

THE CLASSICAL FORTIFICATIONS IN THE VALLEY OF SOULINARI
IN THE ARGOLID.

The modern road from Nafplion to Epidaurus runs, as Frazer tells us, "through uninteresting scenery between low, barren hills of dull, monotonous aspect"; and the same is true of the track from Argos, from the time when it leaves the plain, a little to the northeast of Katzingri, to run over the foothills of Mt. Arachnaion(1). Even in Frazer's day, however, the little level of Soulinari seems to have been exceptionally fertile, and its productivity has been further increased by irrigation.

This area forms a triangle, measuring about four or five kilometers per side, with its apices toward the south, north, and east respectively, and is watered by two streams, the Geleso and a tributary, which are never dry even in midsummer. Both these streams descend from Mt. Arachnaion, their courses at first almost parallel; they unite near the southwest corner of the area, and ultimately empty into the sea about one kilometer east of Asine. Some idea of the contours of the region may be obtained from the British Army Map (Sheet K8, Korinthos, squares 65-69 x 05-10), and also from the sketch-map in the Guide Bleu (1947 reprint, following p. 372). The watersheds of the Geleso and its affluent are divided by a curving line of rocky hills, which runs out southward from the saddle over which the Argos road passes, then turns east and finally north-northeast, to rejoin the main range just beyond Yannouleika.

(1). Frazer, Commentary to Pausanias, III, p. 228.

The southern and southwestern slopes of this rocky divide, toward the Nafplion-Epidauros road, while often steep, are never vertical; but the side that looks over the tributary-stream toward the main mountain almost everywhere culminates in sheer, jagged cliffs. The ridge is broken through at the southwest by the bed of the tributary stream, and between this point and Yannouleika it is at times no more than a gentle mound. Immediately south of the tributary-stream, however, and again at the northeast end, just before rejoining the main range, it rises to two peaks of considerable height(2); the former of these is crowned by the fortress now known as Kasarma, while the ruins of Kastraki occupy the northeast end of the latter elevation(3) (cf. Figs. 1-4.).

These two fortresses have often been mentioned by travellers and topographers, for quite apart from their excellent state of preservation, there is little doubt that one or other of them must mark the site of Lessa, to which Pausanias refers as he journeys from Argos to Epidauros; and the identification of Lessa has a special interest, since the town stood on or near the Argolid-Epidaureia border(4). But almost all these discussions have been primarily from a historical point of view; although Kasarma and Kastraki are among the best preserved ancient forts in the whole

(2). According to the French survey, the peaks are respectively 360 and 430 m. above sea-level.

(3). Kasarma takes its name from the ruins of the Turkish barracks at the foot of the hill; Kastraki of course is the diminutive of "Kastro", and is a common place-name in modern Greece (cf. Asine).

(4). Pausanias, II, 26, 10.

Peloponnesos(5), they have never been adequately described. There is a small and quite unsatisfactory plan of Kasarma, made by the Le Bas expedition, but no plan at all exists of Kastraki, so far as I know; as for the third military structure in the valley, the little blockhouse at the northern apex of the triangle, this has never been mentioned even in recent discussions of the site of Lessa(6). Yet taken together these three forts may go far toward settling the location of the frontier between the Argolid and Epidaurus; and I shall return to the topographical problem later, after describing the fortifications themselves.

KASARMA. (Plans I, IIIa).

The acropolis of Kasarma stands in the southwest part of the Soulinari area, at the point where the tributary of the Geleso breaks through the rocky ridge from the upper valley. It occupies a more commanding position than Kastraki, for it not only rises higher above the floor of the valley(7), but also, owing to

(5). They are of course smaller than sites such as Samiko in Triphylia, and the towers are generally poorly preserved; but the condition of the curtains is rather better than usual in ancient forts, and the plans can be traced almost in their entirety.

(6). Cf. Reinach-Le Bas, Voyage Archeologique en Grece et en Asie Mineure, Itineraire, pl.31-2; Frazer, Pausanias, III, pp.232-233. with earlier literature; Lord, AJA, 1939, pp.78ff.; Scranton, Hesperia, 1938, pp.536-537.

(7). The valley, on both sides of the ridge, slopes downward toward the south and east, away from Mt. Arachnaion; thus, although Kasarma

the erosion of the stream, descends in steep rocky cliffs on the northwest as well as on the north (cf. Fig.7). On the southwest, south and east the hill is more accessible, but even here, although the slopes are gentle at the bottom, they become quite steep toward the top (cf. Figs. 2 and 6). As Plan I shows, the defences are heaviest and most elaborate on these more vulnerable flanks; and not unnaturally the lower town or village was also built on the side where the slopes are least steep, i.e. to the south(8). The following description deals only with the defences of the acropolis; if the lower town was ever surrounded by a wall, no trace of this now survives(9).

The main approach to the acropolis is from the southwest, where a ramp, running parallel to the western side of the fortress, led up to the main gate at the northwest corner(Gate A on Plan I). I am by no means sure, however, that the retaining wall of this ramp was originally built for the purpose which it now serves; for it is constructed of dry-rubble masonry, of quite different character from the carefully jointed blocks of the fortress-walls proper (cf. Fig.8). This difference in style suggests that the ramp-wall may belong to an earlier period than the main fortress, a

i not as high above sea-level as Kastraki, it rises higher above its immediate surroundings.

(8). Numerous remains of foundations may still be seen on this side of the hill, cf. Frazer, Pausanias, III, p.233.

(9). There is no mention of remains of such a wall in the earlier literature, and it is quite likely that the village owed its fortified acropolis entirely to its position close to the border, cf. p.40 ff.

hypothesis which other features tend to support. Thus at point "b" on Plan I there seems to have been a tower, or at least a tower-like projection, which is not required by the terrain, and not easily intelligible as part of a ramp. Furthermore the ramp appears to have continued on, past the gateway with its flanking tower, and presumably right out to the edge of the cliffs which descend to the tributary-stream(10); this also would be rather unnecessary, if the structure is nothing more than a ramp. I am therefore inclined to regard this stretch of wall as part of an earlier circuit, which came farther down the hill on the south side, and was therefore re-used as the retaining-wall of the ramp in the later fortress. There seem to be some traces of a gate at the lower end of the ramp ("a" on Plan I); presumably this was the main gate of the earlier fortress, which was thus in more direct communication with the lower town to the south.

On reaching the gate at the upper end of the ramp, we find on our left, as we enter(11), a round tower of large trapezoidal blocks,

(10). It is difficult at times to distinguish the masonry of the ramp from some of the later, mediaeval or modern, rubble work; I cannot therefore be certain that all sections shown on Plan I are actually ancient, while there may be some scrappy remains that I have omitted.

(11). When there is only one tower flanking a gate, it is usually placed on the right, i.e. unshielded side of the attacker. The position of this tower is clearly dictated by the desire to provide a view along the upper half of the ramp; the unshielded side of an enemy ascending the ramp would in any event be exposed continuously to the defenders on the southern curtain-wall.

projecting outward beyond the gate-corridor (it is actually a continuation of the line of the northwest wall) for a distance of some five meters (Plan IIIa and Figs.9-11). It has a diameter of c. 5.25 m. and a circumference of c. 14 m.; where it bonds into the wall it still stands to a height of about two meters, and seems to have had a solid fill right up to the level of the allure of the northwest wall. The tower is so placed as to command a field of fire along the upper half of the ramp; on the other hand, its advanced position, almost at the edge of the rock-slopes above the tributary-stream, would enable the defenders easily to frustrate any assault on the more hazardous northwest and west slopes of the hill. It thus forms an admirable protection for the gateway; and this in itself would not have been easy to force. The corridor, 3.95 m. long, is very narrow (only 1.75 m. wide)(cf. Fig.11), and was barred by a very heavy gate(cf. Plan IIIa)(12). From the fact that there are gateposts only on the south side of the corridor, I assume that the gate was single-leaved. The outer gatepost projects inward about 0.20 m., and is 0.50 m. across the face; at present it is two blocks high. The lower of these is bonded into the wall; the upper, which is more roughly dressed, is formed by the short leg of an L-shaped block built into the wall proper. The distance from the inner face of the outer post to the outer face of the inner post is 0.90 m. The inner post is not absolutely rectangular on plan; it measures 0.59 m. across the face, but only 0.56 m. where

(12). Since the gateposts are only 0.90 m. apart, there was presumably a single massive gate hung between them; there might have been two separate gates, but it would surely be absurd to place them one

it abuts on the wall of the corridor, while on the outside it projects 0.35 m., as compared with 0.29 m. on the inside. It also is now two blocks high, of which only the upper bonds into the wall; the total preserved height is greater than that of the outer gatepost. At the outer end of the corridor the wall now stands about two meters high, but owing to the upward slant of the entranceway the height at the inner end is not much more than 1.50 m.

From the gateway the wall runs more or less southeast along the flank of the hill for the first six meters, bends slightly to the east for about nine meters, then bends again and runs almost sixteen meters to the jog at point "c" on Plan I. In the first stretch the top of the wall is now fairly level, but owing to the slope of the hillside the actual preserved height varies from two to over three meters. The next stretch is almost all mediaeval patchwork, but the final run before the jog is well-preserved ancient masonry, standing to a height of 2.80-3.60 m., save for one portion, which has partly collapsed, and is only a little over two meters high.

The thickness of the wall seems to average 2.40-2.50 m., with a minimum of 2.00-2.10 m. and a maximum of 2.70 m.; here as elsewhere, however, it is at times hard to distinguish the inner face of the wall, owing to the constructions (of several periods) abutting against it. It should be noted that all along this sector the fortification wall serves also to hold up an earth fill inside; this fill is probably, in part at least, ancient(13).

immediately behind the other.

(13). Owing to the heavy growth of bushes inside the fortress, I could not be certain, but some of the foundations abutting on the wall seemed to be ancient.

After the jog, which turns inward for 1.35 m., the wall continues slightly south of east for 16.75 m. (Fig. 12), then seems to have turned a few degrees north of east and run for c. 11 m. to the southeast tower (II on Plan I). However, only the very beginning of the turn is preserved, and that only just above ground-level; the whole stretch of curtain, together with the western half of Tower II, has collapsed in a pile of debris. The first stretch after the jog seems to be 2.40-2.50 m. thick as before; the preserved height varies from a little over two to about three and a half meters.

The ruinous state of the southeast tower, and the fact that it was largely rebuilt in mediaeval times, make an accurate description out of the question; the tower was certainly round, however, projecting c. 7-7.50 m. from the curtains on either side, with a circumference of about 20 m. around the base of the free-standing portion. The outer face of the mediaeval tower, at the point of greatest projection, has a marked batter, but whether this was true of the ancient tower there is no evidence to show.

