. Keramičeskie klejma Chersonesa i klassifikacija chersonesskich amfor, *NumEpigr* 11, 99-124.
Bouzek, J. 1990. *Studies of Greek pottery in the Black Sea area*. Prague.
Böttger, B., Šelov, D.B., 1998. *Amphorendipinti aus Tanais*. Moskva.
Brašinskij, I.B. 1963. *Afiny i Severnoe Pričernomor'je v VI-II vv. do n.e*. Moskva.
Brašinskij, I.B. 1963a. Ekonomičeskije svjazi Sinopy, *Antičnyj gorod*. Moskva, 132-145.
Brašinskij, I.B. 1965. Keramičeskie klejma Geraklei Pontijskoj, *NumEpigr* 5, 10-27.
Brašinskij, I.B. 1978. Standarty rodosskich amfor, *KSIA* 156, 11-16.
Brašinskij, I.B. 1980. *Grečeskij keramičeskij import na Nižnem Donu v V-III vv. do n.e*. Leningrad.
Brašinskij, I.B. 1981. Južnodonskaja expedicija, *AO 1980 goda*. Moskva, 97-98.
Brašinskij, I.B. 1984. *Metody issledovanija antičnoj torgovli na primere Severnogo Pričernomor'ja*. Leningrad.
Brašinskij, I.B. 1984a. Voprosy chronologii keramičeskich klejm i tipologičeskogo razvitija amfor Geraklei Pontijskoj, *NumEpigr* 14, 3-22.
Braun, D.P. 1982. Radiographic analysis of temper in ceramic vessels: Goals and initial methods, *JFieldA* 9, 183-192.
Breitenstein, N. 1941. *Catalogue of Terracottas, Cypriote, Greek, Etrusco-Italian and Roman*. Copenhagen.
Brujako, I.V., Karpov, V.A., Petrenko, V.G. 1991. Izmenenie urovnja Černogo morja ot epochi kamnja do srednich vekov (po rezul'tatam issledovanija severo-zapadnogo šel'fa), *Pamjatnikovedenie. Izučenie pamjatnikov istorii i kul'tury v gidrosfere* 2, Moskva, 8-18.
Brujako, I.V., Karpov, V.A. 1992. Drevnjaja geografija i kolebanija urovnja morja (na primere severo-zapadnoj časti Černomorskogo bassejna v antičnuju epochu), *VDI* 2, 87-97.
Buck, C.D. 1955. *The Greek Dialects*. Chicago.
Bujor, E. 1962. The amphorae deposit of Islam Geaferca, *Dacia* 6, 475-487.
Burakov, A.V. 1962. Gorodišče bilja s. Kozyrky poblizu Ol'vii, *APamKiiv* XI, 49-96.
Burakov, A.V. 1976. *Kozyrskoje gorodišče rubeža i pervych vekov našej ery*. Kiev.
Burdak, V.D., Ščeglov, A.N. 1966. O tempe rosta, vozrastnom sostave stad i migracijach nekotorych černomorskich ryb v antičnuju epochu, *Ekologo-morfologičeskie issledovanija nektonnych životnych*. Kiev, 117-120.
Calkin, V.I. 1960. Domašnije i dikije životnye Severnogo Pričernomor'ja v epochu rannego železnogo veka, *MatIsslA* 53, 7-109.
Canarache, V. 1969a. *Das archäologische Museum in Konstanza*. Brašov.
Canarache, V. 1969b. *Masken und Tanagrafiguren aus Werkstätten von Callatis-Mangalia*. Konstanza.
Canarache, V., Aricescu, A., Barbu, V., Rădulescu, A. 1963. *Tezaurul de sculpturi de la Tomis*. Bucureşti.
Caprio, N.C., di 1985. *La ceramica in archeologia: Antiche tecniche di lavorasione e moderni metodi d' indagine*. Roma.
Cechmistrenko, V.I. 1958. K voprosu o periodizacii sinopskich keramičeskich klejm, *SovA* 1, 56-70.

Cechmistrenko, V.I. 1960. Sinopskie keramičeskie klejma s imenami gončarnych masterov, *SovA* 3, 59-77.
Cechmistrenko, V.I. 1963. *Klejma kak istočnik dlja izučenija keramičeskogo proizvodstva v Sinope v IV-II vv. do n.e. Abstract from the thesis for degree of Candidate of Historical Sciences*. Moskva.
Cechmistrenko, V.I. 1971. Zametki o sinopskich klejmach, *SovA* 3, 67-75.
Cerda, D. 1987. Las anforas de la nave de El Sec, in: Arribas, A., Trias, Mª G., Cerda, D., De la Hoz, J. 1987, 401-495.
Chrapunov, I.N. 1991. Bulganakskoje pozdneskifskoje gorodišče (po raskopkam 1981-1989 gg.), *Materialy po istorii, archeologii i ethnografii Tavriki* 2, Simferopol, 3-34.
Chtcheglov, A. 1992. *Polis et chora. Cité et territoire dans le Pont-Euxin*. Paris. (*Centre de Recherches d'Histoire ancienne* 118: *Espaces et paysages* 1).
Chudjak, M.M. 1940. Terrakoty, *Ol'vija* I. Kiev, 85-103.
Coja 1961, 230 Alcuni aspetti della coroplastica ellenistica di Histria, *Dacia* 5, 213-232.
Coja, M. 1970. Ceramica autohtonă de la Histria. Secolele V- I î.e.n., *Pontica* III, 99-124.
Condurachi, E. (ed.) 1966. *Histria. Monografie archeologica*. Vol. II. Bucureşti.
Conovici, N. 1989. Probleme ale chronologie amphorelor stampilate sinopeene. Stampilele din grupa a IV-a (B.N. Grakov), *StCercIstorV* 40, 29-41.
Conovici, N., Avram, A., Poenaru Bordea, G. 1992. Količestvennyj analiz sinopskich amfornych klejm iz Kallatisa, *Grečeskie amfory*. Saratov, 229-253.
Corbett, P.E. 1949. Attic pottery of the later fifth century from the Athenian Agora, *Hesperia* 18, 298-351.
Corinth XIII: Blegen, Palmer, Young 1964.
Crane E., Graham, A. J. 1985. *Bee Hives of the Ancient World*. Reprint M117 published by International bee Research Association.
Cvetaeva, G.A. 1951. Gruntovyj nekropol' Pantikapeja, ego istorija, etničeskij i social'nyj sostav, *MatIsslA* 19, 63-86.
Čimbuleva, Ž. 1964. Novootkrita elinističeska grobnica ot Nesebr, *ArcheologijaSof* VI, 4, 57-61.
Danil'čenko, S.A. 2000. Černolakovaja attičeskaja keramika poselenija Kozyrka II, *ΣΥΣΣΙ–TIA*. *Pamjati Yu.V. Andreeva*. St Peterburg, 222-227.
Daševskaja, O.D. 1954. *Skifskie gorodišča Kryma. Abstract from the thesis for degree of Candidate of Historical Sciences*. Moskva.
Daševskaja, O.D. 1961. Raskopki Južnogo Donuzlavskogo gorodišča v 1960 godu, *Kratkie soobščenija o polevych archeologičeskich issledovanijach OGU i OGAM v 1960 godu*. Odessa, 51-58.
Daševskaja, O.D. 1963. O tavrskoj keramike s grebenčatym ornamentom, *SovA* 4, 205-210.
Daševskaja. O.D. 1964. Raskopki Južno-Donuzlavskogo gorodišča v 1961-1962 gg., *KSOGAM 1962 goda*. Odessa, 50-56.
Daševskaja, O.D. 1967. Ellinističeskaja keramika iz Severo-Zapadnogo Kryma, *SovA* 1, 162-168.
Daševskaja, O.D. 1968. Raboty Donuzlavskoj expedicii, *AO 1967 g*. Moskva, 215-217.
Daševskaja, O.D. 1969. Antičnaja bašnja na gorodišče Beljaus, *KSIA* 116, 85-92.
Daševskaja, O.D., Ščeglov, A.N., 1965. Chersonesskoje ukreplenie na gorodišče Beljaus, *SovA* 2, 246-255.
Davidson, G.R., Thompson, D.B. 1943. *Small Objects from the Pnyx: I.* Princeton. (*Hesperia. Suppl.* VII).
Debidour, M. 1979. Reflexions sur les timbres amphoriques Thasiens, *Thasiaca*. Paris. (*BCH* Suppl. V), 269-314.
Debidour, M. 1986. En classant les timbres thasiens, *BCH* Suppl. XIII, 311-334.

Dils, G. 1934. *Antičnaja technika*. Moskva-Leningrad.
Dinsmoor, W.B. 1961. The Basis of Greek Temple Design: Asia Minor, Greece, Italy, *Atti del settimo congresso internationale di archeologia classica 1*. Roma.
Dolgorukov, V.S. 1984. Fanagorija, in: Košelenko *et al.* (eds.) 1984, 77-80.
Domanskij, Ja.V., Marčenko, K.K. 1980. Poselenie ol'vijskoj chory Kozyrka 2, *ASbor* 21, 26-44.
Drougou, S. (ed.) 1991. *Hellenistic Pottery from Macedonia*. Thessaloniki.
Drost, D. 1967. *Töpferei in Afrika. Technologie*. Berlin.
Dufková, M., Pecírka, J. 1970. Excavations of Farms and Farmhouses in the chora of Chersonesos in the Crimea, *Eirene* 8, 123-174.
Dukati, P. 1922. *Storia della ceramica greca*. Vol. II. Firenze.
Edwards, G.R. 1975. *Corinth, 7, 3. Corinthian Hellenistic pottery*. Princeton.
Efremov, N.V. 1993. Načal'nyj period astinomnogo klejmenija v Sinope, *RosA* 1, 31-38.
Egorova, T.V. 2000. Černolakovye kanfary s gorodišča 'Čajka', *RosA* 4, 137-150.
Eiseman, C. J. 1973. Amphoras from the Porticello shipwreck (Calabria), *The international Journal of Nautical Arhaeology and Underwater Exploration* 2, 1, 13-23.
Eiseman, C. J., Ridgway, B. S. 1987. *The Porticello shipwerck: a Mediterranean merchant vessel of 415 – 385 B.C.* College Station.
Empereur, J.-Y., Hesnard, A. 1987. Les amphores hellénistiques, *Céramiques hellénistiques et romaines* 2. Paris, 9-54.
Empereur, J.-Y., Picon, M. 1986. Des Ateliers d'Amphores à Paros et à Naxos, *BCH* 110, 1986, 495-511, 647-653.
Eremeeva, E.M. 1965. *Černoe more*. Simferopol.
Farmakovskij, B.V. 1903. Raskopki nekropolja drevnej Ol'vii v 1901 godu, *IAK* 8, 1-70.
Farmakovskij, B.V. 1906. *Raskopki v Ol'vii v 1902-1903 godach*. St Peterburg. (*IAK* 13).
Farmakovskij, B.V. 1914. Raskopki v Ol'vii, *OAK 1913-1915 gg*., 1-51.
Fedorov, B.G., Šilik, K.K. 1968. Pogrebennaja novočernomorskaja terassa na beregu Bugskogo limana, *Izvestija Akademii nauk SSSR. Serija geografičeskaja* 3, 90-93.
Fedorov, P.V. 1959. O kolebanijach urovnja Černogo morja v poslelednikovoe vremja, *Doklady Akademii nauk SSSR* 124, *5*.
Fedorov, P.V. 1963. *Stratigrafija četvertičnych otloženij krymsko-kavkazskogo poberež'ja Černogo morja*. Moskva.
Fedoseev, N.F. 1992. Itogi i perspektivy izučenija sinopskich keramičeskich klejm, *Grečeskie amfory*. Saratov, 147-163.
Fedoseev, N.F. 1993. *Sinopskie keramičeskie klejma kak istočnik po političeskoj i ekonomičeskoj istorii Ponta. Abstract from the thesis for degree of Candidate of Historical Sciences*. Moskva.
Fedoseev, N.F. 1993a. Utočnennyj spisok magistratov, kontrolirovavšich keramičeskoje proizvodstvo v Sinope, *VDI* 2, 85-104.
Filow, B. 1909. Erosstatue aus Nikopolis ad Istrum, *JdI* 24, 60-73.
Frantov, G.S., Pinkevič, A.A. 1966. *Geofizika v archeologii*. Leningrad.
Fraser, P.M., Matthews, E. (eds.) 1994. *A Lexicon of Greek Personal Names. Vol. II. Attica*. Oxford.
Frolova, N.A. 1988. Problemy monetnoj čekanki Bospora VI-II vv. do n.e. (Po povodu vychoda knigi V.A. Anochina "Monetnoje delo Bospora". Kiev 1986), *VDI* 2, 122-143.
Fol, A., Bogdanov, B. *et al.* (eds.) 1995. *Studia in honorem Georgii Mihailov*. Sofia.
GACh: Solomonik, E.I. (ed.) 1978. *Graffiti antičnogo Chersonesa*. Kiev.
Gajdukevič, V.F. 1952. Raskopki Mirmekija v 1935-38 gg., *MatIsslA* 25, 135-220.
Gajdukevič, V.F. 1952a. K voprosu o tkackom remesle v bosporskich poselenijach, *MatIsslA* 25, 395-414.

Gajdukevič, V.F. 1987. *Antičnye goroda Bospora. Mirmekij*. Leningrad.
Gavriljuk, N.A. 1989. *Domašnee proizvodstvo i byt stepnych skifov*. Kiev.
GChCh: Solomonik, E.I. 1984.
Gilevič, A.M. 1970. Kučuk-Mojnakskij klad chersonesskich monet IV-II v do n.e., *NumEpigr* 8, 3-16.
Gilevič, A.M. 1987. Chersones i Severo-Zapadnyj Krym po numizmatičeskim dannym, *Novoe v sovetskoj numizmatike i numizmatičeskom muzeevedenii (k 200-letiju Otdela numizmatiki Ermitaža). Kratkie tezisy dokladov i soobščenij naucnoj konferencii*. Leningrad, 10-11.
Gilevič, A.M. 1989. O kulte Sabazija v Chersonese, *Drevnij Vostok i antičnaja civilizacija*. Leningrad, 70-76.
Gilevič, A.M. 1998. Monetnyj kompleks poselenija i nekropolja Panskoje I. (Manuscript).
Gilevič, A.M. 1999. Chronologija i topografija kladov i kollektivnych nachodok chersonesskich monet IV-II vv. do n.e., *Archeologičeskie vesti* 6, St Peterburg, 346-373.
Gilevič, A.M., Ščeglov, A.N. 1996. Chersonesec Batyll, syn Nikagora, *Hyp* 2, *2*, 100-124.
Glazunov, V.V. 1978. Opyt vyjasnenija detal'nogo plana postrojki metodom elektrorazvedki, *KSIA* 152, 68-72.
Glazunov, V.V., Naumov, A.P., Vnučkov, G.A. *et al.* 1979. Geofizičeskie issledovanija na antičnom poselenii Panskoe I, *Novoe v primenenii fiziko-matematičeskich metodov v archeologii*. Moskva, 22-39.
Golencov, A.S. 1981. K voprosu o suščestvovanii dogrečeskogo poselenija na territorii Kerkinitidy, *Demografičeskaja situacija v Severnom Pričernomor'je v period Velikoj grečeskoj kolonizacii*. Tbilisi, 227-232.
Golenko, K.V., Ščeglov, A.N. 1966. O kul'te Asklepija v Chersonese Tavričeskom (po numizmatičeskim i archeologičeskim dannym), *Dacia* 9, 373-382.
Golenko, K.V., Ščeglov, A.N. 1971. Tri pozdneellinističeskije tetradrachmy iz Severo-Zapadnogo Kryma, *VDI* 1, 41-47.
Gorochovskaja, L.P., Zirkin, Ju.B. 1985. Severnoe Pričernomor'je i Karfagen, *Pričernomor'je v epochu ellinizma*. Tbilisi, 206-212.
Grace, V. 1963. Notes on the Amphoras from the Koroni Peninsula, *Hesperia* 32, 319-334.
Grace, V. 1965. The Commercial Amphoras from the Antikythera Shipwreck, *TransactAmPhilosSoc* 55, *3*, 5-17.
Grace, V. 1971. Samian Amphoras, *Hesperia* 40, 52-95.
Graef, B., Langlotz, E. 1925-1933. *Die antiken Vasen von der Akropolis zu Athen*. Berlin.
Grakov, B.N. 1926. Englifičeskije klejma na gorlach nekotorych ellinističeskich ostrodonnych amfor, *TrudyGIM* I. Moskva, 165-206.
Grakov, B.N. 1929. *Drevnegrečeskie keramičeskie klejma s imenami astinomov*. Moskva.
Grakov, B.N. 1954. *Kamenskoje gorodišče na Dnepre*. Moskva-Leningrad. (*MatIsslA* 36).
Grakov, B.N. 1977. *Rannij železnyj vek*. Moskva.
Grandmezon, N.N. 1982. Zametki o monetach Chersonesa Tavričeskogo, *Numizmatika antičnogo Pričernomor'ja*. Kiev, 34-42.
Grinevič, K.E. 1929. *Otčetnaja vystavka rezul'tatov raskopok na Geraklejskom poluostrove (7 avg. – 4 sent. 1929 g.) pod rukovodstvom K.E. Grineviča*. Sevastopol.
Grose, D.F. 1989. *The Toledo Museum of Art. Early Ancient Glass*. New York.
Guarducci, M. 1967. *Epigrafia greca. Vol. I*. Roma.
Gudkova, A.V., Krapivina, V.V. 1988. Seroglinjanaja gončarnaja keramika Ol'vii pervych vekov našej ery, *Antičnye drevnosti Severnogo Pričernomor'ja*. Kiev, 82-103.
Guldager Bilde, P. 1993. Mouldmade Bowls, Centres and Peripheries in the Hellenistic World, in: Bilde, P., Engberg-Pedersen, T., Hannestad, L. *et al.* 1993, 192-209.
Haevernick, Th. E. 1977. Gesichtsperlen, *MM* 18, 152-231.

Hampe, R., Winter, A. 1962. *Bei Töpfern und Töpferinnen in Kreta, Messenien und Zypern.* Mainz.
Hampe, R., Winter, A. 1965. *Bei Töpfern und Zieglern in Süditalien, Sizilien und Griechenland.* Mainz.
Hannestad, L. 1983. *Ikaros – The Hellenistic settlements, Volume 2, The Hellenistic pottery*, Aarhus.
Hannestad, L. 1995. Excavation at Panskoye, Crimea, 1994, *Acta Hyperborea* 6, 312-316.
Hannestad, L. 2002. Gods and Agriculture: Evidence from an Agrarian Settlement in the North-Western Crimea, in: Ascani, K. *et al.* (eds.) 2002, 143-151.
Higgins, R.A. 1954. *Terracottas in the British Museum. Vol. I.* London.
Higgins, R.A. 1967. *Greek Terracottas.* London.
Histria II: Condurachi, E. (ed.) 1966.
Histria IV: Alexandrescu, P. 1978.
Howland, R.H. 1958. *Greek Lamps and Their Survivals.* Princeton. (*Agora*, IV).
Illins'ka, V.A. 1965. Basivs'ke gorodišče, *ArcheologijaKiiv* 18, 48-76.
Ivanov, T. 1963. La céramique antique de la nécropole d'Apollonia, *Apollonia. Les fouilles dans la nécropole d'Apollonia en 1947 – 1949.* Sofia, 65-237, 372-380.
Ivanova, Čubova, Ščeglov, A.N. *et al.* 1976. *Antičnaja skulptura Chersonesa.* 1976. Kiev.
Jacenko, I.V. 1970. Issledovanie gorodišča u sanatorija Čajka v Evpatorii, *AO 1969 g.* Moskva, 253-255.
Jacenko, I.V. 1970a. Terrakoty iz gorodišča u sanatorija Čajka v Evpatorii, *Terrakoty Severnogo Pričernomor'ja.* Moskva (*SAI* G1-11), 68-69.
Jacenko, I.V. 1983. Kreposť i sel'skie usad'by chersonescev na okraine sovremennoj Evpatorii, *Putešestvija v drevnost'*. Moskva, 184-204.
Jajlenko, V.P. 1982. *Grečeskaja kolonizacija VII-III vv. do n.e.* Moskva.
Januševič, Z.V. 1976. *Kul'turnye rastenija Jugo-Zapada SSSR po paleobotaničeskim issledovanijam.* Kišinev.
Januševič, Z.V. 1986. *Kul'turnye rastenija Severnogo Pričernomor'ja: Paleoetnobotaničeskije issledovanija*. Kišinev.
Jardé, A. 1925. *Les céréales dans l'antiquité grecque.* Paris.
Jefremow, N. 1998. Einige Abkürzungen auf der antiken Keramik in ihrem Verhältnis zu den bekannten Masseinheiten. Überlegungen zu Produktion und Handel mit den Pithoi im Schwarzmeerraum, *MünstBeitr* 17, *2*, 71-92.
Jemec, I.A., Peters, B.G. 1994. Graffiti iz poseleniya u s. Michajlovka, *RosA* 2, 164-178.
Johnston, A.W. 1978. Lists of Contents: Attic Vases, *AJA* 82, 222-226.
Johnston, A.W. 1979. *Trademarks on Greek Vases.* Warminster.
Johnston, A. 1991. Greek vases in the marketplace, in: Rasmussen, T., Spivey, N. (eds.) 1991, 203-232.
Jones, J. E. 1976. Hives and honey of Hymettus: beekeeping in Ancient Greece, *Archaeology* 29 (2), 80-91.
Jones, J. E., Graham, A. J., Sacket, L. H. 1973. An Attic country house below the cave of Pan at Vari, *BSA* 68, 355-452.
Kac, V.I. 1979. Ekonomičeskie svjazi pozdneklassičeskogo Chersonesa (po dannym amfornych klejm), *AMA* 4, Saratov, 176-191.
Kac, V.I. 1985. Tipologija i chronologičeskaja klassifikacija chersonesskich magistratskich klejm, *VDI* 1, 87-113.
Kac, V.I. 1993. Etjudy po keramičeskoj epigrafike Sinopy. I. Problemy klassifikacii, *AMA* 9, Saratov, 96-118.
Kac, V.I. 1994. *Keramičeskije klejma Chersonesa Tavričeskogo.* Saratov.

Kac, V.I., Monachov, S.Ju. 1977. Amfory ellinističeskogo Chersonesa (s poselenija Panskoje I v Severo-Zapadnom Krymu), *AMA* 3, Saratov, 90-105.
Kac, V.I., Pavlenkov, V.I., Ščeglov, A.N. 1989. The Amastrian stamped pottery, *Archeologia Warsz* 40, 15-28.
Kadeev, V.I., Šumenko, S.I. 1967. Nekotorye rezul'taty petrografičeskogo issledovanija antičnoj keramiki iz Chersonesa, *ZOAO* II (35), 271-276.
Kapošina, S.M. 1956a. Iz istorii grečeskoj kolonizacii Nižnego Pobuž'ja, *MatIsslA* 50, 221-254.
Kapošina, S.M. 1956b. O skifskich elementach v kul'ture Ol'vii, *MatIsslA* 50, 154-189.
Kapošina, S.M. 1959. Nekropol' v rajone poselka im. Vojkova bliz Kerči, *MatIsslA* 69, 108-153.
Karasev, A.N. 1948. Oboronitel'nye sooruženija Ol'vii, *KSIA* 22, 25-37.
Karasev, A.N. 1963a. *Otčet o raskopkach gorodišča u sanatorija 'Čajka' bliz Evpatorii v 1963 g. Archives of IIMK RAS*. St Peterburg (Manuscript).
Karasev, A.N. 1963b. Raskopki na gorodišče 'Čajka' bliz Evpatorii, *KSIA* 95, 33-42.
Karasev, A.N. 1965. Raskopki gorodišča u sanatorija 'Čajka' bliz Evpatorii v 1963 g., *KSIA* 103, 131-139.
Karasev, A.N. 1966. Raskopki u sanatorija 'Čajka' v Evpatorii, *AO 1965 goda*. Moskva, 115-117.
Karasev, A.N., Jacenko, I.V. 1964. *Otčet o raskopkach gorodišča u sanatorija 'Čajka' bliz Evpatorii v 1964 g. Archives of IIMK RAS*. St Peterburg (Manuskript).
Karasev, A.N., Jacenko, I.V. 1965. *Otčet o raskopkach gorodišča u sanatorija 'Čajka' v rajone Evpatorii v 1965 g. Archives of IIMK RAS*. St Peterburg (Manuskript).
Karasev, A.N., Jacenko, I.V. 1966. *Otčet o rabote Čajkinskoj expedicii v 1966 g. Archives of IIMK RAS,* St. Petersburg (Manuscript).
Karyškovskij, P.O., Klejman, I.B. 1985. *Drevnij gorod Tira*. Kiev.
Kasparov, A.K. 1995. New data on faunal remains from Nymphaion and neighbouring settlements, *Archeologia Warsz* 46, 77-80.
Kassapoglou, E. 1993. Un lot petits bronzes d'Erétrie: Témoin d'un culte domestique?, *Bronces y religión romana. Actas del XI Congreso International de bronces antiguos. Madrid, mayo – junio 1990*. Madrid, 247-259.
Kastanajan, E.G. 1952. Lepnaja keramika Mirmekija i Tiritaki, *MatIsslA* 25, 249-288.
Kastanajan, E.G. 1981. *Lepnaja keramika bosporskich gorodov*. Leningrad.
Kastanajan. E.G., Arsen'jeva, T.M. 1984. Keramika, in: Košelenko *et al.* (eds.) 1984, 229-230.
Kisa, A. 1908. *Das Glas im Altertum*. I. Leipzig.
Klejman, I.B. 1966. Terrakoty. Roksolanskoje gorodišče, *Materialy po archeologii Severnogo Pričernomor'ja* 5, 90-100.
Klejman, I.B. 1970a. Statuetki iz Tiry, *Terrakoty Severnogo Pričernomor'ja*. Moskva, 25-27. (*SAI* G1-11).
Klejman, I.B. 1970b. Statuetki iz Roksolan (Nikonija), *Terrakoty Severnogo Pričernomor'ja*. Moskva, 27-29. (*SAI* G1-11).
Klejman, I.B. 1976. Novye nachodki terrakot v Nikonii, *Chudožestvennaja kul'tura i archeologija antičnogo mira. Sbornik pamjati B.V. Farmakovskogo*. Moskva, 118-123.
Klejman, I.B. 1980. Terrakoty iz raskopok Tiry 1970-1977 gg., *Issledovanija po antičnoj archeologii Jugo-Zapada Ukrainskoj SSR*. Kiev, 96-103.
Klejman, I.B. *et al.* 1970. Opisanie terrakot Feodosii, *Terrakoty Severnogo Pričernomor'ja*. Moskva, 79-82. (*SAI* G1-11).
Knipovič, T.N. 1940. Keramika mestnogo proizvodstva iz raskopa ‚И', *Ol'vija* I. Kiev, 129-170.
Knipovič, T.N., Slavin, L.M. 1941. Raskopki jugo-zapadnoj časti Tiritaki, *MatIsslA* 4, 37-60.

Kobylina, M.M. 1951. Raskopki vostočnogo nekropolja Fanagorii v 1948 g., *MatIsslA* 19, 241-249.
Koehler, C. 1992. Obščaja tipologija i chronologija korinfskich transportnych amfor, *Grečeskie amfory*. Saratov, 265-283.
Kolesnikov, A.B. 1984. Antičnye sel'skie usad'by u Evpatorijskogo majaka, *VestnikMU, Serija 8. Istorija* 4, 76-86.
Kolesnikov, A.B. 1985. *Grečeskie sel'skochozjastvennye usad'by v rajone g. Evpatorii. Abstract from the thesis for degree of Candidate of Historical Sciences.* Moskva.
Kolesnikov, A.B. 1985a. Keramičeskie klejma iz raskopok usadeb u Evpatorijskogo majaka, *VDI* 2, 67-93.
Kolesnikov, A.B. 1991. Monety iz raskopok usadeb u Evpatorijskogo majaka, *Pamjatniki železnogo veka v okrestnostjach Evpatorii*. Moskva, 186-195.
Kolesnikova, L.G. 1973. Komu prinadležali anthropomorfnye nadgrobija Chersonesa?, *SovA* 3, 37-48.
Koljakov, S.M. 1975. Amfory gorodišča Čajka: primenenie metoda peresčeta v uslovno-celye sosudy pri issledovanii keramičeskogo komplexa, *Matematičeskie metody v issledovanijach po social'no-ekonomičeskoj istorii*. Moskva, 237-260.
Kolotuchin, V.A. 1990. Kizil-kobins'kyj posud VIII – peršoj poloviny V st. do n.e., *ArcheologijaKiiv* 2, 68-86.
Kolotuchin, V.A. 1996. *Gornyj Krym v epochu pozdnej bronzy – načale železnogo veka: (Etnokul'turnye processy)*. Kiev.
Kopylov, V.P., Marčenko, K.K. 1980. Lepnaja keramika Elizavetovskogo mogil'nika na Donu, *SovA* 2, 1980, 155-160.
Korovina, A.K. 1984. Hermonassa, in: Košelenko *et al.* (eds.) 1984, 81-82.
Korpusova, V.N. 1983. *Nekropol' Zolotoje. K etnokul'turnoj istorii evropejskogo Bospora*. Kiev.
Košelenko, G.A. *et al.* (eds.) 1984. *Antičnye gosudarstva Severnogo Pričernomor'ja*. Moskva.
Kovalenko, S.A. 1991. Antičnoje sel'sko-chozjajstvennoje poselenie vozle s. Pesčanoje, *Pamjatniki železnogo veka v okrestnostjach Evpatorii*. Moskva, 6-36.
Kožin, P.M. 1989. Značenie keramiki v izučenii drevnich etnokul'turnych processov, *Keramika kak istoričeskij istočnik*. Novosibirsk, 54-70.
Kozub, Ju.I. 1974. *Nekropol' Ol'vii V-IV st. do n.e.* Kiev.
Krapivina, V.V. 1980. Vesovye giri Ol'vii, *Issledovanija po antičnoj archeologii Severnogo Pričernomor'ja*. Kiev, 83-98.
Krapivina, V.V. 1987. Prostaja stolovaja keramika, *Kul'tura naselenija Ol'vii i ee okrugi v archaičeskoje vremja.* Kiev, 71-79.
Krapivina, V.V. 1988. Neopublikovannye giri iz raskopok Ol'vii, *Antičnye drevnosti Severnogo Pričernomor'ja*. Kiev, 188-194.
Krapivina, V.V. 1993. *Ol'vija. Material'naja kul'tura I-IV vv. n.e.* Kiev.
Krapivina, V.V. 1997. Antičnye vesovye giri Ol'vii i Chersonesa, *Chersones v antičnom mire. Istoriko-archeologičeskij aspekt. Tezisy dokladov konferencii*. Sevastopol, 63-65.
Kris, Ch.I. 1981. *Kizil-kobinskaja kul'tura i tavry*. Moskva. (*SAI* D1-7).
Krug, O.Ju. 1960. Optičeskoje issledovanie bosporskoj keramiki, *MatIsslA* 83, 128-132.
Krug, O.Ju., Četverikov, S.D. 1961. Opyt primenenija petrografičeskich metodov k izučeniju keramiki Bosporskogo carstva, *SovA* 3, 34-44.
Kruglikova, I.T. 1966. *Bospor v pozdneantičnoje vremja*. Moskva.
Kruglikova, I.T. 1969. Raskopki sel'skich poselenij Bosporskogo carstva, *AO 1968 goda*. Moskva, 307-309.
Kruglikova, I.T. 1975. *Sel'skoje chozjajstvo Bospora*. Moskva.
Kruglikova, I.T. 1984. Kimmerik, sel'skaja territorija, in: Košelenko *et al.* (eds.) 1984, 71-76.

Kryžickij, S.D. 1971. *Žilye ansambli drevnej Ol'vii: IV – II vv. do n.e.* Kiev.
Kryžickij, S.D. 1982. *Žilye doma antičnych gorodov Severnogo Pričernomor'ja*. Kiev.
Kryžickij, S.D. *et al.* 1989. *Sel'skaja okruga Ol'vii*. Kiev.
Kryžyc'kyj, S.D. 1965. Pro metodyku opysu kladok mist Pivničnogo Pryčornomor'ja VII st. do n.e. – IV st. n.e., *ArcheologijaKiiv* 18, 39-47.
Kul'skaja, O.A. 1940. Chimiko-technologičeskoje issledovanie ol'vijskich keramičeskich izdelij, *Ol'vija* I. Kiev, 171-185.
Kul'skaja, O.A. 1958. Chimiko-technologičeskoje izučenie keramiki iz Ol'vii, *APamKiiv* 7, 77-91.
Kunina, N.Z. 1997. *Antičnoje steklo v sobranii Ermitaža.* St Peterburg.
Kurnakov, N.S., Kuznecov, V.G., Dzens-Litovskij, A.I., Ravič, M.I. 1936. *Soljanye ozera Kryma.* Moskva-Leningrad.
Kutajsov, V.A. 1987. Kizil-kobinskaja keramika iz raskopok Kerkinitidy, *Materialy k etničeskoj istorii Kryma VII v do n.e. – VII v. n.e.* Kiev, 27-40.
Kutajsov, V.A., Užencev V.B. 1994. Vostočnye vorota Kalos Limena, *Severo-Zapadnyj Krym v antičnuju epochu*. Kiev, 44-70.
Küster, E. 1913. *Die Schlange in der griechischen Kunst und Religion.* Giessen.
Lancov, S.B. 1994. Antičnoje poselenie Novo-Fedorovka i nekotorye voprosy chersonesskoj chory, *Severo-Zapadnyj Krym v antičnuju epochu*. Kiev, 71-104.
Lang, M. 1956. Numerical notation on Greek vases, *Hesperia* 25, 1-24.
Lang, M. 1976. *Graffiti and Dipinti*. Princeton. (*Agora*, XXI).
Lappo-Danilevskij, A., Malmberg, V. 1894. *Kurgan Karagodeuašch.* (*MAR* 13).
Latyšev, V.V., 1909. *PONTIKA.* St Peterburg.
Latyševa, V.A. 1978. Raskopki antičnogo poselenija Masliny v severo-zapadnom Krymu, *KSIA* 156, 53-60.
Latyševa, V.A. 1994. Terrakota iz raskopok poselenija chersonesskoj chory Masliny, *Drevnosti*, 127-140.
Latyševa, V.A. 1997. O naselenii chersonesskoj chory v Severo-Zapadnom Krymu (po materialam poselenija Masliny), *Drevnosti* 1996, 56-61.
Laumonier, A. 1956. *Exploration archéologique de Délos. Vol. 23: Les figurines de terre cuite.* Paris.
Laumonier, A. 1977. *Exploration archéologique de Délos, 31. La céramique hellénistique à reliefs, 1. Ateliers ioniens.* Paris.
Lawall, M.L. 1999. Studies in Hellenistic Ilion. Transport amphoras from the lower city, *Studia Troica* 9, 187-224.
Leskov, A.M. 1965. *Gornyj Krym v I tysjačeletii do našej ery.* Kiev.
Leskov, A.M. 1972. *Treasures from the Ukrainian barrows*. Leningrad.
Leskov, O. 1974. *Skarby kurganiv Chersonščiny.* Kiev.
Leskov, A. 1974a. *Treasures from the Ukrainian barrows: latest discoveries.* Leningrad.
Levi, E.I. 1940. Privoznaja grečeskaja keramika iz raskopok Ol'vii v 1935 i 1936 gg., *Ol'vija* I. Kiev, 105-127.
Levi, E.I. 1956. Ol'vijskaja agora, *MatIsslA* 50, 35-118.
Levi, E.I. 1959. Terrakoty iz cisterny Ol'vijskoj agory, *KSIA* 74, 9-19.
Levi, E.I. 1964a. Keramičeskij komplex 3-2 vv. do n.e iz raskopok Ol'vii, *Ol'vija. Temenos i agora*. Moskva-Leningrad, 225-280.
Levi, E.I. 1964b. Materialy ol'vijskogo temenosa, *Ol'vija. Temenos i agora*. Moskva-Leningrad, 131-174.
Levi, E.I. 1970. Terrakoty iz Ol'vii, *Terrakoty Severnogo Pričernomor'ja.* Moskva, 33-56. (*SAI* G1-11).
Leipuns'ka, N.O. 1980. Luterii z Ol'vii, *ArcheologijaKiiv* 33, 32-45.

LGPN II: Fraser, P.M. and Matthews, E. (eds.) 1994.
Liberov, P.D. 1960. K istorii skotovodstva i ochoty na territorii Severnogo Pričernomor'ja v epochu rannego železa, *MatIsslA* 53, 110-165.
Liberov, P.D. 1965. *Pamjatniki skifskogo vremeni na Srednem Donu.* Moskva. (*SAI* D1-31)
Longinov, V.V. 1955. Buchta Jarylgač, *Sbornik rabot instituta okeanologii AN SSSR* 4, 151-165.
L'vova, E.M. 1978. *Ravninnyj Krym. Geologičeskoje strojenie, gidrogeologija, ochrana prirody.* Kiev.
Mackevoj, L.G. 1977. *Mezolit i neolit Vostočnogo Kryma.* Kiev.
Mačinskij, D.A. 1971. O vremeni pervogo aktivnogo vystuplenija sarmatov v Podneprov'je po svidetel'stvam antičnych pis'mennych istočnikov, *ASbor* 13, 30-54.
Magetti, M. 1982. Phase analysis and its significance for technology and origin, in: Olin and Franklin (eds.) 1982, 121-133.
Manni Piraino, M.T. 1987. Naxos – frammenti fittili iscritti, *Kokalos* 33, 27-45.
Manni Piraino, M.T. 1987a. Camarina – rifriscolaro graffiti su anfore, *Kokalos* 33, 89-120.
Marcea, M. 1959. Le culte de Sabasius en Dacie, *Dacia. N. S.* 3, 325-339.
Marčenko, I.D. 1956. Raskopki vostočnogo nekropolja Fanagorii, *MatIsslA* 57, 102-127.
Marčenko, K.K. 1972. Lepnaja keramika V-III vv. do n.e. s gorodišča u stanicy Elizavetovskoj na Nižnem Donu, *SovA* 1, 122-134.
Marčenko, K.K. 1975. Klassifikacija lepnoj keramiki Ol'vii vtoroj poloviny IV – pervoj poloviny I v. do n.e., *KSIA* 143, 70-76.
Marčenko, K.K. 1988. *Varvary v sostave naselenija Berezani i Ol'vii vo vtoroj polovine VII – pervoj polovine I v. do n.e. (Po materialam lepnoj keramiki).* Leningrad.
Marčenko, K.K., Domanskij, Ja.V. 1983. Kompleks veščestvennych nachodok na antičnom poselenii Staraja Bogdanovka 2, *ASbor* 24, 56-72.
Marčenko, K.K., Žitnikov, V.G., Kopylov, V.P. 2000. *Die Siedlung Elizavetovka am Don.* Moskau. (*Pontus septentrionalis II. Tanais* 2).
Maslennikov, A.A. 1998. *Ellinskaja chora na kraju oikumeny.* Moskva.
Maslov, S.P. 1991. Kompleks sgorevšich rastitel'nych ostatkov, obnaružennych pri raskopkach pomeščenija CXVIII gorodišča 'Čajka' v 1976 g., *Pamjatniki železnogo veka v okrestnostjach Evpatorii.* Moskva, 76-81.
Matson, F.R. 1951. Ceramic technology as an aid to cultural interpretation – Techniques and Problems, *Essays on Archaeological Methods. Anthropological Papers. University of Michigan* 8, 102-116.
Meljukova, A.I. 1975. *Poselenie i mogil'nik skifskogo vremeni u sela Nikolaevka.* Moskva.
Michlin, B.Ju. 1979. K izučeniju chersonesskich keramičeskich klejm, *VDI* 2, 139-159.
Michlin, B.Ju. 1981. Raskopki nekropolja Kerkinitidy v 1975 g., *SovA* 3, 181-192.
Mirtchev, M. 1956. La collection de terres-cuites du Musée de la ville de Varna, *BullSAVarna* X, 1-50.
Mollard-Besques, S. 1963. *Catalogue raisonné des figurines et reliefs en terre-cuite grecs et romains. II. Myrrina.* Paris.
Mollard Besques, S. 1971. Catalogue raisonné des figurines et reliefs en terre-cuite grecs, étrusques et romains. III,1-2: Époques hellénistique et romaine: Grèce et Asie mineur. Paris.
Monachov, S.Ju. 1980. Ešče raz o standartach emkosti amfor ellinističeskogo Chersonesa, *VDI* 4, 161-179.
Monachov, S.Ju. 1989. *Amfory Chersonesa Tavričeskogo IV-II vv. do n.e. Opyt sistemnogo analiza.* Saratov.
Monachov, S.Ju. 1990. Zametki po lokalizacii keramičeskoj tary: amfory i amfornye klejma Kolofona, *VDI* 4, 97-105.

Monachov, S.Ju. 1992. Dinamika form i standartov sinopskich amfor, *Grečeskie amfory*. Saratov, 163-204.
Monachov, S.Ju. 1999a. *Grečeskie amfory v Pričernomor'je. Komplexy keramičeskoj tary VII-II vv. do n.e.* Saratov.
Monachov, S.Ju. 1999b. K tipologii knidskich amfor IV-II vv. do n.e., *The Phenomenon of Bosporan Kingdom: Greek Culture at the Periphery of Ancient Wold. The Materials of International scientific conference, December 1999*. St Peterburg, 161-172.
Monachov, S.Ju., Rogov, E.Ja. 1990a. Amfory nekropolja Panskoje I, *AMA* 7, Saratov, 128-153.
Monachov, S.Ju., Rogov, E.Ja. 1990b. Keramičeskie kompleksy nekropolja Panskoje I, *AMA* 8, Saratov, 122-151.
Müller, I. (Hrsg.) 1892. *Handbuch der klassischen Alterthumswissenschaft. Bd. I*^{2}. München.
Nalivkina, M.A. 1940. Kostjanye izdelija iz raskopok Ol'vii v 1935-1936 gg., *Ol'vija* I. Kiev, 187-202.
Nalivkina, M.A. 1940a. O nekotorych pamjatnikach antičnoj epochi Severo-zapadnogo Kryma, *SovA* 6, 107-119.
Nalivkina, M.A. 1955. Raskopki v Evpatorii, *KSIA* 58, 63-72.
Nalivkina, M.A. 1970. Statuetki iz Kerkinitidy, *Terrakoty Severnogo Pričernomor'ja*. Moskva, 66-68. (*SAI* G 1-11)
NEPCh: Solomonik, E.I. 1974.
Nevesskij, E.N. 1967. *Processy osadkoobrazovanija v pribrežnoj zone morja.* Moskva.
Nicorescu, P. 1933. Fouilles de Tyras, *Dacia* 3-4 (1927-1932), 557-601.
Niklin, K. 1971. Stability and innovation in pottery manufacture, *WorldA* 3,*1,* 13-48.
Nikolaenko, G.M. 1983. *Metrologija Chersonesa Tavričeskogo v ellinističeskij period. Abstract from the thesis for degree of Candidate of Historical Sciences.* Kiev.
Nikolaenko, G.M. 1985. Meževanie polej chersonesskoj chory, *KSIA* 182, 11-15.
Nissen, H. 1892. Griechische und römische Metrologie, in: Müller 1892.
Noonan, Th.S. 1980. Rec.: Vladilen Afanas'evič Anochin, Monetnoe delo Chersonesa (IV v. do n.e. – XII v. n.e.), Naukova Dumka, Kiev, 1977, *Recenzija* 9 (1978-79), Cambridge, Mass., 1-18.
Novicka, M. 1975. *Les maisons à tour dans le mond grec.* Wrocław, Warszawa, Kraków, Gdansk.
Novičenkova, N.G. 1993. Svjatylyšče bilja perevalu Gurzufs'ke Sidlo, *ArcheologijaKiiv* 1, 54-66.
Olin, J.S., Franklin, A.D. (eds.), 1982. *Archaeological ceramics.* Washington.
Oliver, A. 1970. Persian Export Glass, *JGS* 12, 9-16.
Onajko, N.A. 1956. O fanagorijskich gruzilach. (Po materialam iz raskopok 1936-1940 gg. i 1947-1952 gg.), *MatIsslA* 57, 154-160.
Onajko, N.A. 1980. *Archaičeskij Torik. Antičnyj gorod na severo-vostoke Ponta*. Moskva.
Orlandos, A. 1966. *Les matériaux de construction et la technique architecturale des anciens Grecs. 1.* Paris.
Ostrovskij, B.A. 1968. *Stratigrafija, neotektonika i geologičeskaja istorija plestocena černomorskogo poberež'ja Kavkaza. Abstract from the thesis for degree of Candidate of Sciences.* Rostov-na-Donu.
Parovič-Pešikan, M. 1974. *Nekropol' Ol'vii ellinističeskogo vremeni*. Kiev.
Peacock, D.P.S. 1970. The scientific analysis of ancient ceramics: a review, *WorldA* 1, 375-389.
Pease, A.S. 1937. Oleum, *RE* XVII, 2454-2474.
Pecírka, J. 1973. Homestead Farms in Classical and Hellenistic Hellas, *Problèmes de la terre en Grèce ancienne.* Paris, La Haye, 113-147.
Pervolf, Ju.V. 1953. Ily i uslovija ich obrazovanija v soljanych ozerach Kryma, *Trudy Laboratorii ozerovedenija* AN SSSR, 2, 154-228.
Peščereva, E.M. 1959. *Gončarnoje proizvodstvo Srednej Azii*. Moskva-Leningrad.

Peters, B.G. 1986. *Kostoreznoje delo v antičnych gosudarstvach Severnogo Pričernomor'ja*. Moskva.
Peters, B.G., Efimova, G.M. 1967. O raskopkach Michajlovskogo gorodišča, *AO 1966 g.* Moskva, 220-221.
Petrenko, V.G. 1978. *Ukrašenija Skifii*. Moskva. (*SAI* D4-5).
Petrun', V.F. 1967. K metodike izučenija petrografii stroitel'nogo kamnja antičnych gorodov Severnogo Pričernomor'ja, *KSIA* 109, 144-151.
Pfrommer, M. 1985. Studien zu einzelnen Fundgruppen. a) Klassische und hellenistische Keramik aus dem Heroon III, *IstMit* III, 39-51.
Pharmakowsky, B. 1906. Archäologische Funde im Jahre 1905, Südrussland, *AA* 1906, 110-123.
Pidgorodec'kyj, P.D. 1961. Do sučasnych tektoničnych ruchiv na Tarchankut'skomu pivostrovu, *Geografičnyj zbirnik Ukrain'skogo geografičnogo tovarystva* 4 (1960), Kiev, 181-183.
Podgorodeckij, P.D. 1997. Pamjatniku Panskoje I – nadežnuju zaščitu, *Archeologija Kryma* 1/97, Simferopol, 155-157.
Popova, E.A., Kovalenko, S.A. 1996. On the Cult of Heracles in the North-Western Crimea: Recent Finds from the Chaika Settlement, in: Tsetskhladze, G.R. (ed.) 1996, 63-71.
Popova, E.A., Kovalenko, S.A. 1997. Ob aspektach kul'ta Gerakla v Chersonesskom gosudarstve (po materialam gorodišča Čajka), *SovA* 2, 78-84.
Pravotorov, I.A. 1967. K voprosu o transgressivnom chode urovnja za poslednie tysjačeletija na severnom lagunnom poberež'je severo-zadadnoj časti Černogo morja, *Geologija poberež'ja i dna Černogo i Asovskogo morej v predelech USSR* 1, Kiev.
Pridik, E.M. 1917. *Inventarnyj katalog klejm na amfornych ručkach i gorlyškach Ermitažnogo sobranija.* Petrograd.
Pritchett, W.K. 1956. The Attic Stelai, *Hesperia* 25, 178-317.
Pruglo, V.I. 1967. Sinopskie amfornye klejma iz Mirmekija, *KSIA* 109, 42-48.
Pruglo, V.I. 1971. K chronologii englifičeskich klejm Geraklei Pontijskoj, *SovA* 3, 76-90.
Ptušenko, E.S. 1948. *Tablicy dlja opredelenija otrjadov i semejstv ptic (Opredelitel' ptic SSSR).* Moskva.
Rasmussen, T., Spivey, N. (eds.) 1991. *Looking at Greek vases*. Cambridge.
Rice, P.M. 1987. *Pottery analysis. A sourcebook*. Chicago-London.
Roberts, S. 1986. The Stoa Gutter Well: A Late Archaic Deposit in the Athenian Agora, *Hesperia* 55, 1-74.
Robinson, D.M. 1941. *Excavations at Olynthus. Part X. Metal and Minor miscellaneous finds*. Baltimor.
Robinson, D.M. 1946. *Excavations at Olynthus. Part XII. Domestic and Public Architecture*. Baltimore.
Robinson, D.M. 1950. *Excavations at Olynthus. Part XIII. Vases found in 1934 and 1938*. Baltimore.
Robinson, D.M. 1952. *Excavations at Olynthus. Part XIV. Terracottas, Lamps, and Coins Found in 1934 and 1938*. Baltimore.
Rogov, E.Ja. 1986. Raskopki na poselenii Panskoje I, *AO 1984 g.* Moskva, 297-298.
Rogov, E.Ja., Tunkina, I.V. 1998. Raspisnaja i černolakovaja keramika iz nekropolja Panskoje 1, *Archeologičeskie vesti* 5, St Peterburg, 159-175.
Roller, L.E. 1987. Gordion special studies, 1. Nonverbal graffiti, dipinti and stamps. Philadelphia. (*University Museum monographs*, 63).
Romančenko, N.F. 1907. Raskopki v okrestnostjach Evpatorii, *IAK* 25, 172-187.
Rotroff, S.I. 1982. *Hellenistic pottery. Athenian and imported moldmade bowls.* Princeton (*Agora*, XXII).

Rotroff, S.I. 1997. *Hellenistic pottery: Athenian and imported wheelmade table ware and related material.* Princeton. (*Agora*, XXIX).
Rotroff, S.I., Oakley, J.H. 1992. *Debris from a Public Dining Place in the Athenian Agora.* Princeton, N.J. (*Hesperia.* Suppl. XXV).
Ruban V.V. 1974. Antičnaja usad'ba na poberež'e Bugskogo limana, *Archeologičeskie otkrytija 1973 g.* Moskva, 335-336.
Ruban, V.V. 1978a. Iz istorii priol'vijskich poselenij pravoberež'ja Bugskogo limana 4-3 vv. do n.e., *Archeologičeskie issledovanija Severo-Zapadnogo Pričernomor'ja.* Kiev, 65-83.
Ruban, V.V. 1978b. Kompleks pamjatnikov antičnogo vremeni v uročišče Didova chata na Bugskom limane, *KSIA* 156, 32-36.
Rusjaeva, A.S. 1979. *Zemledel'českie kul'ty v Ol'vii dogetskogo vremeni.* Kiev.
Rusjaeva, A.S. 1982. *Antičnye terrakoty Severo-Zapadnogo Pričernomor'ja.* Kiev.
Rye, O.S. 1981. *Pottery technology: principles and reconstruction.* Washington, D.C.
Samojlova, T.L. 1988. *Tira v VI-I vv. do. n.e.* Kiev.
Samojlova, T.L., Strokin, S.V. 1982. Keramika severopontijskich gorodov iz Tiry: (4-1 vv. do n.e.), *Archeologičeskie pamjatniki Severo-Zapadnogo Pričernomor'ja.* Kiev, 141-150.
Saprykin, S.J. 1994. *Ancient farms and land-plots on the khora of Khersonesos Taurike (research in the Herakleian Peninsula – 1974-1990).* Amsterdam.
Saprykin, S.Ju., Kruglikova, I.T. 1991. Chersones Tavričeskij i Amastrija po dannym amfornych klejm, *KSIA* 204, 89-95.
Savelja, O.Ja. 1970. O keramike s vreznym ornamentom iz Chersonesa, *KSIA* 124, 48-50.
Sauciuc-Săveanu, Th. 1924. Callatis. I-er rapport préliminaire. Fouilles et recherches de l'anée 1924, *Dacia* 1, 108-165.
Scheibler, I. 1976. *Kerameikos XI, Griechische Lampen.* Berlin.
Scheibler, I. 1995. *Griechische Töpferkunst: Herstellung, Handel und Gebrauch der antiken Tongefässe.* München.
Schulz, P.N. 1937. O rabotach Evpatorijskoj ekspedicii, *SovA* 3, 252-254.
Schulz, P.N. 1941. Evpatorijskij rajon. 1933-1934 gg., *Archeologičeskie issledovanija v RSFSR. 1934-1936 gg.* Moskva-Leningrad, 265-277.
Seefried, M. 1979. Glass Core Pendants Found in the Mediterrarien Area, *JGS* 21, 17-26.
Seidl, U. 1972. *Gefässmarken von Boğazköy.* Berlin. (*Boğazköy-Hattuša. Ergebnisse der Ausgrabungen*, 8).
Sekerskaja, N.M. 1989. *Antičnyj Nikonij i ego okruga v VI-IV vv. do n.e.* Kiev.
Senatorov, S.N. 1987. O kizil-kobinskoj keramike iz Chersonesa i Zapadnogo Kryma, *Tezisy dokladov konferencii molodych učenych.* Sevastopol, 7-8.
Senatorov, S.N. 1988. O keramike s grebenčatym ornamentom iz Chersonesa, *Problemy issledovanija antičnogo i srednevekovogo Chersonesa. Tezisy dokladov konferencii.* Sevastopol, 99-100.
Shepard, A.O. 1956. *Ceramic for the Archaeologist.* Washington (*Carnegie Inst. of Washington. Publication* 609).
Skudnova, V.M. 1970. Terrakoty iz Nimfeja, *Terrakoty Severnogo Pričernomor'ja.* Moskva, 83-89. (*SAI* G1-11).
Skudnova, V.M. 1988. *Archaičeskij nekropol' Ol'vii.* Leningrad.
Smirnov, K.F. 1958. Meotskij mogil'nik u stanicy Paškovskoj, *MatIsslA* 64, 272-312.
Sokolovskij, I.L., Volkov, N.G. 1965. *Metodika poetapnogo izučenija neotektoniki.* Kiev.
Sokol'skij, N.I. 1954. Bosporskije meči, *MatIsslA* 33, 130-136.
Sokol'skij, N.I. 1967. Krepost' na poselenii Batarejka II, *KSIA* 109, 108-115.
Sokol'skij, N.I. 1971. *Derevoobrabatyvajuščee remeslo v antičnych gosudarstvach Severnogo Pričernomor'ja.* Moskva.
Soldern, A. von 1982. *Glas von der Antike bis zum Jugendstil.* Mainz am Rhein.

Solomonik, E.I. 1952. O skifskom gosudarstve i ego vzaimootnošenijach s grečeskimi gorodami Severnogo Pričernomor'ja, *Archeologija i istorija Bospora* 1, Simferopol, 103-128.
Solomonik, E.I. 1974. *Novye epigrafičeskije pamjatniki Chersonesa*. Kiev.
Solomonik, E.I. 1984. *Graffiti s chory Chersonesa*. Kiev.
Solomonik, E.I. 1994. Chersonesskie glinjanye gruzila s nadpisjami, *Severo-Zapadnyj Krym v antičnuju epochu*. Kiev, 138-158.
Solomonik, E.I., Antonova, I.A. 1974. Nadgrobija vračej iz antičnogo Chersonesa, *VDI* 1, 94-105.
Sparkes, B.A., Talcott, L. 1970. *Black and plain pottery*. Princeton. (*Agora*, XII).
Stern, E.R. von 1897. "Graffiti" na antičnych južnorusskich sosudach, *ZOOID* 20, 1-37 (Abstract).
Stoian, I. 1961. La città pontica di Tomis. Saggio storico, *Dacia* V, 233-274.
Stolba, V.F. 1989. Novoje posvjaščenije iz Severo-Zapadnogo Kryma i aspekty kul'ta Gerakla v Chersonesskom gosudarstve, *VDI* 4, 55-70.
Stolba, V.F. 1990. Monetnaja čekanka Kerkinitidy i nekotoryje voprosy chersonesskokerkinitidskich otnošenij v IV-III vv. do n.e., *Drevneje Pričernomor'je* I. Odessa, 141-155.
Stolba, V.F. 1991. Dom IV v. do n.e. na poselenii Panskoje I: raskopki 1987 g., *KSIA* 204, 78-84.
Stolba, V.F. 1996a. Barbaren in der Prosopographie von Chersonesos (4. – 2. Jh. v. Chr.), *Hellenismus: Beiträge zur Akkulturation und politischer Ordnung in den Staaten des hellenistischen Zeitalters. Akten des Internationalen Hellenismus-Kolloquiums, 9. – 14. März 1994 in Berlin*. Tübingen, 439-466.
Stolba V.F. 1996b. Ein Münzfund aus Eupatoria von 1917 und der Beginn der Prägung von Kerkinitis, *Hellas und der Griechische Osten. Studien zur Geschichte und Numismatik der griechischen Welt*. Saarbrücken, 225-241.
Stolba, V.F., Golencov, A.S. 2000. Monety iz raskopok i slučajnych nachodok na Južno-Donuzlavskom gorodišče (Severo-Zapadnyj Krym), *ΣΥΣΣΙΤΙΑ*. *Sbornik pamjati Ju.V. Andreeva*. St Peterburg, 274-280.
Stolba, V.F., Hannestad, L., Ščeglov, A.N. 1995. Raboty rossijsko-datskoj Tarchankutskoj expedicii v Krymu, *AO 1994 goda*. Moskva, 335-337.
Stolba, V.F., Hannestad, L., Ščeglov, A.N. 1995a. Raskopki poselenija Panskoje I v Krymu, *Izučenie kul'turnych vzaimodejstvij i novye archeologičeskie otkrytija*. St Peterburg, 50-53.
Stolba, V.F., Ščeglov, A.N. 1994. Raskopki na poselenii Panskoje I, *Krymskij muzej* 1, Simferopol, 149.
Strong, D.E. 1966. *Greek and Roman Gold and Silver Plate*. London.
Strželeckij, S.F. 1948a. Raskopki 1939 goda u Karantina, vblizi Chersonesa Tavričeskogo, *ChSbor* IV, Simferopol, 51-64.
Strželeckij, S.F. 1948b. Kamyšovskij klad antičnych monet Chersonesa, *ChSbor* IV, Simferopol, 107-112.
Strželeckij, S.F. 1961. *Klery Chersonesa Tavričeskogo. K istorii drevnego zemledelija v Krymu*. Simferopol. (*ChSbor* VI).
Sungurov, A.N. 1966. *Pticy*. Simferopol.
Sztetyłło, Z. 1976. *Mirmeki. Wykopaliska odcinka polskiego w r. 1957*. Warszawa.
Ščeglov, A.N. 1961a. K istorii drevnego vinogradarstva v Krymu, *Vinogradarstvo i sadovodstvo Kryma* 12, 40-42.
Ščeglov, A.N. 1961b. Razvedki 1959 goda na zapadnom poberež'je Kryma, *SoobMuzChersones* 2, 70-80.
Ščeglov, A.N. 1963. Raskopki gorodišča Tarpanči v 1960 g., *SoobMuzChersones* 3, 67-75.
Ščeglov, A.N. 1965. Tarchankutskaja expedicija v 1962-1963 gg., *KSIA* 103, 140-147.

Ščeglov, A.N. 1967. Issledovanie sel'skoj okrugi Kalos Limena, *SovA* 3, 234-256.
Ščeglov, A.N. 1967a. Raskopki v Severo-Zapadnom Krymu, *AO 1966*. Moskva, 210-212.
Ščeglov, A.N. 1968. Issledovanija v Severo-Zapadnom Krymu, *AO 1967 g*. Moskva, 213-214.
Ščeglov, A.N. 1968a. Osnovnye etapy istorii Zapadnogo Kryma v antičnuju epochu, *Istorija i kul'tura Sredizemnomor'ja i Pričernomor'ja. Sbornik statej k stoletiju so dnja roždenija akad. S.A. Žebeleva*. Leningrad, 332-342.
Ščeglov, A.N. 1969. Novyj metod opredelenija veliciny ryb po ee češue i nekotorye dannye o promysle ryb v Severo-Zapadnom Krymu v I v. do n.e., *KSIA* 119, 128-130.
Ščeglov, A.N. 1970. Poselenija severo-zapadnogo Kryma v antičnuju epochu, *KSIA* 123, 19-24.
Ščeglov, A.N. 1974. Gerakl otdychajuščij, *Chersones Tavričeskij: remeslo i kul'tura*. Kiev, 44-55.
Ščeglov, A.N. 1974a. O vnutrennej torgovle Chersonesa Tavričeskogo v IV-II vv. do n.e., *KSIA* 138, 44-50.
Ščeglov, A.N. 1976. *Polis i chora.* Simferopol.
Ščeglov, A.N. 1977. Kompleksnye metody issledovanija v archeologii, *Priroda* 5, 78-81.
Ščeglov, A.N. 1978. *Severo-Zapadnyj Krym v antičnuju epochu*. Leningrad.
Ščeglov, A.N. 1980. Primenenie komplexa estestvennych i točnych metodov v polevoj archeologii, *Archeologičeskie issledovanija na Ukraine v 1978-1979 gg. Tesisy dokladov XVIII konferencii IA AN USSR, Dnepropetrovsk, aprel' 1980 g*. Dnepropetrovsk, 19-20.
Ščeglov, A.N. 1980a. Utilisation de la photographie aérienne dans l'étude du cadastre de Chersonésos Taurique (IV-II s. av. n.e.), *DialHistAnc* 6, 59-72.
Ščeglov, A.N. 1982. O greko-varvarskich vzaimodejstvijach na periferii antičnogo mira, *Materialy III Vsesojuznogo simpoziuma po drevnej istorii Pričernomor'ja. Abstracts of papers. Cchaltubo 21-27.05.1982.* Tbilisi, 107-109.
Ščeglov, A.N. 1982a. Ob opredelenii vysoty postroek po razvalam syrcovych sten, *KSIA* 172, 50-57.
Ščeglov, A.N. 1984. Istorija voprosa, in: Košelenko G.A. *et al.* (eds.) 1984, 45-49.
Ščeglov, A.N. 1985. 25 let rabot Tarchankutskoj expedicii: itogi i perspektivy, *KSIA* 182, 3-7.
Ščeglov, A.N. 1985a. O greko-varvarskich vzaimodejstvijach na periferii antičnogo mira, *Pričernomor'e v epochu ellinizma. Materialy III Vsesojuznogo simpoziuma po drevnej istorii Pričernomor'ja. Cchaltubo 1982.* Tbilisi, 185-198.
Ščeglov, A.N. 1985b. Ol'vija i Chersones: novye materialy i aspekty problemy, *Problemy issledovanija Ol'vii. Tesisy dokladov i soobščenij seminara*. Parutino, 84-86.
Ščeglov, A.N. 1986. Les amphores timbrees d' Amastris, *BCH*. Suppl. 13, 365-373.
Ščeglov, A.N. 1986a. Prozess i charakter territorial'noj expansii Chersonesa v IV v. do n.e., *Antičnaja graždanskaja obščina: Problemy social'no-političeskogo razvitija i ideologii*. Leningrad, 152-176.
Ščeglov, A.N. 1987. Un établissement rural en Crimée: Panskoje I (fouilles de 1969-1985), *DialHistAnc* 13, 239-273.
Ščeglov, A.N. 1988, Bol'šoj Kastel' i svjatilišče II v. do n.e. v uročišče Ğangul', *Problemy antičnoj kul'tury. Tezisy dokladov Krymskoj naučnoj konferencii 19-24 sentjabrja 1988 g.* III. Simferopol, 273-275.
Ščeglov, A.N. 1989. Pozdneskifskoje gosudarstvo v Krymu: k tipologii ellinizma, *Drevnij Vostok i antičnaja civilizacija*. Leningrad, 29-40.
Ščeglov, A.N. 1993. Osnovnye strukturnye elementy antičnoj meževoj sistemy na Majačnom poluostrove v Jugo-Zapadnom Krymu, *Istorija i archeologija Jugo-Zapadnogo Kryma.* Simferopol, 10-38, 298-317.
Ščeglov, A.N. 1994a. Gerakl v statuarnoj skul'pture Chersonesa, *Pamjatniki drevnego i srednevekovogo iskusstva.* St Peterburg, 136-148. (*Problemy archeologii* 3).

Ščeglov, A.N. 1994b. 'Staryj' Chersones Strabona. Ukreplenie na perešejke Majačnogo poluostrova: topografija i fortifikacija, *Problemy istorii i archeologii Kryma.* Simferopol', 8-42, 295-310.
Ščeglov, A.N. 1997. Issledovanija Tarchankutskoj expedicii, *Archeologičeskie issledovanija v Krymu. 1994 god.* Simferopol, 275-276.
Ščeglov, A.N. 1998. Ešče raz o pozdneskifskoj kul'ture v Krymu. (K probleme proischoždenija), *Istorija i kul'tura drevnich i srednevekovych obščestv. Sbornik naučnych statej, posvjaščennych 100-letiju so dnja roždenija M.I. Artamonova.* St Peterburg.
Ščeglov, A.N. 2000. O vremeni pojavlenija kul'ta Sabazija na severnych beregach Ponta: sostojanie izučennosti, istočniki, interpretacija, rekonstrukcija, *Svjatilišča: Archeologija rituala i voprosy semantiki. Materialy tematičeskoj naučnoj konferencii, St Peterburg, 14-17 nojabrja 2000 g.* St Peterburg, 67-73.
Ščeglov, A.N., Balt, T.N., Vachtina, M.Ju. *et al.* 1976. Raboty na Tarchankutskom poluostrove, *AO 1975.* Moskva, 409-410.
Ščeglov, A.N., Burdak, V.D. 1965. O promysle ryby u beregov Tarchankuta v antičnuju epochu, *Rybnoe chozjajstvo* 3, 221-223.
Ščeglov, A.N., Gilevič, A.M., Glazunov, V.V. *et al.* 1975 Izučenie poselenija i nekropolja Panskoje I na chore Chersonesa, *AO 1975 g.* Moskva, 375-376.
Ščeglov, A.N., Hannestad, L., Kašaev, S.V. *et al.* 1995. Rossijsko-datskie raskopki na poselenii i nekropole Panskoje I, Severo-Zapadnyj Krym, *Archeologičeskije vesti* 4, St Peterburg, 288-290.
Ščeglov, A.N., Januševič, Z.V., Kuz'minova, N.N., Čavčavadze, E.S. 1989. Zemledelie na poselenii Panskoje I (Severo-Zapadnyj Krym) v IV – nacale III v. do n.e., *Botaničeskie issledovanija 5: Flora i rastitel'nost'.* Kišinev, 50-69.
Ščeglov, A.N., Malikov, B.M. 1963. Novye pamjatniki drevnego vinogradarstva v Krymu, *Vinodelie i vinogradarstvo SSSR* 7, 36-37.
Ščeglov, A.N., Podol'skij, N.L., Gilevič, A.M., Kac, V.I. 1972. Tarchankutskaja expedicija, *AO 1971.* Moskva, 342-343.
Ščeglov, A.N., Rogov, E.Ja. 1985. Pogrebenija v podbojnych mogilach v Nižnem Pobuž'je, Nižnem Podneprov'je i Severo-Zapadnom Krymu, *Problemy issledovanija Ol'vii. Tesisy dokladov i soobščenij seminara.* Parutino, 86-88.
Ščeglov, A.N., Selivanova, N.B. 1992. Optiko-petrografičeskoje issledovanie Pričernomorskich klejmenych amfor IV-III vv. do n.e., *Grečeskie amfory.* Saratov, 32-68.
Ščeglov, A.N., Šilik, K.K. 1965. Opyt elektrorazvedki metodom simmetričnogo profilirovanija na ellinističeskoj usad'be v okruge Kalos Limena, *Materialy sessii, posvjaščennoj itogam archeologičeskich i etnografičeskich issledovanij 1964 g. v SSSR.* Baku, 122-123.
Šelov, D.B. 1972. *Tanais i Nižnij Don v pervye veka našej ery.* Moskva.
Šelov, D.B. 1975. *Keramičeskie klejma iz Tanaisa III-I vv. do n.e.* Moskva.
Šelov, D.B. 1984. Remeslennoe proizvodstvo, in: Košelenko *et al.* (eds.) 1984, 162-173.
Šelov, D.B., Vinogradov, Ju.G. 1977. B.N. Grakov i razvitie antičnoj epigrafiki v SSSR, in: Grakov B.N. 1977, 205-213.
Šilik, K.K. 1967. Opyt elektrorazvedki metodom simmetričnogo profilirovanija, *SovA* 3, 205-211.
Šilik, K.K. 1972. Opredelenie vysoty i absoljutnogo vozrasta novočernomorskoj terrasy v Ol'vii, *Doklady Akademii nauk SSSR* 203, *5*, 1157-1159.
Šilik, K.K. 1975. *Izmenenie urovnja Černogo morja v pozdnem golozene (po materialam geomorfologičeskich issledovanij v severo-zapadnoj časti bassejna). Abstract from the thesis for degree of Candidate of Sciences.* Leningrad.
Šilik, K.K. 1975a. K paleogeografii Ol'vii, *Ol'vija.* Kiev, 51-91.

Šilik, K.K. 1977. Izmenenie urovnja Černogo morja v pozdnem golozene i paleotopografija archeologičeskich pamjatnikov Severnogo Pričernomor'ja antičnogo vremeni, *Paleogeografija i otloženija pleistocena južnych morej SSSR*. Moskva, 158-163.
Štaerman, E.M. 1951. Keramičeskie klejma iz Tiry. V svjazi s voprosom o klejmach neizvestnych centrov, *KSIA* 36, 31-49.
Štitelman, F.M. 1956. Poselenija antičnogo perioda na poberež'je Bugskogo limana, *MatIsslA* 50, 255-272.
Šurgaja, I.G. 1984. Nymfej, Mirmekij, Tiritaka, Porfmij, Ilurat, in: Košelenko *et al.* (eds.) 1984, 63-70.
Talcott, L. 1936. Vases and Kalos-names from an Agora Well, *Hesperia* 5, 333-354.
Tjumenev, A.I. 1950. Chersonesskie etjudy. IV. Chersones i mestnoe naselenie (skify), *VDI* 2, 48-56.
Tjumenev, A.I. 1955. Chersonesskie etjudy. V. Chersones i Kerkinitida, *VDI* 3, 37-47.
Trejster, M.Ju. 1998. K nachodke bronzovych i serebrjanych statuetok v svjatilišče u perevala Gurzufskoje Sedlo, *VDI* 2, 68-80.
Tsetskhladze, G.R. (ed.) 1996. *New Studies on the Black Sea Littoral*. Oxford. (*Colloquia Pontica* 1).
Tölle-Kastenbein, R. 1974. *Das Kastro Tigani. Die Bauten und Funde griechischer, römischer und byzantinischer Zeit*. Bonn. (*Samos*. Bd. XIV).
Tochtas'ev, S.R. 1985. Ob odnom graffito s ostrova Berezan', *Le littoral thrace et son róle dans le monde ancien. Thracia Pontica, 2. Deuxième symposium international, Sozopol 4-7 octobre 1982*. Jambol, 283-296.
Tochtas'ev, S.R. 1997. K izdaniju kataloga keramičeskich klejm Chersonesa Tavričeskogo, *Hyp* 3, *2*, 362-404.
Turovskij, E.Ja. 1994. *Chronologija sel'skich usadeb Chersonesa na Geraklejskom poluostrove v IV-II vv. do n.e. Abstract from the thesis for degree of Candidate of Historical Sciences*. St Peterburg.
Ukraina i Moldavija 1972. Moskva.
Van der Mersch, Ch., 1986. Production magno-grecques et siciliotes du IV^{e} siècle avant J.-C., *BCH*. Suppl. 13, 567-580.
Vasilenko, B.A. 1970. Zametki o Geraklejskich klejmach, *SovA* 3, 217-224.
Vasilenko, B.A. 1971. K voprosu o datirovke sinopskich klejm, *SovA* 3, 245-250.
Vasilenko, B.A. 1974. O charaktere klejmenija geraklejskich amfor v pervoj polovine IV v. do n.e., *NumEpigr* 11, 3-38.
Vavilov, N.I. 1967. *Izbrannye proizvedenija*. Vol. I. Leningrad.
Vinogradov, Ju.G. 1972. Keramičeskie klejma ostrova Fasos, *NumEpigr* 10, 3-63.
Vinogradov, Ju.G. 1983. Polis v Severnom Pričernomor'je, *Antičnaja Grecija* I. Moskva, 366-420.
Vinogradov, Ju.G. 1989. *Političeskaja istorija Ol'vijskogo polisa: VII-I vv. do n.e.* Moskva.
Vinogradov, Ju.G. 1990. Olviopolity v Severo-Zapadnoj Tavrike, *Drevnee Pričernomor'je*. Odessa, 51-64.
Vinogradov, Ju.G. 1997a. Die Olbiopoliten in der Nordwest-Tauris, in: Vinogradov 1997b, 484-492.
Vinogradov, Ju.G. 1997b. *Pontische Studien*. Mainz.
Vinogradov, J.G., Kryžickij, S.D. 1995. *Olbia. Eine altgriechische Stadt im nordwestlichen Schwarzmeerraum*. Leiden-New York-Köln.
Vinogradov, J.G., Ščeglov, A.N. 1990. Obrazovanie territorial'nogo Chersonesskogo gosudarstva, *Ellinizm: ekonomika, politika, kul'tura*. Moskva, 310-371.
Višnjakov, A.E. 1967. *Tipovaja elektrorazvedočnaja apparatura*. Leningrad.
Vlasov, V.P. 1997. Lepnaja keramika pozdneskifskogo Bulganakskogo gorodišča, *Bachčisarajskij istoriko-archeologičeskij sbornik* 1. Simferopol, 204-303.

Vnučkov, G.A., Glazunov, V.V., Naumov, A.P. *et al.* 1977. Primenenie kvantovogo magnitometra v issledovanii archeologičeskich pamjatnikov, *Geomagnitnoje priborostrojenie*. Moskva, 77-85.
Vnukov, S.Ju. 1992. K voprosu o meste proizvodstva koričnevoglinjanych amfor Severnogo Pričernomor'ja, *Grečeskie amfory*. Saratov, 68-89.
Vokotopoulou, J. 1990. Polychrono: A New Archaeological Site in Chalkidike, *ΕΥΜΟΥΣΙΑ*. *Ceramic and Iconographic Studies in Honour of Alexander Cambitoglou*. Sydney, 79-86.
Vokotopoulou, J., Pappa, M., Tsigarida, E.B. 1988. Excavations at Polychrono in Chalcide, 1988, *AErgoMak* 2, 317-329.
Vos, M.F. 1981. Some Note on Panathenaic Amphore, *OudhMeded* 62, 33-46.
Vysotskaja, T.N. 1968. Novaja nachodka rel'efa s izobraženiem Gerakla, *AO 1967 goda*. Moskva, 211-212.
Vysotskaja, T.N. 1969. Drevnegrečeskoje poselenie v pos. Mežvodnoje, *AO 1968 goda*. Moskva, 295-296.
Yaylenko, V.P. 1995. Graffiti Tiry, in: Fol, Bogdanov *et al.* (eds.) 1995, 245-260.
Wallece Matheson, P.M., Wallece, M.P. 1982. Some Rhodian Amphora Capacities, *Hesperia* 51, 293-320.
Wąsowicz, A. 1972. Traces de lotissements anciens en Crimée, *MEFRA* 84, 1, 199-229.
Wąsowicz, A. 1982. *Zagospodarowanie przestrzenne antycznych miast greckich*. Wrocław.
Wasylikova, K., Carciumaru, M., Hajnalova. E., Paškevič, G. *et al.* 1991. *East – Central Europe. Progress in Old Wold palaeoethnobotany*. Rotterdam.
Weinberg, G.D. 1970. Hellenistic Glass from Tell Anafa in Upper Galilee, *JGS* 12, 17-27.
Weinberg, G. D. 1971. Glass Manufacture in Hellenistic Rhodes, *ArchDelt* 24 (1969), 143-151.
Weinberg, G.D. 1973. Notes on Glass from Upper Galilee, *JGS* 15, 35-51.
Wesenberg, B. 1976. Zum metrologischen Relief in Oxford, *MarbWP* 1975/1976, 15-22.
Whitbread, I.K. 1986. The application of ceramic petrology to the study of ancien greek amphorae, *BCH*. Suppl. 13, 95-101.
Whitbread, I.K. 1995. *Greek Transport Amphorae, a petrological and archaeological study*. Athens. (*British School at Athens Fitch laboratory Occasional Paper* 4).
Williams, Ch.K., II, Fisher, J. 1971. Corinth, 1970: Forum Area, *Hesperia* 40, 1-51.
Winter, F. 1903. *Die Typen der figürlichen Terrakotten*. Berlin-Stuttgart.
Wolf, S. 1995. Rez.: Griechische Fischteller. Natur und Bild, *Gnomon* 67, 352-356.
Zabelina, V.S. 1992. Antičnye glinjanye svetil'niki iz Pantikapeja, *Archaeology and Art of Bosporus Kimmerian*, Moscow, 298-328. (*SoobMuzMoskva* 10).
Zajceva, K.I. 1962. Mestnaja keramika Ol'vii ellinističeskogo vremeni (kuril'nicy i amfory), *TrudyGE* 7, 184-206.
Zajceva, K.I. 1997. Kul'tovye čaši V-I vekov do n.e. iz Severnogo Pričernomor'ja, *TrudyGE* 28, 38-53.
Zamjatnin, S.N. 1946. Skifskij mogil'nik "Častye kurgany" pod Voronežem. (Raskopki Voronežskoj učenoj archivnoj komissii. 1910-1915 gg., *SovA* 8, 9-50.
Zeest, I.B., Marčenko, I.D. 1962. Nekotorye tipy tolstostennoj keramiki iz Pantikapeja, *MatIsslA* 103, 149-165.
Zenkovič, V.P. 1958. *Berega Černogo i Azovskogo morej*. Moskva.
Zenkovič, V.P. 1958a. *Morfologija i dinamika sovetskich beregov Černogo morja*. I. Moskva.
Zenkovič, V.P. 1960. *Morfologija i dinamika sovetskich beregov Černogo morja*. II. Moskva.
Zlatkovskaja, T.D. 1974. Elementy kul'ta zmei v duchovnoj kul'ture narodov Jugo-Vostočnoj Evropy (K voprosu ob etnokul'turnom nasledii drevnego naselenija Balkano-Dunajskogo regiona), *Živa antika,* XXIV, 1-2. Skoplie, 91-116.
Zograf, A.N. 1951. *Antičnye monety*. Moskva-Leningrad. (*MatIsslA* 16).
Zograf, A.N. 1977. *Ancient coins*. Oxford. (*BAR International Series* 33).

