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PAPERS OF THE AMERICAN SCHOOL OF CLASSICAL STUDIES AT ATHENS.
EXCAVATIONS BY THE SCHOOL AT ERETRIA IN 1891.

VI. A TOPOGRAPHICAL STUDY OF ERETRIA.[1]

[PLATES XIV, XV, XVI, XVII, XVIII, XIX.]

INTRODUCTORY NOTE.

In presenting Mr. Pickard's report on the topographical portion of our work at Eretria during the campaign of 1891, I need hardly dwell upon the importance which such careful and sober study of the extant remains of the city has for the settlement of disputed points of topography and history. The final answer to the question as to the site of the early and the later Eretria and the relation which they held to each other, which has recently entered a new phase, can be given only as a result of such careful study of the archæological remains surviving.

Perhaps the only piece of work which still remains to be done in this respect is the investigation of the site of Batheia in connection with some "exploring excavation," which the School may hope to carry out during the season of 1892.

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[1] In the following pages, no attempt is made to show the historical bearing of the facts presented.

Mr. John W. Gilbert is responsible for all the chain-measurements. The exceedingly rough and bushy nature of a portion of the ground surveyed rendered this work

Eretria lies nearly north from Athens on the western coast of the island of Euboia, some 4½ hours ride from Chalkis. It is reached from Athens either by steamer leaving Peiraieus in the evening, sailing around Sounion, and reaching Eretria early the following morning, or by taking cars to Kephisia, from that point on by either carriage or horse, *viâ* Dekeleia, to Skala Oropou, or on horseback by way of Kalamos and the Amphiareion to the same place. At Skala Oropou boats may be hired to cross the Euripos. The journey by this route occupies 11–12 hours under favorable conditions.

It was on the last day of February, 1891, that we began our survey of the walls of this ancient Eubœan city. The weather was bleak, rendering the management of the instruments somewhat difficult. A few flying snowflakes gave warning of the coming snowstorm, which rendered work impossible for several days thereafter. Our starting-point was just at the foot of the acropolis, on the eastern side of the town, where the modern road to Batheia and Aliveri passes over the foundations of the ancient city-walls. Just at the right of this modern road, concealed beneath slight elevations of earth, are the remains of the towers which guarded the entrance to the city on either side of the "Sacred Way" (see MAP, PLATE XIX). The course of this ancient road can be traced with absolute certainty for miles to the east by the multitude of graves which lie on either side. Some twenty minutes walk from the city-wall, on the south side of this way, was excavated that mausoleum which has been regarded as the possible tomb of Aristotle. The line of the wall from this station *A* runs a little east of south, toward the Euripos, in the direction of the peninsula which protects the large harbor on its east-southeast side.

For the first sixty metres, only a few fragments of the foundations are now above ground. At this distance is a low mound which seems to mark the site of a tower. For the next forty metres scarcely a trace of the wall can be seen, till the line is recovered in a square tower some 6.5 m. by 9 m. in plan. From this point on for 500 metres toward the sea, the line is perfectly clear. It is in this stretch that the plan and character of the wall of the lower city can best be studied. The builders seem to have avoided using a straight line, excepting for a short distance along the sea, where the wall is essentially different

at times very troublesome. The acknowledgments of the writer are also due to Mr. Gilbert as well as to Dr. Waldstein, Professor Richardson, and Mr. C. S. Brownson for many suggestions, and to Dr. Dörpfeld for valuable observations.

in construction. Neither here nor elsewhere is the line of wall even approximately straight for more than 40 m. at a stretch. The frequent changes of direction, for which often there exists no apparent reason, form a series of very obtuse angles. The right angle was not used where we might expect one. Except in the corners of the "square" towers, such an angle does not occur in the whole circuit of the city. The existing foundations of this eastern wall of the lower town rise above the surface from 0.10 m. by station *B* to one metre near *D*. They are on an average 2.6 m. thick, varying but a few centimetres either way from this measure. The slight variation is in part accounted for by the difficulty in obtaining, on the somewhat roughly dressed stones, exactly corresponding points from which to measure; so the thickness of these walls, here as at every other point where sufficient remains are extant to render measuring possible, may be considered as accurately given by the above figures. These foundations are made up by a wall of stone on either side, the space between being filled with packed earth in which are scattered small stones. The stone is fairly well dressed on the surfaces which face outward; the inner surfaces however are quite in the rough, just as they were broken from the quarry. The work is semi-polygonal, there being very rarely a right angle in the joints. Many blocks are nearly quadrangular, but others are decidedly polygonal. Much pains seems to have been taken to make the upper surface of the foundations as nearly horizontal as possible. In this respect, indeed, the walls are much like those of Mantineia. There are absolutely no remains of the superstructure scattered about. This is not difficult to explain when we consider that Eretria has always been inhabited, and has, to judge by the graves, at times been the site of a considerable town since the days of its ancient renown. Even now the village numbers some 150 buildings of various kinds. It has not been uncommon for the walls of a city to disappear under such circumstances; and even to-day the inhabitants of Eretria are in the habit of digging up the foundations of the old city-walls to obtain stone for building. But there are reasons which tend to show that the upper portions of the walls of the lower city were built of sun-dried brick. Had the superstructure been of stone, it would be remarkable indeed if, in more than a mile and a half of such walls, some fragment had not escaped to tell the character of the rest. The foundations can be traced throughout nearly their entire length; yet not a stone which can be surely ascribed to the super-

structure can be found. On the acropolis, some towers still stand to a height of 4 metres, while the wall of the citadel is in places 3 metres high. In this no attempt is made to have the first course above ground horizontal, as in the lower city. It was not uncommon for city-walls to be built of sun-dried brick, and we know that this was the material used in the walls of Mantineia. The clay for such bricks was abundant near the Eubœan city. It seems quite probable, therefore, that the portion of the place which lay in the plain was enclosed by walls of this nature. The outcropping rock of this region is limestone, but the ledges, even those in close juxtaposition, often show markedly different characteristics. All the stone used in the walls seems to have been quarried in the neighborhood. That employed in the lower city is in general of a light greyish color, little weatherworn, fine-grained, firm and hard.

The foundations of the towers, of which only slight indications are to be found in the remaining portions of the wall of the lower town, are along the eastern side intact and in excellent condition. A series of five in succession gave an excellent opportunity to learn the dimensions of their ground-plan, and the intervals at which they were probably placed along the greater extent of the defenses of the lower city; at least, nothing appears elsewhere to throw doubt upon the measurements here obtained The average of these five gives a quadrilateral 6.6 metres in the line of the wall, by 9 metres in the perpendicular to this line. They extend across the wall and form an integral part of it, projecting about 1.5 m. within on the side next the city, and some 5 m. on the exterior side, and are placed at intervals of about 55 m. There was evidently no attempt to make the dimensions of all the towers just the same, or to place them at exactly equal intervals. The lengths (in the wall) vary from 6.4 m. to 6.8 m., the widths from 8.6 m. to 9.2 m., and the greatest distance between any two is 55.8 m., the smallest distance 54.8 m. The stonework is better in the towers than in the adjacent walls, but it retains the same polygonal character.