From the southeast tower the wall turns back uphill, running in a northerly direction for almost 35 m., then more or less east for c. 14 m.; it then turns north again, the angle being protected by Tower III, and runs over 20 m. to the northeast tower (IV on Plan I), which stands on the highest point of the hill (14). Figs. 13 and 16 give a general view of this section of the fortress.

For about 15 m. north of Tower II the uppermost 1-1.25 m. of

(14). The square mediaeval tower, which is built on the ancient round socle, stands out clearly in Figs. 2 and 6.

the curtain is mediaeval (cf. Fig.13, on the left), but there is some three meters of ancient masonry below this; for the next twenty meters or so, up to the reentrant angle, the ancient masonry is nowhere less than four, and at one point c. 5.60 m. above the present ground-level. From the way in which the topmost blocks of the outer face mount upward in long steps (cf. Fig. 13, centre), I think this section must be preserved at its northern end almost to the height of the allure(15). The wall here consists almost entirely of an outer and inner face of masonry, with very little fill between them, and was evidently not originally intended to support the earth fill which is now banked against its inner face; the primitive ground-level inside the fortress, at least at the reentrant angle, is shown with complete certainty by the existence of the postern-gate, B, at the northern end of the stretch (Fig.14). The postern, as so often, is constructed on the corbel-principle(16); it has a maximum width of 1.05 m., and at present is exposed for two meters below the crown of the vault; originally it was about 2.50 m. high, for there is now almost half a meter of debris at the foot of the wall. At some later date, probably not long after the fortress was built, to judge from the style of the blocks, the

(15). The allure doubtless ascended the slope in steps, as is usually the case; cf. the northeast corner of the fortress, where the steps are still in situ, and similar examples at Messene, Scranton, Archaeology, III,1, 1950, p.7, lower right, and Aitolian Chalkis, Noack, AA, 1916, 236ff

(16). Both corbel and post-and-lintel types may occur together, as here; cf. the V. century circuit of Oiniadai. The corbel-type is still in regular use in the IV. century, e.g. at Messene.

opening was walled up (cf. Fig.14); it was presumably at this time that the ground-level inside the wall was raised to its present height(17)

In the stretch between the postern and Tower III, the level top of the wall suggests that it here stands to its full height, which is from 5-5.25 m. above the native rock. I had hoped that among the tumbled blocks on the hillside below some might be identified as belonging to the battlements, but I was unable to discover any such remains. The thickness of this stretch of wall is 2.30-2.40 m., the greater width being partly due, I suppose, to the fact that the wall from the first supported an earth fill inside; this must certainly be ancient, for the corbel-vaulted cistern (see below, p.11) is built down into it(Fig.19).

Although Tower III is in ruins (cf. Fig.16, centre), its dimensions can be determined with some accuracy. Like the other towers it is round; it measures 6.40 m. across the base-chord, where it bonds into the adjoining curtains, and has a diameter of c. 8.25 m. Its ground-storey was solid, being formed by a fill of earth and small stones within a stone facing 1-1.20 m. thick.

The curtain between Tower III and the northeast tower (IV) is well preserved, standing 4.50-4.60 m. high for half its length (cf. Fig.16). Toward the northern end, however, it appears much lower, for there is a great mass of debris, partly from the curtain itself, but mostly from the northeast tower, lying against the foot of the wall; thus, although this portion is still c. 3.75 m. above the

(17). For another postern, which was later walled up, cf. the east Long Wall at Karavassaras on the Ambrakian Gulf, our Fig. 31.

ancient ground-level, only the uppermost 2.75 m. is visible immediately south of the northeast tower. This whole stretch of curtain consists of an inner and outer face with a rubble fill, the total thickness being c. 2.50 m. The ground-level inside, at least toward the northeast tower, must have been much lower in antiquity, for there is a postern-gate, C, immediately south of the tower (Fig.17). Unlike Postern B, Postern C employs the post-and-lintel system; at present the opening is 1.16 m. high, and 1.05 m. wide at the lowest visible point, narrowing to 0.97 m. at the level of the lintel. If the original height of the opening was two meters, the width at the threshold must have been c. 1.10 m. The lintel is formed by four great slabs of stone; the outermost of these is still intact, but all the others are cracked.

The northeast tower abuts on the stretch of curtain to the south at a little less than a right angle; but on the north side the angle of junction is extremely sharp. The mediaeval builders, presumably finding the tower in ruins, filled in this angle, and constructed a square tower on the ancient round socle; it is this mediaeval tower which stands out so clearly from all parts of the valley (cf. Fig.6), and it must be this also, I think, which led Frazer to say that there were "some square towers" in the ancient fortress(18). Actually the dimensions of the ancient round tower can still be obtained; it measures 4.10 m. across the base-chord, and has a circumference of about 15 m.

We have now reached the highest point of the fortress, and have also passed along the most easily accessible stretches of wall;

(18). Frazer, *Ausonia*, III, p.232.

from here back to the gate-tower(I), the sheer north and northwest cliffs needed little help from the hand of man to make them absolutely impregnable. From the vantage-point of the northeast tower we can see quite clearly the system according to which the circuit was planned. The builders started from the north cliffs, the natural line of defence on that side, and simply enclosed as much of the hill slopes to the south as they required. They made little or no attempt to use natural outcrops of rock, for there are none of these of useful height for some distance down the hillside; and even the earlier circuit, the line of which is preserved in the present ramp, was too large for their liking. On the contrary, having decided how large an area was needed to house an adequate garrison, they threw around it a high wall, well flanked by massive towers, which would in itself be sufficient defence, without much help from nature. This is a type of planning which is characteristic of a fairly advanced military science, and should be a warning against dating the fortress too early.

Resuming our course round the circuit, we find that from the northeast tower, for a distance of over 7.50 m. down to the northeast corner of the fortress, the wall stands to its full height except for the battlements; seven of the stone steps, by means of which the allure descended the short slope, are still in situ; the lowest of these serves as a landing, and below it an eighth step descends at right angles along the line of the northern cliffs (cf. Fig.18). These steps are 1-1.05 m. wide, with risers varying from 0.25-0.30 m., and treads 0.40-0.50 m. deep. The greatest height of the wall is 3.80m., but the effective height is much more, since the native rock

away sharply from its foot. The thickness (outer and inner faces plus fill) is 1.80 m.; of this, as we have seen, the allure occupied 1-1.05 m., while the remaining 0.75 m. or so was taken up by the battlements. Here again, although I had hoped to find some of the blocks from the battlements on the hillside below the wall, the search proved vain.

From the northeast corner back to the main gate the line of the wall is very irregular, since it swings in and out along the edge of the cliff. At times it is a genuine wall, with an outer and inner face(19), but for the most part only a vertical facing, averaging some 2.50 m. in height; in some spots only a parapet was needed, of which little survives save the beddings and a few scattered blocks. In general the masonry on this side of the fortress is smaller in scale and less carefully finished than elsewhere; I do not think, however, that there can be any question of the whole stretch belonging to an earlier period, and merely re-used in the later fortifications. If any earlier masonry survives, it must be confined to the central portions, for at its eastern end the north wall bonds into the east wall, while the southwestern end is an integral part of the present gateway(cf. Plan I); and there is in fact a simple explanation for the rougher character of the masonry in this sector (cf. Below).

Sefanton indeed distinguishes three different types of masonry at Kasarma: true polygonal, coursed polygonal, and irregular trapezoidal(20); and he suggests that these may belong to two

(19). This is the case at the ends, where it bonds into the wall descending from the northeast tower, and again on the west at the gate-corridor.

or three different periods(21). It is not clear from his tables which portions he considers to be earliest; but in any case we have seen that only along the cliff-top can there be any question of survival of earlier sections of wall. Throughout the remainder of the fortress the towers and curtains bond into each other in such a way as to leave no reasonable doubt that the whole circuit was constructed at a single time.. As for the stylistic differences, Scranton himself admits that irregular trapezoidal is a transitional stage between polygonal and regularly coursed trapezoidal masonry(22), while coursed polygonal would seem to be a compromise between polygonal and masonry with regular horizontal coursing(23). It is thus in any event unnecessary to assign such closely related styles to different periods. It is more to the point to observe that the most massive masonry is to be found in the gate-tower (Tower I), and that in general the masonry is more carefully finished and beautifully fitted on the more accessible sides of the fortress. This is natural enough, for it would be these sectors which would bear the brunt of an attack, while in peacetime they would be, so to speak, the show pieces of the fortress(24). Along the north cliffs, on the other hand, smaller blocks and less handsome finish were permissible, since here no foe could bring his engines to bear, nor visitor come close enough to disparage.

(20). Cf. Scranton, Greek Walls, pp.163, 165, 168, under "Lessa",

(21). Scranton, op. cit.; cf. preceding note.

(22). Scranton, op. cit., p.78-79, 138-139.

(23). Scranton, op. cit., p.69.

(24). Cf. Aristotle's statement that city-walls should be handsome

Within the fortresses of Kasarma there are the ruins of a large number of buildings. Many of these, however, at least in their present state, are post-classical; and since only excavation could determine their dates and recover their plans, I have shown only two of them on Plan I: the building immediately inside the main gate, which seems to belong to the original fortress, and the water-cistern near Tower III, which was of course a vital part of the whole system.

From its position I assume the building inside the gate to have been a guard-house, or something of that nature. As the plan shows, it occupied the angle formed by the south wall of the gate-corridor and the main outer wall of the fortress; to enter it, one turned to the right at the inner end of the corridor, and passed through a doorway into an L-shaped room, 4.40 x 4.30 x 2.65 m. The walls, 0.85-1.45 m. thick, are partly at least later reconstructions, but they seem in part also to bond into the original fortress wall (I could not be certain of this, however, since the area is much overgrown with bushes).

The cistern(25) lies just inside the stretch of wall between Postern B and Tower III (cf. Plan I). It is now c. 1.25 m. deep at the west end (the east end is filled with debris), and seems to have measured c. 7.20 x 2.75 m. at the bottom; since, however, the side-walls are constructed on the corbel principle, and so converge toward the top, the width across the top is only 1.80-2.00 m. (Fig.19). The "mortar" mentioned by Frazer is actually as well as serviceable, Pol. 1331a, 12, and Scranton's observations, Greek Walls, pp.3-5, 13-15.

(25). On the cistern, cf. Frazer, Pausanias, III, p.232.

the remains of the waterproof stucco, with which the cistern was lined. There is nothing especially surprising in the use of the corbel principle for the construction of a water-cistern. It is common enough in gates and posterns at least as late as the IV. century B.C. (26), and is used in a sort of false pendentive in the water-cistern at Katzingri (cf. our Fig. 20, and the plan, Ath. Mitt., XL, 1915, p.107), which must be very close in date to the Kasarma fortress. In fact this mode of construction, which was once regarded as the hallmark of the Bronze Age, clearly survived through most of the classical period; it seems likely, for instance, that the so-called Mycenaean bridge near Kasarma (cf. AJA, 1939, pl.IV,C) is actually part of the Nauplia-Epidauros road of classical times.

