

Underwater
archaeology

a nascent discipline

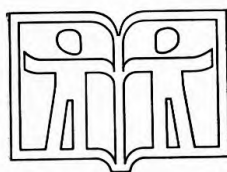
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Submerged sectors of towns on the Black Sea coast

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It is now about 150 years since a start was made on studying the ancient monuments submerged off the northern shores of the Black Sea. In the eighteen-twenties, at the head of the Kerch' strait, not far from the Chushka peninsula, six marble columns (1)¹ had been noticed, probably belonging to an ancient temple. This may have been the sanctuary of Achilles, which was situated at a place called 'Αχιλλειον or 'Αχιλλειοσ-κώμη (2). In the middle of the nineteenth century, A. Uvarov observed that the coastal portion of the ancient city of Olbia lay beneath the waters of the Bug estuary (3). V. Farmakovskiy (4), who took a keen interest in the submerged buildings of Olbia, asked V. Derekin to measure them in 1915(5).

F. Gill, speaking of the ruins submerged near the ancient town of Phanagoria, took them to be a mole that had been destroyed (6).

At an earlier date, in the gulf of Taman' not far from Phanagoria, two antique marble statues representing recumbent lions had been discovered and brought up from the bottom of the sea (7). They can be seen today in the Feodosiya Museum.

HARBOUR OF FEODOSIYA

In 1894, the lower portions of approximately 4,000 pinewood piles on which a mole had once rested were discovered in the course of building operations in Feodosiya harbour. The ends of these piles, buried deep in the mud, were about 8 m below water-level and more than 4 m below the surface of the sea bed. They were arranged in rows in such a way as to form an angle. The sector of the bay demarcated by this ancient mole was explored in 1905 under the direction of the Russian scholar L. Kolli. The fifteen amphorae dating from the classical period (8) that were recovered from the sea on that occasion provided indirect evidence as to the date of the mole.

Since 1957, the Archaeological Institute of the U.S.S.R. Academy of Sciences has been collaborating with the History Faculty of Moscow University in an underwater archaeological expedition which, with brief intermissions, is still in progress. The principal aim of this expedition is to explore the submerged portion of the ancient towns located near the northern coasts of the Black Sea. In 1957 research was concentrated in the neighbourhood of the ancient Hermonassa, the Tmutarakan of the Middle Ages, one sector of which lies beneath the waters of the Kerch' strait. The limit of the submerged part of the town was found to lie approximately 90 m from the present coastline.

1. Figures in brackets relate to sources given in 'References' at end of this section.

PHANAGORIA

The excavations carried out in 1939-40 on dry land in the coastal sector of Phanagoria revealed cultural stratifications below the existing sea-level. This showed that part of the ancient city is now submerged by the waters of the Gulf of Taman', and that the ruins which F. Gill had thought to be the remains of a mole are undoubtedly the vestiges of the former city walls. It was with all this in mind that we commenced our underwater exploration at Phanagoria.

In 1958 the submerged sector of Phanagoria was explored (9). At the head of the Gulf of Taman', near the site of the city, a great many heaps of stones were discovered, as well as classical and mediaeval pottery, consisting mainly of truncated amphora shards and tiles. Most of these heaps of stones were found near the north-eastern and north-western limits of the ruins of the city, approximately 220-240 m from the coast. There, the stones were piled one on top of another in rows 14 m wide, which doubtless represented all that remained of the ancient defence walls. This enabled us to demarcate the submerged sector of Phanagoria. The depth of the submerged zones of the city did not exceed 2.30 m; the gradient was for the most part gentle—about one metre in a hundred—with no abrupt variations. Beyond the limits of the site occupied by the rows of stone and heaps of pottery there was a sharp drop of 1-1.50 m and in places of as much as 1.65 m. This suggested that the difference in depth was due to the cultural strata of the submerged sector of the city. The considerable difference in ground density supported this hypothesis. Beyond the indicated limits of the submerged sector of Phanagoria, the mud was of such low density that one could easily thrust one's arm right into it, whereas within the perimeter of the site occupied by the ancient cultural stratifications, it was only with the greatest difficulty that it could be penetrated with an iron bar.