Zubar', V.M. 1998. Ob atribucii kollektivnych usadeb ellinističeskogo vremeni, *VDI* 4, 102-116.
Zujkov, Ju.V. 1987. Pozdneellinističeskij keramičeskij kompleks iz Gorgippii, *KSIA* 191, 70-75.
Žitnikov, V.G., Marčenko, K.K. 1984. Novye dannye o stroitel'nych kompleksach Elizavetovskogo gorodišča na Donu, *SovA* 3, 162-170.
Ορλανδος, A.K., Τραυλος, I.N. 1986. Λεξικον αρχαιων αρχιτεκτονικων ορων. Αθηναι.

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Lise Hannestad *Vladimir F. Stolba* *Alexander N.Ščeglov*

(Eds.)

PANSKOYE I

VOLUME 1

THE MONUMENTAL BUILDING U6

PLATES

AARHUS UNIVERSITY PRESS

2002

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Appendix I

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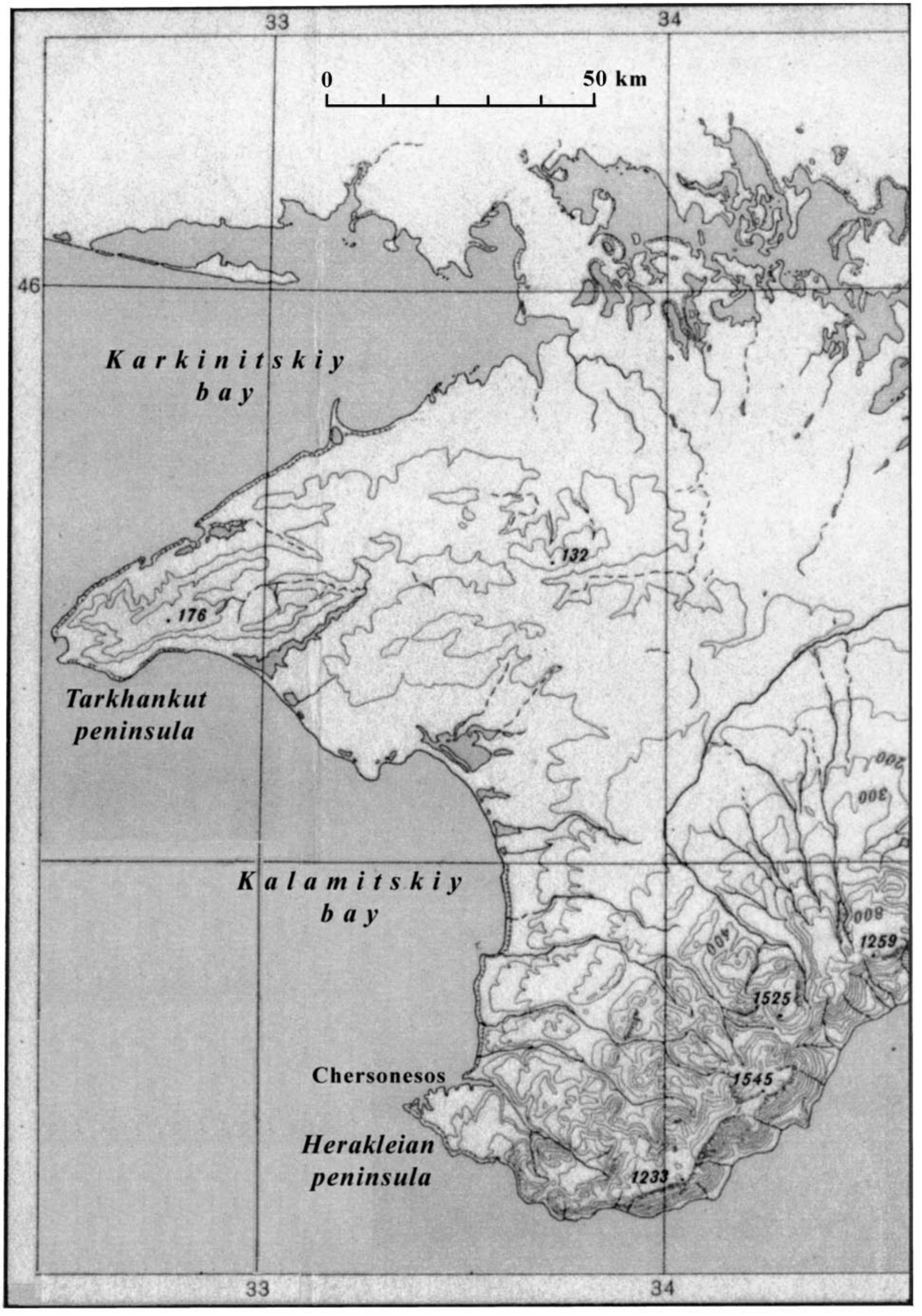
APPENDIX III

APPENDIX V

PLATE 1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176
Tarkhankut peninsula
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Kalamitskiy bay
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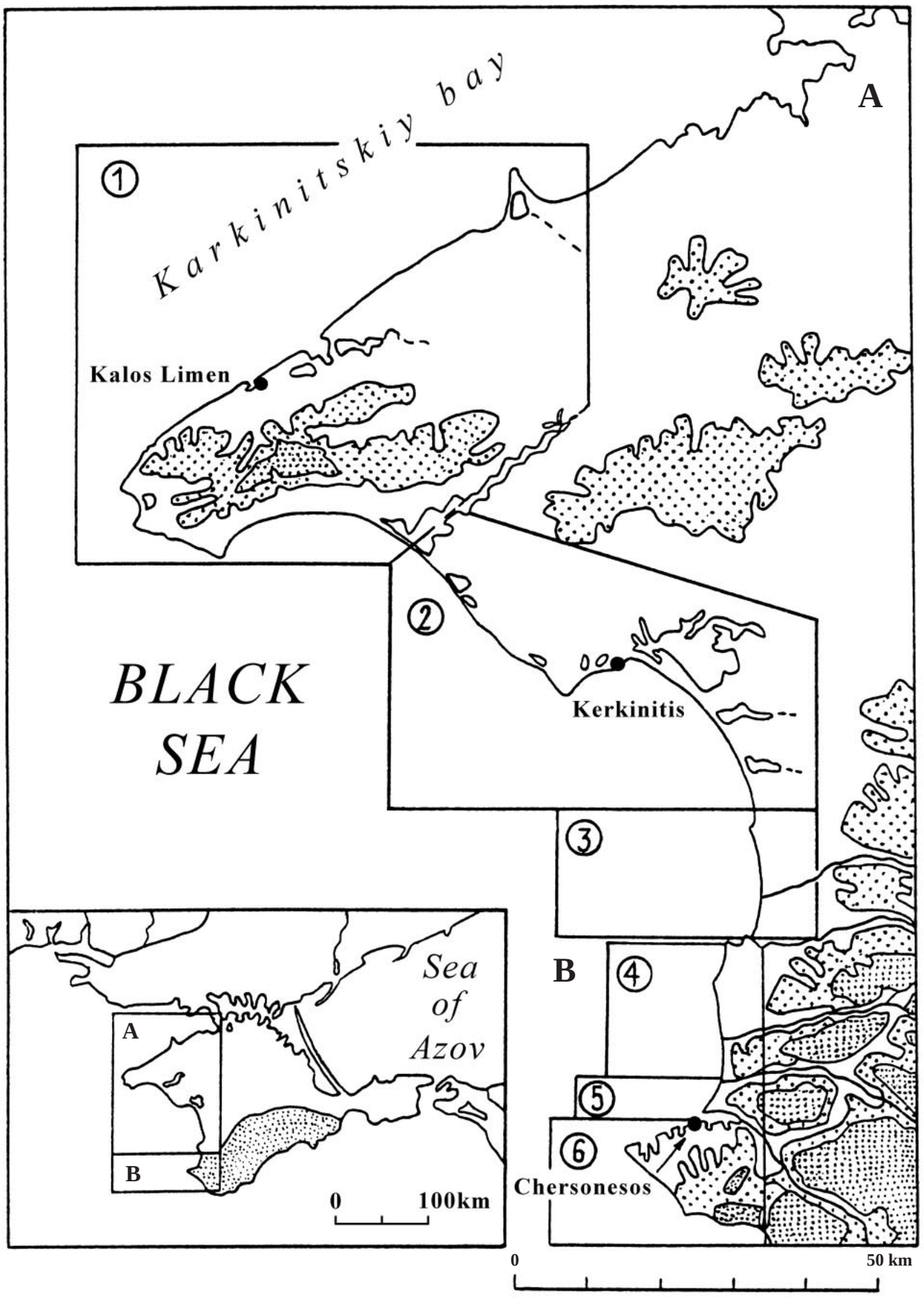
800
1259
1525
Chersonesos
1545
Herakleian peninsula
1233
33
34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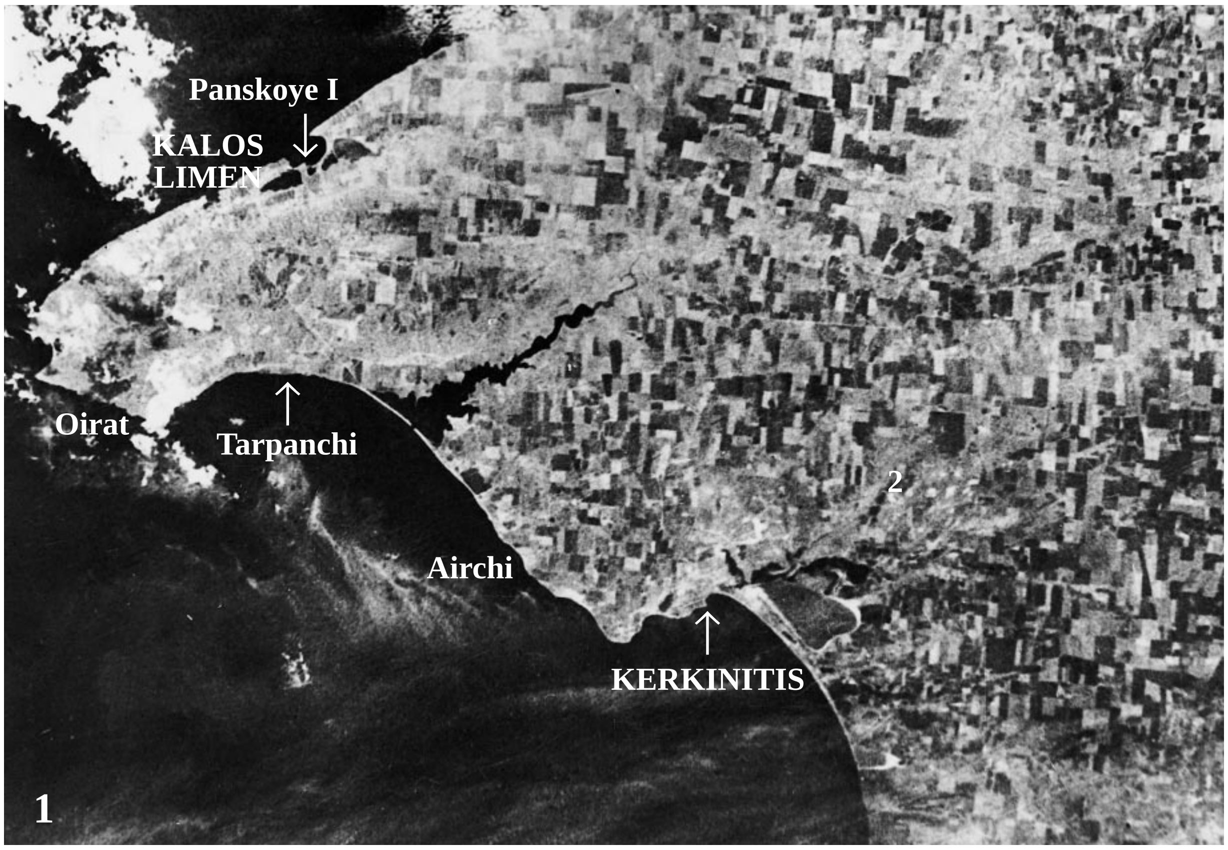
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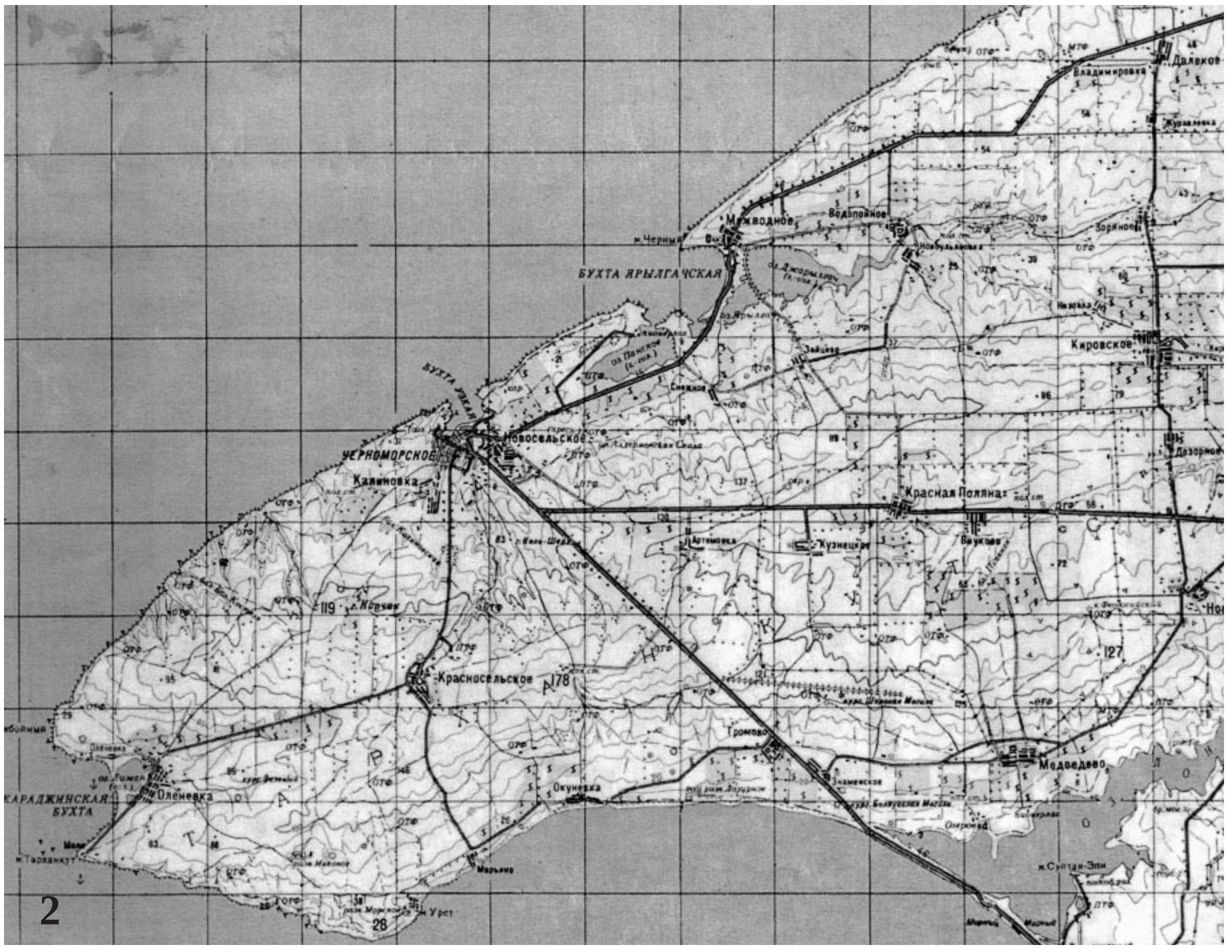
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Черноморское
Новосельское
Красносельское
Красная Поляна
Кировское
Медведево
Оленевка
КАРАДЖИНСКАЯ БУХТА
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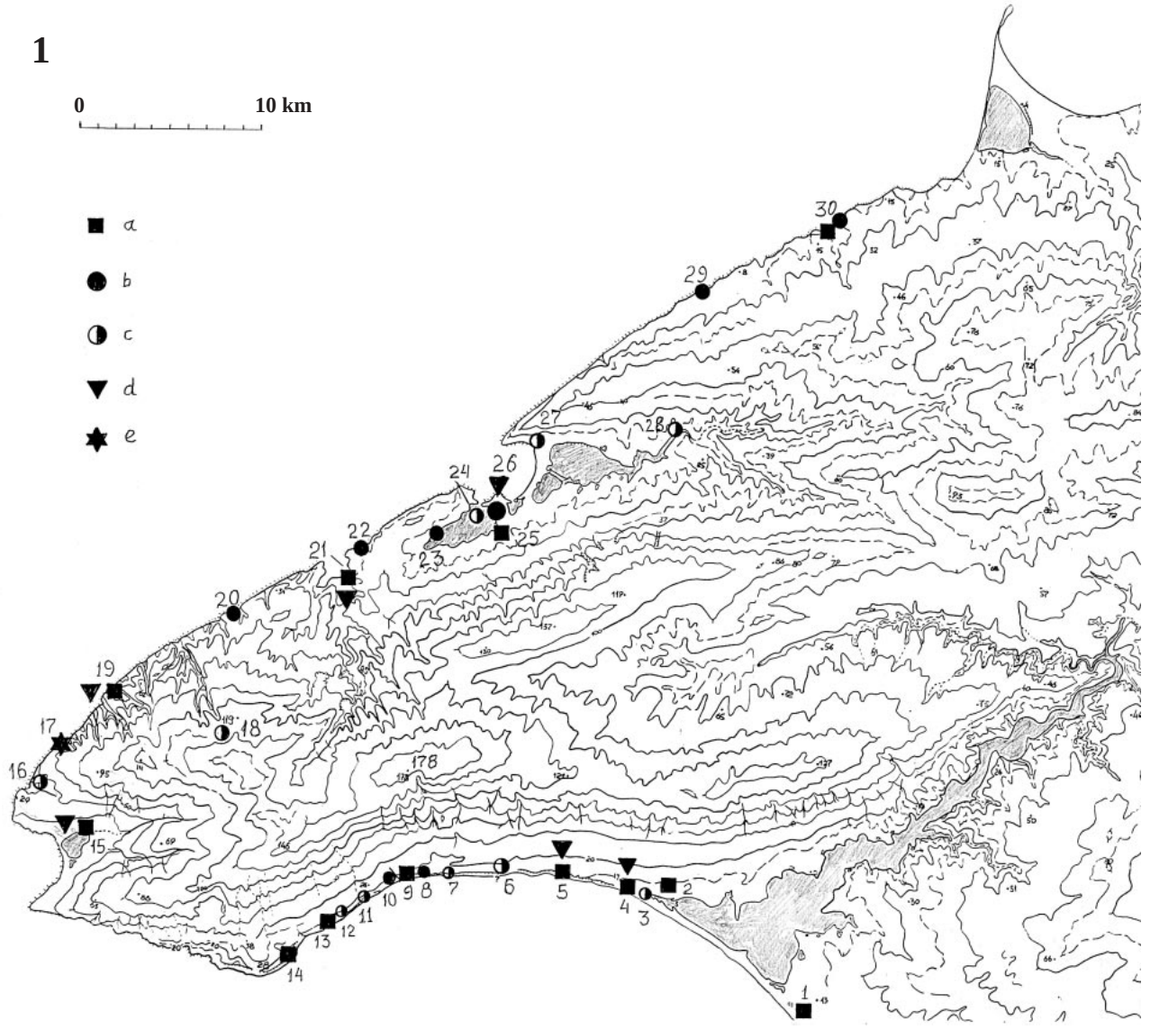
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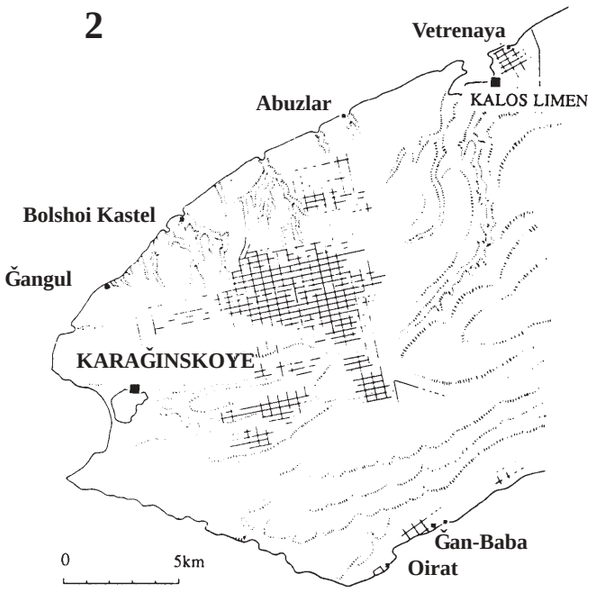
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Vetrenaya
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Abuzlar
Bolshoi Kastel
Ğangul
KARAĞINSKOYE
Ğan-Baba
Oirat
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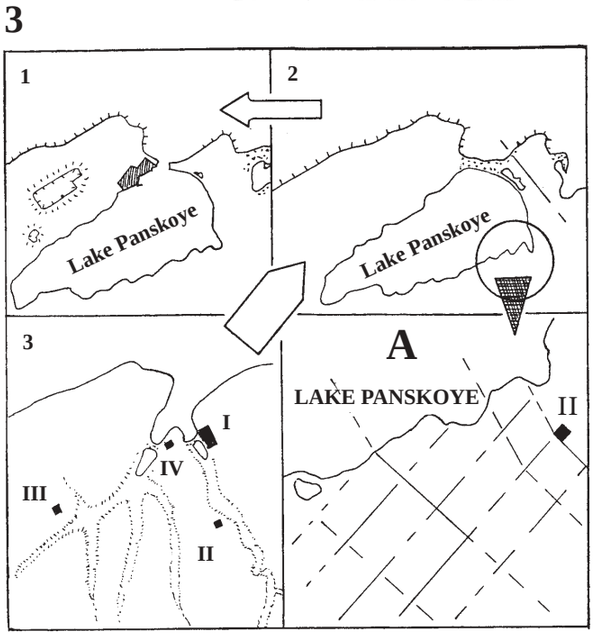
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Lake Panskoye
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LAKE PANSKOYE
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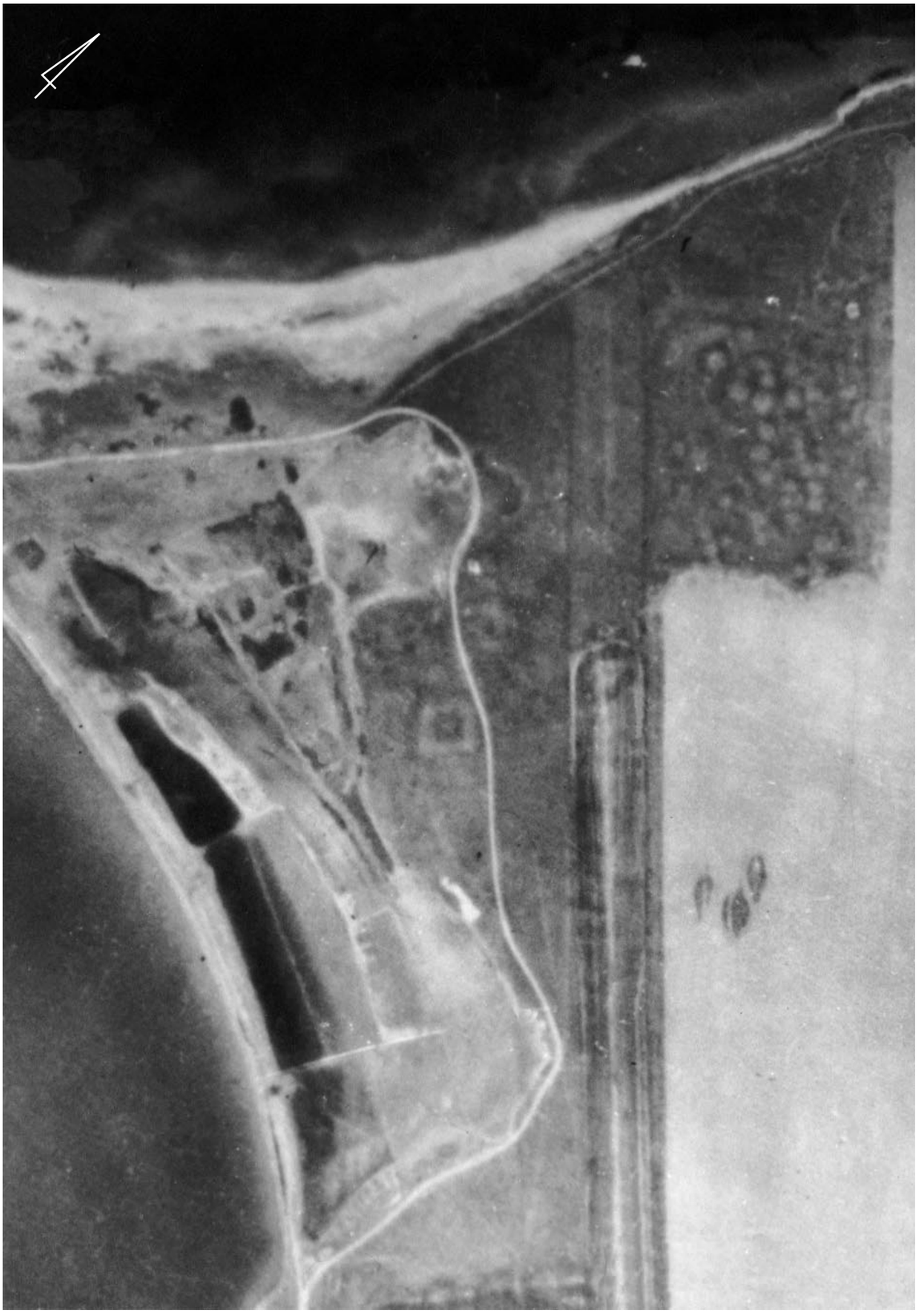
II
III
IV
II



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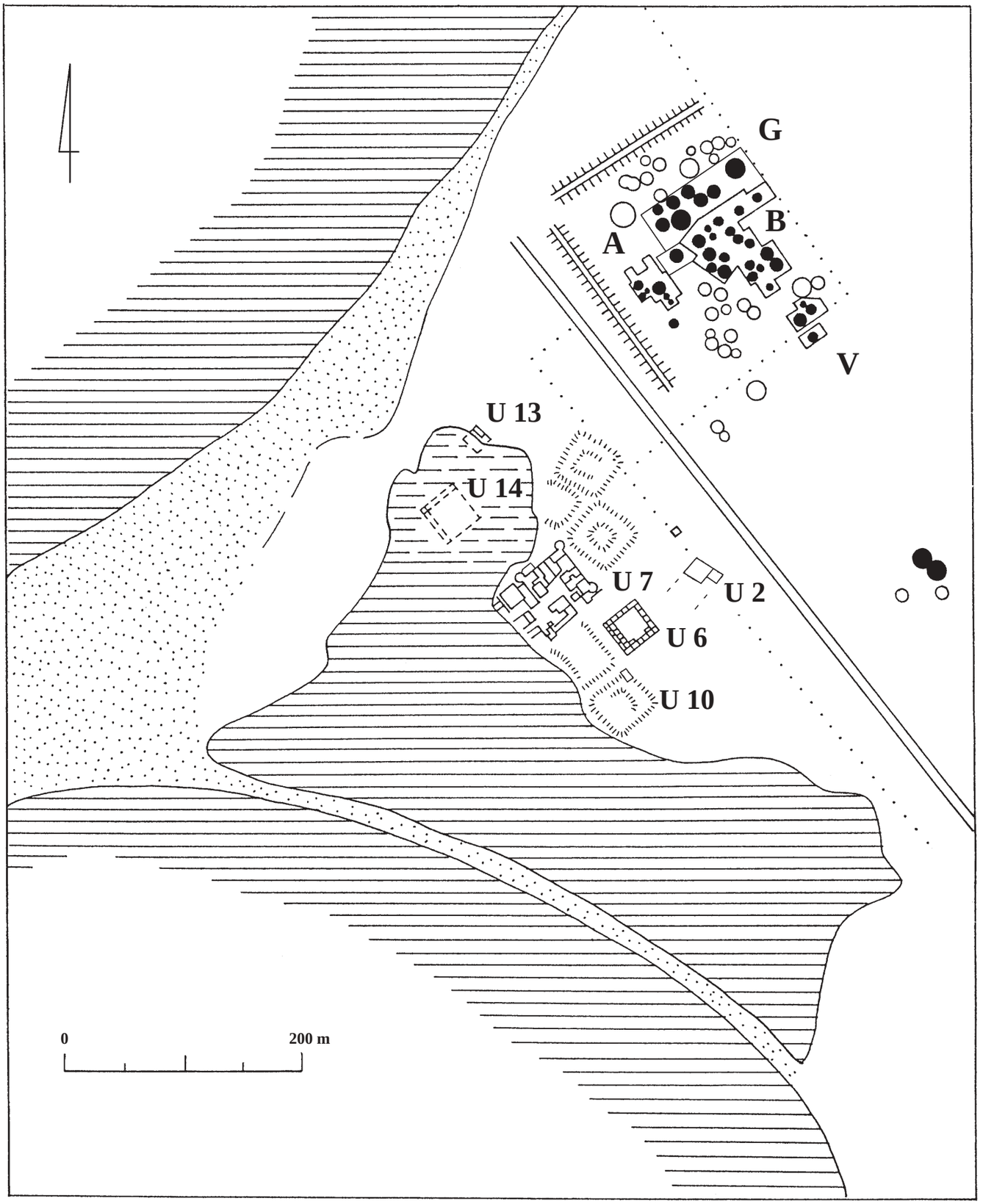
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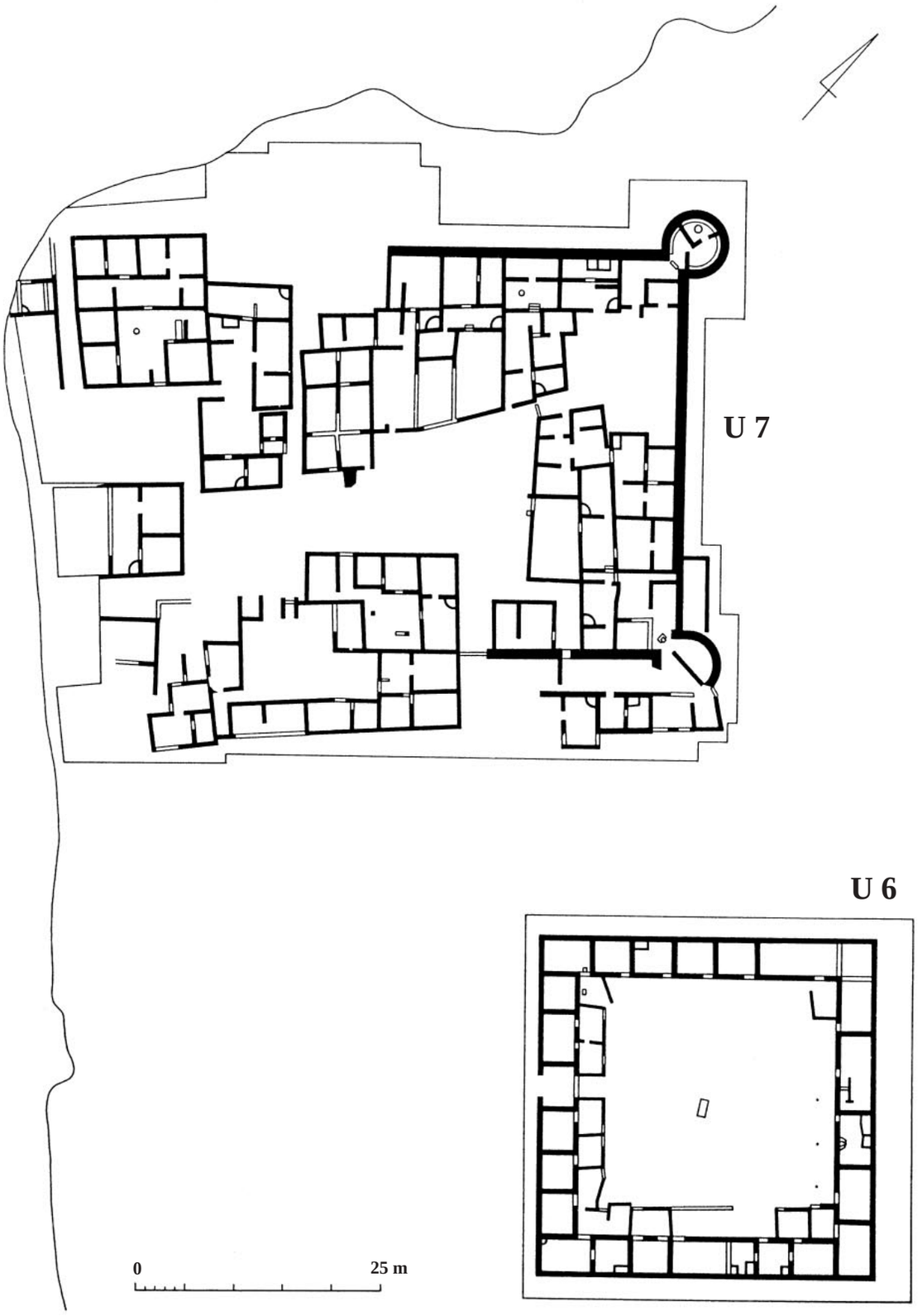
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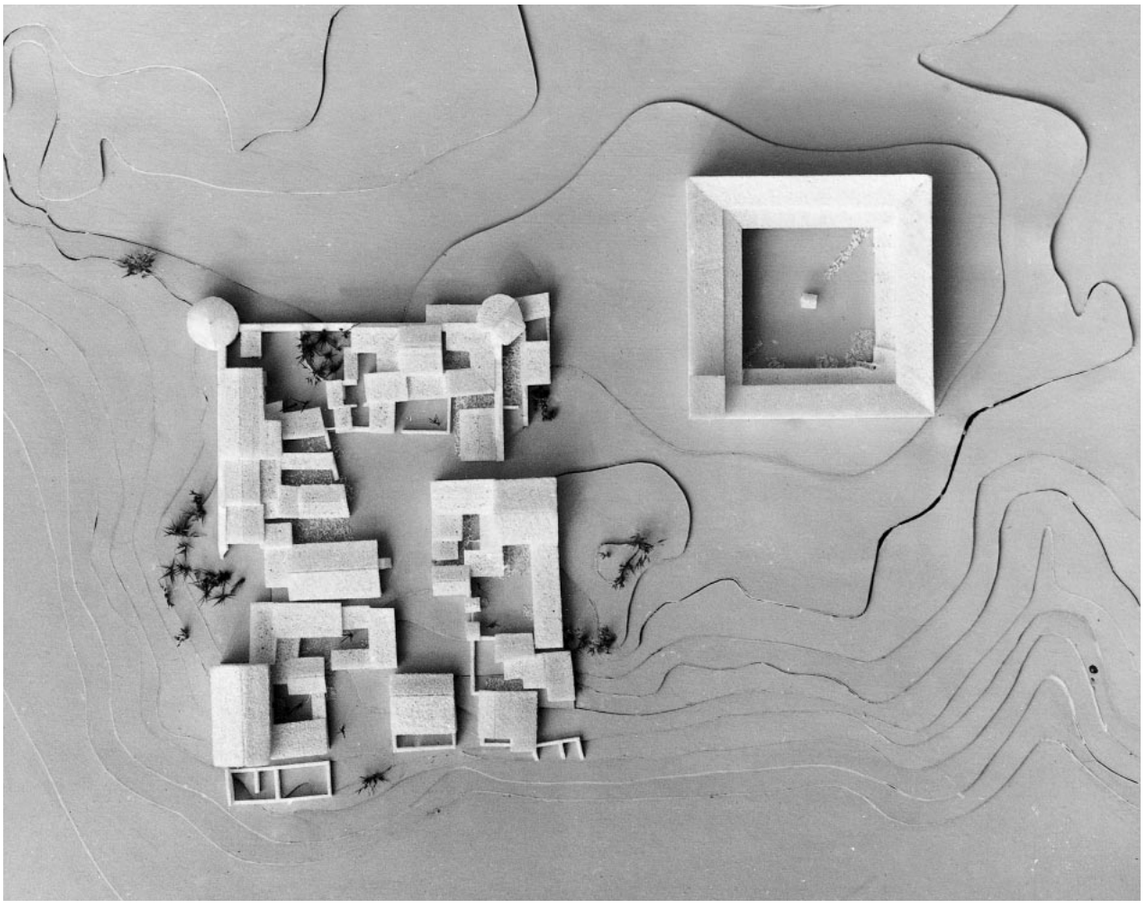

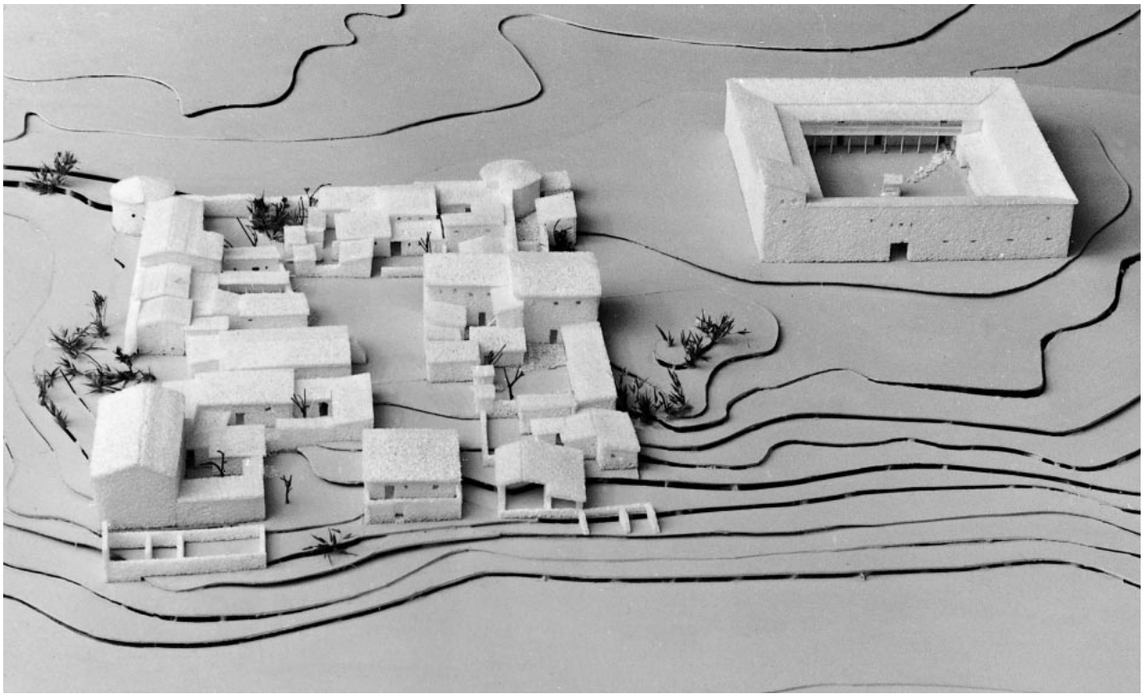

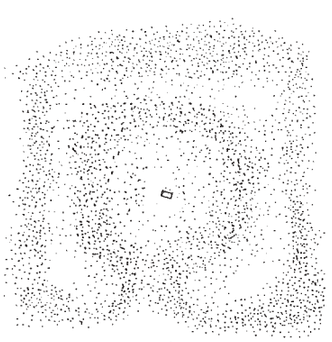

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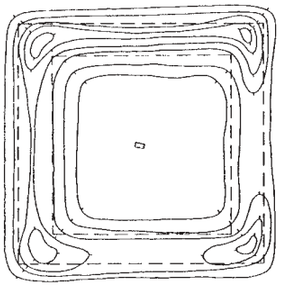

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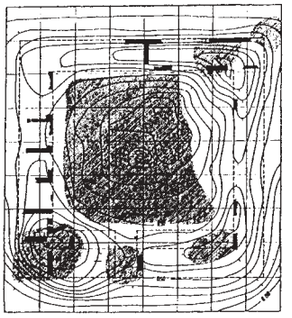

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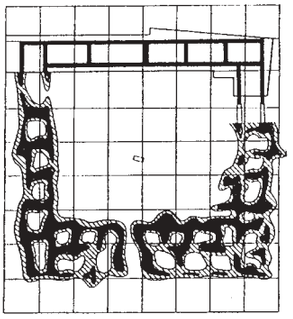

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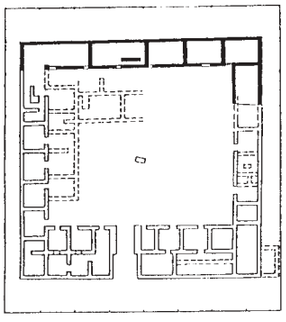

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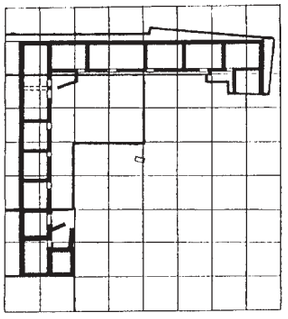

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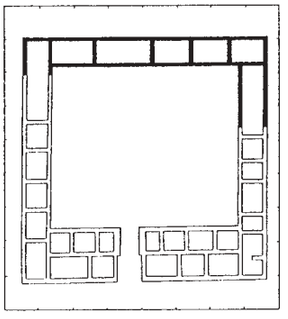

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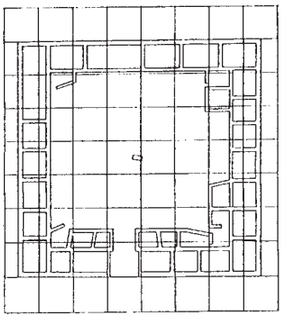

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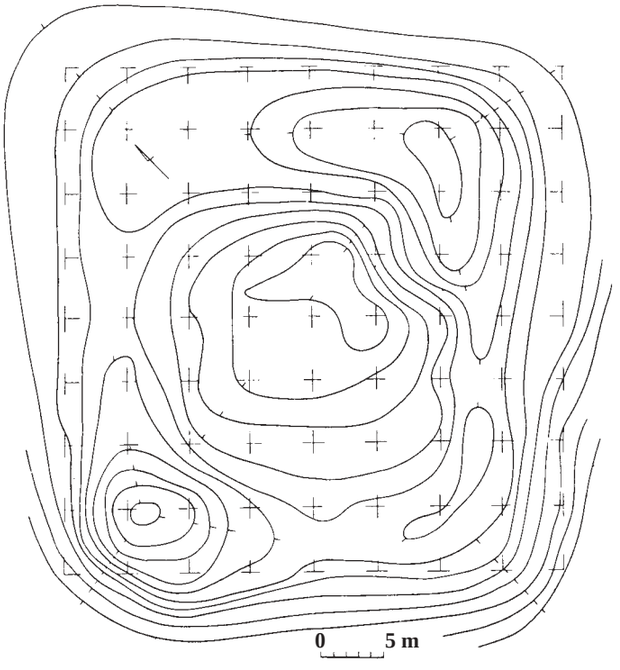

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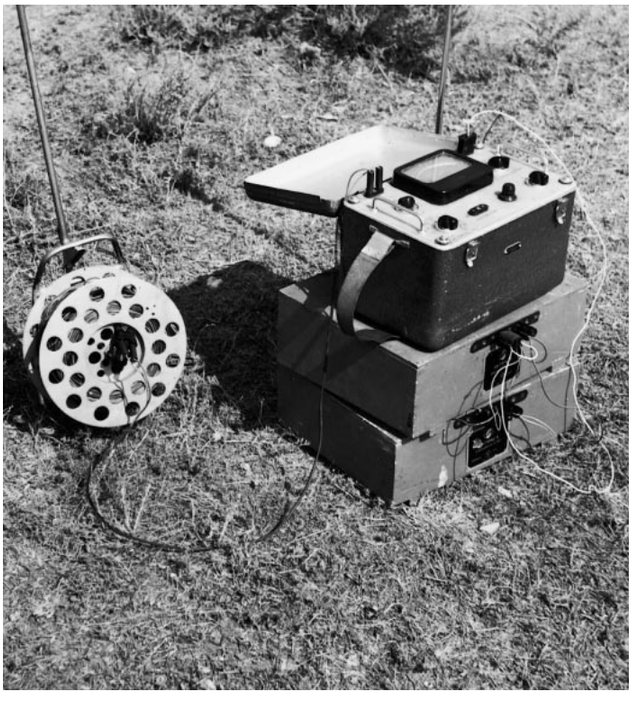

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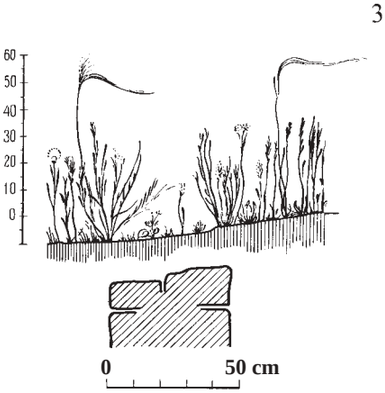
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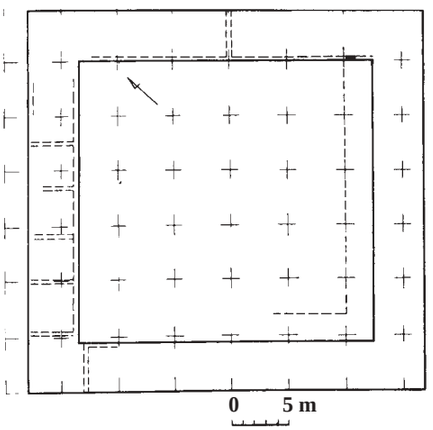
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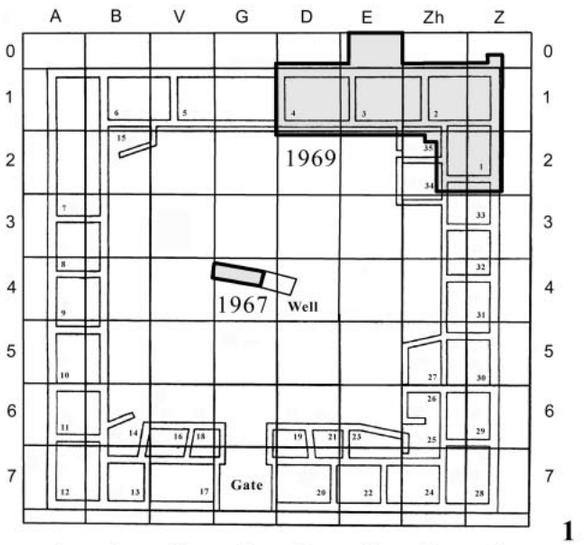
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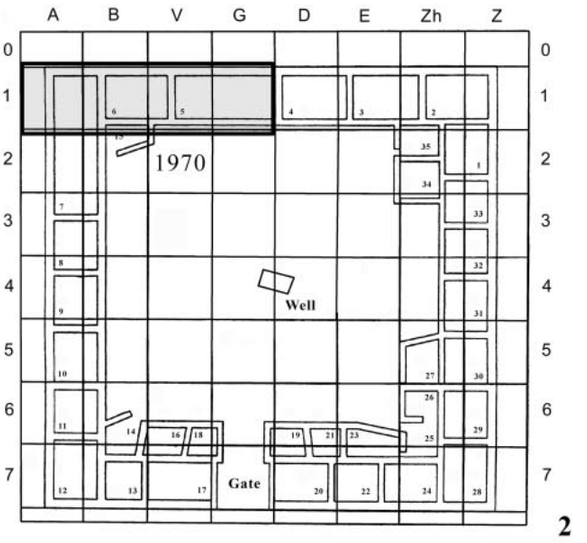
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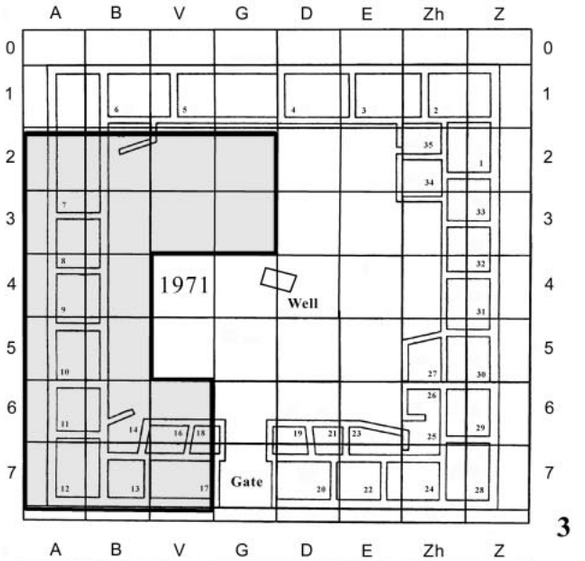
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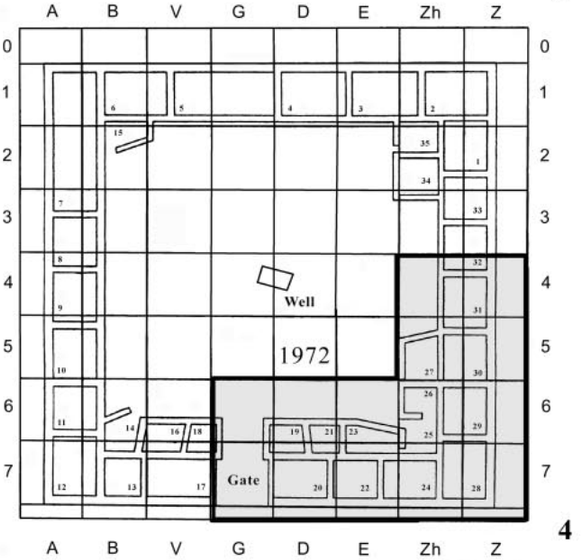
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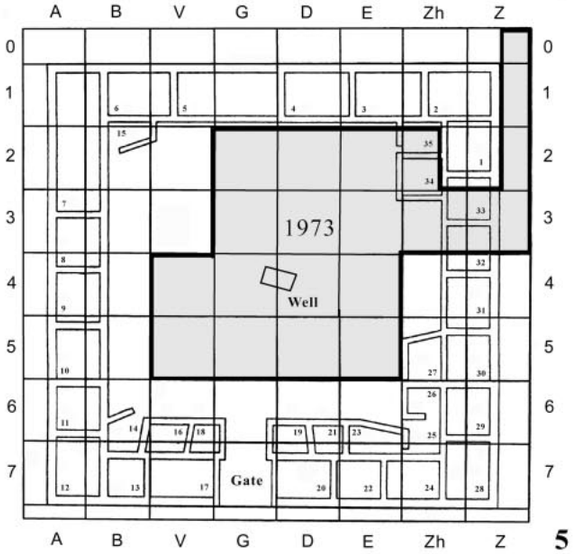
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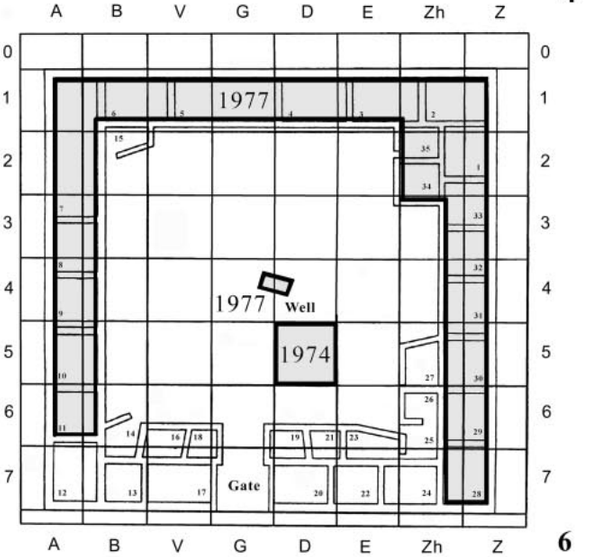
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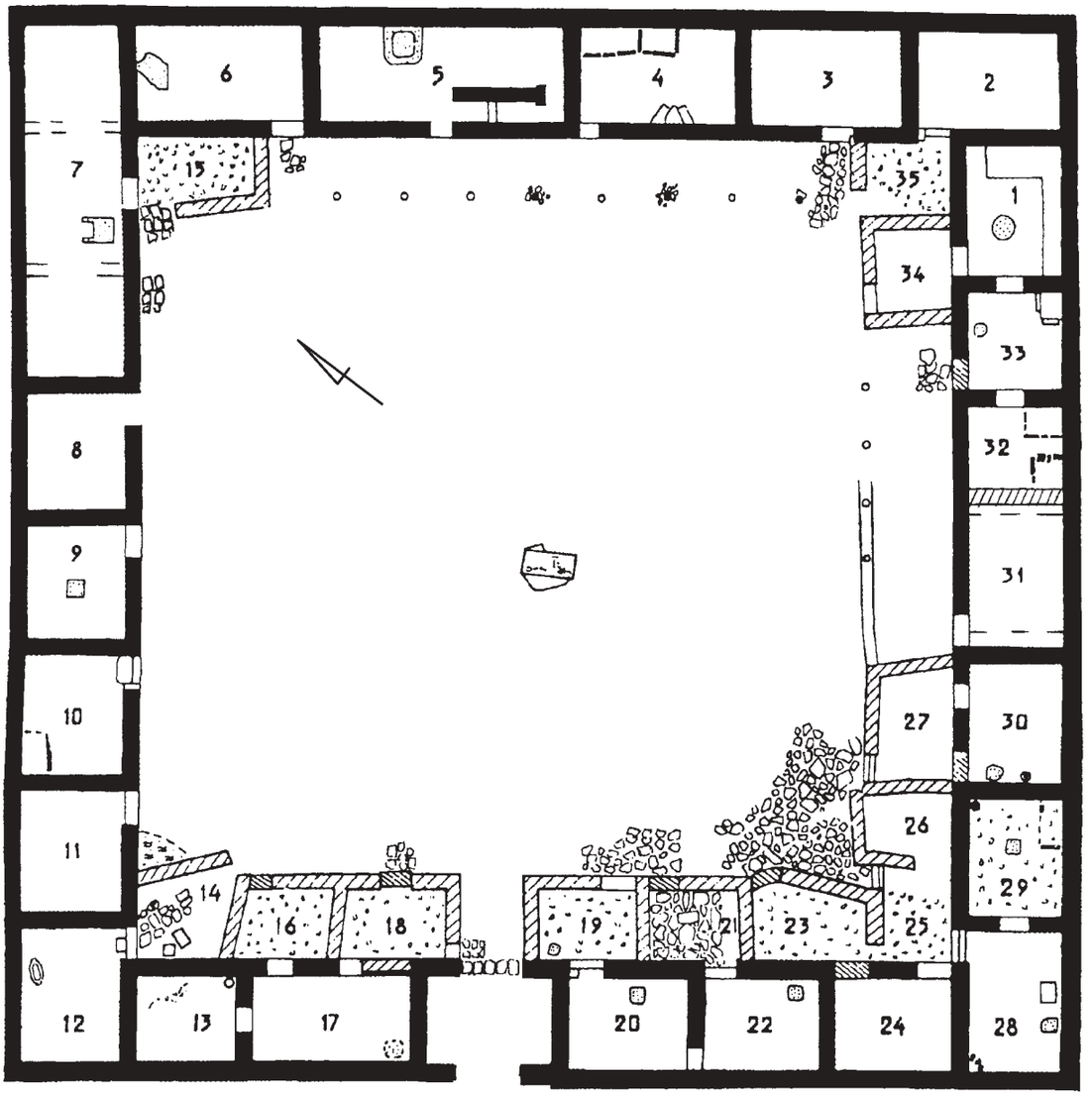
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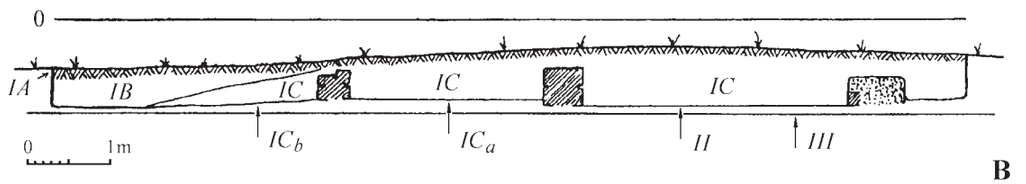
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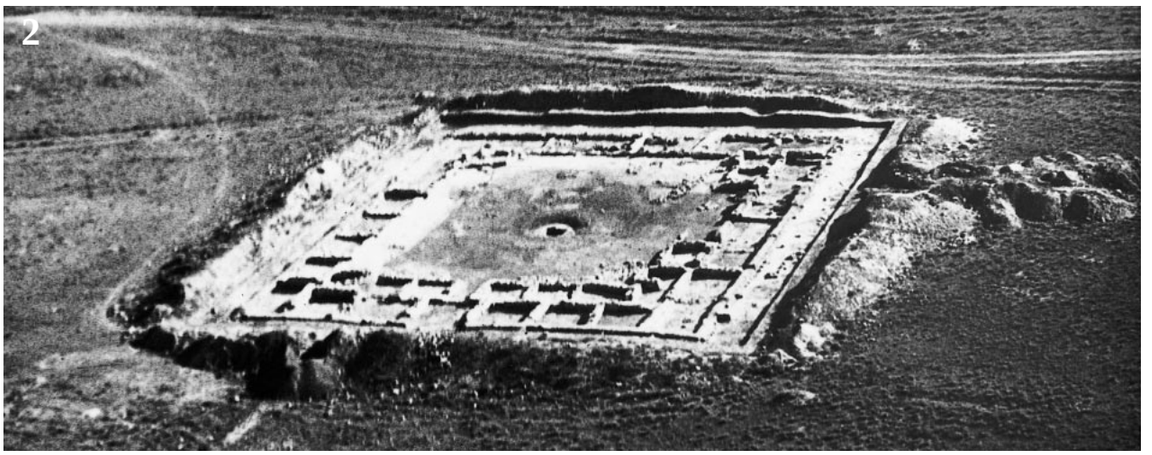
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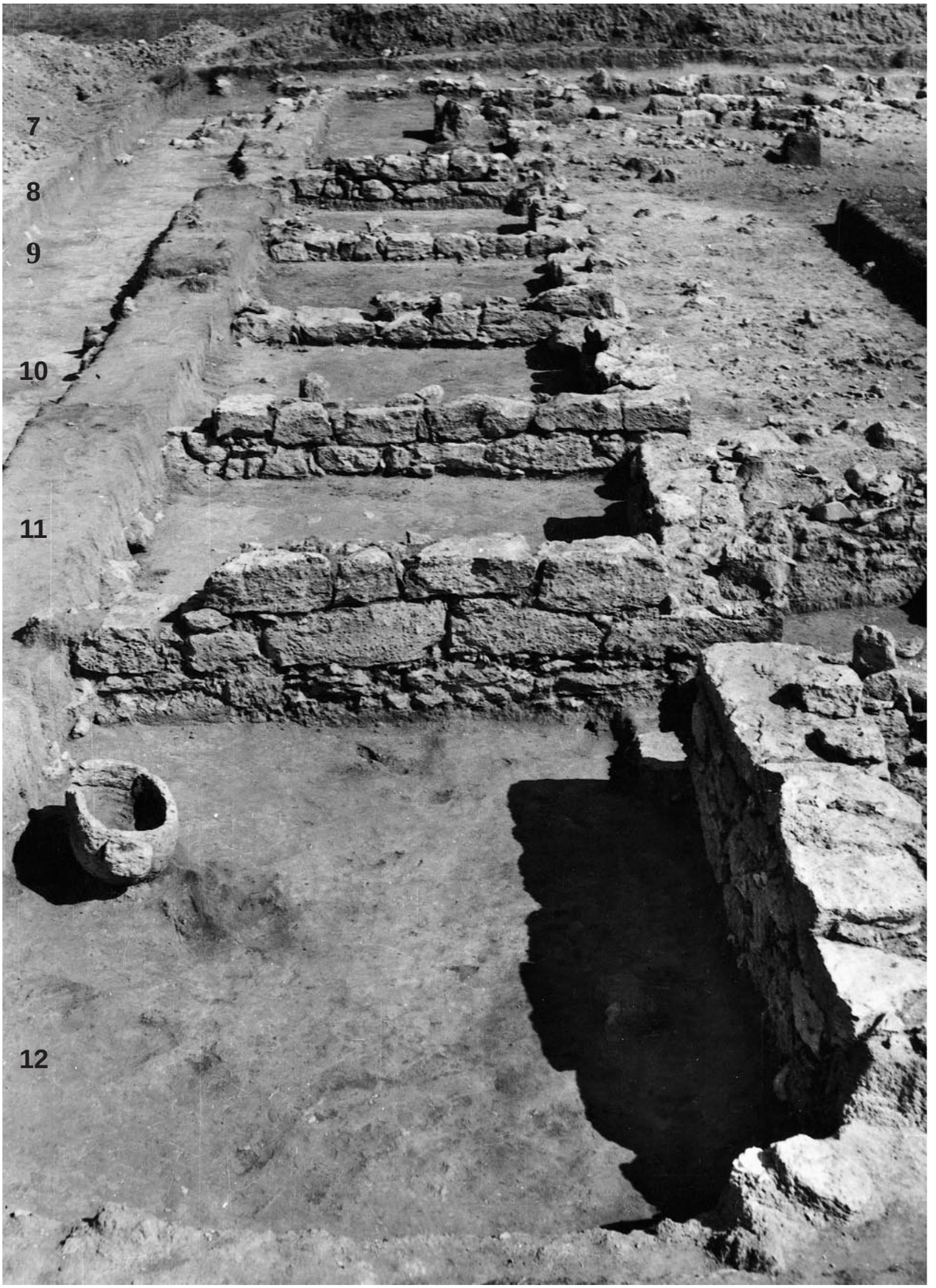
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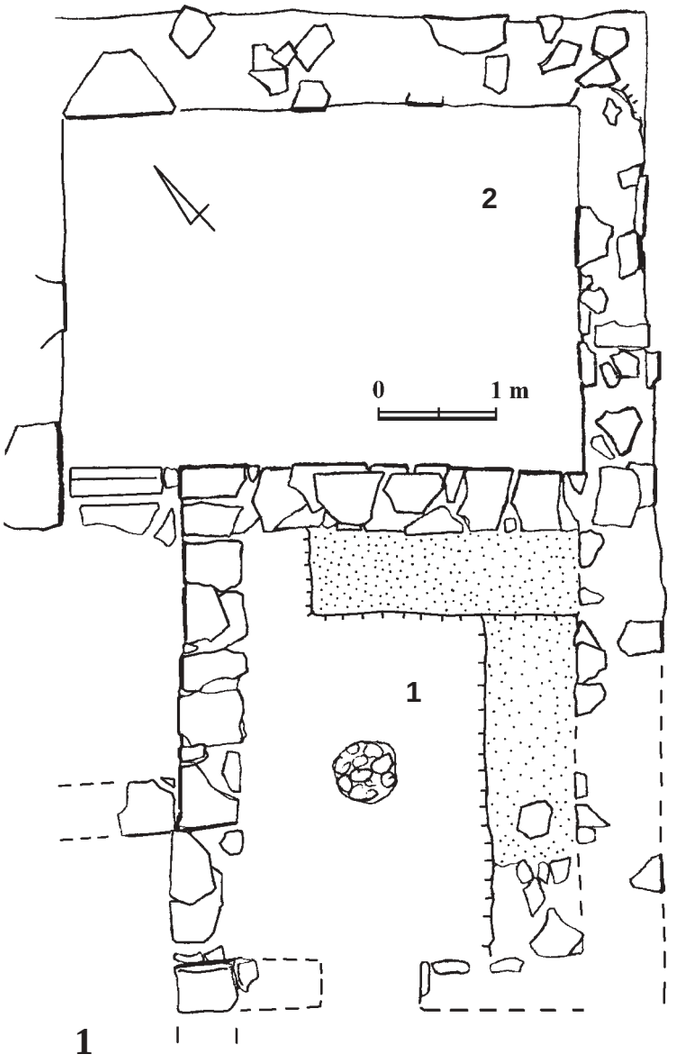
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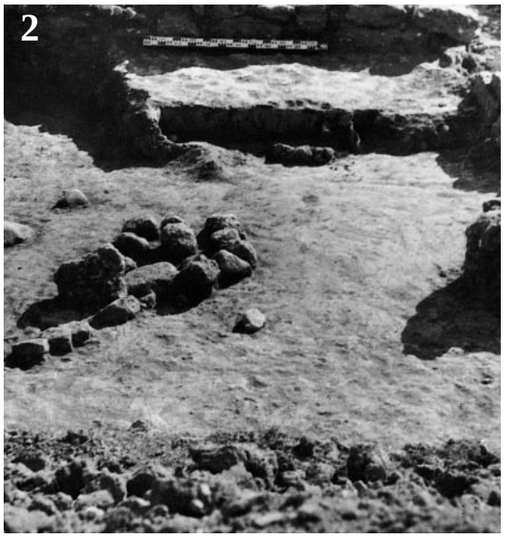
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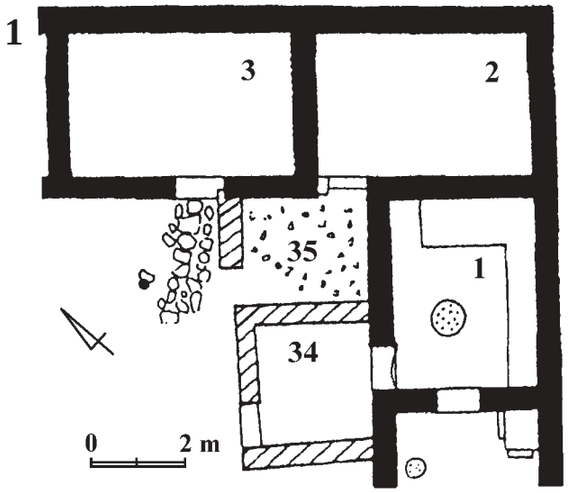
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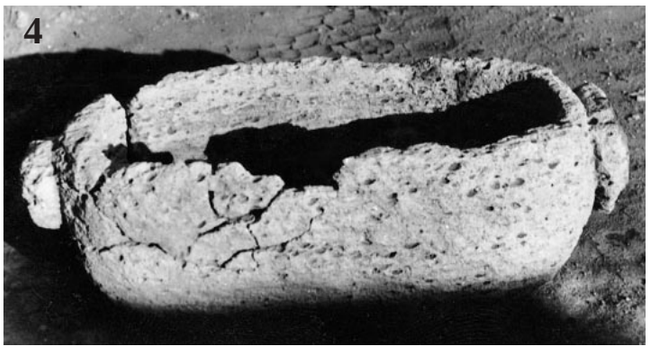
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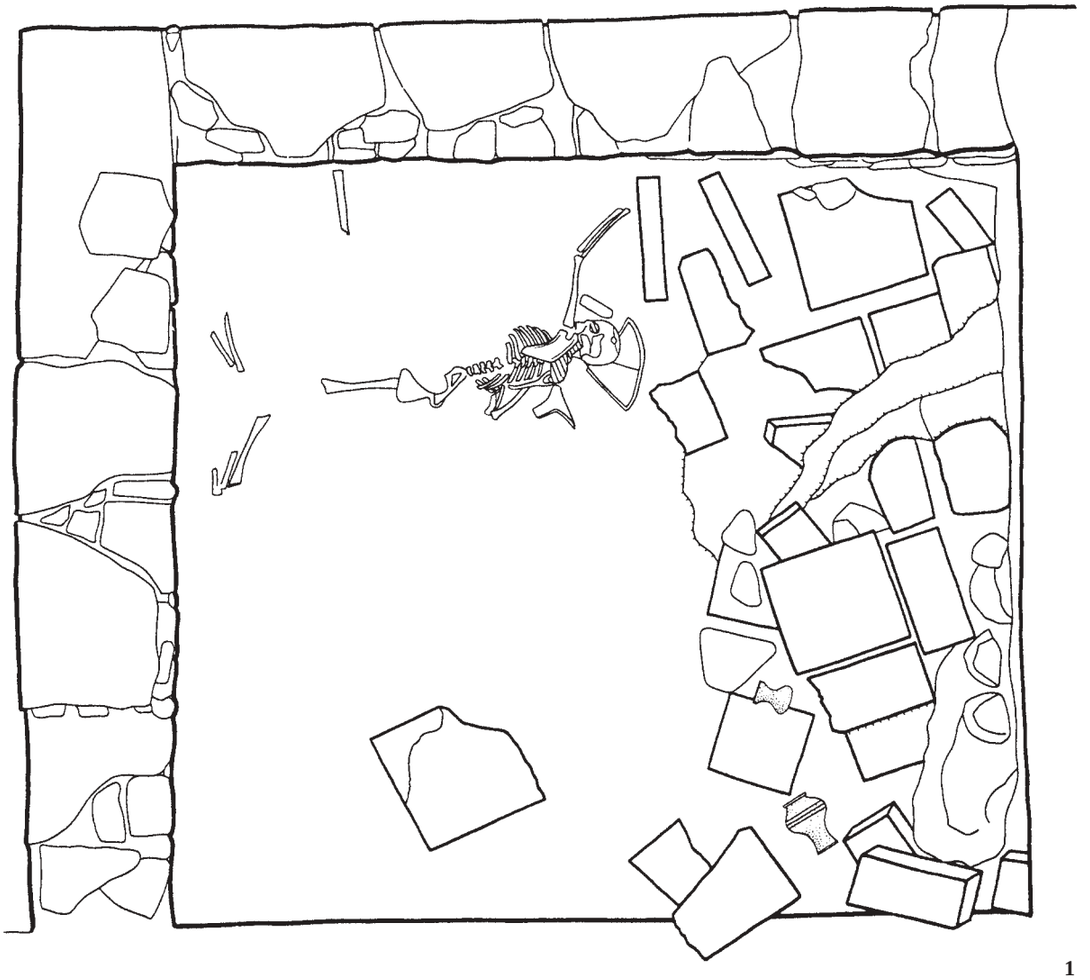

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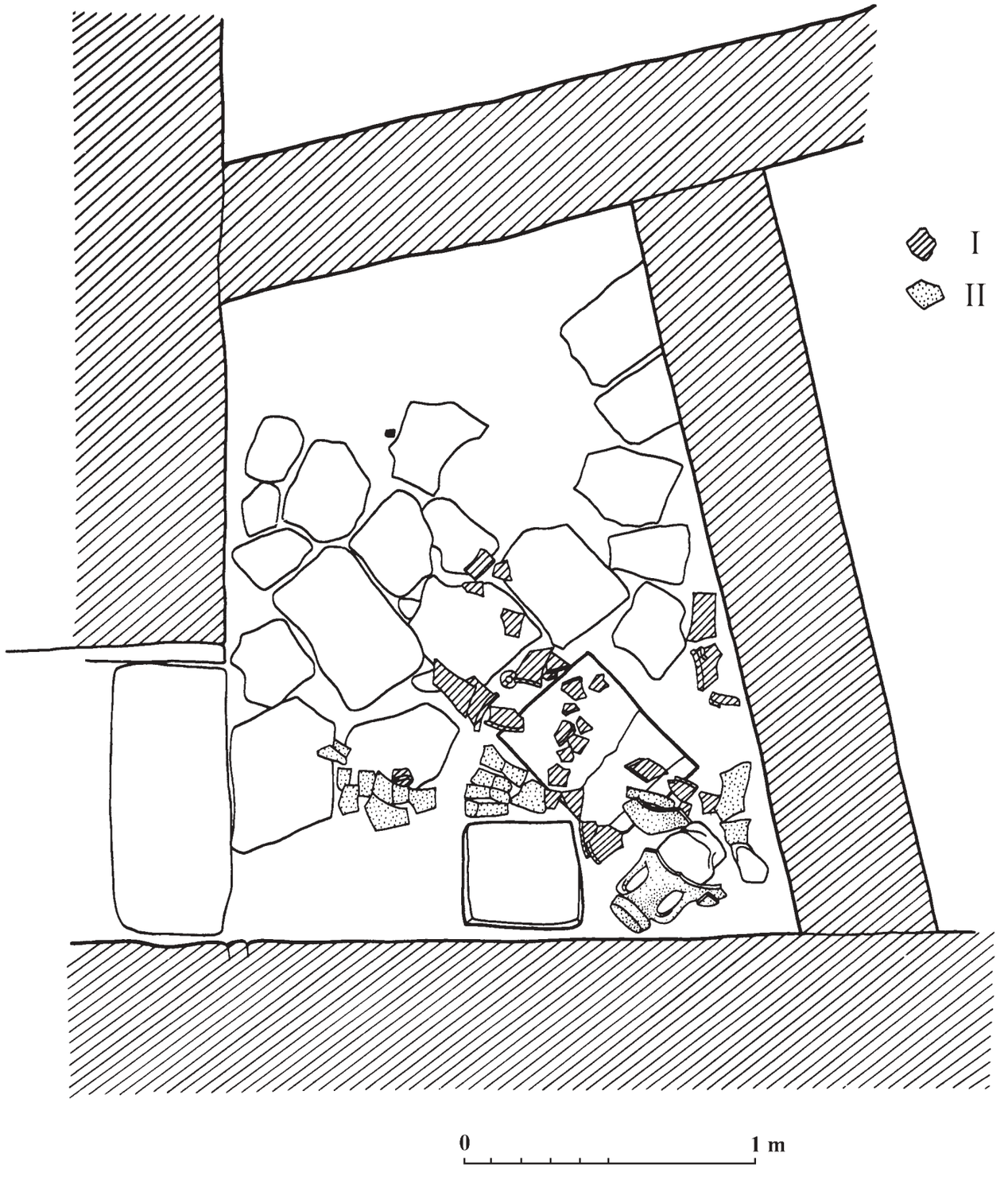
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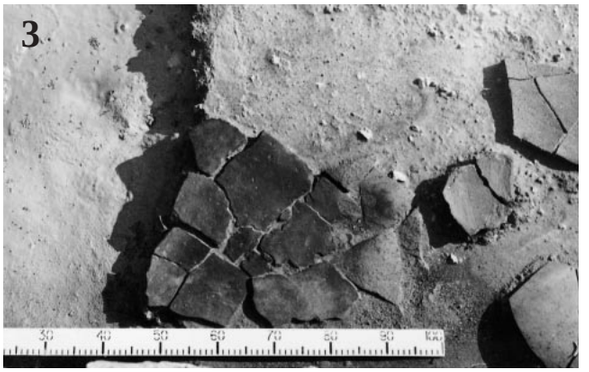
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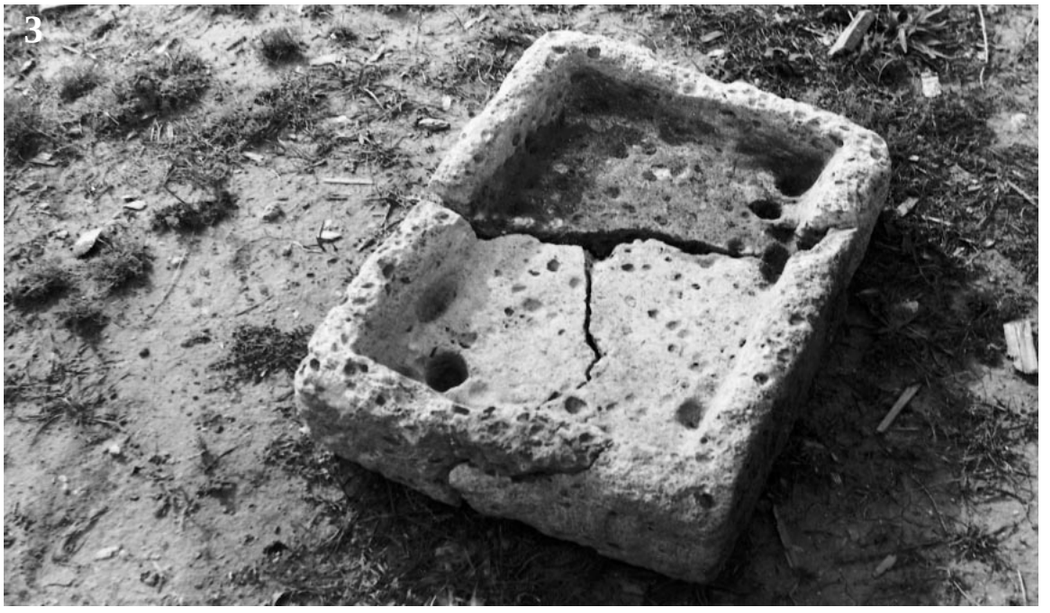
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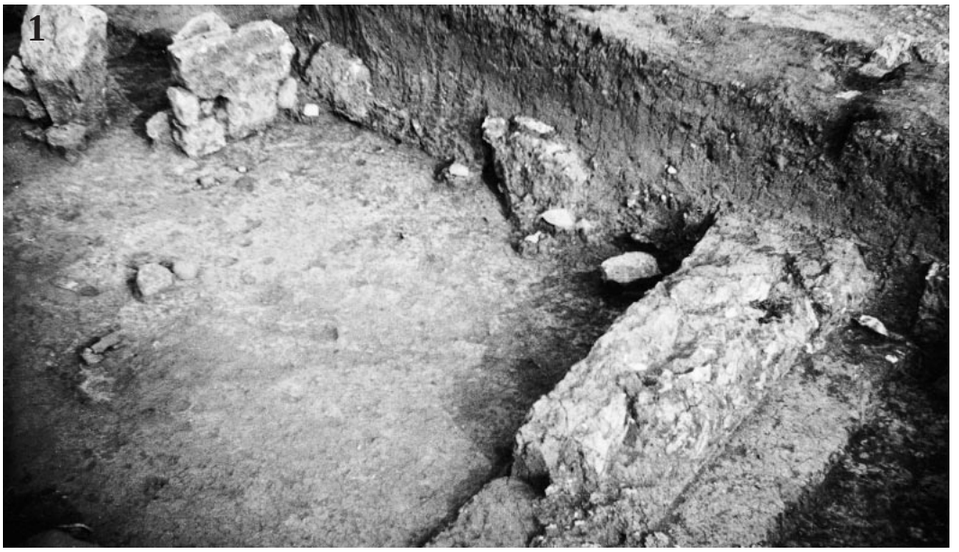