In this line are the foundations of two other very interesting towers. One is located at the southeast corner of the city-wall, at the southern end of the portion now under consideration. The other is 35 m. back toward our starting point. They are marked *E* and *F* on the MAP, and are circular in form, 7 m. in diameter. The wall is just tangent to the circle, and from it passages led within the towers. The stones

of these, though the portion projecting within the towers is, as usual, left undressed, are on the outside beautifully worked to the circular form, the joints being also carefully fitted. In addition, the outer surface is carefully dressed with regular horizontal rows of vertical straight lines about an inch long, the lines of the alternate rows, reckoning from the bottom, being perpendicularly over one another. This work is undoubtedly, as has been shown by Dr. Dörpfeld, an imitation in stone of the surface of the sun-dried brick. A path extends across the wall just north of the southernmost of these two towers. The shortness of the distance between them, some twenty metres less than usual, together with the unusual shape and their superior architectural beauty, can best be explained on the ground that there was here another entrance through the eastern wall of the city. The existing remains above ground are insufficient to establish this fact.

For nearly its entire length, a causeway must originally have been constructed on which to lay the foundations of this eastern wall. At the time our survey was made, it was impossible to work anywhere in this section except on a strip of land a few feet wide on either side of the line of wall. Even when we revisited the site, early in May, though the ground was elsewhere dry and the grain was almost ready for the harvest, there was still a marshy pond surrounded by a bog inside the wall; and the great marsh to the east of the line covered an area nearly as large as that occupied by the ancient city itself. It was undoubtedly this great swamp which gave the city its bad name in antiquity, and ultimately caused its depopulation. The late King Otho cherished plans for restoring the city to more than its old-time splendor by building a great naval station here. The new Eretria was duly surveyed, maps were drawn, plans made, colonists were settled. In the office of the village Demarch can still be seen on paper what magnificent boulevards, docks, public squares, fountains, and gardens were to have been called into being. But the dream of the king and the reality of to-day stand in sad contrast. The only parts of this magnificent scheme which took some material shape were three buildings that were intended for the Naval School, and the streets of the village, which impress one as being altogether too broad for the few poor houses scattered along them. The same unhealthful influences emanate from these marshes as of yore. They compelled the king to give up his scheme; and they render it unsafe for any one to remain at Eretria after the warm weather of spring has once fairly set in.

The direction of this east wall is such as, at first glance, to warrant the belief that it must have extended directly to the seashore at the point where the peninsula joins the mainland, thus including the whole of the east side of the large harbor within the ancient fortifications. But, making a sharp turn to the west at *F*, it runs in a direction less than a right angle with its previous course for a hundred metres. At *H*, it turns with an obtuse angle toward the sea again, and its course is easily followed for some 120 metres further. At *I*, it is entirely lost in the well cultivated fields lying on this side of the village.

These apparently eccentric turnings involve the surrender of all idea of fortifying the entire water front of the large harbor as it now exists. Beyond *I*, though making various turnings, the wall does not finally reach the present line of the shore till it comes to *N*. From *N* to *O*, a distance of 80 metres, the line skirts the beach. At *O*, it turns directly inland; so that the line *N–O* is the only frontage the wall now has upon the harbor. This appeared a curious state of things, and for a long time no satisfactory solution of the puzzle could be found. To be sure, the line from the round tower at *F* toward the inland end of the peninsula, led across ground which was decidedly marshy at the time the survey was made, so much so, indeed, as to preclude a careful examination of all the intervening ground. The turns at *F* and *H* also brought the line around the small pond lying outside the wall in this direction. But the engineering-skill which had run the whole eastern wall through the great swamp, and included one pond within the fortifications, would certainly not have been stopped by the lesser obstacle between *F* and the sea. Then, too, in the line *H–I* the ground is perfectly firm the whole way to the shore. The angles at *F* and *H* are quite distinct; the line of wall *F–G–H–I* is unquestioned, being among the best preserved portions of the entire circuit of the lower city. It was only when we revisited the site in May, after the summer heats had dried up the swamp to some extent, that what seems the true explanation was discovered. In the immediate neighborhood of the line *F–G–H*, all traces of a former wall have disappeared. But, moving out from *G* directly toward the sea, a wall was discovered, concealed by bushes, sometimes indistinct, sometimes as well preserved as any portion of the eastern wall, in all sufficient to show that it must have extended from near *G* and enclosed the eastern side of this small pond. The wall ends abruptly, as shown on the MAP. The pond is half enclosed, on the east by this last discovered wall, and

by the line *H–I* on the west. Between the pond and the present shoreline is an accumulation, made up apparently of sea-sand, rising to perhaps 2–3 metres above the water-level at the highest point. Mention is made by ancient writers of the two harbors of Eretria. So it seems beyond question that where this little pond now is enclosed by the two arms of the city-walls was once the innermost fortified harbor of the Eretrians. Here, as in so many other instances, the action of wind and waves has completely altered the character of the coast, and filled up the old harbor.

At *I*, as mentioned above, all trace of the wall is lost. At *L*, it again appears, and from this point throughout the remainder of the circuit, both of the lower town and of the acropolis, the main line is traceable with perfect certainty. We counted ourselves very fortunate that the study of the walls offered problems enough to render the work most interesting, and that at the same time the remains were sufficient to restore, with a good degree of certainty, the ancient lines of the city.

From *I* to *L*, there existed beyond question a wall. Between these points to-day extends a highly cultivated field. In it a few stones are scattered about, and there are remains of foundations of buildings, perhaps constructed of stones from the city-wall; but, in the main, all traces which were above the surface have been removed entirely, both because desired for building purposes, and because they formed an obstruction to tillage. In a pit near *J*, was found a short bit of well laid stone substructure; but neither the character of the work nor the direction in which it extended seemed to warrant the conclusion that it was a portion of the city-wall. The line from *I* to *L*, as laid down on the MAP, shows how the wall, which must have crossed this interval, may have run. Three facts furnish the reason for choosing this particular course. At *J* and *K* are the foundations of what in later times were certainly buildings, but which anciently may have been towers. The stones look as if they had once belonged to the city-walls. The present dimensions of these foundations are, however, not what we should expect to find in foundations for wall-towers. In the line *K–L*, we find other foundations; in one case it may be the remains of a square wall-tower, in the other is recognized, by its dimensions and the character of the work, a round tower similar to the two already described. This last, at *O*, may be said to fix the line of wall as passing this point.

The line *N–O* has qualities, peculiar to itself, such as to show that here at least the shore-line has not changed. The best measurement gives its thickness as 2.7 m.; but it is a solid stone wall for the entire length. It appears that the action of the waves injured this line to such an extent as to render most thorough repairs necessary; for at the end near *N* the foundations are regular quadrangular blocks of breccia 0.7 m. by 1.3 m. in area on the upper surface, showing marked traces of red oxide of iron. The outer row of these blocks is laid with the ends toward the sea. Further on toward *O*, a course of fine polygonal blocks rests upon the breccia; and near *O* the polygonal blocks only are in sight. Breccia, so far as I am aware, appears nowhere else either in the wall or in the neighborhood, and the way in which this stone is dressed points to a later period than that of the usual polygonal wall. The tower at *O*, of fine massive polygonal masonry, is circular in form, 7.6 m. in diameter, and of a quite different and more solid aspect than that presented by the round towers mentioned already. One complete course still stands above the surface; and the water almost touches the outer edge of the tower. In two adjacent outer stones are to be seen the only clamp-holes which were found anywhere in the walls. One is for half of a U-shaped, the other for half of a ⊢⊣-shaped clamp. It is quite possible that these were added, for some purpose, after the destruction of the upper portion of the tower. More probably, however, they served to clamp together the stones of the tower with those on the inner end of the mole or breakwater which runs out from this point. The breakwater extends out for perhaps 20 m., then turns at an acute angle and runs to the east in a direction too near the shore to be quite parallel with the wall *NO*. It ends a little to the east of *N*, and there is no connection between this extremity and the shore. Though the entire length is beneath the surface of the water, it is even now dangerous to sail over it with an ordinary boat. The evident purpose was to form a small haven into which galleys could run and lie in safety under the protection afforded by the sea-line of wall with its strong tower. Probably the breakwater extended above the surface in antiquity, though to what height it is not possible to say. The present character and condition of the breakwater are similar to those of the much longer mole which led out from the point of land by the ruined church further to the west. This sea-wall protected and still in a measure protects the great harbor from the sweep of the west-northwest winds, which blow down the Euripos. A small islet at the

outer end has given rise to the belief that a lighthouse formerly stood there.