We were thus able to reconstruct, with a fairly high degree of certainty, the configuration of the submerged portion of ancient Phanagoria. The area was about 15 hectares. The 1936-40 excavations (10) had revealed the total area of the non-submerged portion of Phanagoria to be approximately 37 hectares. The total area of ancient Phanagoria was thus not less than 50 hectares. This has considerably altered earlier ideas of the size of the city and the number of its inhabitants and made it easier to understand the testimony of Strabo (11), who particularly emphasized the importance of Phanagoria for the Asian Bosphorus.

But convincing and well-substantiated though the hypothesis appeared, the question could not be finally and incontrovertibly settled except by underwater archaeological excavations at a considerable distance from the coast. This was the reason for the excavations (12) carried out in 1949 at the head of the Gulf of Taman', at 185 m from the coast, at the north-eastern limits of the submerged zone of the ruin of Phanagoria. The sea-bed here was 1.90 m deep. To begin with, the excavations were carried out manually, using a spade; the pottery remains were sorted by hand. The earth thrown up was removed by an air-lift. When the excavations reached a depth of 1 m, plank lining was needed to prop up the sides; on the other hand, the ground was now loose and could be cleared away by the air-lift without first having to be turned. Any sizeable objects that were found continued to be sorted by hand, while the smaller ones were sucked up together with the earth and water through a pipe, deposited on a sieve (a double net) and then collected stratum by stratum. (Fig. 67.)

These excavations revealed that the highest stratum consisted of a layer of alluvial sand, 0.65 m thick, containing fragments of pottery ranging in date from the fifth century B.C. to the Middle Ages. Below this were the remains of a paved street. Still lower were two strata of clayey soil, both of

the same thickness. The higher of the two dated from the second century B.C.; it contained amphora fragments of the fourth to second centuries B.C. and some fragments of late black-glazed pottery; at the very bottom of this stratum were vestiges of a road that had been destroyed. In the lower stratum (fourth to third centuries B.C.) were found the remnants of various utensils, including fragments of fifth- to third-

century B.C. amphorae and fragments of baked clay, perhaps from a pottery furnace. Underneath the lower stratum were the remains of a road made of large paving-stones. The bed of this road rested on ordinary dark grey mud, at a depth of 1.30 m below the sea-bed and 3.20 m below sea-level.

The excavations thus provided definite confirmation of our theories regarding the