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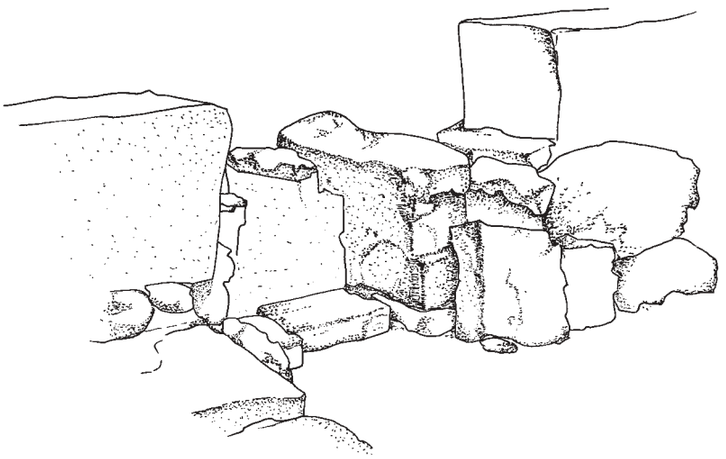


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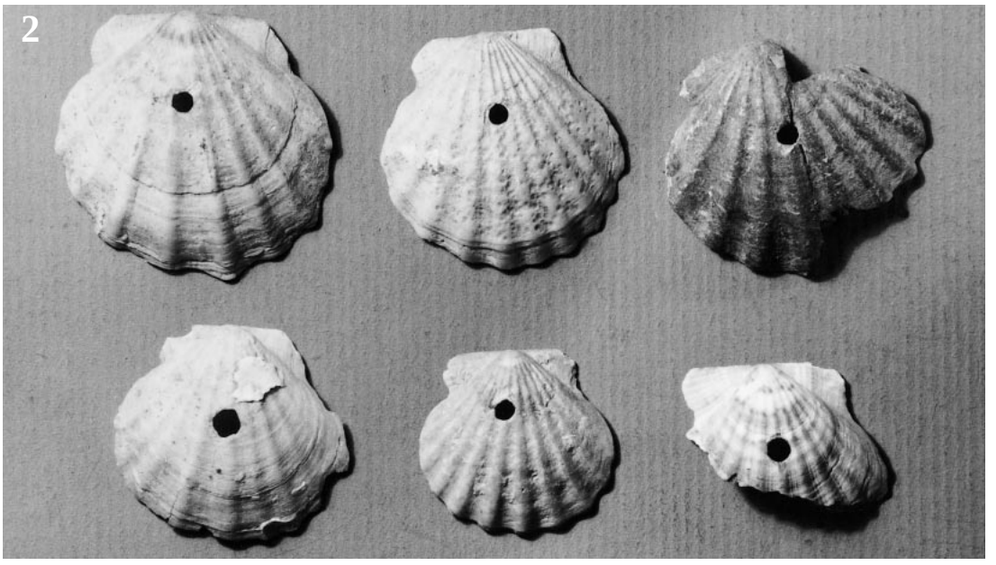
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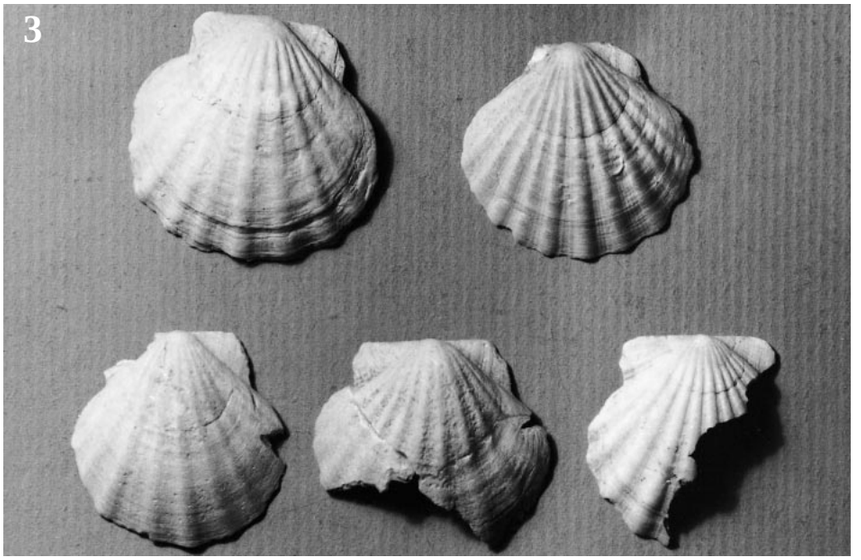
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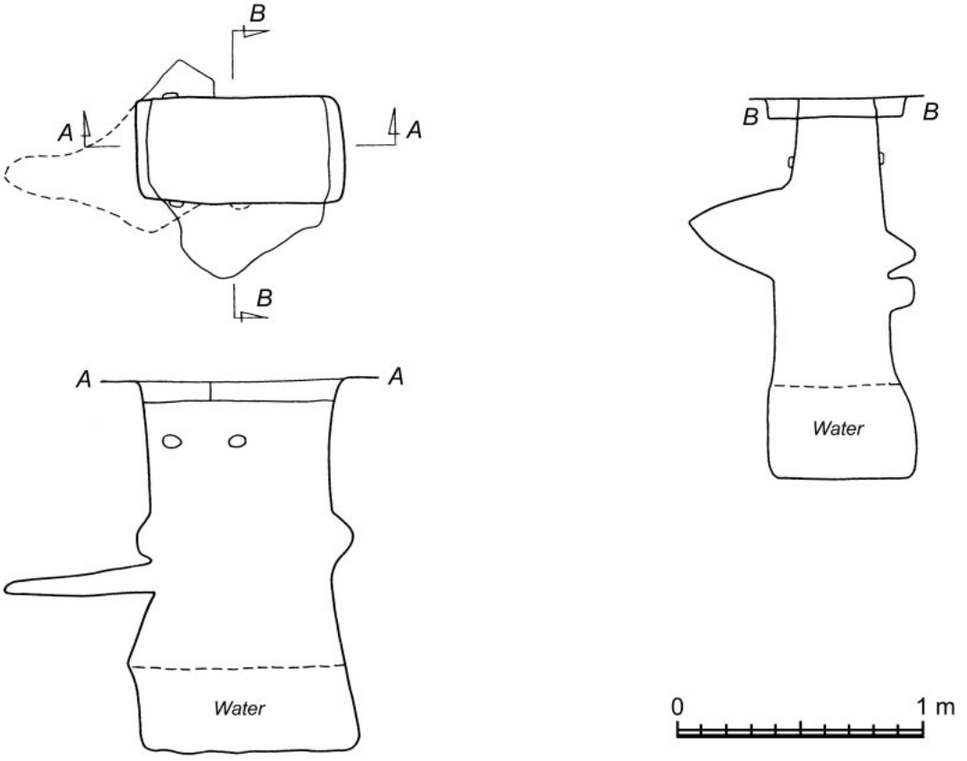


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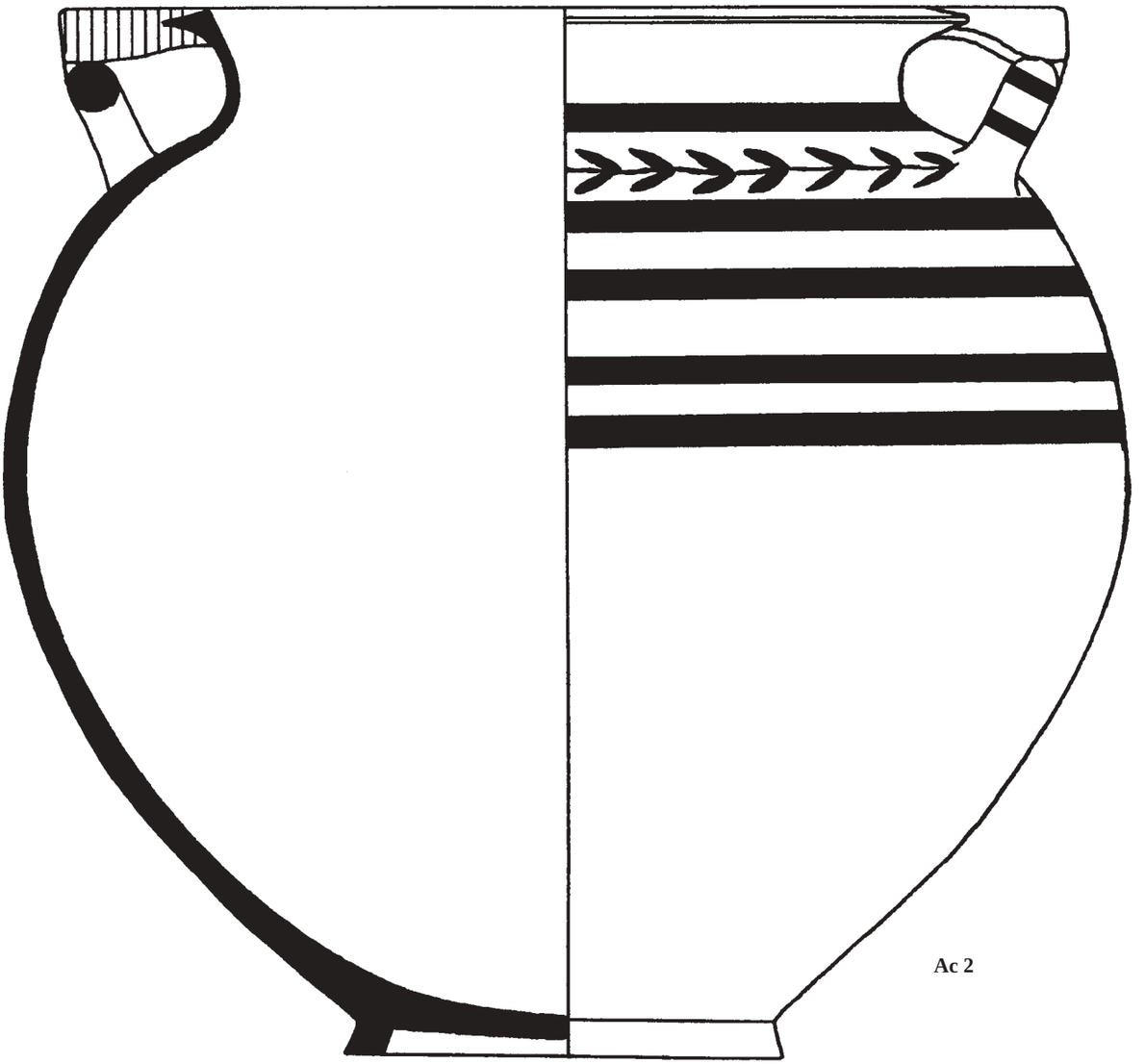

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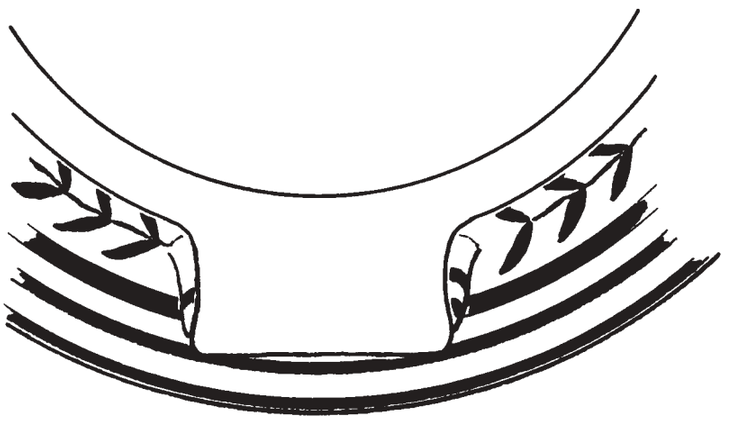

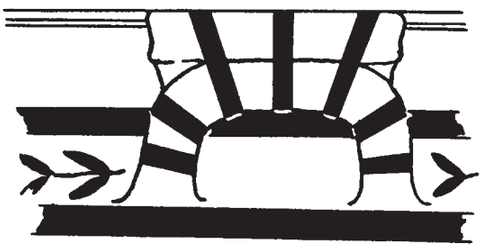

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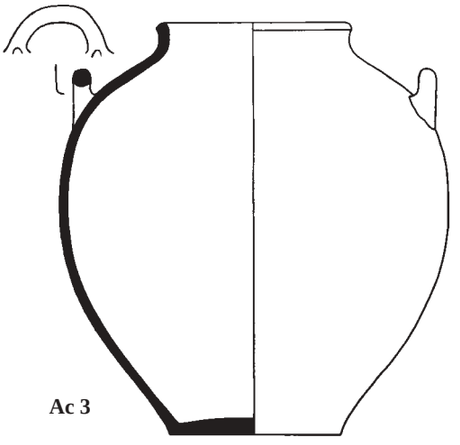

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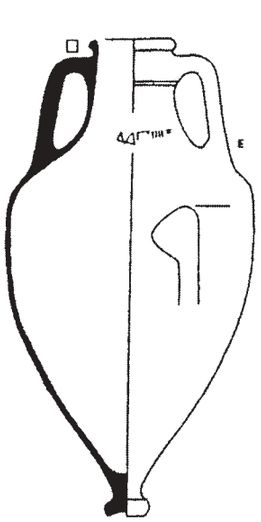
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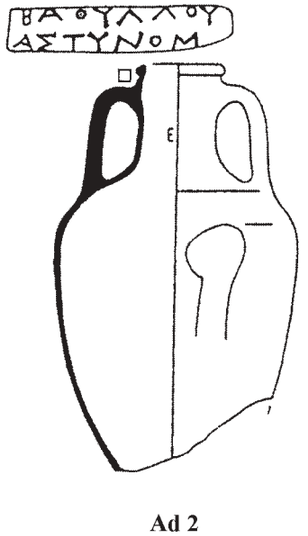
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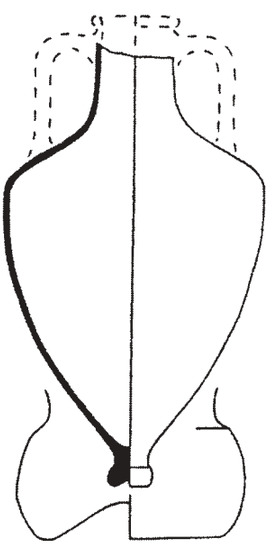
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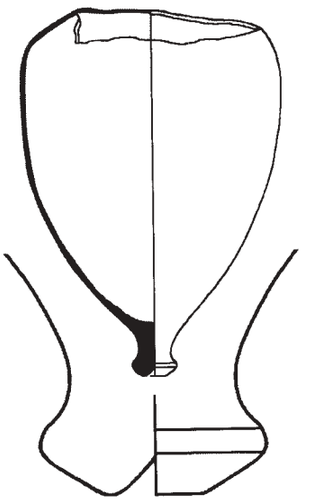
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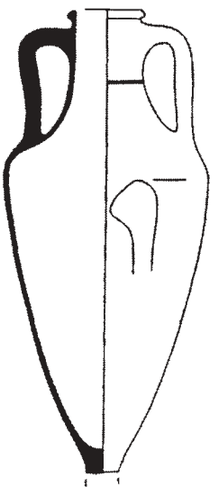
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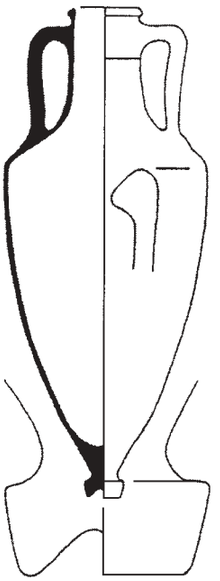
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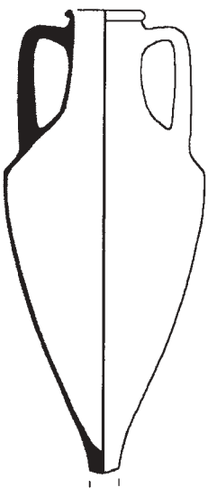
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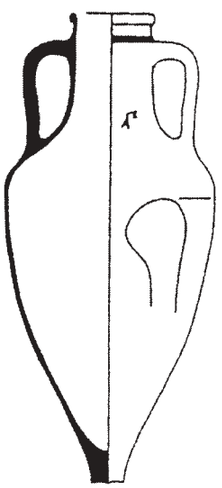
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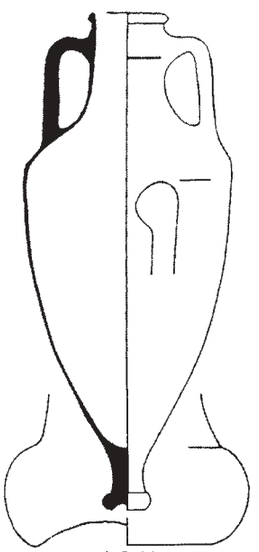
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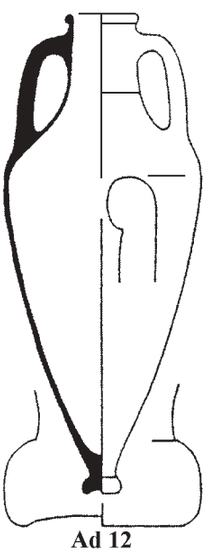
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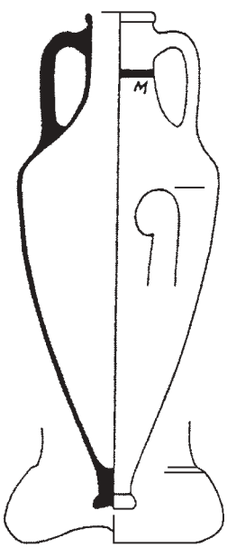
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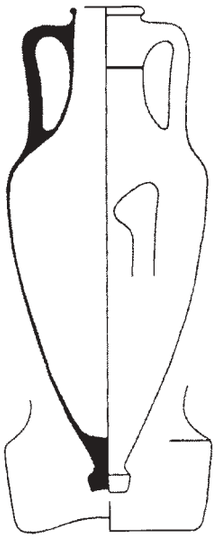

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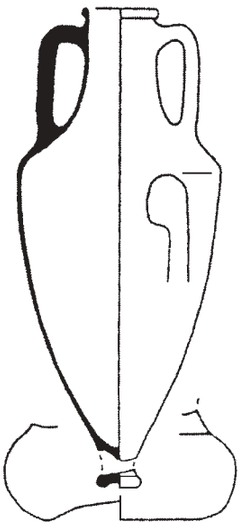

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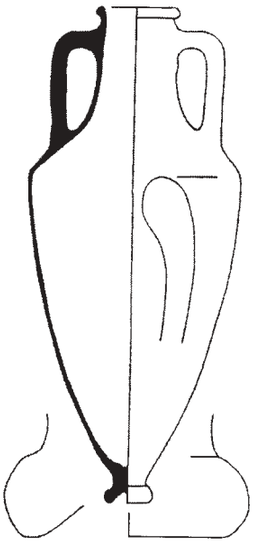

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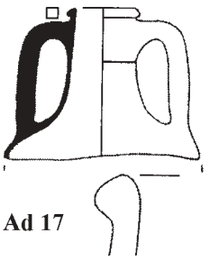

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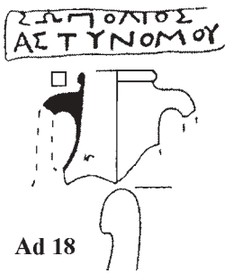

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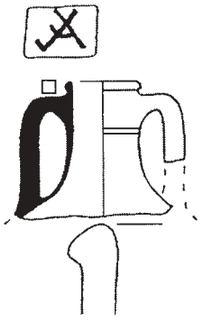

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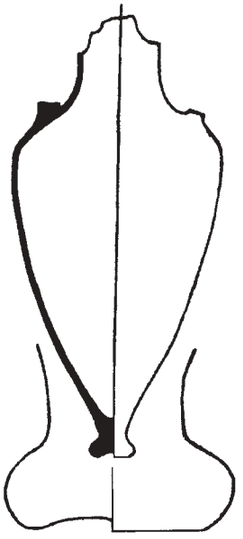

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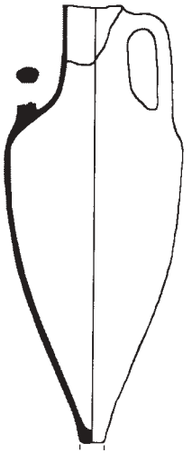

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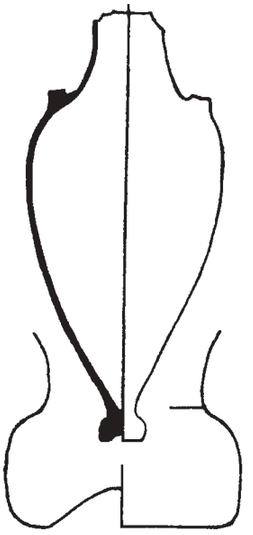

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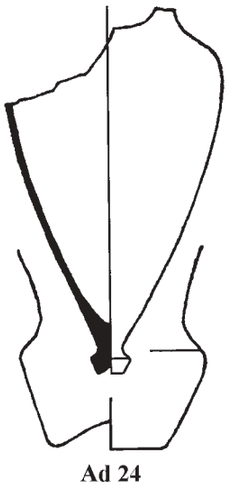

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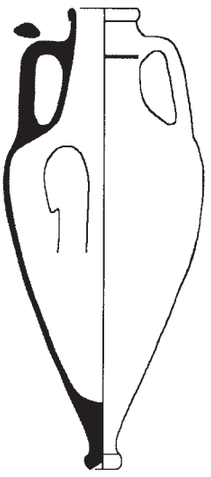

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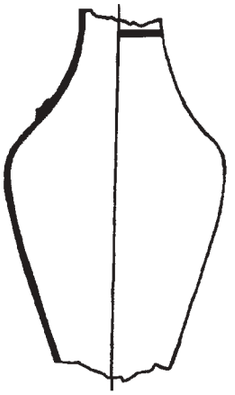

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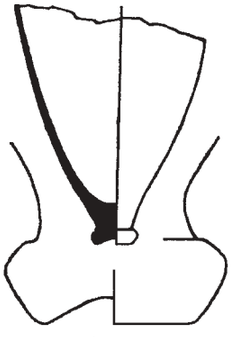

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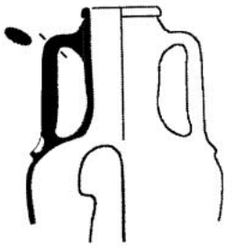

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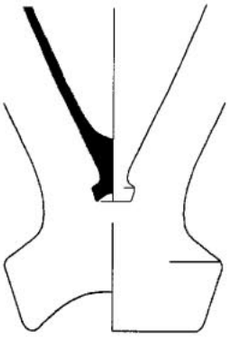

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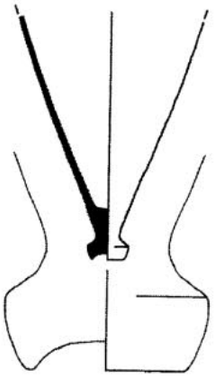

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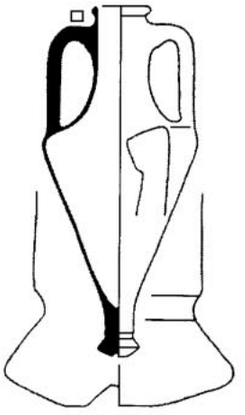

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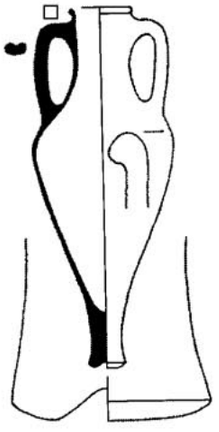

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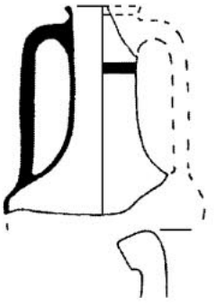

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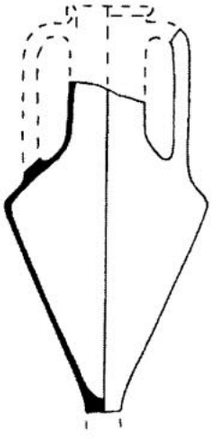

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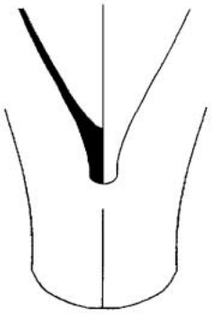

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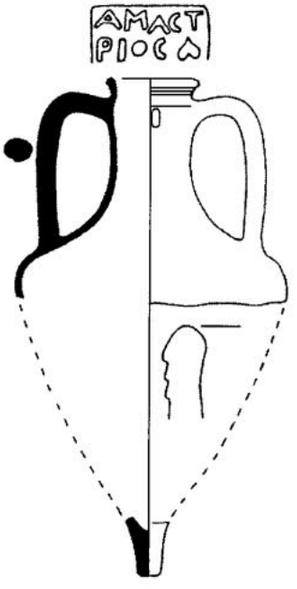

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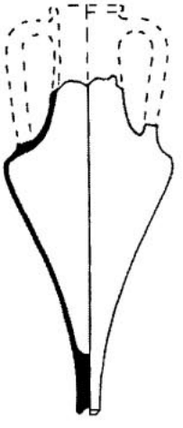

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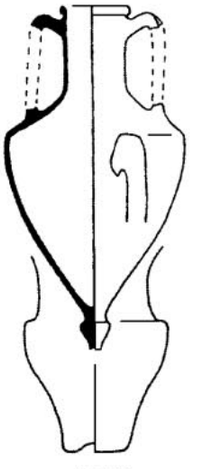

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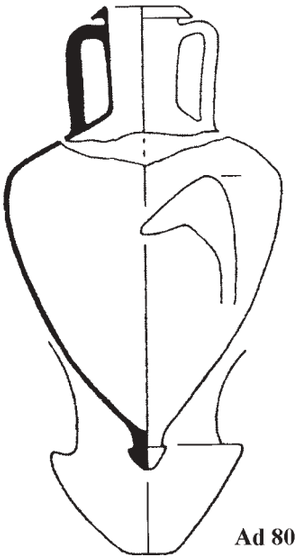

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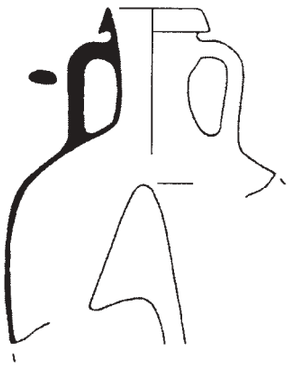

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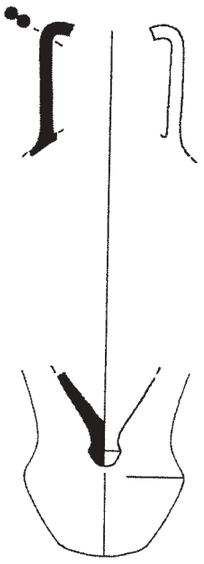

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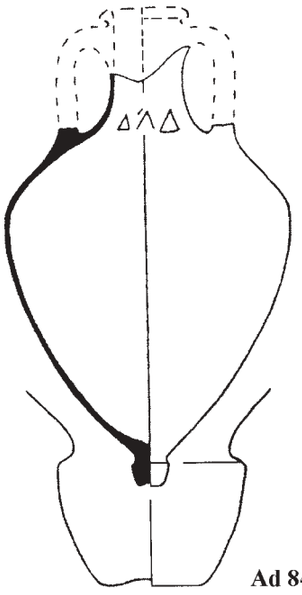

Ad 84

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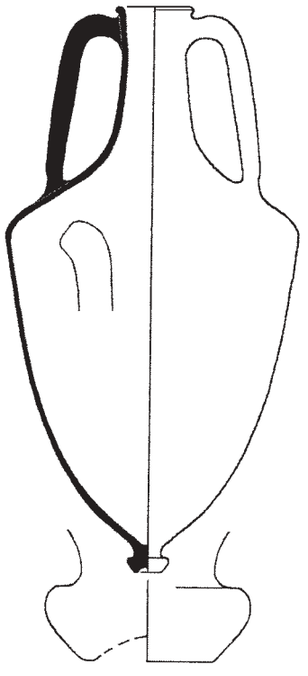

Ad 87

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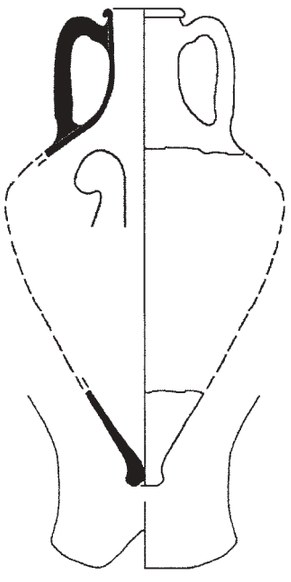

Ad 88

Ad 89

Ad 90

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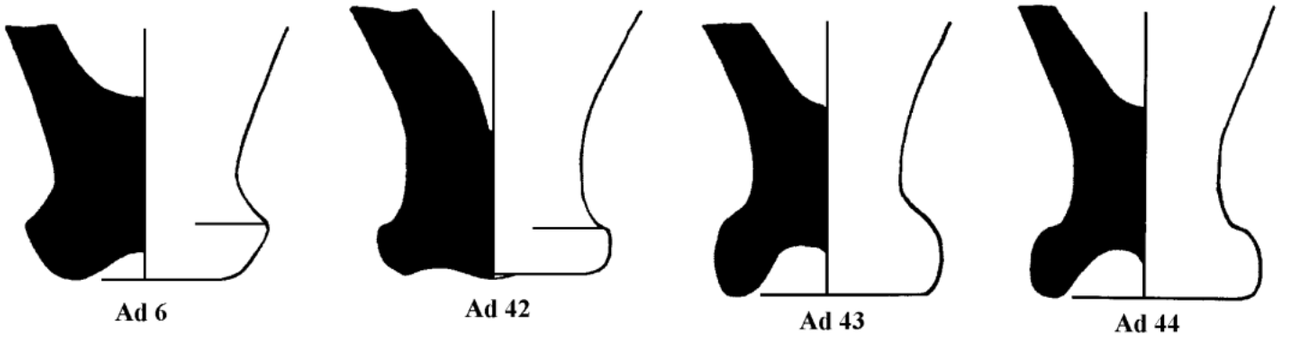
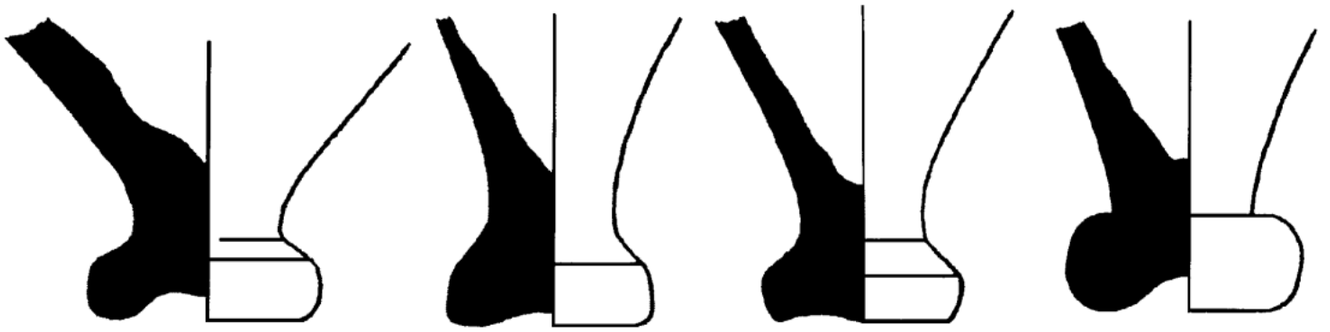
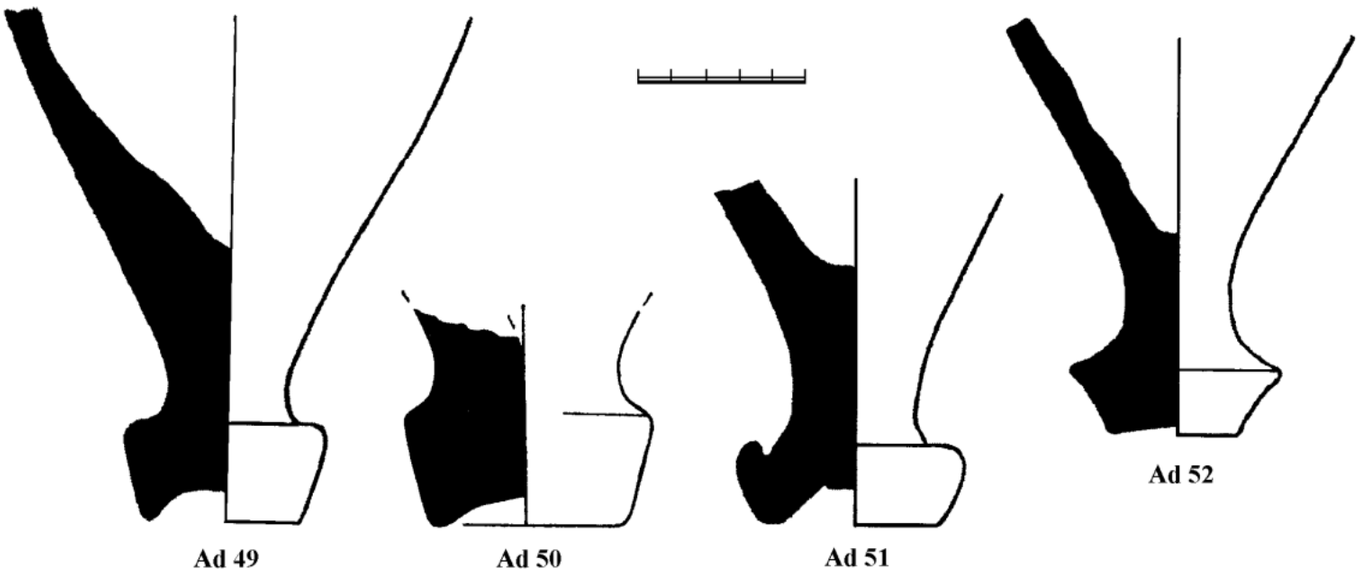


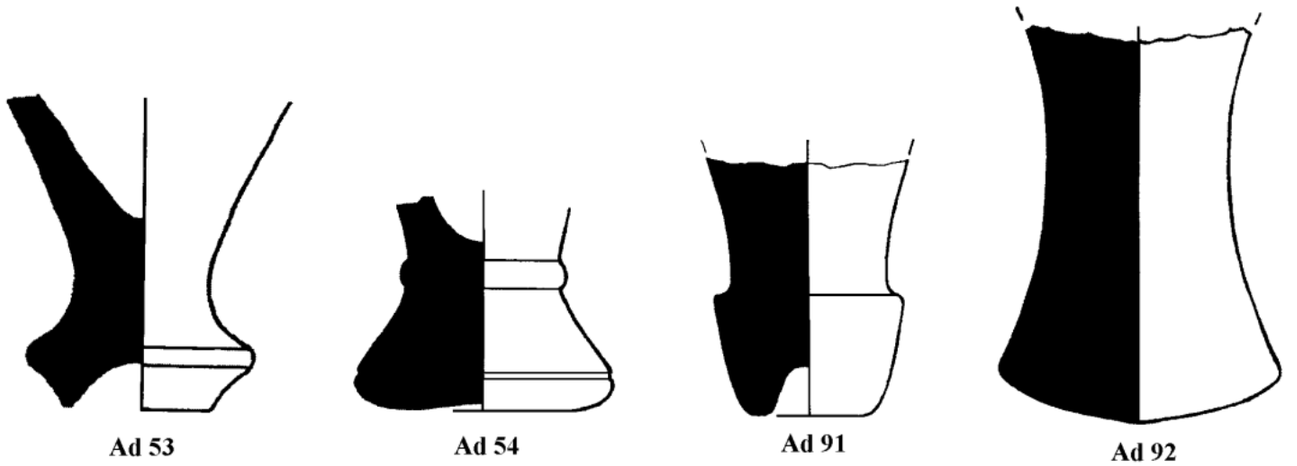
Ad 6 Ad 42 Ad 43 Ad 44



Ad 45 Ad 46 Ad 47 Ad 48



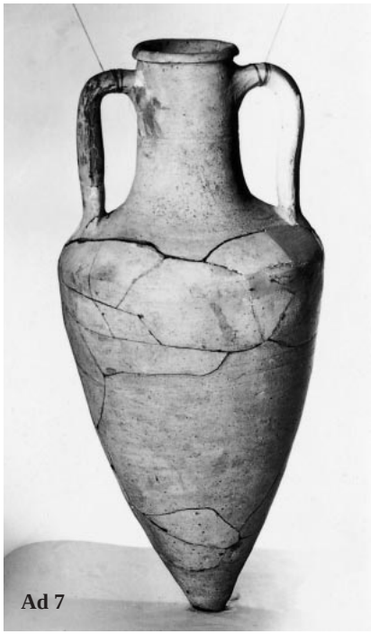
Ad 49 Ad 50 Ad 51 Ad 52



Ad 53 Ad 54 Ad 91 Ad 92

1:2

Ad 1



Ad 7

Ad 10

Ad 12

Ad 13

Ad 14

Ad 20

Ad 22

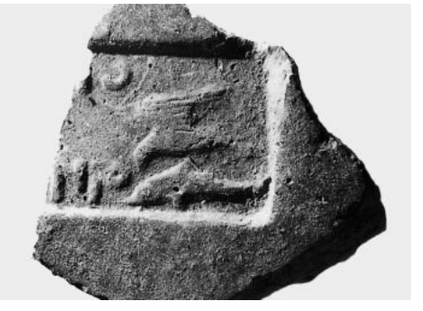
1:8 (**Ad 34-36a** 1:5)

1:8 (**Ad 6a** 1:4; **Ad 85** 2:5)

Ab 1

Ab 2

Ab 3



Ab 5

Ab 6

Ab 7

Ae 2

Ae 5

Ae 7

Ae 14

Ae 15

Ae 18

Ae 17

Ae 20

Ae 33

Ae 34

Ae 35

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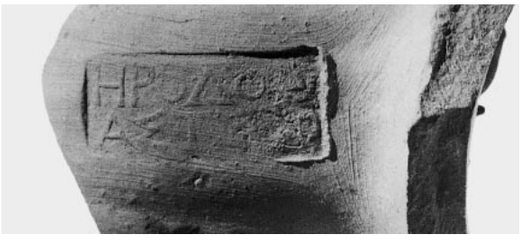
Ae 49

Ae 53

Ae 54

Ae 55



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Ae 62

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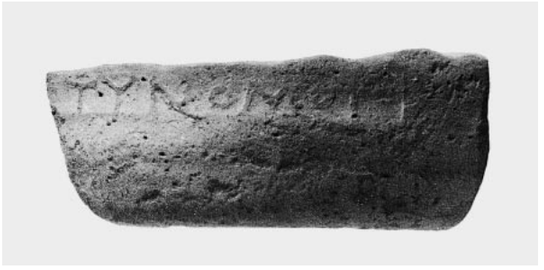
Ae 73

Ae 76



Ae 79

Ae 83

Ae 84

Ae 85

Ae 86

Ae 87

Ae 88

Ae 100

Ae 101

Ae 102

Ae 103

Ae 106

Ae 108

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Ae 112

Ae 105

Ae 107

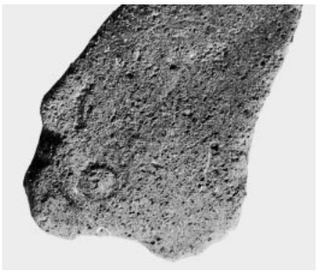
Ae 110

Ae 114

1:1 (**Ae 114** 2:1)

Ae 115

Ae 116



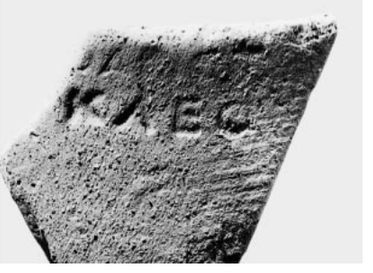
Ae 117

Ae 119

Ae 120

Ae 121

Ae 122



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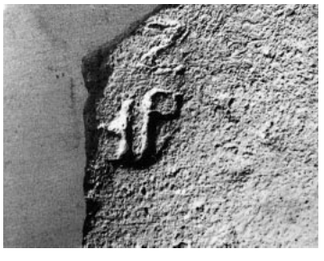


Ae 124

Ae 125

Ae 132

Ae 133

Ae 134

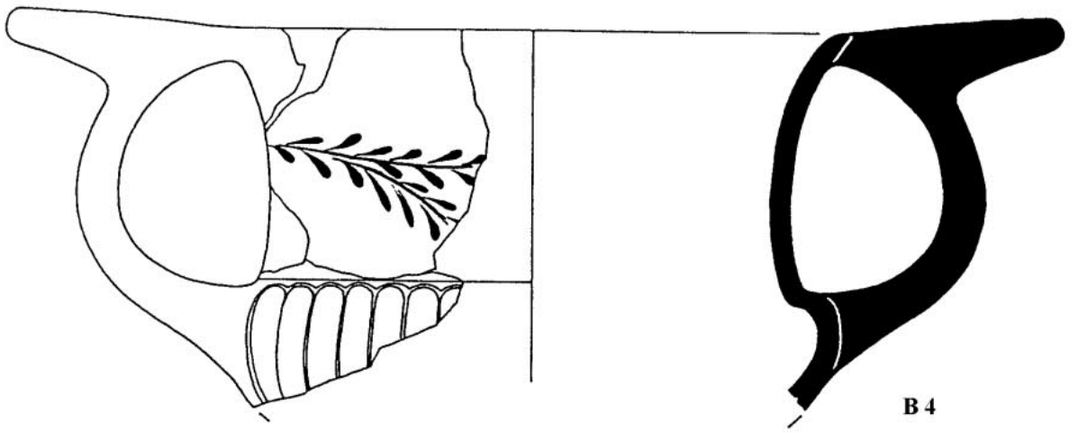
Ae 135

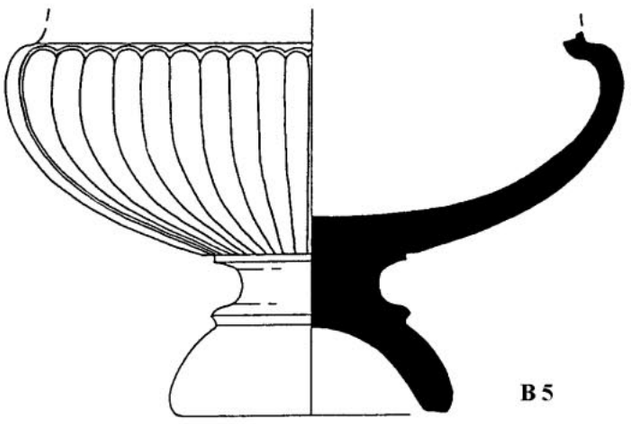
Ae 136

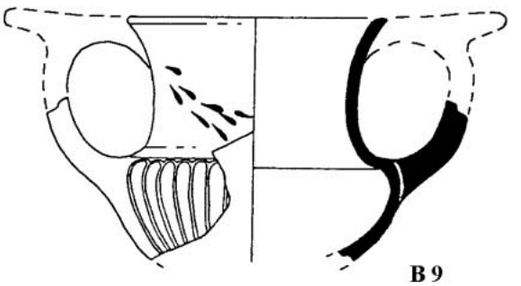
Ae 137

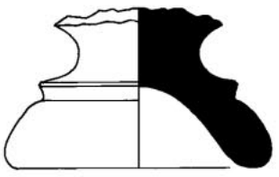
Ae 138

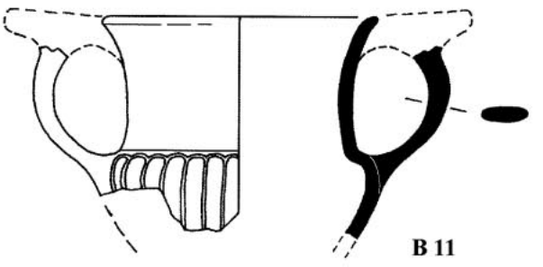
Ae 141

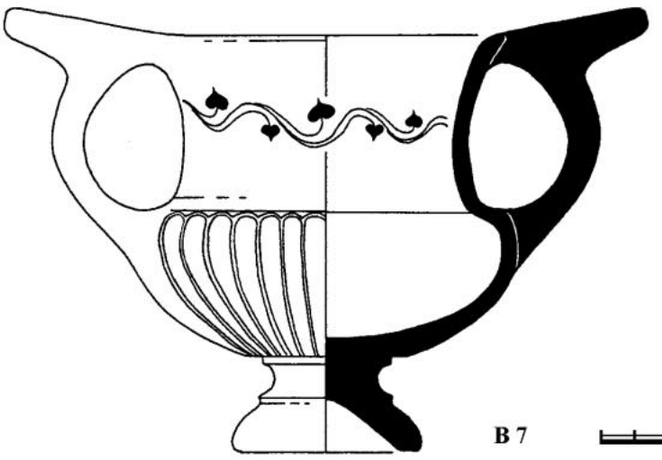


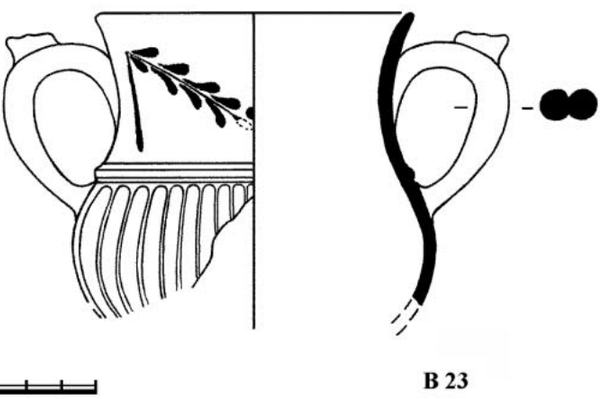












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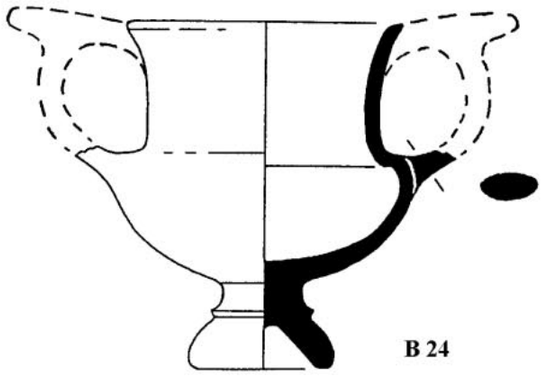

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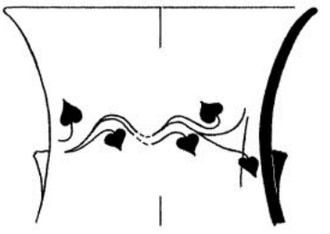

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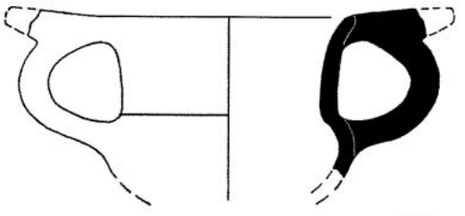

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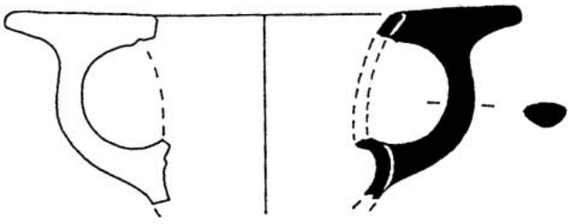

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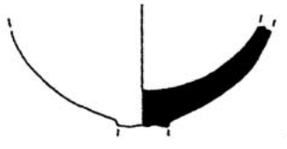

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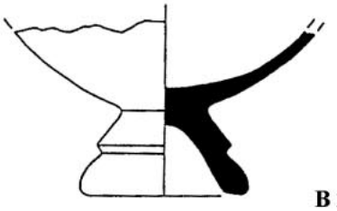

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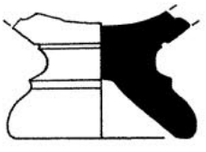

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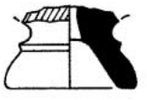

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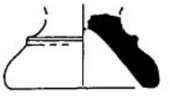

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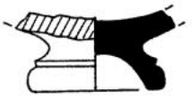

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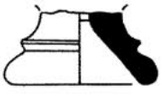

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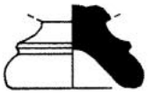

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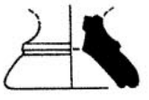

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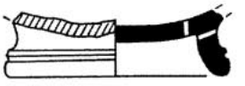

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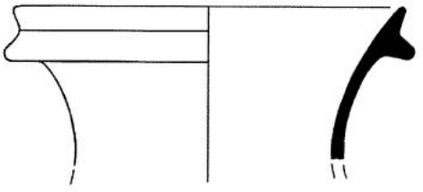

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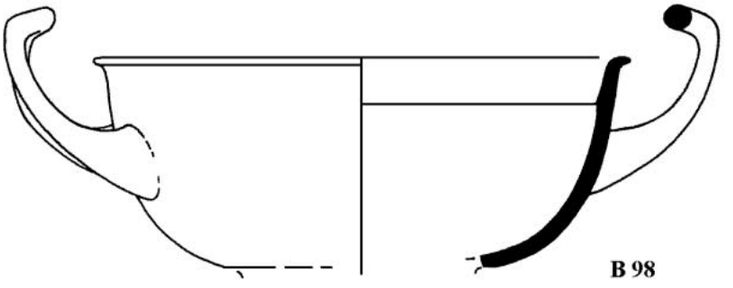

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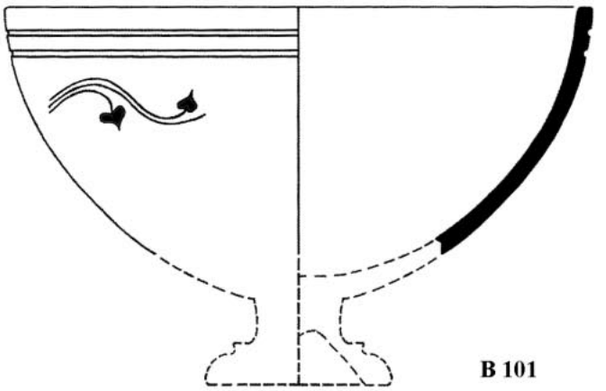

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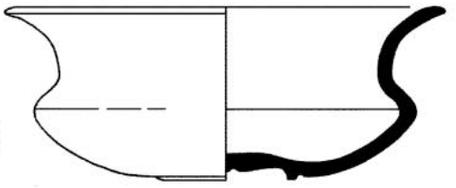

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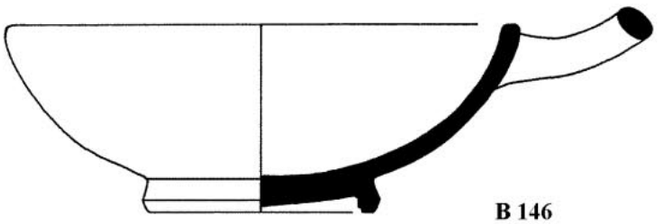

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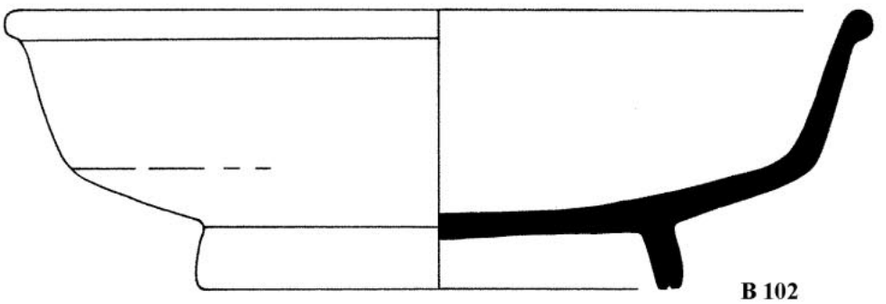

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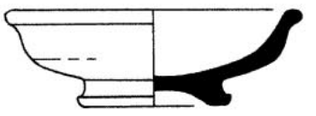

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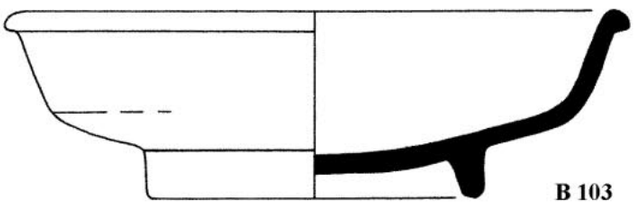

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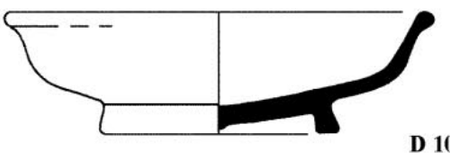

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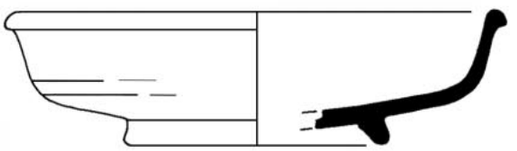

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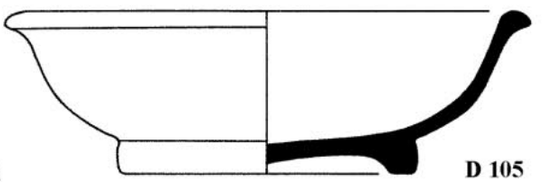

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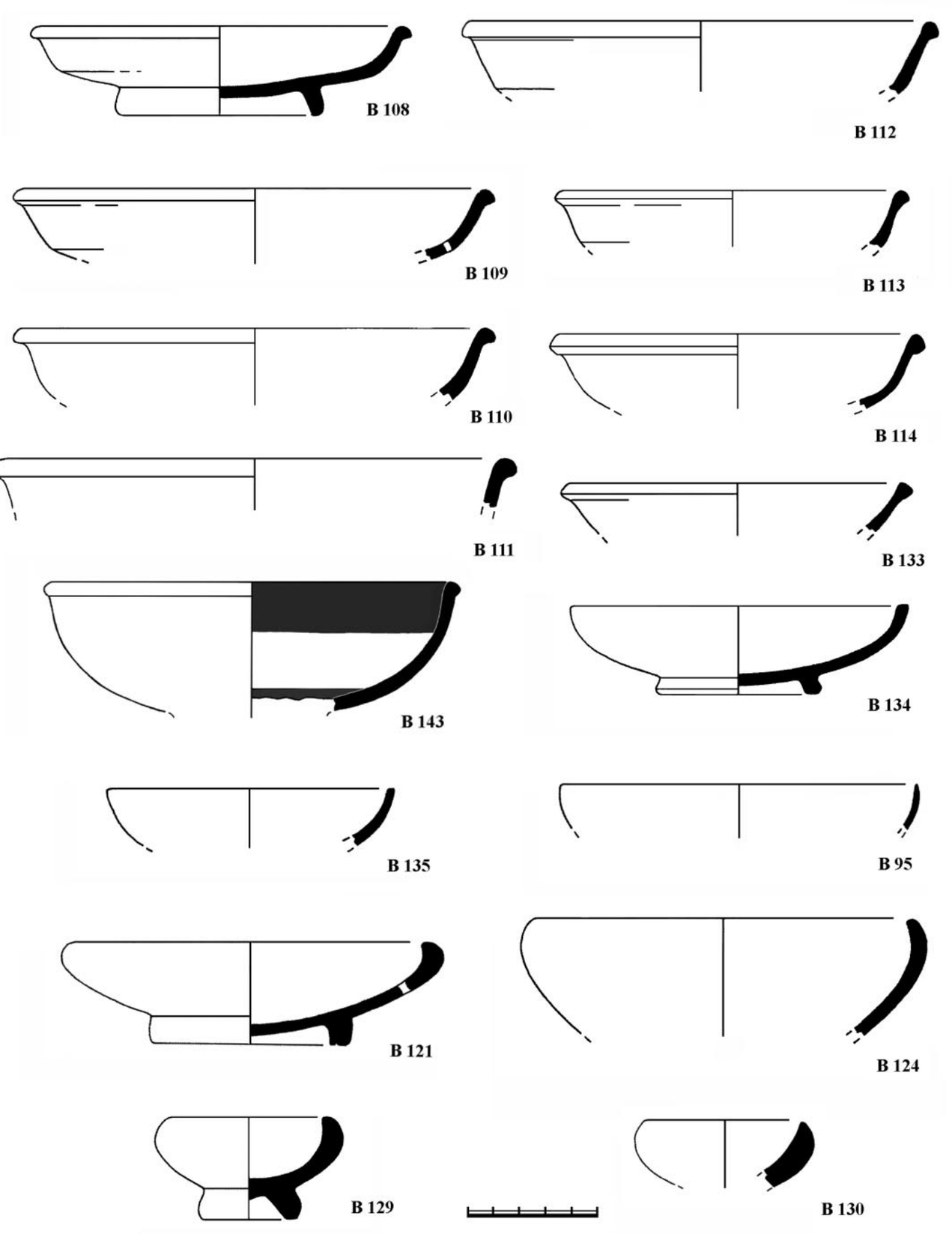
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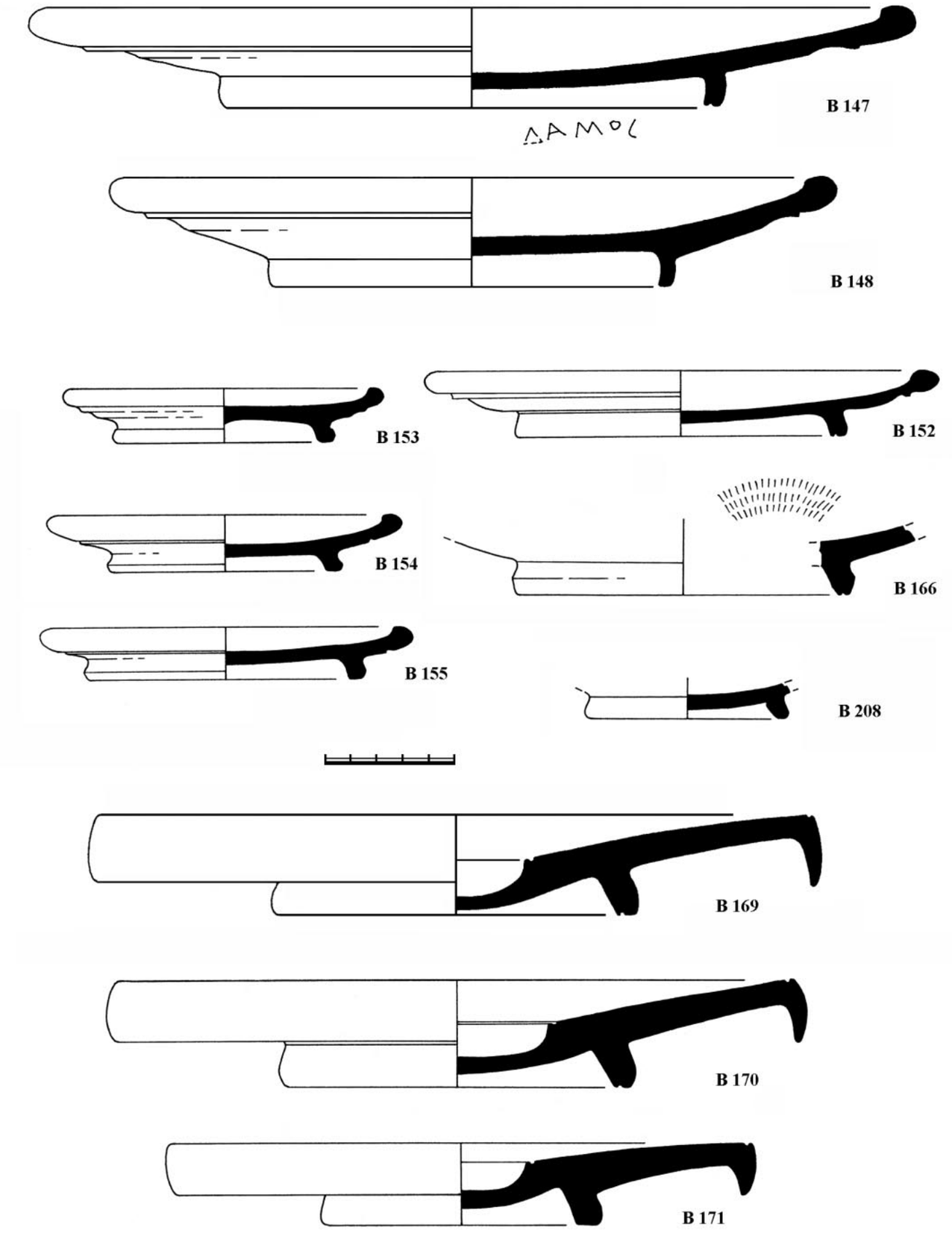

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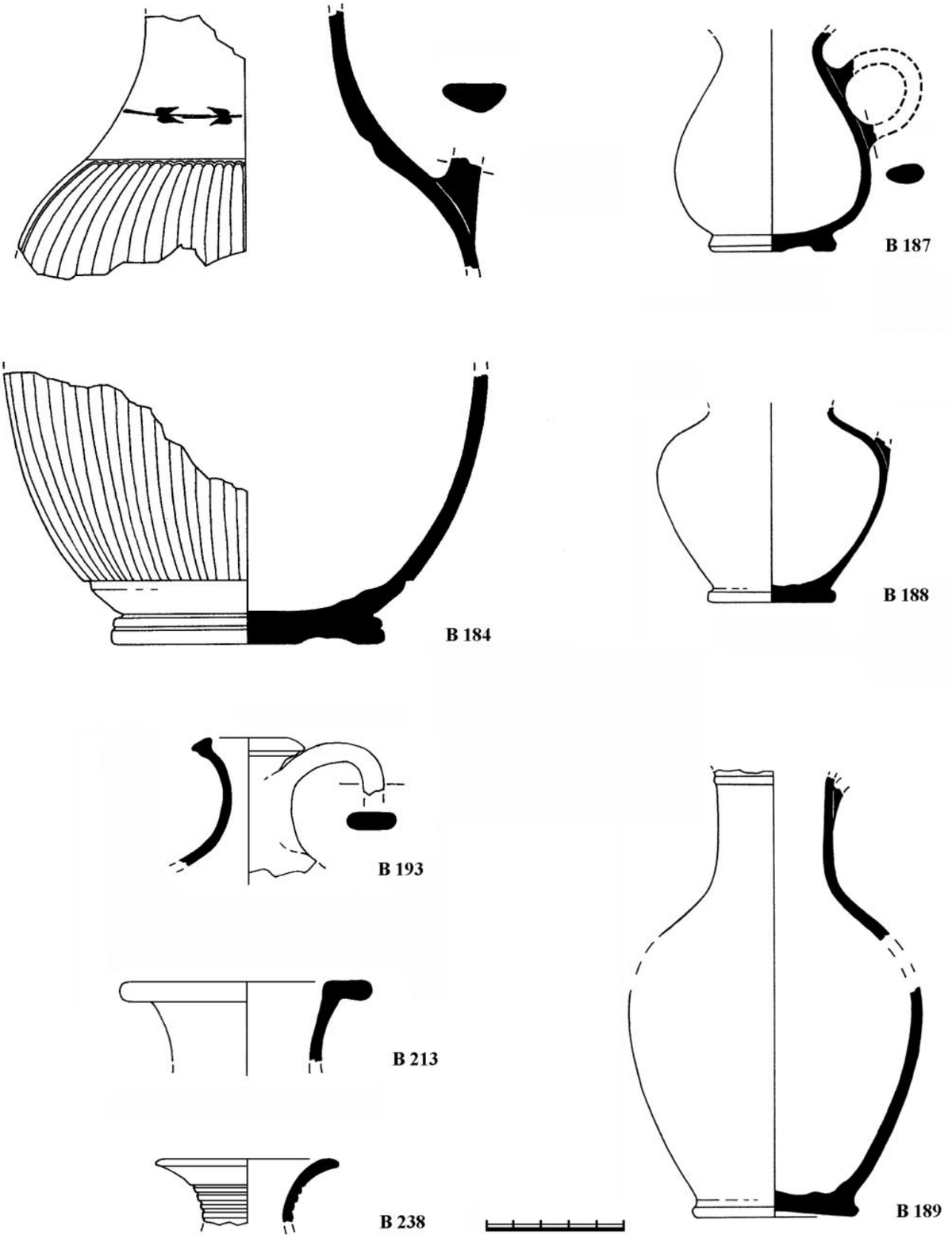

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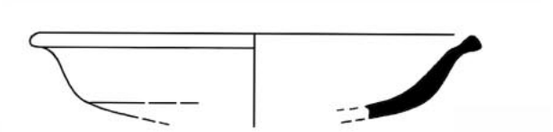

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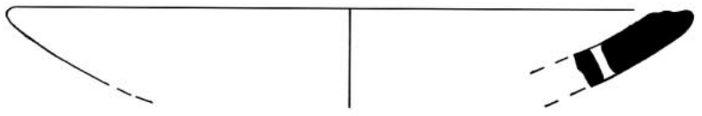

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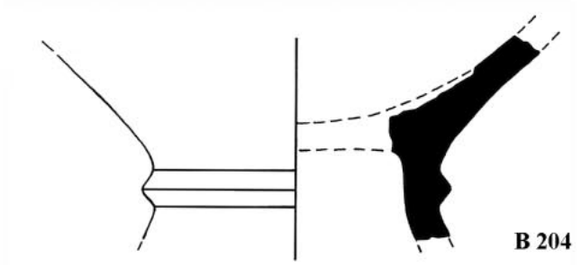

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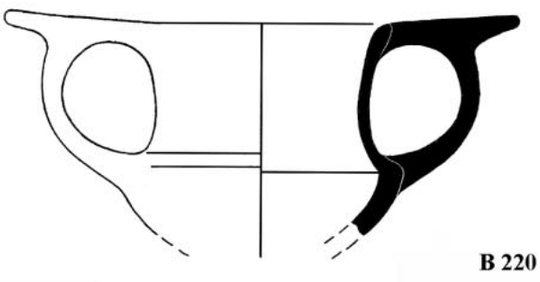

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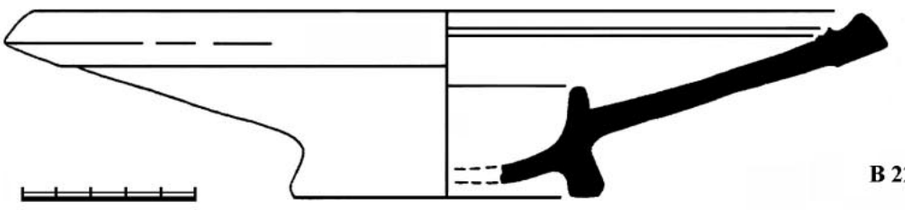

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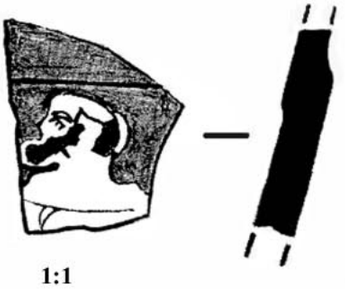

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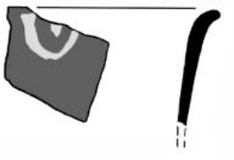

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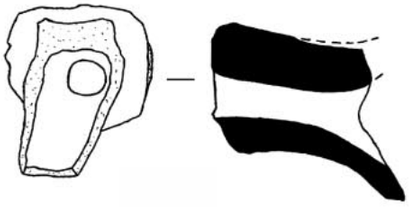

B 205

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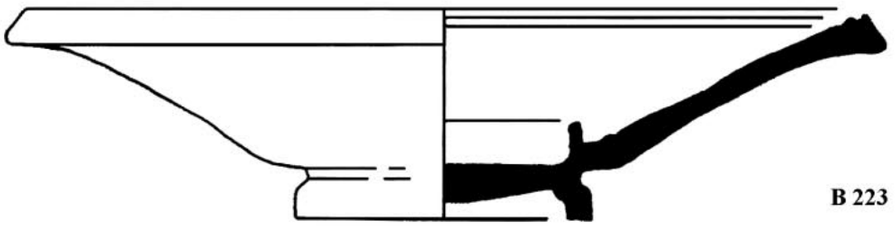

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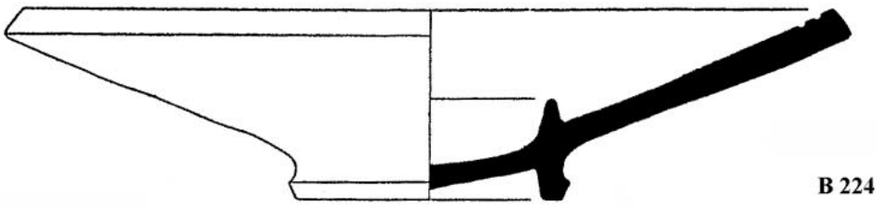
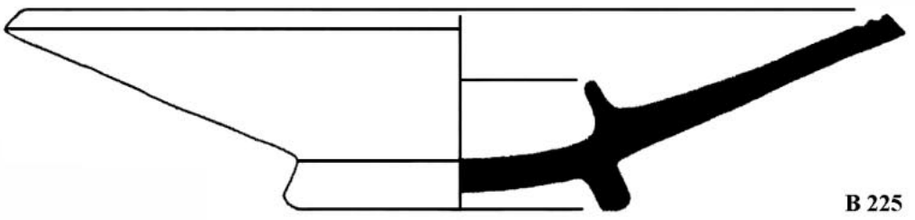
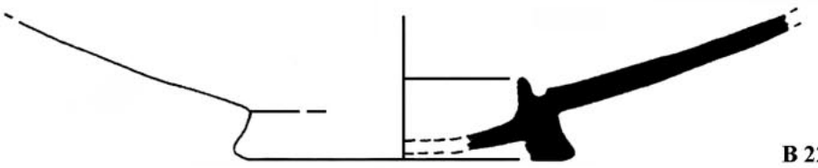


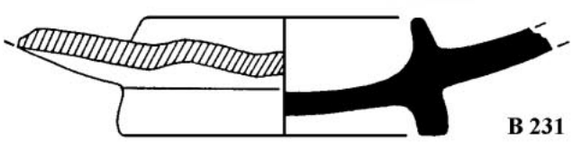
B 224



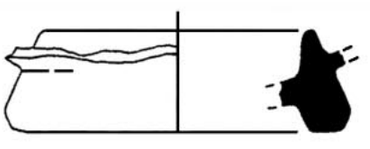
B 225



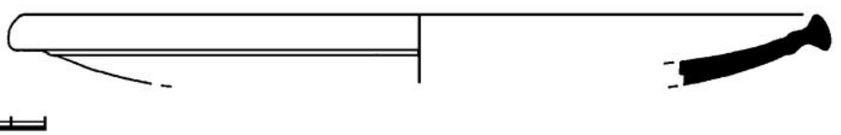
B 226



B 231

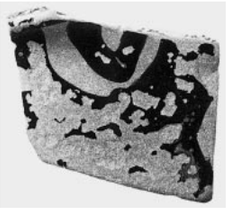


B 233

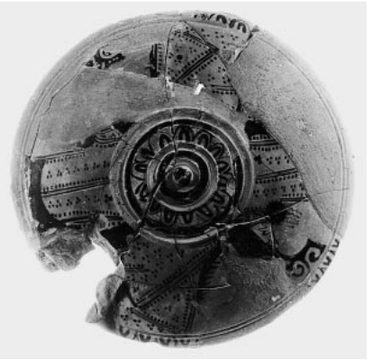


B 235

B 1



B 2



B 3

B 7

B 8

B 9

B 11

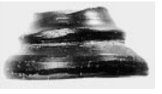
B 23

B 24

B 25

B 1-2 1:1; **B 9**, **B 24** 1:2; **B 11**, **B 23**, **B 25** 2:3; **B 3**, **B 7-8** 2:5

B 21

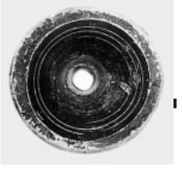


B 31

B 67

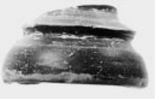
B 68

B 70

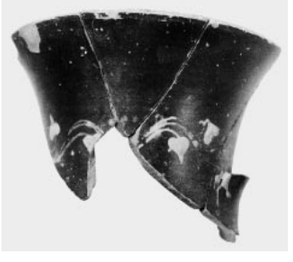


B 31

B 67



B 71



B 42

B 56

B 88

B 98

B 99

B 100

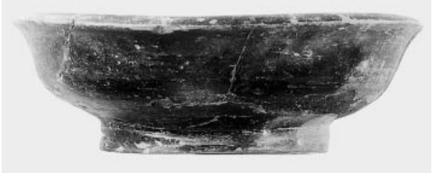
B 146

1:2 (**B 56**, **B 98**, **B 146** 1:3; **B 88**, **B100** 2:3)

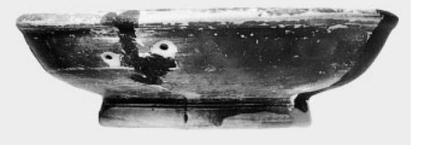
B 102

B 103

B 106

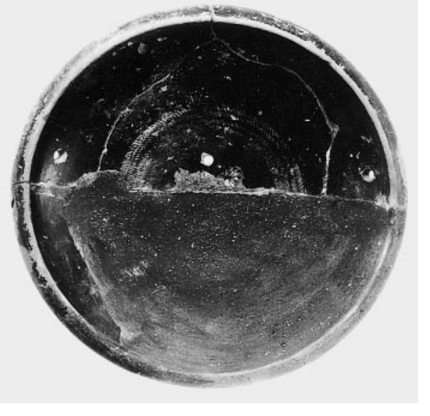


B 105



B 108

B 107



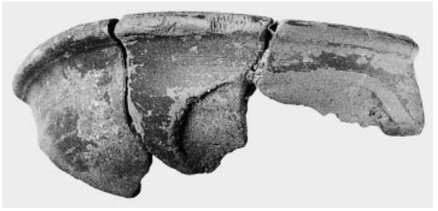
B 121

B 121

B 145

B 145

2:5 (**B 102** 1:4; **B 107** 2:3)

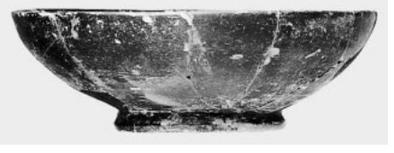


B 120

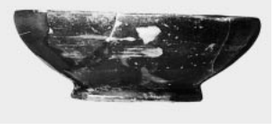
B 129

B 131

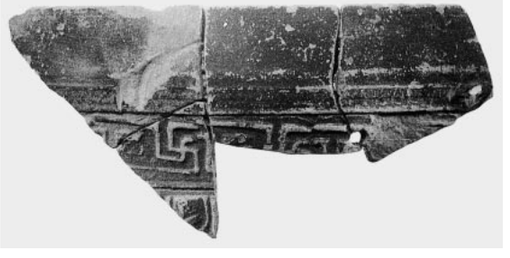
B 132



B 134

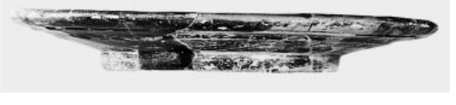


B 136



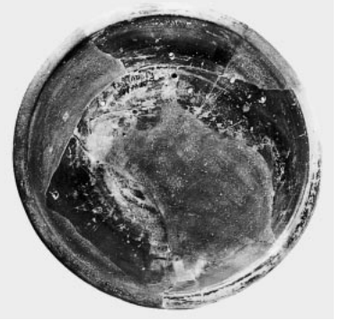
B 144

B 147



B 148

B 152

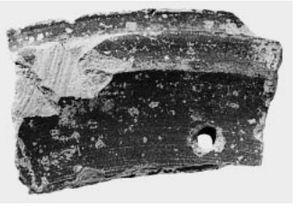


B 152

1:4 (**B 129**, **131-132** 1:2, **B 134**, **B 136** 2:5; **B 120**, **B 144** 3:4)