At the eastern end of the sea-wall *NO*, by *N*, are remains of quadrangular foundations in poros stone, 9.7 m. wide in the direction *NO*. They apparently extended originally into the water, but the outer end is now washed away. The construction and position both warrant the belief that here was an ancient wharf; consequently, here must have been one sea-gate to the city.

The wall *OPSV* calls for little additional mention. From *O* to *S*, it passes beneath two modern buildings and crosses the streets of the present village. From *S* to *V*, the portion above the surface has been removed, but there has been but little digging for foundation-stone. The indications of the wall, though not very numerous, are quite unmistakable. Lines of graves on the other side of the fields to the west, show that, as indicated on the MAP, the "Sacred Way" from this direction probably entered the city at a point not far from the Naval School buildings; but there are no indications above ground to show that a gate stood here.

Passing very near the western side of the theatre-mound, at *V*, the wall of the lower town reaches its northwestern angle. Here was a tower much larger than any of those we had hitherto discovered. Unfortunately its ruined condition rendered it impossible to take the dimensions. Immediately to the north of this tower, in the brook which runs parallel to the line *VUT*, are the remains of the stone abutments of an ancient bridge. This, though other indications are lacking, shows that there was also an entrance to the city just to the east of the tower, at a point where a road now leads out and up the valley to the north.

At *V*, the wall turns toward the acropolis. For the first 50 m., the kind of stone, the method of construction, and the width, are the same as those of the eastern wall of the lower town. The same light-colored, fine-grained, hard limestone occurs, the same semi-polygonal shapes to the stones which form the two outer shells of the wall, the same rammed earth filling, with the thickness practically constant at 2.6 metres. At this 50 m. point a change takes place. The line begins to ascend the southwestern slope of the acropolis (PLATE XIV). For some little distance the ascent is gradual, and there are so few fragments of the wall still visible that the change does not become at once apparent. A more careful examination showed that there is a line of stones ex-

tending across the wall at this point *W*, and a piece of wall leads from the main line a few feet within the city. The stones in the main wall to the east of *W* are decidedly polygonal, and are of a different quality from those previously observed. The thickness of the wall is 2.1 m. This measure is characteristic of the acropolis-wall through its entire length. In the steepest portions of the ascent it contracts to 2 m., and in one or two places, as at *b* and *f*, it is much thicker for a short distance; this extra thickness is to give the wall the strength of a tower. The filling is composed almost entirely of small stones. From *X* to *Z* the grade is 10°. At *Z* begins a fine polygonal wall some 2 m. high. From *Z* to *a*, the angle of elevation is 17°. At *a*, the line turns and goes up the steepest portion of the ascent at an angle of 25°. A view (PLATE XV) of the wall beyond *b* on the MAP gives an excellent idea of the appearance of the main acropolis-wall in its entire extent. Towers are not placed at regular intervals, but occur apparently where most necessary. From *W* to *Z*, unimportant remains of these defenses exist. Some 20 m. beyond *Z* is a tower 6.1 m. by 5 m. in area. The view given in PLATE XVI shows its great strength and the decidedly polygonal nature of the construction. The stone used is the same as the bed-rock over which the wall extends, and was apparently quarried on the spot. It is dark-grey, porous, and usually much weathered, so much so as to be exceedingly rough and unpleasant to the touch, contrasting decidedly with the stone in the walls on the plain. A comparison of PLATES XV and XVI with the polygonal walls of Lepreon in Elis, of Asea near Tripolis, of Medeia (?) in the Argolic plain, and of the well-known piece of polygonal wall on the side of the city opposite the "Treasury of Atreus," at Mykenai, shows that, so far as appearances go, the oldest portion of the acropolis-wall of Eretria displays a more decidedly polygonal character, and hence, in accordance with the old-time view, should be of a higher antiquity than any of these. Though no one would claim to-day that this appearance of hoary age shows of itself that these walls were constructed at any particular period before the Christian era, still, when taken in connection with other facts to be noted later, the comparison affords a strong presumption that the Eretrian acropolis was fortified at an early date.

Between *a* and *b*, when the summit is nearly reached, two walls branching from the main line claim attention. The one which crosses the southern portion of the summit till it joins the eastern wall of the acropolis, will be discussed further on. Just beyond where this leaves

the western line is a fine tower of polygonal masonry, 4 m. by 6 m., its outer wall still being at least 4 m. high. From immediately above the tower, the branch-wall starts down the slope to the left, at an angle of 11°. Just beyond this wall is the first gate of the acropolis. It is small, only 1.6 m. wide; but the lower courses are in excellent preservation; there is thus no doubt that this was the original width. The branch-wall appears, so far as the ruins will admit of decision, to be of the same nature as the main acropolis-wall *a b*, and was probably built at the same time. Rather more than a third of the way down the hillside it terminates in a tower at *I*. After a short break, there comes the tower *II*. From this point on, a diligent search failed to lead to the discovery of any further traces of the wall, though many stones which have fallen from the upper line are scattered over the ground. The first thought was that this lower wall was constructed to include springs for the citadel fortifications; but no traces of springs were found in the space thus added. After a study of the northeast entrance to the acropolis, a close examination showed that the main purpose here was probably to form a double line of defense for the entrance to the citadel from this direction, and at the same time to add to the area of the acropolis. The main wall from *b* to *d* is along the summit of a precipitous declivity, the bare rock sometimes falling 10–12 metres sheer. The branch-wall from the gate to *I* is also along the edge of a steeper portion of the hillside. Directly below the tower *II* are indications that a roadway, passing close below this tower and on between *I* and *II*, was formerly supported by a retaining-wall. This to be sure would present, to the defenders of the tower, the "shield side" of an enemy passing along this road; but the lay of the land did not allow of any other arrangement. The slope, both down the hill without and from within up to the gateway at *b*, is such that a roadway here would have been quite practicable.