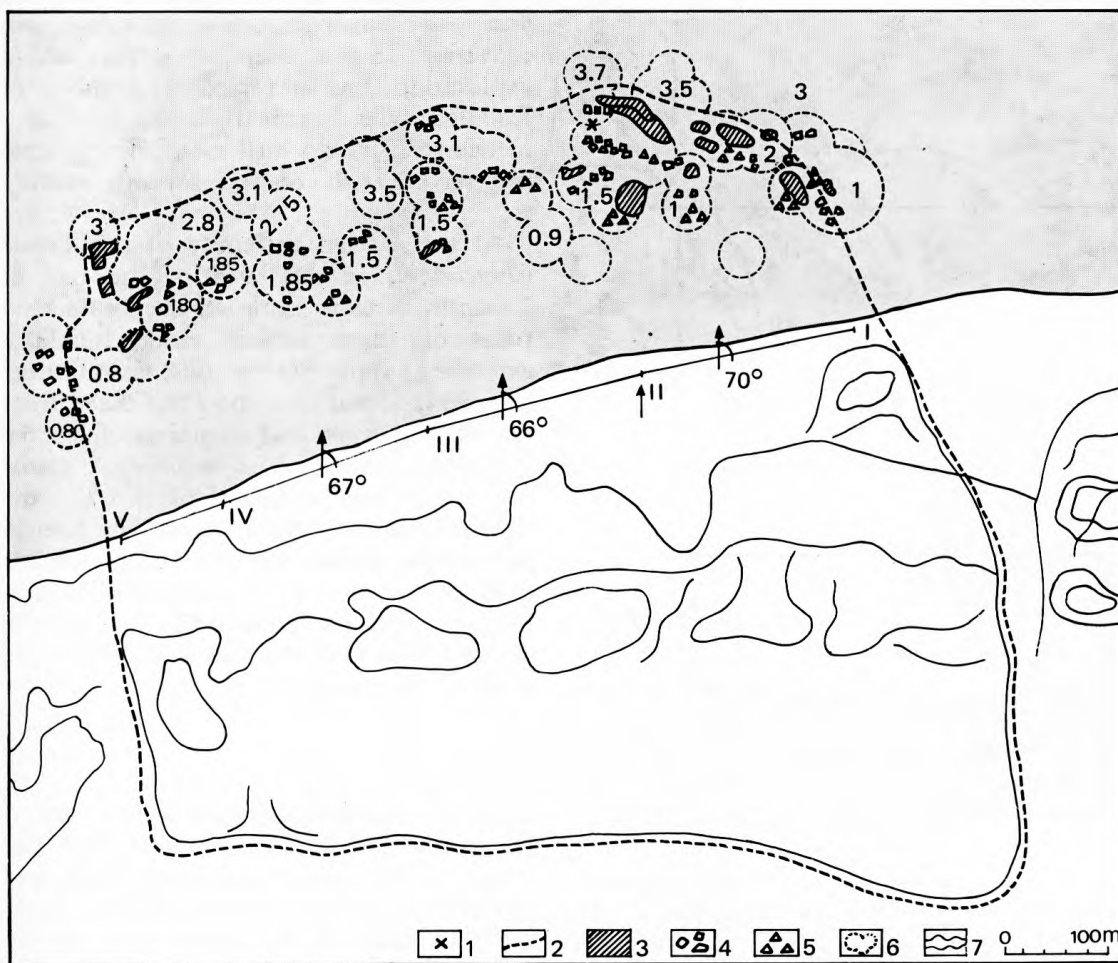


Fig. 66
General plan of Phanagoria: (1) location of the 1959 excavations; (2) extent of the city; (3) rows of stones; (4) groups of stones; (5) piles of pottery; (6) sectors explored during the 1958 excavations and their depth; (7) lie of the hills.

limits of the submerged portion of Phanagoria and showed that the city, in the fourth to second centuries B.C., extended more than 185 m beyond the coastline. The existence of a road dating from the fourth to third centuries B.C., at a depth of 3-3.20 m below the present level of the Gulf of Taman', proves that in the course of the last twenty-two or twenty-three centuries the level of the sea in this region has sunk by at least 4 m.

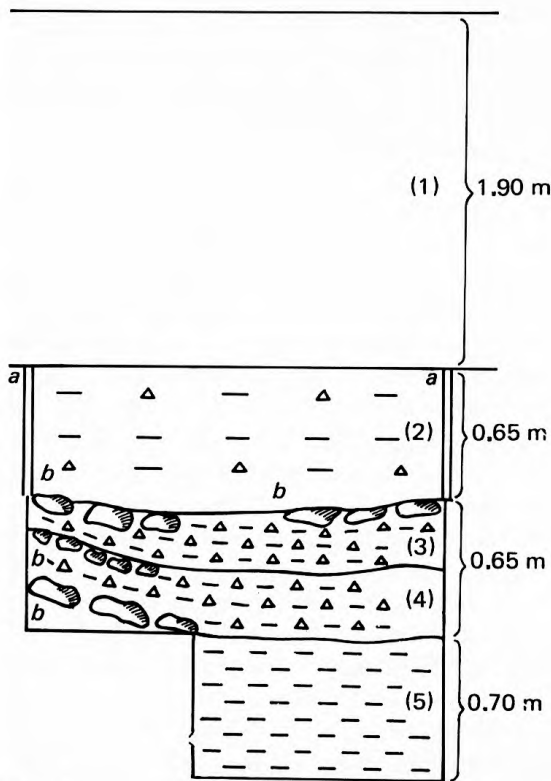


Fig. 67
Section of the underwater excavations at Phanagoria in 1959: (1) sea; (2) cultural layer in contact with sea; (3) cultural layer of second century B.C.; (4) cultural layer of fourth to third century B.C.; (5) original layer; a, wooden framework; b, pavement remains.