B 153

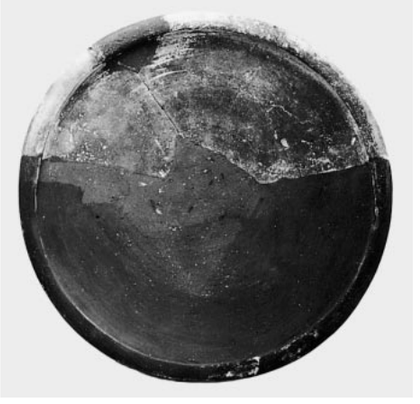
B 153



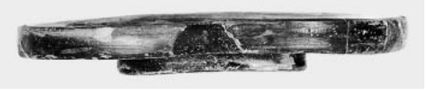
B 168

B 154

B 170



B 154



B 171

B 187

B 184

B 189

B 188

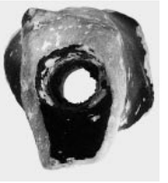
2:5 (**B 184** 1:2; **B 189** 1:3; **B 170-171** 1:4; **B 168** 2:3)

B 193

B 194

B 203a

B 204

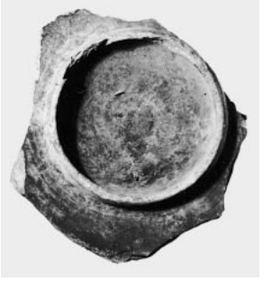


B 205

B 220

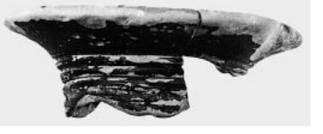
B 221

B 223



B 229

B 232

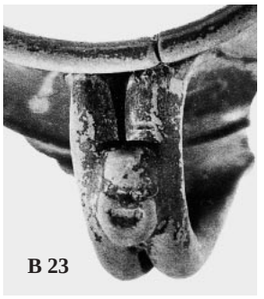


B 238

B 239a

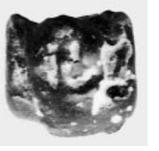
E 12

2:3 (**B 221**, **B 239a**, **E 12** 1:2; **B 223** 1:3)

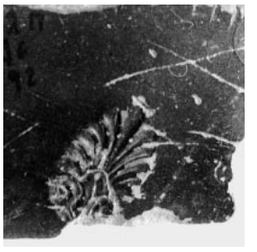


B 23

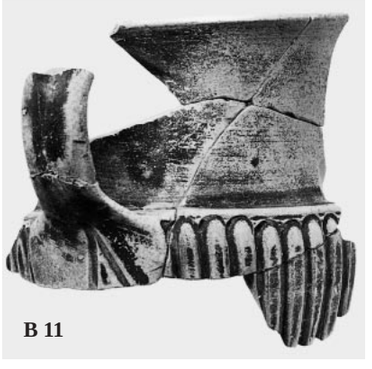
B 23



B 65



B 167

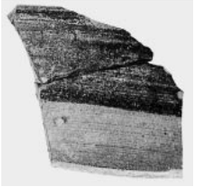


B 11

B 165

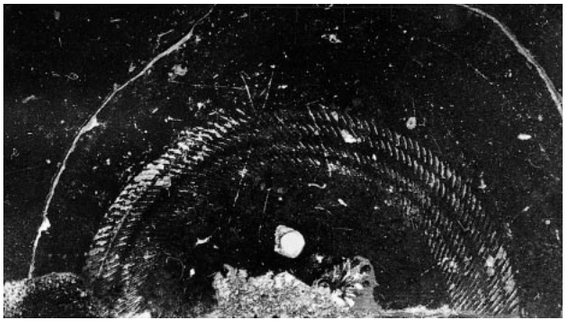
B 212

B 164

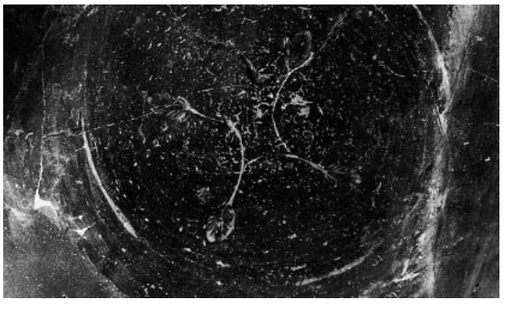


B 143

B 143



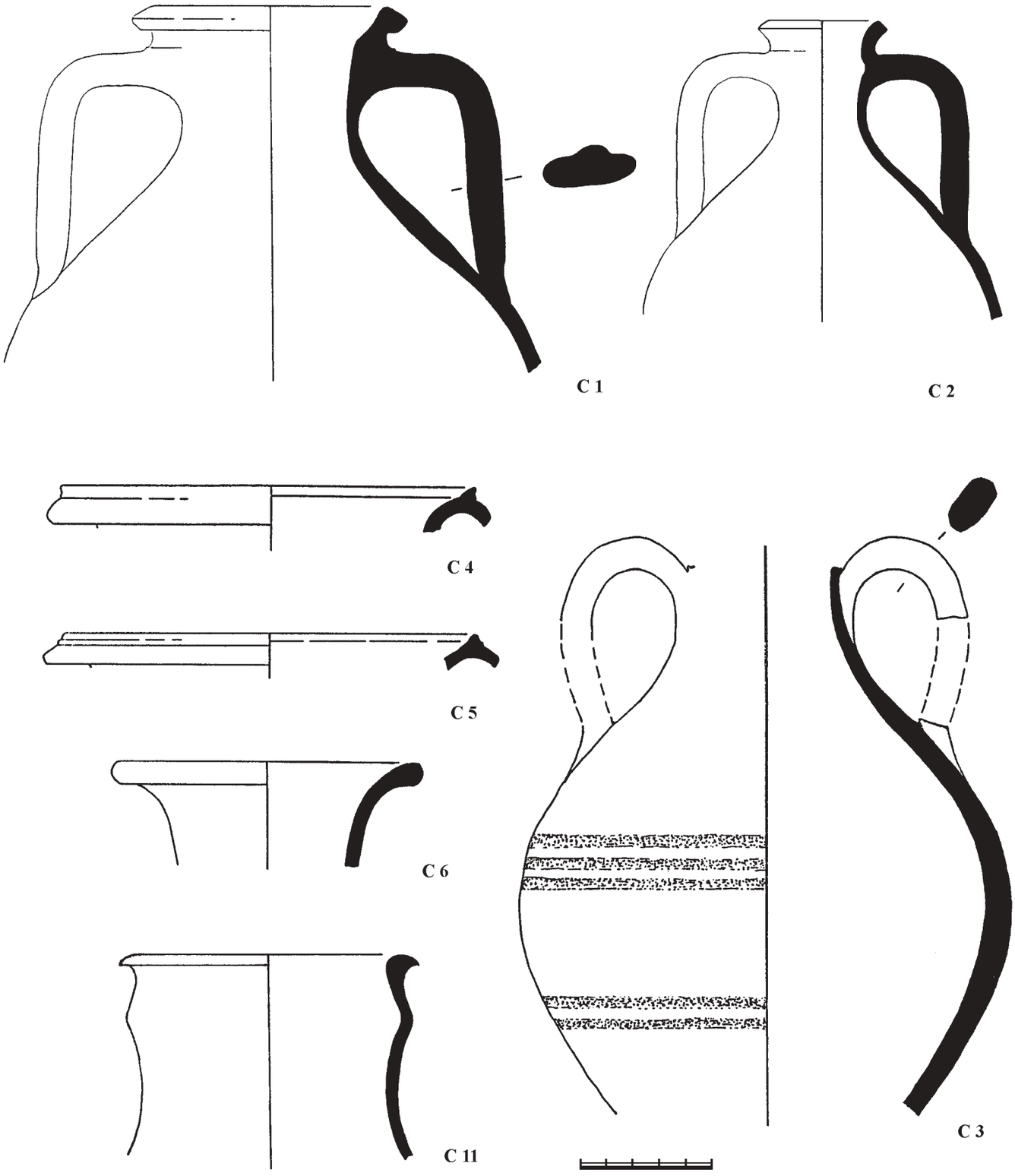
B 121



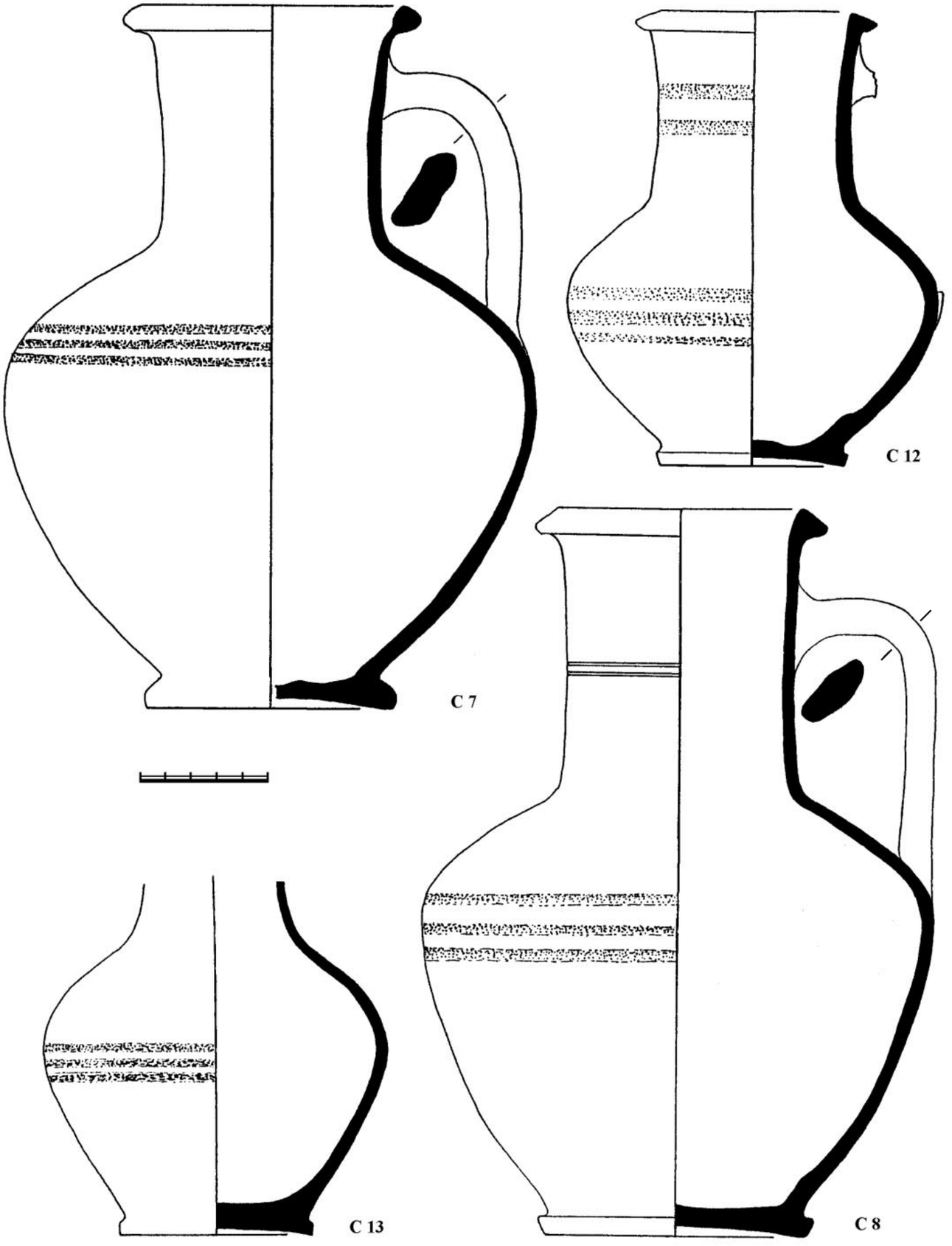
B 102

B 142

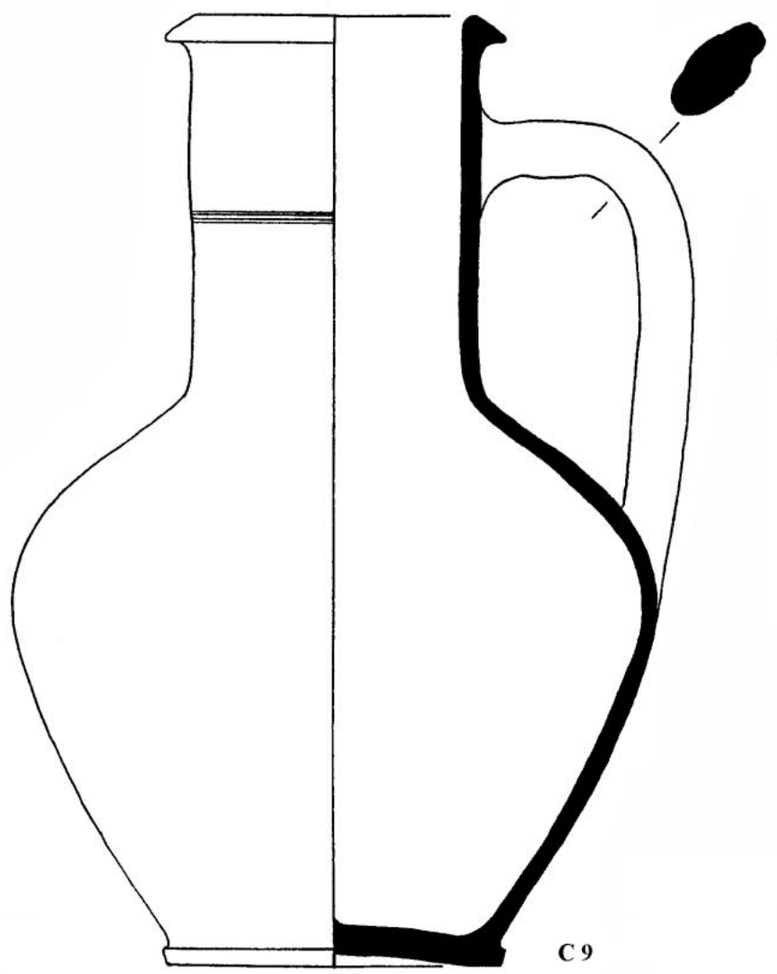
1:1 (**B 11**, **B 143** 2:3; **B 102** 2:5)



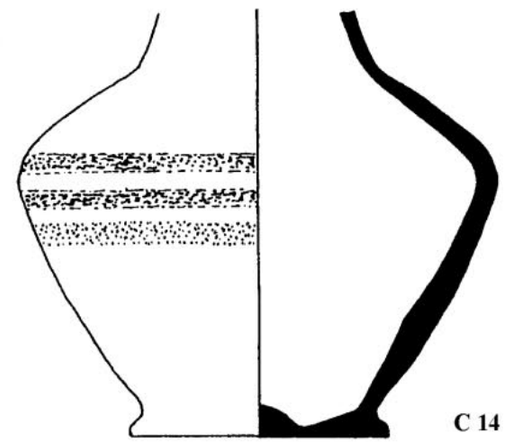
1:2



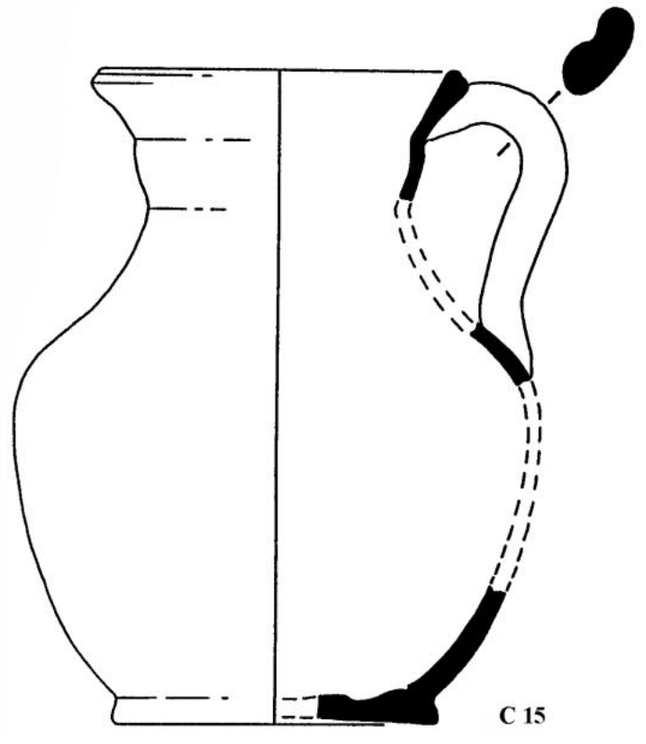
1:2



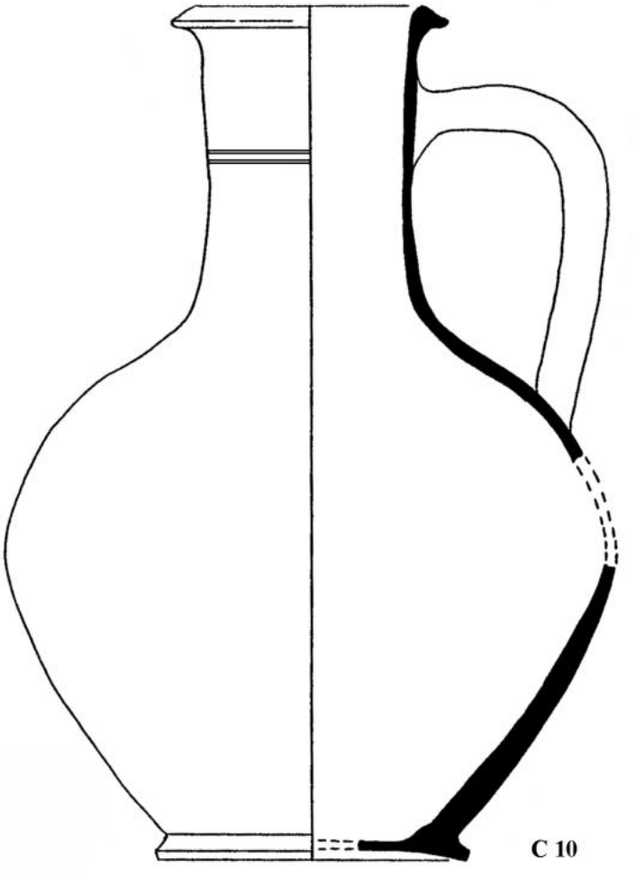
C 9



C 14

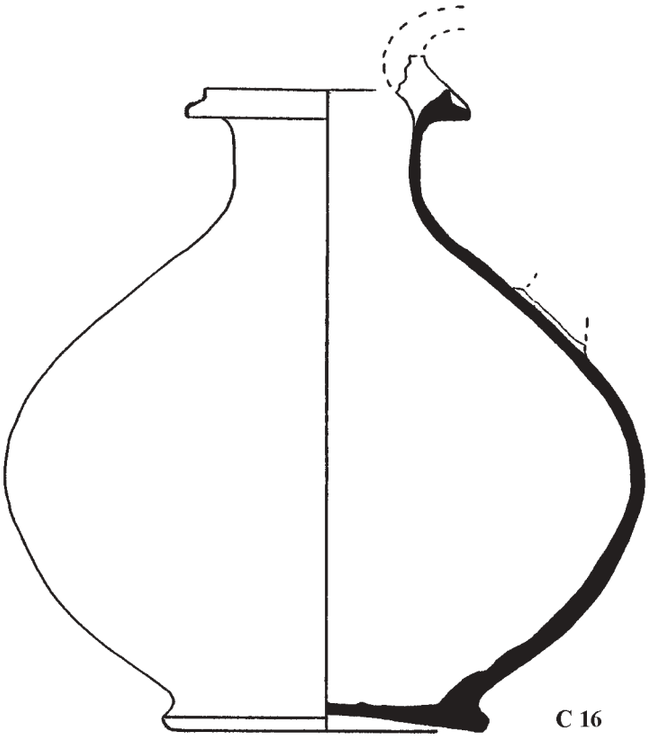


C 15

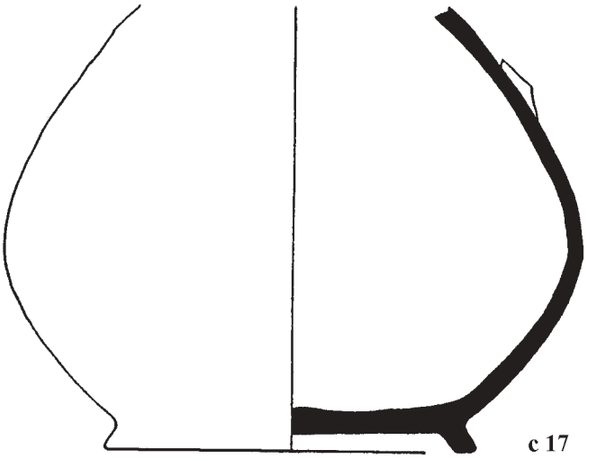


C 10

1:2

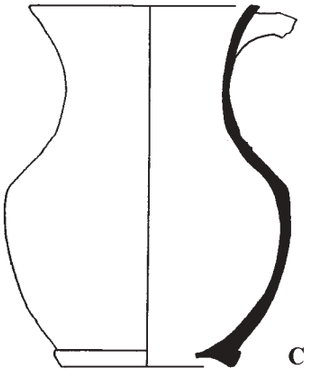


C 16

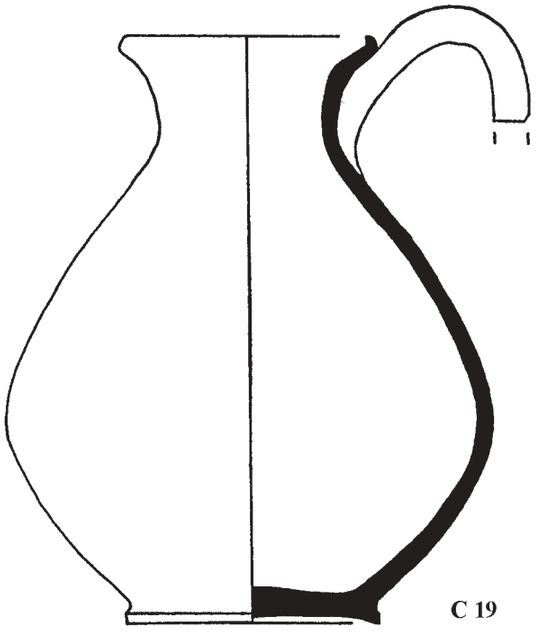


c 17

C 18



C 20



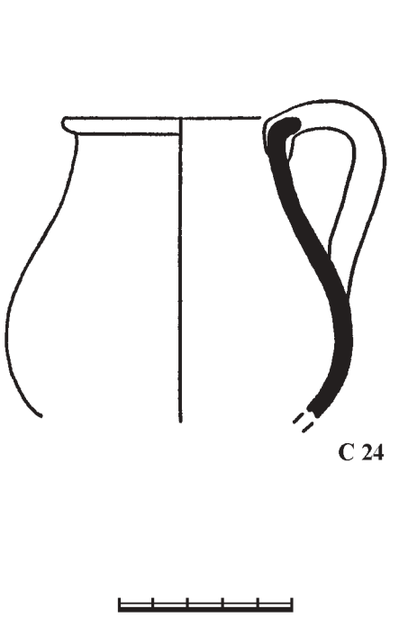
C 19

C 21

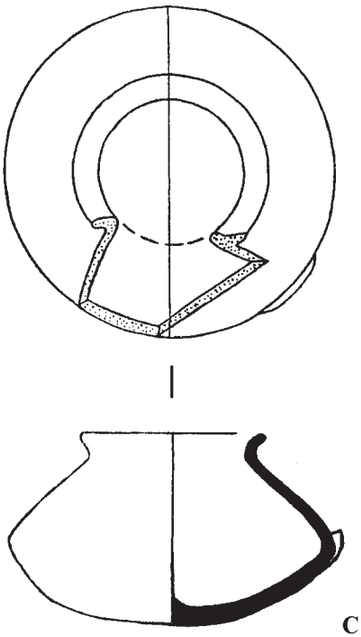
C 22

C 23

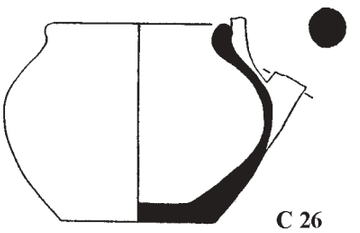
1:2



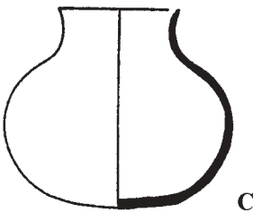
C 24



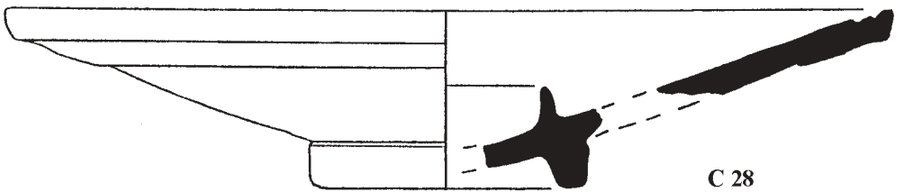
C 25



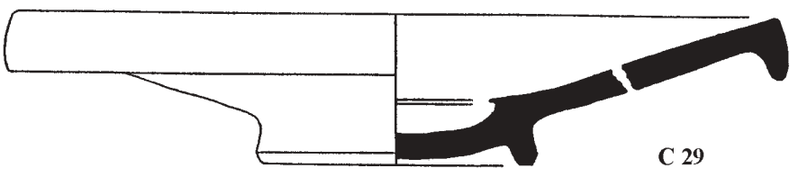
C 26



C 27



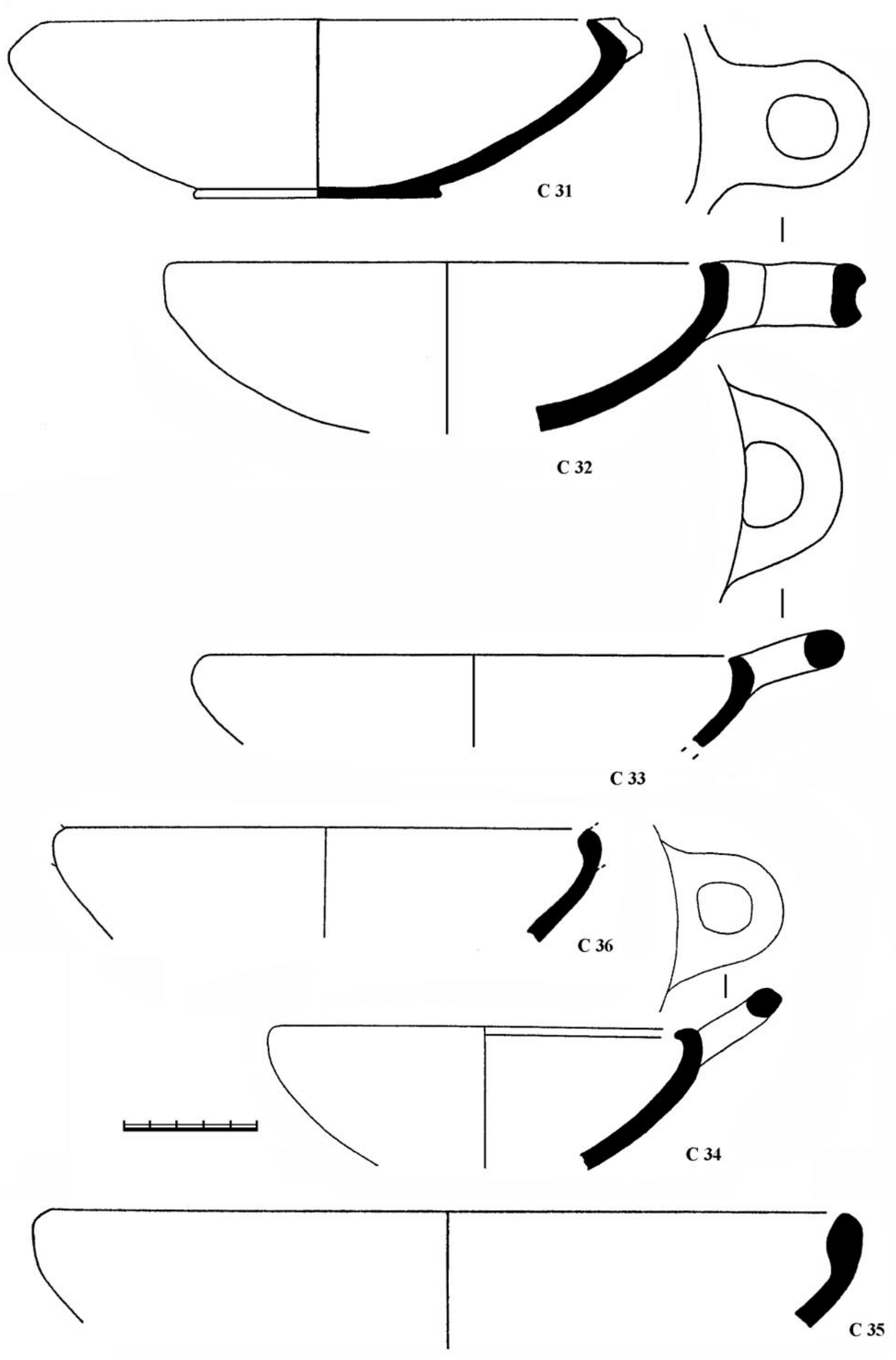
C 28



C 29

C 30

1:2



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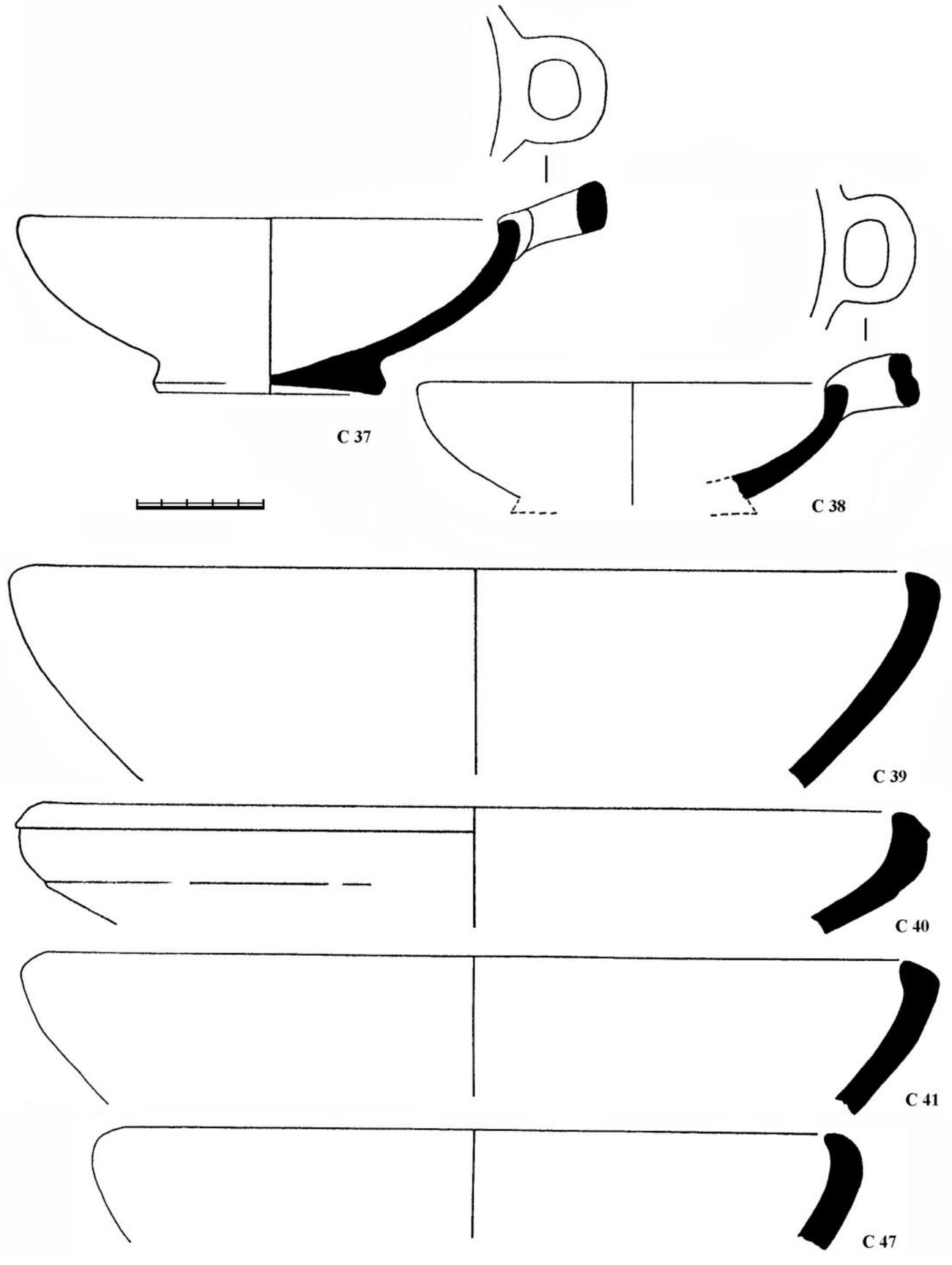

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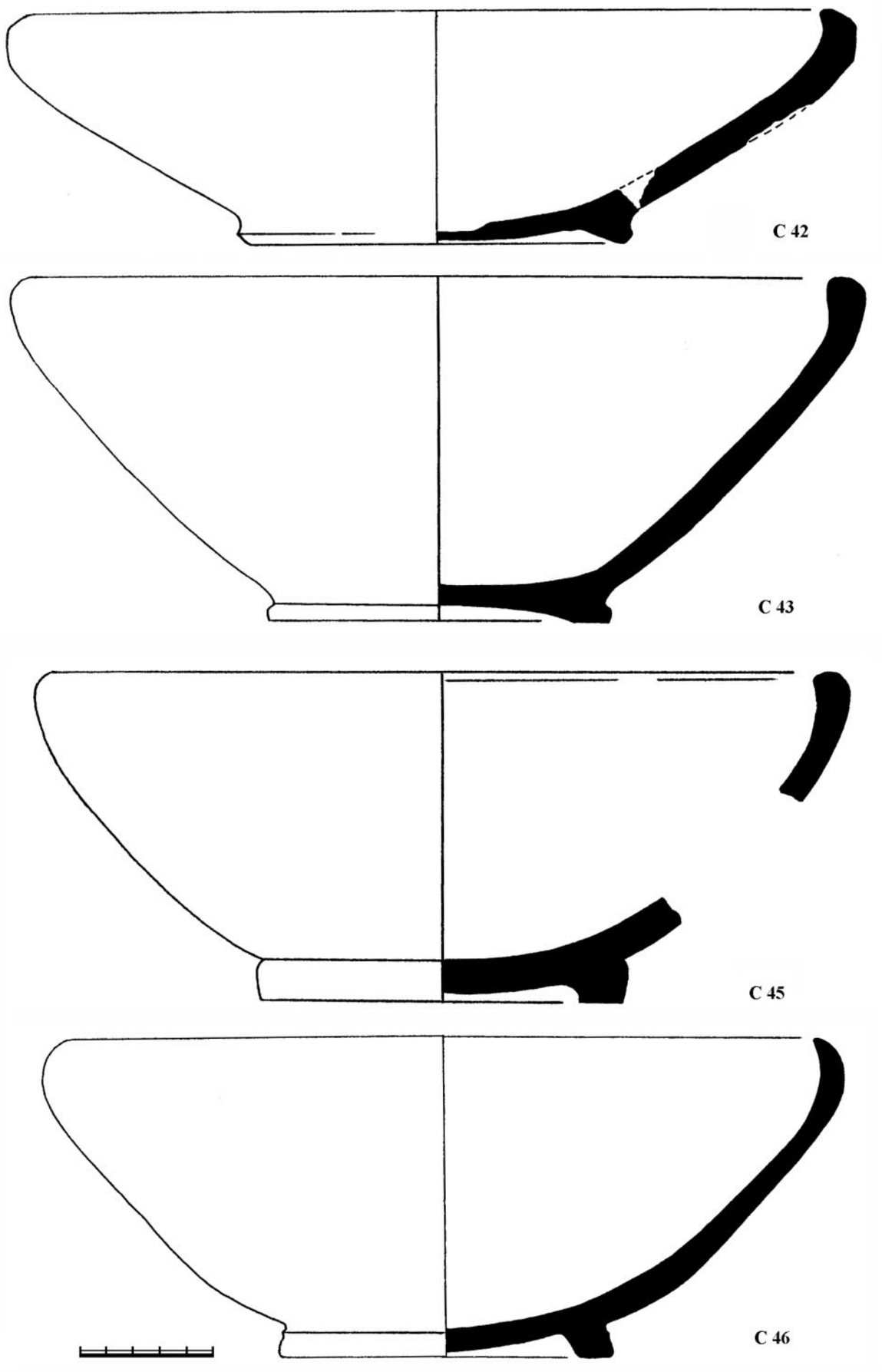

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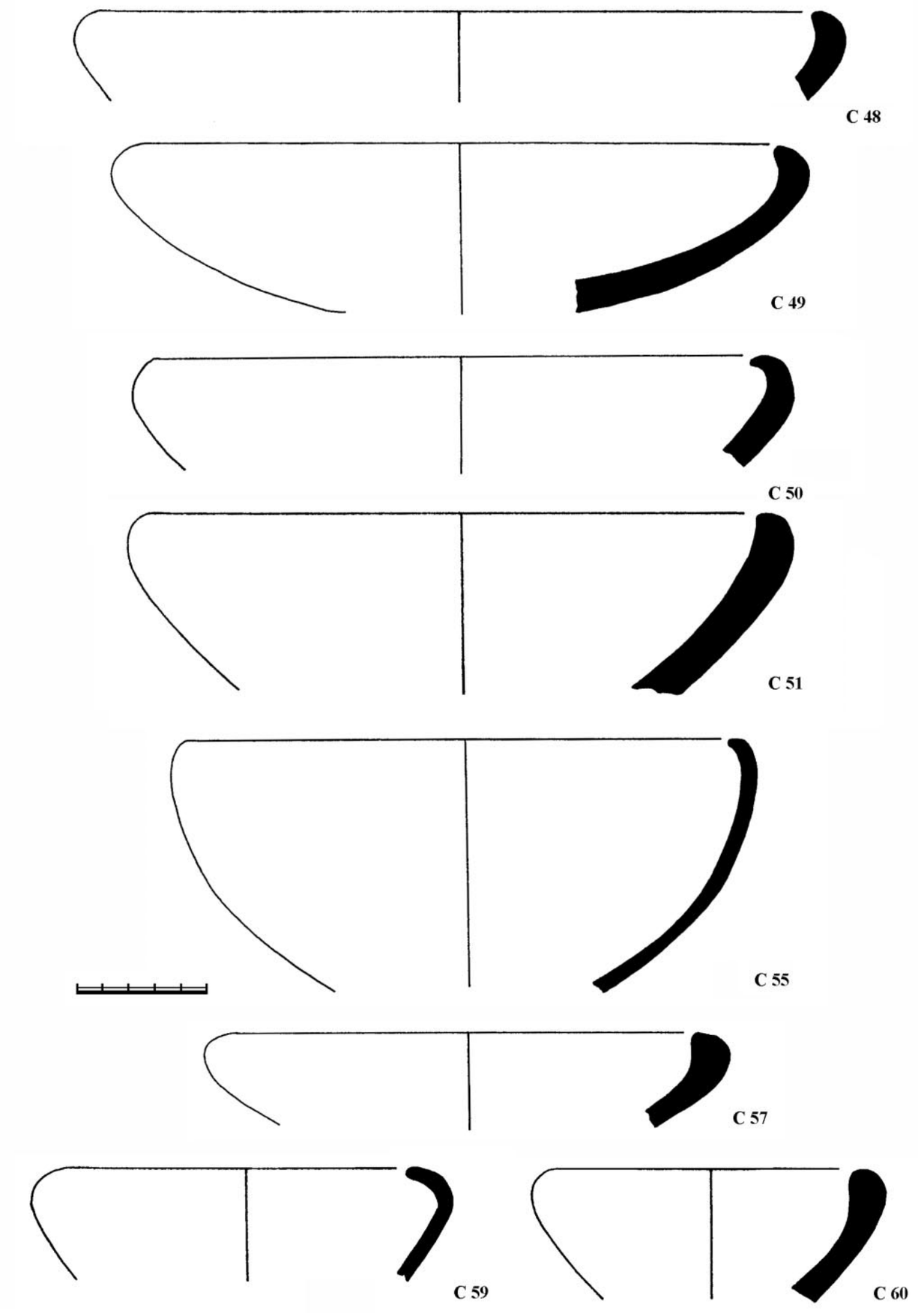

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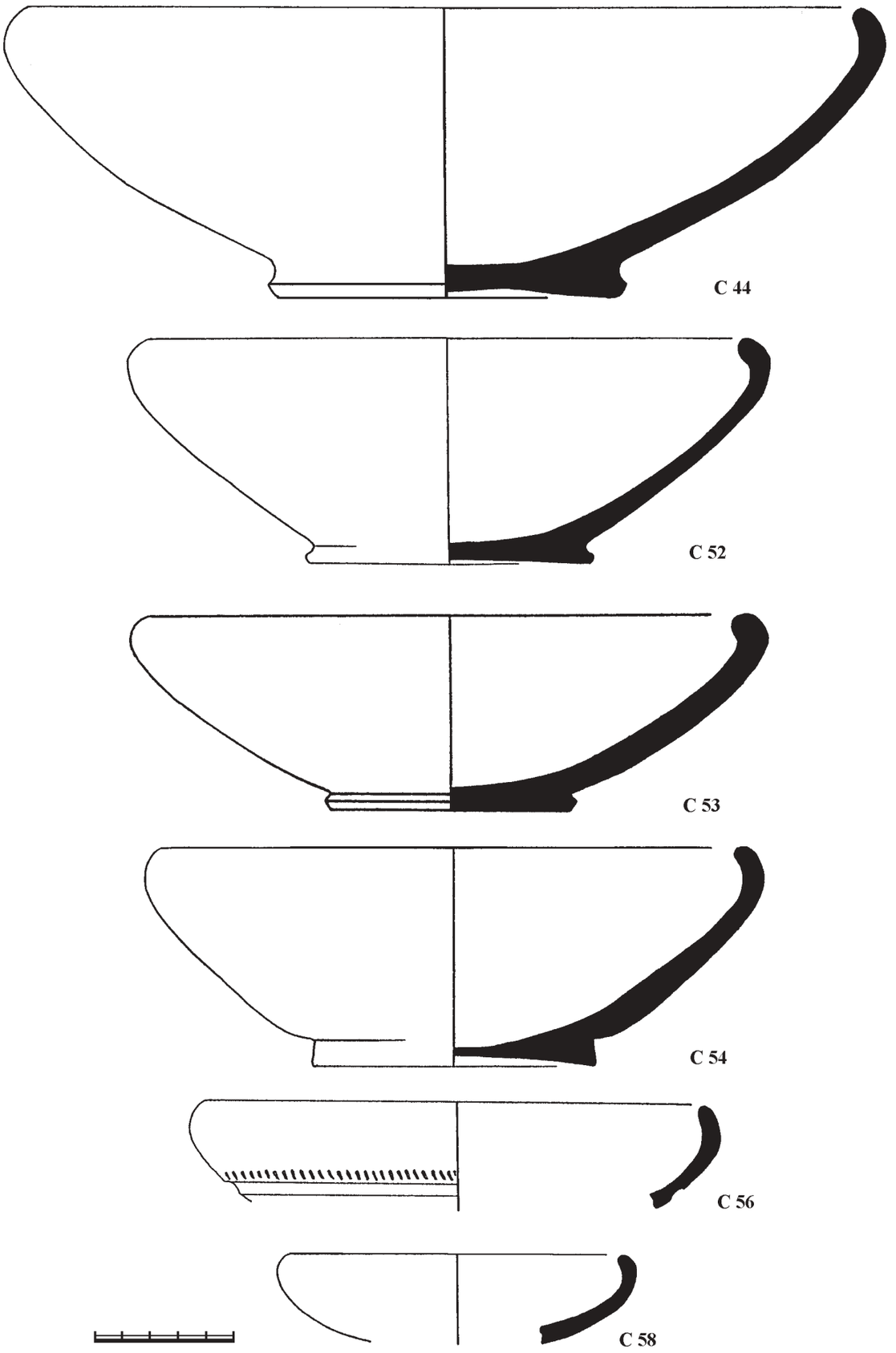
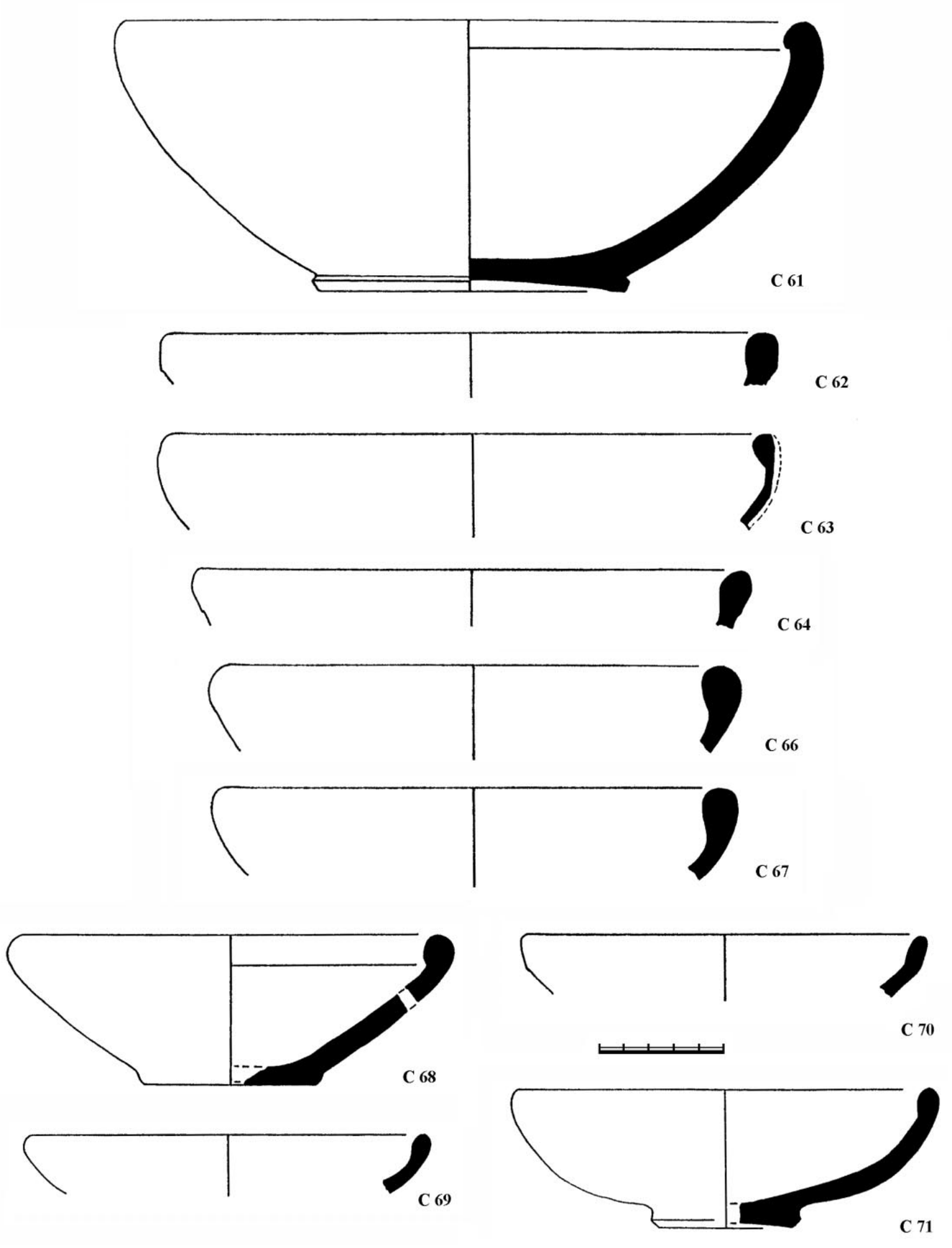


1:2



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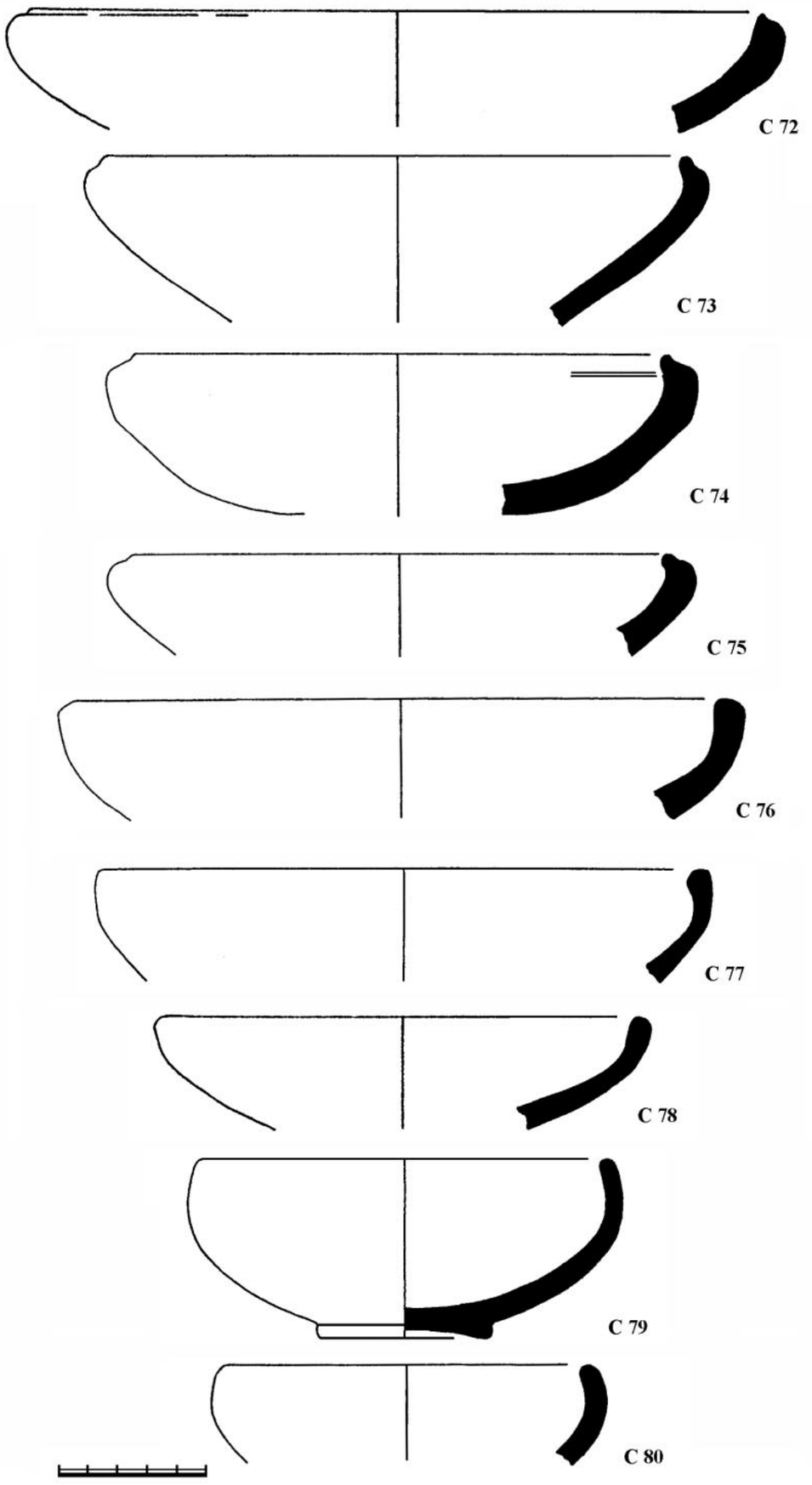

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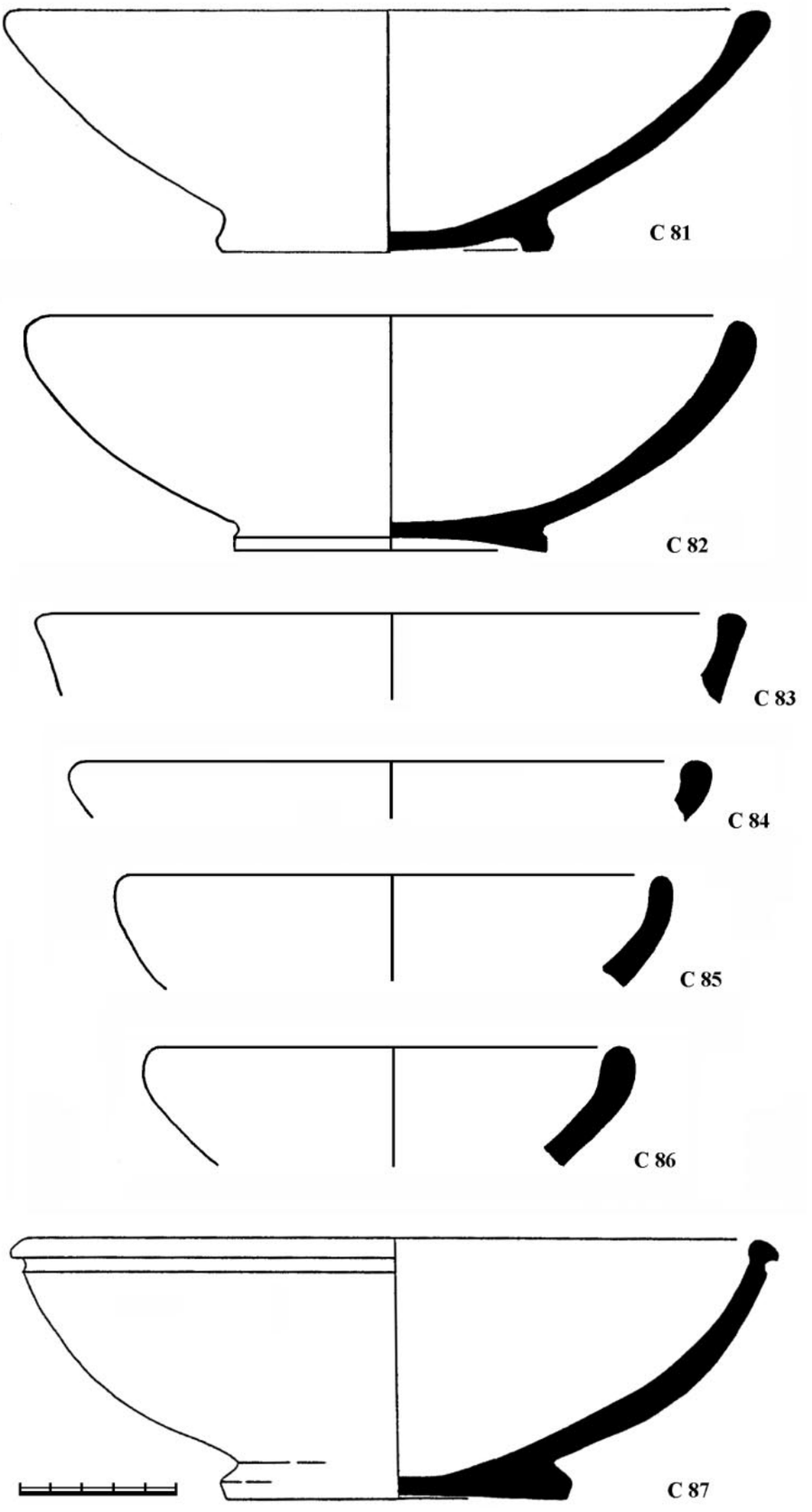

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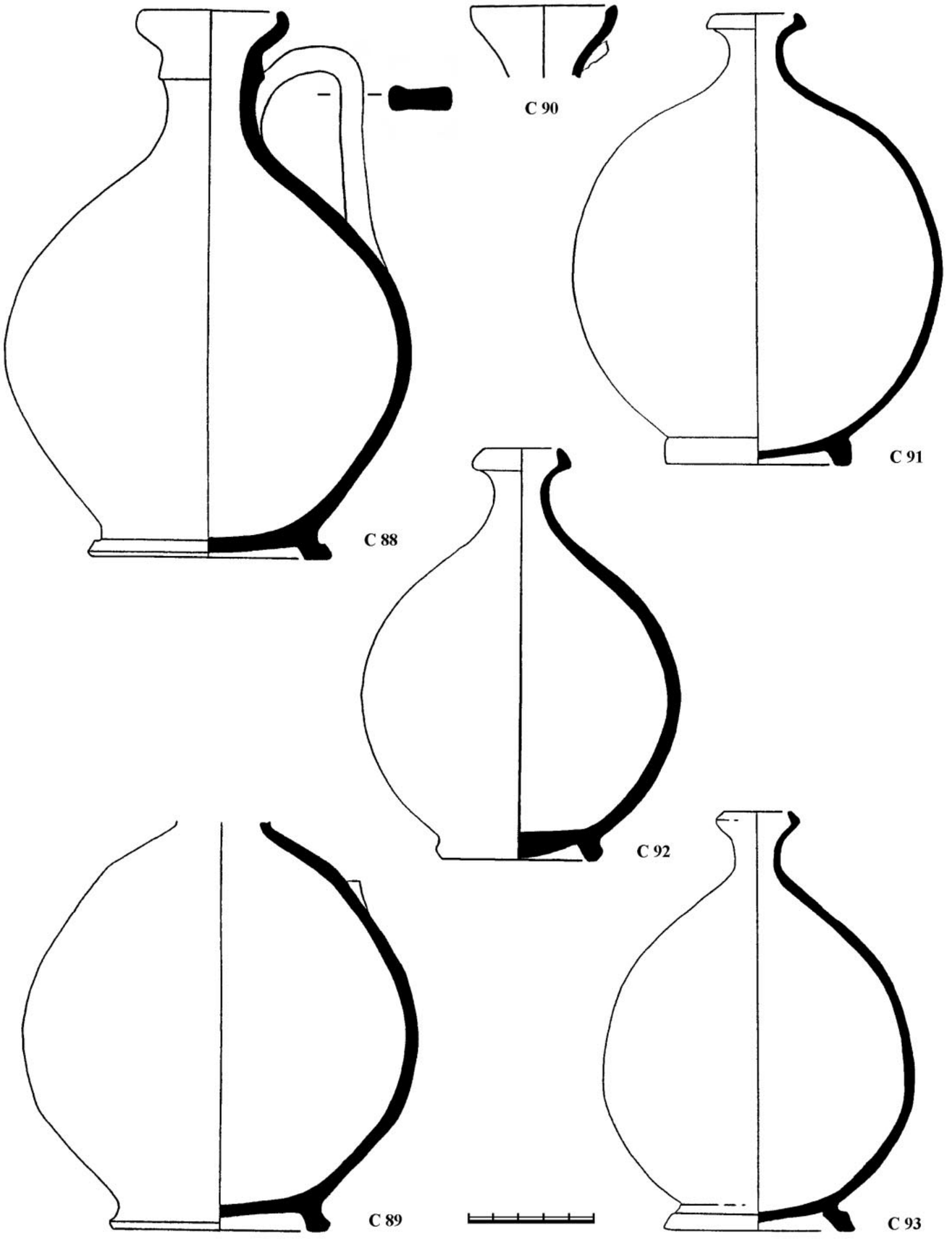

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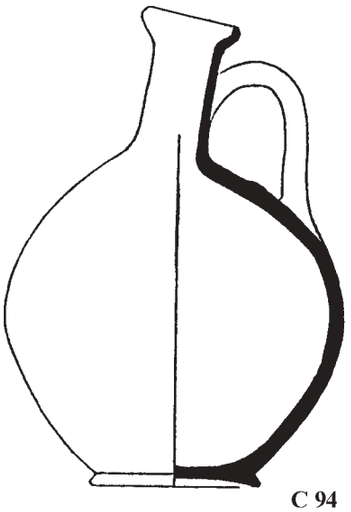
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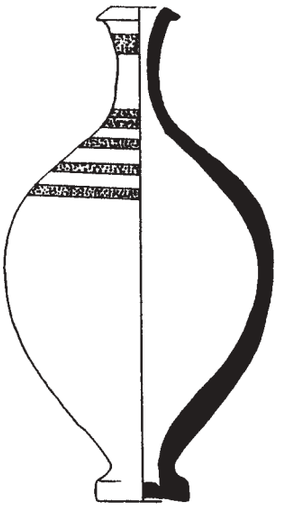
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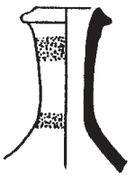
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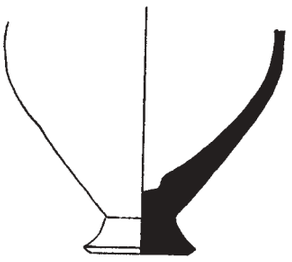
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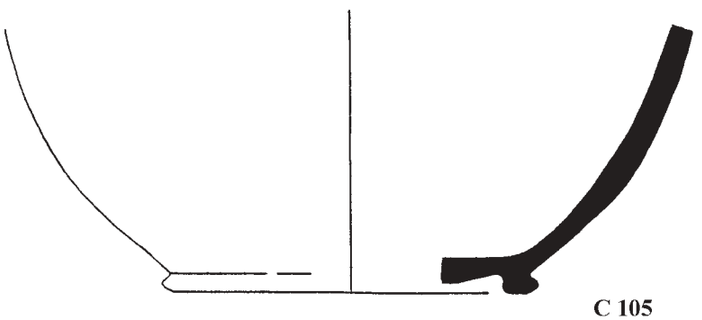
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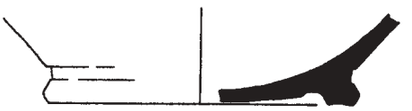
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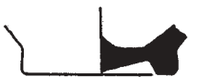
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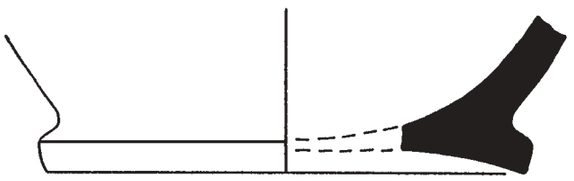

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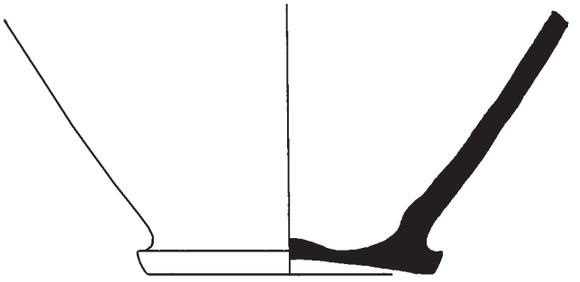

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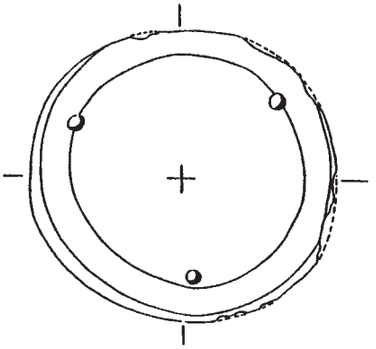

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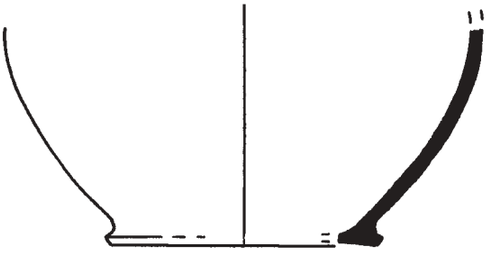

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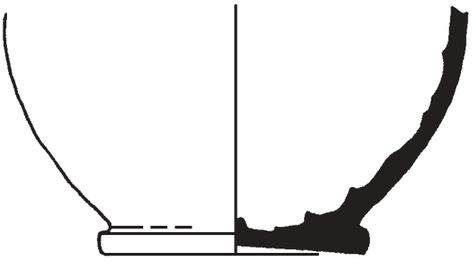

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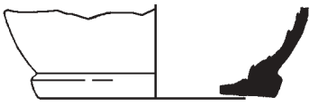

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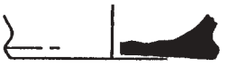

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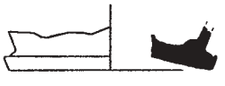

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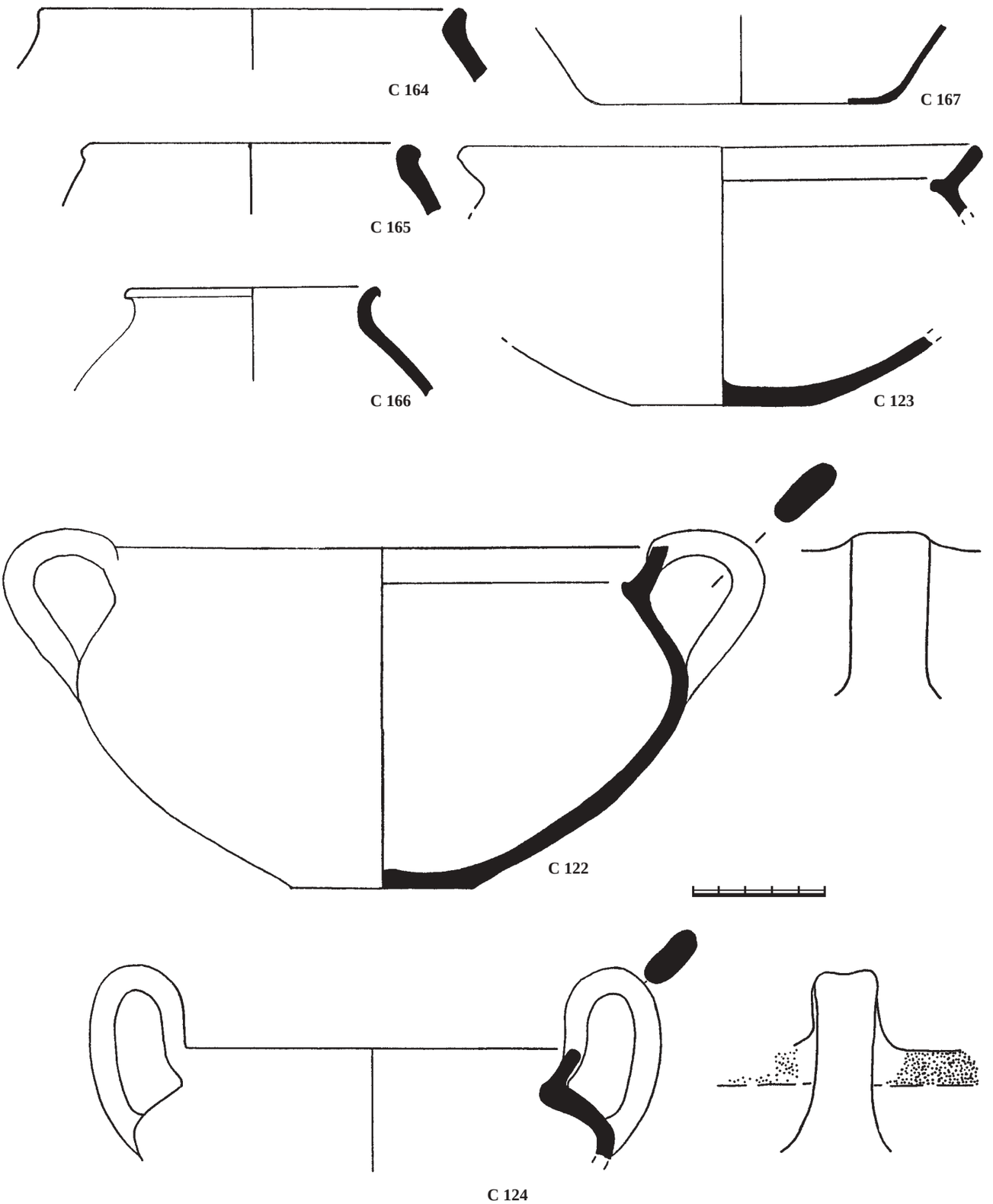
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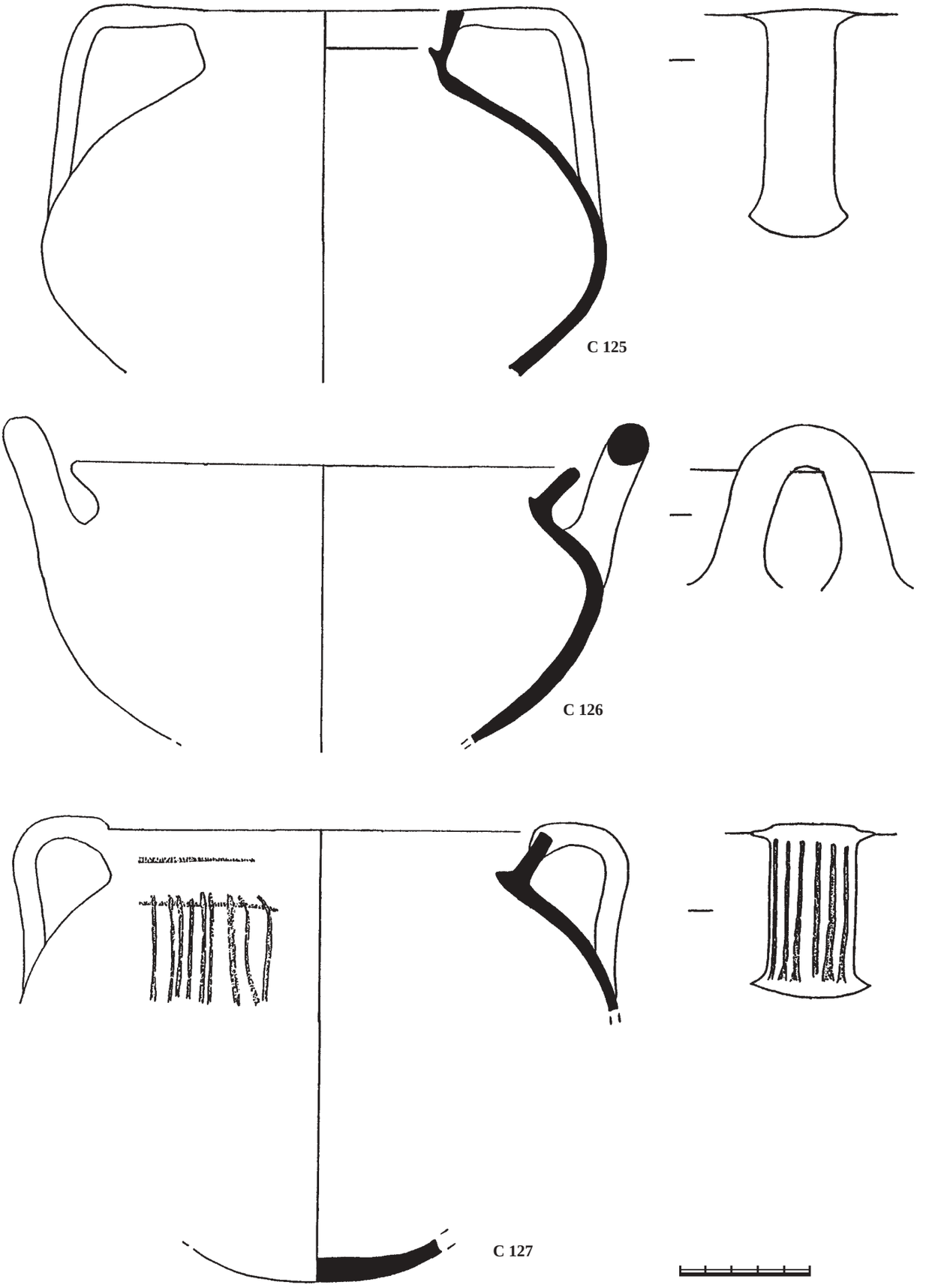

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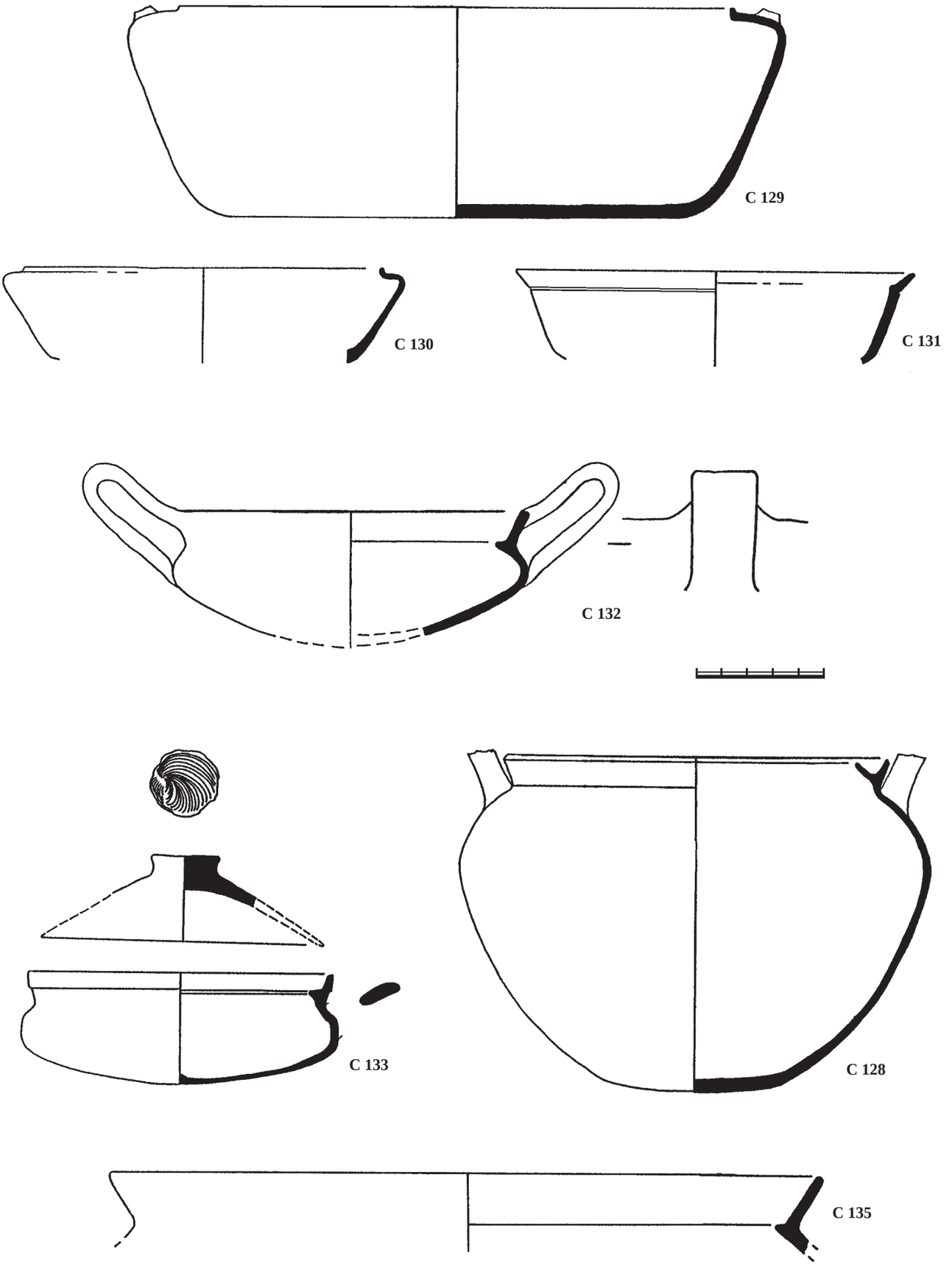