KASTRAKI. (Plans II, IIIb).

At its northeast end the rocky ridge, which divides the watersheds of the Geleso and its affluent, rises once more to a considerable height, then descends slightly to the saddle which links it to the main mass of Mt. Arachnaion. This northeast elevation, however, is not a single eminence like Kasarma, but a long ridge with three definite peaks; the fortress stands on the most easterly of these, immediately above the saddle. The position, as I have already mentioned, is less lofty and commanding than that of Kasarma. The floor of the valley is here a good deal higher, the cliffs on the north correspondingly lower; the northeast saddle is quite high, and between the fortress and the central elevation of the ridge there is only a gentle depression. Only

on the southeast and south, therefore, are there long and fairly steep slopes. Yet the site is a very strategic one; not only does it command the eastern portions of the fertile valleys below, but the Argos road passed over the northeast saddle, that from Nauplia along the southern slopes, and the two united less than a mile beyond. It is therefore not surprising to find this end of the ridge crowned by an ancient fortress, which, as we shall see later, must be another Argive outpost against Epidauros; and it must have been the same strategic considerations that caused the site, like Kasarma, to be rebuilt in mediaeval times. As the plans show, this fortress is the smaller of the two; and though there are some remains of a settlement below to the east, these are far less extensive than at Kasarma. Kastraki was primarily a military post, not the acropolis of a town or village(27).

The Kastraki fortress, as Scranton notes, is constructed of

(26). Cf. note 16. Apart from Messene, the gates in many IV. century walls in Akarnania are of cor el-type, though the upper portion of the openings is cut to the shape of a round-headed arch (perhaps the most famous is the Avloporta at Palaiomanina, Noack, Baukunst, Fig. 129b); the posterns in the walls of Paestum in South Italy are also of this type.

(27). Apart from the smaller size of the fortress and the almost negligible remains outside the walls (I think they must have been more extensive in Frazer's day, cf. Pausanias, III, p. 233), the inhabitants of the district claim that they find antiquities far more frequently around the Kasarma acropolis than at Kastraki.

ry-rubble masonry with a tendency toward polygonal(28); at times there is some attempt to fit the blocks together, but never any of the careful polygonal jointing that is found at Kasarma. The only entrance to the fortress is at the southwest corner, and is approached from the crest of the ridge; there is nothing to show whether the path from below ascended from the north or south side of the ridge, but the former is probably the case, since it was on this side that the more important Argos road passed, and the ascent here is less lengthy and fatiguing (cf. Fig.4). Save for an outcrop of rock at the northwest, the interior of the fort is almost level (cf. Fig.21, a composite photograph taken from Tower II of Plan II), thanks to the extensive earth-fill that has been thrown up against the inner face of the circuit-wall. This fill seems to go back to the time of the original fortress; at least I could find no evidence to the contrary.

The gate of the Kastraki fortress is larger than the main gate of Kasarma(cf. Plans IIIa and IIIb), no doubt because, as the only means of access, it had to carry all the traffic. The corridor is formed by two overlapping sections of wall (cf. Fig.22, a view from outside the gate), a scheme which goes back to the Archaic period, but survived, in more elaborate form, as the standard type of city-gate until well on into the fourth century; it is not until the later fourth century that it is superseded by the Dipylon-type(29). The approach to the corridor is guarded by

(28). Scranton, Greek Walls, p.166, B.6.3.

(29). It is of course the same principle of the "indented trace", which is found in the Dema wall of Attika (Scranton, Walls, pp.38ff., 149ff.; Scranton does not admit a continuity of tradition from

a round tower on the right, i.e. unshielded side of the attacker (Figs. 22, 23), and the corridor itself is blocked by an inner and outer gate, with a small court between them (cf. Plan IIIb and Fig. 24)

The curve of the tower begins 2.75 m. outside the outer gate; from here to the point where it returns to the curtain is c. 5.75 m.; the greatest projection from this base-chord is c. 7.25 m., the circumference c. 20 m. The outer portion of the tower is very ruinous (cf. Fig. 22), but near the base it rises about two meters above the entrance to the corridor, while it is still some four meters high where it bonds into the southeast wall of the fortress (cf. Fig. 25). The rough inner faces of the blocks, together with the remains of the fill of small stones and earth, show that the ground-storey was solid.

the Dema wall to the Mantinea gates, but such a continuity does seem to me to exist; attempts to date the Dema wall after the end of the Archaic period are scarcely convincing). The type reaches its highest development in the gates of Mantinea (Fougeres, Mantinea, pl. VIII; detailed plan of Gate D, ibid., Fig. 29), but is later superseded by the Dipylon-type (Dipylon Gate at Athens, Lykourgan; Arkadian Gate at Messene, which Scranton rightly regards as early Hellenistic; the first occurrence of the new type seems to be at Corinth (cf. Parsons, Corinth, III, 2, pp. 94 ff.; probably early IV. century)). In this later type the gate-court extends inward from the line of the wall, instead of being formed by overlapping sections. I think the change probably occurred when gate-courts became so wide that the overlapping principle was no longer practical. For a similar development in the gate of a sanctuary, cf. the earlier and later forms of the

The width of the gate-corridor outside the outer gate is 4.07 m.; but a short spur-wall, projecting inward 0.70 m. from the north wall of the corridor, narrows the width of the actual gateway to 3.37 m.; this spur-wall is 1.65 m. thick. The court between the two gates is trapezoidal in shape; the west, north, and east sides all measure c. 6.50 m., the south side c. 4.40 m. (cf. Plan IIIb). The inner gate is placed at the very end of the corridor, so that the inward return of the northern spur-wall marks the end of the north wall of the corridor. This northern spur-wall is 2.10 m. thick, and projects southward 1.25 m.; the inward projection of the southern spur-wall is c. 1.75 m. The gate-posts are aligned with the outer faces of the spur-walls; they measure 0.60 across the face, and project inward 0.45 m., reducing the width of the actual opening from c. 3.35 to 2.40 m. The southern post bonds into the spur-wall about 0.10 m. Only the lower portion of these posts survives; each bears a cutting on the back, but these are at different heights from the ground; no doubt they were connected with the hinging of the gate, which must have been double-leaved.

Immediately inside the inner gate, on the left as one enters, are traces of a building, which I assume fulfilled the same purpose as the "guardhouse" at Kasarma; its plan, however, cannot be recovered without preliminary clearance work, hence it is not shown on Plan II.

From the point where Tower I bonds into the adjoining curtain, the wall runs more or less in a northeasterly direction for almost 50 m., with an average thickness of 2.30-2.40 m. This stretch is

very ruinous, however; though it stands about four meters high for the first 4.50 m. from the tower (Fig.25), there follows a stretch of almost 15 m., which is no more than a pile of debris. For the next five meters the preserved height is c. 2.50 m., but thereafter the remainder of the stretch is in ruins almost as far as Tower II (cf. Fig.26).

Unlike the gate-tower, Tower II is rectangular. It is 6.15 m. wide, and projected about seven meters from the adjoining curtains; only about 5.50 m. of the projection is certain, however, for the outer half of the tower has completely collapsed. The ground storey was solid; the side walls bond into the curtains on either side, while the upper storey seems to have run right through the thickness of the wall, which is here about 3.50 m. (30).

From Tower II the next curtain runs northwest for over 36 m. to the northeast tower (Tower III on Plan II). This whole stretch seems to be about 3.50 m. thick; for the first 20-22 m. it stands four to five meters high, but the copious mediaeval mortar suggests that a good deal of this may be reconstruction (Fig.27). To the north of this section most of the wall is destroyed.

The plan of the northeast tower (III) is completely preserved, although the walls do not at any point stand more than two or three blocks high. It is not quite rectangular, for the south wall

(30). Cf. Mantinea, where the stone socles of the towers do not bond in, but the mud-brick superstructure seems to have run right through the thickness of the wall. According to later military science, it was unsafe to bond the tower into the curtain, and Hellenistic examples often run right through the wall for their whole height, with the masonry of the curtains abutting on them on either side.

abuts on the curtain at an acute angle. The width across the face is 5.75 m., the projection from the curtain to the south 2.95 m. As in the case of Tower II, the ground storey was solid, while the upper storey seems to have run right through the thickness of the wall.

As at Kasarma, the north wall of the Kastraki fortress follows the line of the north and northwestern cliffs, but in this case little survives save the debris of the masonry, which once blocked the 16-meter gap near the east end of the line of cliffs. From the northeast tower to the inner face of the west wall, at point "a" on Plan II, is a distance of some 50-55 meters.

On the west side of the fort, the first piece of wall that survives is the stretch of masonry, 2.50 m. long, which blocks the gap between two jutting masses of rock at the northwest corner (these rocks appear in the photograph, Fig.28). About 6.50 m. south of this gap the main portion of the west wall runs dead against the south flank of the southern outcrop; it is comprised of two legs of masonry, running at first almost due south for c. 19.00 m., then turning slightly east and running 9.25 m. to the southwest tower (IV on Plan II). The first of these stretches ran along the top of a shelf of rock for all but the last 4.50 m. or so at the south end, and is nowhere more than two or three blocks high (cf. Fig.28); the northern portion of the second stretch has partly collapsed, but at the south end it still stands to a height of 2.40-2.70 m. All along the west side of the fortress the thickness of the wall seems to be 1.90-2.20 m.

The southwest tower, like the gate-tower, is round; the diameter is c. 8.25 m. The outer portion of the tower has collapsed, so that even if the tower had contained a solid fill, this would have been to a great extent washed out down the slope. It is possible, however,

that the tower was originally hollow, at least for some distance below the ground-level of the interior of the fortress; for its walls are two courses thick, instead of only one, as in the case of the gate-tower, and the inner faces of the blocks are fairly smooth, features which would both be unusual if there had been a solid fill inside (Fig. 29).

The stretch of wall between the southwest tower and the gate is the best-preserved in the whole fortress (cf. Figs. 22 and 30), standing, as the level top shows, to its full original height; this is seldom less than four meters, and at one point the top of the wall stands c. 5.50 m. above the ground-level outside. From the tower the line runs almost due east for 20 meters, then turns northeast for a little over four meters to reach the outer gate. The thickness is uniformly 2.15-2.20 m. along the whole stretch.

Having now completed our circuit of the fort, we can see that it was planned on essentially the same principles as the acropolis at Kasarma. The builders clearly started again from the cliffs on the north and northwest, and enclosed just so much ground to the south as was needed for the garrison. Again there is no attempt on the other three sides to follow natural lines of defence; the high, massive wall, flanked by four heavy towers, gave all the protection necessary.