OTHER SITES

In 1960 underwater explorations were carried out near the north part of the Sea of Azov, in the Kerch' straits and near the southern coast of the Crimea (13). In the Bay of Taganrog an ancient establishment, doubtless an emporium, founded in the last decades of the seventh century B.C., was explored. The place had become extremely busy in the sixth century B.C. and had remained active in subsequent centuries. It was there, too, that earlier exploration had revealed a number of Rhodian kylix fragments in the later geometric style with a bird motif, dating from the second half of the seventh century B.C. (14).

At the eastern extremity of the Tauric Chersonese, at the head of the Bay of Karantin, a team explored the submerged ruins of some ancient stone buildings extending about 45 m offshore. Pottery fragments found near the ruins dated from the Middle Ages and sometimes from the Hellenistic period. The submerged sector had always lain outside the city walls, the distance between this spot and the Roman and earlier mediaeval cities being not less than 60 m and 40 m respectively (15). Perhaps artisans lived here—just as the potters' kilns (16) were situated outside the walls of Chersonese.

OLBIA

By 1961, explorations were carried out on the submerged portion of Olbia (17). The sector of the estuary adjoining Olbia was plotted and certain submerged sites, especially in front of the central part of the ruins, were explored in detail.

At the head of the estuary, in front of the centre of Olbia, two great piles of large-size building blocks were found. The first was at a distance of 8-55 m from the coast; it consisted of about forty blocks, mainly rectangular stones of different sizes, the

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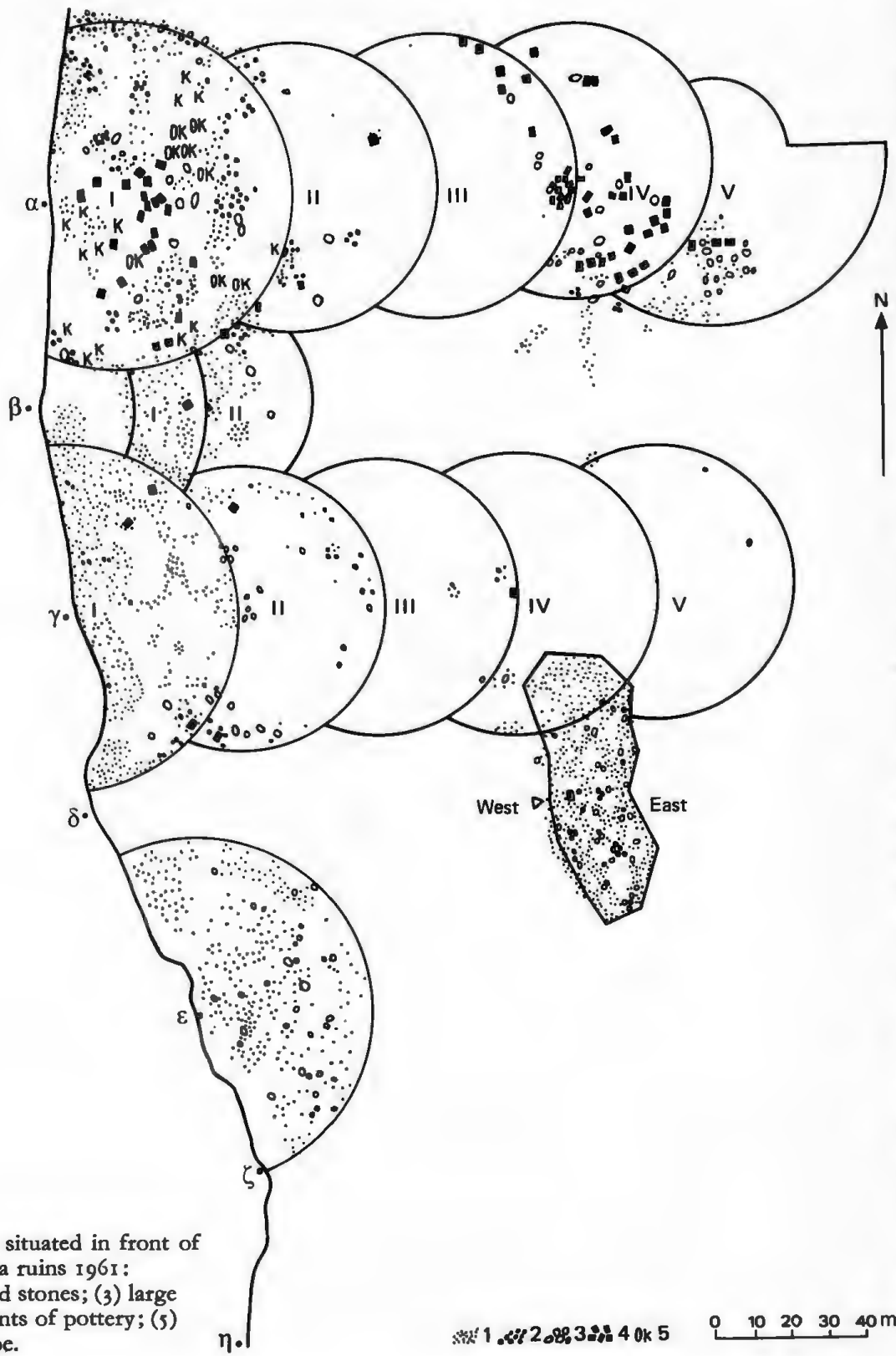


