

RIMUTĖ RIMANTIENĖ

NIDA

A Bay Coast Culture Settlement
on the Curonian Lagoon

NATIONAL MUSEUM OF LITHUANIA

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Preface

Nida, which lies on the Curonian Lagoon, is best known today as a Lithuanian coastal resort town sandwiched between two large, impressive, forested dune fields. The ones to its west are called the old dunes. On the highest one, Urbas Hill, stands a lighthouse, which shines for marine and lagoon fishing boats. In the 19th-century, the spit still had many small fishing villages with boats displaying the unique weathercocks that gradually became an interesting symbol of this remote region. The lighthouse is still working, only the siren no longer wails in the fog. But almost no real fishermen remain. All of the fishing villages have become separate resort destinations, joined into a single administrative unit called the city of Neringa. One of them, Nida, has long been known to those seeking tranquillity. At one time, no vehicles aside from fire trucks and ambulances used to travel down the spit and Nida could only be reached by ferry. The Nida archaeological sites rested in this tranquillity. After the early 20th century, no one excavated them. For a long time, during the Second World War and afterwards, the sites were known but it was impossible to investigate them. People had to be satisfied with the knowledge left by the pre-war archaeologists. Several attempts were made to identify their sites, which were known only from old archaeological literature, but without success.

It would have been a shame if the old archaeologists had left nothing for our generation in the coastal Stone Age settlements exalted by 19th-century archaeologists. The Stone Age was long represented in museum showcases by only chance find axe heads and reprinted 19th-century drawings of the most beautiful pottery. It was, of course, known that the Bay Coast culture (English variant names: *Pamarių*, *Rzucewo*, *Haffküsten*) culture was one of the most colourful of the Baltic coastal cultures.

This lack of material led to redoubled efforts to find the heritage of the old inhabitants of Nida. The archaeologists had several aims. The first was scientific. Lithuania needed to become involved in the Corded Ware culture investigations spreading in Europe so that it would not remain a blank space on the archaeological map. The second was museum-related, i.e. to show through finds that the Lithuanian Stone Age, and especially the Late Bay Coast culture, is something to be proud of. And third was heritage protection. Experience has shown that Stone Age sites are at their most vulnerable when they have not been registered and their territory has not been defined. It was necessary, of course, to ascertain whether those historic sites still even existed.

In 1973, the ultimately successful search for the lost Nida site was launched in hopes of making it accessible again and including it in European archaeological literature. There was also a desire to compare Nida with older sites known from literature and perhaps supplement their data. Incidentally, the material from the investigation of the huge Polish and East Prussian Bay Coast culture sites had perished during the war. Therefore it seemed especially important to investigate a real, almost unknown site in Lithuania.

After being unearthed and investigated, material needs to be published because an unpublished site does not enter into archaeological circulation. But during the period of the Soviet occupation, the publishing opportunities were limited in Lithuania and the press was unenviable. For example, publishing houses were forced to diminish the value of texts by adding ideological thinking. After all, archaeological discoveries, the pride and foundation of each nation, were something that distracted people from the 'achievements' of the so-called socialist period.

Bay Coast culture sites also began to be found further from the Curonian lagoon, in the highlands of Žemaitija. The first time these discoveries were made public was when they were presented to European archaeologists at the 1989 symposium for Corded Ware culture investigators in Prague. The same year, a small, thin, poor quality book *Nida: senoji baltų gyvenvietė* [*Nida: An Old Baltic Settlement*] was released. But it still evoked feelings of pride because it was period of Lithuania's rebirth. At that time there was a special desire to stress that Nida was an ancient Balt settlement, although that was not brought out in the text. The question of national identity is too complex for it to be resolvable by specialists in one field.

The material presented in this book is preserved in the holdings of the National Museum of Lithuania. The material is the most important thing because it does not change while the attitude towards it and the conclusions drawn from it change with every generation. May this publication serve as a basis for further investigations into the culture's history, something that will require the work of more than one generation of archaeologists.

Acknowledgements

I remember with gratitude the late Archaeologist Ona Bagušienė, a restorer at the National Museum of Lithuania, who helped in all of the fieldwork on the Nida expedition and headed the excavation of some of the trenches. I am grateful to those archaeologists, who, by neglecting their own primary expeditions, found a way to conduct the excavation of some of the trenches at Nida: Algirdas Girininkas (in 1976 and 1977) and Adomas Butrimas (in 1978). I am also sincerely grateful to Palaeogeographer Rimvydas Kuskas, who regularly helped to resolve the questions that arose during the expedition and prepared a palaeogeographic assessment of the entire excavated object. I would like to thank Geologist Ona Kondratienė, who examined the plant remains from the cultural layer at Nida, Geologist Algirdas Klimašauskas, who identified the discovered stone artefacts, and Palaeozoologist Vera Danilchenko, who studied the animal bone remnants. I would like to express my gratitude to Artists Viktorija Daniliauskaitė and Skaidra Žeizytė, who elegantly redrew the field plans created by the archaeologists. I would also like to thank the many regional investigators, students, and regional studies club members, without whose help it would have been impossible to carry out this work, and especially our irreplaceable assistant, Valerija Kėvalaitytė, who worked with the archaeologists all five years of the excavation.

I am grateful to Director Birutė Kulnytė and the employees at the National Museum, who contributed to the publication of this new publication of the excavation at Nida. Museum employee Dalia Ostrauskienė rendered priceless assistance as well. I would also like to thank the Lithuanian Institute of History for the opportunity to use their archive material. And finally I offer my gratitude to Archaeologist Eugenijus Svetikas for preparing colour photographs of the Nida finds for this publication.

Rimutė Rimantienė

A historiographical Survey of the Excavations at Nida

The organised collection of finds from Stone Age settlements on the Curonian Spit began in the early 19th century. This was done by at least two Königsberg cultural societies: the *Königliche physikalisch-ökonomische Gesellschaft zu Königsberg* founded in 1790 and *Altertumsgesellschaft Prussia* founded in 1844. They issued the periodical publications: *Schriften der physikalisch-ökonomischen Gesellschaft* (1861–1882), *Altpreuussische Monatschrift* (1864–1922), and *Sitzungsberichte der Altertumsgesellschaft Prussia* (1874–1924), which last, beginning with issue 26, was called simply *Prussia*. These published archaeological excavation reports and registered the finds obtained by the societies. Because this work was performed by well-read individuals: P. Schiefferdecker (1849–1931), O. Tischler (1843–1891), A. Bezzenberger (1851–1922), and E. Hollack (1860–1924), these publications have yet to lose their value. What is more, they became the only source for learning about the Curonian Spit's past after the museum collections perished during the Second World War.

The Nida settlement stands out among all of the sites on the spit. It was the first of the Lithuanian Stone Age sites to make it into the literature. The oldest description, which appeared in 1833, was an article by Fisheries Inspector W. Beehrbohm about three 'pagan cemeteries' near Nida that had been exposed by the wind. All three were on small hillocks in a long meadow which was at the foot of the dunes and was not flooded by seawater at all or only at certain places, even when the sea was at its highest. At the time of their description, these sites were not separated from the sea by either a forest or sand dunes (I).