At the same time there are several differences between the two fortresses, some of which we have already noticed. Thus the style of masonry at Kastraki is less finished than at Kasarma, which may indicate that it belongs to an earlier period (cf. the ramp-wall at Kasarma), or merely that it was more hastily constructed; and

while all the towers at Kasarma are round, at Kastraki two are round, the other two rectangular. On the other hand it is possible that the southwest tower at Kastraki had a hollow ground-storey; this is a relatively late development in the history of Greek fortifications, and should be a warning against separating the construction of the two fortresses by any great length of time. We shall return to the chronological problem later, after glancing briefly at the third military structure in the valley.

THE BLOCKHOUSE.

This stands on a low rocky hill, near the north apex of the valley, a few hundred meters to the north of the road from Argos. It does not command a view over the low pass toward Katzingri, but is more easily defended than any site on the pass could be; besides it adequately commands and protects the head of the valley, and is sufficiently isolated to give its defenders time to detect and either report or repulse a surprise raid over the main mountain. Finally, should an attack along the main road from Epidauros threaten to cut off either Kastraki or Kasarma, the blockhouse is ideally placed for calling up reinforcements from across the pass at Katzingri, or for covering a retreat to that fortress, if this became necessary.

The term "blockhouse" accurately describes the character of the structure. It is a single room, measuring 8.40 x 9.50 m., exterior dimensions. The walls themselves are 1.10-1.20 m. thick, and consist of an inner and an outer course of masonry; there is only one entrance into the building, a door at the east end of the south side; since the south wall is poorly preserved here, I could not

ascertain the width of the opening. The orientation of the building is almost exactly north-south and east-west. The style of masonry employed in the walls is identical with that found at Kasarma, i.e. coursed polygonal, at times verging on irregular trapezoidal; a rudimentary sort of drafting still survives on the northwest corner of the structure. Some portions of the walls are standing to a height of almost two meters; elsewhere they are less well-preserved, and scarcely anything is left above the foundations in the east half of the south wall.

CHRONOLOGICAL AND HISTORICAL CONCLUSIONS.

In the absence of precise excavational evidence for the dating of the two fortresses and the blockhouse, we shall perforce have to begin with internal evidence of a more general nature, namely the style of masonry employed in the walls, and the relation of these two fortresses to the development of Greek military science as a whole. However, I think that this evidence, when considered in the light of the history of the Argolid, is sufficient to fix the chronology of the fortifications with some precision.

The styles of masonry have already been discussed. From this point of view at least, it would seem as though the blockhouse and the present circuit at Kasarma were contemporary. On the other hand, the dry-rubble masonry of the ramp-wall at Kasarma has led us to suggest that it may be part of an earlier circuit, which enclosed a greater portion of the hilltop. As for the fortress at Kastraki, the masonry there is typologically intermediate between the ramp-wall and the later circuit at Kasarma, but one cannot base

chronological deductions on distinctions between "careful" and "more hasty" rubble masonry. We shall see below, however, that the Kastraki fort is probably earlier, but only slightly earlier, than that at Kasarma.

The problem of absolute chronology is more difficult, for in this connection rubble masonry is even less capable of furnishing useful data; we must therefore confine ourselves to the present circuit at Kasarma and the blockhouse. It can scarcely be accidental that there are a number of fortresses in the Argolid constructed in this same technique; apart from the acropolis at Kasarma and the blockhouse, there are also the fort at Katzingri, the walls of Akronauplia, and portions of the circuit-wall at Mycenae. All these walls, on stylistic grounds, would appear to belong somewhere in the latter half of the fourth century(31); for there is no datable example of coursed polygonal work earlier than the middle of the century, while a date much after the beginning of the Hellenistic period seems unlikely(32). In addition there is some evidence, though by no means conclusive, for assigning the coursed polygonal work at Mycenae and the massive fortifications of Asine to the very early Hellenistic period; and since the general character and

(31). Cf. Scranton, Greek Walls, p.69, and Table B5, pp.165-66.

(32). The great walls of Asine show the kind of defense that was developed in the Hellenistic period to cope with the new siege-techniques introduced by Philip and Alexander; on the other hand the group under discussion is definitely "pre-Macedonian" as far as defensive techniques are concerned.

Historically speaking, it is again unlikely that Katzingri and Kasarma can be much later than the beginning of the Hellenistic

appearance of the walls at Asine suggests a rather later date than those of Katzingri, Kasarma, and Akronauplia(33), it is unlikely that the latter group can be as late as the last decades of the century.

On considering our fortresses from the point of view of military science, we once more come to the conclusion that Kasarma is at least as late as the middle of the fourth century, but fairly certainly no later than the early Hellenistic period. Admittedly there is not a great deal of precise chronological information to be gained from comparing Kasarma and Kastraki with other fortresses of similar type and function. It has already been mentioned, however, that small, heavily defended forts and acropoleis, like those under consideration, are a relatively late development in the Greek world; although one can find early examples of strongholds built specifically to guard a frontier, the fortress near Kastelli, between Chalkis and Eretria in Euboeia(34), shows the kind of thing one might expect in the Archaic period. It is true that no great innovations were made in Greek siege-techniques during most of the fifth century(35); none

period. The area is too remote from the main routes to have been of more than local interest; and the third century history of Argos herself is too much taken up with internal disputes to have left her free to pursue a policy involving domination of the whole of the Argolid.

(33). They are more regular and far more massive, as well as showing a more sophisticated finish; cf. our Fig. 32 and the description in Frødin and Persson, Asine, pp. 25 ff., 45 ff.

(34). Eph. Arch., 1903, pp. 131 ff. and plan, *opp.* p. 131.

the less, the commencement of large-scale military operations over a wide area, which is a conspicuous feature of the history of the Pentekontaetia, inevitably led to the expenditure of more time and money on defensive systems(36). The fruits of these efforts may be seen in the Periklean circuit at Eleusis(37), and in the late fifth and early fourth century border and coastal forts of Attika, at Sounion(38), Thorikos(39), Rhamnous(40), Phyle(41), Mycupolis(42), and Gyphtokastro(43), which, with their heavy walls

(35). The Athenians, who had a reputation for skill in siege-craft, had to reduce Potidaia and Mytilene by starving them out; the Spartans, after a few elementary attempts at carrying Plataiai by direct assault, had to resort to the same long and costly process; and it was only when they had cut off Athenian food-supplies by capturing the Athenian fleet at Aigospotamoi, that they could become masters of Athens itself.

(36). It was of course the new concept of sea-power, introduced in Athens by Themistokles (Thuc. I. 93.3ff.), and continued by Perikles, which was most influential in bringing about these changes: as Themistokles saw, a city which was going to concentrate on its fleet needed impregnable land-defences; and its enemies, needing their troops to protect their frontiers against the danger of attacks by sea, would need to take extra measures for the defence of their capital. In the Peloponnesian War, for example, the power of Sparta protected Corinth from fear of direct land-assault; but when Corinth had to face the powerful Spartan army in the Corinthian War, one of her first steps was to build Long Walls like those of Athens(cf. Scranton, Walls, pp.86ff.).

(37). Plan Noack, Eleusis, pl.II; illustrations Wrede, Att. Mauern,

and flanking towers, are a far cry from the relatively simple systems of two generations before. Of course these new systems are not confined to Attika; in fact the Argolid itself can offer an example in the acropolis of Hysiai, which cannot, I think, date from much later than the turn of the century(44). It is therefore clear that the fortresses of Kasarma and Kastraki, though they could scarcely be dated before the outbreak of the Peloponnesian War, might belong on such general grounds as those adduced above to almost any subsequent period.

pls.37-39, 63.

(38). Plan in Stais, To Sounion; illustrations Wrede, op.cit., pls.26-27.

(39). Wrede, Att. Mauern, pl.90, Attika, pl.6; Frazer, Pausanias, II, pp.407ff.

(40). Chandler, JHS, 1926, p.17, Fig.10; Wrede, Att. Mauern, pls.80,88.

(41). Wrede, AM, 49, 1924, pp.153ff.

(42). Chandler, loc.cit., p.9, Figs.4-5.

(43). Chandler, loc.cit., pp.9-12; Wrede, Mauern, pls.83-86; also the report, with plan, of the most recent Greek studies at the site in Praktika, 1938.

(44). It has often been assumed that the ruins near Achladhokambo are those of the fortress destroyed by the Spartans in 417 B.C. (Thuc., V, 83, Diod. Sic., XII, 81); however, the site was certainly reoccupied later, so this is not necessarily the case. The plan of the fortress, as drawn by the French surveyors (cf. Frazer, Pausanias, III, p.214) and the style of masonry employed (polygonal on a trapezoidal socle) suggest a date rather later than pre-417 B.C., and I think that the site was probably re-fortified by the Argives in the course of their activities against Sparta, following the end of the Peloponnesian War.

On the other hand, there are a number of individual features which are more helpful in arriving at a precise dating. In the first place the typological development of Greek city-gates is fairly well established, and on this basis it is clear that the gate at Kastraki cannot be earlier than the first half of the fourth century. The main gate at Kasarma, it is true, is of a less elaborate form, but this is due to the natural features of the position it occupies(45); other factors make it reasonably certain that the Kasarma circuit post-dates that of Kastraki.

Actually the earliest form of gate in the two fortresses would appear to be that at the lower end of the ramp at Kasarma. As we have seen, the walls at this point are very poorly preserved, but the fragments that remain suggest that there was a gate at the end of a corridor formed by two overlapping sections of wall, the lower of which formed a small projecting bastion on the right, i.e. unshielded, side of the attacker. This type of gate is found on a monumental scale in the Lion Gate at Mycenae; in historical times it is one of the two standard types through the late Archaic period and most of the fifth century. Usually there is a tower protecting the outer end of the bastion; this is true of the Late Archaic gate at Larisa on the Hermos(46), the Themistoklean Sacred Gate at Athens(47), the (probably) Kimonian gate under the inner Propylaea at Eleusis(48), the Parmenon Gate at Limena on Thasos(49), and the gate in the outer wall of the acropolis at Abai in Phokis(50), all of which are earlier than 450 B.C. The tower is not essential, however, and the nature of the terrain often permits its omission; this seems to have been the case at Kasarma (at any rate I could find no trace of a tower), and it is true also of the main eastern

gate at Oiniadai, which dates from c. 450 B.C., and of the Sea-gate and Southwest gate of the Peisistratid circuit at Eleusis, which were retained in essentially their original form until the time of Perikles(51). Typologically then, the gate in the first circuit at Kasarma, if we have interpreted the remains correctly, would belong to the fifth century B.C., and is probably not as late as the closing decades of the century.

By the end of the Peloponnesian War, however, new developments in siege operations had made a more elaborate defensive system necessary. The old type of gate, set in two overlapping sections of wall, still survives, but the tower flanking the entrance to the corridor on the outside is now an essential feature. This can be seen in the two main gates of the fortress at Gyphtokastro in Attika(52), in all the major gates in the fourth century circuit at Mantinea(53), and in the fortress of Nestane(54). Where the ground outside the gate gave no help to the defenders, as at Mantinea, there is often a second tower in the curtain on the inner side of the entrance to the gate-corridor. Furthermore, instead of

(45). Cf. above, p.6 and note 11.