Fig. 68
 Plan of submerged sectors situated in front of the central part of the Olbia ruins 1961:
 (1) rubble; (2) medium sized stones; (3) large blocks of stone; (4) fragments of pottery; (5) fragments on a steeper slope.

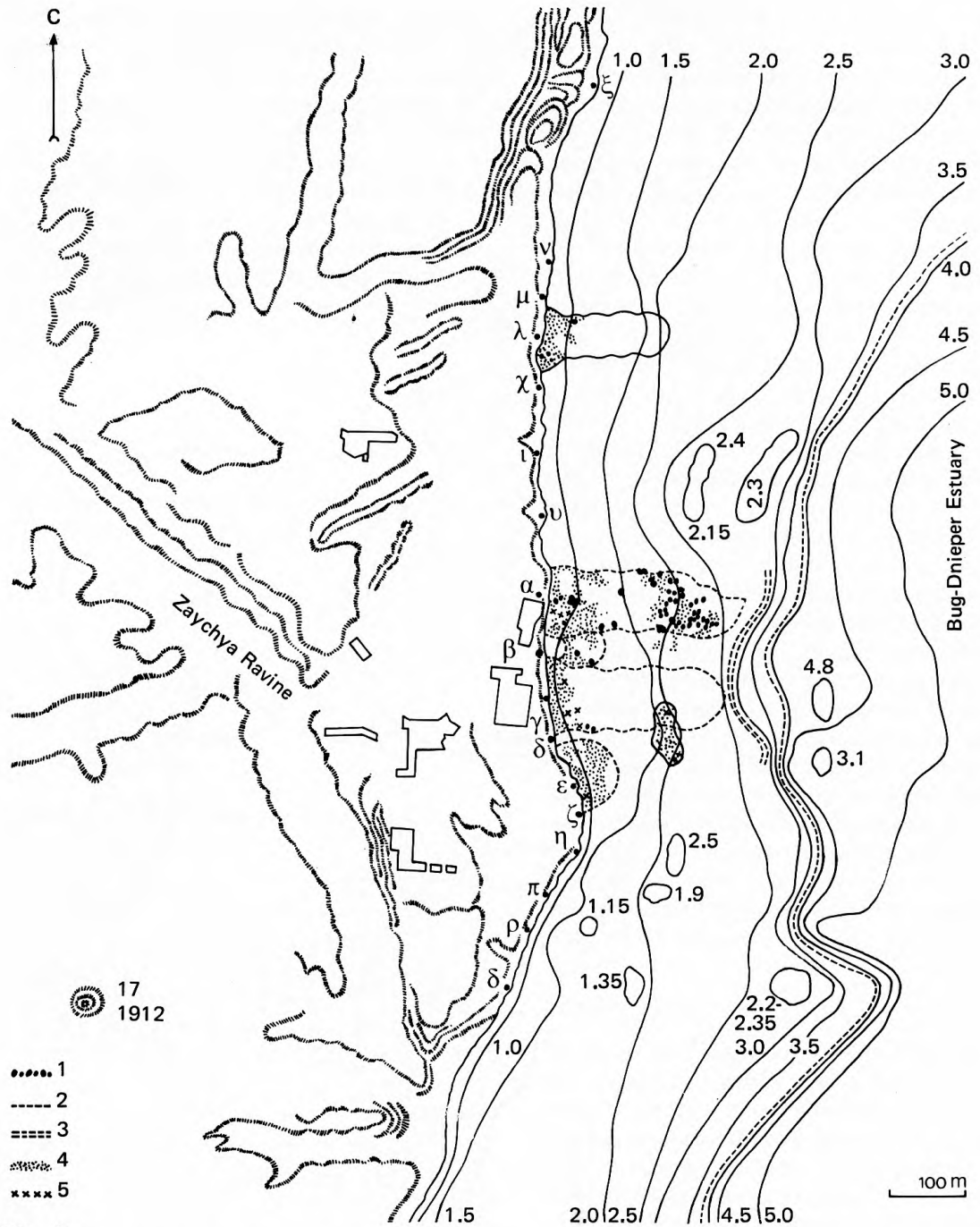


Fig. 69
 General plan of the Olbia ruins after the 1961 work: (1) blocks of stone; (2) approximate lie of ancient coastline; (3) approximate extent of the city's buildings; (4) broken stone; (5) fragments of pottery.

largest being as much as 1.60 m in length. The second pile was 110-200 m from the coast and consisted of eighty blocks, none less than 1 m or more than 2.50 m in length.¹ The presence of great blocks of stone at the head of the estuary, 200 m from the existing coast, suggests that at any rate the central part of Olbia must have extended at least this far. The variations in depth at the head of the estuary, near the ruins of Olbia, are similar to those observed at the head of the gulf near Phanagoria; to begin with, up to a certain distance from the coast, the bottom sinks very gradually; then, over a small segment, near the supposed limit of the ancient city, the gradient suddenly becomes abrupt. Thus, in front of the central part of the ruins of Olbia, the estuary gets gradually deeper, attaining a depth of 3 m at a distance of 230 m from the coast; the incline then becomes much sharper and, 10-30 m further on the estuary is 4 m deep. It would therefore seem that at this point the city did not extend more than 230 m beyond the present coastline and that the shore formerly followed a line about 250 m further east than today. We do not know the exact limits of the northern and southern sectors of the submerged portions of Olbia. If later explorations establish that their distance from the coast is the same as in the

case of the central sector, this will mean that the area of the submerged portion of the city represents about 20 hectares, or approximately two-fifths of the total area of Olbia.

It was stated above that the coastline in the days of ancient Olbia may have lain 4 m below the present-day water-level of the Bug estuary. It would thus appear that the change in water-level since classical times has been much the same in the Gulf of Taman' and in the Bug estuary.

In 1962, underwater explorations were concentrated mainly on the west coast of the Dniester estuary, where the submerged portions of ancient Tyras and of the mediaeval city which later arose on its site were explored and charted.