The main purpose for which this wall was constructed being accomplished at the gate-towers *I* and *II*, it is natural to expect that from *II* the line should pass as quickly as possible back to the main wall. Though there is nothing in the space between to prove or disprove this, at *d* there are slight indications that the wall may have returned straight up the steep slope to this point. It is accordingly so shown on the MAP. The line *d e g* passes along the northern edge of the summit. So sharp is the fall that a substructure of smaller stones, a little outside and below the real foundations, was deemed necessary along

the entire distance, *d*-*g*. The summit of the hill has been leveled, so that the existing remains of the encircling wall serve as a terrace-wall to support the earth, and they seldom project more than half a metre above the level of the soil within. The most imposing view of the summit must have been from the north. Here, no portion could have been more impressive than the walls of the great tower at *e*. Its dimensions are 9.8 m. by 7.8 m., while two cross-walls divide it within into four parts. Its northern wall is still 4.8 m. high, and it is constructed of regular courses, each 0.6 m. thick. The stones are not exactly rectangular, the vertical joints not being in all cases perpendicular; but it needs only a glance at PLATE XVII to show that this has nothing constructionally in common with the main acropolis-wall as seen in the previous views. If further proof were needed, it is found in the fact that this tower is simply built against the wall. The wall, intact and as complete as elsewhere, runs behind the tower, the stones of the latter being merely laid close up to those of the wall. Stones similar in appearance and in material to those used here are found only in the two towers by the gate at *h*, and in the other similar tower at *k*. The shape of the stones used varies considerably in these four towers. The method of working is the same, even to a finished edge extending the entire length of the corners of the towers. This last peculiarity is found only in these four towers. These four structures, then, must be taken as representing a particular period of construction and repairs.

The tower at *g*, 4.5 by 6 m., though forming a part of the old wall, deserves special mention. Outside of and below it are two lines of terrace-wall. The slope here is not steep enough to require such supports, and the walls are too far from the tower to serve to strengthen its foundations. The more probable explanation is that at some time a path led up the slope, rounded the western end of the lower terrace-wall, passed between the two, turned the eastern end of the upper one and then proceeded, between the tower and the upper wall, to the west side of the tower, where there was a small entrance. A passage through the inner wall of the tower is still easily distinguished. The line for the greater part of the distance from *f* to *g* was strengthened by walls situated, the first 1.5 m. from the main wall, the second 1 m. further in, which look as if they may also have had the purpose of supporting a passage to the ramparts.

Between *g* and the northeast corner of *h*, the wall has been patched, in part with finely worked blocks of poros stone, one of them with a

side a perfect rectangle 1.4 × 0.8 m. in area. These stones are different from any found elsewhere in the walls. This corner at *h* was naturally the weakest spot in the fortifications of the citadel. Here to the northeast is the highest portion of that ridge which connects the solitary outlying spur, which the Eretrians used for their acropolis, with the remaining foot-hills, offshoots of the Eubœan Olympos. Along this ridge must have come that road which entered the acropolis between the gate-towers. Here an enemy would naturally attack, and here we accordingly find plentiful evidences of rebuilding and repairing.

The line *f g h* terminates in a fine tower (PLATE XVIII) projecting 4.9 m. in the direction *g h*, and 8.7 m. wide. Beyond the tower, in a continuation of the line *g h*, is a passage about 6 m. wide, beyond which again projects, to a distance of 10.2 m., another tower, which is 13 m. wide. The upper, the first mentioned of the two, is now 2.7 m. high, the lower tower 3 m. high, measured on the down-hill side in each case; while the up-hill sides are on a level with the earth at these points. Here, also, the upper tower is plainly an addition to the older wall; but a study of the lower easternmost one gives striking testimony that both these structures were an afterthought. About 45 m. from *h* in the line *h k*, the line *k h* divides, one branch going to *h* at the upper, the other to the lower of the two gate-towers. The two branches are apparently coincident in their time of building, and a small tower guards the point of junction. They are of the same construction as the main line of the acropolis-wall. Just before reaching its tower, the lower branch makes a curious curve, as if to pass around it instead of joining it directly. There is no appearance on the tower to indicate that the wall ever touched it. Unfortunately, from the point two or three metres from the tower, where the curve begins, the height of the wall falls away. Where it passes near the lower corner of the tower, only the points of the stones of the foundations project above the surface. This line is traceable completely around the lower side of this tower, up to, and across, the passage between the two towers. This is indicated by the dotted line on the MAP. There is not room enough between the lower tower and the dotted lines to admit of a passage. The dotted line across the entrance between the two towers cannot possibly represent the remains of a wall extending across this space after the time of the building of these two towers. Such a wall would render this entrance to the acropolis useless. This dotted line, then, stands for what can still be seen of the fortifications which were here

before these towers existed. When these earlier defenses had been destroyed, or were for some reason thought to be too weak for so important a line of defense, they were replaced by the existing towers. Naturally, the lower branch-wall must have joined the lower tower to make the line of defense complete. As no signs of a more intimate union exist, it seems that the wall must have been merely built up against the tower. By what sort of gate the entrance between the two towers was closed does not appear. The holes at comparatively regular intervals under the top course of stones of the upper tower appear, from a comparison with other parts of the same structure, to have been formed by the removal of the small stones used to fill up the openings due to the polygonal shape of the larger blocks. Some 37 m. from *h*, 8 m. from the dividing-point of the two branches, is found one side of the gateway leading within the acropolis itself. It is not possible to make out the width of this entrance. The existing portion has the same appearance as the sides of the gateway at *b*, on the west of the hill. From *h* to *k*, there are in the wall a few traces of patching in which lime-mortar appears for the first time. At *k*, is the last of the four great acropolis-towers, 9.8 m. by 7 m. in area. It is more massive than the other three, one corner-stone being 1 m. $\times$ 1 m. $\times$ 0.46 m. The wall here extends across the tower, which must therefore have been a later addition to the fortifications.

At the point *f*, the descent of the acropolis along the line of the wall begins. The slope is gradual from this point to *k*. From *k* to our starting-point at *A*, the angle of the slope is 17°, and the line runs obliquely down the hillside. The extant portions for a part of this distance are scanty but sufficient to determine the wall. Up to the point *p*, wherever measurable, the thickness is about 2.10 m. and the usual wall-characteristics of the acropolis-wall appear. Just beyond *p*, where measurement and accurate observation are again possible, the width is 2.6 m. and the appearance is that of the wall of the lower city.

The cross-wall along the southern edge of the acropolis next claims attention. Starting at *l*, on the west side of the acropolis, are the remains of two walls some 7 m. distant from each other. The ends are merely built against the main line at this point. The lower of these extends only a few metres, and is of as venerable appearance as the walls of Tiryns. The upper one is the beginning of the real cross-wall. Through the latter, a short distance from the beginning, is a passage 1.8 m. wide. Foundation-stones across the bottom of the pas-

sage, some 8 to 10 cm. high, forbid the idea that in antiquity this could have led through the wall at the same level as the surface of to-day. It seems more probable that the lower wall just mentioned supported a terrace, so that the pedestrian could pass through the cross-wall to this terrace at a higher level than at present, turn to the left, pass round the end of the retaining-wall, and then, bearing to the right, follow the foot-path that to-day as of yore leads down the steep descent by the line of wall *b–a*.

The southern declivity of the citadel is so steep, at times indeed absolutely precipitous, as to render even a good foot-path connecting the upper and lower towers practically impossible excepting at this place, and at *3* and *7* to the east. This cross-wall is of exceedingly poor construction, made of small stones held together by large quantities of lime-mortar, and is but 1.7 m. thick. These characteristics caused us to give it the name of the "Roman cross-wall." It passes along the southern edge of the summit to *2*, then turns downward at an angle of depression of 17° to run along the top of some beetling rocks at *4*. At *5*, it divides into two branches, one running northeast at about the same level and meeting the main line at *8*, the other bending down a steep descent around the summit of another precipitous rock at *6* to the gateway at *7*, beyond which it also joins the eastern acropolis-wall.