(46). Schefold, AA, 1933, 141ff., 1934, 363ff.

(47). Noack, AM, 32, 1907, pp.123ff. and pls.X-XIII.

(48). Cf. the plan, Noack, Eleusis, pl.II; this gate and the adjoining stretches of wall go back to the Peisistratids, but the gate was retained in the post-Persian circuit.

(49). Baker-Penoyre, JHS, 29, 1909, pp.219ff., Figs.9, 10a-b.

(50). Yorke, JHS, 16, 1896, pp.291ff., Figs.1-2.

(51). Cf. Noack's plan, Eleusis, pl.II; it was only when the Perikleian

Telesterion was begun, that the sanctuary was extended to the southwest.

a single gate, it became the general practice to have an outer gate leading into a small court, with a second gate at the inner end. Should the attackers penetrate the outer entrance they would then be exposed on all sides while they tried to break through the inner gate (cf. Mantinea and Gyphtokastro cited above).

This type of double gate, which is used at Kastraki, does not seem to occur before the beginning of the fourth century, and it is superseded in the latter half of the century by the dipylon-type which we find at Athens and in the Arkadian Gate at Messene(55). Furthermore the gate at Kastraki is one of the most developed examples of its type, and is most closely paralleled by the gates of Mantinea(56). This would indicate a date between c. 380 and 350 B.C., and we shall see below that there is other evidence in favour of this conclusion.

The main gate at Kasarma also belongs to this type, but, since the acropolis seems to have been intended primarily as a frontier-post, the engineers decided to build a small gate with very heavily defended approaches, instead of a larger entrance in a more accessible spot, where elaborate artificial defences would have been required. In effect the whole length of the ramp, shut in as it is between the ramp-wall and the main curtain on the south side of the fortress, forms a long corridor leading up to the gate; the tower, as we have

(52). Cf. the plan, Praktika, 1938.

(53). On the gates of Mantinea cf. Fougeres, Mantinee, pp.150ff. and Figs.27-32; cf. especially Gate D, Fig.29.

(54). Lattermann, AA, 1916, 409-414, and Abb.6-9.

(55). Cf. note 29.

(56). With our plan, IIIb, cf. Fougeres, Mantinee, Figs.27-32.

seen, is placed in such a way as to command the cliffs below the gate to the west; and should the attackers be able to reach the gate-corridor, their backs would be exposed to the defenders of the tower, while they tried to break down the gate. Thus for all its apparent simplicity, the overall system of defence has been worked out with a care and elaboration, which could scarcely antedate the advanced military science of the time of Epaminondas and the Hellenistic kings.

The relatively late date of the Kasarma fortress is further demonstrated by the existence of the two posterns (B and C on Plan I). Postern-gates, it is true, are found in many fifth century systems; but it is rare, even in a large circuit, to find as many as occur in the fifth century enceinte of Oiniadai(57). The attitude of the military engineers of that period seems to have been that the fewer openings there were in the wall, the more secure the defences would be. But in the fourth century, and even more in the Hellenistic period, the employment of larger numbers of men and more advanced siege-engines required that all possible approaches to the wall be covered by posterns, whence the defenders might sally forth to take the main attacking force on the flank, or to break up secondary assaults on the more remote portions of the circuit. It is for this reason that we find so many gates in the walls of Mantinea, which were open to attack from any quarter. Even at Messene posterns are placed in the shelter of the towers in the northwest part of the circuit, although the wall here follows the crest of a fairly high ridge; and the border-fort at Gyphokastro in Attika, small though

(57). Cf. Powell, *AJA*, 3, 1904, pp.146ff.

it is, has six sally-ports in addition to the two main gates(58). At Kasarma the north and northwest flanks were adequately protected by the cliffs, the south flank by the ramp wall; but the slopes between the southeast and northeast towers, though long, are fairly easy of access, so that it was felt necessary to have two posterns in this region. They are so placed, however, that it would be impossible for an enemy to enter through them; Postern B is in the reentrant angle, Postern C under the protection of the massive northeast tower. The absence of any such posterns in the Kastraki fortress is one of the features which suggests that it may be earlier than Kasarma(59).

On examining the towers of the two fortresses, I think we shall find that these support the conclusions we have drawn from our study of the gates. The towers used in Greek fortifications at different periods present three main varieties of ground-plan: rectangular, semi-circular, and circular(60). There seems to be no chronological distinction between the first two types; both occur, often together, from the Archaic period onward(61). It is important, however, not to confuse the semi-circular type with the circular, which stands clear of the wall for most of its circumference. This third type is relatively late in appearing, and, so far as I

(58). Cf. plan, loc.cit., note 52.

(59). Of course no great weight can be attached to this argument; postern gates may easily be employed in an earlier fort, but be lacking in a much later example.

(60). Towers of polygonal plan are merely variants of the curvilinear types.

can discover, was intended to serve a more specific purpose than the semi-circular variety(62): it is worth noting that the earliest examples are virtually confined to salients(63), or to the flanking bastions or the entrance to the court of a gate(64). The semi-circular type is also frequently used at such vital points(65); and this preference for a curved or polygonal plan suggests that the Greek engineers believed such towers to afford a better all-round view and field of fire, for the defenders within the tower as well as for those on the roof. The genesis of the tower with curved ground-plan, especially as regards the circular type, would then be due to the same considerations which led to a (theoretical, at least) preference for curved rather than angular salients, a point which is graphically demonstrated by Schramm, in Kromayer-Veith, Heerwesen und Kriegführung(Pl.13, Figs. 48-49). But whatever the

(61). E.g. there are two small semi-circular bastions flanking the gate of the Kastelli fort in Euboeia (above, n.34); in the enceinte of Phigaleia, which may perhaps belong to the fifth century (cf. Scranton Greek Walls, p.175), rectangular and semi-circular towers are both employed, with no particular distinction as to position and function; and the same is true in the fourth century circuit of Messene (in the N.W. part of the circuit there are semi-circular towers in the straight stretch of wall, while the corner salient is guarded by a rectangular tower).

(62). It is true that later on the circular tower may be used in positions other than those here emphasised, and in the Hellenistic period it is actually abandoned for a while, even at such points; none the less admitting that there was some good reason why it was

reason, the fact remains that we have no datable example of a circular tower earlier than the corner-tower of the Perikleian circuit at Eleusis; and again at Phyle, in the early fourth century(66), the circular type is used only at the northeast salient, while the southeast angle has a square tower. The earliest example of a circular tower defending a gate would seem to be the Kononian Eetioneia Gate of Peiraiæus(67); we find it used again in the main gates at Mantinea and in the gate at Kastraki. At Kastraki also, as at Phyle, we find one salient guarded by a circular tower, while the others have rectangular towers (note that the circular type is used for the weakest salient, which is the case at Phyle too). These comparisons, together with the evidence of the gates, suggest that the Kastraki fortress is probably somewhat earlier than the middle of the fourth century, since it can scarcely be much later than the circuit of Mantinea, but is probably slightly later than the fort at Phyle(68).

The subsequent history of the circular and semi-circular types of tower does not concern us here, save to observe that in the Hellenistic period both types fall, temporarily, at least, out of favour; such early Hellenistic systems as those of Miletos, Priene, the second circuit at Herakleia, Ephesos, and Demetrias, which may be assumed to embody the most up-to-date features of Macedonian military science, employ square towers exclusively. This would suggest that neither Kasarna nor Kastraki can be as late as the end of the fourth century, a conclusion which we have already reached

(developed at all, the explanation here offered seems to cover the facts.

(63). E.g. Eleusis, Phyle, Kastraki.

(64). E.g. Peiraiæus, Mantinea.

(65). E.g. the early IV. century gates of Corinth; in Akarnania and

on other grounds. On the other hand, since at Kasarma circular towers occur at all corners as well as at the gate, we are once more led to conclude that this fort must be somewhat later than Kastraki.

Thus far we have been considering the towers from the point of view of ground-plan only; but the elevations also can furnish us with some useful information. Here again the history of Greek fortifications provides us with a number of variant types. I suppose that the earliest towers were no more than projecting bastions, solid like the curtains, and protected by a breastwork at the height of the allure. But the advantage of being able to fire down on the enemy from above and on the flank must soon have led to the addition of a second storey to the tower, with an open platform on the roof, where more defenders could be stationed; it is unusual to find any of this superstructure in situ, however, because it was built by preference of sun-dried bricks, at least down to the beginning of the Hellenistic period, at times also during that epoch. The next stage of development seems to be the introduction of towers with a hollow ground-storey, which could serve as a shelter for the troops

Aitolia towers of curved ground-plan are seldom used save in such positions.

(66). Sjöflund's article, Opuscula Archaeologica, I, 1935, does not seem to me to have upset Wrede's original dating of the fortress.

(67). B.C.H., XII, 1888, pl. XV.

(68). The simplicity of the gate at Phyle can only be partially explained by the fact that, in order to approach it, an enemy would be compelled to pass along below some portion of the east wall of the fort, coming quite close under one of the towers guarding the angles.

during inclement weather; it seems fairly certain that this change was brought about by the tendency of Greek warfare to become more and more an all-year operation. Finally come the innovations which follow the introduction of defensive artillery; the housing of these weapons soon becomes the main function of the towers, so that we may find only one storey above the level of the allure, roofed in instead of having an open platform on top, then two roofed storeys, both carrying artillery, and finally the ground-storey also provided with openings in the walls and used to house the heaviest artillery pieces which the defenders possessed.

Chronologically these various types often overlap, but it is possible to make out in a general way the period at which each first appears. Thus I think it unlikely that the first type can have been very widely employed after the end of the Archaic period, and it is even probable that the second variety, with a covered upper storey and an open platform above, had already been introduced, at least in Asia Minor, by the time of the Persian Wars. The first certain instance of troops being housed within the towers or in the walls is, to the best of my knowledge, at the siege of Plataiai, in the opening years of the Peloponnesian War (69); the construction of the Spartan encircling wall was of course dictated by the fact that this was the only way in which the besiegers could find shelter during the winter months. It is interesting to note that the first two surviving instances of towers with hollow ground-storeys are also in fortresses which had to be garrisoned all the year round, namely the Attic border-forts of Phylæ and Gyphokastro. The introduction of roofed two- or three-storey towers, to house artillery,

(69). Thuc., III, 21.

was, like the extensive use of artillery itself, a development due to Alexander the Great and his successors; I know of no certain instance of such towers prior to the beginning of the Hellenistic period(70).