After receiving the chance report, on 9 August 1832 W. Beehrbohm (now written Beerbohm) went to inspect the sites. The situation of the find spots was not described, it only being noted that the first site was about four miles from Nida. Later, in 1896, the situation of these sites: Nida, the Parnidis Dune, and Cape Grobštās (Ger. *Grabschter Haken*) was described by E. Hollack (Hollack, 1895). It was a universally held opinion in the early 19th century that such sites were pagan cemeteries and the discovered potsherds were usually deemed to be smashed urns. W. Beehrbohm also arrived in Nida with such thoughts. His fairly accurate description of the actual appearance is of interest here. This was a flat area, about 250 paces long and about 100 paces wide, densely studded with potsherds (in his opinion, from urns). Some of them were still sticking out of the ground, but he was unable to remove one intact, although it was possible to determine their shape and volume. The majority were wide, short, and bulbous with a somewhat waisted neck and a small base, reminiscent to him of ancient shapes. Others, which were similar to pitchers with handles, had vertical necks and extensive decoration, which was fairly thoroughly described as pinched and cord impressions. It appeared to W. Beehrbohm that they had been produced on a potter's wheel. Potsherds with a special shape were likewise noted: it was as if someone had pressed their heel into the clay, the size and shape being reminiscent of a clog heel.

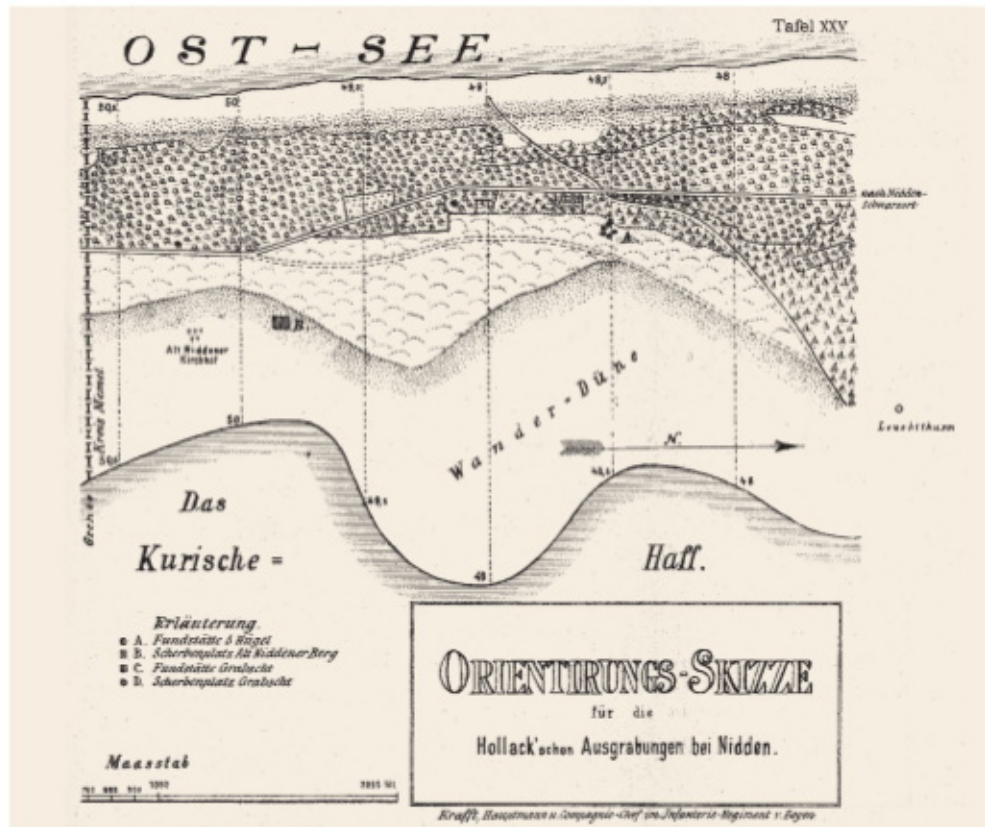
W. Beehrbohm was probably acquainted with descriptions of excavated barrows with urns and therefore this description reflects not only what he saw but also what he wanted to see. The 'urns' had been placed at the foot of the low hillocks, which were studded with small pebbles, and beside the urns were larger, knapped stones. He even saw that the urns contained grey, sometimes almost charcoal coloured congealed ashes mixed with small pieces of bone. In one large 'urn', from which he was still able to collect several sherds that had flaked off, above the ashes at the bottom were apparently the remains of food as he found a number of bird bones, fish bones, and fish scales. He also found amber and a large number of stone celts at that site.

The second 'cemetery' was three quarters of a mile from Nida and the third a mile (i.e. the Parnidis Dune and Cape Grobštas settlements). Afterwards, W. Beehrbohm drew the conclusion that the spit must have been densely populated if such huge 'cemeteries' could be so close to one another. His other conclusions (about the formation of the spit and the changes in the position of the lagoon, sea, and dunes) are fairly rational.

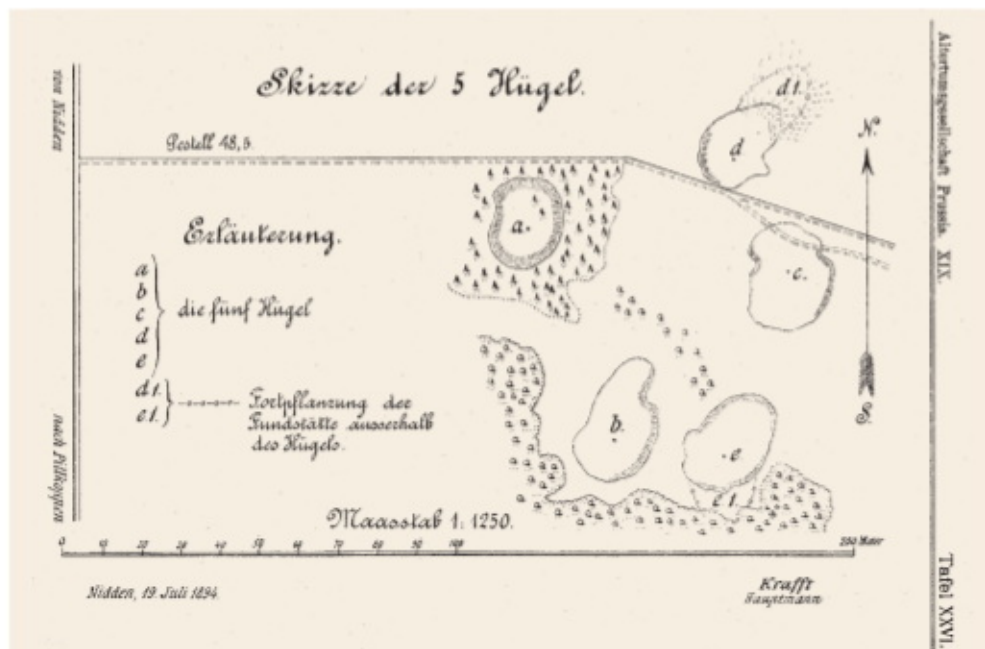
The second time this site is mentioned is in an 1873 account in the *Physikalisch-ökonomische Gesellschaft* (Schiefferdecker, 1873, 46). In 1870 and 1871, the society sent P. Schiefferdecker to the Curonian Spit to collect archaeological material. In addition to other sites, he described four hillocks (Ger. *vier Hügel*) near Nida. This settlement entered the archaeological literature under that name, i.e. *vier Hügel*. P. Schiefferdecker discovered a multitude of 'urn sherds' in the bare areas between the hillocks. He attempted to conduct an excavation on one day, but discovered nothing.