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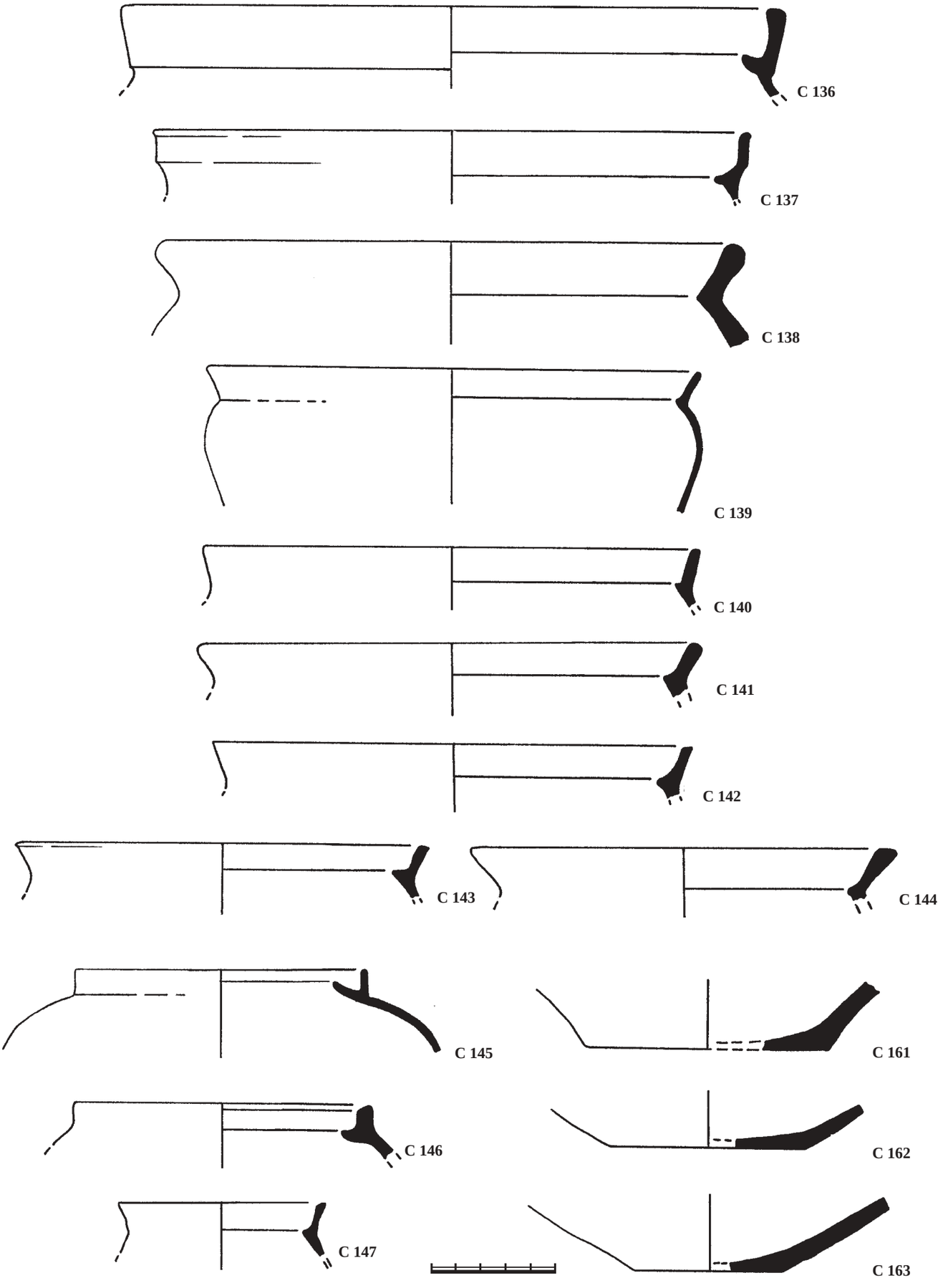
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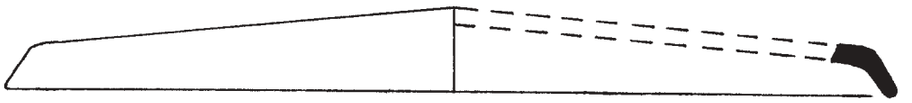

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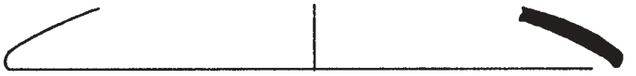

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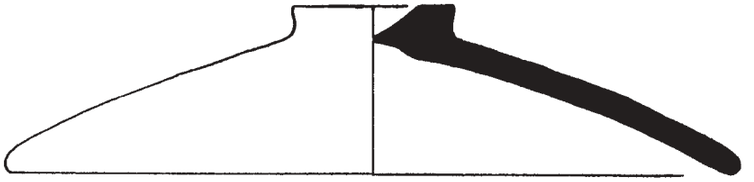

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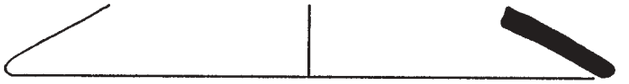

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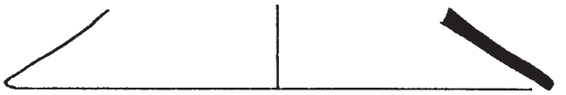

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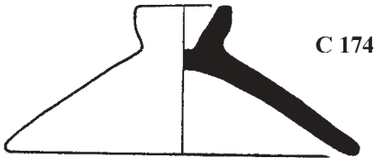

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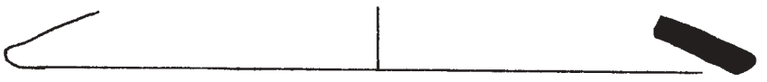

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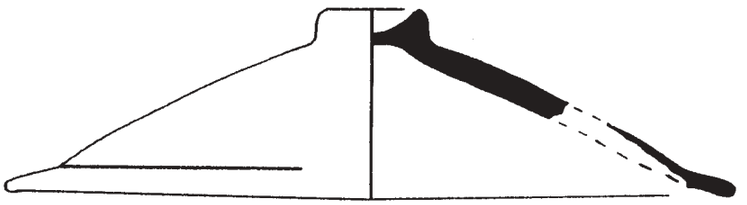

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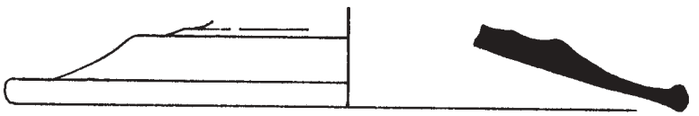

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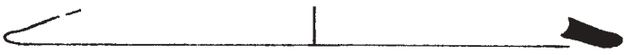

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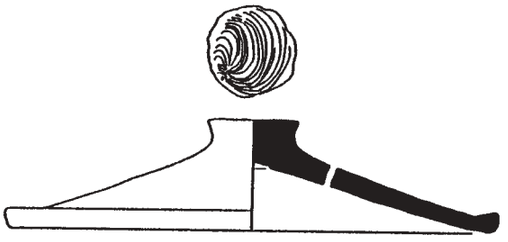

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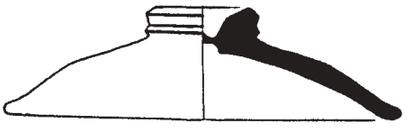

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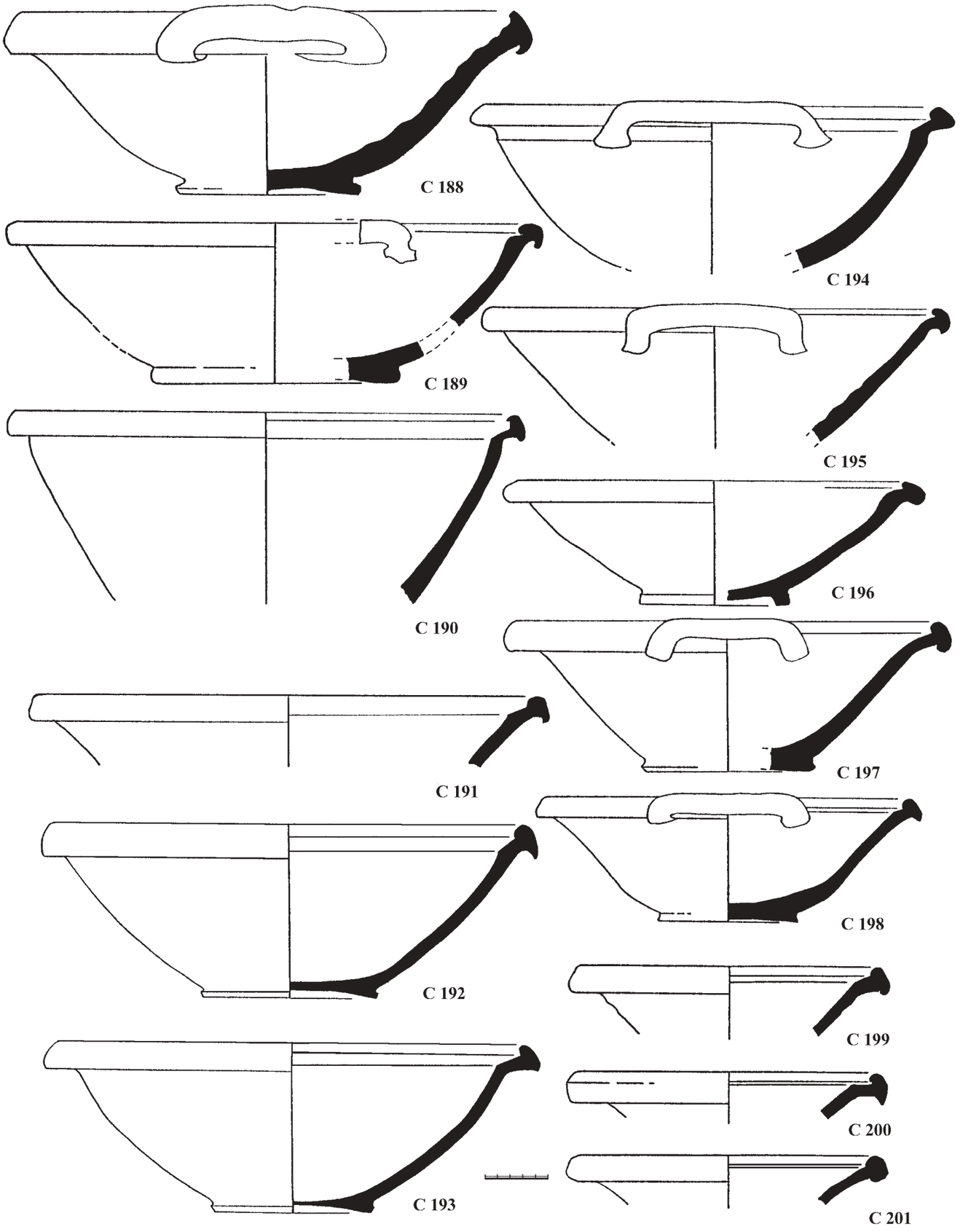
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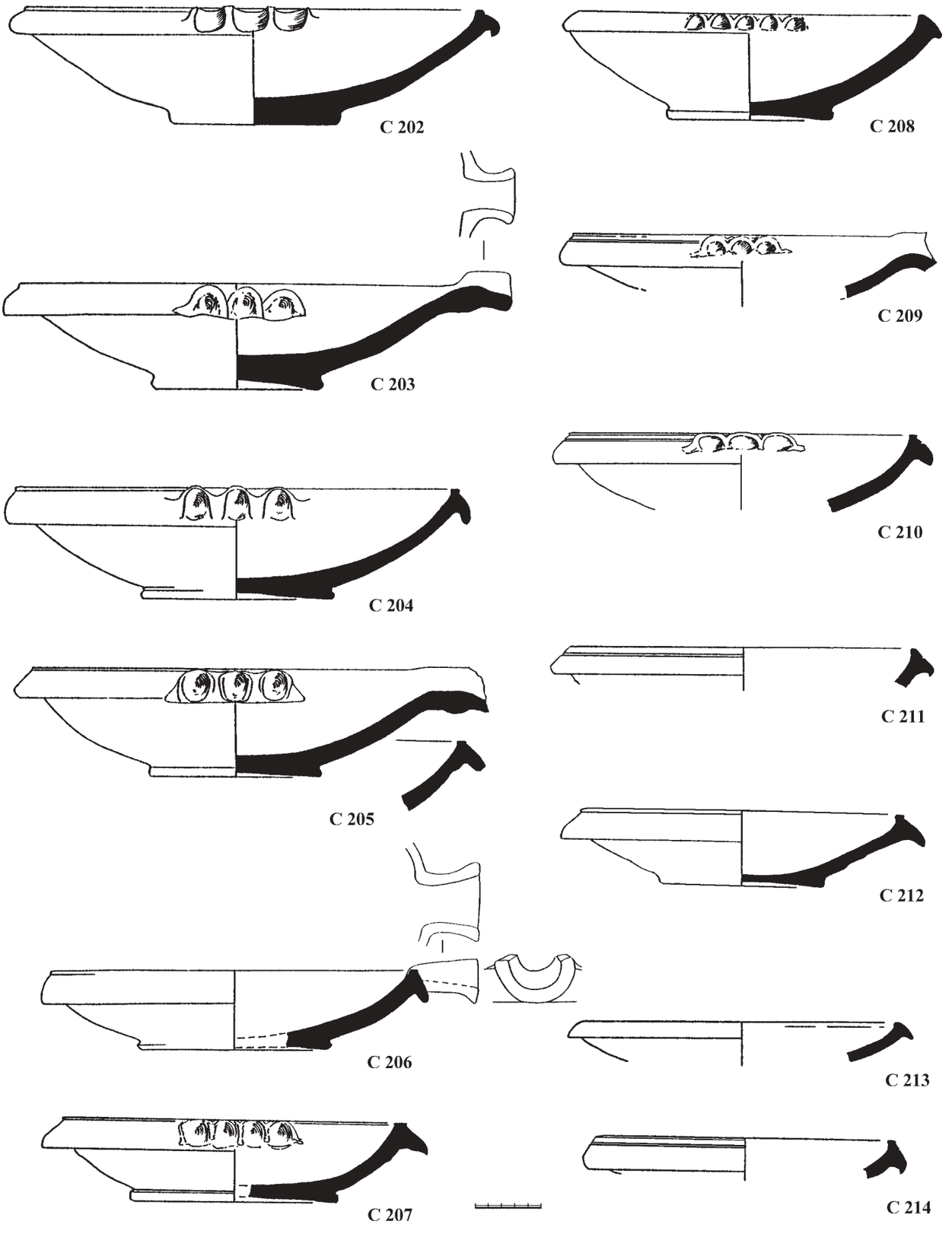
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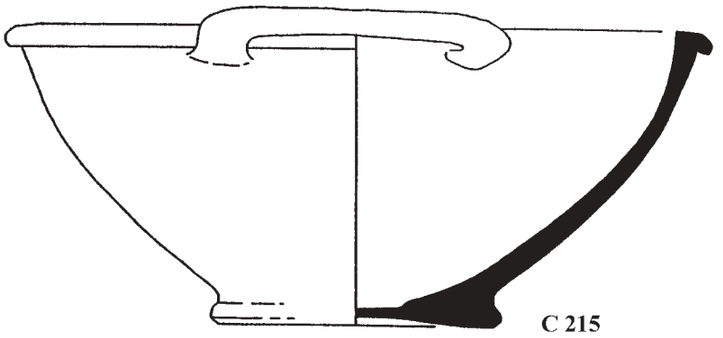

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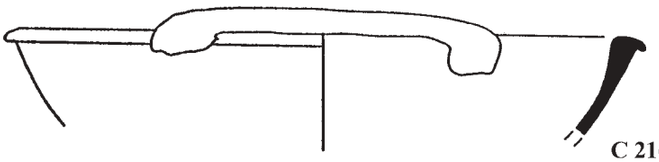

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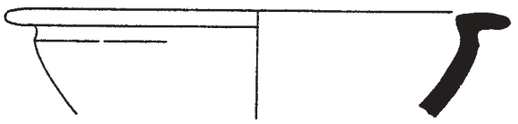

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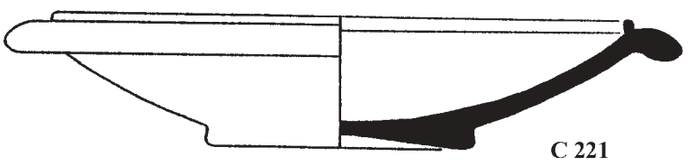

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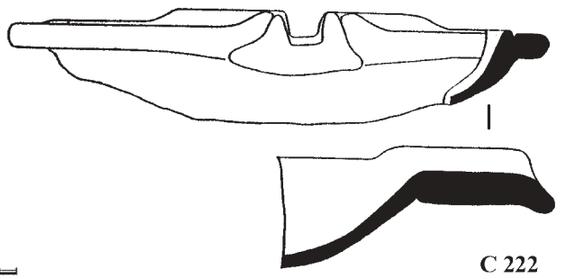

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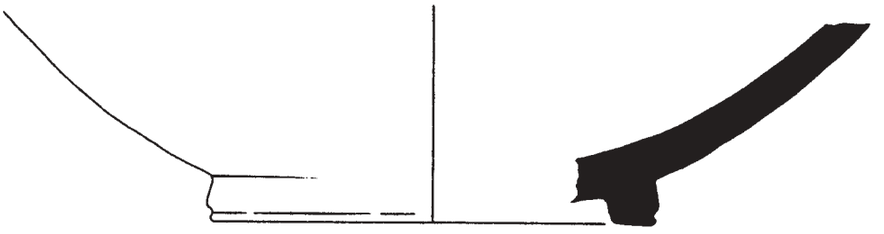

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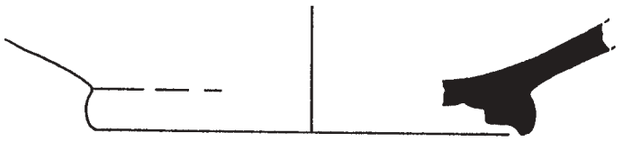

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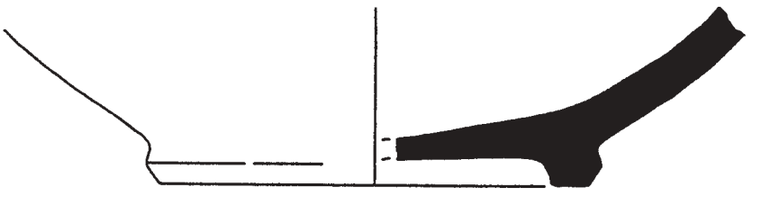

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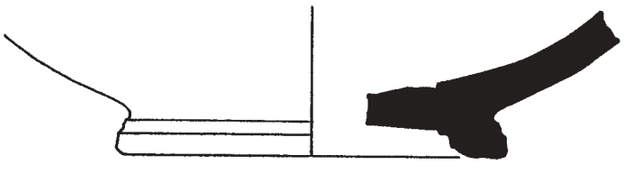

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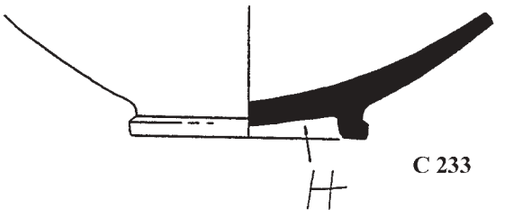

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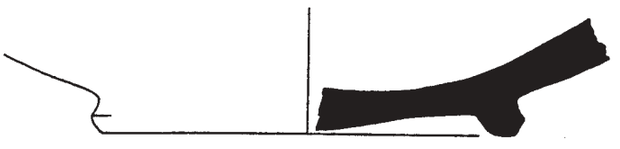

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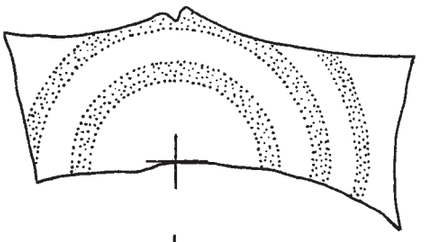

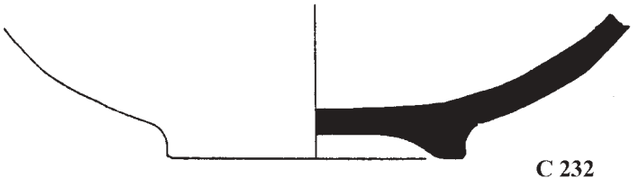

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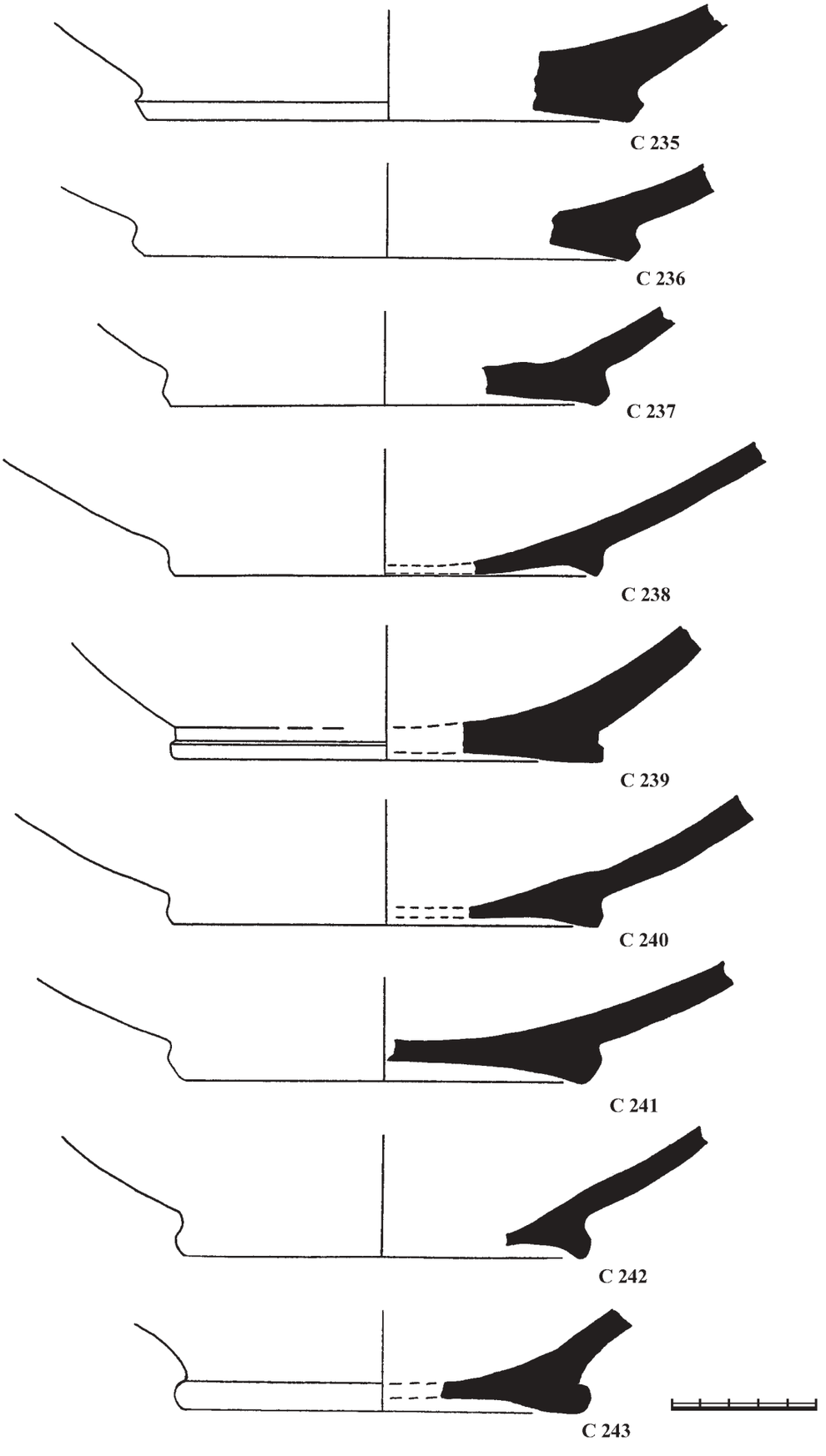

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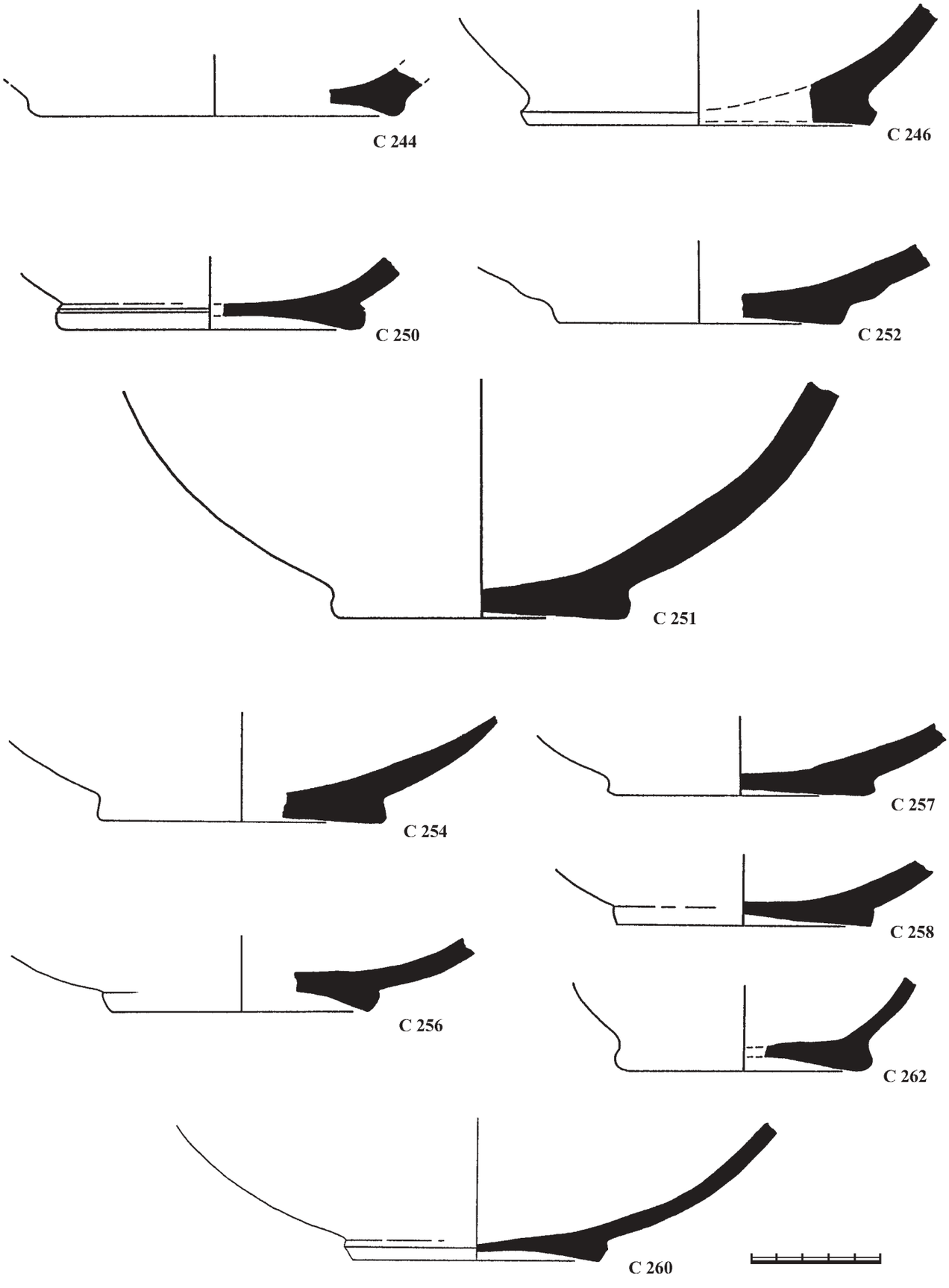

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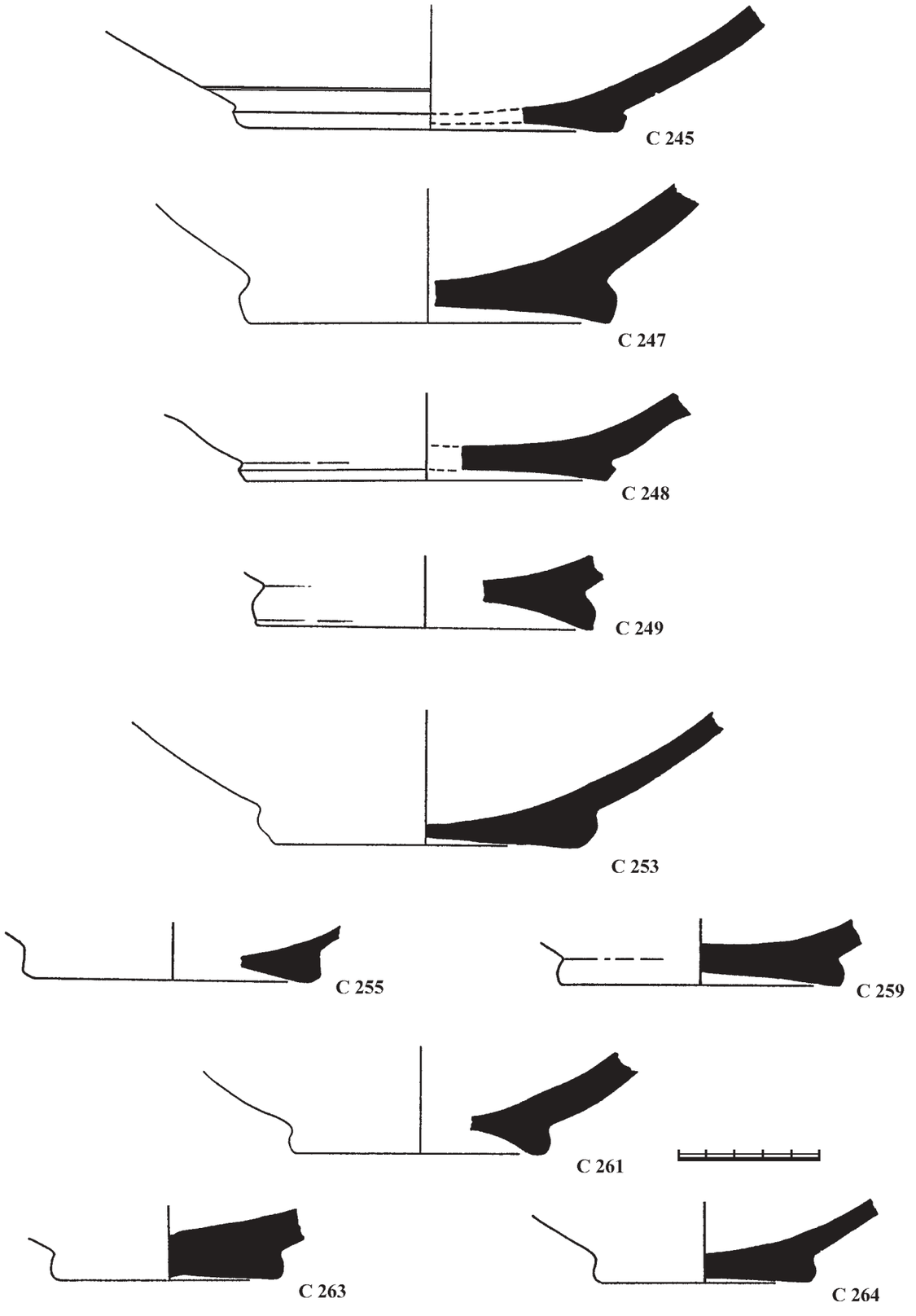
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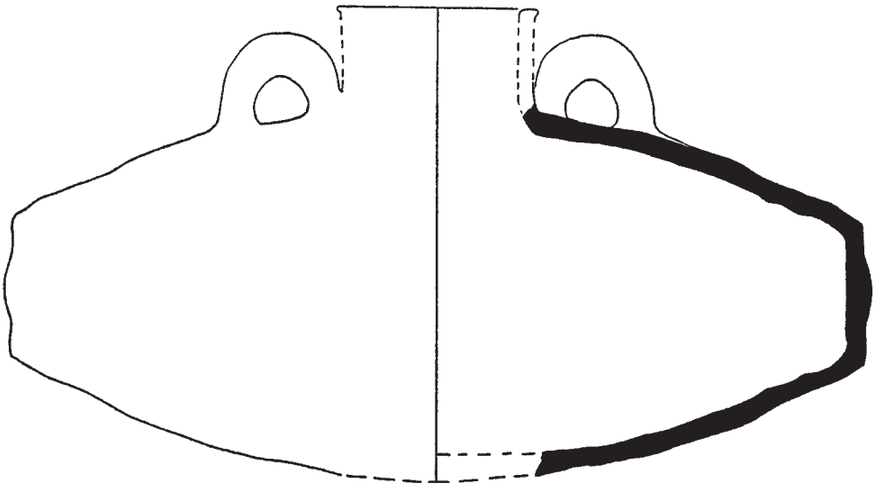

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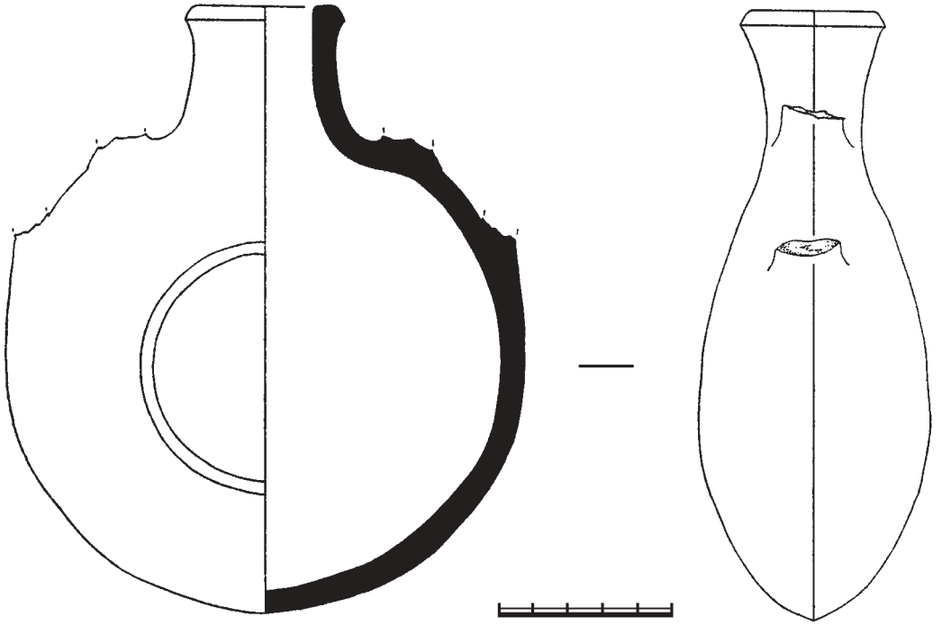

C 266

C 265 1:4; **C 266** 1:2

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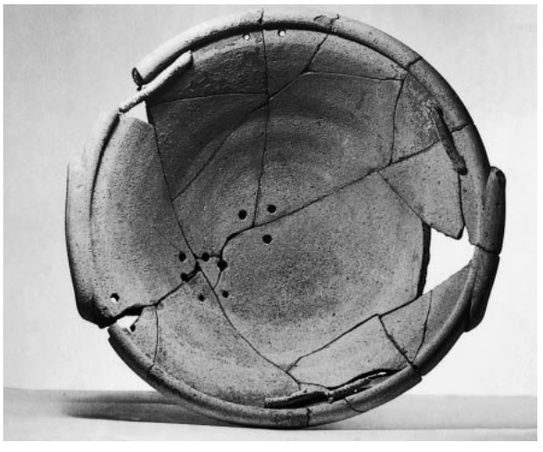

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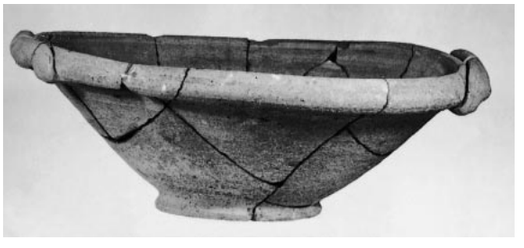
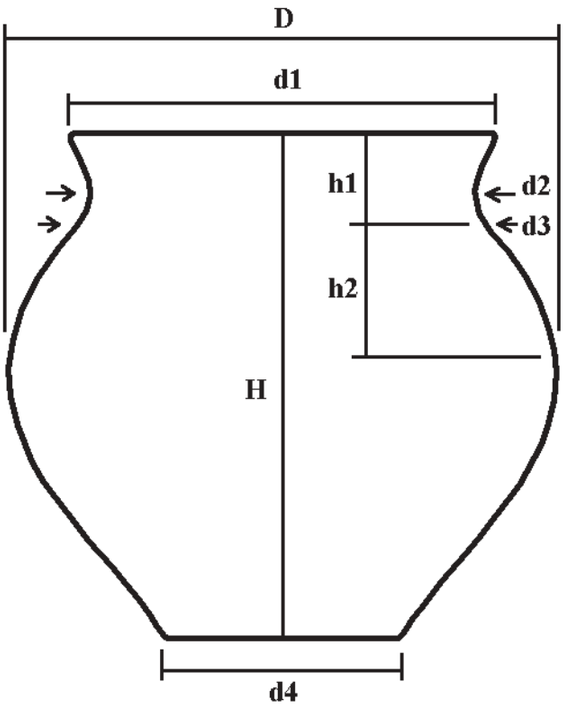
C 171

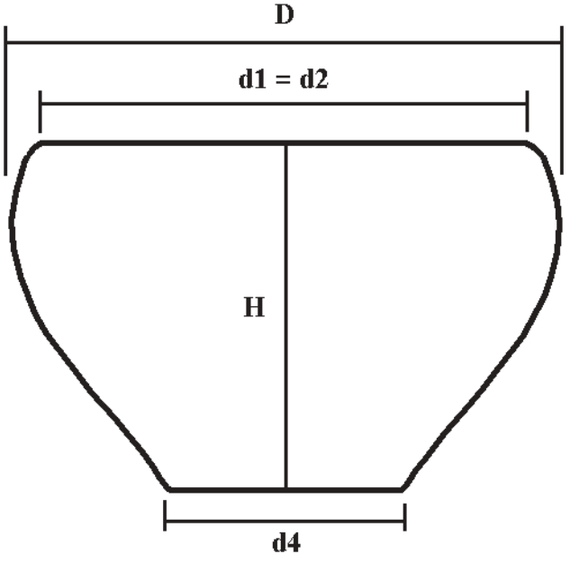


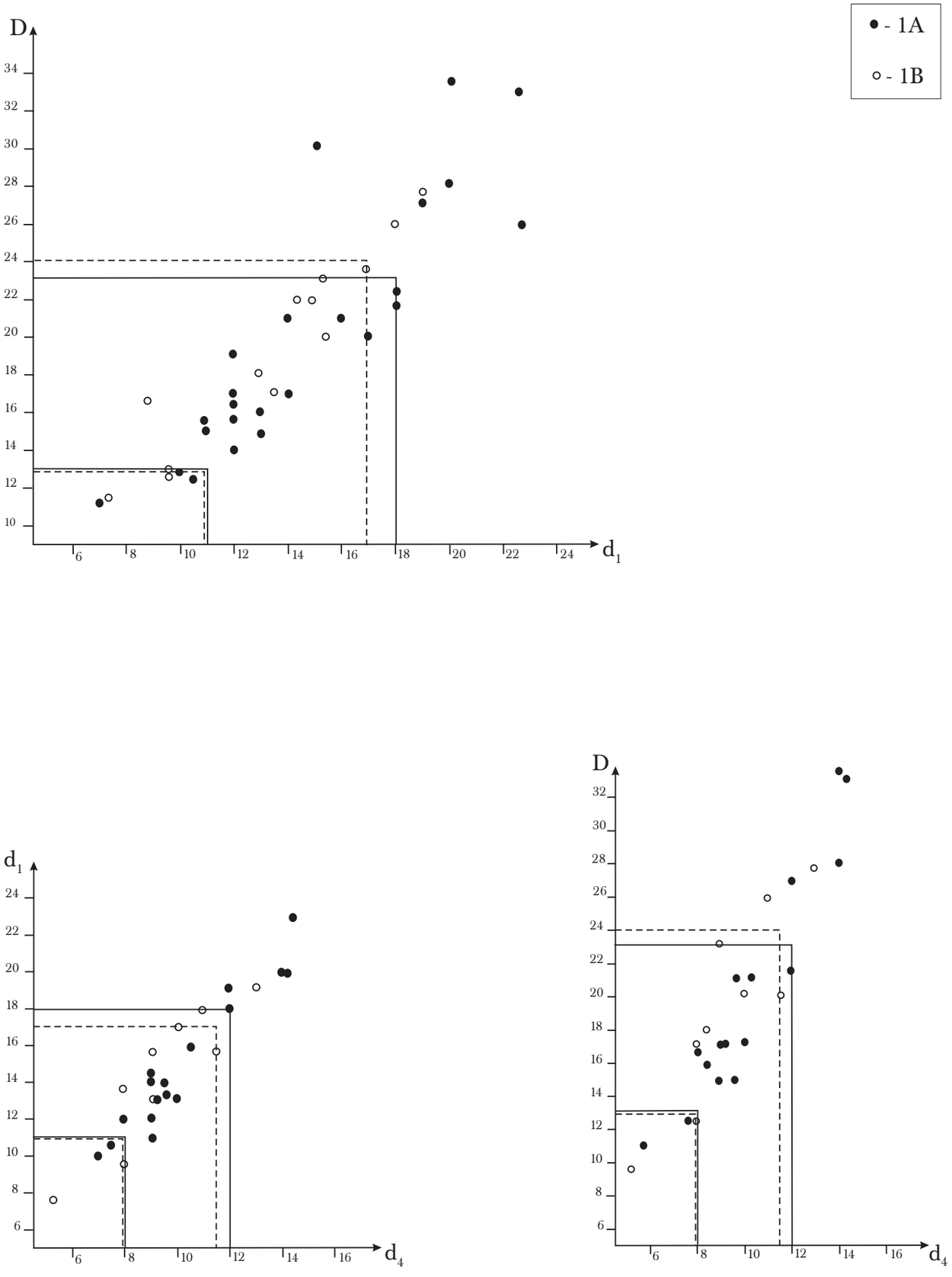
C 188

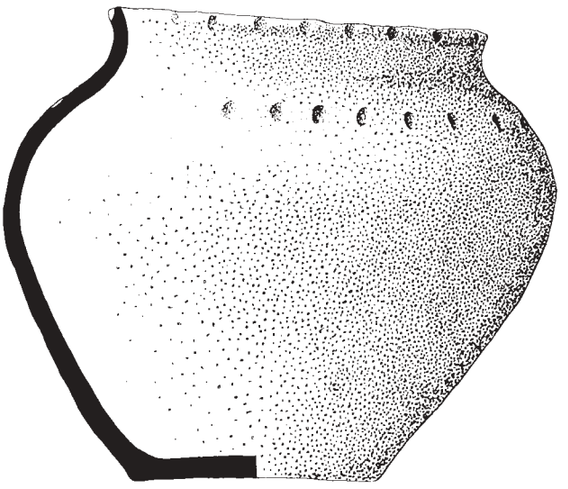
C 203

1:4 (**C 132** 1:3; **C 198** 1:5; **C 188**, **C 203** 1:6)


D
d1
h1
d2
d3
h2
H
d4


D
d1 = d2
H
d4


D
d1
d4
- 1A
- 1B



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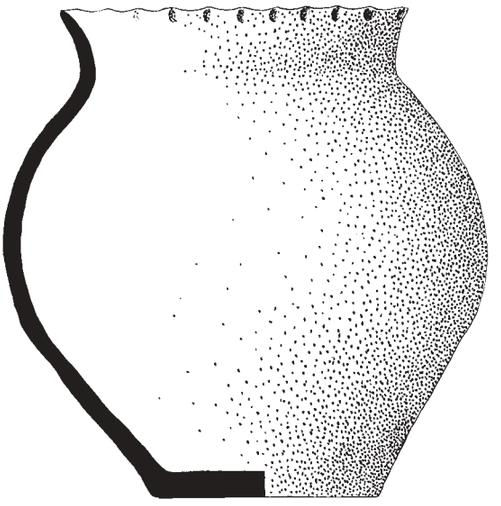

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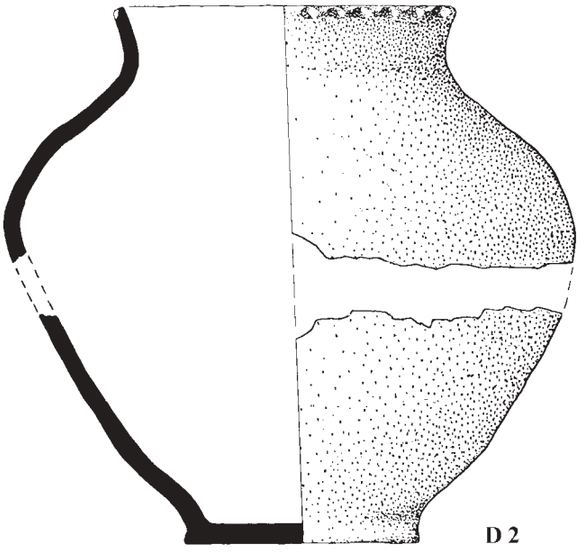

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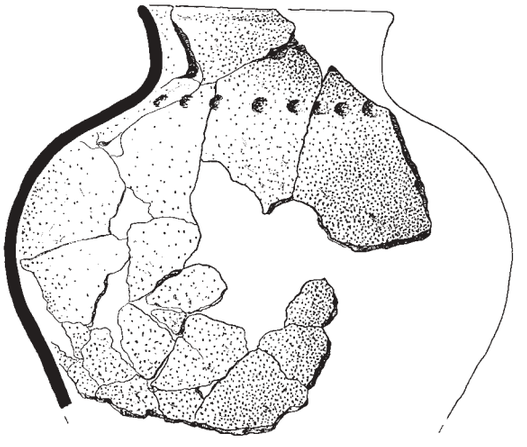

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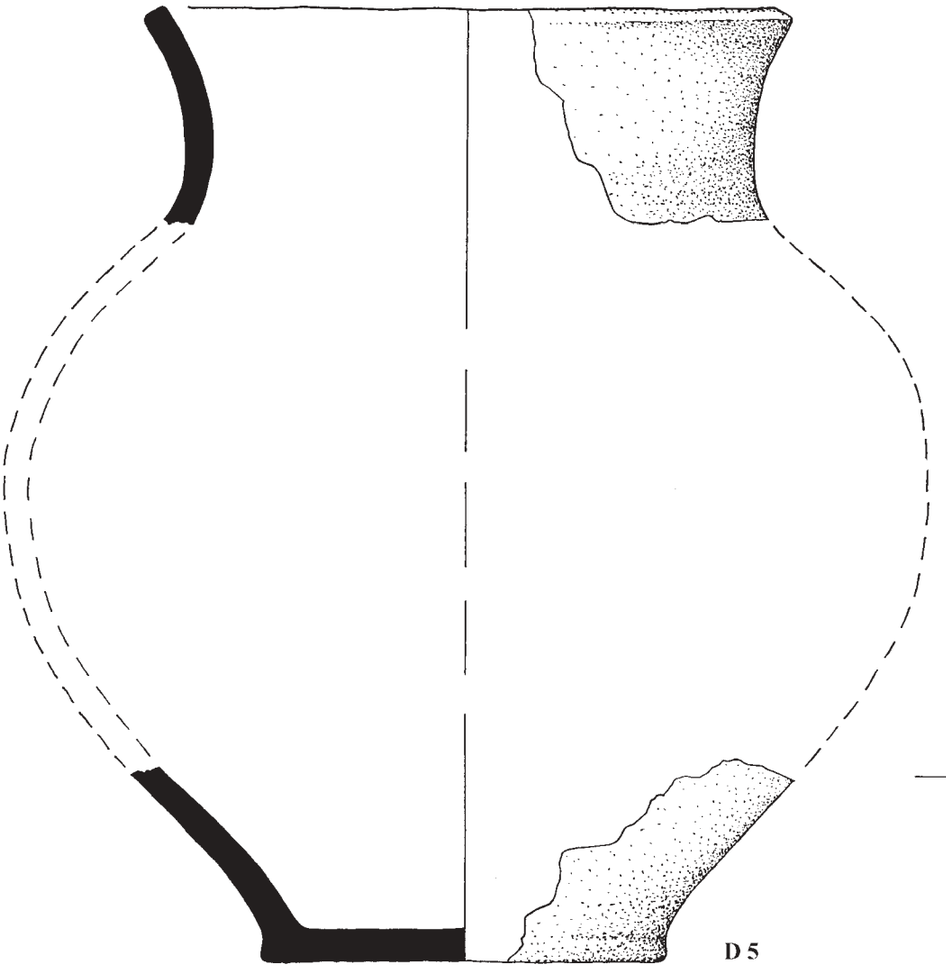
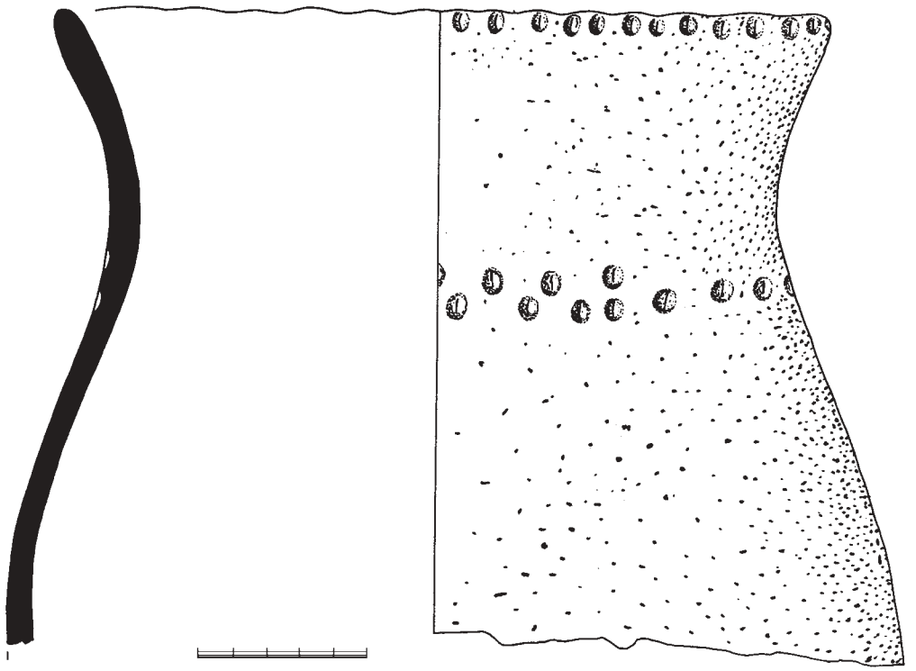


D 5

D 6



D 7

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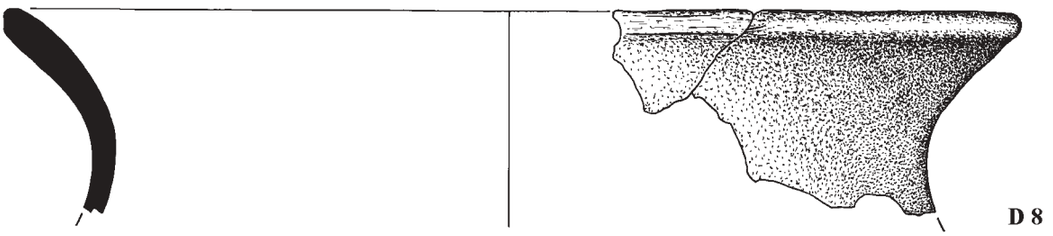

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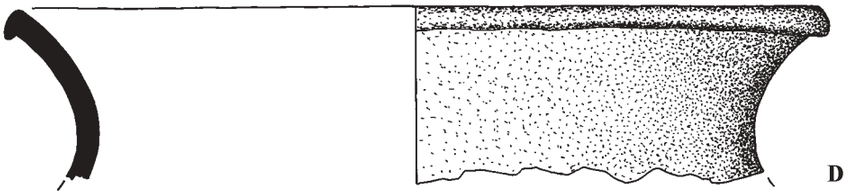

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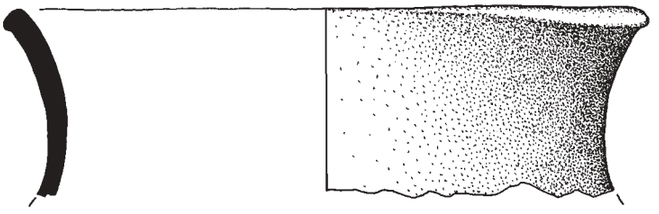

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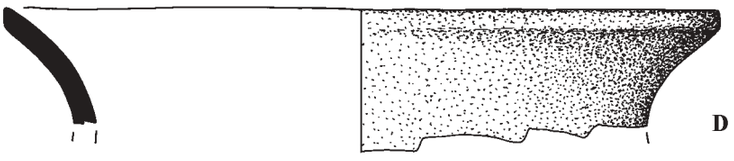

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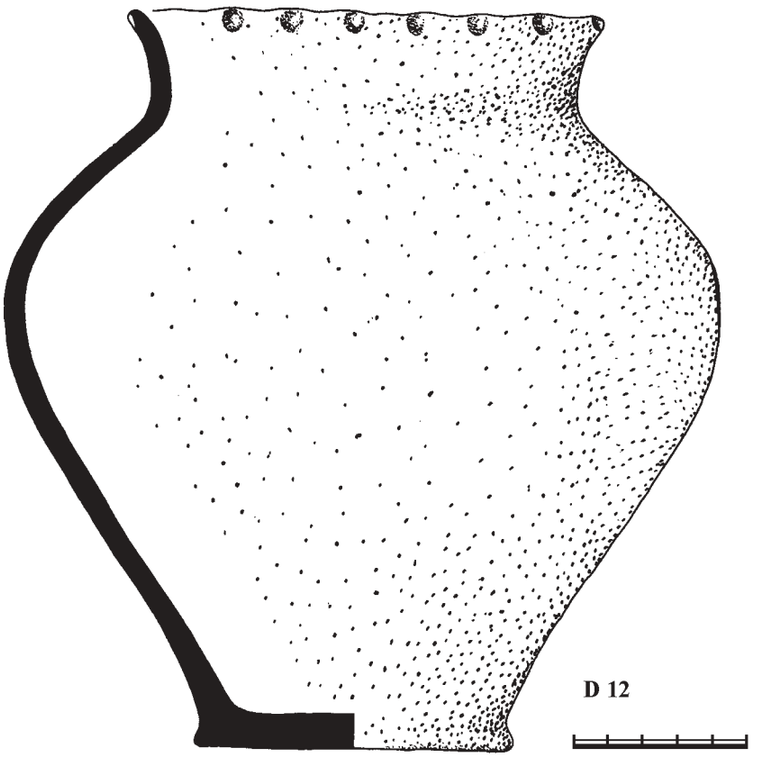

D 12

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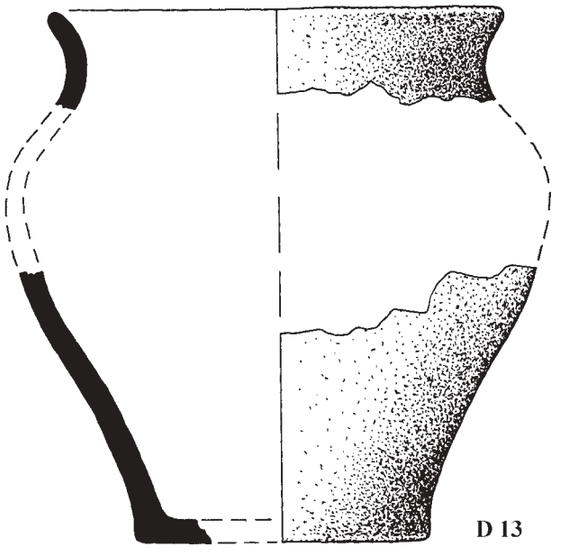

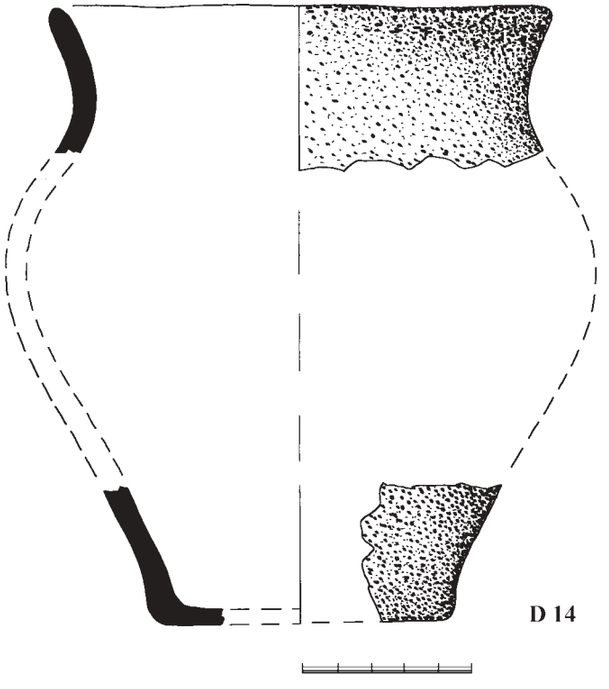

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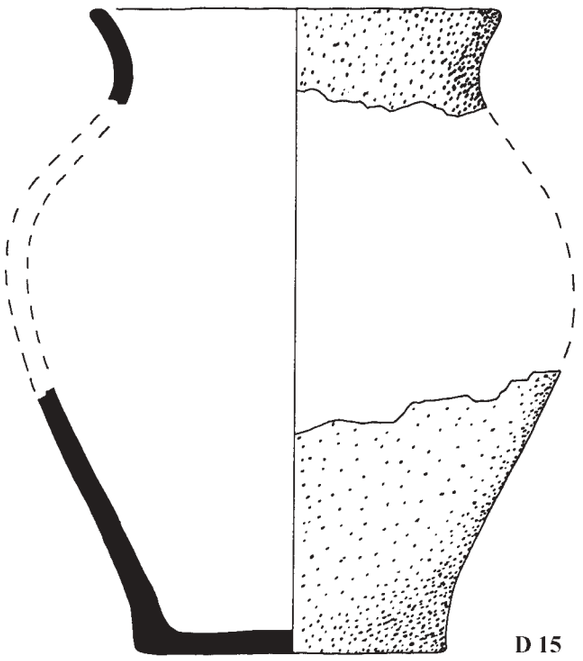

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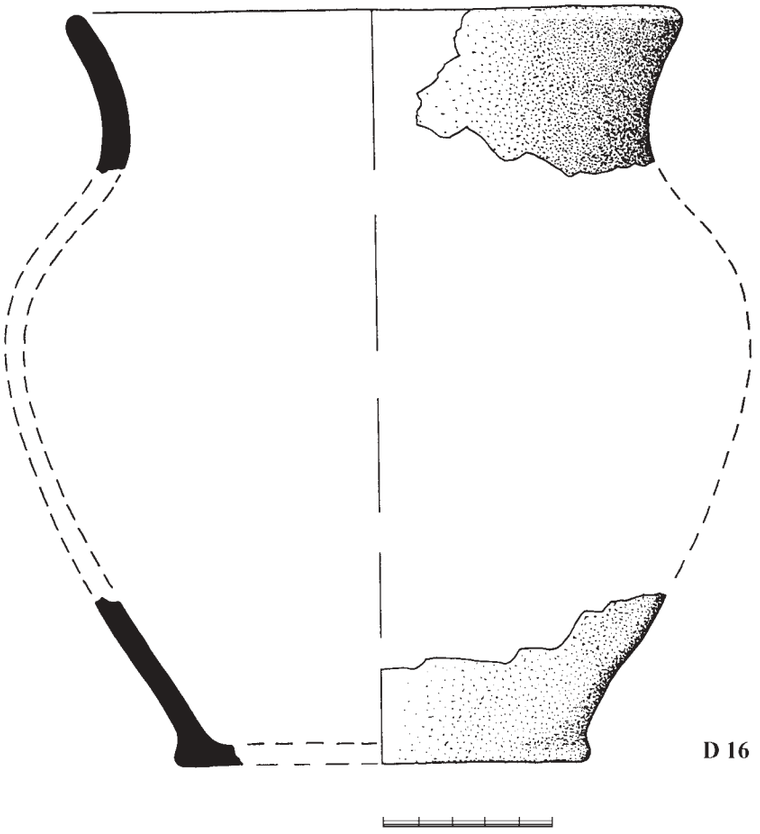

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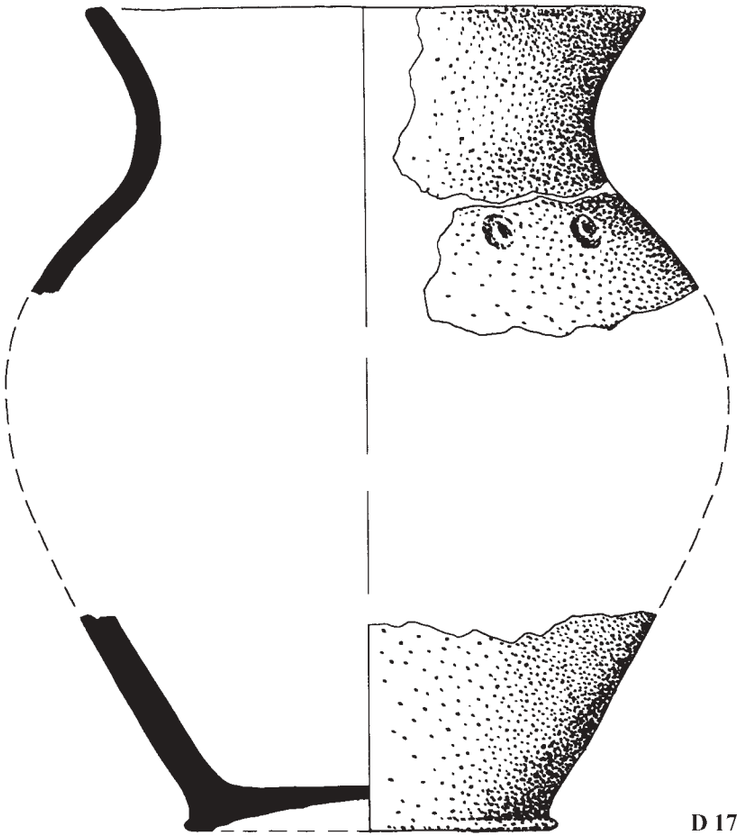

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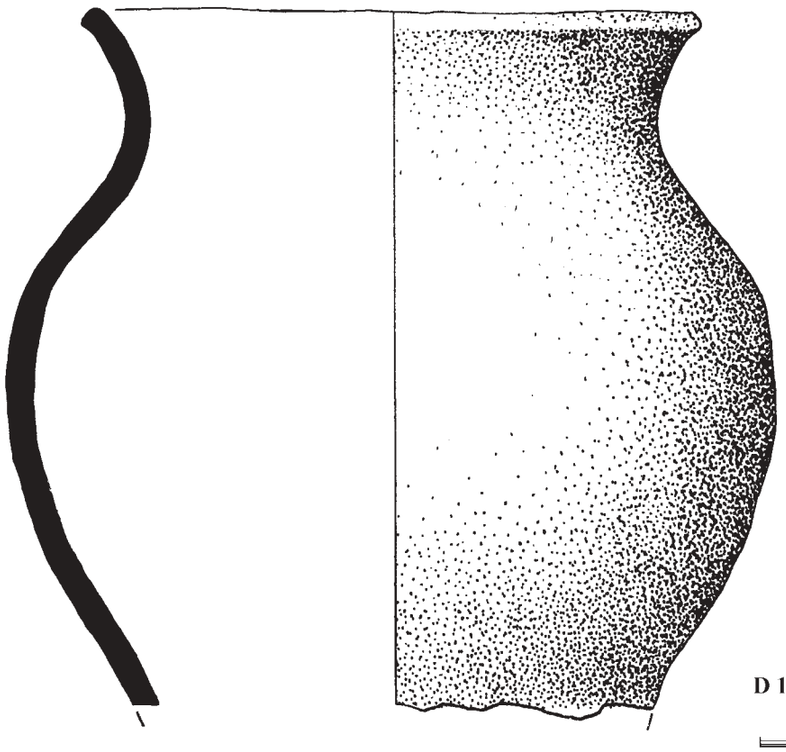

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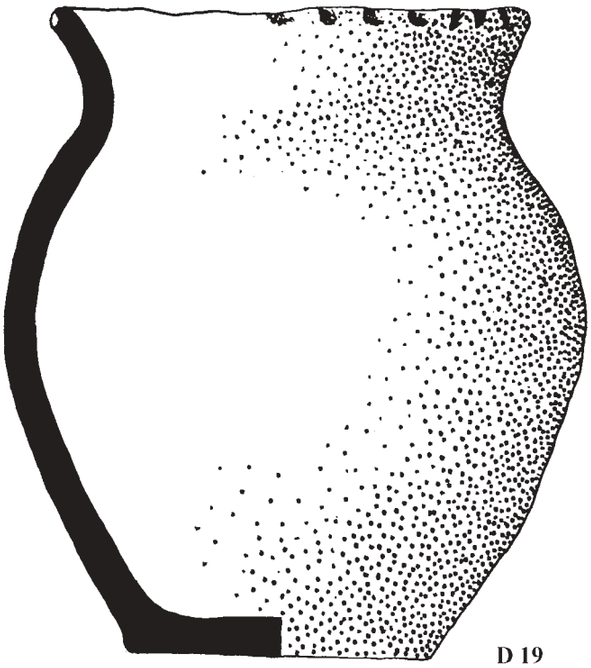

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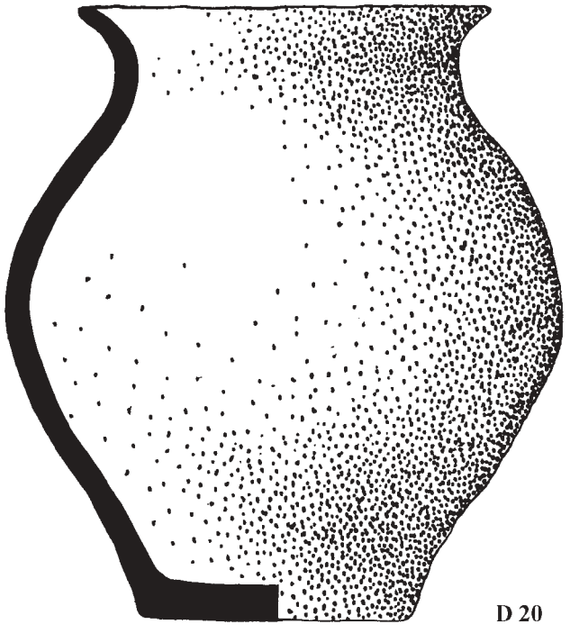

D 20

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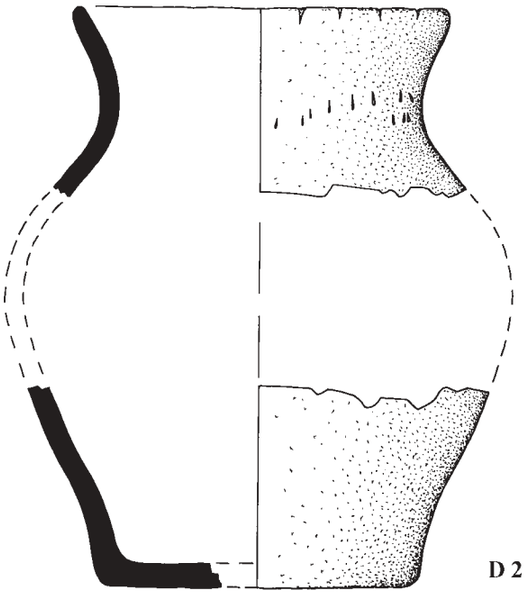
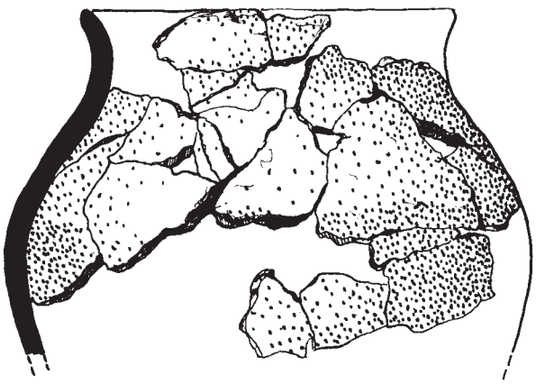


D 21

D 22



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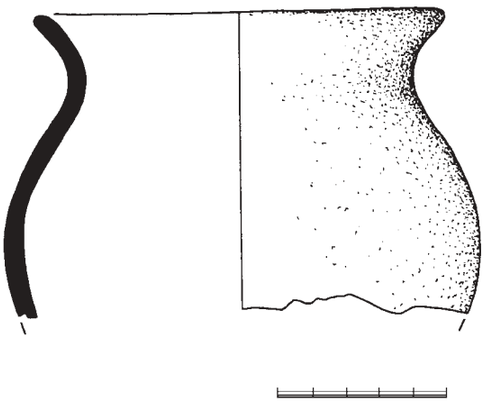

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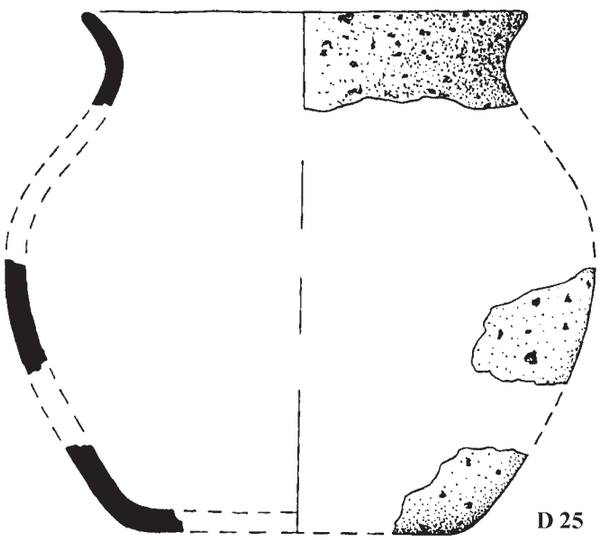

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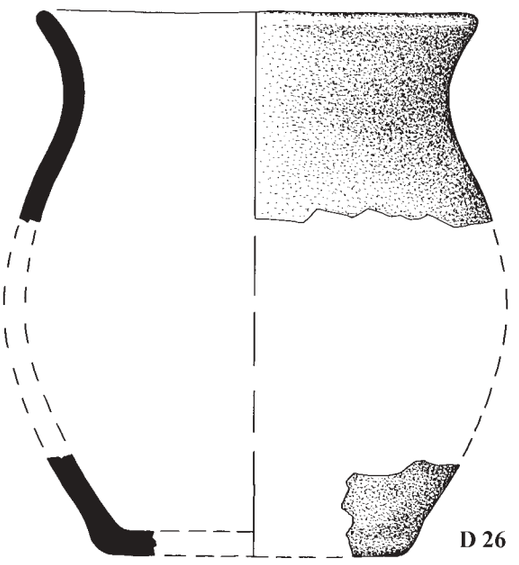

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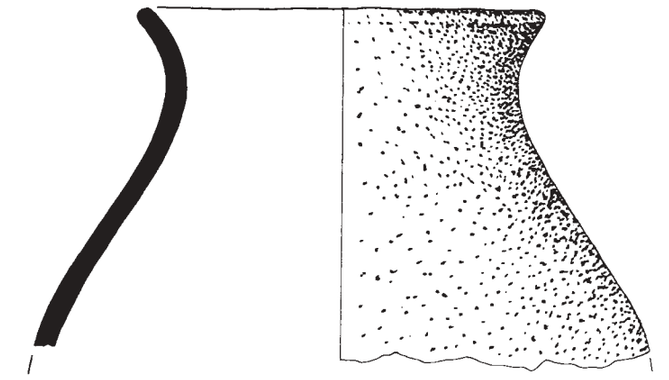

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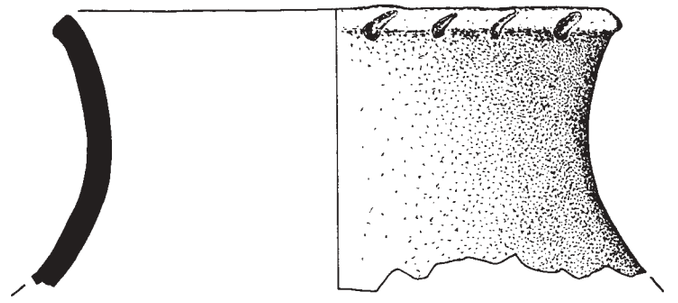

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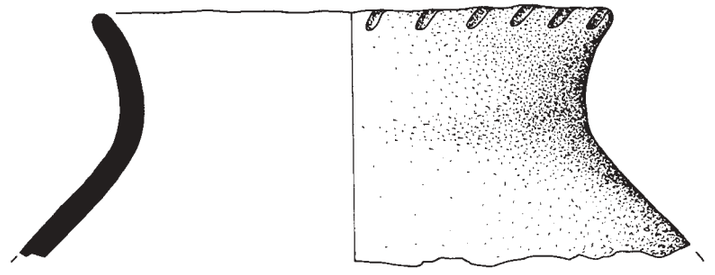

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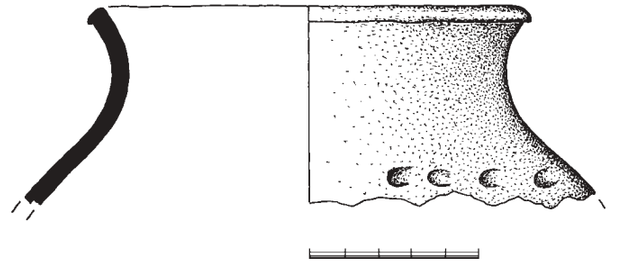

D 31

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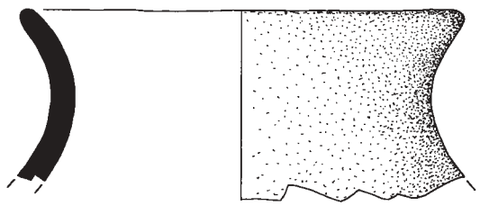
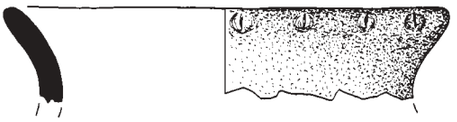
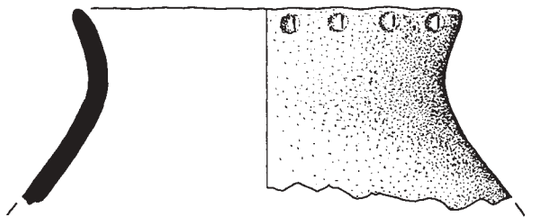


D 32



D 33



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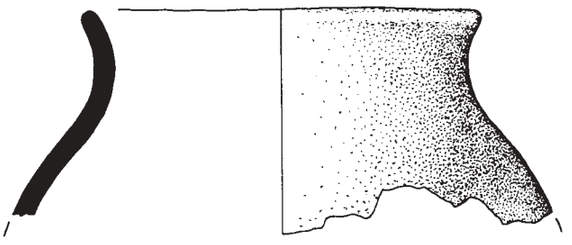

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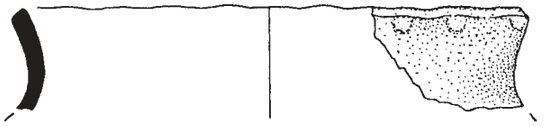

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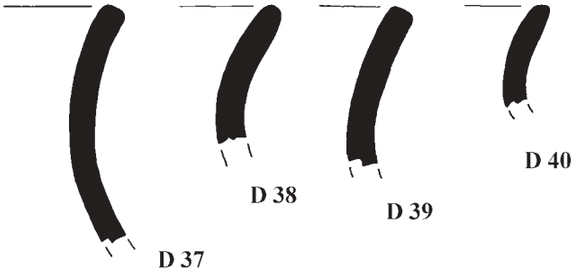
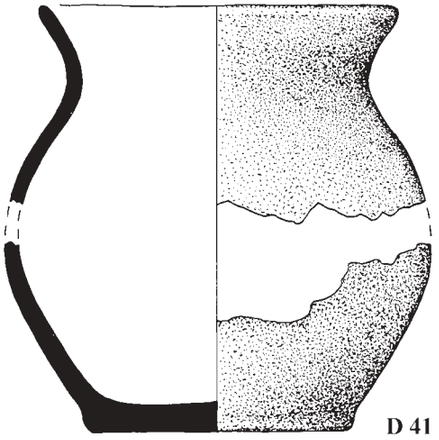


D 37

D 38

D 39

D 40



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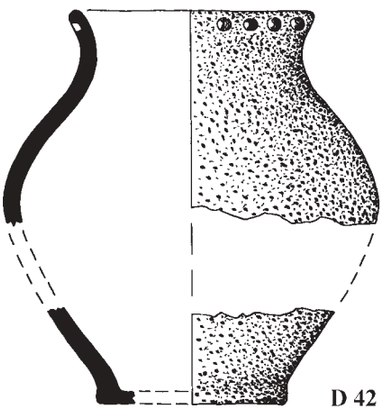
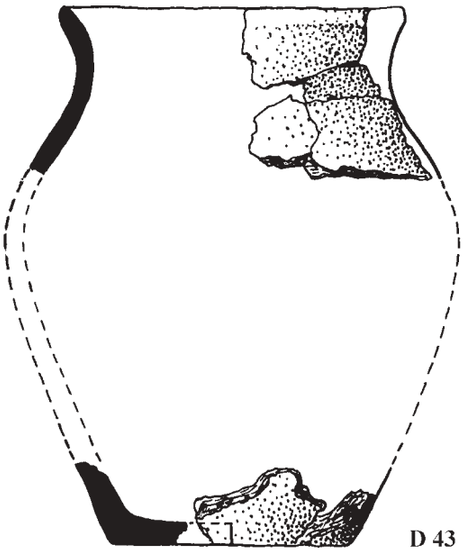


D 42

1:2



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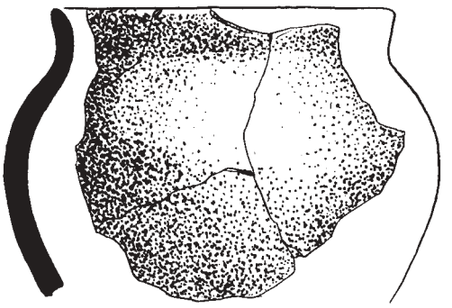