It will thus be seen that the elevations of the towers at Kasarma and Kastraki offer some slight confirmatory evidence in favour of dating both fortresses in the fourth century, but earlier than the beginning of the Hellenistic period. For it is in two fortresses of the early fourth century that we find the best parallels for the isolated tower with hollow ground-storey, for which there is some evidence at the southwest corner of Kastraki fortress; and since all the evidence suggests that the Kasarma circuit is later still, it also must fall in the fourth century. On the other hand there is no evidence in either fortress that the towers were used as artillery-emplacements, which suggests that they are both pre-Hellenistic(71). Incidentally the existence of a tower with hollow ground-storey at Kastraki, in the light of the parallels adduced above, confirms our view that this fortress was no more than a strong border-post, with scarcely any settlement outside its walls; at Kasarma, where there was a village of some size below the acropolis, as well as a number of buildings inside the walls, it was not necessary to make such provision for the shelter of the garrison.

The evidence provided by the fortifications themselves has thus led us to the following chronological results:

(70). At Gyphtokastro the towers on the north side of the fortress have hollow ground-storeys, but these were evidently used only for the housing of troops, for there are no openings for weapons; for an excellent example of the Hellenistic artillery-tower, see Krischen's restorations of the towers at Herakleia-ad-Latmum, Milet, III, 2.

First circuit at Kasarma	Probably latter fifth century.
Fortress at Kastraki	First half of fourth century, probably c. 780-350 B.C.
Present circuit at Kasarma and blockhouse (also Katzingri)	Slightly later than Kastraki, perhaps second third of fourth century.

It still remains, however, to correlate these results with our knowledge of the history of the Argolid during the fifth and fourth centuries. Naturally any such correlation can only be of a tentative nature, since the historical data are scanty; but with these reservations in mind I think it is possible to narrow down the dating of our fortresses still further.

We shall begin with three assumptions: first that the fortresses both lay in Argive territory, secondly that they were built to defend the Argos-Epidauros frontier, and thirdly that they were built at a time when the whole of the Argolid was under Argive control. Scranton indeed has suggested that Kastraki was an Epidaurian fortress, the counterpart of Argive Kasarma(72), and that the border passed between the two; but I do not think that this can be correct. It is misleading to speak of "the obvious opposition of (Kasarma) to neighbouring Kastraki", for as a matter of fact the two fortresses are not opposed to each other; Kastraki, like Kasarma, is clearly orientated toward Epidauros, and it is ideally placed for breaking up an attack from that direction before it could penetrate into the Soulinari valley. On the other hand if Kastraki were an

(71). Of course this is not definite evidence, but it is suggestive.

(72). Hesperia, VII, 1938, p.537.

Epidaurian fortress intended to ward off an attack from the direction of Argos, it would surely have been placed at the western end of the three-peaked ridge, immediately above Yannouleika, and would have had its single gate on the side toward Epidauros, not on that toward Argos. At the same time there can be little doubt that the frontier lay somewhere nearby; the whole character of the two fortresses is identical with what we know of other border-posts, in Attika and elsewhere. Nor is it easy to imagine the construction of such heavy defensive works by the few inhabitants of the district, so that we are justified in assuming both fortresses and the blockhouse to be the work of the Argives themselves.

Now it is clear, I think, that at no time during the first four decades of the fifth century did Argos have much time for expansion, or even consolidation, as far afield as this. At the beginning of the century she had suffered a crushing defeat at the hands of Kleomenes in the battle of Sepeia(73), and her heavy losses, together with the ensuing civil strife during and immediately after the period of the Persian Wars(74), had reduced her to such straits that even dependencies as near home as Tiryns and Mycenae were able to throw off her sway(75). On recovering her strength, her first efforts were directed toward reestablishing control of the plain and the head of the Gulf, by the reduction of Tiryns, and toward securing her northern approaches, by means of operations against Mycenae and Kleonai(76). With this accomplished, her next move was to resume her traditional enmity against Sparta; thus we find her in alliance

(73). Her., VI, 76ff., VIII, 148; Paus., II, 20,8, III, 4,1; cf. Busolt, Griechische Geschichte, II, p.50.

with the Tegeans in their disastrous campaign against Sparta about 473 B.C., and she evidently had a large share in the synoecism of the five villages of Mantinea into a city(77); while some years later she entered into the first of several alliances with Sparta's arch-enemy, Athens(78). It is quite likely that she may have again extended her sway over the Soulinarh valley during this period; but it seems to me that any large-scale work of consolidation along the Epidauros frontier would be more reasonably placed in the succeeding phase of her history, the period of the Thirty Years Peace with Sparta, c. 451-421 B.C.(79). At this time pacific, if not friendly relations with the Peloponnesian League would have made it possible to divert her energies from the West and North toward her eastern frontier; and it is therefore in these years that I would place the construction of the first acropolis at Kasarma(80).

Indeed, although the material evidence for the building of a fort here during the latter part of the fifth century is rather tenuous, the historical data show fairly conclusively that such a structure must have been in existence by the year 419 B.C., whether it was built during the Thirty Years Peace or at an earlier period.

(74). Her., VI, 83; Aristot., Pol., 1303a,7.

(75). They both fought in the Persian Wars, while Argos remained neutral.

(76). Kleonai, Paus., I, 29,7; Mycenae, Strab., 372,377, Diod., XI, 85, Paus., VII, 25,6.

(77). Tegea, Her., IX, 35; Mantinea, Strab., 337.

(78). Thuc., I, 102.

(79). Thuc., V, 14 and 28; the truce was near its end in 422/1 B.C.

(80). Of course there may have been an earlier fort, of which no

One of the first results of the Argive alliance with Athens, which was promoted by Alkibiades in 420/19 B.C.(81), was a joint Athenian-Argive attack upon Epidaurus; this was no mere raid, but actually led to the investment of Epidaurus itself. It is true that the Argive troops were recalled during the negotiations at Mantinea, and after the Battle of Mantinea, in 418 B.C., all Athenian-Argive positions in Epidaurian territory were abandoned(82); none the less, it is surely reasonable to assume that this activity along the Epidaurian border could not have been undertaken, unless the Argives were sure of their defences, and had a well-fortified site close to the frontier to serve as their base of operations.

After the close of the Peloponnesian War, however, the high-handed policy of victorious Sparta once more diverted the attention of Argos from her eastern frontier. In 395 B.C. she joined with Athens, Corinth and Thebes against the Spartans(83), and this alliance lasted until the Peace of Antalkidas in 387 B.C.(84). Thereafter we know almost nothing of her history until 370 B.C., when she is once more at war with Sparta, and willingly sides with Epaminondas in 369(85). In the following year hostilities with Epidaurus are resumed by a new Argive attack upon Epidaurian territory(86).

(81). Thuc., V, 43-47.

(82). Thuc., V, 80.

(83). Diodor. Sic., XIV, 82.

(84). On the part of Argos in the wars of the following years, cf. Xen., Hell., IV, 2-8, Diod., XIV, 92, 97. On the conclusion of the Peace of Antalkidas, cf. Xen., Hell., V, 1, 29-34.

(85). Xen., Hell., VI, 5, 16 & 23; Diod., XV, 62, 68.

(86). Xen., Hell., VII, 1, 18.

Presumably the friendship of Argos with Thebes considerably strengthened the former's position in the Peloponnesos in the period between the Battle of Leuktra and the death of Epaminondas at Mantinea; and although she suffered a setback in 353 B.C., when the Spartans defeated an Argive army at Orneai(87), she must have more than recouped her losses under the aegis of Philip of Macedon, whose cause she espoused in 344 B.C.(88), and who rewarded her, after the Battle of Chaironeia, with the territory of Thyreatis(89).

This was her last flourishing period, however; she abandoned Macedon after Philip's death, and suffered accordingly at the hands of Alexander(90), while for her part in the Lamian War(91), she was finally conquered by Kassander(92). Thereafter Argos declined steadily; although Antigonos I, and later Demetrios, gave her a few moments of freedom(93), she was too involved in her intrigues against Sparta, Pyrrhos and Antigonos Gonatas(94), to play any decisive role in the history of the earlier third century, while the latter half of the century is largely taken up by the efforts of a number of tyrants to seize control of the city, and of Aratos and the Achaian League to depose them(95).

(87).

(88). Demos., VI, 9, 19 & 26, XVIII, 295, XIX, 261.

(89). Polyb., XVIII, 14,7; cf. Paus., III, 20,1.

(90). Diod., XVII, 5; Arrian, I, 17,8.

(91). Paus., I, 25,4.

(92). Diod., XIX, 34.

(93). Diod., XIX, 63; Plut., Demetr., 25, Athen., X, 415a.

(94). Cf. Plut., Pyrrhos.

(95). Cf. primarily Plut., Aratos, and Polyb., II, 59.

In any event the third century falls outside the period to which the Soulinari fortifications may reasonably be assigned; and I think that the history of the fourth century, as sketched above, offers only two periods in which Argive activity along the Epidauros frontier might have taken place. The first of these falls between the Peace of Antalkidas and the death of Epaminondas; for before 387 B.C. and after Mantinea the struggle with Sparta can have left little opportunity for operations in the East. On the other hand, after Argos joined Macedon in 344 B.C., she could count on Philip to hold Sparta in check, and would once more be free to regain or extend her territory along the Epidauros border. Since therefore we have decided that the present circuit at Kasarma and the blockhouse must belong to the later of two fourth century building-periods, we can date them with some precision in the years 344-336 B.C. As for the fortress at Kastraki, this may have been constructed before the attack on Epidauros in 368 B.C., in preparation for that move, or it may belong to a general strengthening of Argive defensive positions between the Battles of Leuktra and Mantinea, when Argos probably flourished under the patronage of Epaminondas. The fort at Katzingri, of course, since it seems to be contemporary with Kasarma and the blockhouse, will also fall within the period of friendship with Macedon.

The correlation of historical and archaeological evidence thus produces the following results:

First circuit at Kasarma

Time of the Thirty Years Peace
between Argos and Sparta,
c. 451-431 B.C.

Fortress at Kastraki

Either 387-368 or 370-362 B.C.

Present circuit at Kasarma Probably 344-336 B.C.
and the blockhouse (also
the fort at Katzingri)

If these conclusions are sound, I think we may draw from them a number of inferences as to the course of the border-dispute between Argos and Epidauros. We have already seen that the border must be sought somewhere in this region, and it cannot have been as far East as Ligourio, since Scranton's excavations in the pyramid there furnished some evidence that the structure lay in Epidaurian territory. The border then must be sought further westward, and either Kasarma or Kastraki must be the ancient Lessa, the frontier-town mentioned by Pausanias(96). I think Scranton is correct in choosing Kasarma as the site of Lessa, for, as we have seen, there are far less extensive traces of habitations below Kastraki, i.e. Kasarma was the chief settlement of the valley(97); but I have stated above the reasons against accepting his identification of Kastraki as an Epidaurian fort(98). In any case I find it inconceivable that two Greek states could ever have acquiesced for long in a settlement, which assigned to each half of the fertile valley of Soulinari. Such a settlement might indeed have been imposed by the Roman governors of Achaia, and have been actually in force in Pausanias' day; none the less, during the period of Greek independence, it is far more likely that the history of the region was one long struggle between the rival

(96). Hesperia, VII, 1938, pp.536-537.