Though the descent from *3* is very steep, a foot-path is practicable. Halfway down are the ruins of what may have been a kind of propylaea, and below there are steps cut in the solid rock as if leading up to this point. The main entrance to the acropolis, however, from the city itself, the only one in fact in the least degree practicable for horses, must have led up through the gateway at *7*. The southeastern slope is quite gradual; and the triangle formed by the three walls within *7* has plainly been artificially leveled. Above the inner line of wall *5–8*, and from *8* along the main line back beyond *k*, there has also been much work of this kind. At *k*, indeed, the earth within is some 4–6 metres above that immediately without the wall. The line *5–8* is in such a ruined state that it is now impossible to say where the road passed through it; but it seems, from the nature of the slope, that this gateway must have been near the end at *8*. From *2*, in the line of the Roman cross-wall, are traces of a wall leading toward *8*, but the purpose of this was not determined.

Disregarding such appearances as the ancient part below the "Roman cross-wall" at *1*, the repairs with well squared stones near *h*, and the

rebuilding of the sea-line *NO*, four great periods of wall-building are clearly distinguishable at Eretria. In the order of apparent antiquity must be named: *first*, the main line of the acropolis-wall; *second*, the wall of the lower city; *third*, the four great towers at *e*, *h*, and *k*; *fourth*, the so-called "Roman cross-wall." Concerning the last three divisions, there can be no doubt, though by such a classification there is no intention of asserting that the four great towers, for instance, were all erected within any short definite period of time, as a single year. It is maintained only that they belong to the same period of construction. Our assigning two separate periods somewhat remote from each other for the construction of the acropolis-wall and of that encircling the lower city is so important, in view of what is to come, that it is best to recapitulate the arguments.

The acropolis-wall seems to have been entirely of stone; the upper portion of the wall of the lower city was apparently of brick. The acropolis-wall is markedly polygonal in character; the wall of the lower city much less so. The stone used in the construction of the two lines is in general quite different in material and appearance. Where observable, the filling of the wall in the lower city is rammed earth; on the acropolis it is largely composed of stones. The thickness of the lower wall varies but slightly from 2.6 m.; in the upper city the thickness of 2.1 m. is about constant. The points at which the changes in construction occur, are fixed with a good degree of precision at *W*, on the west, and *p* on the east. These indications first suggested the thought that, as in the case of Athens and of most Greek cities before the time of the Persian wars, the citadel of Eretria was first fortified; and only at a period considerably later was the city which had grown up on the plain thus protected. If this was so, there must have been a wall across the south slope of the acropolis long before the present late "Roman wall" was thought of.

Search for the foundations of such a line did not receive so full a reward as could have been desired. This southern slope of the citadel has at first a gradual ascent, and the ruins on its lower portion are the most exposed to the depredations of the villagers seeking for building-stone. A small quarry has in fact been opened here; but this was not done till the greater portion of the loose building-material had been removed. Higher up on the slope, as indicated by the crosses on the map, considerable remains of terrace-walls and parts of the foundations of buildings are still found. The line of the streets, even on the

steep hillside, can sometimes be traced for a short distance. These remains are, almost without exception, of the same material and character as those of the old main line of the acropolis-wall. Such remains are not found below the dotted line, which marks the presumable course of the lower wall of the ancient citadel. The number of fragments of wall scattered over the hillside rendered the tracing of this line exceedingly difficult. Nowhere, indeed, were foundations discovered so that the width of the wall could be measured. Starting at *p* on the east side, just where the change in the width and character of the wall takes place, a line of stones at short intervals leads across a grain-field toward the west. These indications were followed carefully, the line being staked at intervals. In one spot the bed-rock had evidently been hewn out to receive the lower courses of the wall. Portions of foundations of what seemed to be towers appeared occasionally; other fragments of wall kept lining in, till finally all indications pointed toward *W* on the west side as the terminus of this lower wall. In other words, this cross-wall rejoins the acropolis line at the west exactly where it was to be expected. Of the many fragments lying higher up the hill, so far as careful study has shown, none will line in with such a wall as is required here. This wall as laid down on the MAP includes within the ancient citadel the most ancient foundations of the city. It stretches across a short distance above the foot of the declivity. The peculiar long projection of these acropolis-fortifications toward the west is also accounted for. Just outside the line *WX*, is a sharp break, a sudden descent, rendering the line of wall easy of defense. The extension of this ancient city so far to the west included practically the whole of the southern slope of the hill within the walls, and brought the western limit within a short distance of the little brook which is the only abundant source of running water. No claim of absolute demonstration for this cross-line of wall is put forth,—the extant remains are too scanty for that; but, in the light of the facts presented, its existence may fairly be said to be in the highest degree probable.

On the very summit of the acropolis, some well dressed poros blocks have been excavated, but not sufficient evidence has as yet appeared to show the character of the structure to which they belonged. Unimportant remains are also visible in other portions of the citadel. Along the road leading into the town from the east at *A*, the somewhat extensive excavations carried on by the Greeks for the purpose

of procuring earth with which to fill up the great swamp, have brought to light extensive foundations, apparently belonging to stoas and similar public buildings. Some ruins of the same nature have been uncovered to the east, along this same road, outside the walls. Near the line *VW*, and in the bushy ground south of the theatre, many foundations are to be seen also, the course of some of the narrow streets being traceable. Fragments of walls just coming to the surface are occasionally found in the streets and plots of the modern village; but there seems to be little of promise for the excavator's spade.

No attempt has been made on the map to show the number and arrangement of the graves beside the "Sacred Way" and on the point by the land-end of the large breakwater; it has merely been sought to indicate the places in which the graves are found. The tombs along the great highway leading toward the east are in great numbers, and the lines extend for a considerable distance back from the road on either side. No graves have been found within the walls. On the western side of the acropolis, without the walls, are the ruins of a small church. These are interesting, because here was found, a few years ago, an inscription relating to Dionysos. Other wrought stones have been found on this hillside; notable among these is a well made door-sill.

In view of the statements of distances found in classical authors, it was interesting to discover that the width from the sea-wall at *N* to the *Scala* of *Oropos*, on the opposite shore of the Euripos, is 7687.37 m., or about 4.8 English miles. Measurement of the distance to the Delphinion gave 9679.43 m., or 6 English miles. The latter figures are less trustworthy, however, because of the impossibility of locating exactly from Eretria the position of this ancient harbor.