During 1874–1876 and 1878, O. Tischler gradually travelled the entire length of the Curonian Spit, registering about 100 potsherd concentrations (Tischler, 1874, 1875, 1878, 1882). He also visited the *vier Hügel* settlement; excavating the edges of the hillocks for a day and a half (Tischler, 1875, 39; 1890, 89–91). It was clear to him that this was more likely to have been a midden than an ancient cemetery. But later (Tischler, 1890, 19), he rejected this idea and conjectured, although fairly reservedly, that it could have been the site of religious rites. His broad comments on the pottery and its decoration helped to elevate the special significance of the Curonian Spit Stone Age sites to a European scale. The finds were dated to the second millennium BC (Tischler, 1891, 93).

Almost 40 years later this site was described the most thoroughly by Teacher E. Hollack in an 1894 report to the *Altertumsgesellschaft Prussia Society* (Hollack, 1894, 146–150, 241–246). In July of that year, he conducted a field evaluation together with Captain Kraft, a cartographer, who created plans of the locality (1). These plans were very useful in identifying the location because, as noted by E. Hollack, it was not easy to find one's way on the basis of the earlier references. He labelled the four known 'hillocks' with the letters (a), (b), (c), (d) and a fifth, which he discovered, with the letter (e) (2). The hillocks had become very low and only one (a) had survived, although it was difficult to see as it was covered with pine saplings (which were still there when the excavation began in 1973). In all of the hillocks, he discovered large quantities of decayed sherds, the remains of O. Tischler's excavation. O. Tischler had excavated a day and a half and P. Schiefferdecker only one; Thus E. Hollack was given the task of determining the extent of the excavations so that it



1 Situation plan of the Nida Settlement with the site marked by the letter A and a small schematic sketch. E. Hollack 1894, Taf. XXV



2 The arrangement of the hillocks at the Nida Settlement after a sketch made by Colonel Krafft. E. Hollack 1894, Taf. XXVI

would be possible to set guidelines in the future. He determined that the edges of all of the hillocks had been excavated, while the central area was usually not touched and that hillock b (B) had been dug the most. E. Hollack excavated trial trenches: north–south trenches in hillocks a (A) and d (D), east–west trenches in hillocks b (B) and c (C). In addition, all of them were joined by test pits. Only the newly discovered hillock e (E), which was called the *fünf Hügel* (fifth hillock), was excavated more broadly.

In the layer of topsoil under the sand on all of the hillocks, he discovered large quantities of potsherds, which were even below the groundwater level in hillocks d (D) and e (E), while in hillock e (E) large quantities of wild animal and fish bones were also discovered. A list of small finds was attached. But E. Hollack did not examine the purpose of the hillock, being satisfied to cite the opinions of P. Schiefferdecker and O. Tischler. His citation of the latter's opinion seemingly showed his agreement with it, with many reservations, until the Stone Age religion on the Curonian Spit could be ascertained to at least some degree. A. Bezenberger (Bezenberger, 1889, 1893; 1895. Беценбергер, 1897, 87), who wrote about the Curonian Spit in the late 19th century, raised the hypothesis that the Nida site could have been a sacrificial one, although he himself admitted that this explanation would be suitable only if no other was found (Bezenberger, 1889, 245–246).

In 1895 E. Hollack was entrusted by the society to return for a week to excavate the settlement between Pillkoppen (now Morskoye, Kaliningrad Oblast) and Nida. He was surprised after reading the then forgotten article published by W. Beehrbohm in 1833, an article which he reprinted in his report (Hollack, 1896, 116–123). He apparently excavated without excavating; he only noted the narratives related by the old local inhabitants that the vessels had not fallen apart on their own but had been trampled by animals. During his Whitsuntide holidays in 1898, E. Hollack together with several students and dune caretakers found several decorated sherds, celts, and a worked stone, all on hillock d (D) (Hollack, 1900, 311). Apparently the settlement had been nearly completely blown away by that time and they rescued it from complete oblivion.

E. Hollack's descriptions, compared with those of W. Beehrbohm, are very professional. He wrote only about what he himself had seen or done. While trusting the assertions of W. Beehrbohm, he also made his own comments, for example, that he 'no longer found' charcoal and ashes in the vessels (Hollack, 1886, 119). While initially trusting the interpretation of O. Tischler with reservations, later, in 1908, he put forth the idea that the site was probably the remains of a former Stone Age settlement (Hollack, 1908).

The literature does not show whether someone later excavated this locality, but no one probably did because all of the later German archaeologists listed the same sources and generally used very similar illustrations. The wind probably completed its destruction of the site at a later time and a forest was planted there.

The same Stone Age sites were examined and interpreted in the books that were published in Königsberg by various authors in the 1920s and the 1930s. These works have proven useful for Lithuanian archaeologists as a large part of the collection of the Prussia Museum in Königsberg was published in them. Of these works, those by W. Gaerte (Gaerte, 1890–1958) (Gaerte, 1926; 1927; 1929), C. Engel (1895–1947) (Engel, 1931,

1932, 1935), and W. La Baume (1885–1971) (Engel, La Baume, 1937) are important. In addition, H. Bohne-Fischer attempted to present a geographic interpretation of these sites. And so ended the first stage in the excavation of the Curonian Spit's Stone Age sites, including Nida.

After the Second World War, several works, which also examined the Stone Age finds from the Curonian Spit, were issued by Lithuanian archaeologists. M. Gimbutienė (Gimbutienė, 1958) and P. Kulikauskas (Kulikauskas, 1959, 1961), who used the oldest sources, described the finds from the Curonian Spit several times. A summary of the sources and references were given in the 1974 *Lietuvos archeologijos atlasas I* tome [Atlas of Lithuanian Archaeology, volume I] (Bagušienė, Rimantienė, 1974, 57–59). The most comprehensive surveys of this material were made at a later date by L. Kilian (Kilian, 1955) and E. Šturms (Šturms, 1970), who also presented their latest insights, which greatly affected the further work of Lithuanian authors.

The second stage in the excavation of Nida began when it was perceived in the second half of the 20th century that the sites on the Curonian Spit were in a vulnerable zone and could be ravaged by both nature and people. There were doubts as to whether the sites still existed. Thus survey expeditions conducted by employees of the Lithuanian Institute of History tried on several occasions to identify their locations, but without any luck. Their efforts were hindered by the dense forest planted in the area. Only in 1973 was the precise location of a site finally identified and an excavation began.

In 1989, after the excavation's completion, the Lithuanian Institute of History published the present author's survey of the work: *Nida: senųjų baltų gyvenvietė*. She later examined this excavation narrowly and broadly more than once (Rimantienė, 1989, 1992, 1994, 1996, 1999a; 1999b).