(97). Cf. the stories of the inhabitants of the region, above n.27, p.17

(98). Above, pp.40-41.

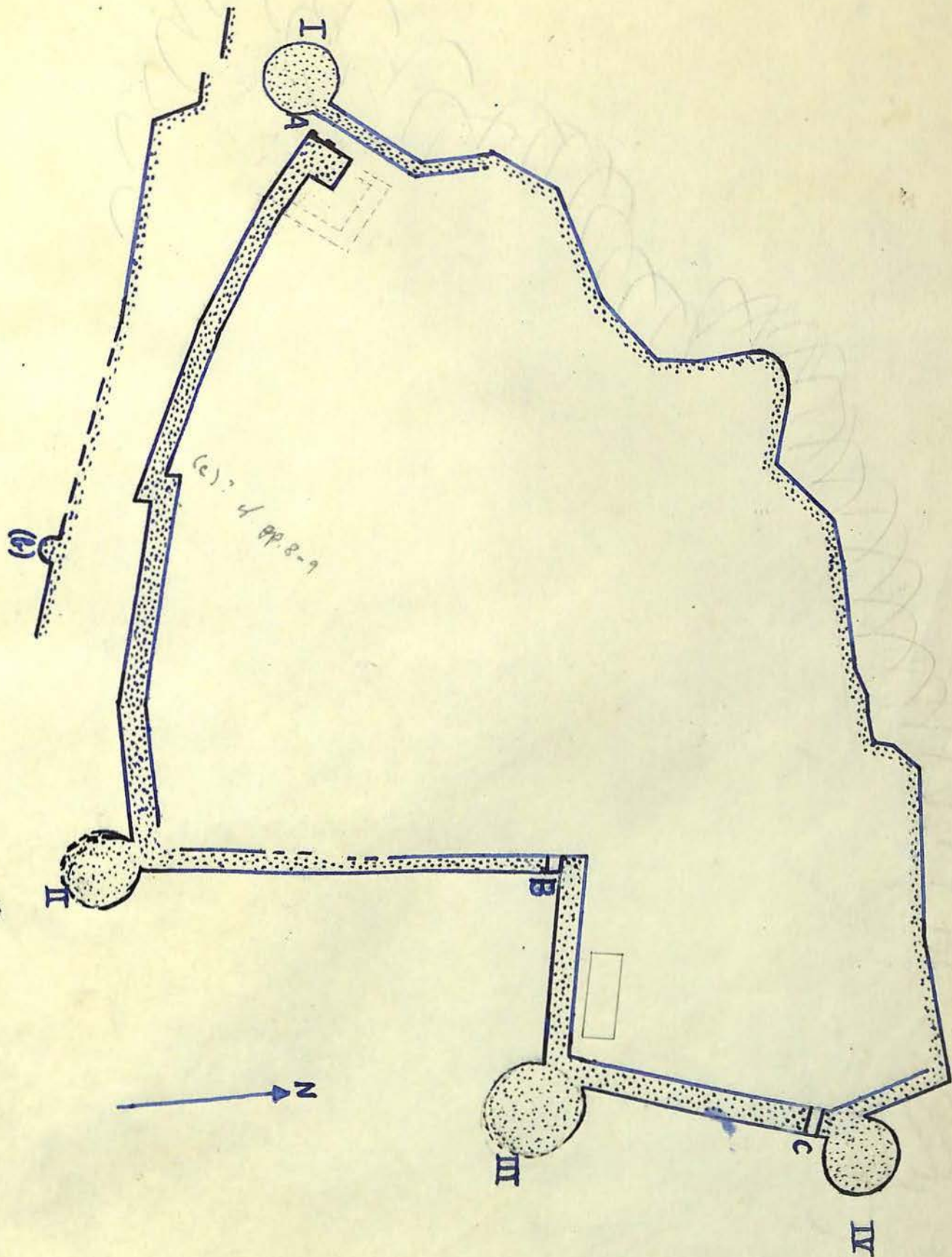
states for the control of these few acres of farmland.

Now we have seen that after the victory of Kleomenes at Sepeia in the early fifth century, Argos was so weakened that even Mycenae and Tiryns slipped from her grasp; in view of this she could scarcely have retained her hold on the Soulinari valley, and the territory may well have passed under Epidaurian control, probably in the second decade of the century. This would explain why the only fifth century construction, for which we have evidence in the valley, i.e. the first acropolis at Kasarma, lay on the western side, toward Argos. The Argives had little time for operations in this region prior to the Thirty Years Peace; and thereafter, though they probably hastened to reassert their control of the valley, they would have had to be cautious about building military works close to the Epidaurian border, lest the Epidaurians complain to their ally, Sparta, and involve Argos in a new quarrel with the Lakedaimonian confederacy. On the other hand, with Spartan attention absorbed by the resumption of hostilities after the Peace of Nikias, Argos was only too ready, in 419 B.C., to undertake a joint attack on Epidauros, with the object not merely of strengthening her hold on the Soulinari area, but of acquiring some portion of Epidaurian territory as well.

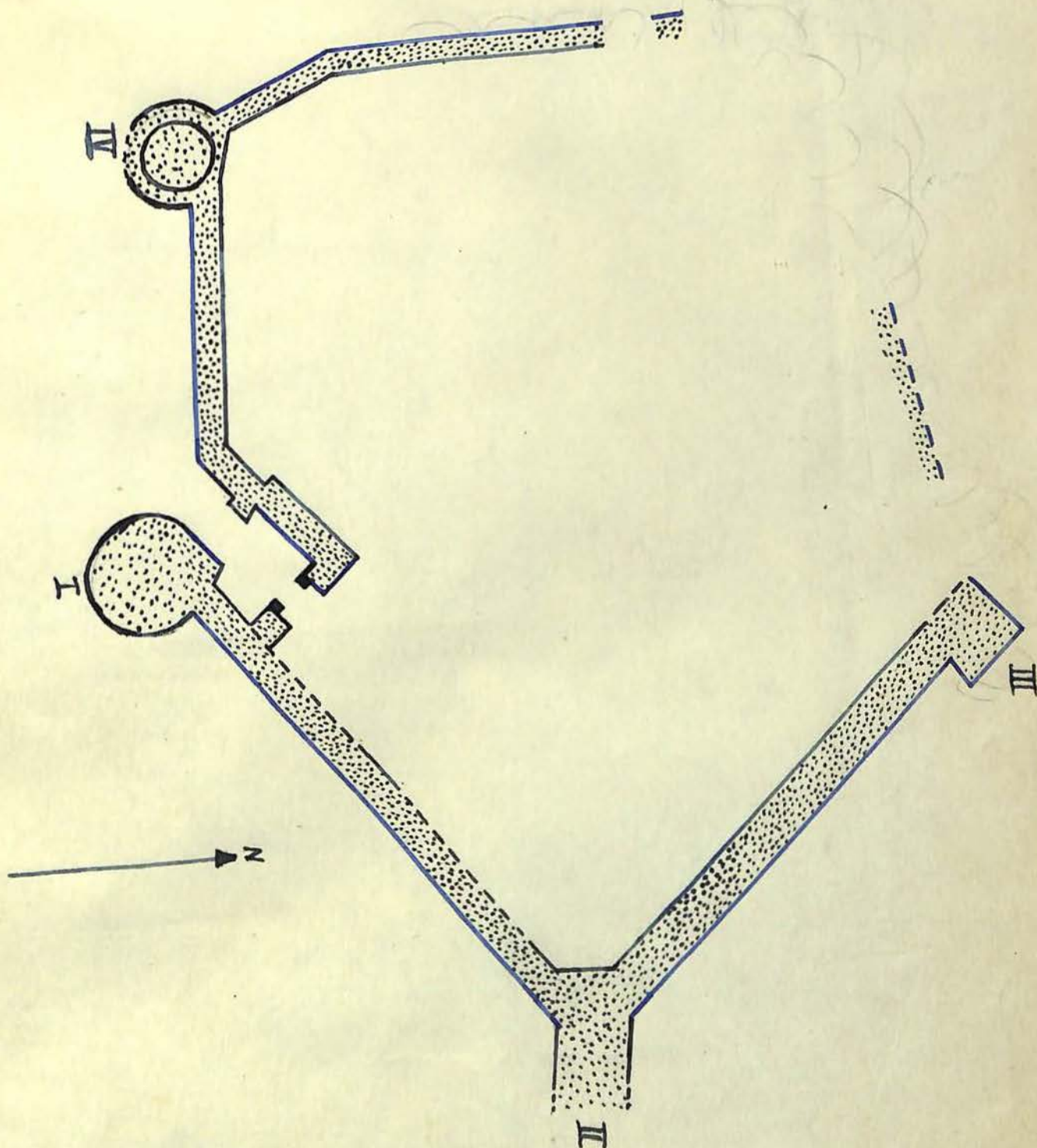
The attempt failed, and events between the closing years of the Peloponnesian War and the Peace of Antalkidas left Argos little time for activity in this quarter; indeed her hold on the valley may have been weakened once more. Perhaps as early as the late eighties of the fourth century, however, she again turned her attention hither; and by 368 B.C. she was ready to resume the struggle on an active scale. In this phase of the dispute it seems clear that the Argives succeeded in pushing the Epidaurians back toward their own base at

Ligourio, i.e. they won undisputed control of the valley, and confirmed this position by building the new fort of Kastraki; while a generation or so later they strengthened their hold still further by remodelling the old acropolis at Kasarma and constructing the blockhouse at the end of the valley.