Situated on the northern shore of the broad Euripos, which here presents the appearance of an inland sea, with such fine harbor advantages as were evidently hers, it is easy to understand the ancient maritime power of Eretria. To-day the great harbor has a water-front, reckoned from the point by the ruined church on the west to the inland end of the peninsula on the east, of but little less than a mile. Nothing but the unwholesomeness of the air stands in the way of Eretria becoming again one of the most prosperous ports in Greece. The peninsula, which, as has been said, is now at some tides entirely surrounded by water, has upon it unimportant remains of walls, particularly on the inland end and on the east side. These remains, at first thought to be of high antiquity, were proven by the use of mortar in their construc-

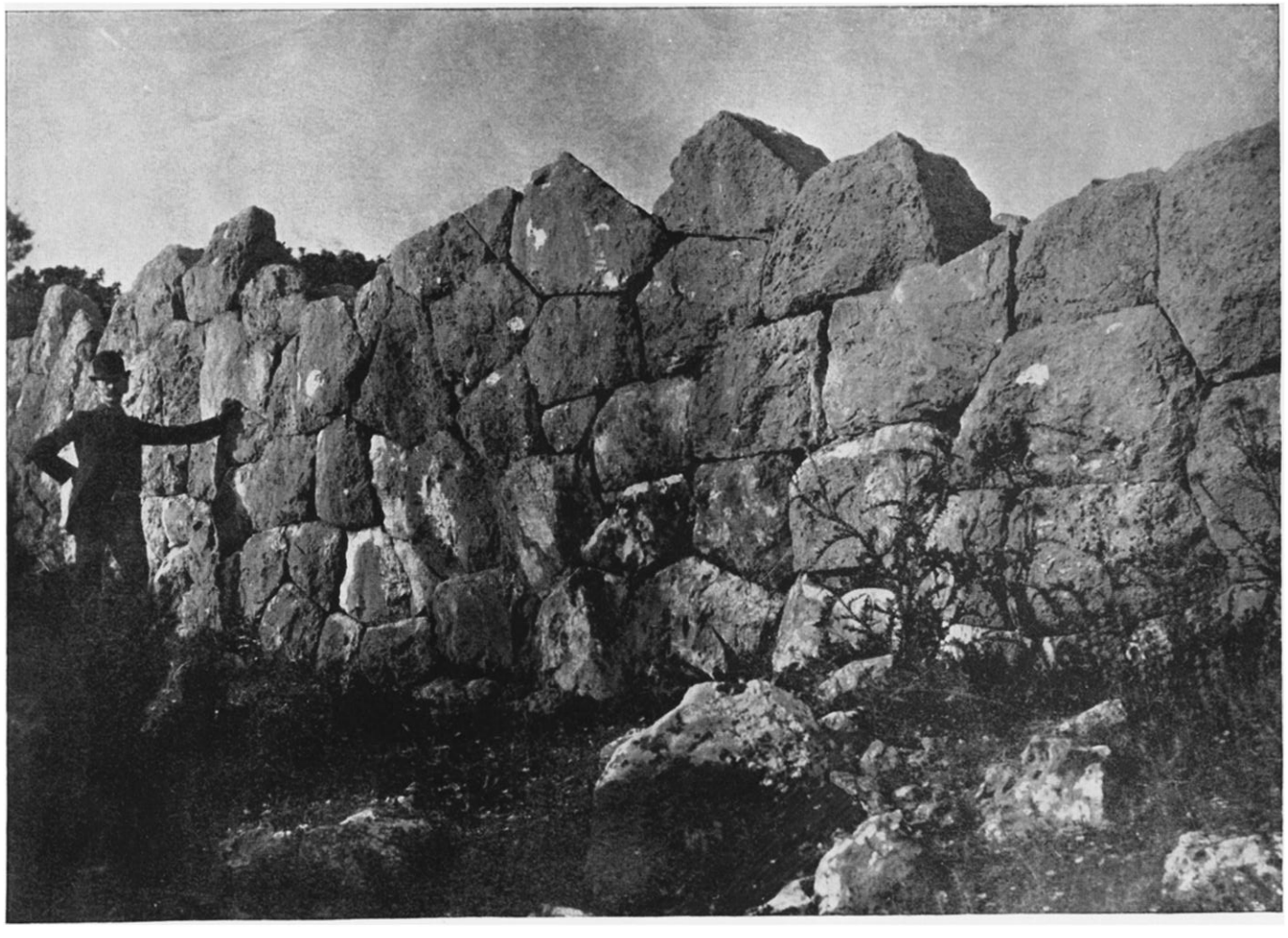
tion to be comparatively modern. This peninsula, in the lapse of time, has suffered very severely from the action of the waves. Exposed as it is to the sweep of the prevailing winds up and down the strait, the outer end has been worn away for a long distance, as may be seen by the reef projecting here. This process of destruction is indeed still going on; and owing to the large area which has thus been washed away we cannot say how extensively this land may have been utilized in antiquity.

The plain on which the town was built, extending several miles along the shore, is very fertile, and is seldom more than three or four metres above sea-level. To an observer, either from the deck of a passing steamer or from the high ground of the opposite shore, it easily becomes apparent why the Eretrians of old chose this for the site of their city. Nowhere along the stretch of coast does there appear another such elevation for a citadel. The circuit of the outer wall of the lower town and acropolis is about 2½ miles, which of itself would show that this was indeed "no mean city."

It was our good fortune to be busied with this survey in those days of early March when the snowstorm had cleared away, to be followed by many days of cloudless beauty. From the top of the acropolis, 116 m., high, we looked down on the plain and the town. On one side the workmen were busy at the theatre excavations; out on the plain to the east, others were opening tombs; just beyond the town stretched the winding course of the Euripos with occasionally a passing sail. The snow had scarcely melted when thousands of bright anemones scattered themselves over the fields. The eye wandered from these nearer scenes, attracted by the wonderful beauty of the mountains still clad with snow. A little north of west the sharp, white, perfect cone of Messapion rose. Further southward, in the distance, towered lofty Parnassos; then came Kithairon. To the south, Parnes shut out the view of Pentelikon. To the southeast appeared Ocha and the mountains of southern Euboia. Close beside us, to the east and north, was the snowy range of Olympos. Day by day the snow-line climbed higher, and the valley became more green. The contrasts of these snow-caps and the verdure, the wide extent of sea and plain and mountain, as seen through the clear air of Greece under the soft purplish glow of a Greek sunset, made a picture of rare beauty, such as one seldom looks upon, but never forgets when once seen.