The third stage on the excavation of Nida began 33 years later in 2011–2012 when archaeologists and geologists, while working together during the implementation of the project *ARCHEOLOGIJA AMS*, which was financed by the Research Council of Lithuania, returned to Nida. The project's main aim was the dating of the sites and at the same time the Stone Age culture through the employment of new methods. In addition, searches for new sites and geological investigations were conducted (Mažeika, Petrošius, 1998, 473–483); Piličiauskas, 2012, 11–52; Piličiauskas, et al 2011, 629–643).



3 View of the Nida Settlement in the forest clearing. 1975



4 View to the north of the forest clearing. 1978

The 1973–1978 Excavation of Nida

Excavated Area. The Situation and Course of the Excavation

When starting the excavation of the Nida site in 1973, it was not very difficult to approximately determine the locality based on the plans published by E. Hollack. In 1973, it was beside a forest road running through a forest clearing, 3.5 km from the Lithuanian–Kaliningrad Oblast border. The excavated area's western boundary was 100 m to the east of the 48.5 km mark on the main spit highway, its eastern boundary 70 m from road running along the foot of Parnidis Dune (3). The settlement's area could be defined in this way only after the completion of the excavation in 1978. During 1973–1978, the entire surviving part of the cultural layer, 4640 m², was excavated.

The huge Nida dunes to the east overlook the excavated area. An observation platform with a sundial on what is now the highest of them is frequently visited by holidaymakers. To the south of it can be seen aeolian sand dunes, which are called 'wandering' dunes (*Wanderdünen*) in German. The feet of these dunes are today covered with vegetation, but the dunes themselves have been left bare, protected from even volunteer saplings, in order to allow admiring holidaymakers to understand why so many villages, which are now only names, came to be buried under windblown sand after the forests were cut down in the 17th–18th centuries.

At the foot of the dunes runs a footpath from the resort of Nida to the recreational area created at the former site of the glider school (which is now in Kaliningrad Oblast). The huge aeolian dune was an ideal location for such training. In the time of E. Hollack, this single-file footpath was bare and wide enough for four-wheeled traffic. To the west of this footpath lies a low hilly area, which in German literature is called *Kupstenterrain* from the Lithuanian word *kupstai*. These hillocks are natural, presumably formed when the progress of the drifting sand is stopped by stronger tufts of vegetation, or, in this case, by the cultural layer accumulation from the Stone Age settlement, which resulted in the formation of the 'five hillocks'.

Later this hilly area was planted with mountain pines (Lat. *Pinus mugo*), which do a good job of stopping the movement of the sand. But when the excavation began in 1973, all that remained of many of those pines were rotten stumps. The entire hilly area was sparsely covered with beach grass, only isolated clumps of volunteers, i.e. stunted pines and birches, were to be seen. Among them was a bifurcated pine from the old forest (3, 4).

The view looking east from this area was no different (5). When looking east from the clearing, the excavation area was even sandier (6).

The excavation began with random test pits in order to search for traces of the cultural layer. In addition, it was hoped that at least one of the five hillocks mentioned by E. Hollack would be discovered. There was also a desire to ascertain where the interdunal Parnidis Lagoon's shore had been and from where drinking water had been obtained.



5 View to the east of the forest clearing, 1978



6 Beginning to excavate a trial trench, 1974

A pine forest had been planted in the south part of the marked out excavation area and a fairly wide, well trampled and travelled road ran along its edge. It emerged that during the Second World War heavy vehicles had used this road to travel from the spit's main road to the ammunition depots at the foot of the dunes. Even though there was no expectation of finding anything in such a devastated area, nevertheless a test pit was excavated in the middle of the road in the clearing and surprisingly, the excavation's first sherd emerged from under a thin layer of sand (7). It was a body sherd from a large, undecorated, slightly articulated, thick-walled vessel with a slightly flaring neck. The sherd was different than the known sherds of Bay Coast style corded ware, but it was clear that a cultural layer had been discovered. The layer did not differ in colour or composition from the sand in the vicinity of the road. Two small celts were also discovered nearby in the road layer. Removing the thin turf layer in a larger area near the clearing uncovered crumbled sherds from large vessels made in the same style as the first vessel. The sherds had not been scattered as they had apparently not lain in the open for long after being discarded (8, 9, 10). In order to find the site's boundaries, a long east–west trial trench was excavated beside the clearing and the location of the first finds.

Because the Nida settlement entered the archaeological literature mostly with the old name of *'Fünf Hügel'* given by E. Hollack, an effort was made to connect the new excavation with the old. When the excavation started, no hillocks could be seen. It came as a complete surprise when the first work in the trench beside the forest road in 1974 revealed a slight hillock covered with turf and trees at a location in the pine forest (11).

According to the plan provided by E. Hollack (Hollack, 1895, Table XXVI), it should have been the remains of hillock a (A). The hillock rose 70 cm above the ground's surface and had been somewhat destroyed on the road side. After excavating the trial trench, it emerged that the hillock completely corresponded to E. Hollack's description. The site of the German trench was also found (11). It had had a width of exactly 1 m, a depth of 0.75 m, and a precise north–south orientation. Small potsherds were scattered in the trench and in its vicinity, obviously the remains of the discarded cultural layer.

In this hillock, E. Hollack had discovered traces of O. Tischler's excavation on the hillock's edges, but the centre of the hillock had not been touched. During his excavation, he also found potsherds with cord and finger impressions, a small round cup, pieces of oval and oblong bowls, and large quantities of small sherds and amber (Hollack, 1895, 241).

The plan drawn by E. Hollack was accurate, although it used an unusual scale. An attempt was made to use compass bearings from this hillock to locate the other hillocks, which were no longer visible on the ground's surface. The locations of all four were measured off and marked so that they could later be included in the total excavation area. An attempt was also made to find the hillock which was the least likely to be found, i.e. e (E), where E. Hollack had 'thrust his arm up to the pit into the water' and collected a large quantity of pottery and animal bones. 70 m to the south-east (140°) of hillock a (A), a very dense forest was encountered and after excavating a test pit down to the groundwater level, a layer of blackish deposits was found to contain potsherds and a vertical light-coloured segment, which obviously marked the site of E. Hollack's trench. Its distance from hillock a



7 A cluster of sherds in a trial trench being excavated by Valerija Kėvalaitytė and Aloyzas Sakalas. 1974

(A), its depth of 1.5 m, and the cultural layer becoming thicker to the south corresponded to his account. No attempt was made to excavate the other former hillocks sites, which were later marked on the general plan.

At the north-east end of the trial trench, a layer of grey deposits, which sloped down to the north, was unearthed (12). It was hoped that this marked the edge of the body of drinking water that was being sought. It emerged that the immediate area (13) was covered with a layer of silt. Fireplaces, later marked in the synoptic plan with the numbers 35–37, were discovered in this layer. Between the fireplaces, on the very edge of the silt layer, lay pebbles which were all similar (14), and under the layer, a fireplace (15) and postholes (16, 17) were discovered. It later emerged that this silt layer had been formed by a former channel between the interdunal lagoon and the sea.

After completion of the excavation, all of the data from the deposits and cultural layer were entered in a general synoptic plan (18, 19).