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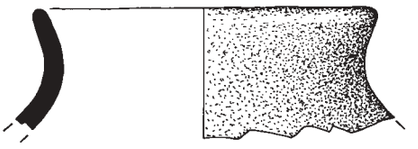
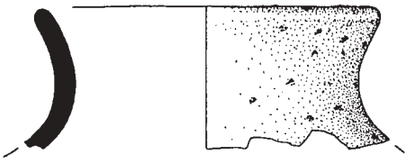


D 45



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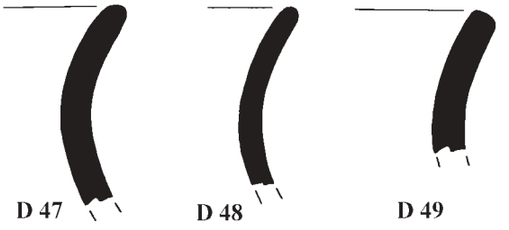
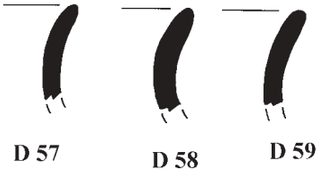


D 47 D 48 D 49

D 50 D 51 D 52 D 53

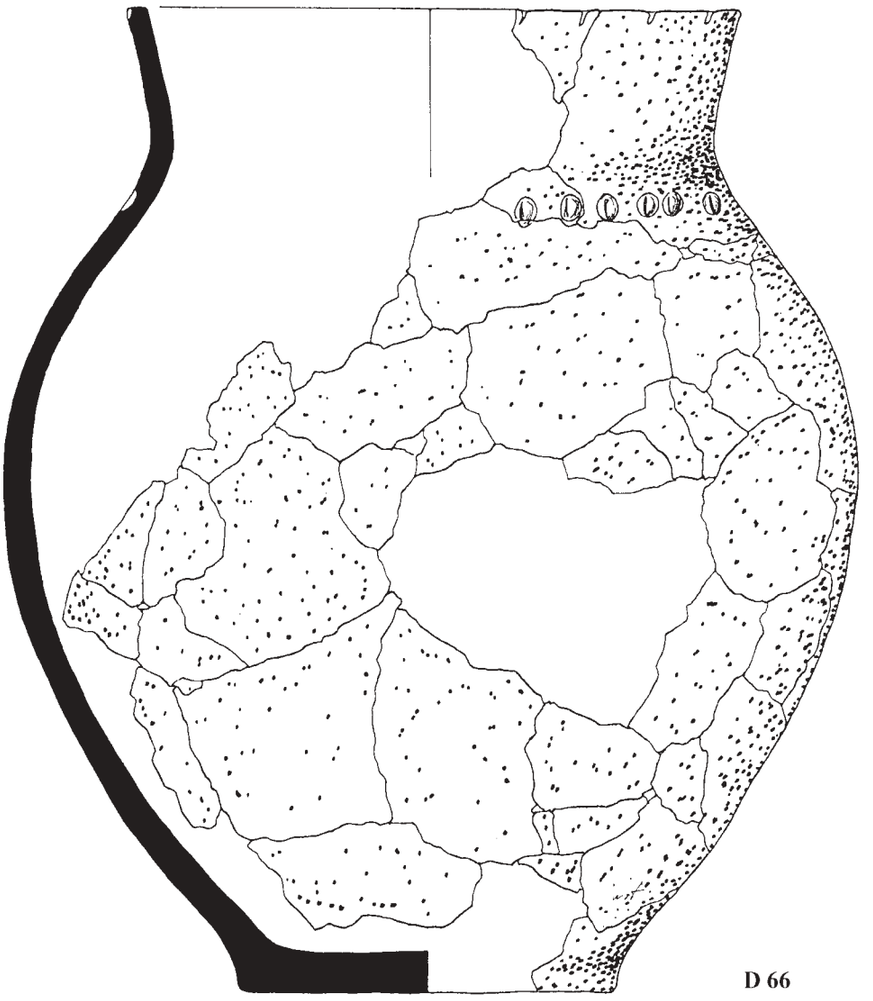


D 57 D 58 D 59

D 54 D 55 D 56

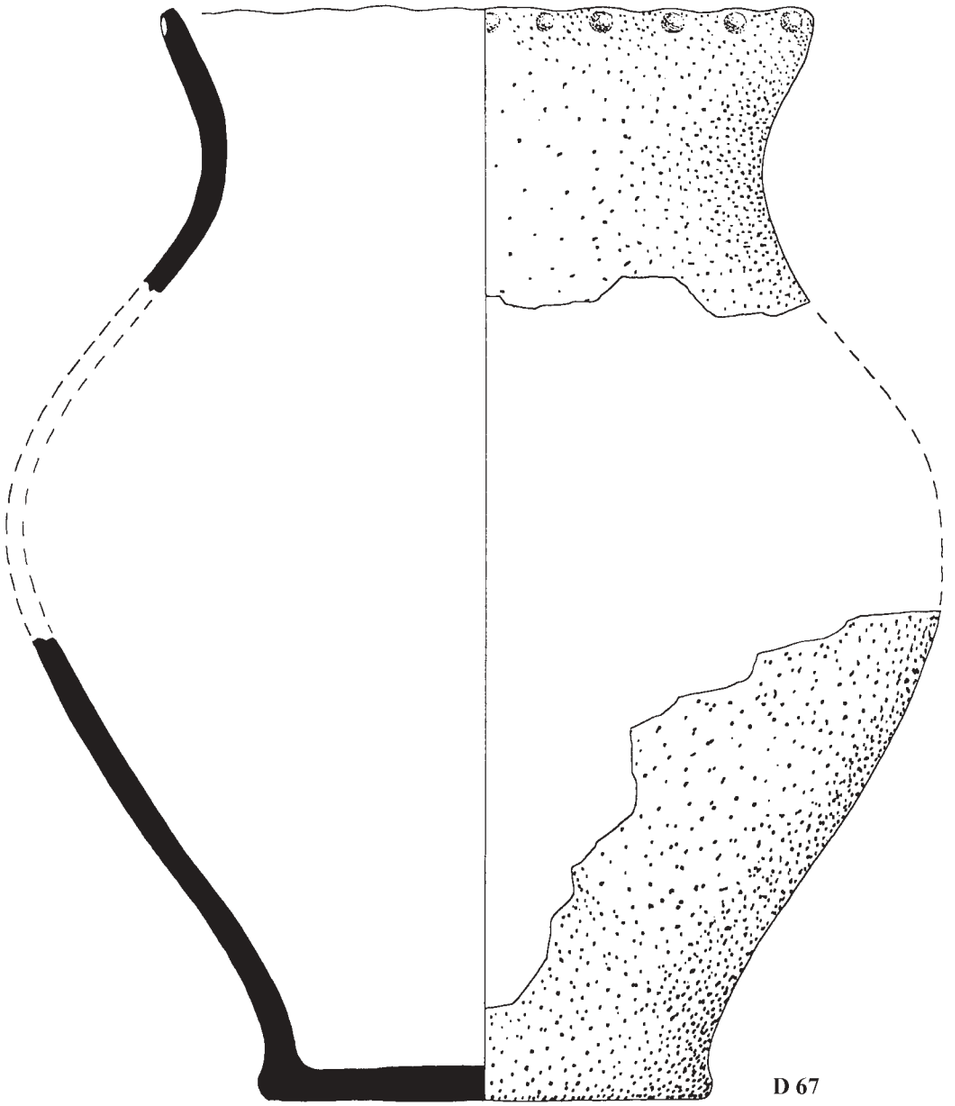
D 60 D 61 D 62

D 65

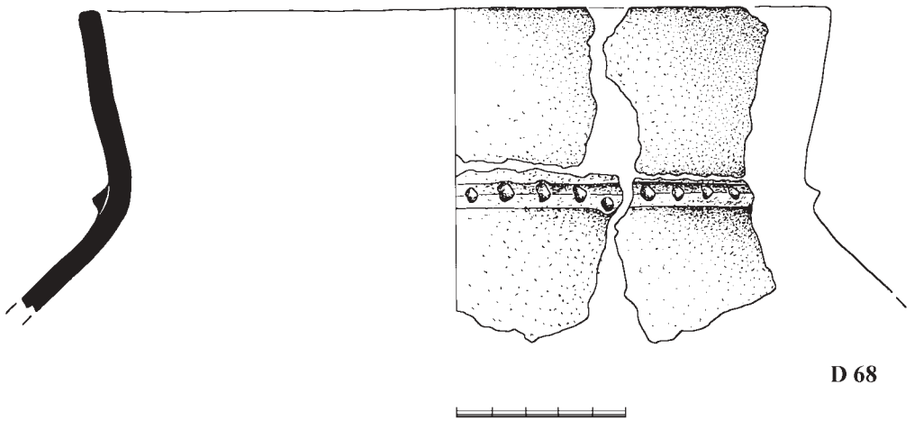


D 66

1:2

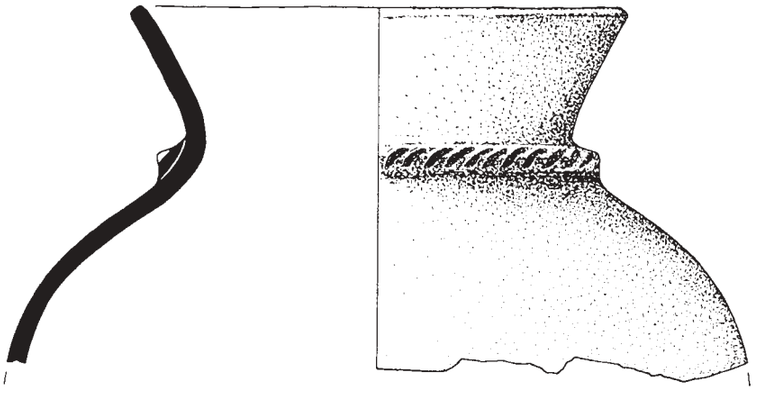


D 67



D 68

1:2



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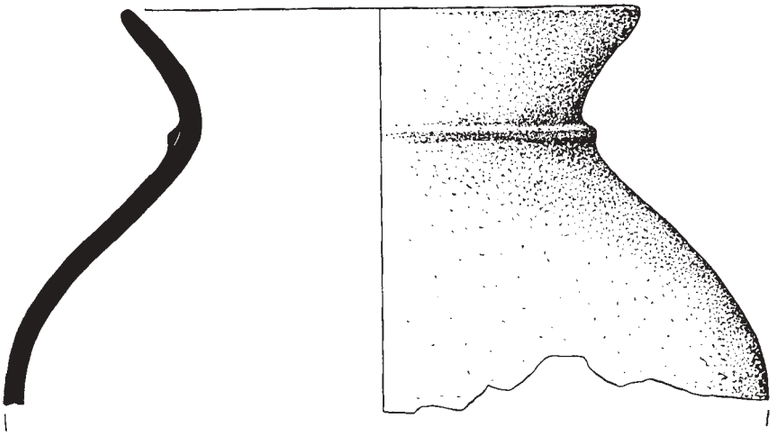
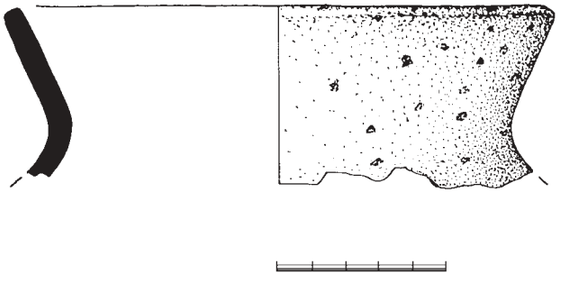
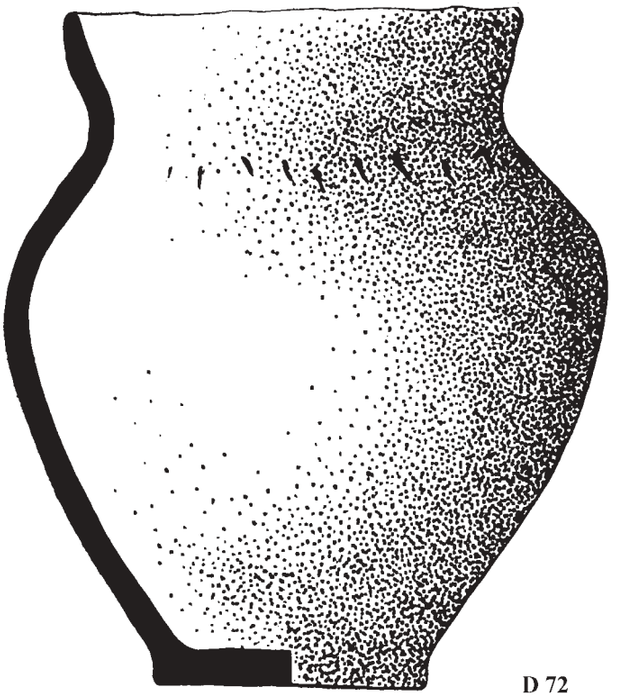


D 70



D 71

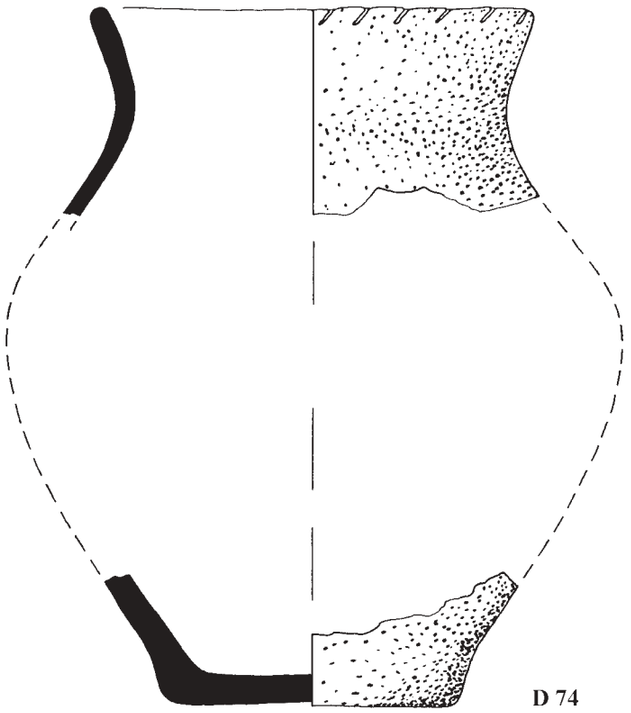
1:2



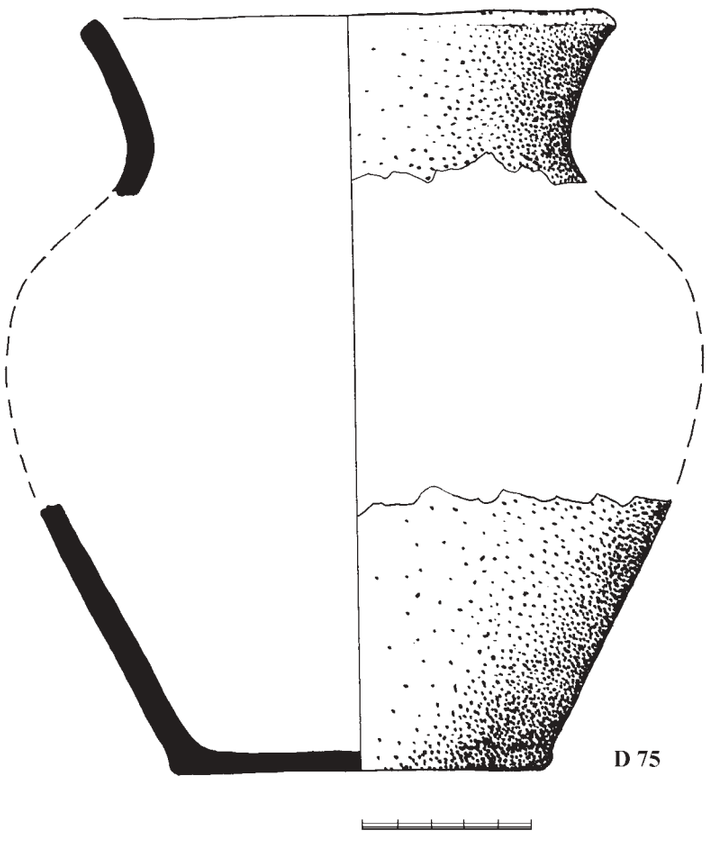
D 72

D 73

1:2

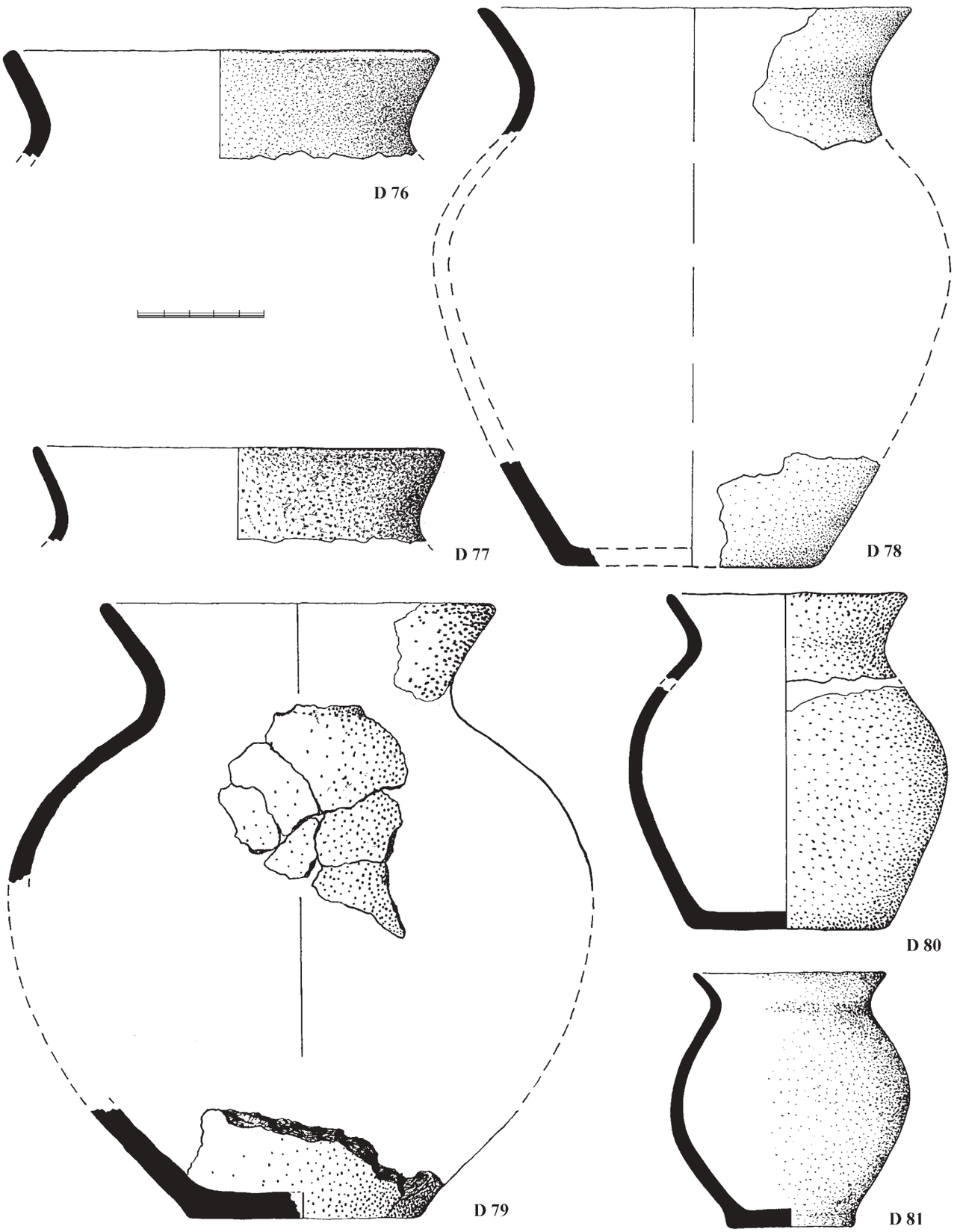


D 74



D 75

1:2



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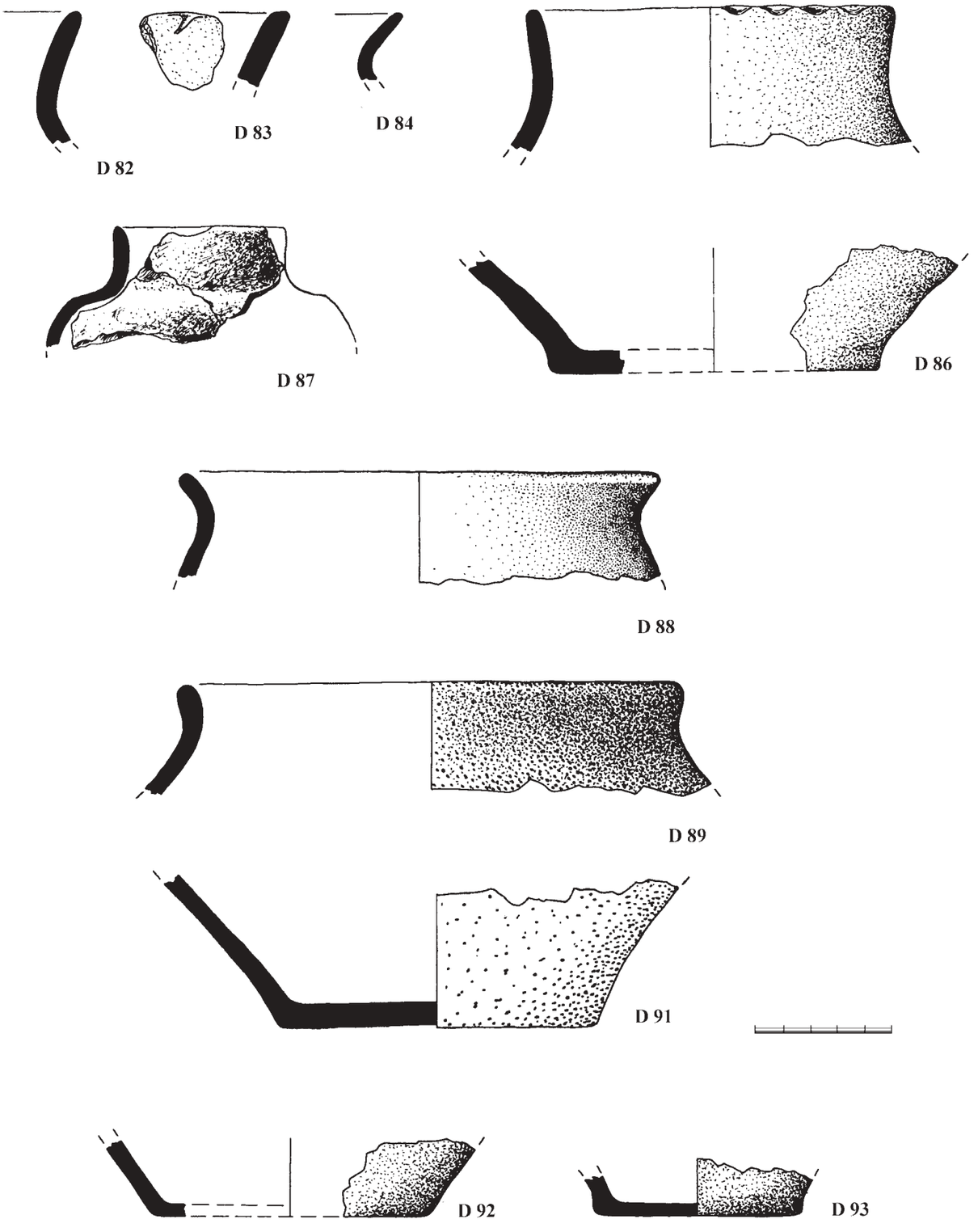


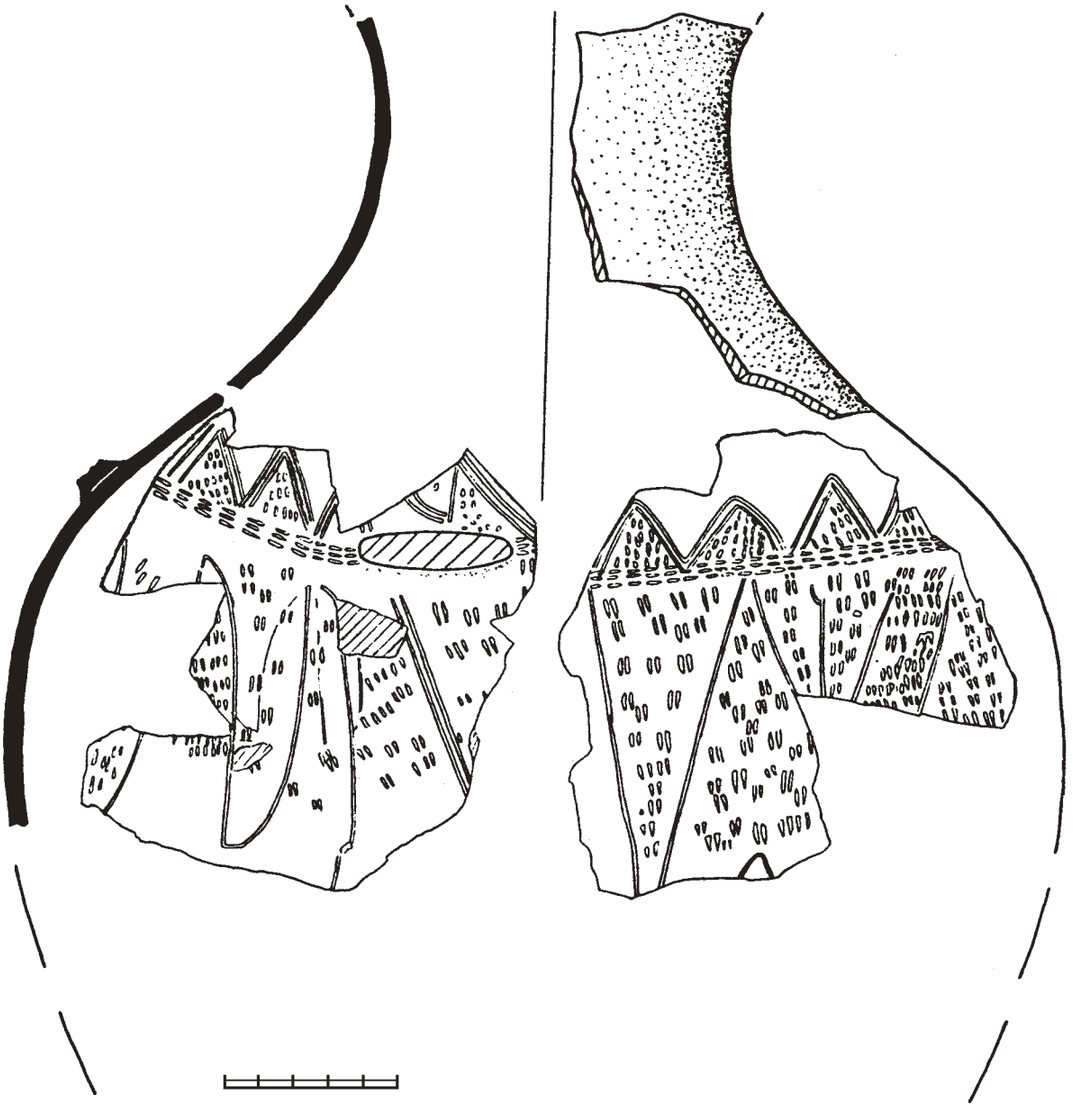
1:2

D 94

D 95

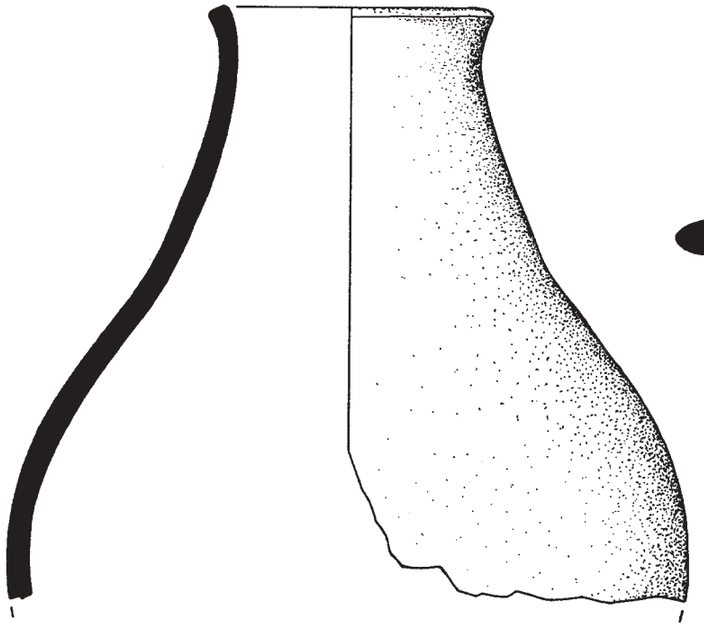
D 96

D 97

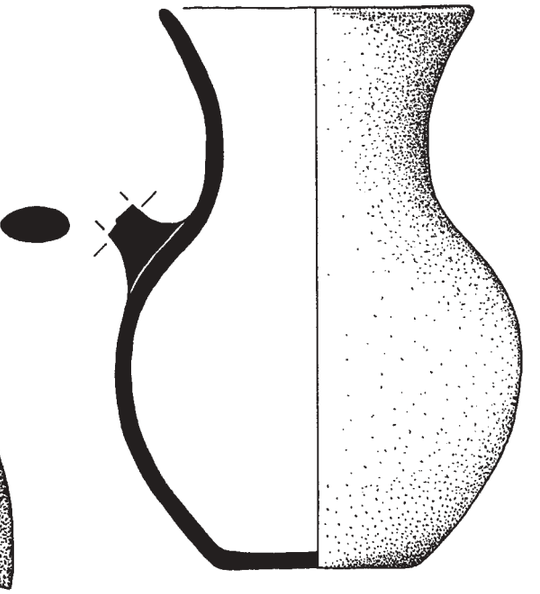


D 104

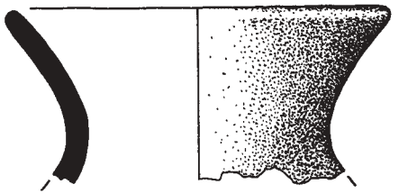
1:2



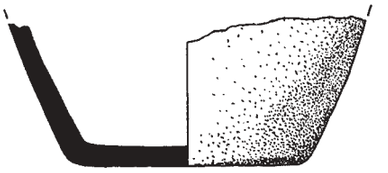
D 105



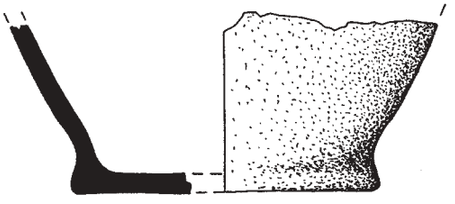
D 106



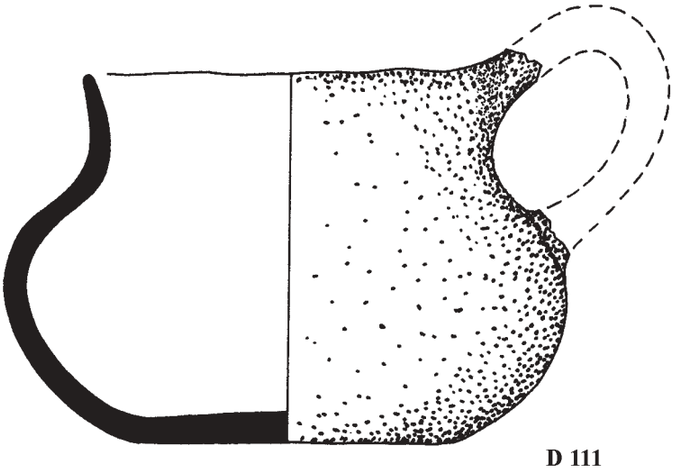
D 107



D 108

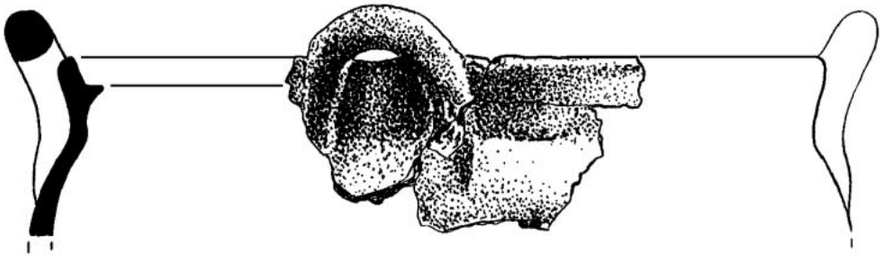


D 109

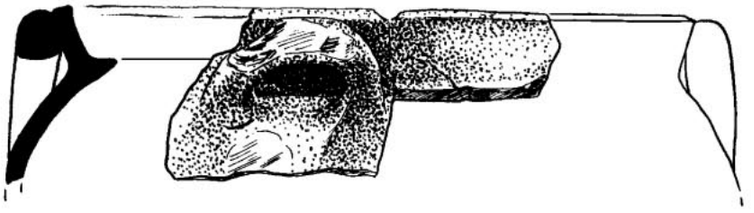


D 111

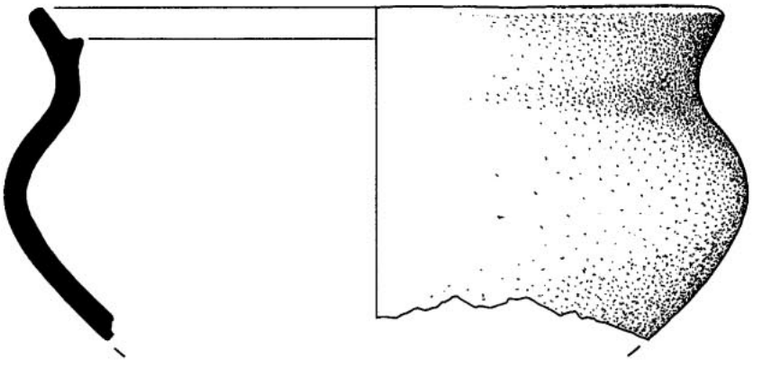
1:2



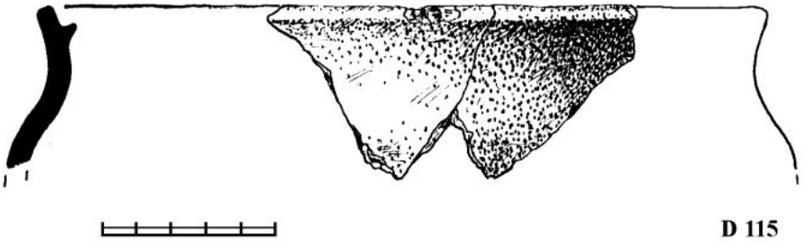
D 112



D 113

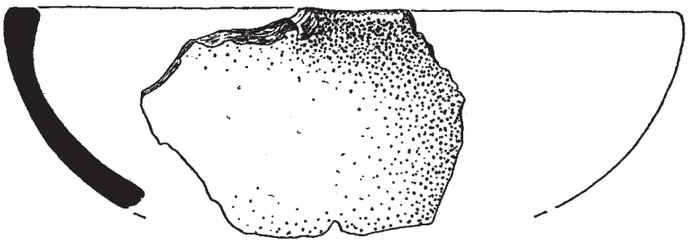


D 114

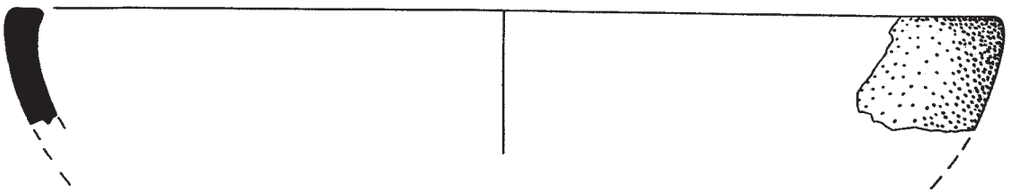


D 115

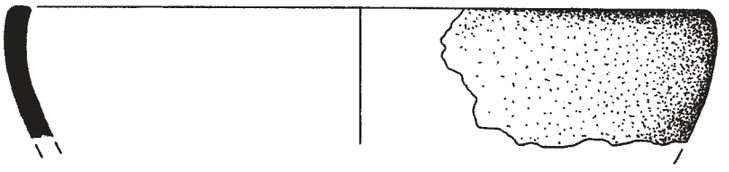
1:2



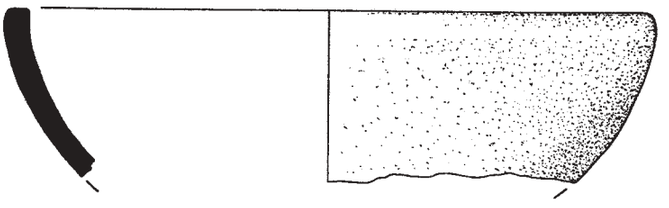
D 116



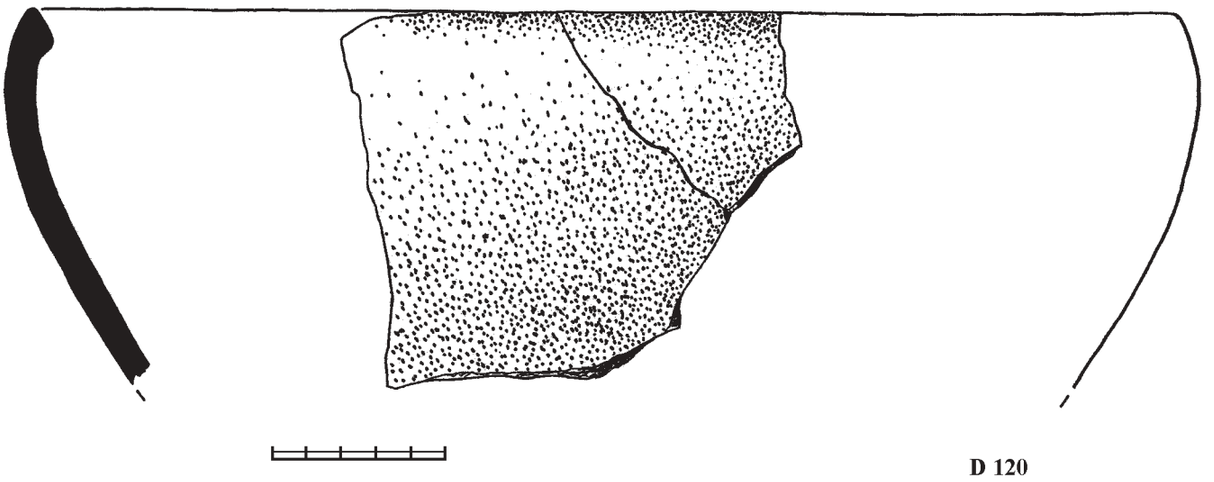
D 117



D 118

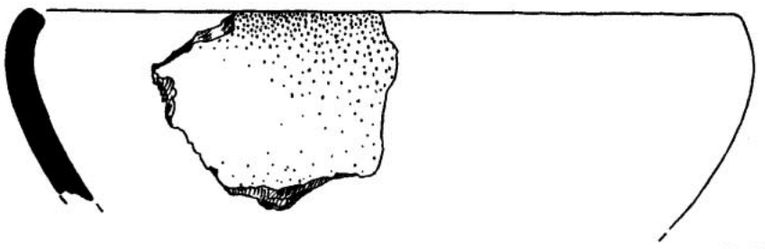


D 119

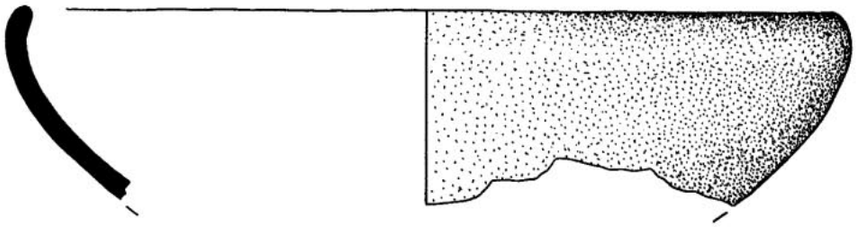


D 120

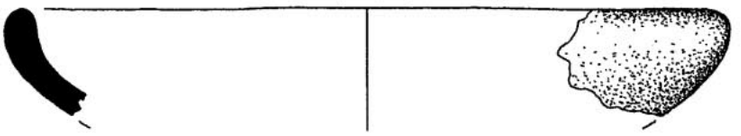
1:2



D 121



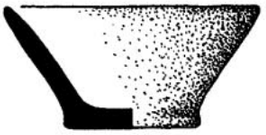
D 122



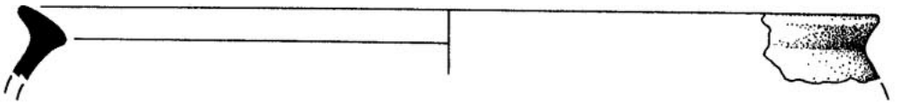
D 123

D 124

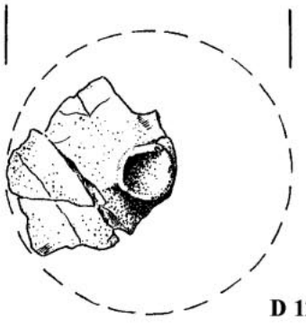
D 125



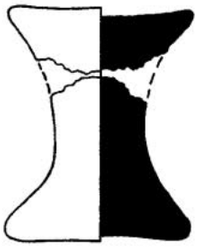
D 126



D 127



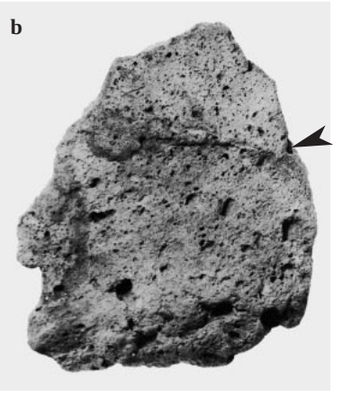
D 128



D 130

1:2

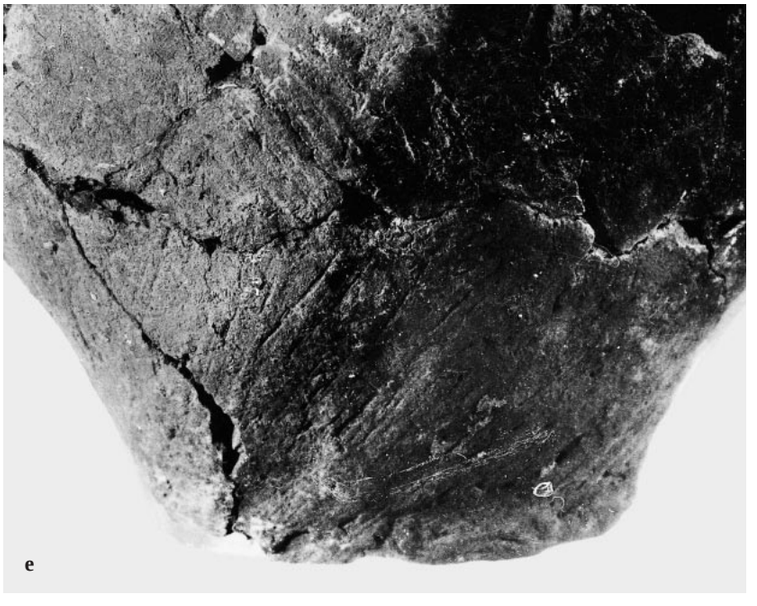
a



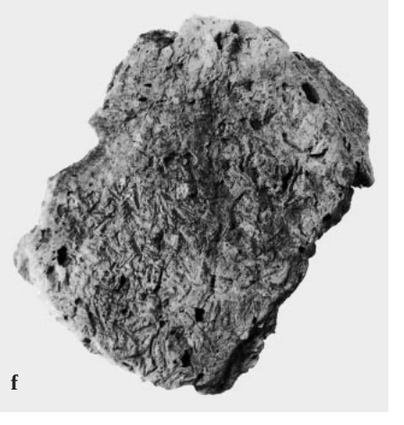
b

d

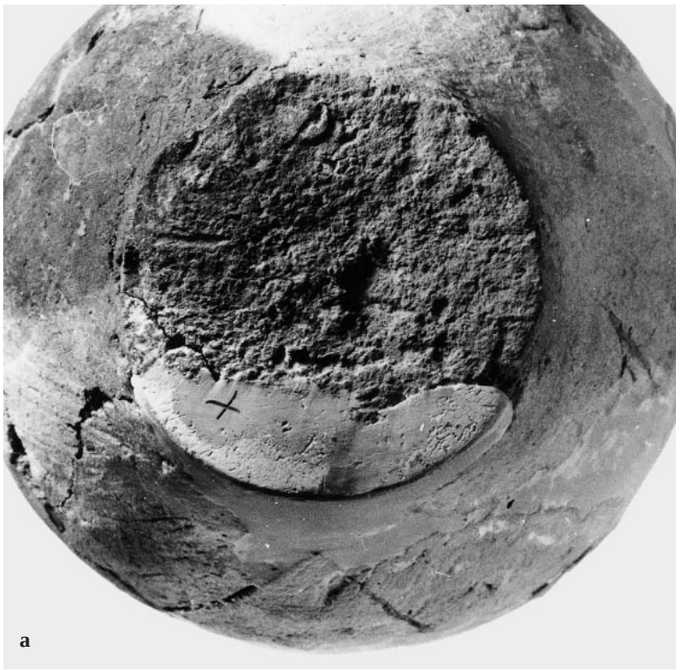
c



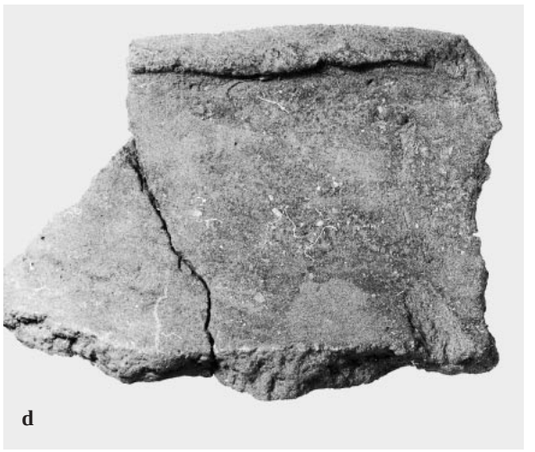
e



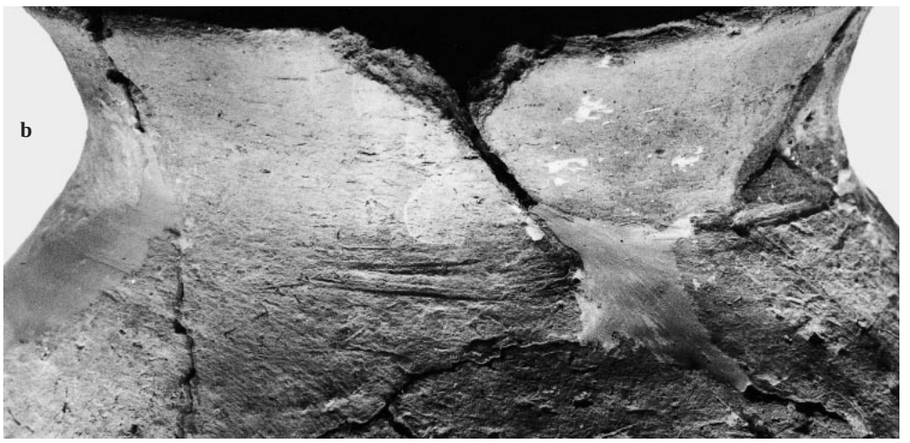
f



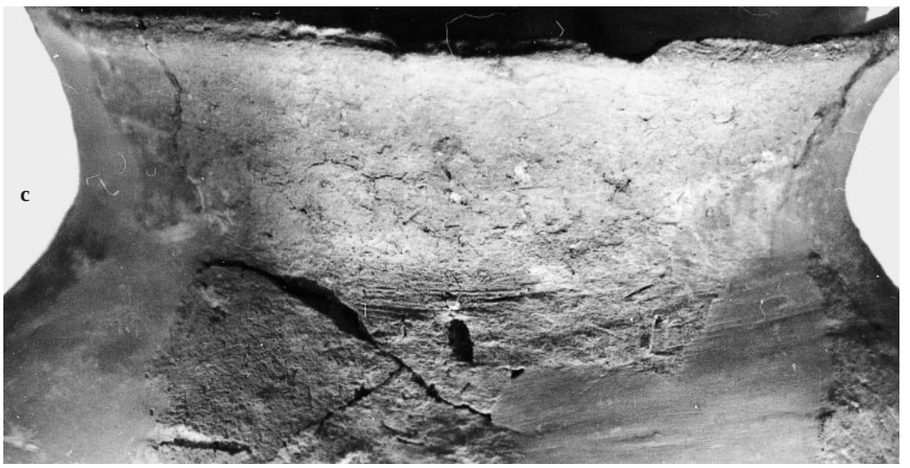
a



d



b

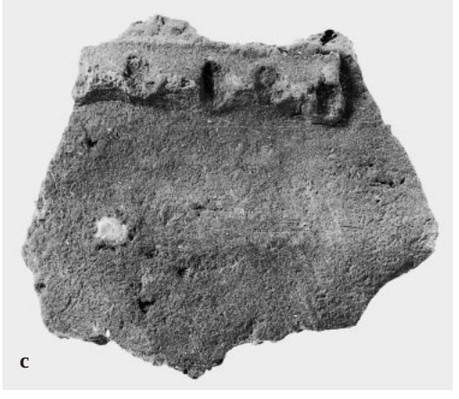


c

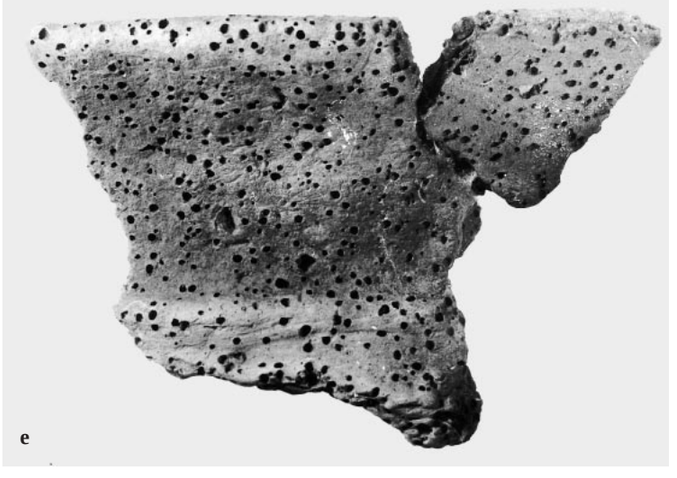
1:1 (**a** 3:4)


a

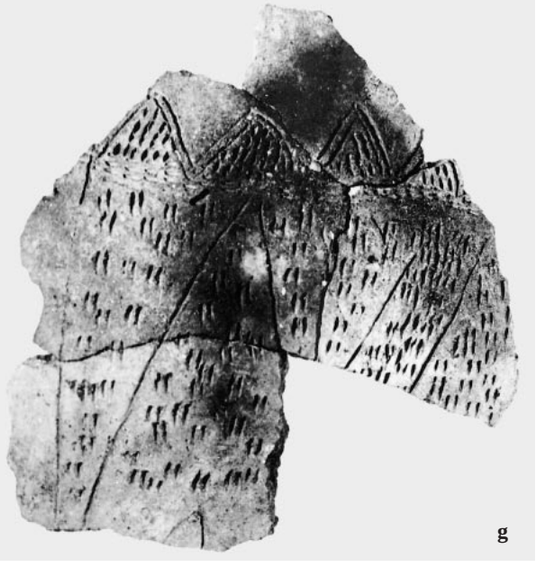

b


c

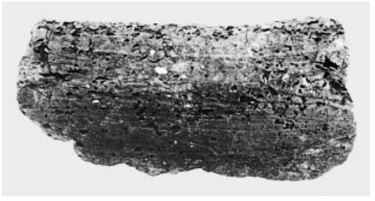

d


e


f


g

1:1 (**g** 1:2)

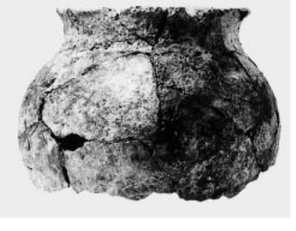


a

b

D 20

D 19 **D 72**



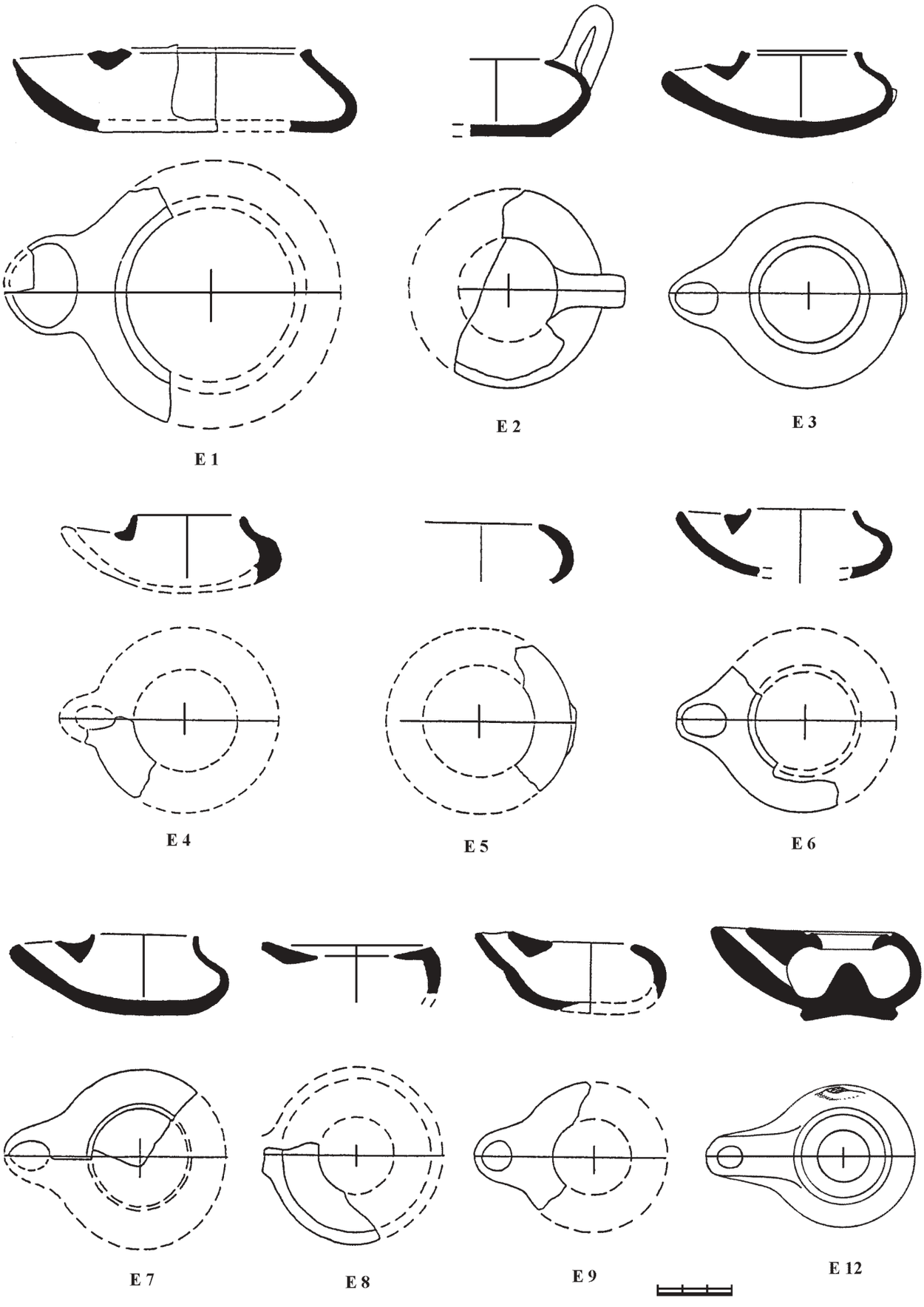
D 22

D 81

D 111

D 126

1:4 (**a-b** 1:1; **D 81**, **D 126** 1:3; **D 19**, **D 72** 1:6)



1:2

F 1

F 2

F 4

F 3

F 6

F 5

F 8

F 9

F 17

F 18

F 10

F 11

F 12

F 14

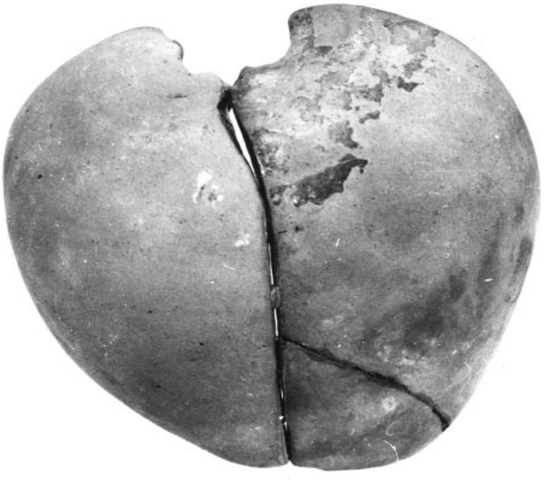
F 15

F 16

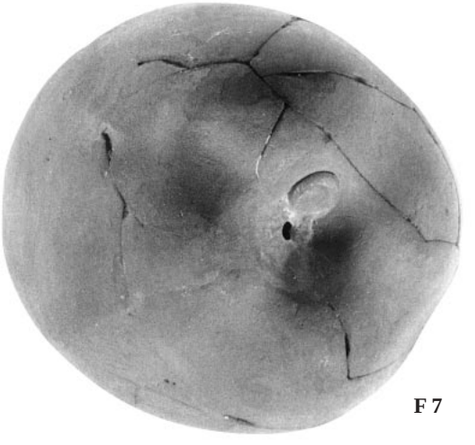
F 19

F 20

F 22

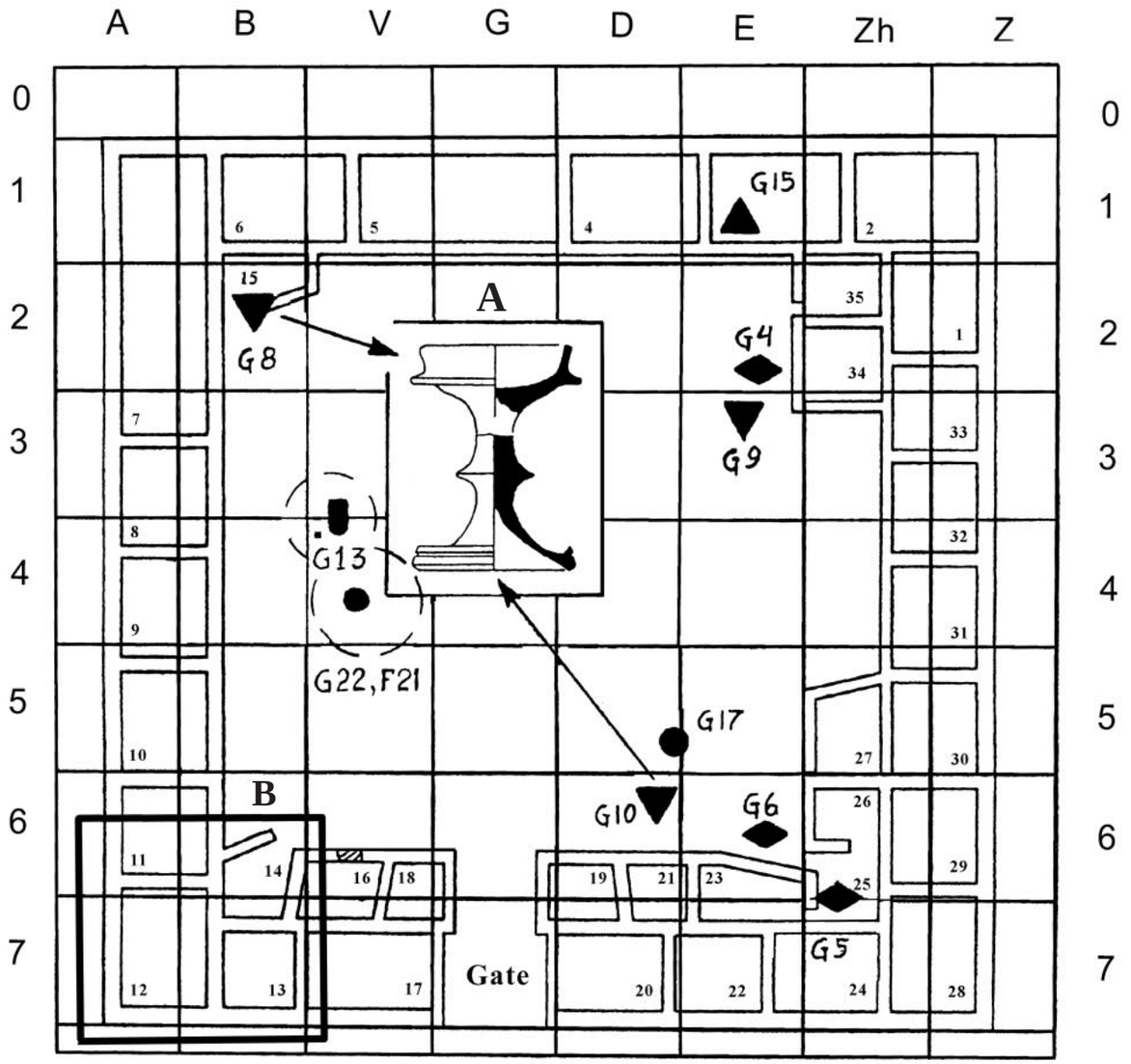


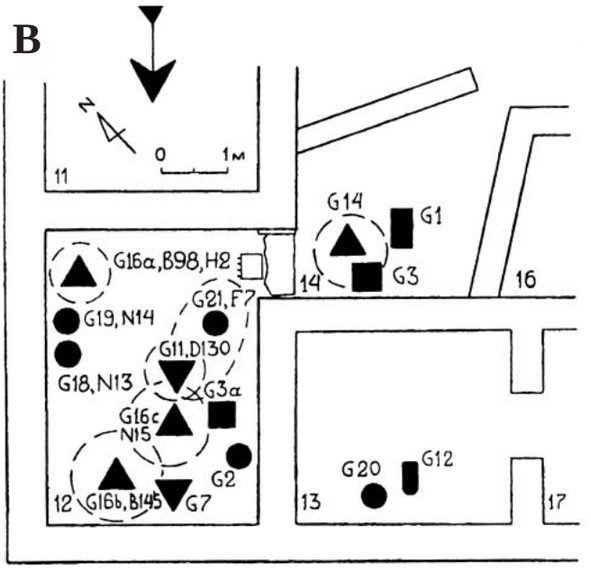
F 21



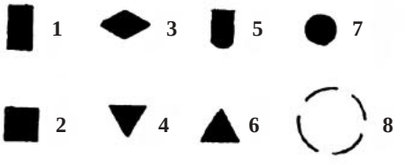
F 7

F 23

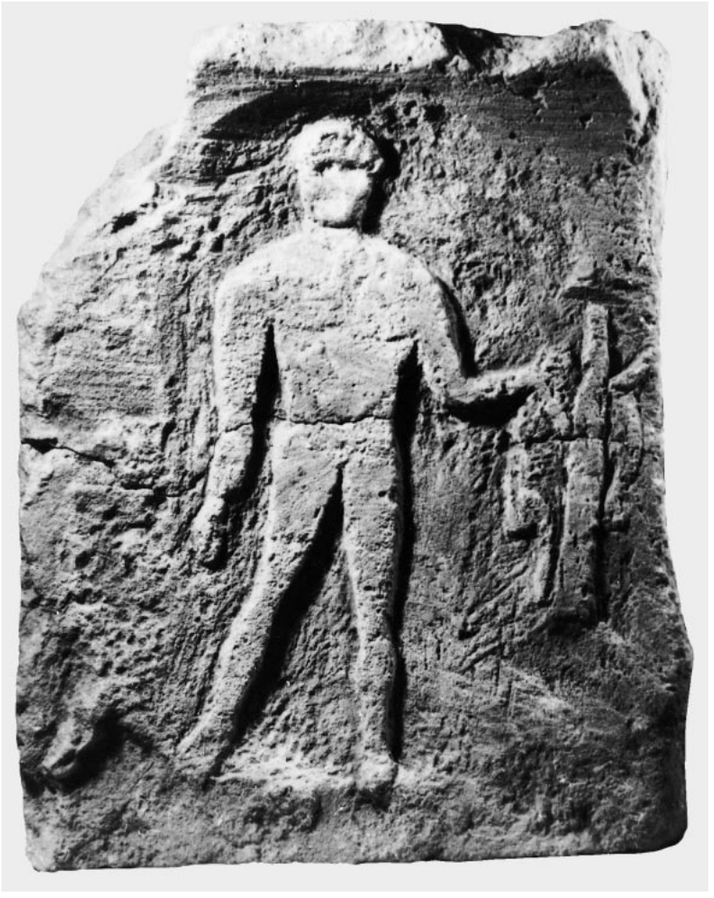

A B V G D E Zh Z
0 1 2 3 4 5 6 7
A
B
G15
G8
G4
G9
G13
G22, F21
G17
G10
G6
G5
Gate

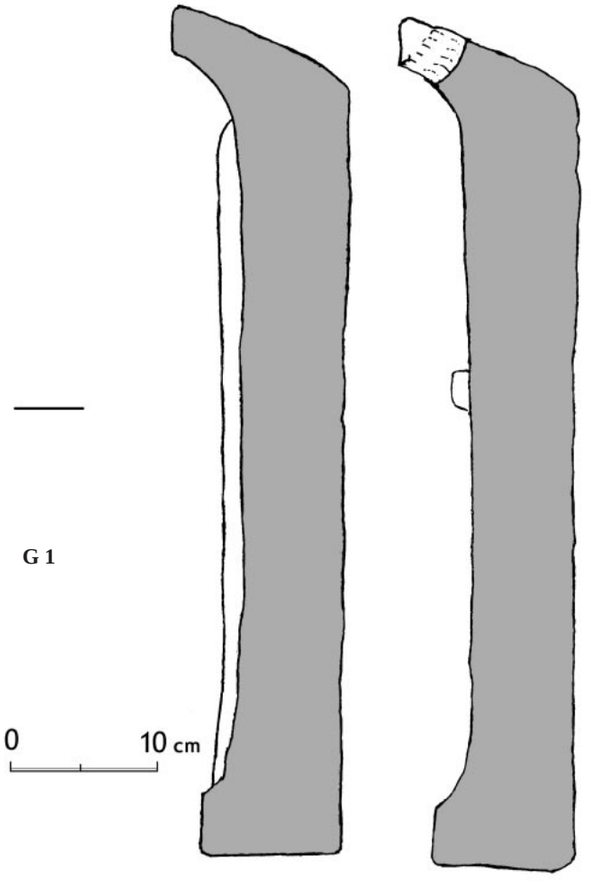

B
N
0 1м
G14
G1
G3
G16a, B98, H2
G21, F7
G19, N14
G11, D130
G18, N13
G3a
G16c
N15
G2
G16b, B145
G7
G20
G12

G 10


1
3
5
7
2
4
6
8

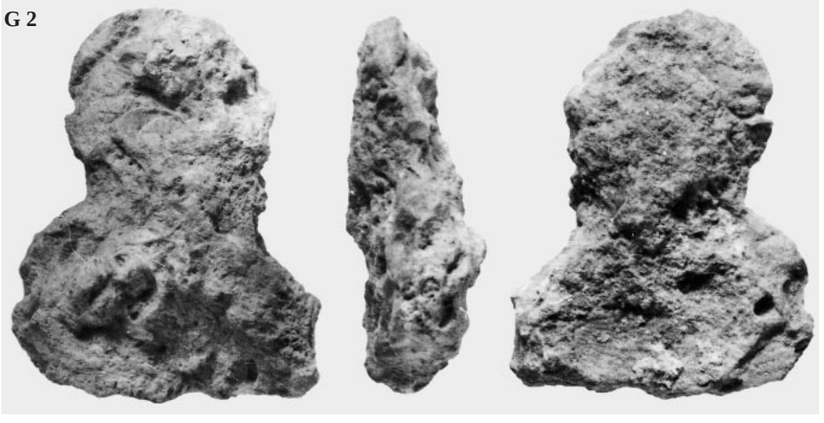
G 10 1:2





G 1

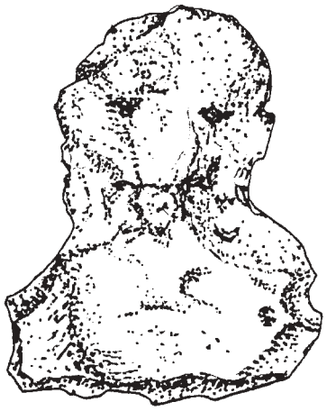
G 2

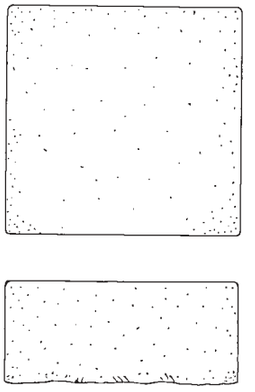


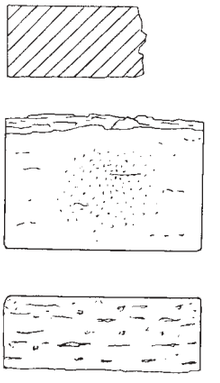
G 3a

G 3

G 1 1:5; **G 2** 1:1

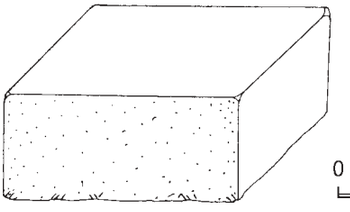


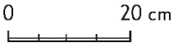


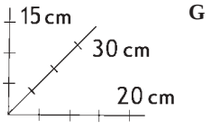


G 3a

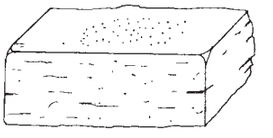
G 2

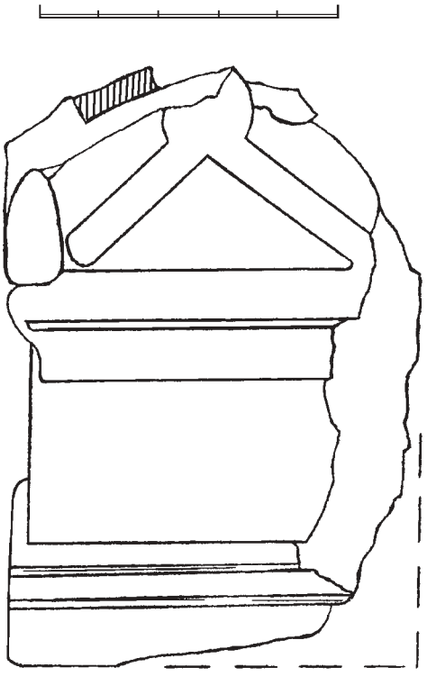




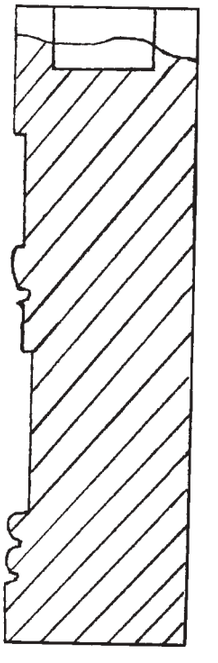


G 3



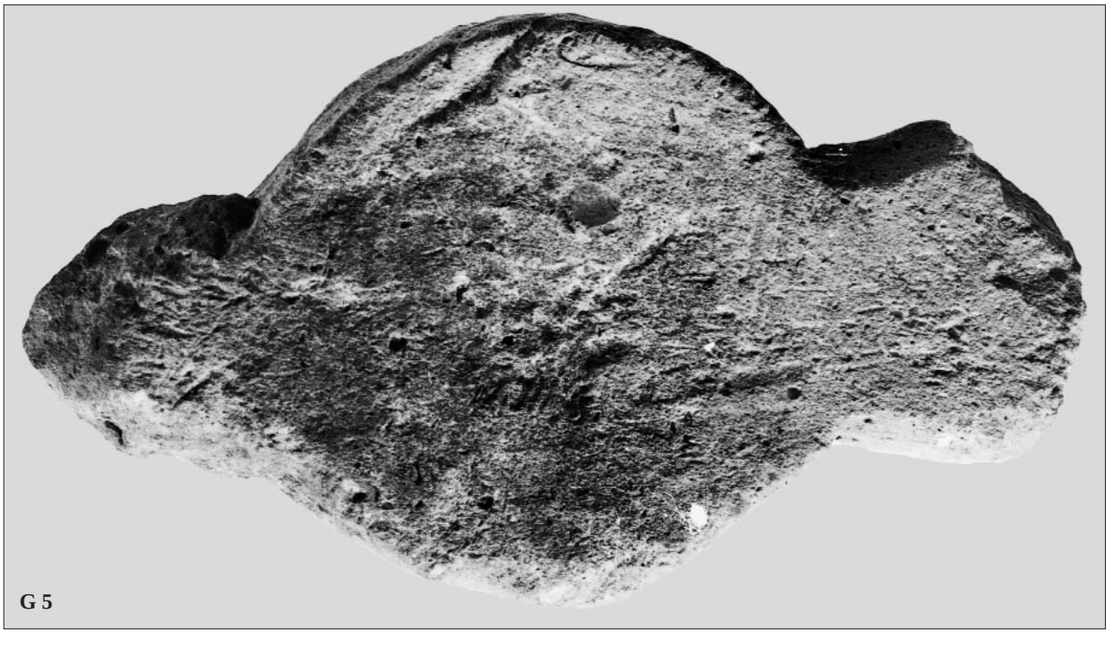


G 4



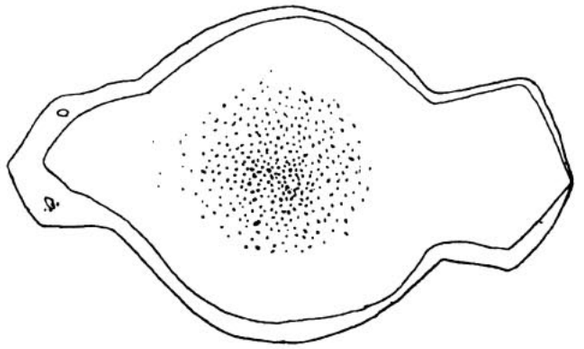
G 5

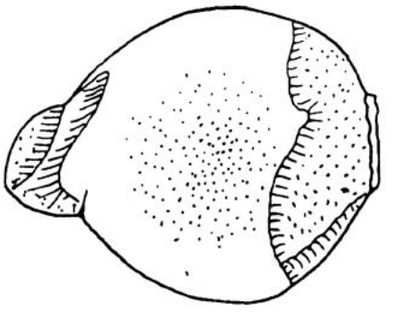
G 5

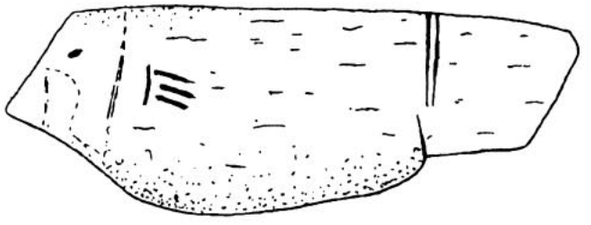


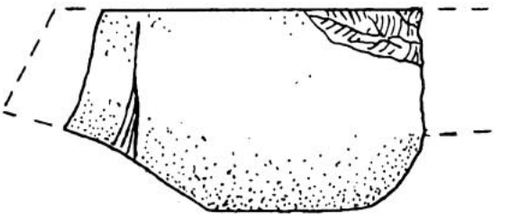
G 5

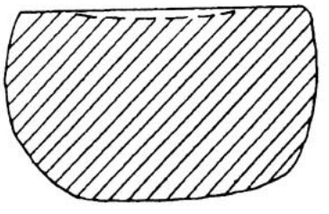
1:1



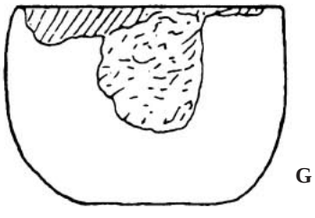








G 5



G 6

G 7

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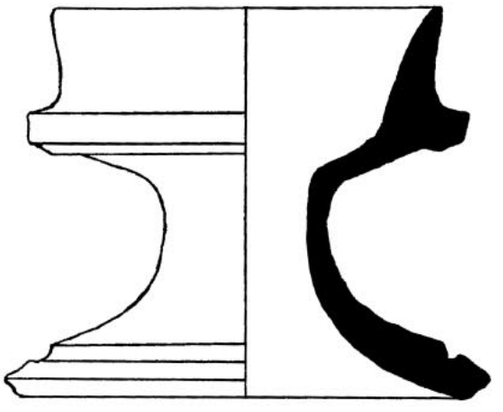