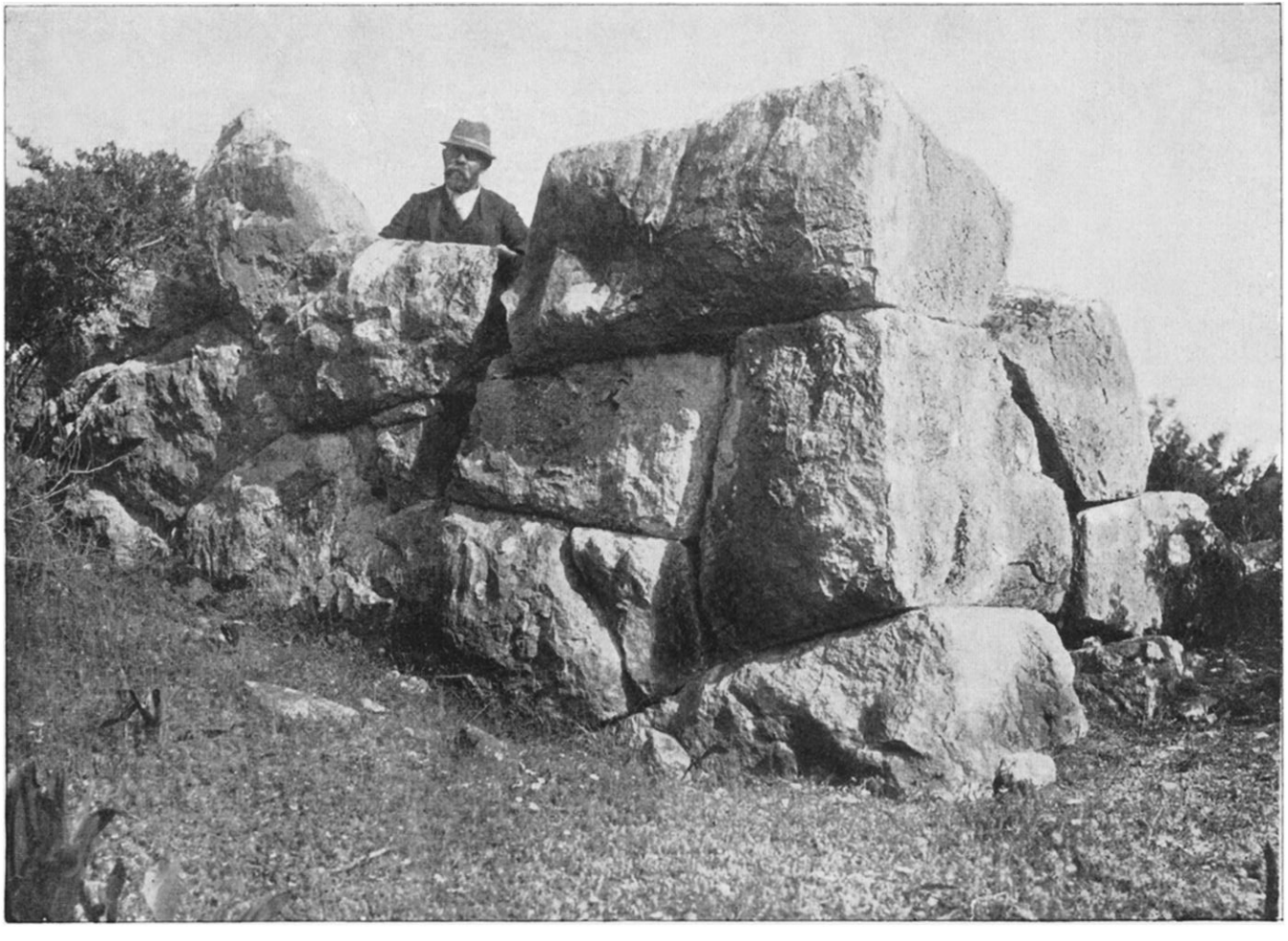
JOHN PICKARD.

ERETRIA. VIEW OF ACROPOLIS FROM THE THEATRE.



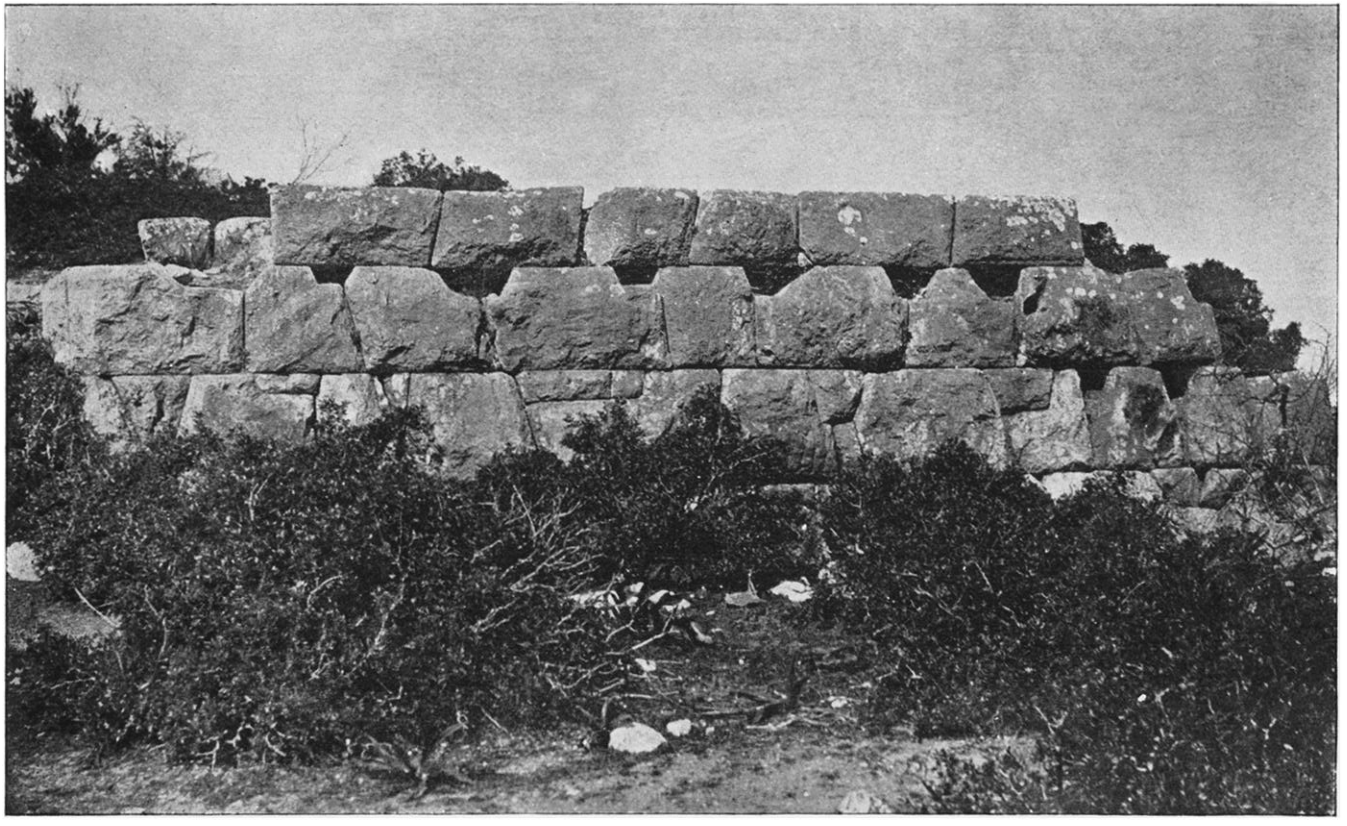
ERETRIA. WALL ON WEST SUMMIT OF ACROPOLIS.

NEAR *b* (SEE MAP, PLATE XIX).