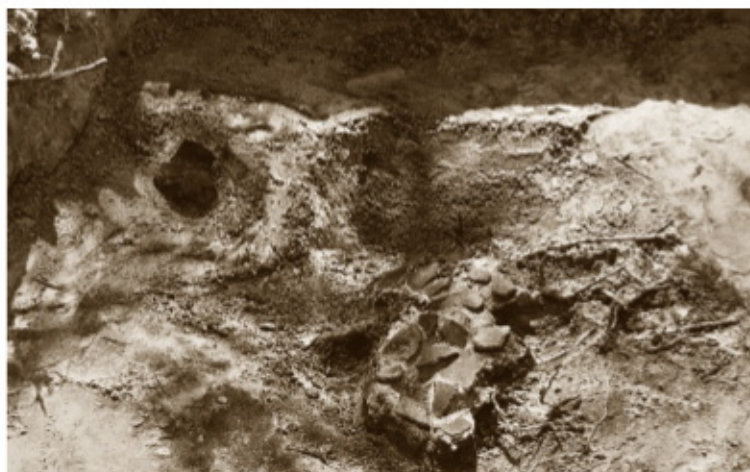
The description of the cultural layer is presented by individual areas: north-east, central, and south. The west area was not broadly excavated because it had been severely ravaged and no features were discovered in it.



8 The first potsherd in the trial trench. 1974



9 A crumbling vessel in the trial trench. 1974



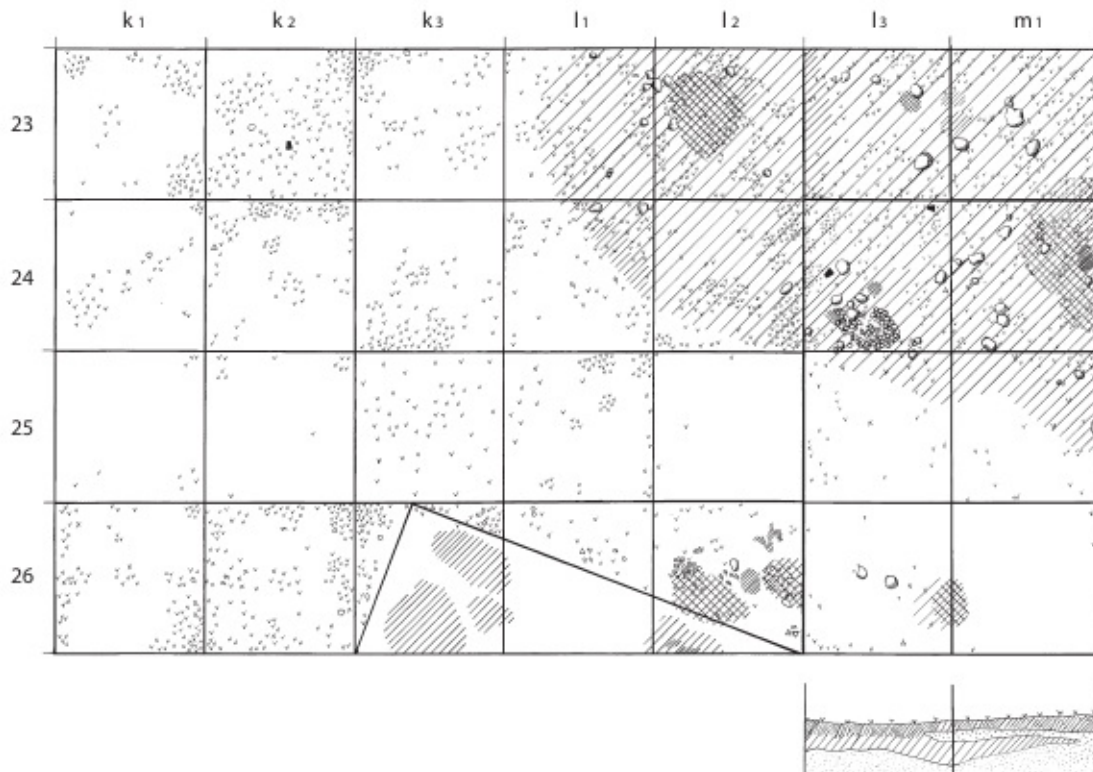
10 A cluster of sherds from a crumbling pot. 1974



11 Hillock a (A) according to E. Hollack, 1974



12 The cultural layer, sloping down to the north, and a cluster of sherds. 1974



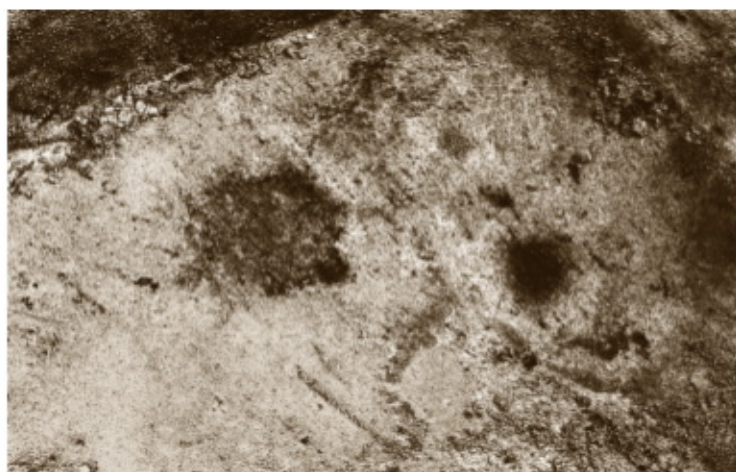
13 Detail plan of the 1974 trench, including the silt layer, sloping down to the north, and fireplaces (later listed as fireplaces 36 and 37)



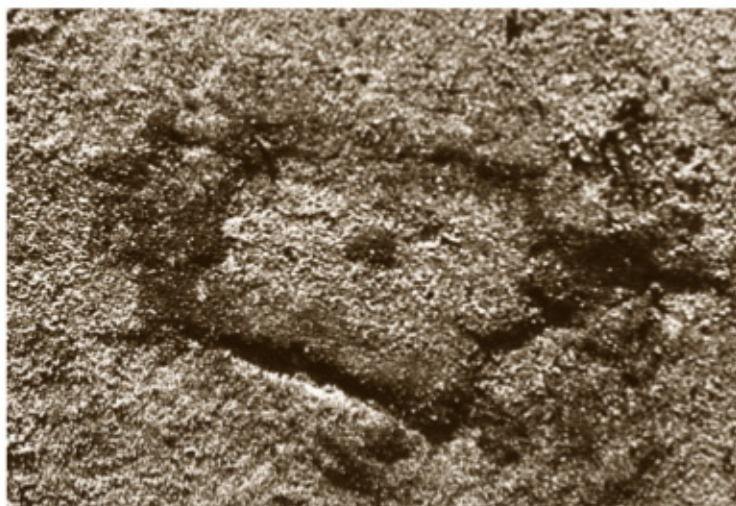
14 A collection of pebbles (weights) on the edge of the silt layer. 1974