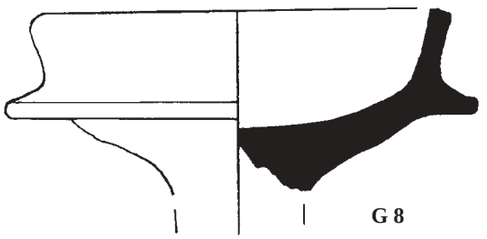

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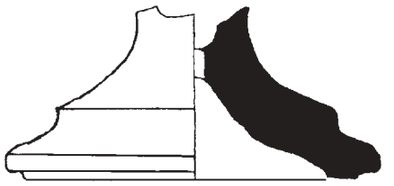

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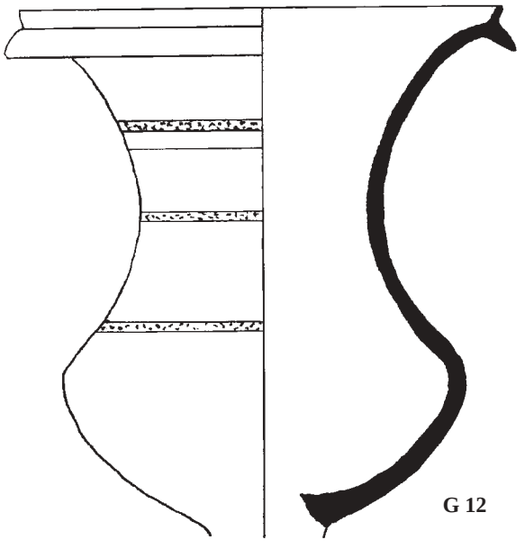

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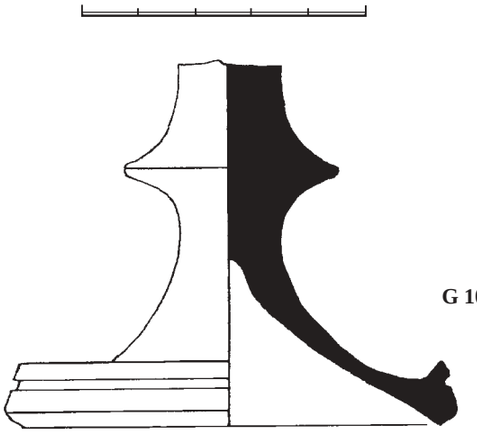

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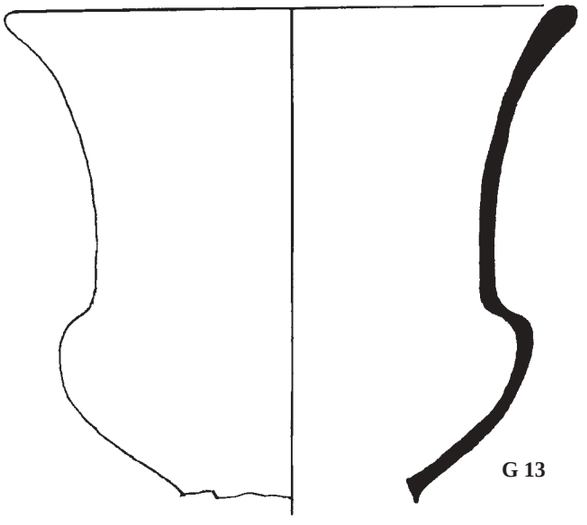

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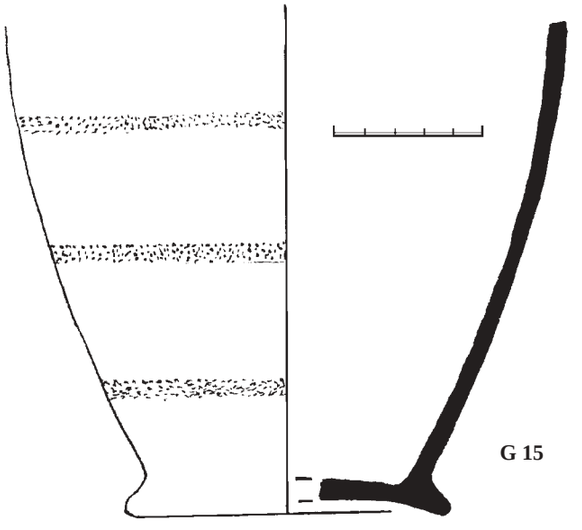

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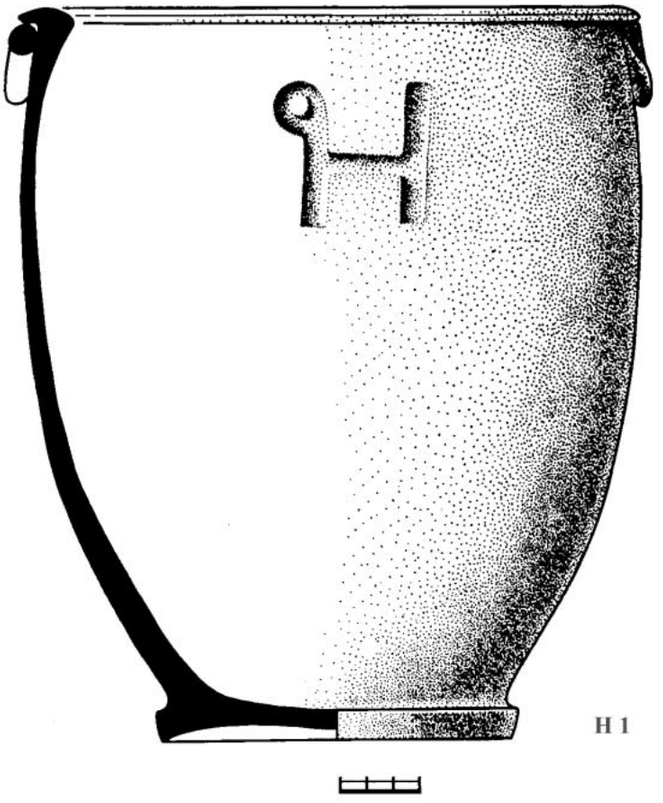
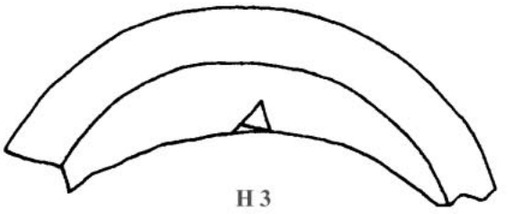


H 1



H 3

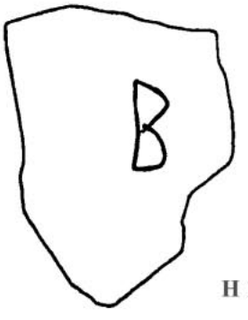
H 4

H 6

H 2

H 8

H 9



H 11

H 13

H 10

H 12

H 14

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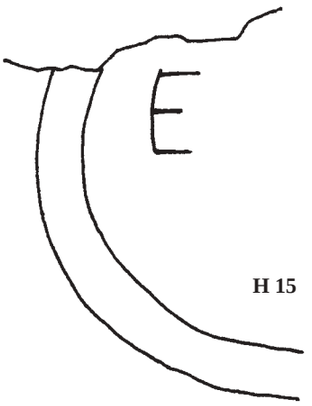

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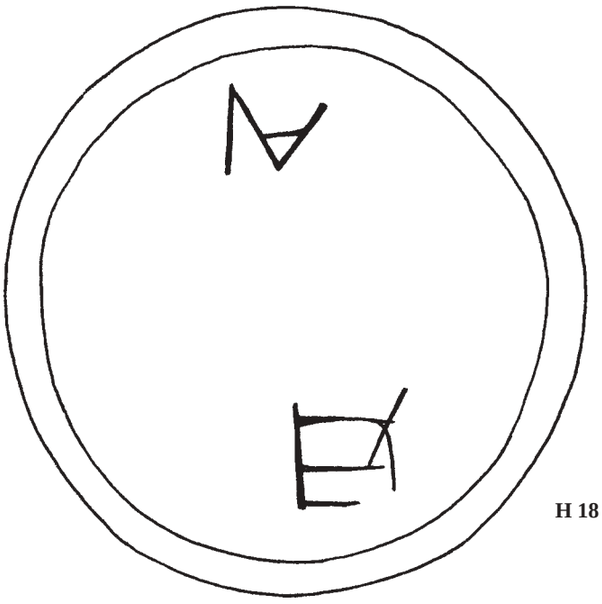

H 18

H 16

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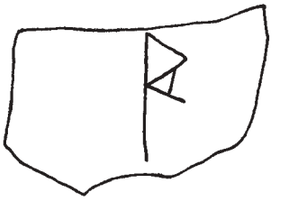

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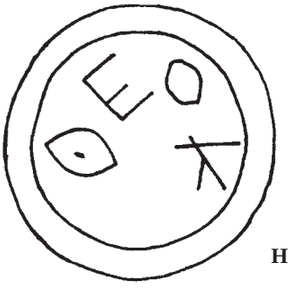

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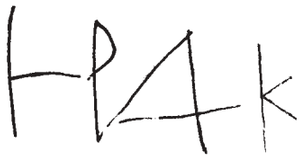

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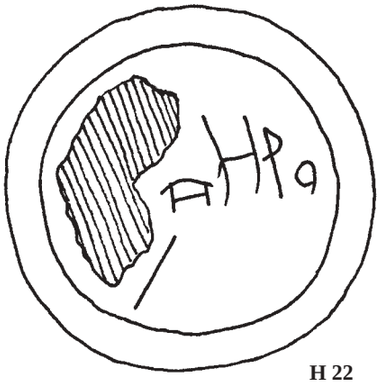

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H 25

H 30

H 31

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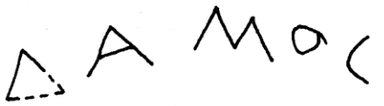
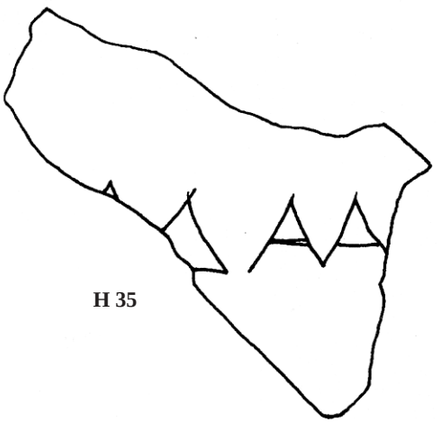


H 32

H 33(b)



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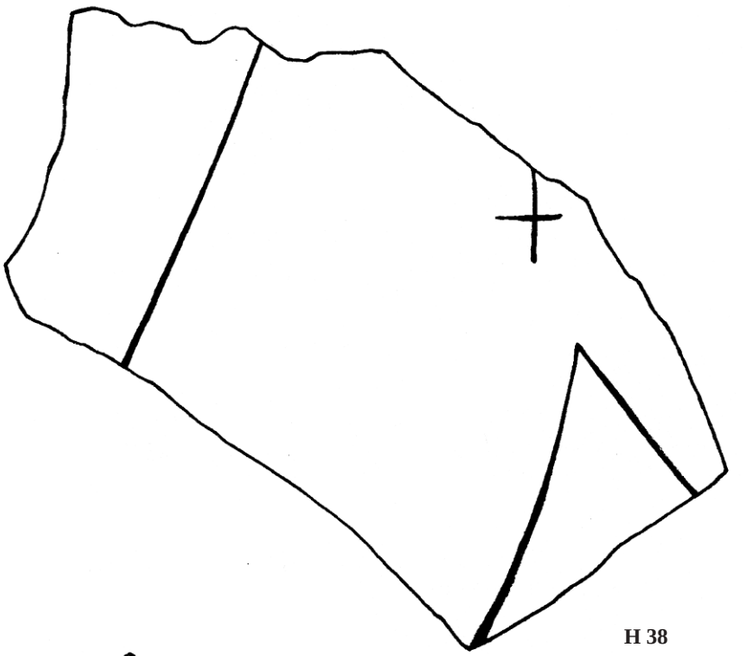

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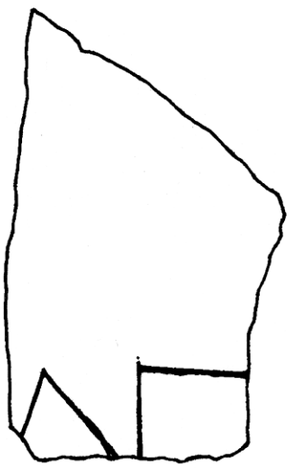

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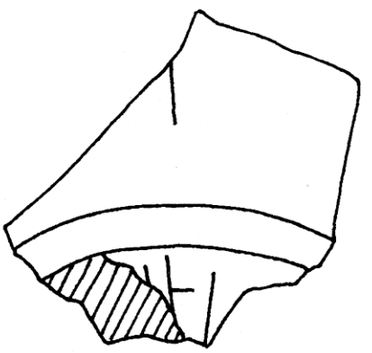

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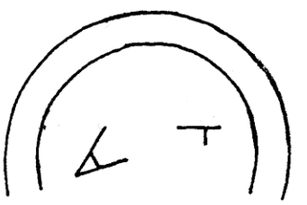

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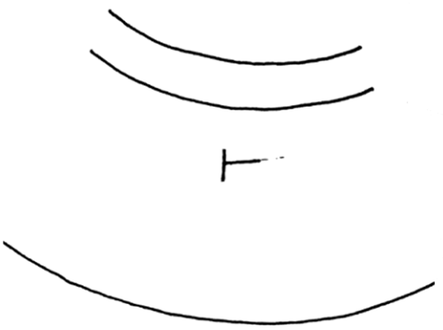

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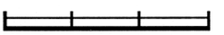

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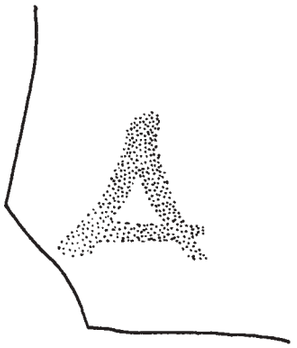
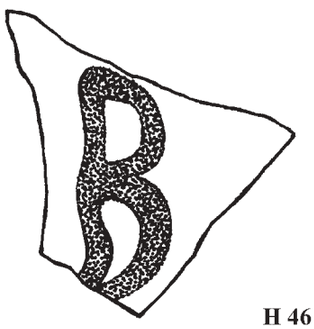


H 43

H 45



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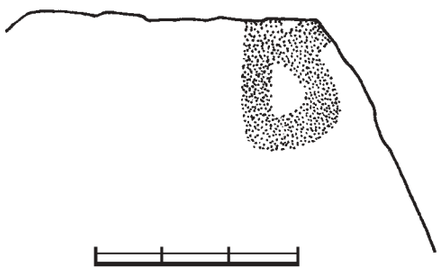
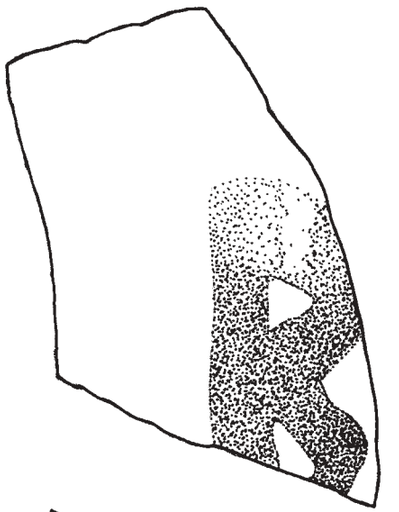


H 48

H 44



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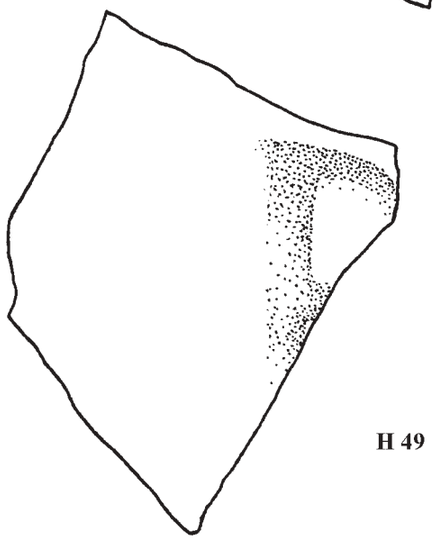

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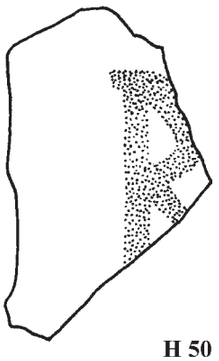

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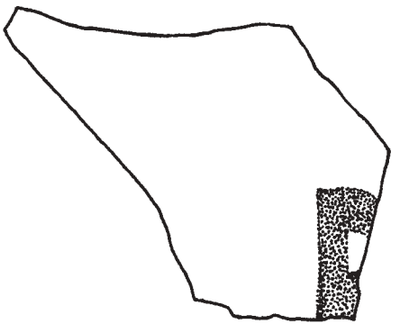

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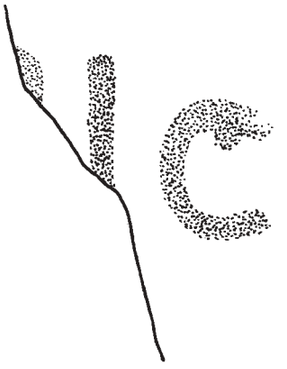

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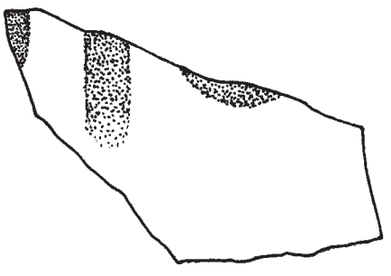

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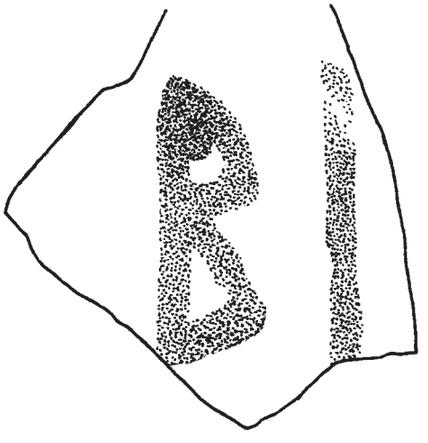

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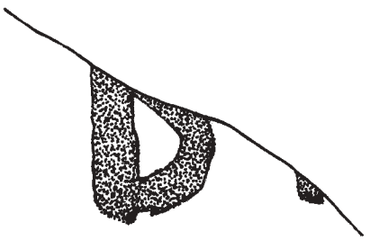

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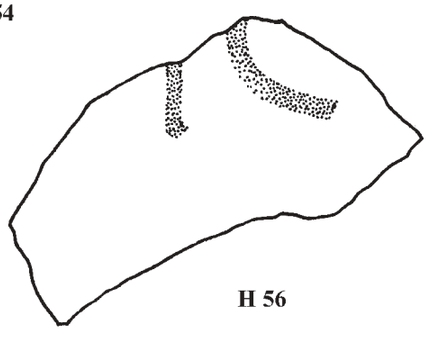

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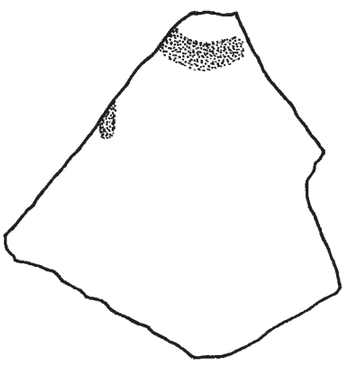

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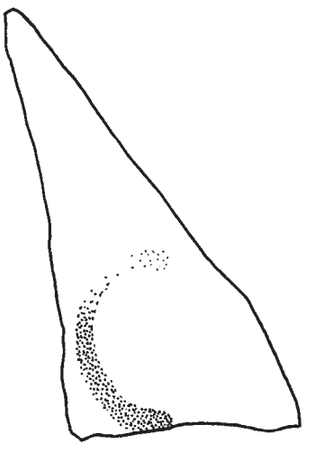

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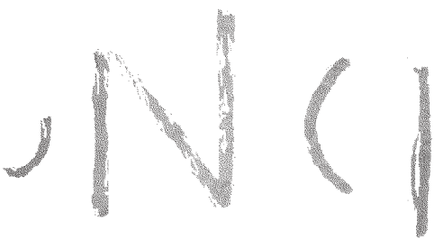

H 60

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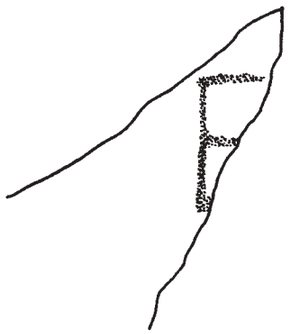

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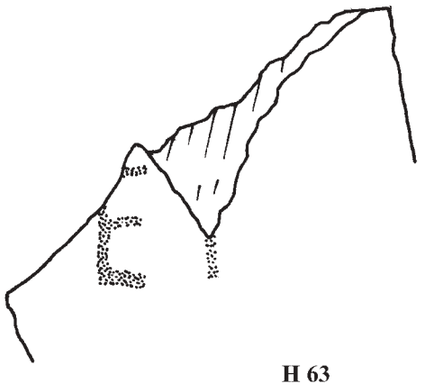

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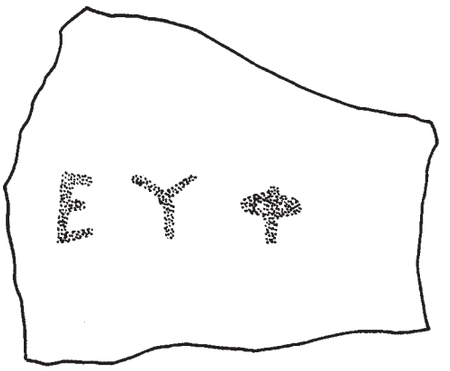

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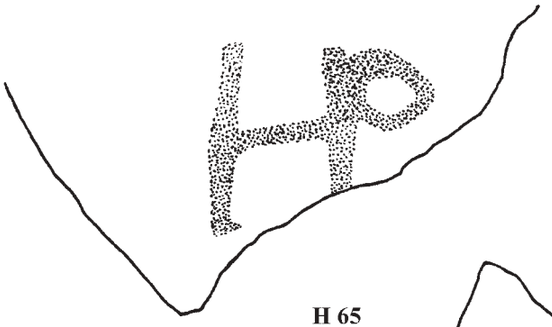

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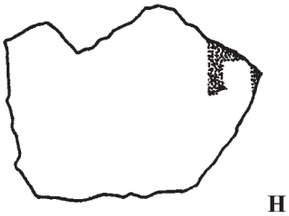

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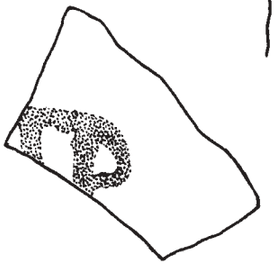

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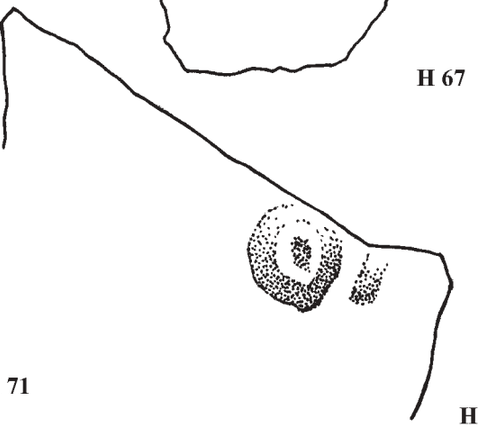
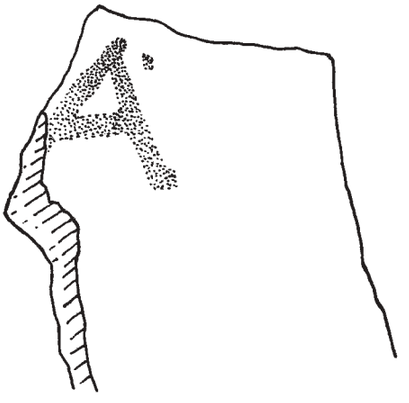


H 68

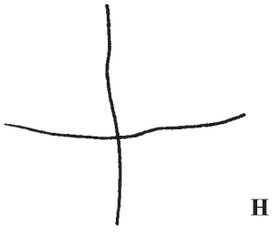
H 70

H 73



H 74

H 75



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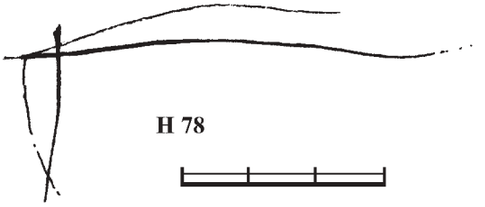

H 78

H 79

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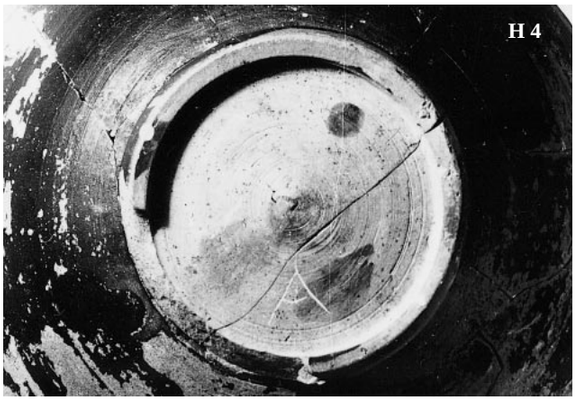
H 2

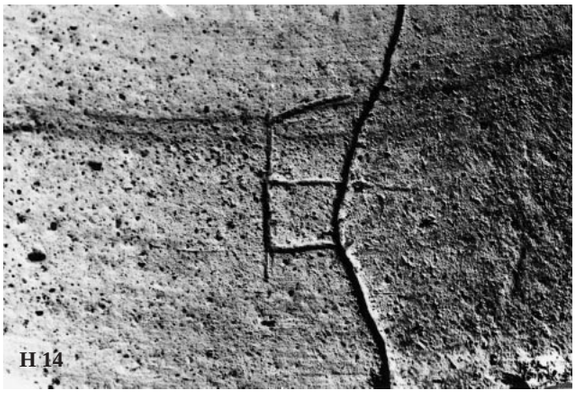


H 4

H 9

H 10

H 11



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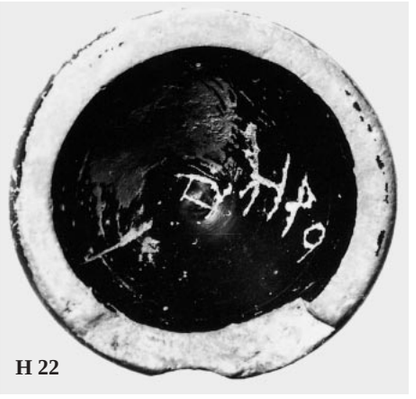
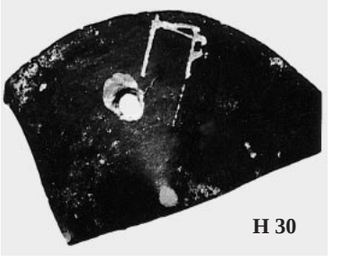

H 22


H 23


H 24


H 26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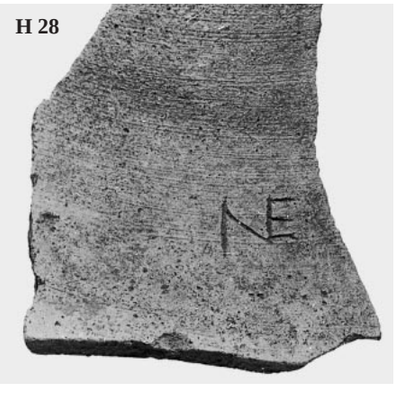
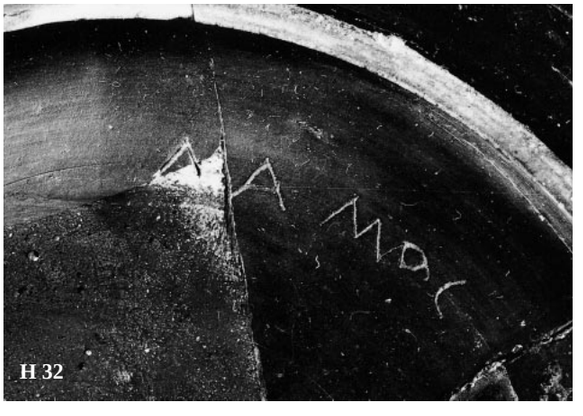

H 28

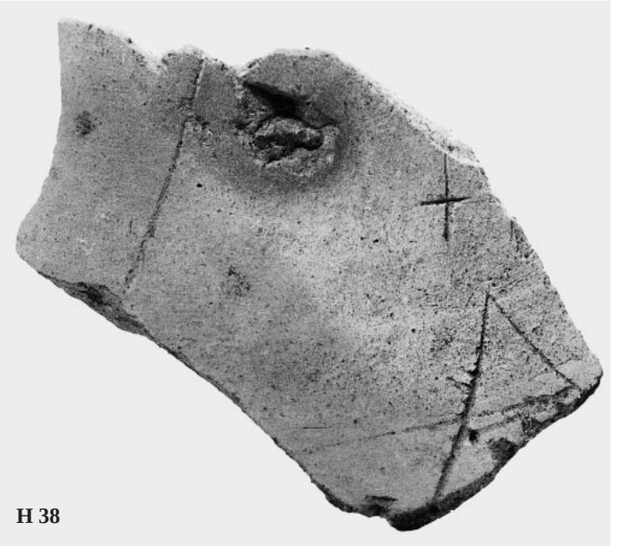

H 31


H 32


H 33(b)

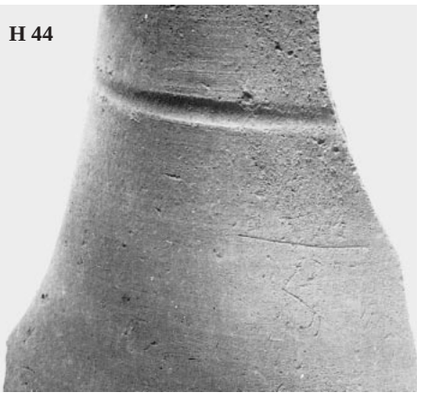
H 35

H 37

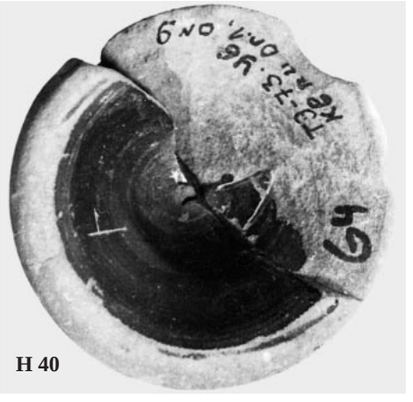


H 38

H 39

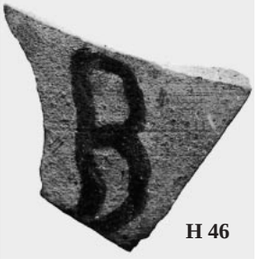


H 44



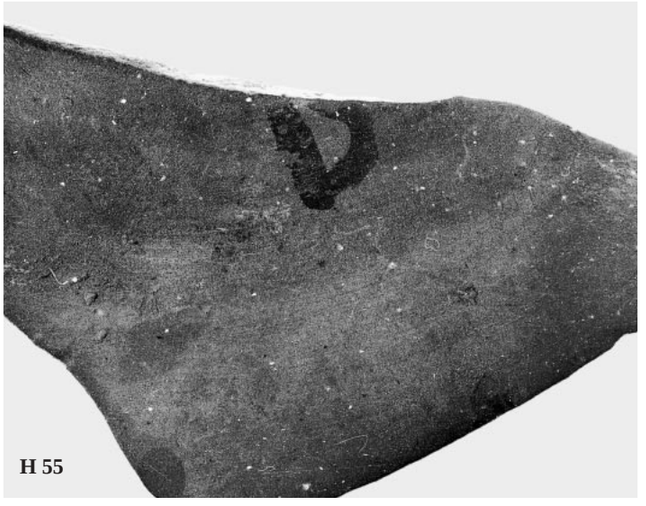
H 40

H 45



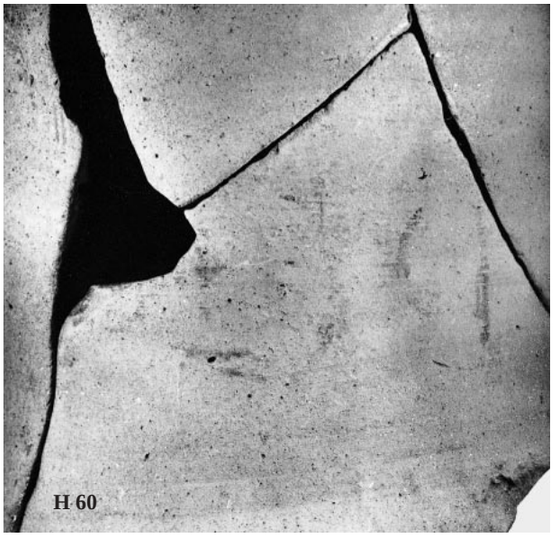
H 46

H 54



H 55

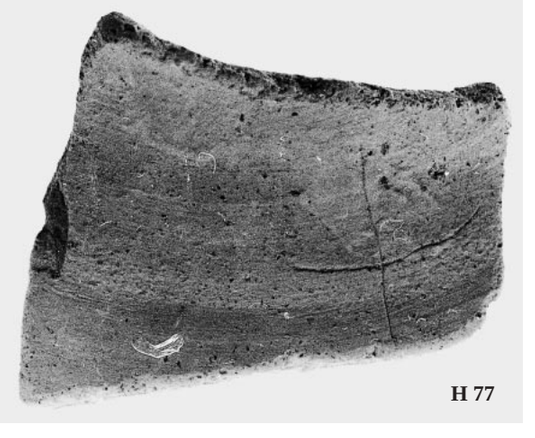
H 56



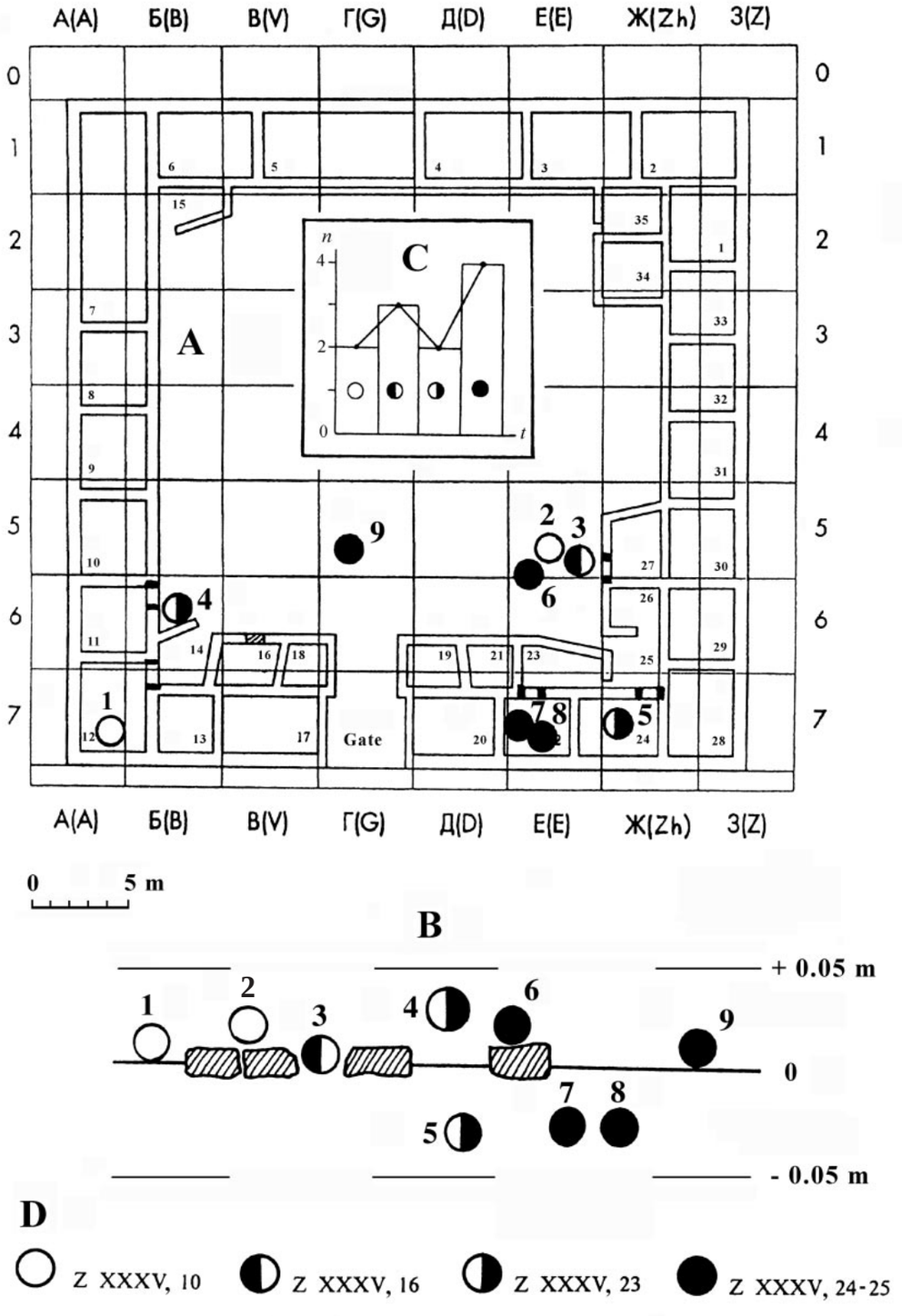
H 60

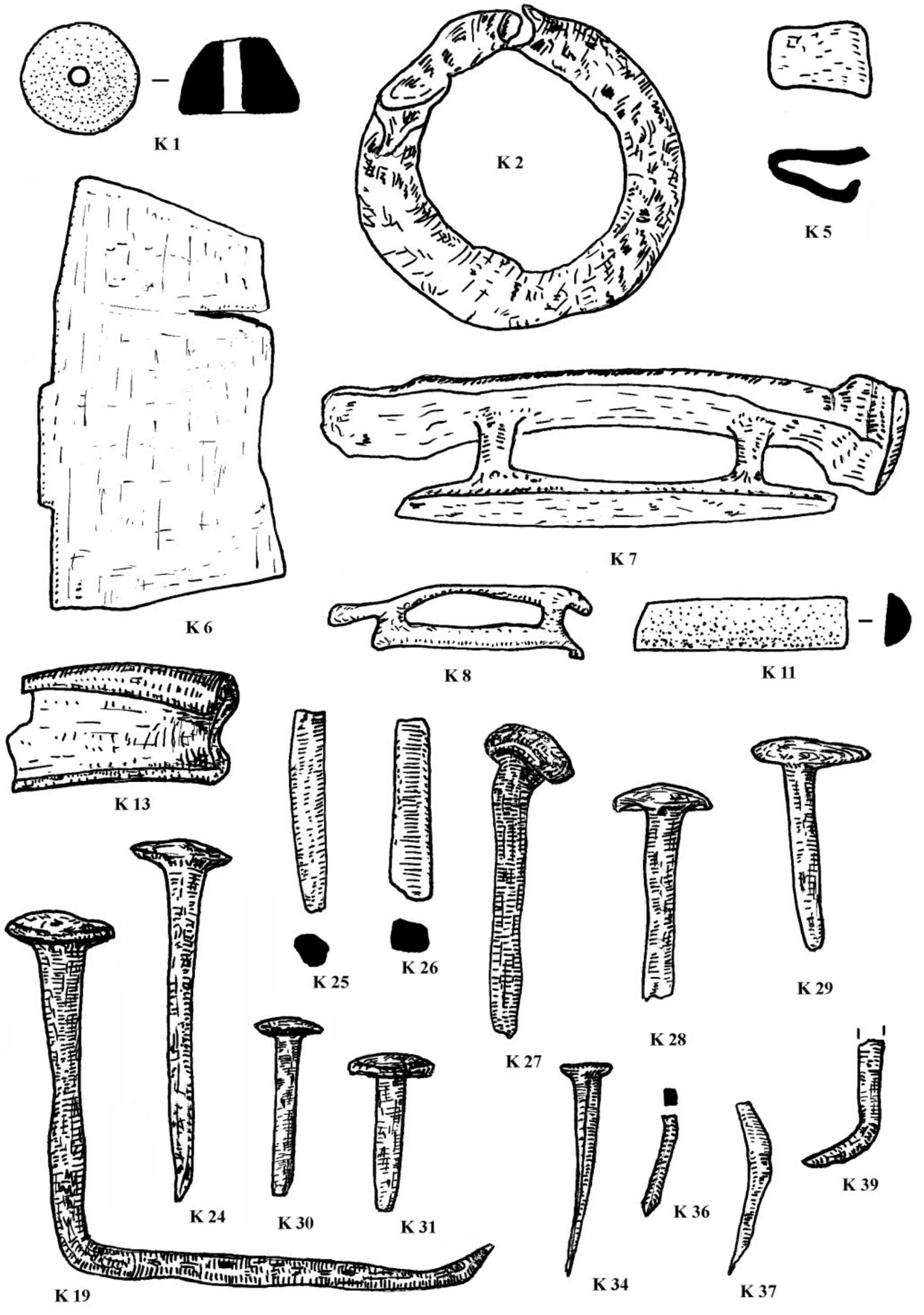
H 71

H 73

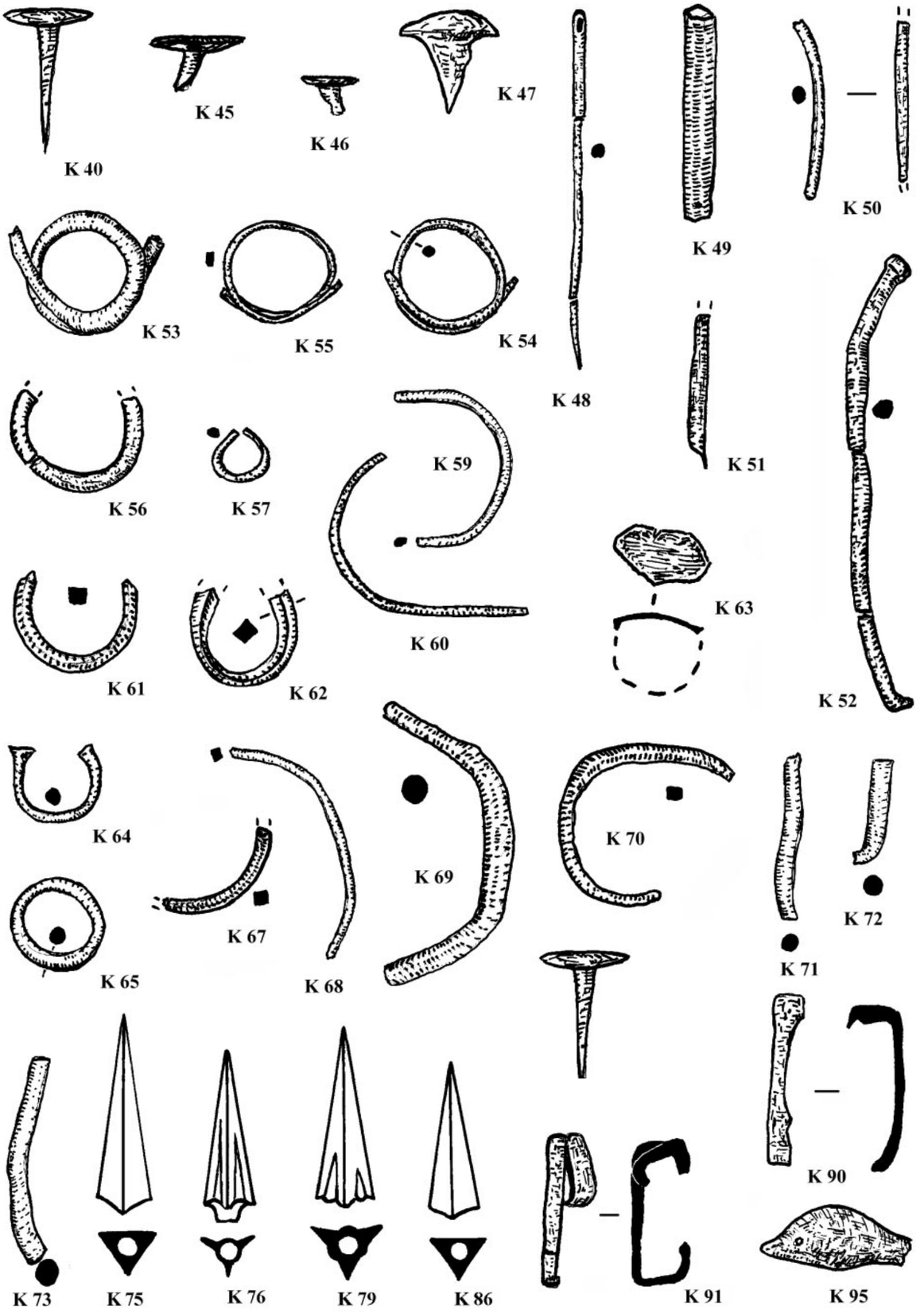


H 77


А(A) Б(B) В(V) Г(G) Д(D) Е(E) Ж(Zh) З(Z)
0 1 2 3 4 5 6 7
A
C
n
t
Gate
0 5 m
B
+ 0.05 m
0
- 0.05 m
D
Z XXXV, 10
Z XXXV, 16
Z XXXV, 23
Z XXXV, 24-25


K 1
K 2
K 5
K 6
K 7
K 8
K 11
K 13
K 25
K 26
K 27
K 28
K 29
K 24
K 30
K 31
K 34
K 36
K 37
K 39
K 19

1:1


K 40
K 45
K 46
K 47
K 48
K 49
K 50
K 51
K 52
K 53
K 54
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K 57
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K 60
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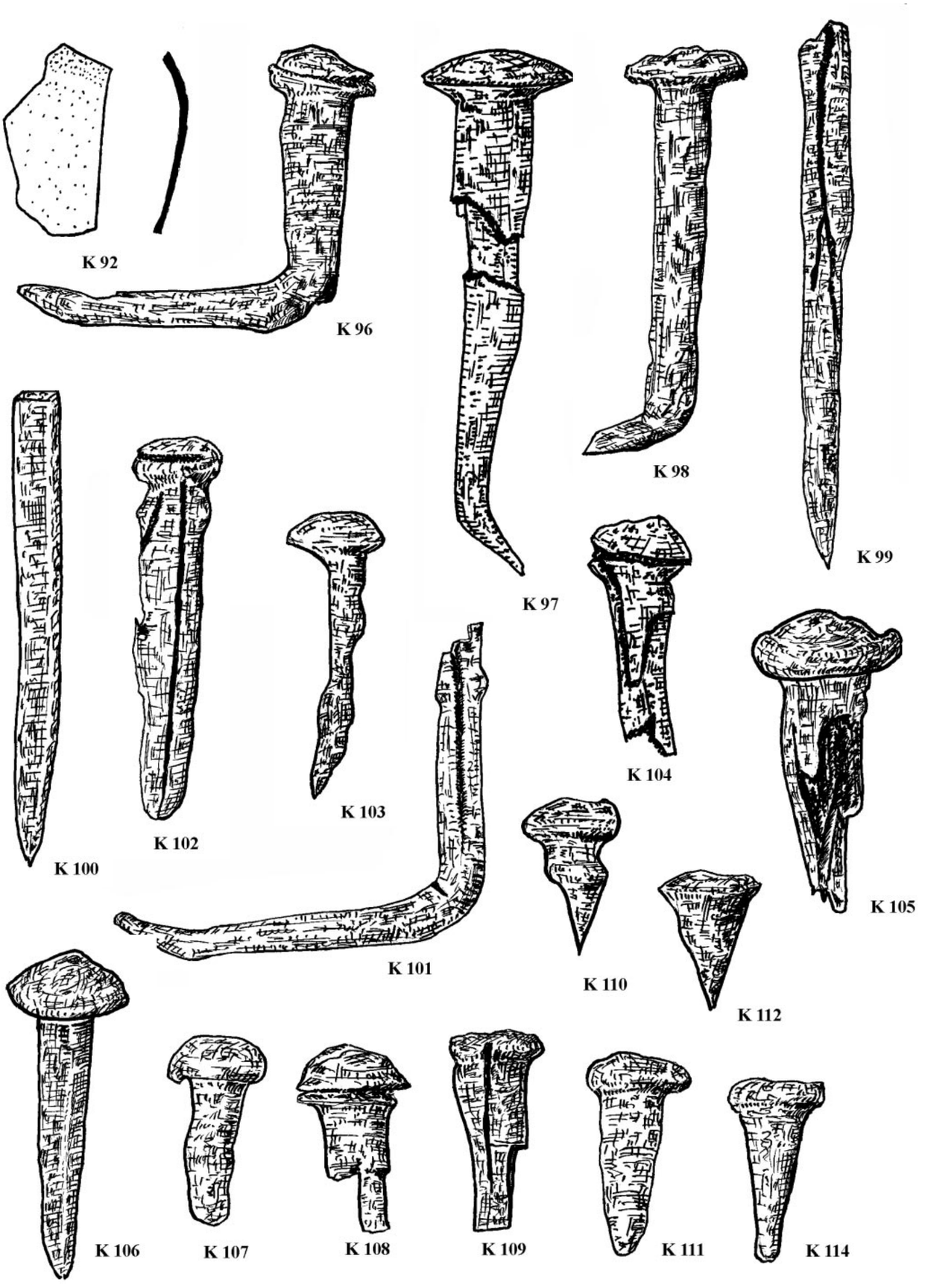
K 86
K 90
K 91
K 95


K 92
K 96
K 97
K 98
K 99
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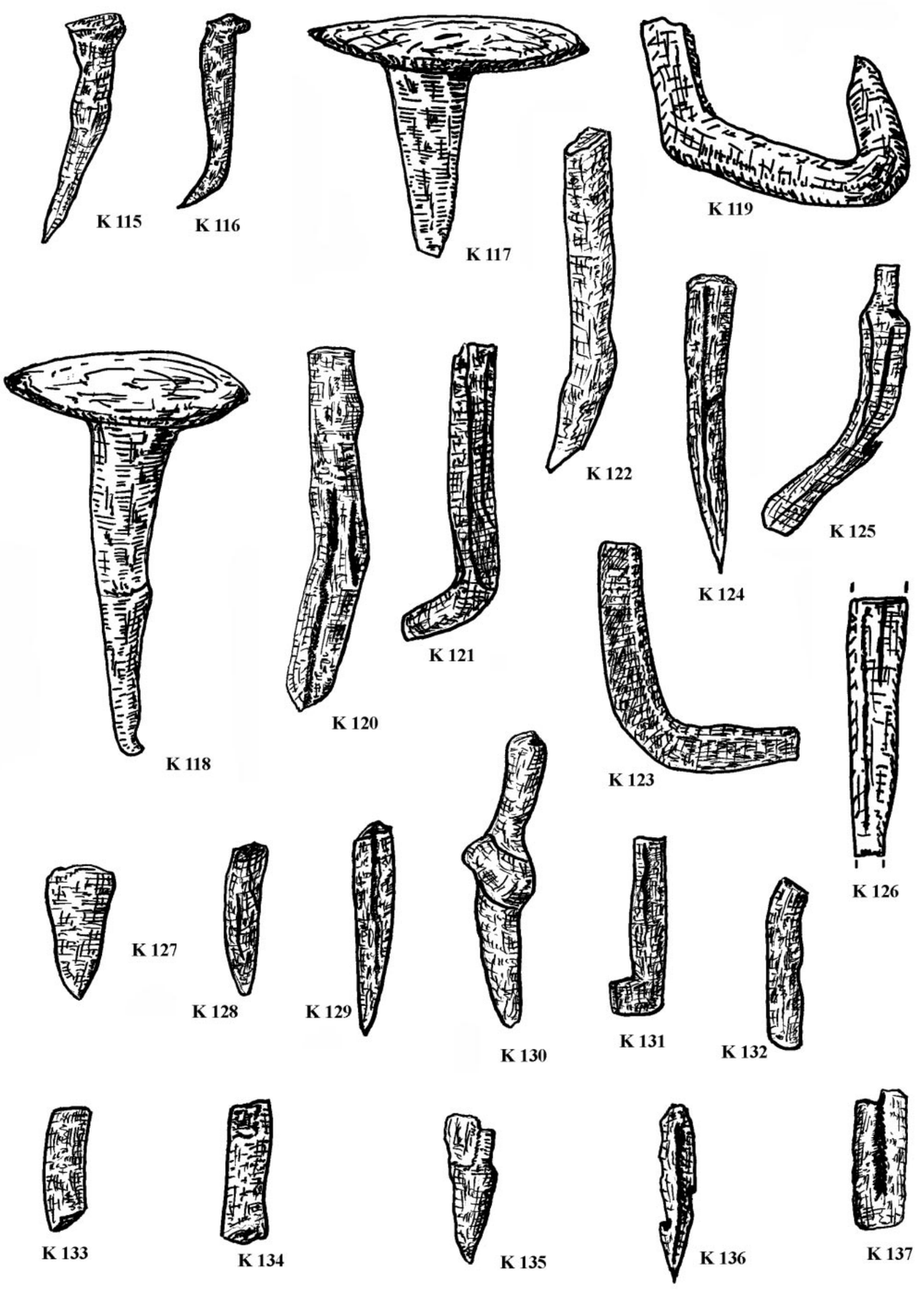
K 102
K 103
K 104
K 105
K 101
K 110
K 112
K 106
K 107
K 108
K 109
K 111
K 114

1:1


K 115
K 116
K 117
K 119
K 122
K 125
K 124
K 118
K 120
K 121
K 123
K 126
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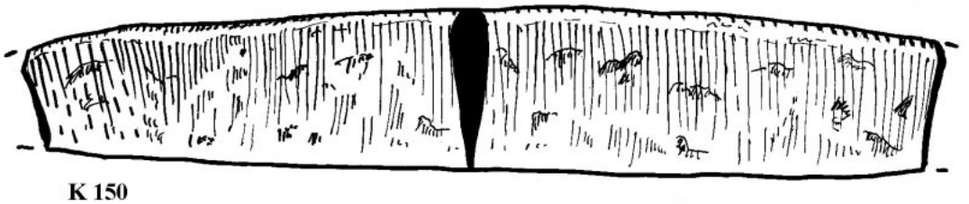
K 128
K 129
K 130
K 131
K 132
K 133
K 134
K 135
K 136
K 137

K 145

K 146



K 150

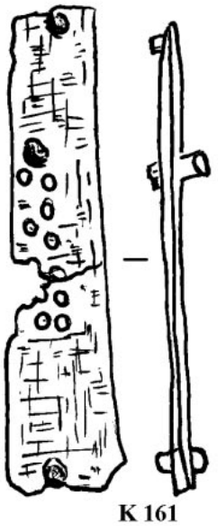
K 152

K 157

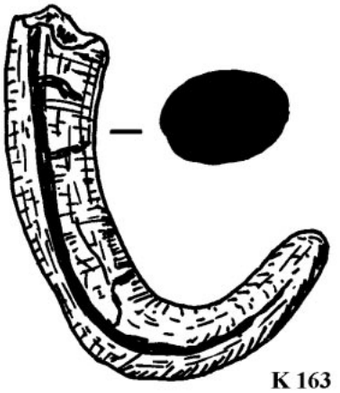
K 158

K 159

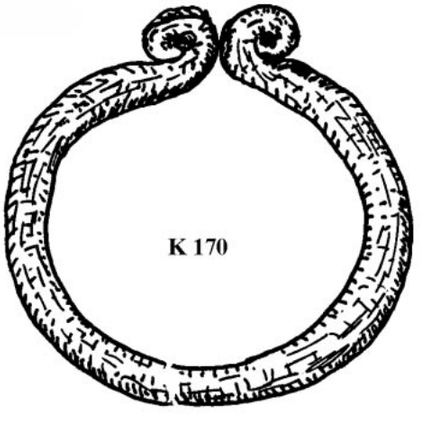
K 160



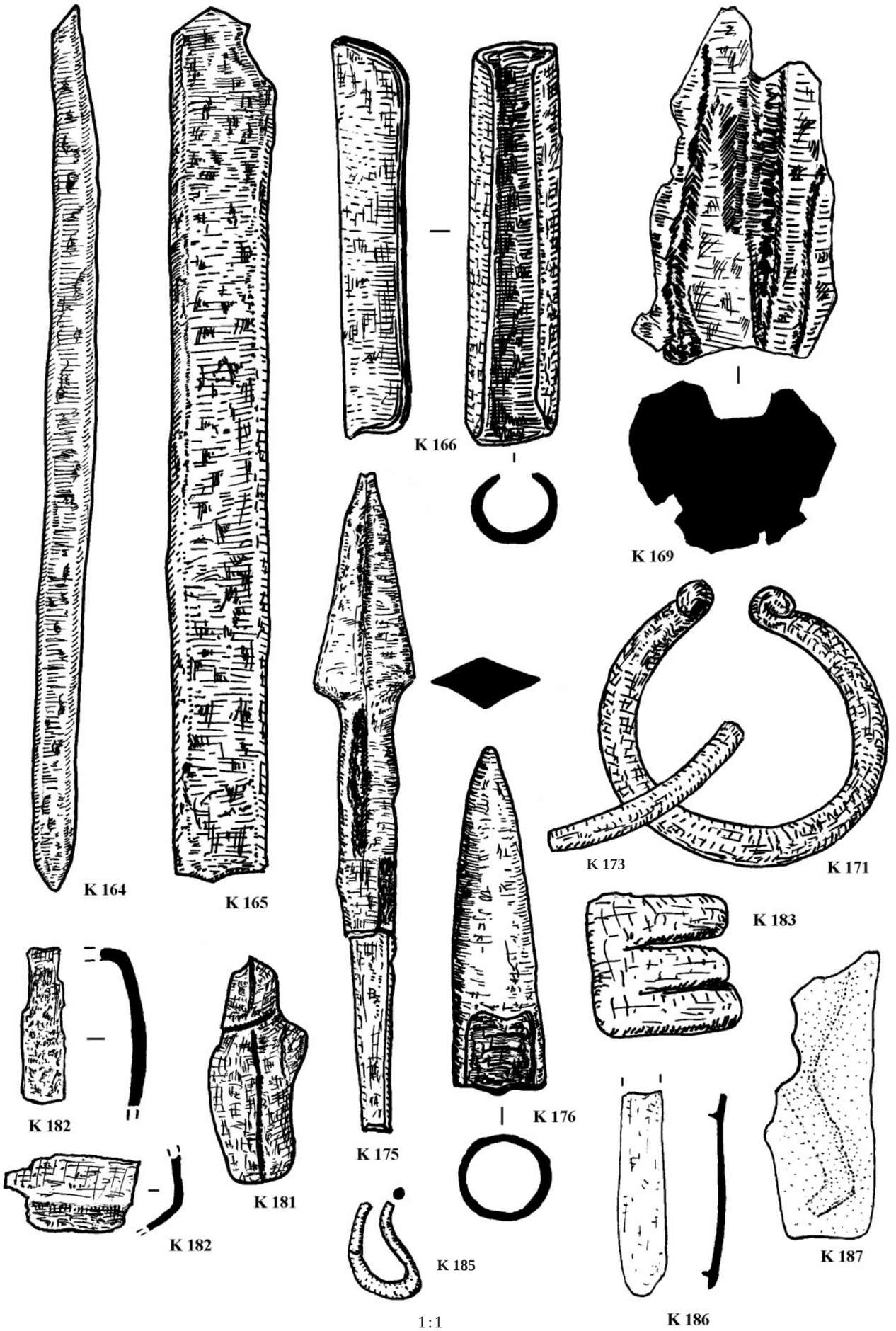
K 161



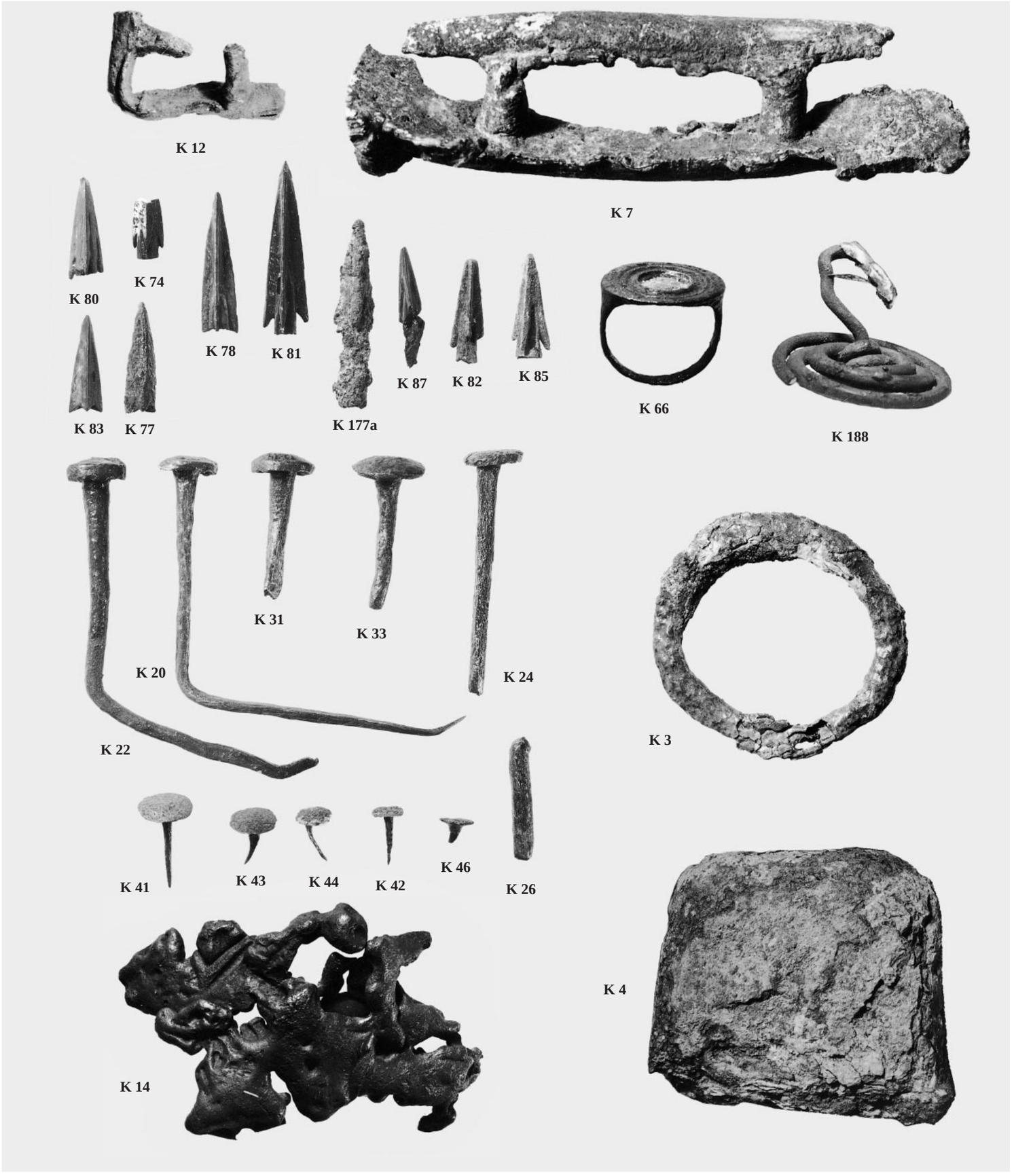
K 163



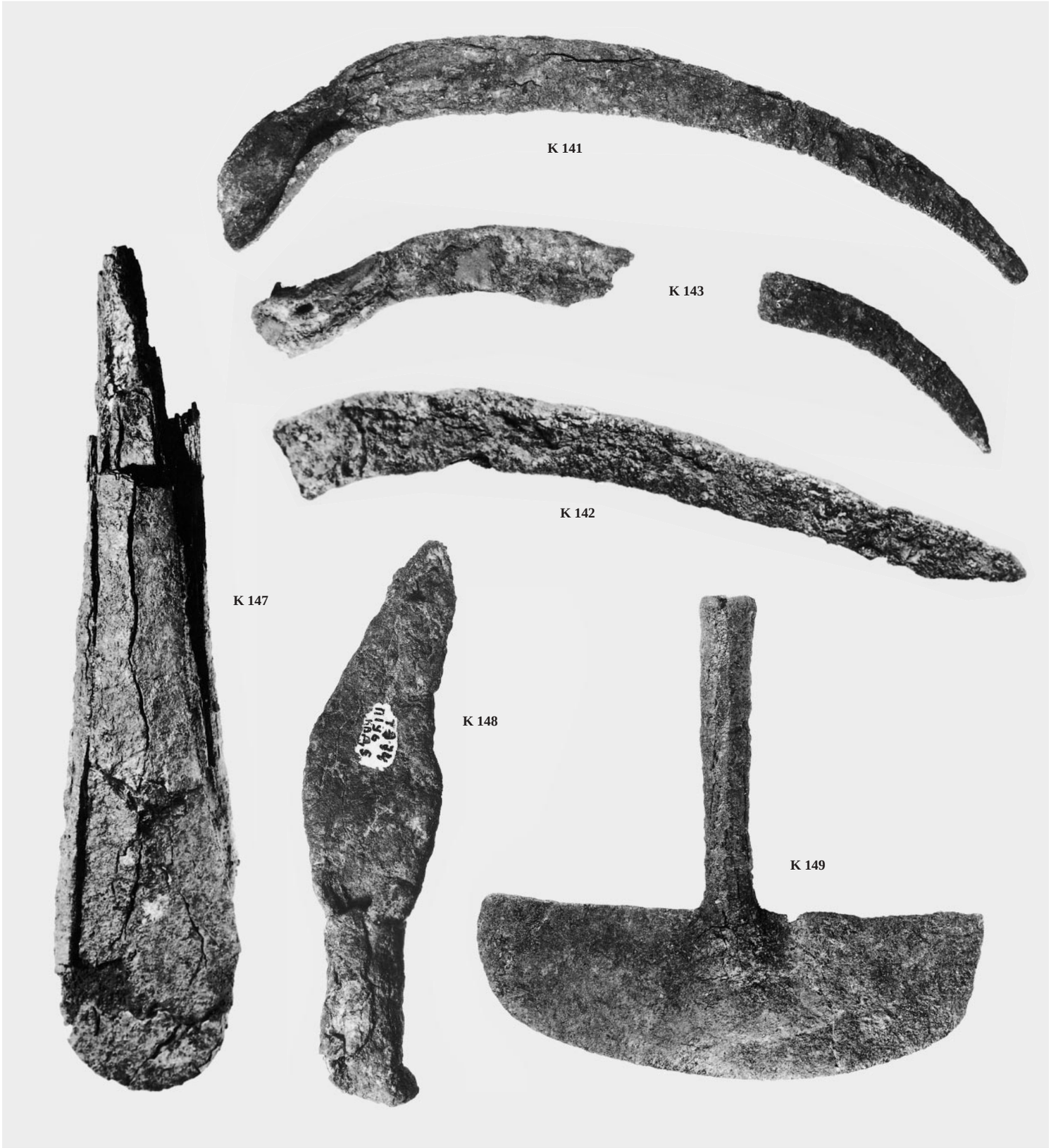
K 170


K 164
K 165
K 166
K 169
K 171
K 173
K 175
K 176
K 181
K 182
K 182
K 183
K 185
K 186
K 187

1:1

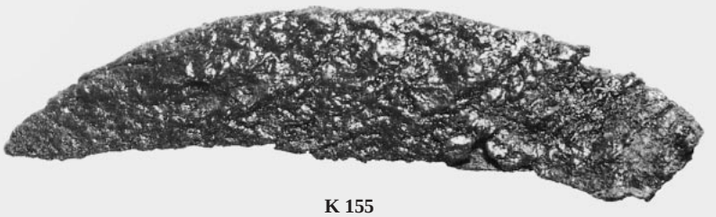


1:1 (**K 20**, **K 22**, **K 24**, **K 26**, **K 31**, **K 33**, **K 41-44**, **K 46** 3:4; **K 188** 3:2)



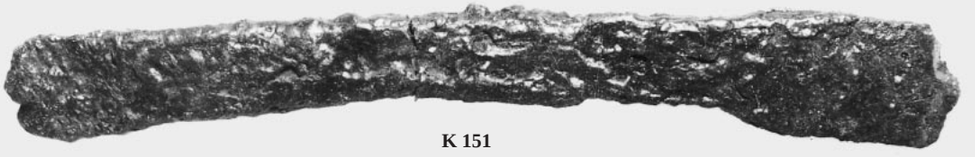
1:2 (**K 142**, **K 148** 1:1; **K 149** 1:3)

K 154



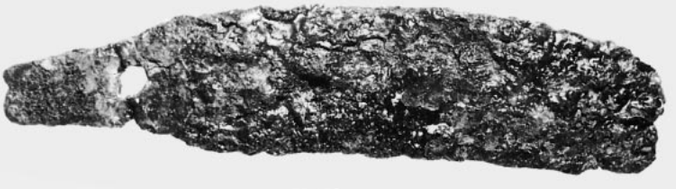
K 155

K 106



K 151

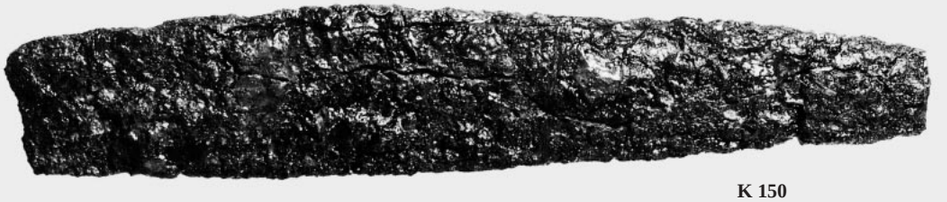
K 167



K 153

K 156

K 161



K 150

K 152

1:1 (**K 106** 3:4; **K 167** 1:4)

K 162

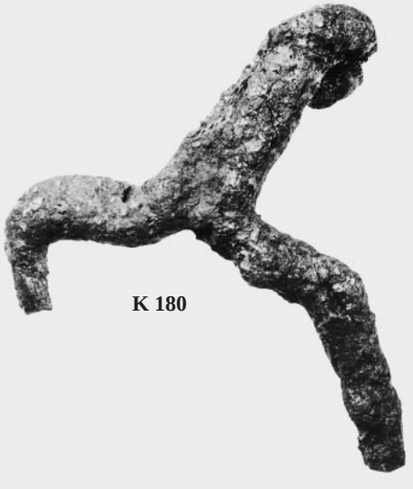
K 168

K 178

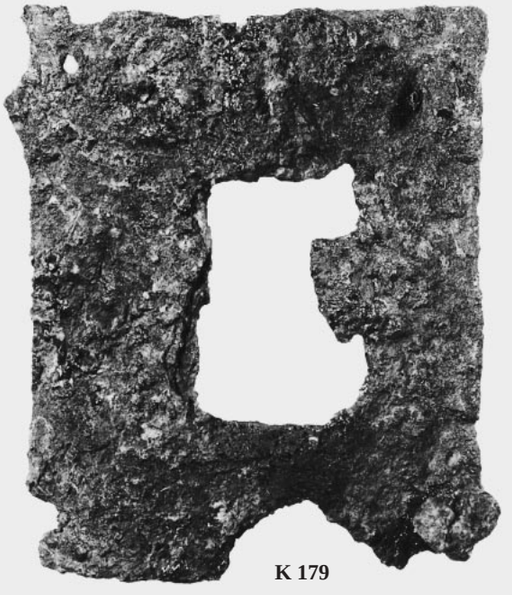
K 174

K 176

K 177

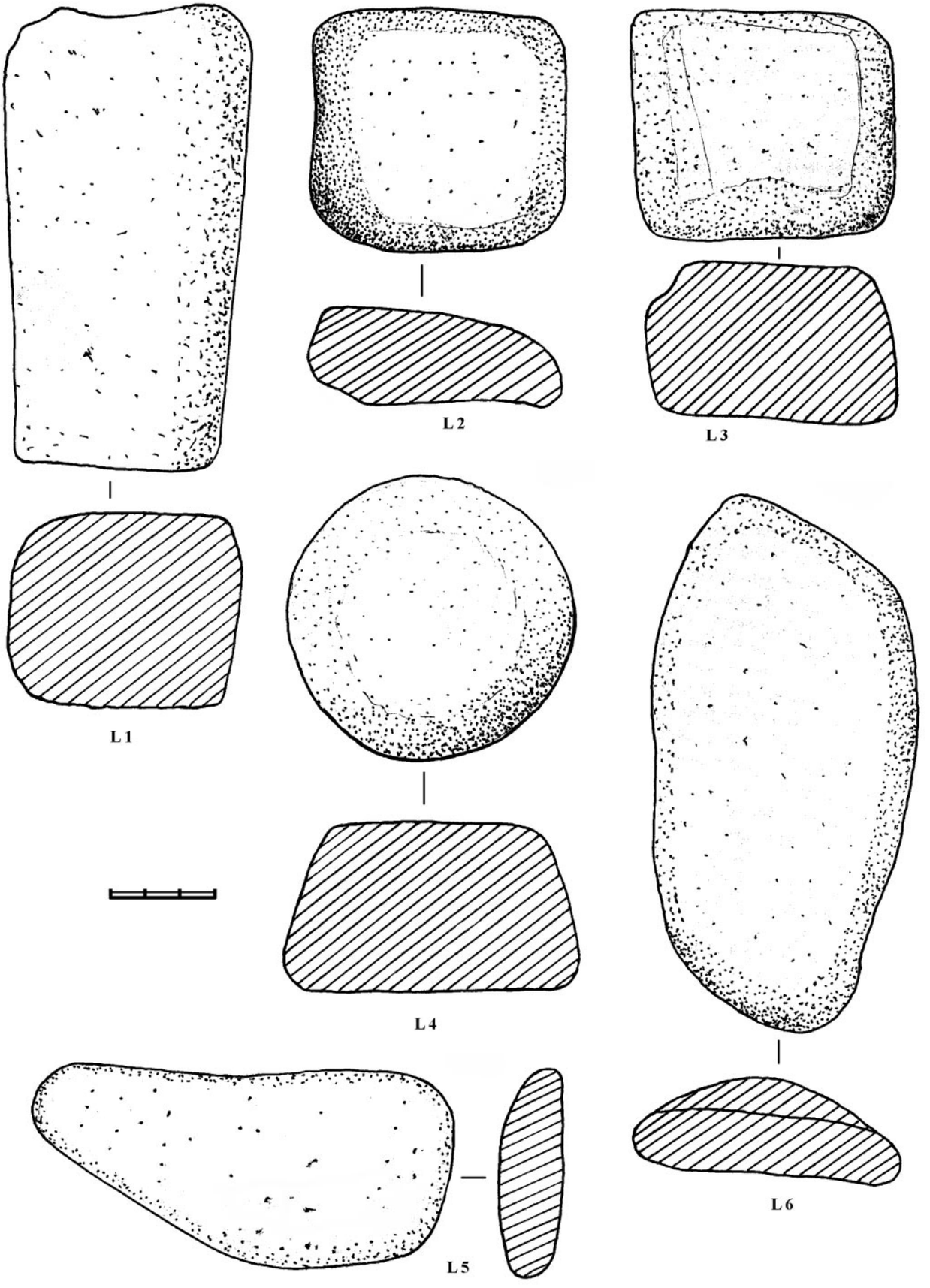


K 180

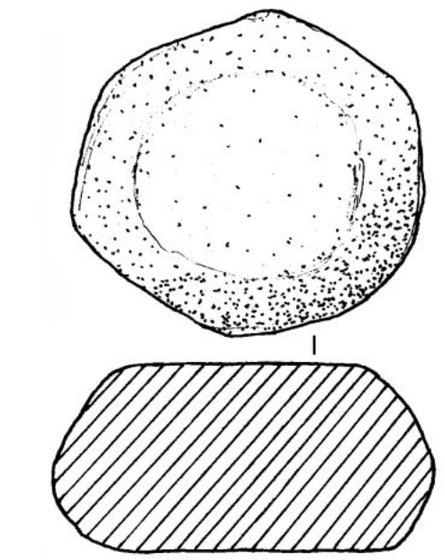


K 179

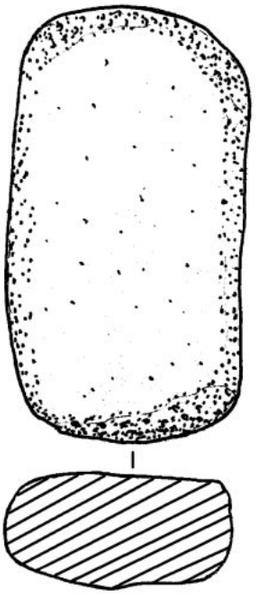
K 177 1:1; **K 176**, **K 178** 1:2; **K 174** 1:3; **K 162** 1:6; **K 168**, **K 179-180** 3:4