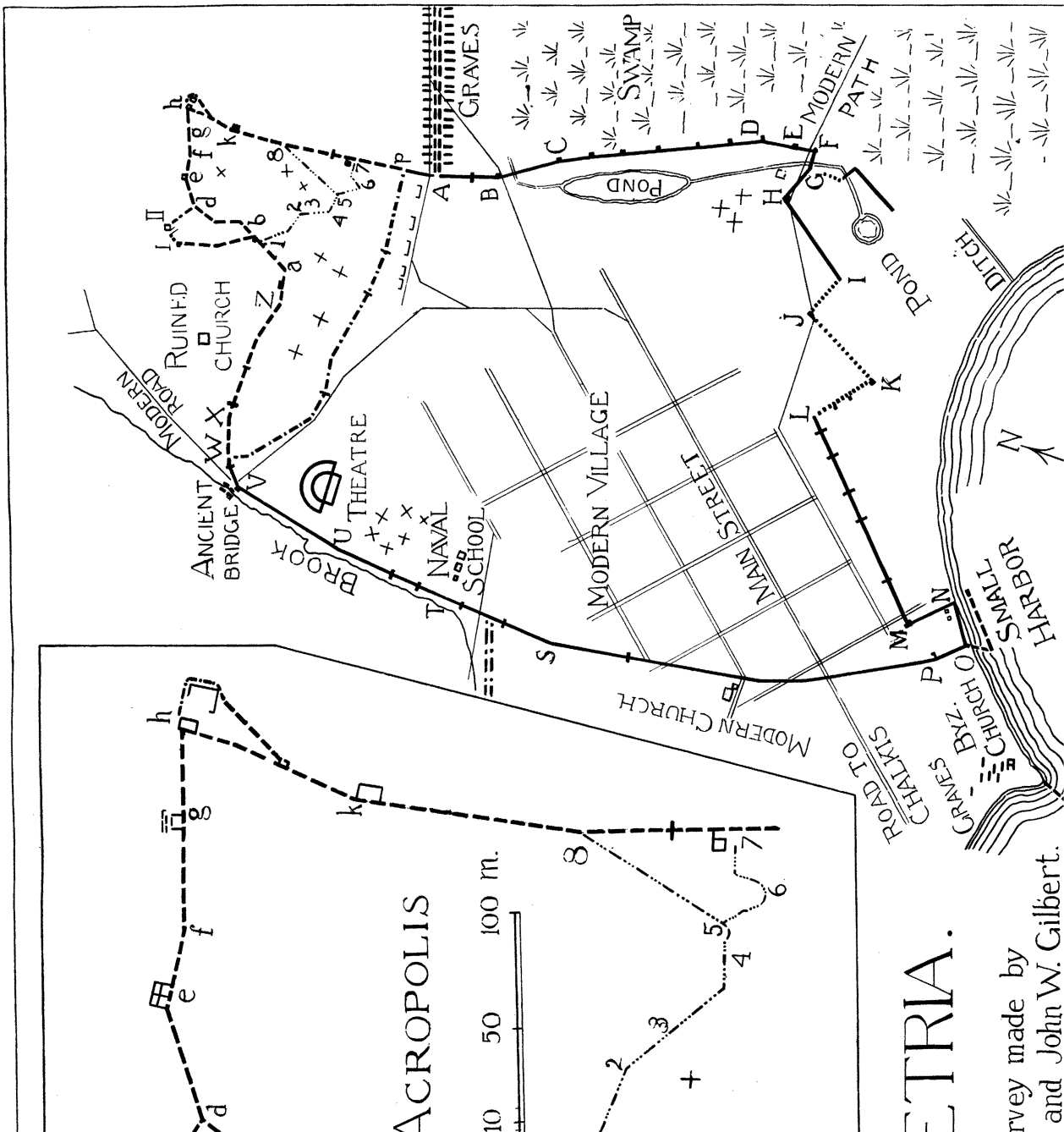


ERETRIA. TOWER ON S. W. SLOPE OF ACROPOLIS.
IN LINE *z–n*. (SEE PLATE XIX).

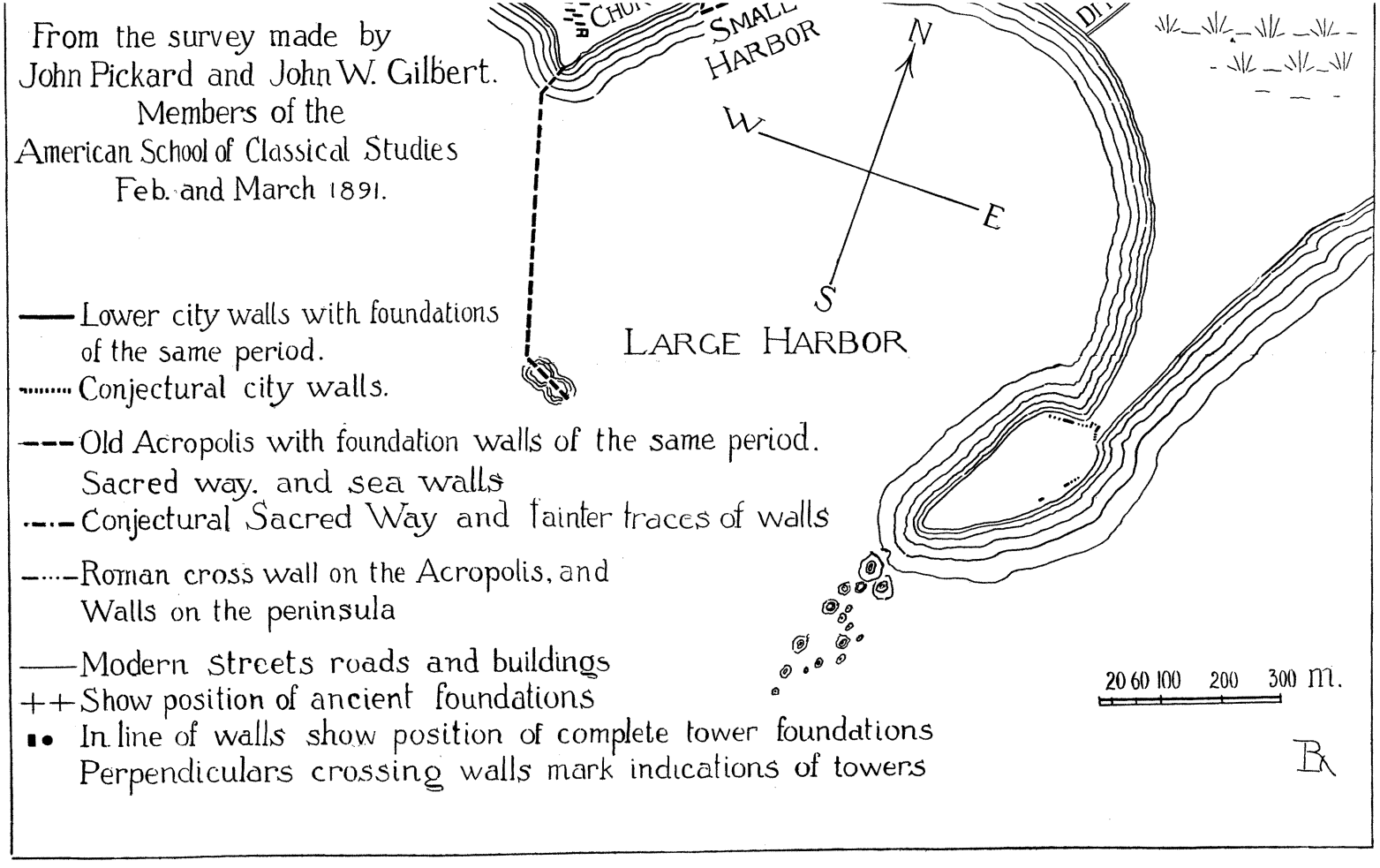
ERETRIA. GREAT TOWER ON NORTH SIDE OF ACROPOLIS
AT *C*. VIEW FROM THE WEST.

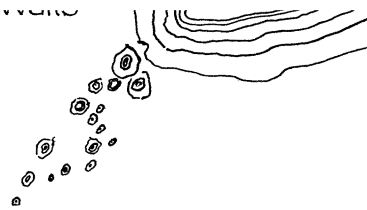


ERETRIA. UPPER GATE-TOWER.
AT *h*. N. E. SIDE OF ACROPOLIS; VIEW FROM THE EAST.



MAP OF ERETRIA SHOWING EXCAVATIONS BY THE AMEI





–···–Roman cross wall on the Acropolis, and
Walls on the peninsula

——Modern streets roads and buildings

++Show position of ancient foundations

▪▪ In line of walls show position of complete tower foundations
Perpendiculars crossing walls mark indications of towers