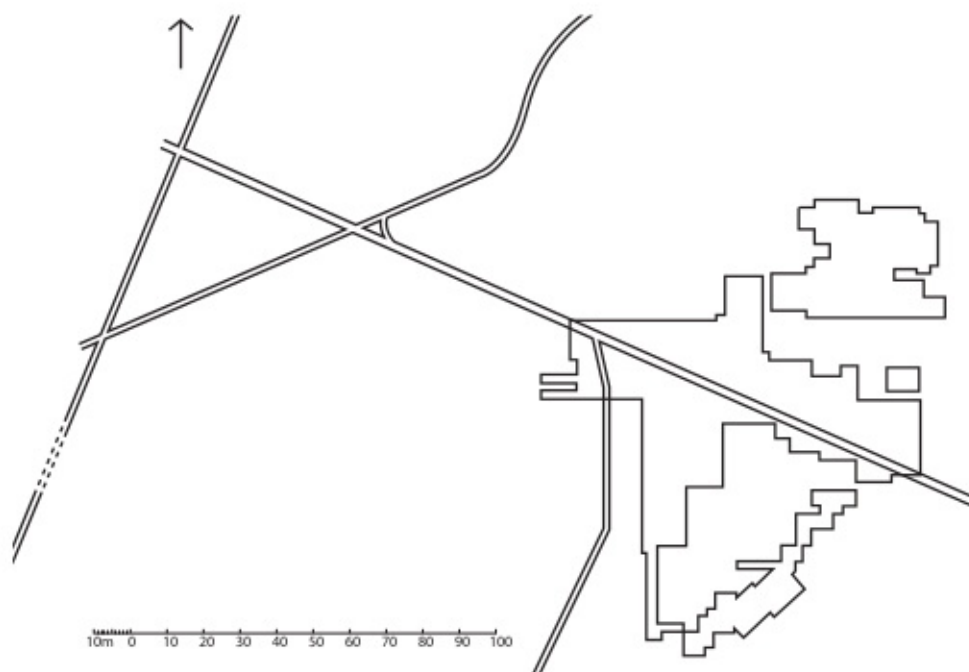
15 The section of fireplace 36 under the silt layer. 1974



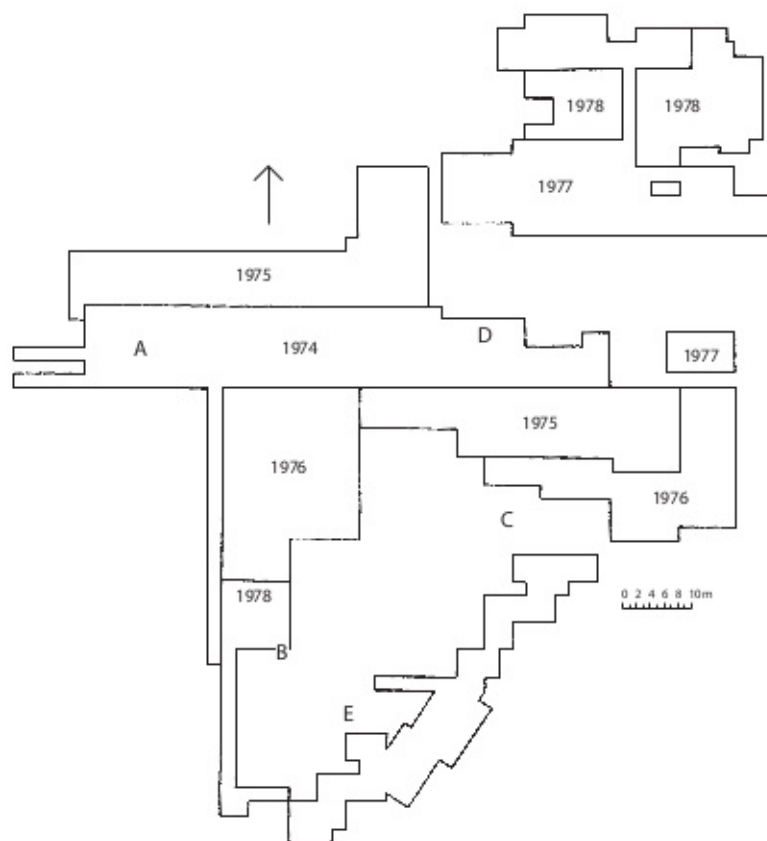
16 Postholes under the silt layer. 1974



17 Posthole under the silt layer. 1974



18 Situation plan of the area excavated during 1973–1978



19 The areas excavated during 1973–1978 with the sites of the hillocks marked with the letters a (A) to e (E) by E. Hollack