1. A stone platform in front of the central portion of the city was also explored; its measurements had previously been taken by W. Derenkin, but with insufficient precision. This platform had previously been called a landing stage, but its position—184 m from the present coast—rules out this hypothesis. The platform is 75 m long, 29 m wide and rises from 5-40 cm above the level of the sea-bed. Its upper surface is flat and—in places at any rate—made of stones closely fitted together. Fragments of pottery dating from the fourth to third centuries B.C. were found on the platform.

REFERENCES

1. *Antiquités du Bosphore Cimmérien*, vol. I, p. CIV, no. 4, St. Petersburg, 1854; GERTS. *Arheologičeskaja topografija Tamanskogo poluostrova*. Moscow, 1870. p. 114 et seq.
2. STRABO, VII, 4, 5; XI, 2, 6; PTOLEMY, V, 8, 5; STEPT. BYZ., Ἀχιλλεῖος Πέριμος.
3. UVAROV, A. *Issledovanija o drevnostjah Južnoj Rossii i beregov Cernogo morja*. 1st ed. St. Petersburg, 1851. p. 40.
4. FARMAKOVSKY, B. V. *Ol'vija*. Moscow, 1915. p. 123.
5. —. *Otčet o raskopkah Ol'vii v 1924 godu. Soobščeniya Gosudarstvennoj Akademii Istorii material'noj Kul'tury*, vol. I, 1926, p. 145, fig. 3; KARASEV, A. N. *Oboronitel'nye sooruženija Ol'vii. Kratkie soobščeniya Instituta istorii material'noj Kul'tury Akademii nauk SSSR*, no. XXII, 1948. p. 32 et seq.
6. GERTS, K. *Op. cit.*, p. 88.
7. KOLLI, L. P. *Sledy drevnej Kul'tury na dne morskome. Sovremennoe položenie voprose o nahoždenii v more anticnyh pamjatnikov. Izvestija Tavričeskoj Učenoj Arhivnoj Komisii*, no. 43, Simferopol', 1909, p. 126.
8. —. *op. cit.*, p. 130.
9. BLAVATSKY, V. D.; KUZISHCHIN, V. *Podvodnye razvedki v 1958 g. Kratkie soobščeniya Instituta Arheologii Akademii nauk SSSR*, no. 83, 1961, p. 136 et seq.

Underwater archaeology: a nascent discipline

10. KOBYLINA, M. M. Fanagorija. *Materialy i issledovanija po arheologii SSSR*, no. 57, 1956, p. 10-12.
11. STRABO, XI, 2, 10.
12. BLAVATSKY, V. D. Podvodnye raskopki Fanagorii v 1959 godu. *Sovetskaja Arheologija*, 1961, p. 277 et seq.
13. BLAVATSKY, V. D. Raboty podvodnoj Azovo-Černomorskoj ékspedicii 1960 g. *Sovetskaja Arheologija*, 1951, no. 4, p. 148 et seq.; BLAVATSKY, W. D. (V. D. Blavatsky). An Underwater Expedition to the Azov and Black Seas. *Archeology*, 1963, vol. 16, no. 2, p. 93 et seq.
14. PFUHL, E. *Malerei und Zeichnung der Griechen*. Leipzig, 1923, vol. I, p. 92, paragraph 86; vol. III, p. 9, fig. 47; LAMBRINO, M. F. *Les vases archaïques d'Histria*. Bucarest, 1938, p. 39 et seq., figs. 7 and 8, p. 42 et seq.
15. BELOV, G. D. *Hersones Tavričeskij*. Leningrad, 1948, p. 48, fig. 8, table xxiii.
16. *Otčet Arheologičeskoj Komissii*. 1900, p. 19 et seq.; BORISOVA, V. V. Gončarnye masterskie Hersonesa. *Sovetskaja Arheologija*, 1958, no. 4, p. 144 et seq.
17. BLAVATSKY, V. D. Podvodnye razvedki v Ol'vii. *Sovetskaja Arheologija*, 1962, no. 3, p. 144 et seq.