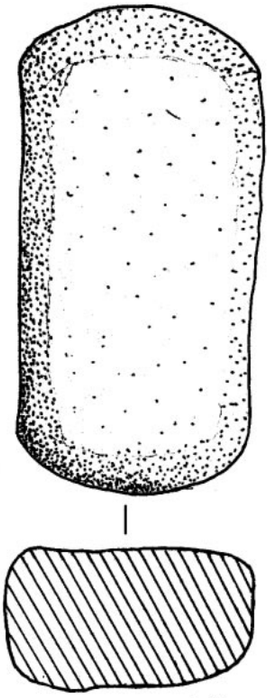
2:3



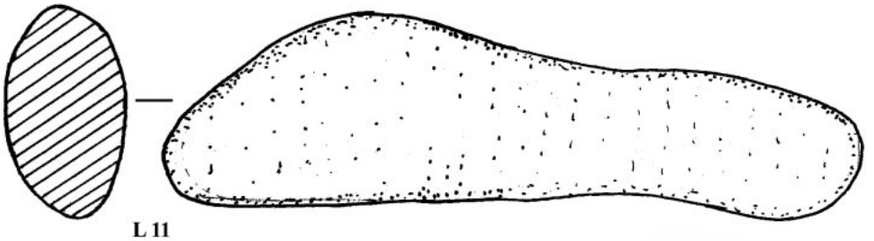
L 7



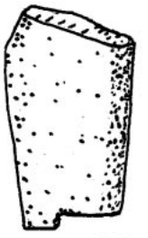
L 12



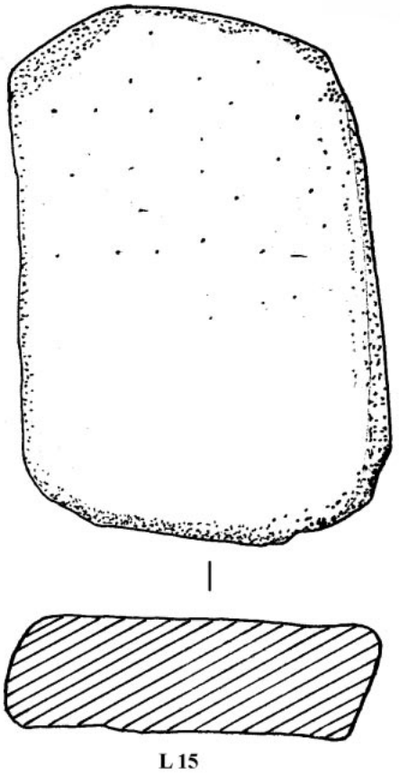
L 16



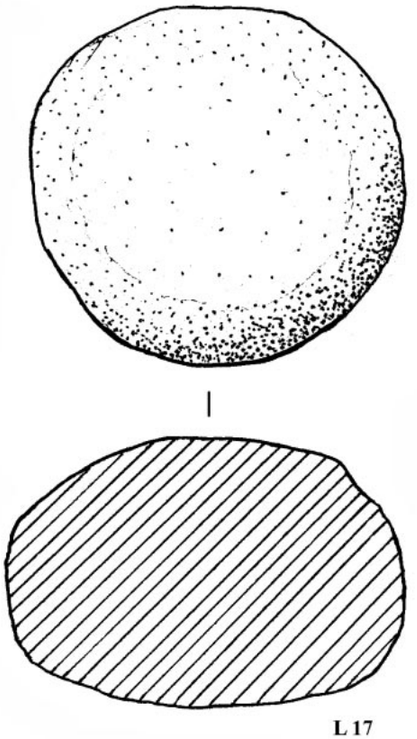
L 11



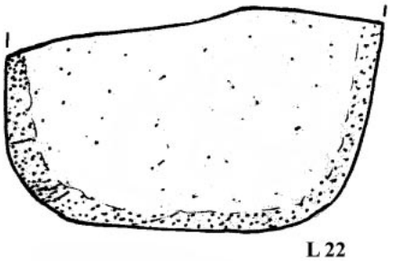
L 19



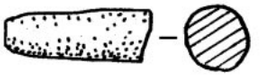
L 15



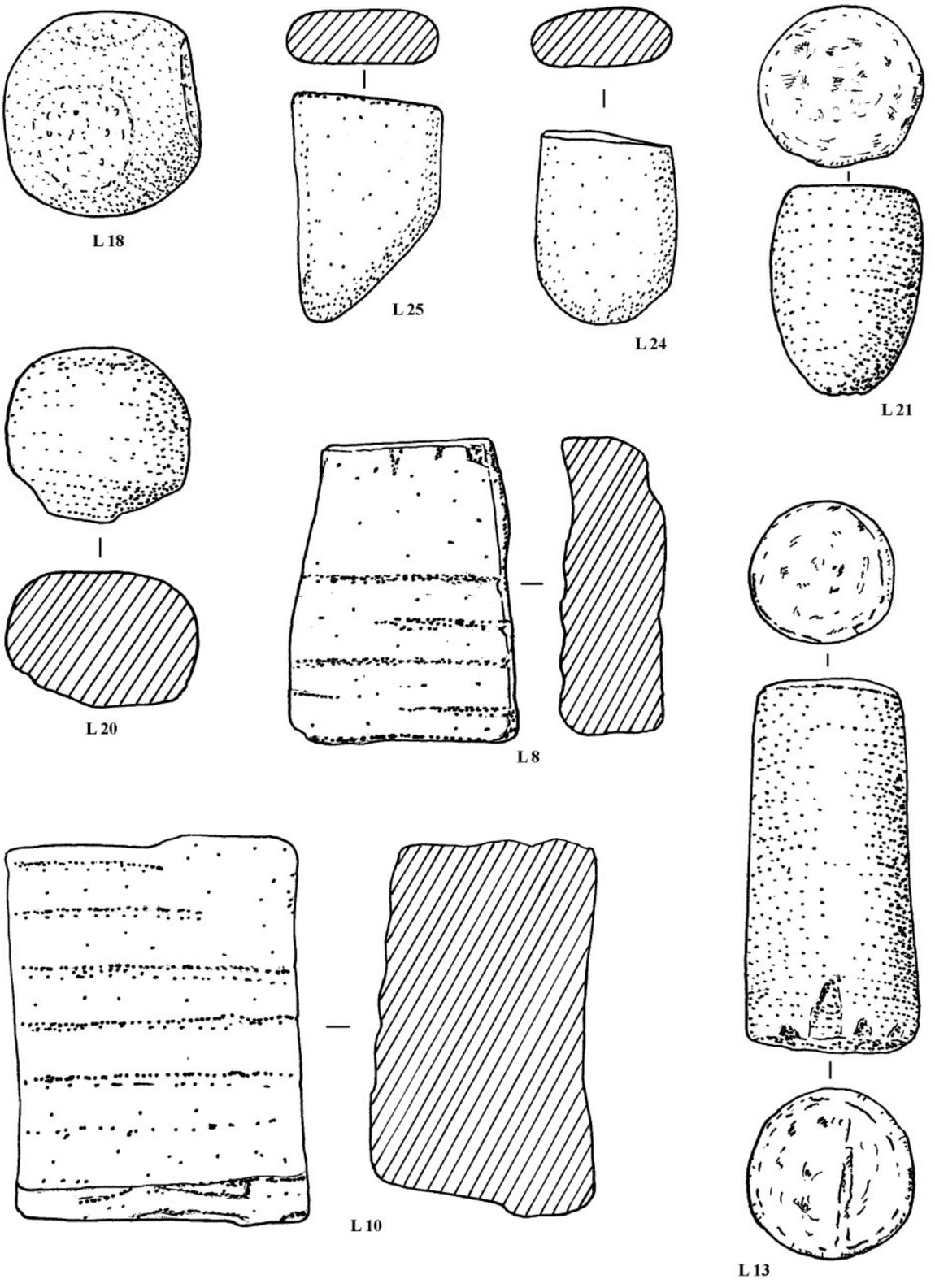
L 17

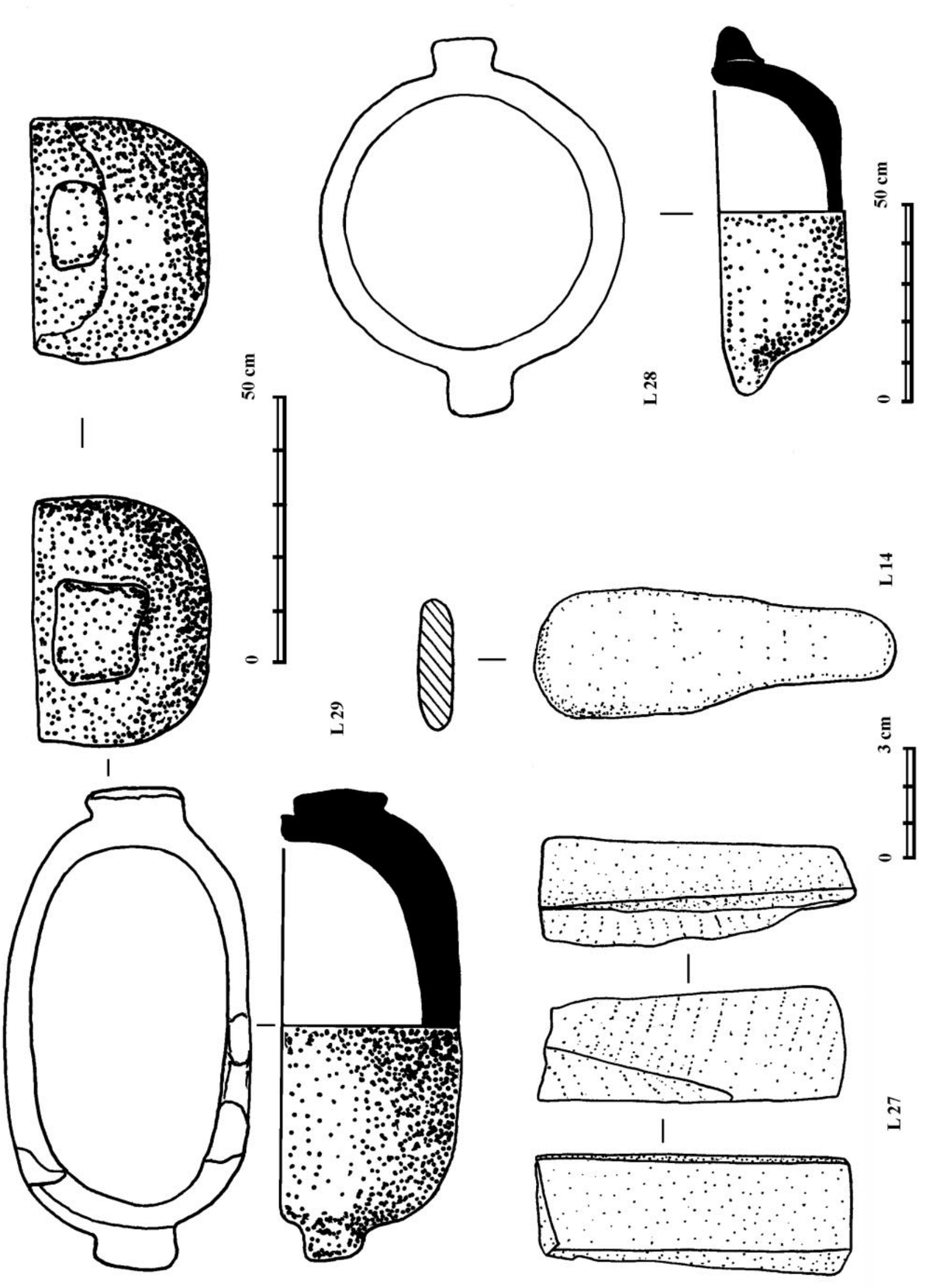


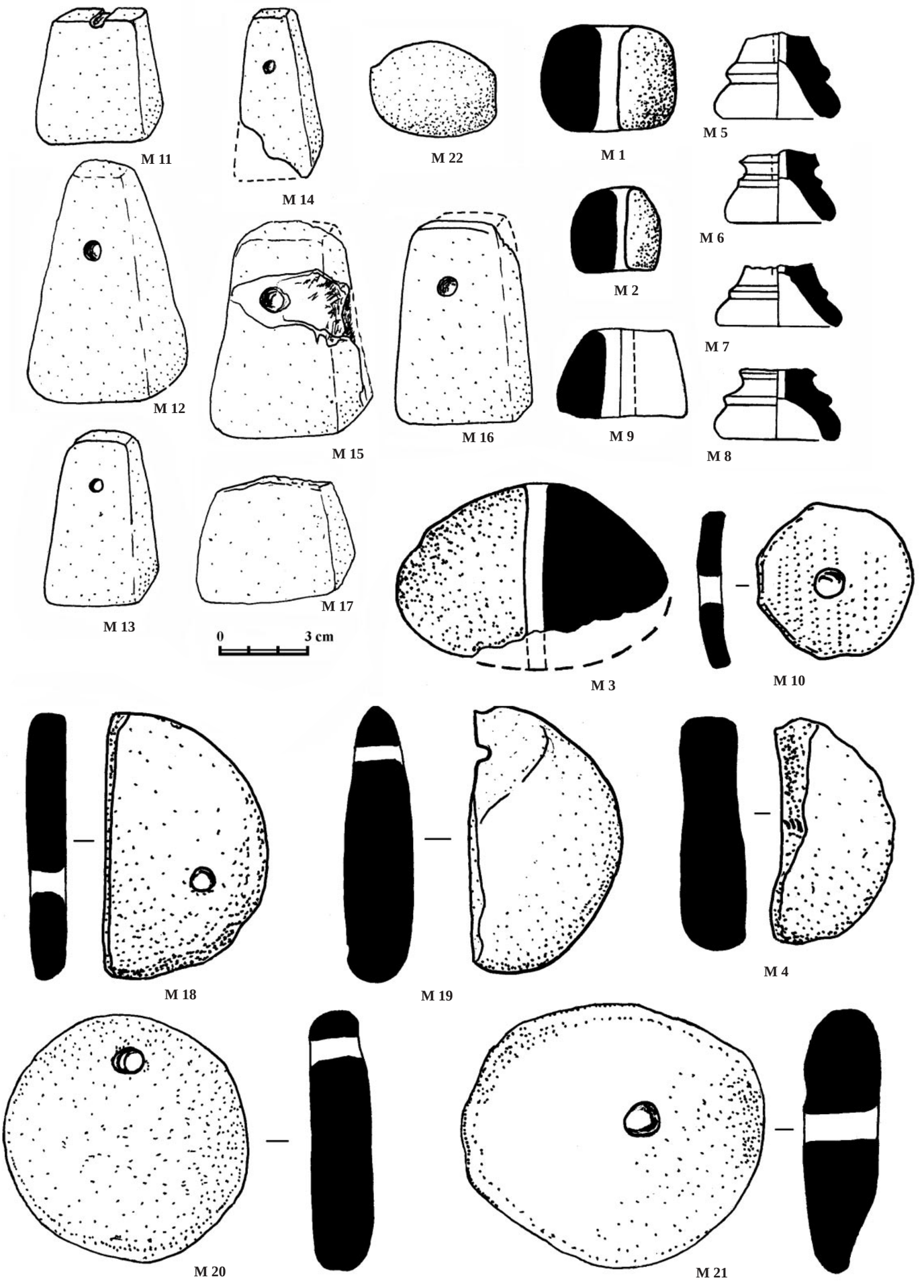
L 22



L 23

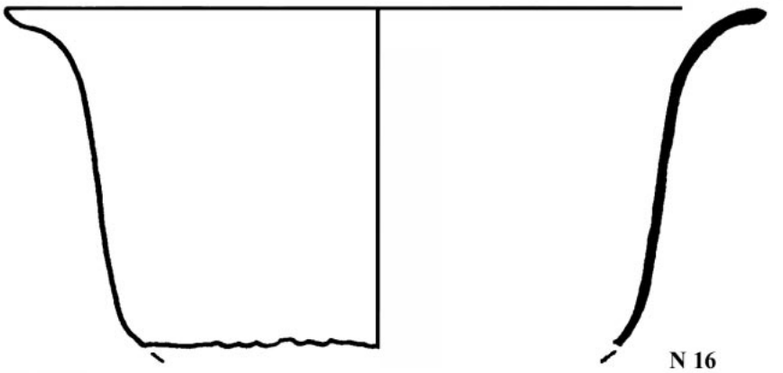

L 18
L 25
L 24
L 21
L 20
L 8
L 10
L 13
2:3


50 cm
0
L 28
50 cm
0
L 29
L 14
3 cm
0
L 27



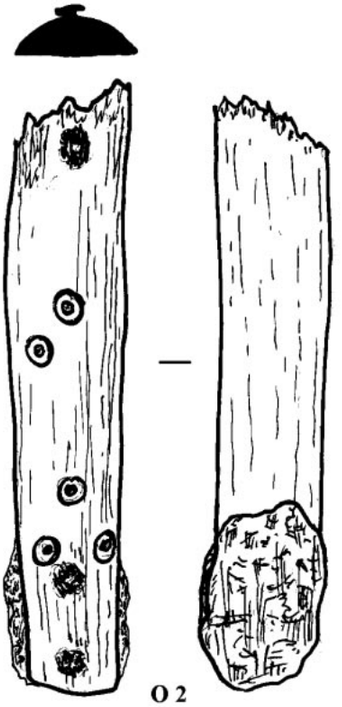
1:1 (**M 1-2**, **M 5-9**, **M 11-17**, **M 22** 2:3)

N 14 N 15



N 16

O 1



O 2

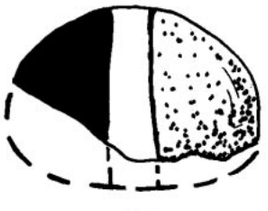
O 5

O 6

O 8

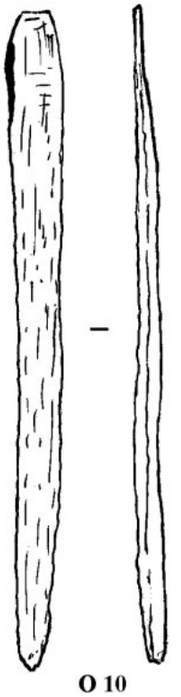
O 7

O 3



O 4

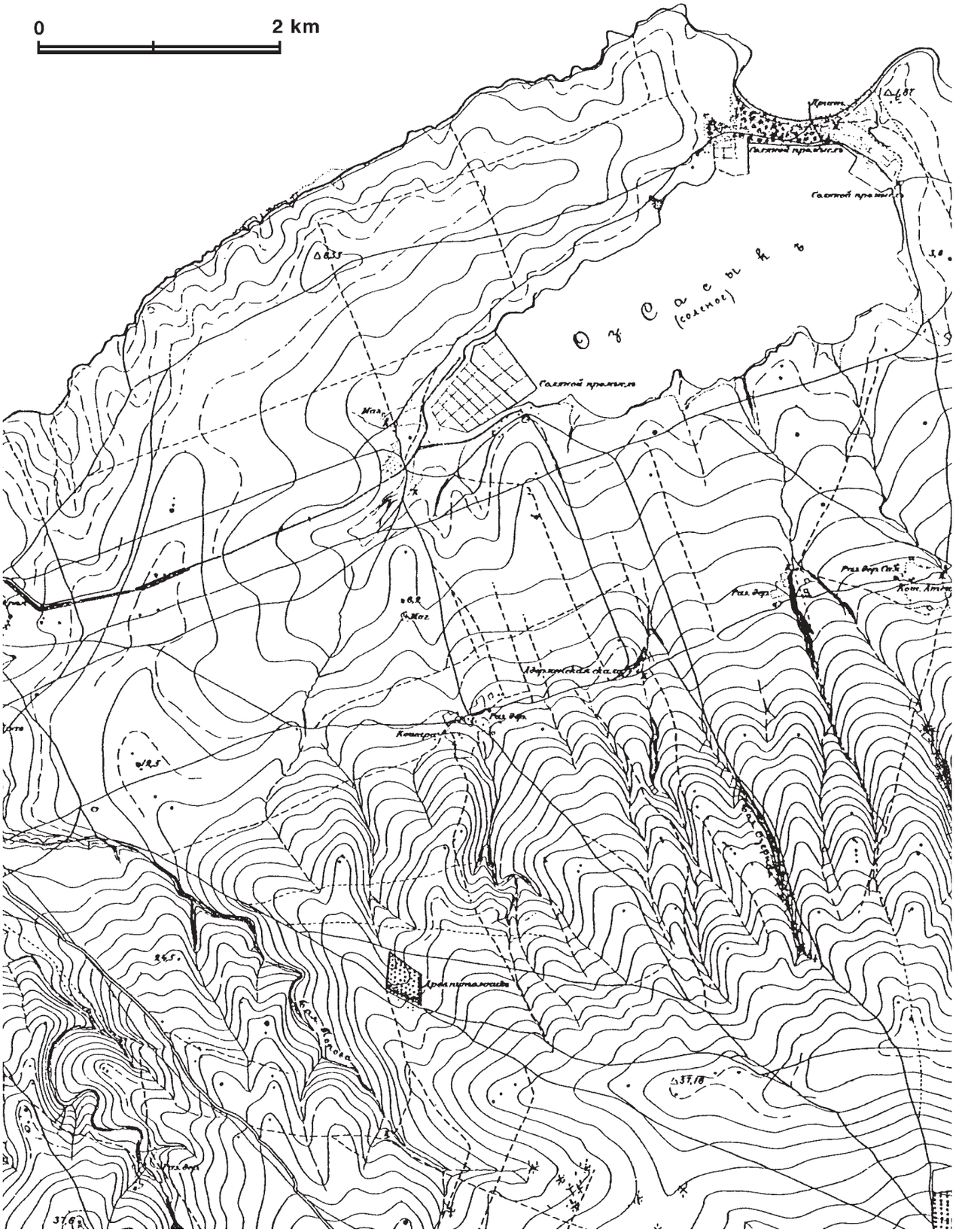
O 9

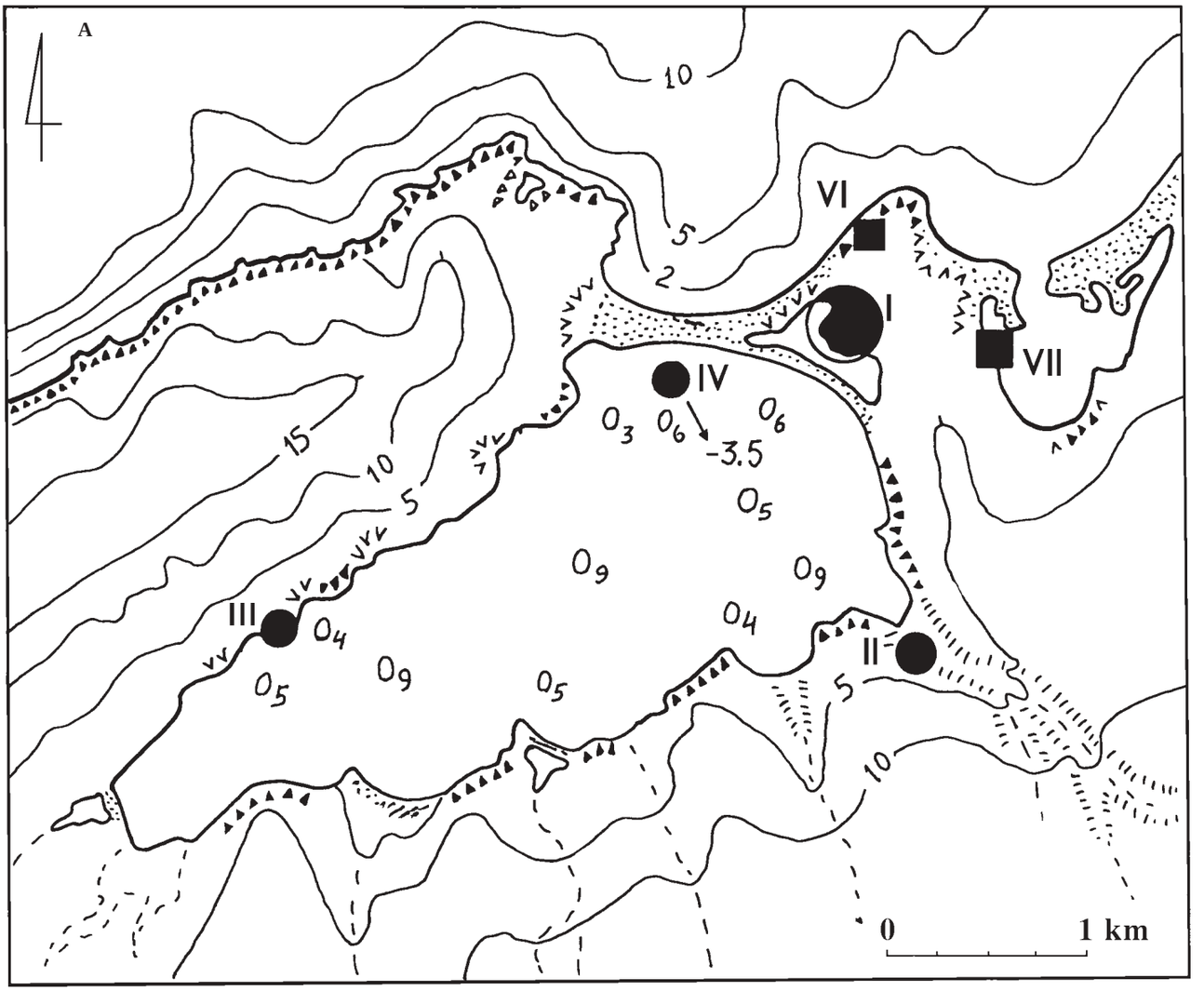


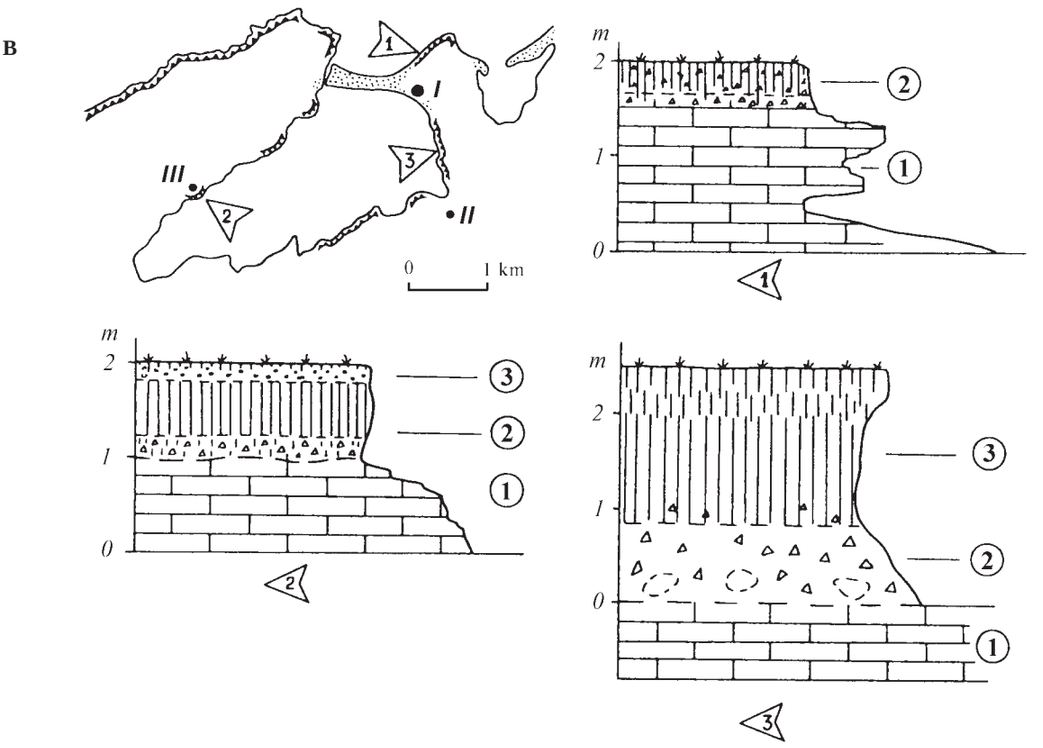
O 10


1
Lake Panskoye

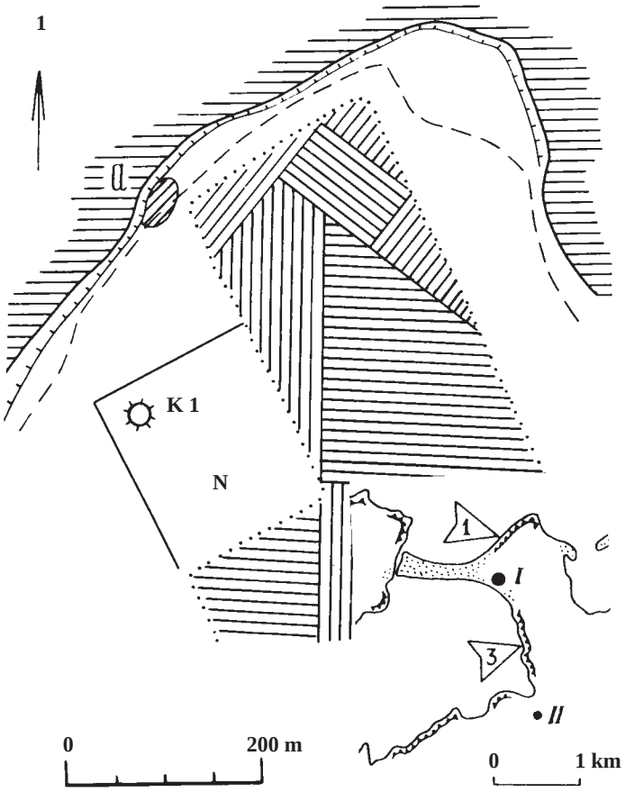

2
Panskoye I
U 6


0
2 km

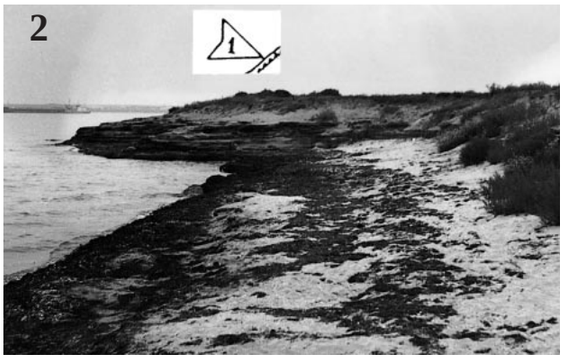

A
10
5
2
VI
I
VII
IV
15
10
5
III
II
0
1 km


B
1
I
3
III
2
II
0
1 km
m
2
1
0
3
2
1

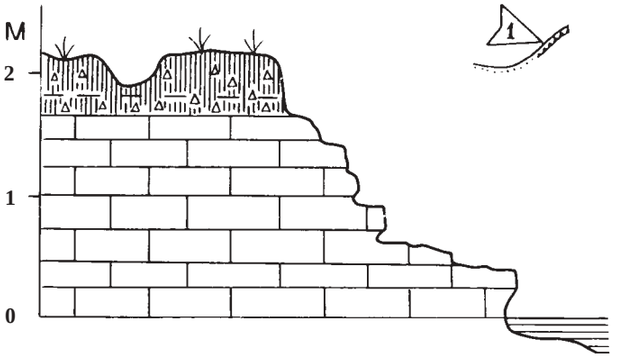
1



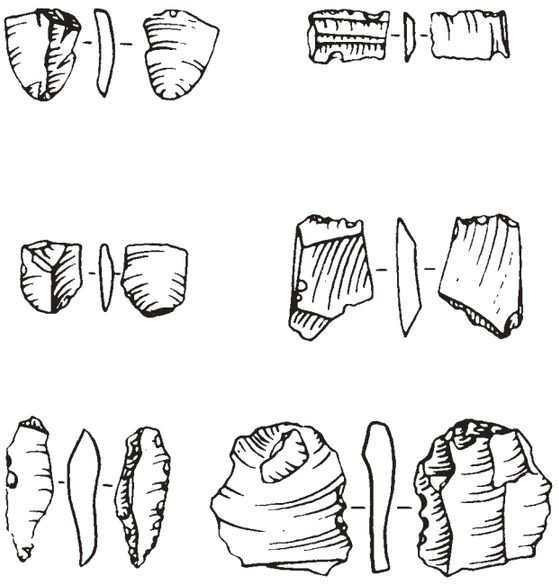
2



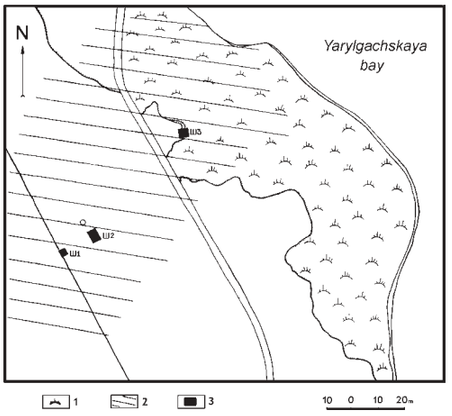
3



4



5



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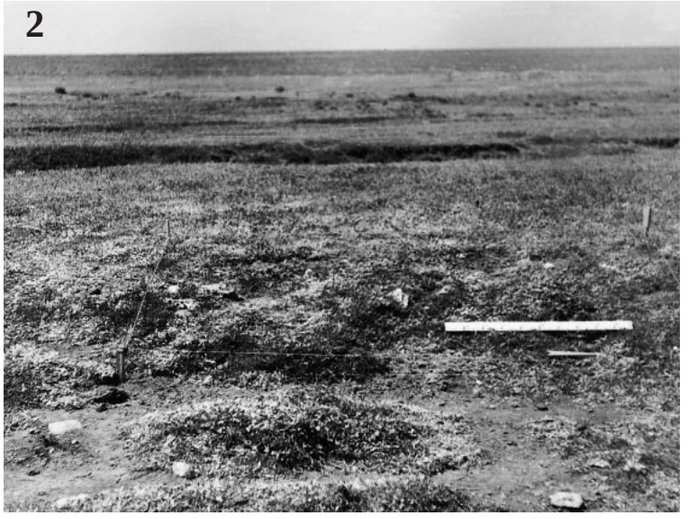
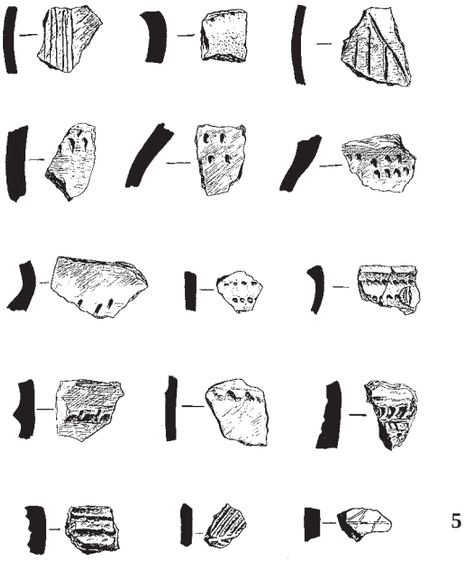


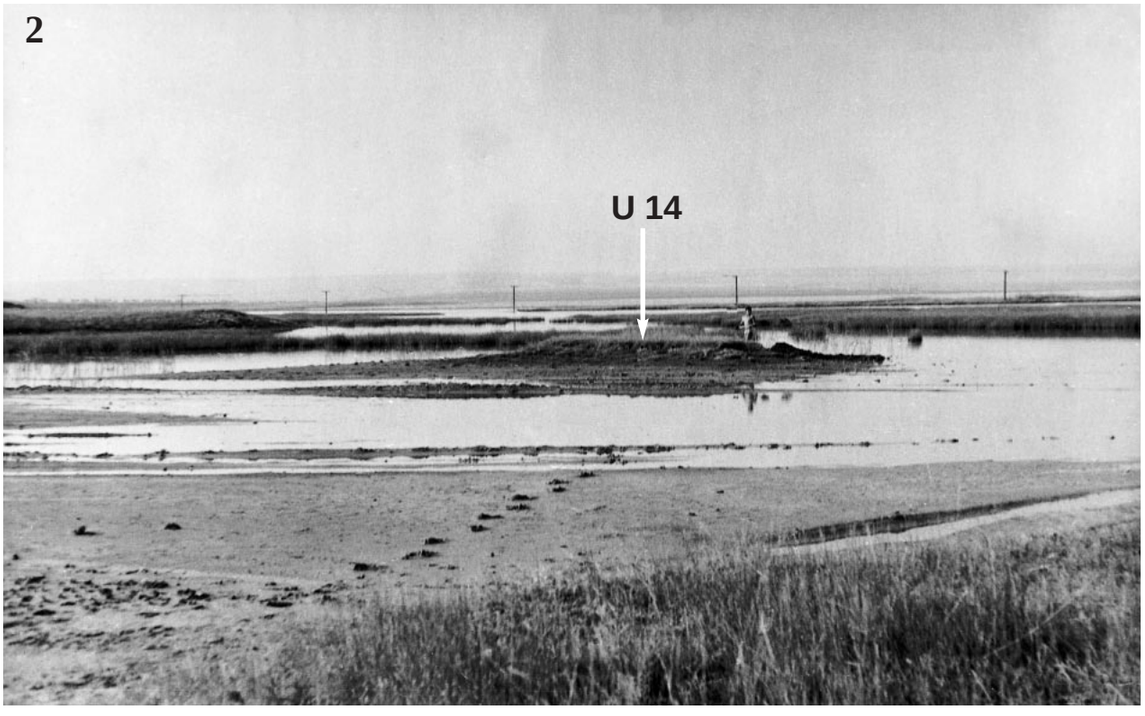
2

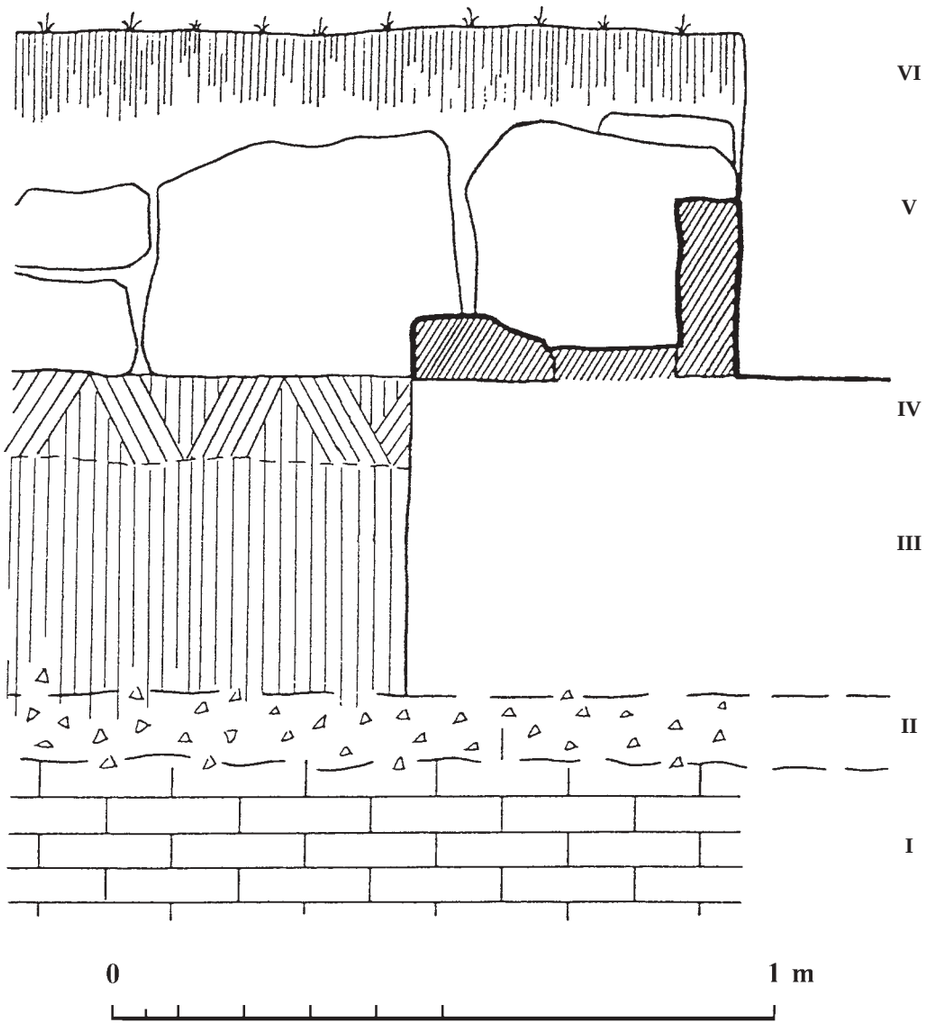
4

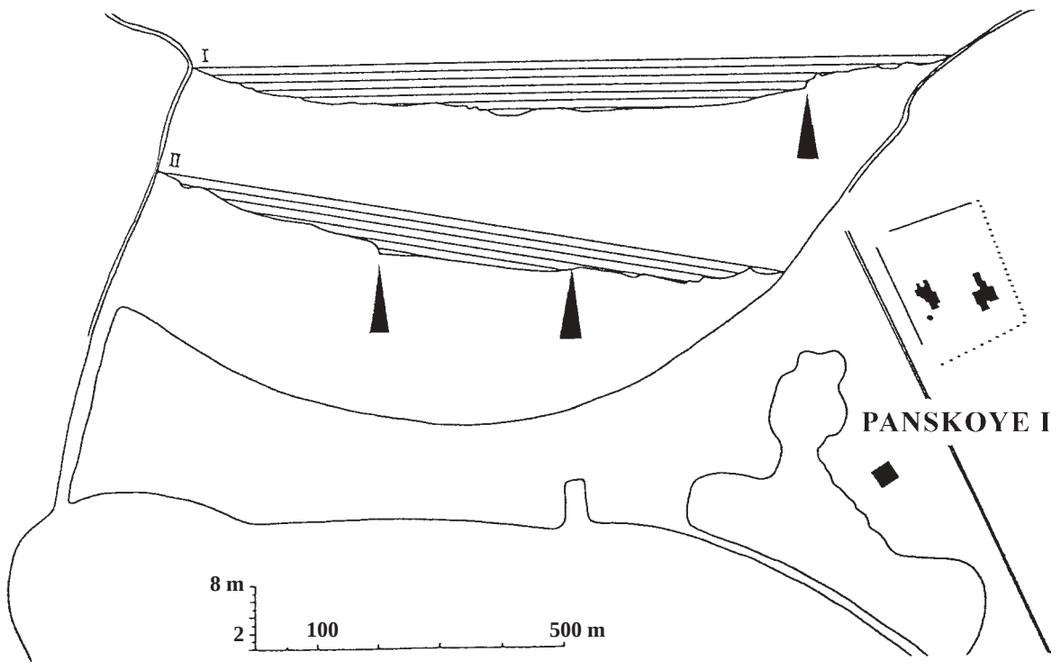


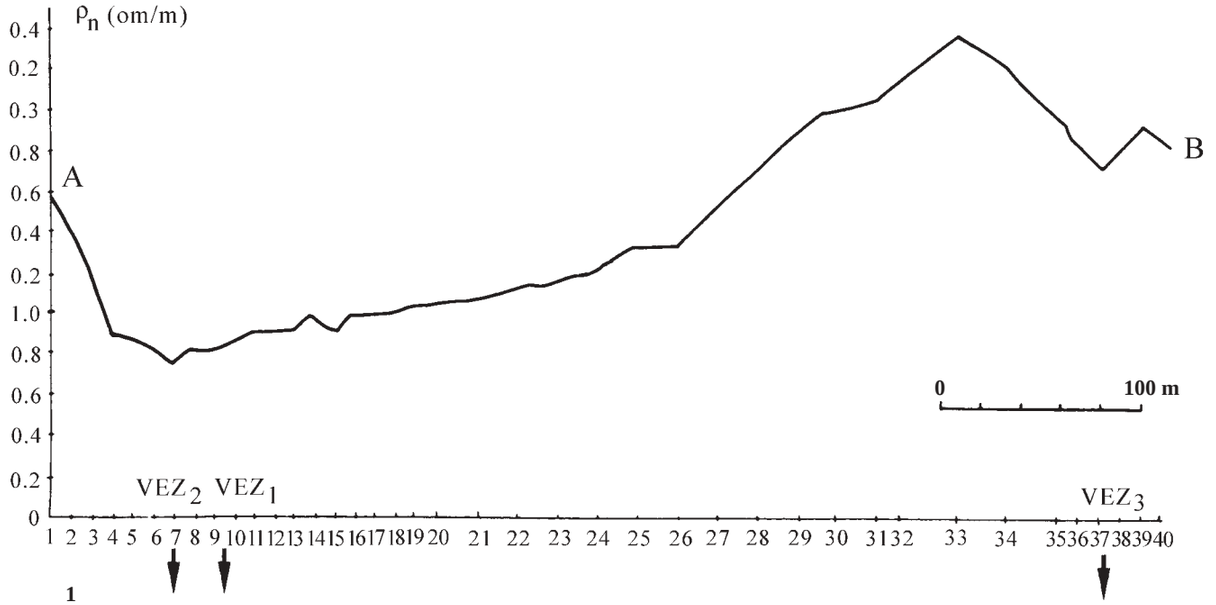
5


1
U 13
U 14
U 7
U 6

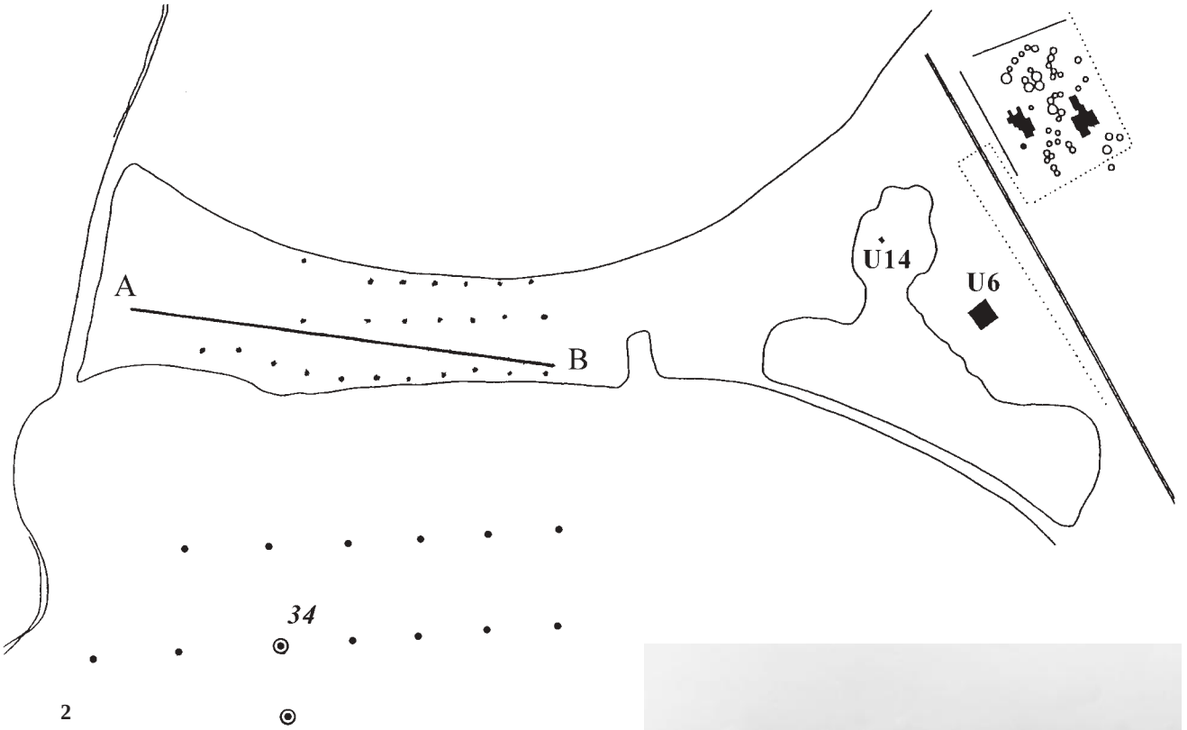

2
U 14


VI
V
IV
III
II
I
0
1 m

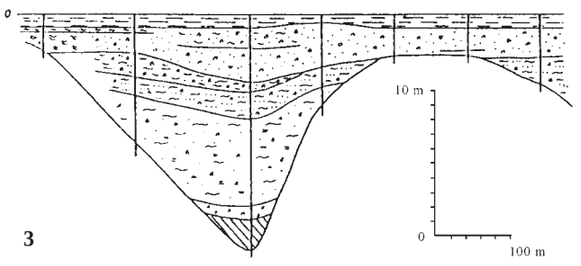

I
II
PANSKOYE I
8 m
2
100
500 m


ρn (om/m)
0.4
0.2
0.3
0.8
0.6
0.4
0.2
1.0
0.8
0.6
0.4
0.2
0
A
B
0
100 m
VEZ2 VEZ1
VEZ3
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

1


A
B
U14
U6
34

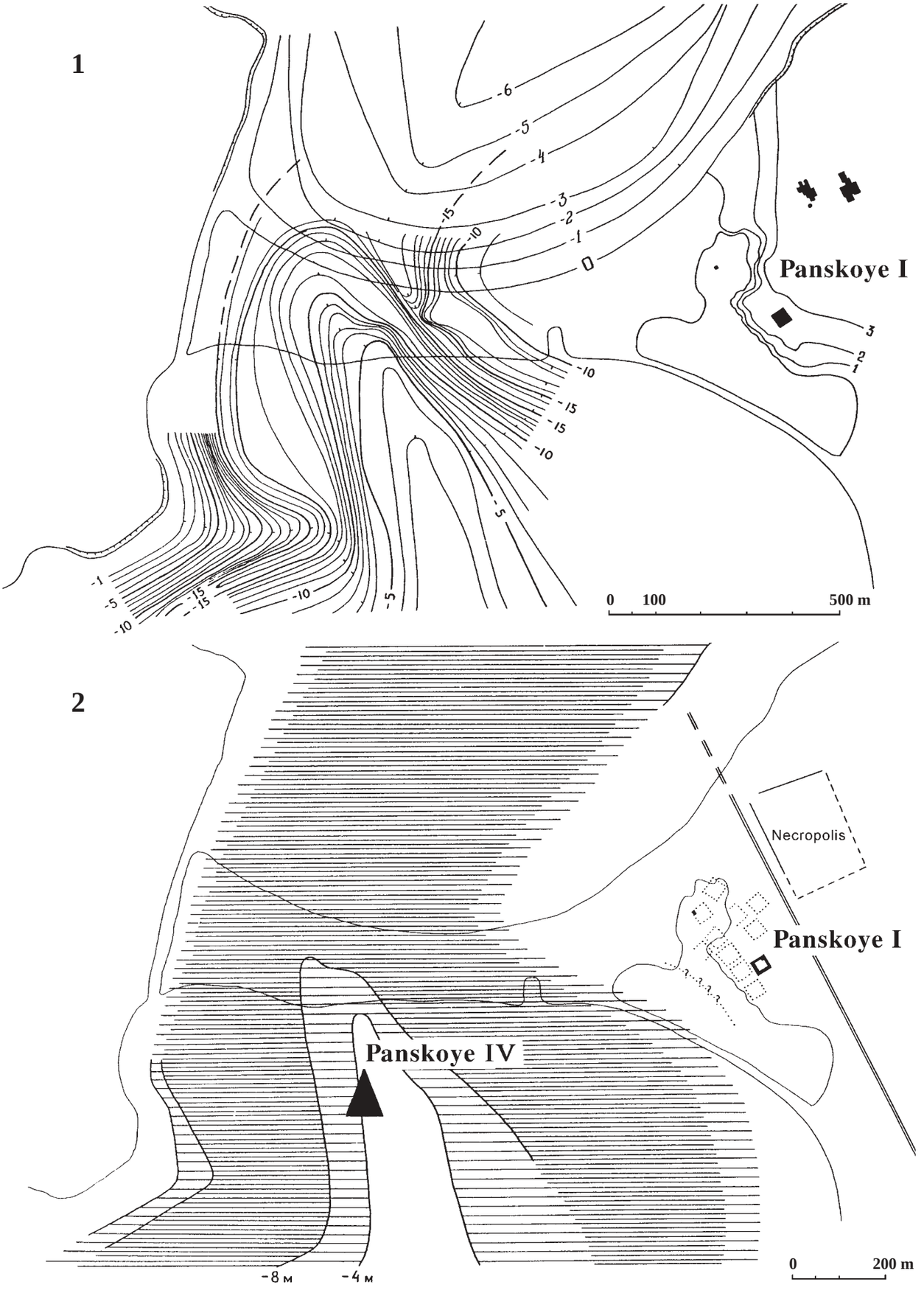
2

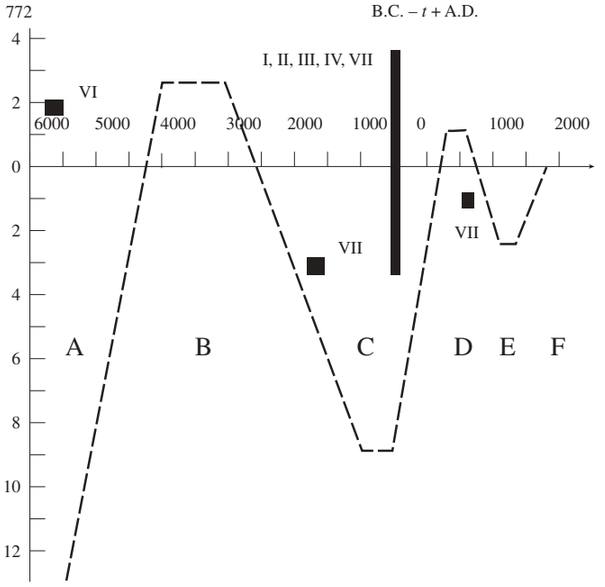

0
10 m
0
100 m

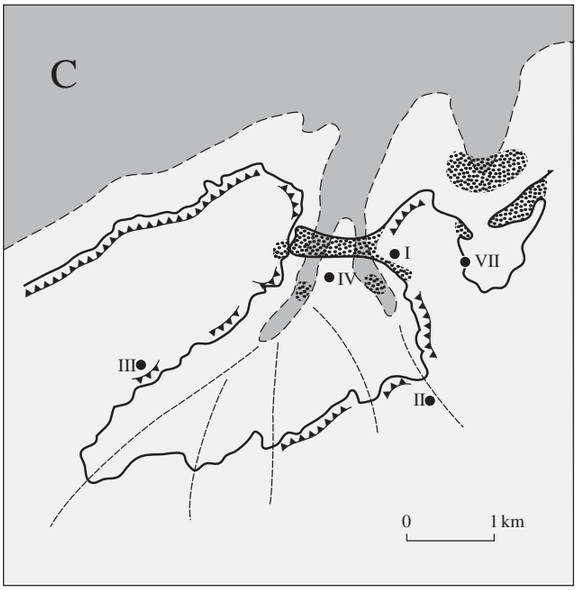
3

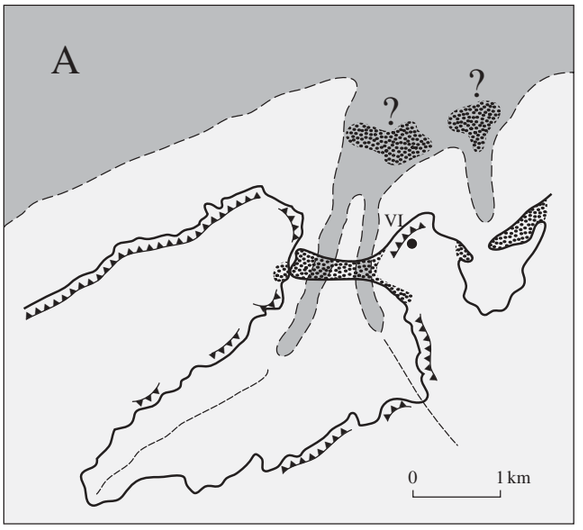

34

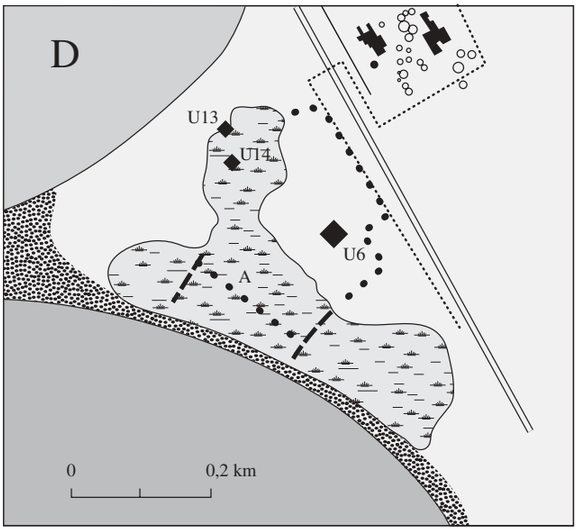
4

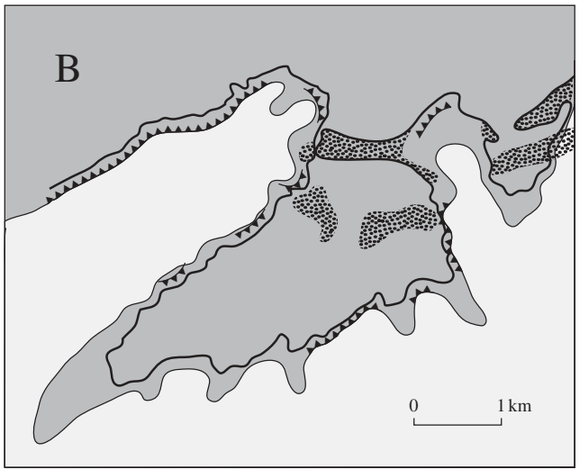

1
Panskoye I
0 100 500 m
2
Necropolis
Panskoye I
Panskoye IV
0 200 m

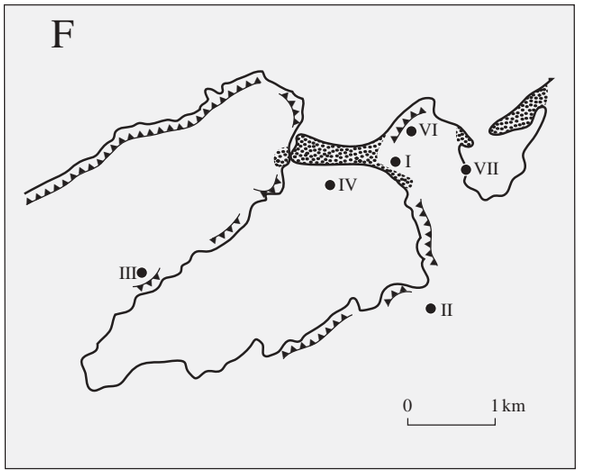

772
B.C. – t + A.D.
I, II, III, IV, VII
VI
VII
VII
6000
5000
4000
3000
2000
1000
0
1000
2000
4
2
0
2
4
6
8
10
12
A
B
C
D
E
F

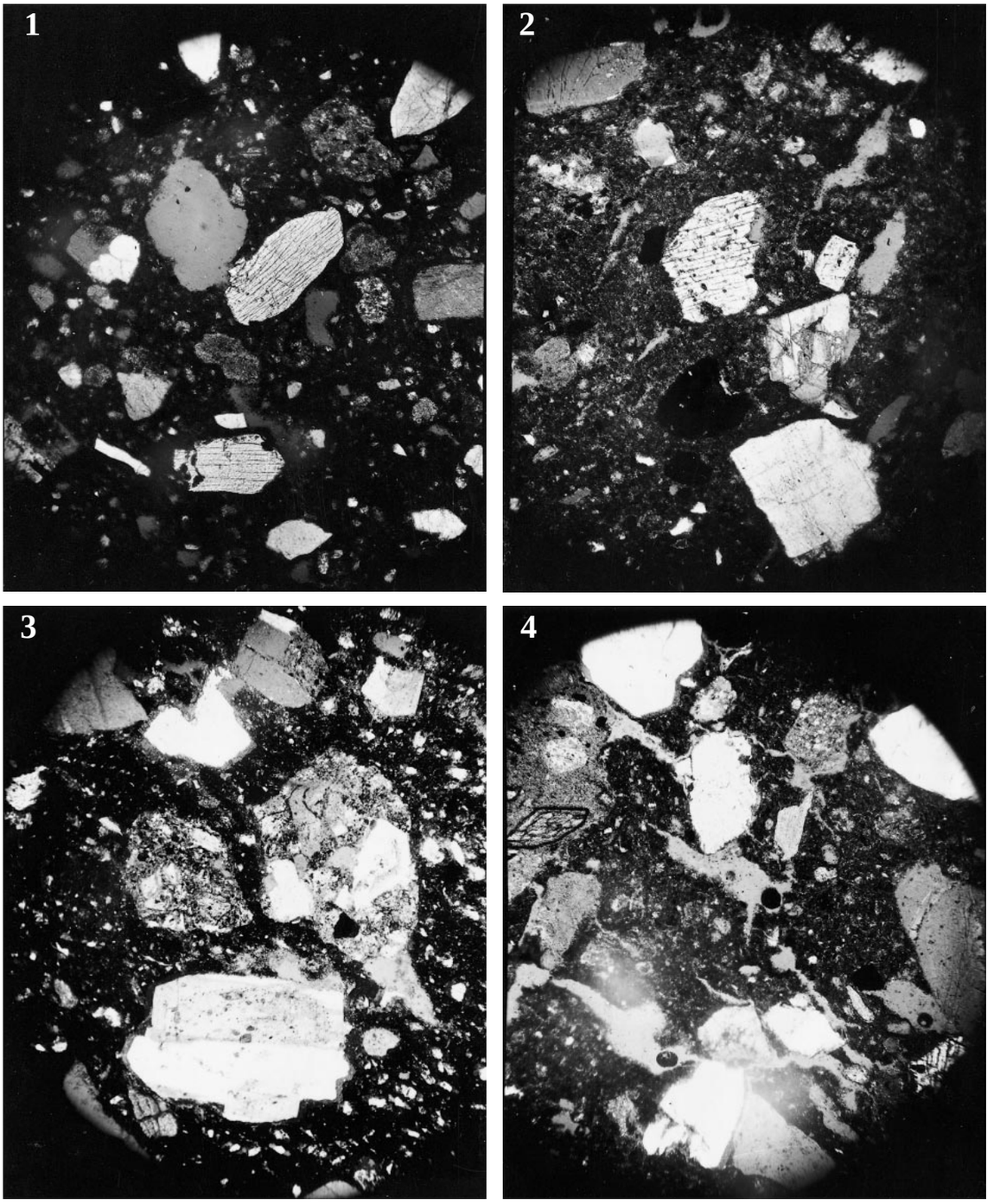

C
I
IV
VII
III
II
0
1 km

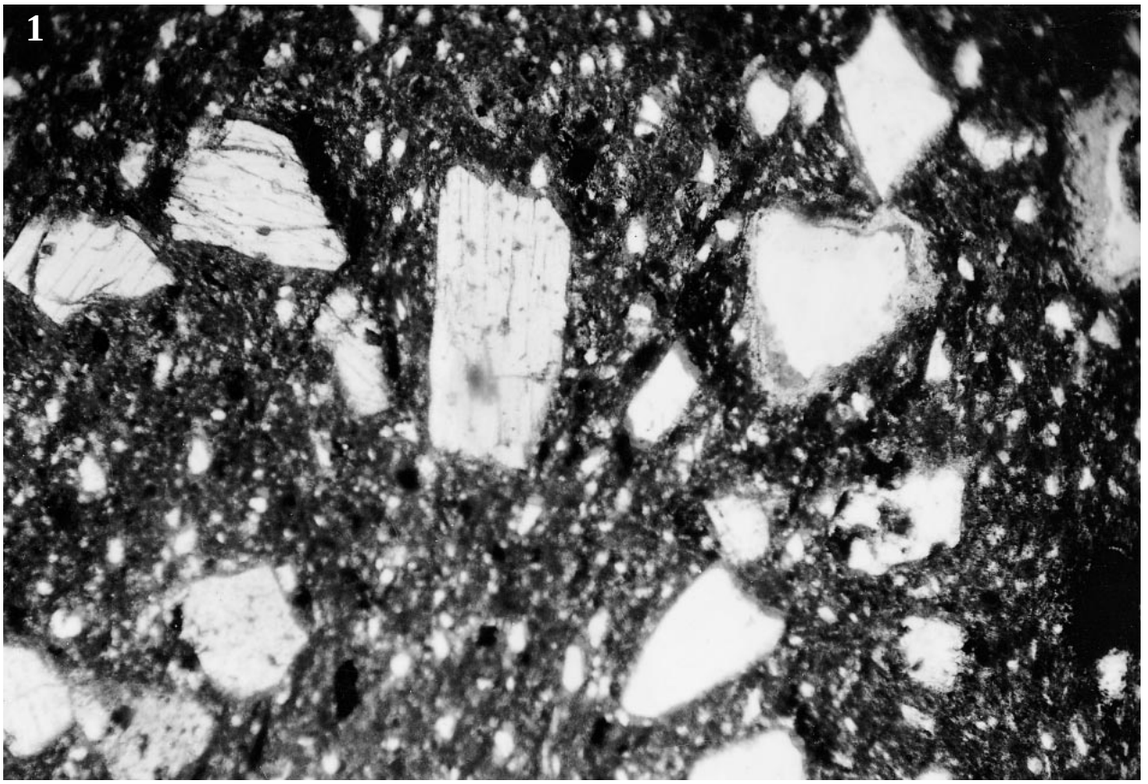

A
?
?
VI
0
1 km

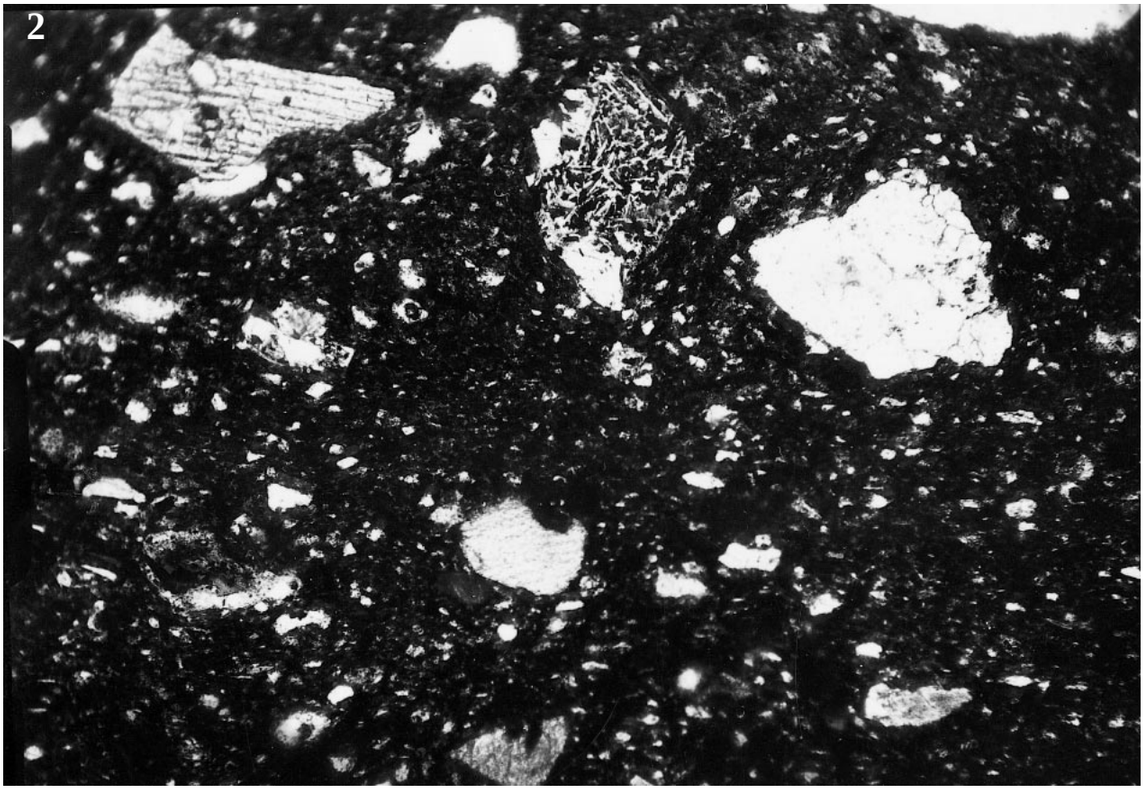

D
U13
U14
U6
A
0
0,2 km

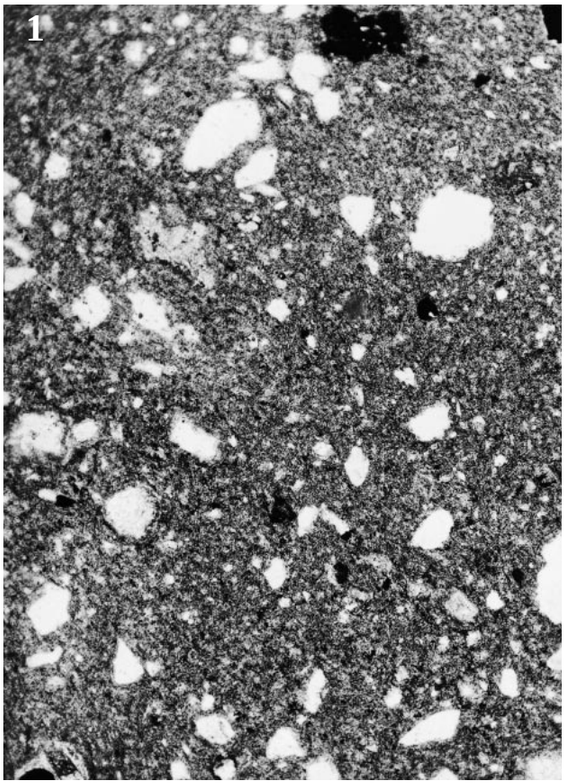

B
0
1 km

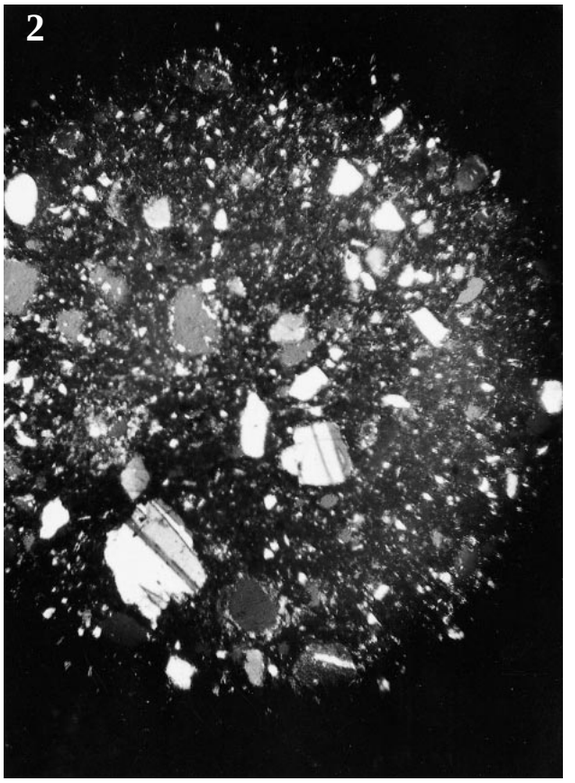

F
VI
I
VII
IV
III
II
0
1 km

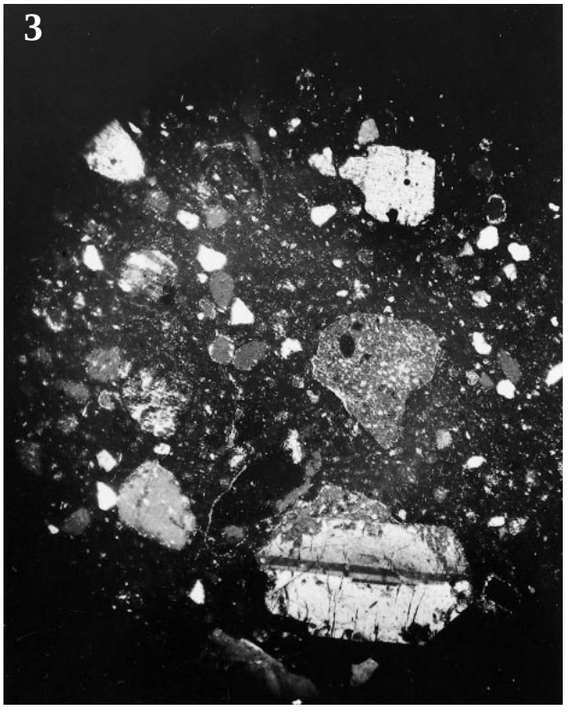

1
2
3
4


1


2


1


2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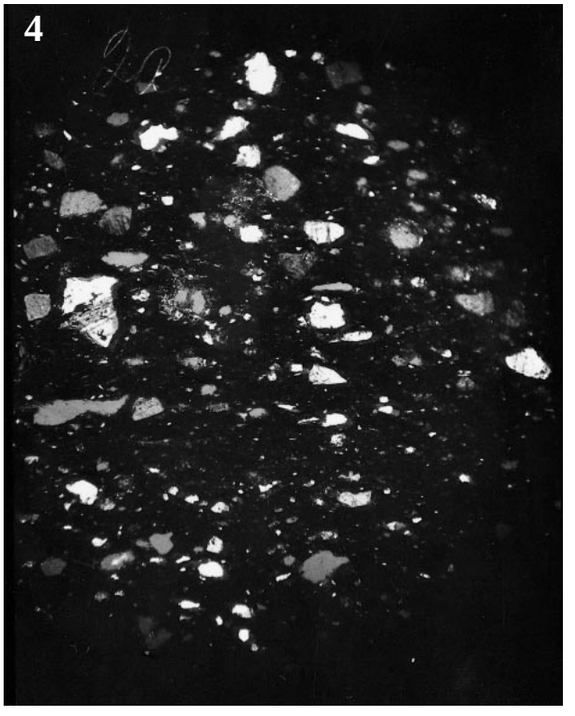
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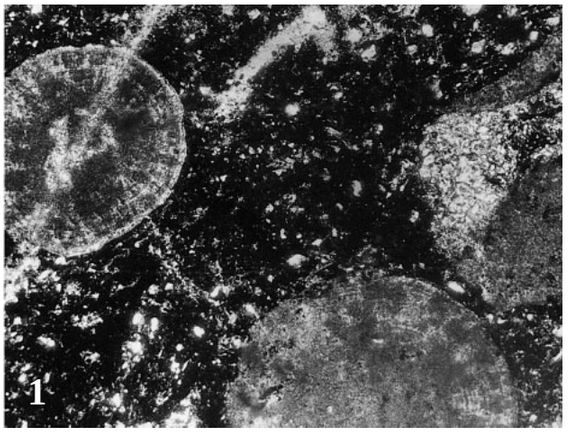
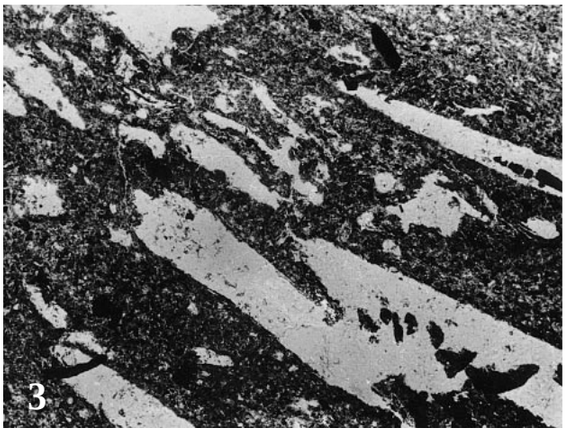

1


2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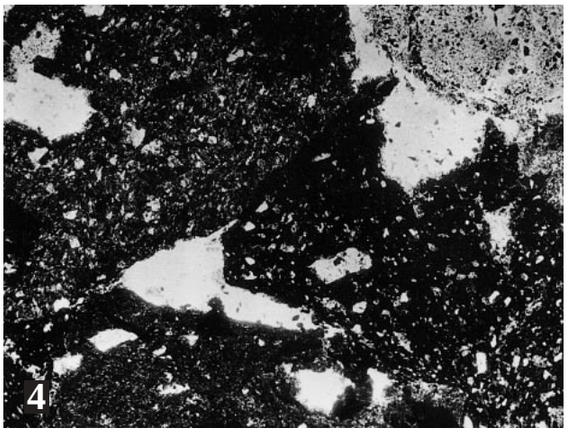
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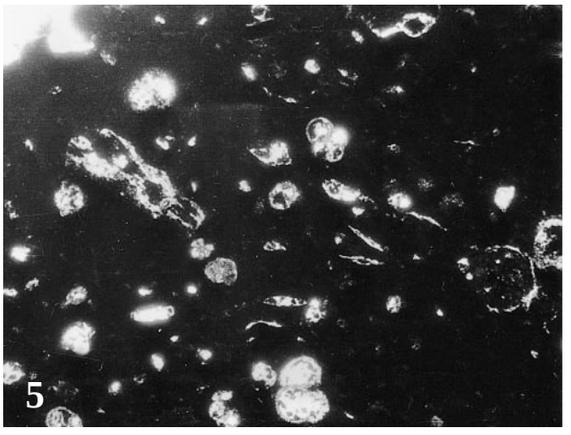
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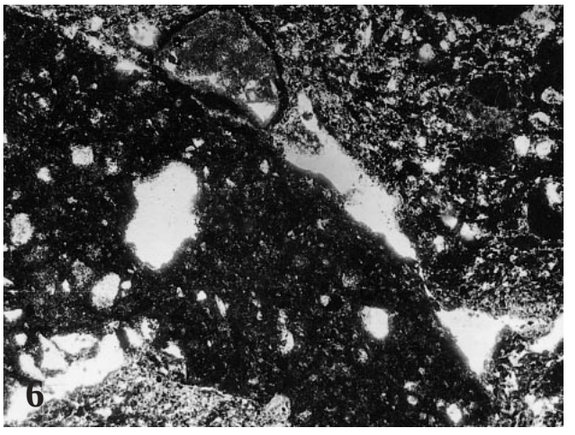
6