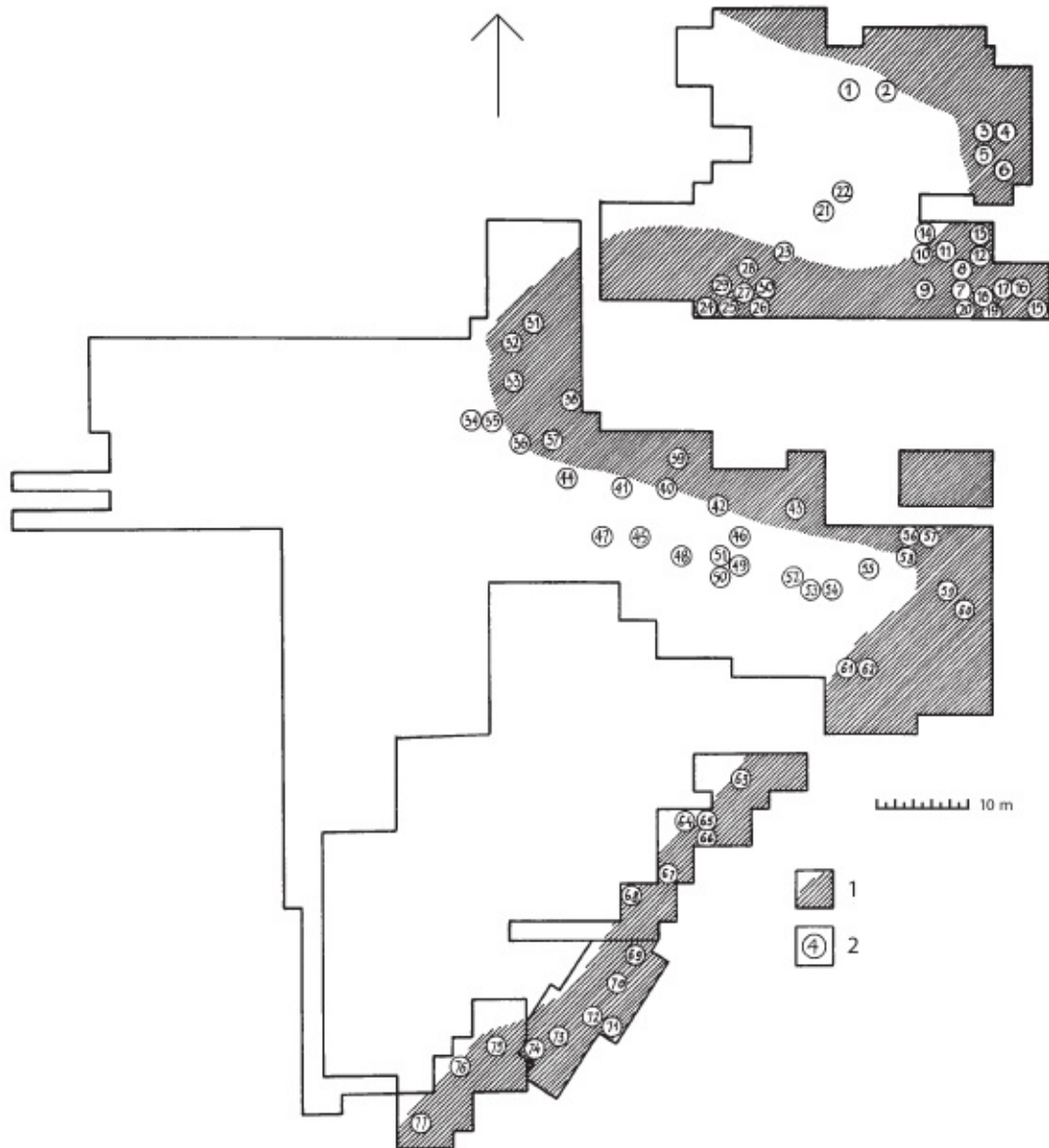
The Cultural Layer and its Features

In 1974, the excavation began in the settlement's central section because the previous year potsherds had been discovered in good condition in the clearing segment of the road. The 1974 trench cut east–west clear across the settlement's entire area. It emerged that on the west side, the layer had been completely eroded after becoming exposed while on the east side it was fairly distinct and finally ended in the groundwater. The excavation was expanded to the north and south in the search for the settlement's boundaries. The cultural layer had survived in good condition only on the east and north sides of the settlement while on the west and south sides a 30–60 cm thick layer of blown sand covered the sparse light grey find horizon, which evidently had been on the surface in the 19th century as the finds in the west part were very abraded.

After the last of the settlement was unearthed in 1978, it emerged that it had been situated on both sides of a channel between the interdunal lagoon and the sea (20). The shore is marked by a thick, grey silt layer with a lenticular cross-section. From the projections visible in the section of this layer and from the fact that some of the fireplaces and finds lay under this layer and some above it, it was seen that the interdunal lagoon had retreated and advanced several times during the habitation period. But only in the east part of the settlement was it still possible to see somewhat more clearly several habitation stages distinguished on the basis of the cultural layers.

The greater part of the lagoon shore was successfully unearthed. Probes were used to survey the soil below the groundwater level and as much as possible, finds were collected from the waterlogged sand. It emerged that the surface level of the lagoon and channel during the first habitation stage was lower than the current groundwater level and therefore some of the traces of the earliest settlements on parts of the shore could have been destroyed after the water level rose. The inhabitants withdrew towards the west and the lagoon put down a thick silt layer. After the lagoon retreated and only a thin layer of sand had had a chance to form, the inhabitants returned to the shore. These expansions of the lagoon should be connected with marine transgressions. The retreat of the lagoon shoreline was apparently short-lived. Afterwards the water level gradually began to rise again. The channel existed for a long time. After it became overgrown, the inhabitants began to settle at higher sites, but they still visited the channel.

It is impossible to count how many times transgressions and regressions occurred because each time the earlier settlement layer was destroyed. The finds were discovered throughout the layer's thickness. The pottery and other finds, which were very degraded, were discovered at very diverse depths, for example, pieces of the same vessel were found at depths differing by as much as 0.7–1 m. The retreat of the lagoon shoreline resulted in the erosion of the shore. It was not possible to determine the shoreline when the settlement was inhabited. It was only possible to state what artefacts managed to be found. The ground was excavated down to the level where the layer dropped below the groundwater. During the excavation, the groundwater level was 155–180 cm below the current ground's surface.



20 A schematic synoptic plan of the arrangement of the shore's silt layer (1) and the fireplaces (2) in the excavated area. A segment of the channel between the sea and Parnidis lagoon cuts obliquely across it

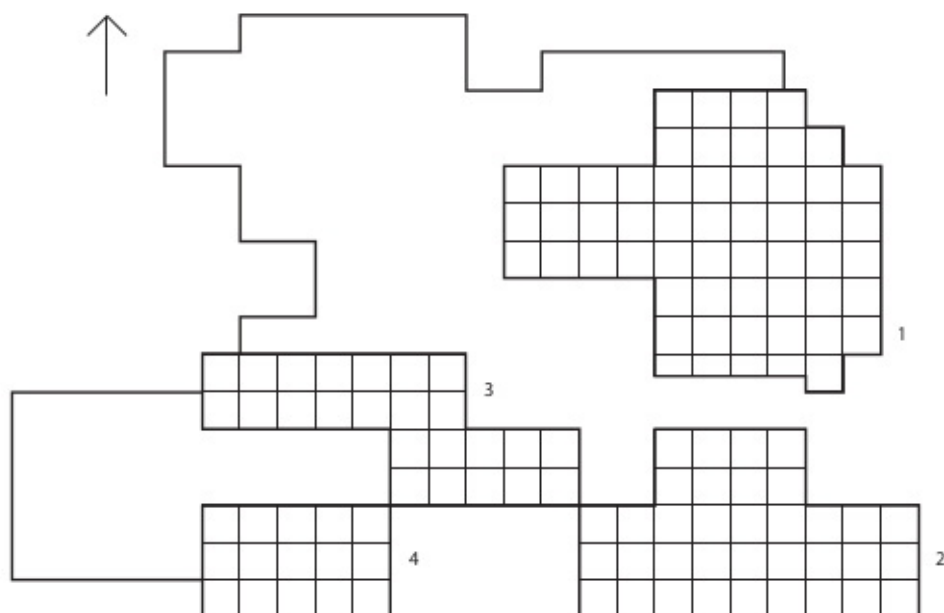
The cultural layer and its features were inventoried on the plan, which divided them into four areas. As it emerged during the excavation, they were bounded by the natural banks of a former channel. After entering all of the areas excavated during the five years and numbering the discovered features in them: fireplaces and traces of buildings, it was only then possible to present an image of what managed to be unearthed.

Nature has severely damaged the cultural and silt layers; therefore it was not possible to determine their structure or the trajectory of the changes in the composition of the forests. The samples from the upper and lower parts of the silt layer, based on the data of Geologist

O. Kondratienė, were entirely similar. There was little pollen in either: about 100–150 specimens per gram, but it had survived in good condition. After being chemically processed, charcoal, a quantity of cellulose, and a few worm eggs were discovered in addition to the pollen. In both samples, roughly identical flora species were found. The fluctuations in the quantities were within the margin of error. In the arboreal group, pine (51%) and birch (35%) pollen predominated. In addition, there was also alder (13%), fir (4%), and isolated broad-leafed tree pollen. There was little plant pollen. Representatives of the Poaceae family, including grain (4%), predominated.

The North-east Excavation Area

The north-east area was excavated in 1977 and 1978. This area is bounded on the south by the channel from the interdunal lagoon to the sea. In the plan, the area looks like a 30 m wide (north–south) projection into the interdunal lagoon. Around it, a 6–8 m deep ribbon of the shore was covered by the silt layer. On the north-west edge the cultural layer was thin, from several centimetres to 15–20 cm thick, and light grey. It contained a large number of scattered stones. It lay directly above the silt layer, which fairly abruptly sloped down to the north, finally disappearing under the water. At this location, better than elsewhere, it was seen that the cultural layer lay on top of a layer of white sand that had been laid on top of the silt layer on the shore. On the north edge not only the cultural layer but also the silt layer contained a large number of finds, especially larger ones. It appears that they probably sank further at that location when the berm slipped at various times. Several clearer groups of fireplaces and postholes, which are presented as detail plan sites in the excavation plan, stand out in this area (21).