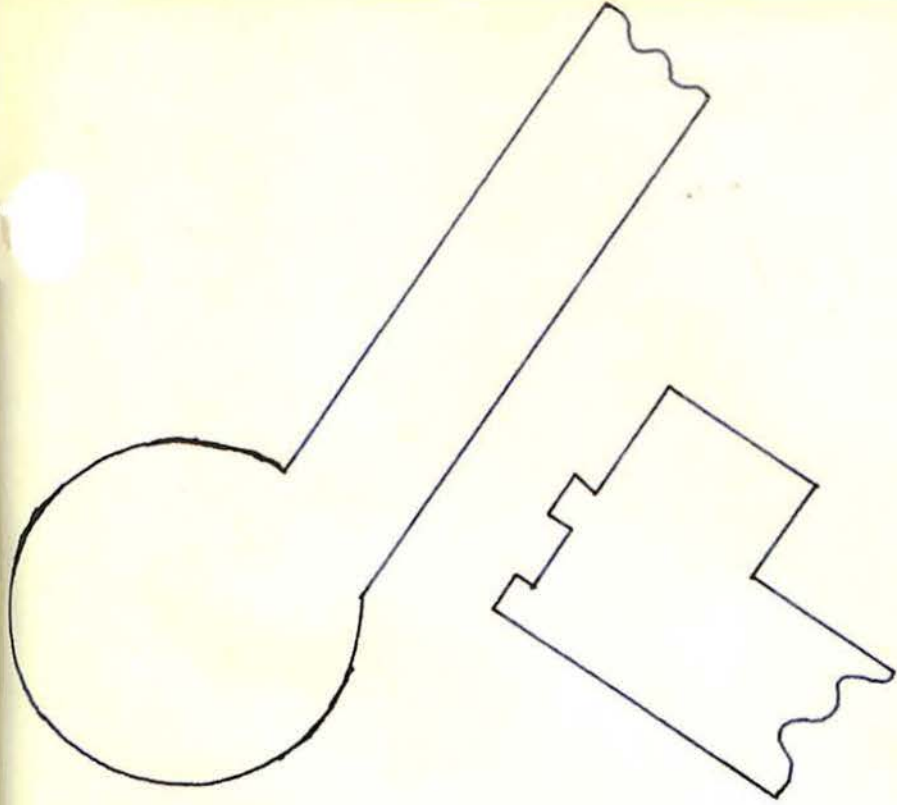
But frontier-struggles of this nature are seldom ended save by the destruction of one of the antagonists or the subjection of both to a third power. The decline of Argos in the Hellenistic period may well have led the Epidaurians to open hostilities once again, and the bickering doubtless continued down to the time of the Roman domination. The later history of the struggle, however, lies outside the scope of this paper.



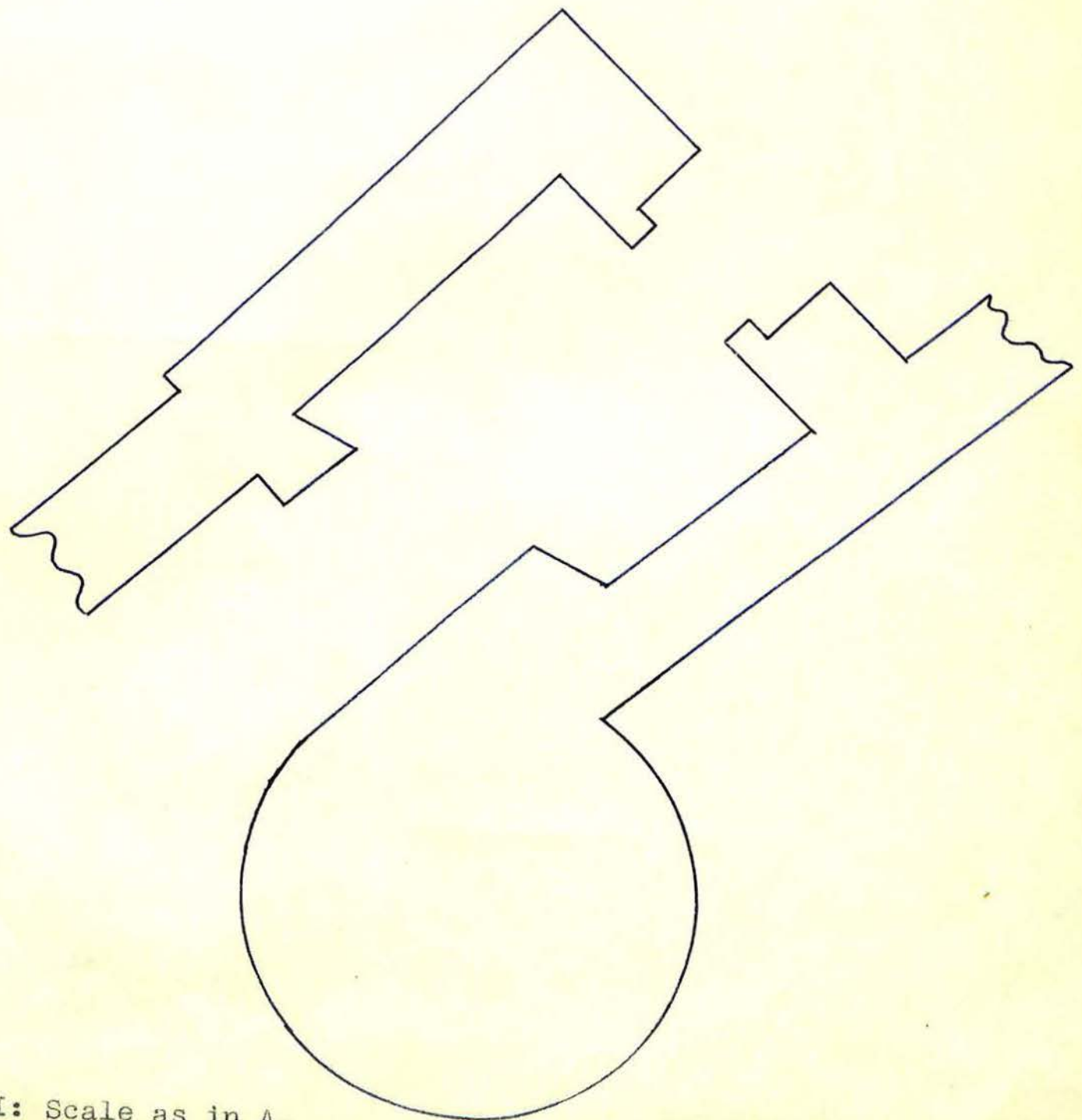
PLAN OF FORTRESS AT KASARMA: Scale 1 cm. = 5 m.



PLAN OF FORTRESS AT KASTRAKI: Scale 1 cm. = 5 m.



A. GATE AT KASARMA: Scale 1 cm. = 1.25 m.



B. GATE AT KASTRAKI: Scale as in A.



Fig. 1. View from Kastraki toward
Kasarma.



Fig. 2. Kasarma from the South.



Fig. 3. View from Kasarma toward
Kastraki.



Fig. 4. Kastraki from the West.



Fig. 5. View from Kasarma toward
the Argos pass.



Fig. 6. Kasarma from the East.



Fig. 7. Kasarma, the N.W. Cliffs.



Fig.8. Kasarma, the Ramp Wall
from below.



Fig.9. Kasarma, the Gateway from below.



Fig.10. Kasarma, the Gate Tower.



Fig.11. Kasarma, the Gateway from
inside the Fortress.



Fig.12. Kasarma, the S.W. Curtain.



Fig.14. Kasarma, Postern B.



Fig.13. Kasarma, S.E. sector of the
Fortress.



Fig.15. Kasarma, detail of S.E. curtain



Fig.16. Kasarma, Tower III and the
Adjoining Curtains.



Fig.17. Kasarma, Postern C.



Fig.18. Kasarma, Stepped Allure at
N.E. Corner.



Fig.19. Kasarma, View of the Water
Cistern.



Fig.20. Water Cistern at
Katzingri.



Fig.21. View of the Interior of the Fort at Kastraki.



Fig.22. Kastraki, View of the Gateway
from outside.



Fig.23. Kastraki, Entrance to the
Gate-Corridor.



Fig.24. Kastraki, View of Gateway
from inside the Fortress.



Fig.25. Kastraki, Bonding of Curtain
and Gate Tower.



Fig.26. Kastraki, Ruined S.E. Curtain.



Fig.27. Kastraki, the N.E. Curtain.



Fig.28. Kastraki, N.W. Corner of
the Fortress.



Fig.29. Kastraki, Tower IV from
outside.

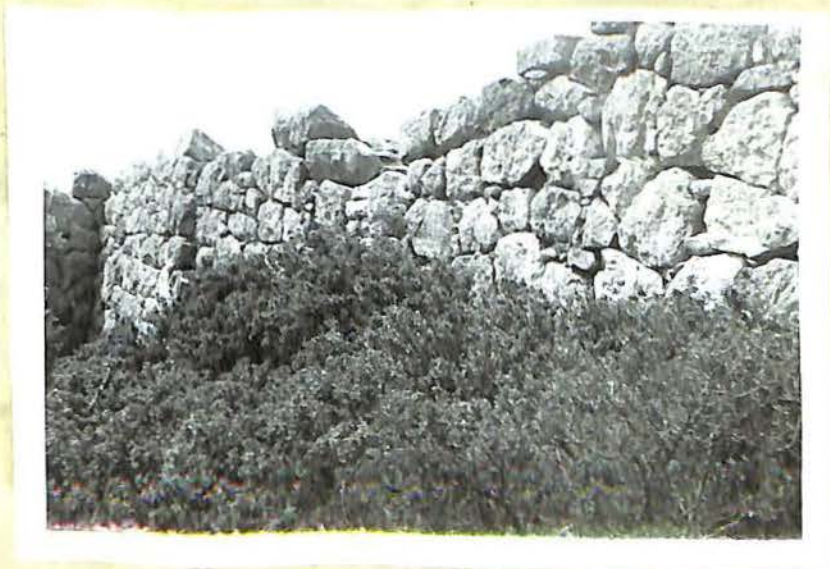


Fig.30. Kastraki, the Curtain between
Tower IV and Gateway.



Fig.31. Post rn, later walled up,
Karavassaras, Akarnania.

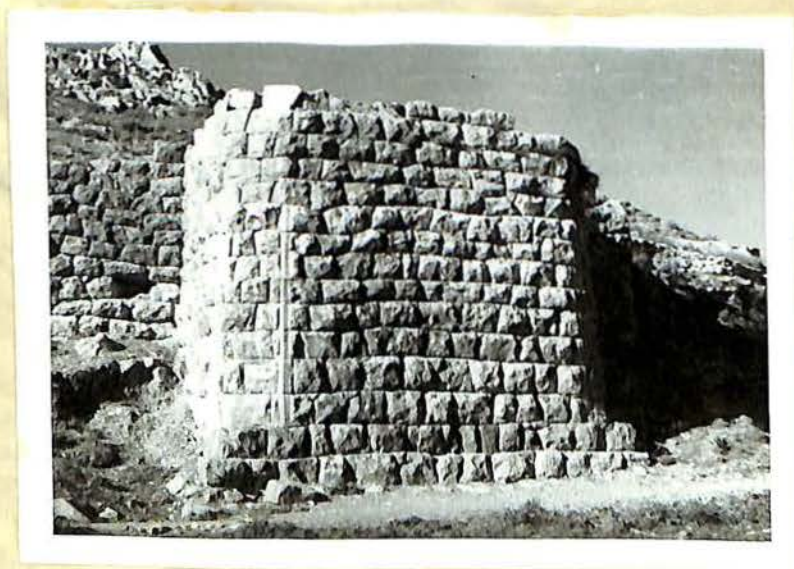


Fig.32. Asine, portion of Hellenistic Circuit.