21 The arrangement of the detail plans in the north-east of the excavated area

The silt layer on the south-east side of this projection abruptly became thicker to the south and east while on the north-west side, like on all of the ridges of this projection, it was just several centimetres thick. It was possible to define the boundary between the cultural and silt layers on the south shore only on the basis of the fireplace bases because the fireplaces at this location lay directly on the silt layer.

To the west of the silt layer boundary began an open area of light coloured sand. On the north edge of this area two fireplaces and a large number of postholes had survived.

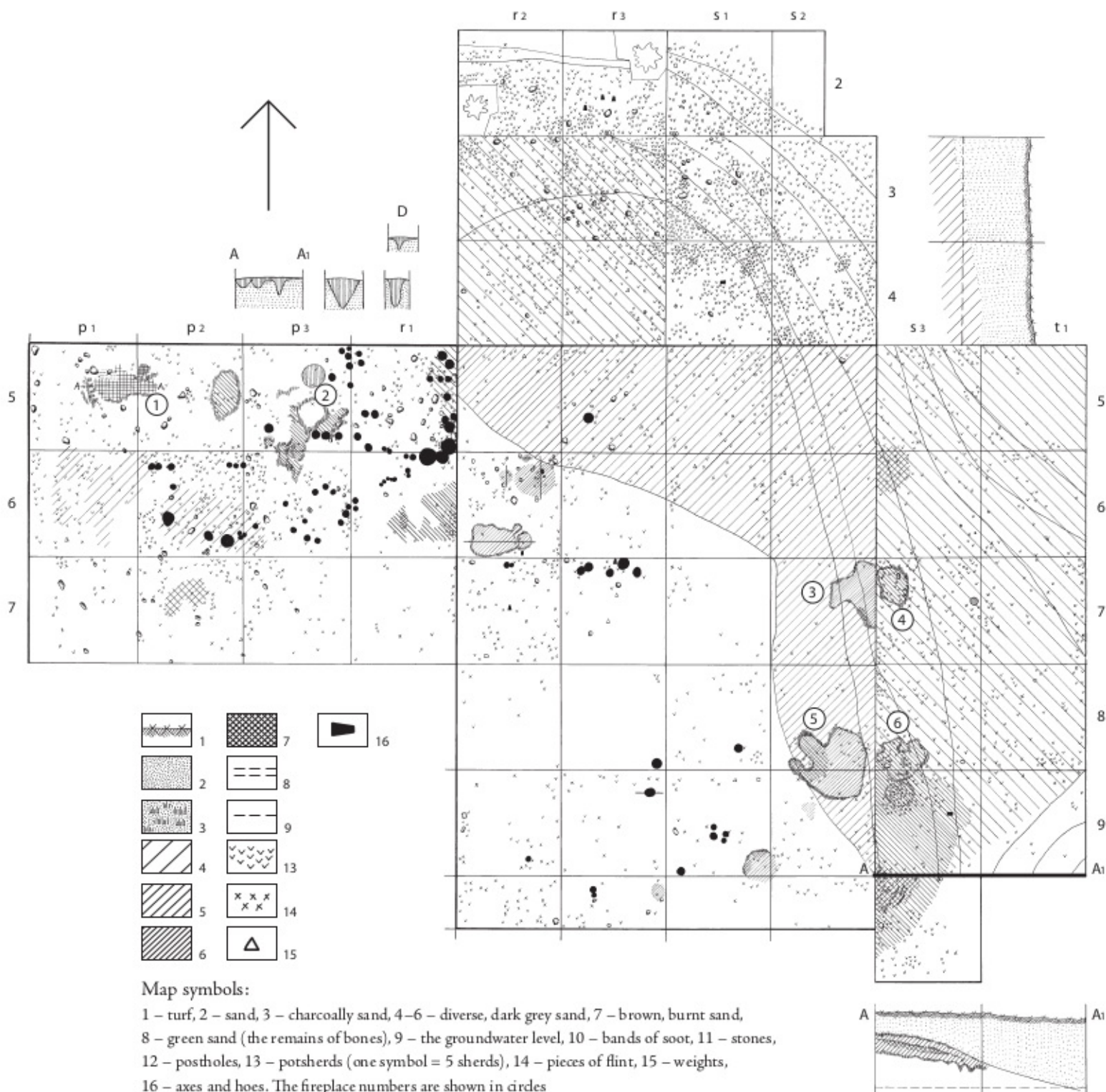
The first detail plan from the plan of the north-east excavated area (22) encompasses the area with fireplaces 1–6. Fireplace 1 was distinguished from the surrounding sand by an irregular, roughly 100 × 80 cm oblong stain of reddish burnt sand. A thin band of soot and several cracked and sooty stones were visible on its edge. The fireplace section shows three 20 cm deep pits, of which only the middle, 35 cm diameter pit, was full of soot. Fireplace 2, which had also survived in poor condition, was discovered about 3 m to the east of fireplace 1. An irregular stain, with a north–east length of 135 cm and a roughly equal north–south width, was discovered under the cultural layer. Bands of soot were visible along its entire south edge. In the south part, the remains of the fireplace were up to 30 cm thick, gradually progressing from dark grey sand on top to reddish burnt sand with a small charcoally stain on the bottom. It is obvious that both fireplaces, which had failed to retain their shape, had been later scoured by the lagoon's waters. It was probably because of this that the dispersed dark stains were irregular, thin, sooty, and charcoally.

A set of postholes, the remains of a building, was discovered beside the fireplaces. These consisted of two fairly clear rows of postholes and the remains of a third (?) row. The south row is roughly in line with the end of the scoured sooty stains. Thus it must be thought that the water had risen while the walls were still standing (perhaps after the building had been abandoned?). A surge of water pushed the stakes out of place, completely removing some of them, and only a line of sooty soil shows where they must have been.

At the east end of this group, a row of five postholes, 12–20 cm in diameter and 25–30 cm deep, were visible. To the west was a 110 cm long, dark grey stain with sooty edges; the section revealed traces of three postholes: two semicircular and 20 cm deep and one with a sharp bottom and a depth of 32 cm. A continuation of the postholes was visible 3 m to the west. 8–12 cm diameter postholes were arranged in an irregular line. On the edge, the poles had been set up to 30–50 cm into the sand, further to the west and the north, only to a depth of about 10–12 cm. It appears that this must have been a building's transverse partition.

Further to the west, beside traces of the same thin stakes, thicker postholes were visible. The east posthole was 35 cm deep. 90 cm to the west of it was a second 30 cm diameter, 50 cm deep posthole, which, it seems, was at the building's corner because from it a row of smaller postholes runs due north. This row ended in three postholes side-by-side.

The second row of postholes began just a couple of metres from it and ran parallel to it. A 5 m long strip could be traced. At one end, it began with a cluster of large postholes. The largest grey stain was an 80 × 60 cm oval. In the section, it tapered steadily to the bottom. Several poles driven side by side probably stood at this site. Beside these postholes was



22 Detail plan 1, including clustered fireplaces 1–2 and 3–6, in the north-east of the excavated area.
 The grid squares are 2 × 2 m² with a height of 20 cm