

THE GARDEN OF HEPHAISTOS

An unexpected result of the Agora excavations has been the recovery of the setting of the "Theseion," now recognized as the temple of Hephaistos.¹ Its beauty can be most fully appreciated from the ancient level of vision—the floor of the market square. Its relation to the life of the Athenians is made vivid by the discovery of the shops of the metal-workers scattered over the hill on which stands the temple of their patron god. And finally, even the vanished temple-close can be restored, the garden of Hephaistos.

This garden survives only in rows of cuttings in the bedrock running parallel to the temple. At first their significance escaped the excavators but when pots appeared in hole after hole, the very duplicates of modern flower pots, only one interpretation was open to even the most incredulous. Yet when we look at the naked rock and gaping holes, it seems almost impossible to replant it, even in imagination.

THE EXCAVATIONS

Figures 1–2 show the temple of Hephaistos, its precinct and its surroundings restored so far as is permitted by our knowledge to the spring of 1937.² The date of the temple need not concern us. When the building was finished, earth must have been thrown in to cover the foundations up to the euthynteria. At first this earth was probably merely banked irregularly without a retaining wall. The temenos would then have appeared exactly as it did from the years 1890–1930 of our era.³ A little of this packed earth ramp survives on the east and west slopes of Kolonos Agoraios. A stairway, later covered by the precinct wall, can be traced at the southwestern corner. Pottery in the cutting for the

¹ For the Hephaisteion, Judeich, *Topographie von Athen*², pp. 365 ff.; *Hesperia*, VI, 1937, p. 65.

In making this study, I have been assisted by many archaeologists and horticulturists to whom I am most grateful. I must name especially Professor Politis of the University of Athens and Professors Anagnostopoulos and Krimba of the Agricultural School, who generously put their knowledge and their laboratories at my disposal. The photographs are by H. Wagner and the drawings by John Travlos. The topography and history of the area I owe to my husband whose reports on further details will appear in a later number of *Hesperia*.

² Fig. 2 gives the actual state of the Hephaisteion precinct including details that bear no relation to the garden. The graves marked by double crosses range from Sub-Mycenaean to Geometric times; those marked by single crosses are Byzantine. The oval cutting at the southwestern corner below the letter B is a pit for casting bronze statues; the circle below A is a small furnace. The cutting in bedrock that runs under the northwest corner of the Hephaisteion is obscure. Below the letter C on the north side is a cistern. The shaded walls and pithos cuttings are Byzantine.

³ Cf. especially the photographs in Sauer, *Das sogenannte Theseion*, pl. I; Fig. p. 8.

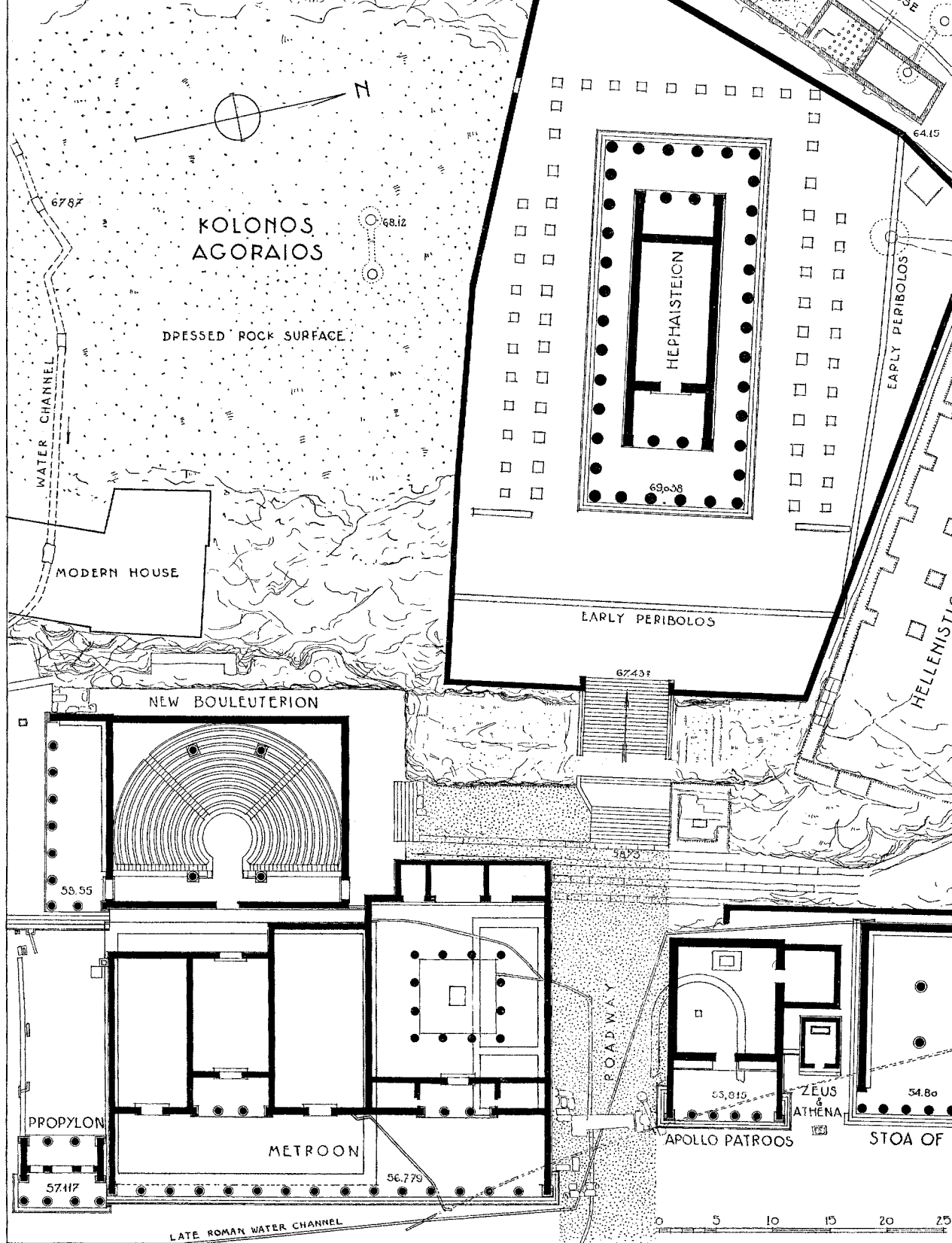


Fig. 1. Hephaisteion Precinct and Surroundings, Restored Plan

stair suggests for it a date from the turn of the fifth into the fourth century B.C. The first formal enclosure was of irregular shape extending beyond the temple about eight to ten metres on each side. It is traceable by cuttings and by the position of the drains that begin at the western corners. It is actually represented by a few blocks of conglomerate still *in situ* near the southwestern angle. The western wall of this enclosure was extended southward to retain an earth filling on the hill-slope. The curious orientation of this western side was dictated by the line of the road to the Pnyx. The northern limit of the temenos is indicated by slight traces of its wall beddings. The eastern side of the first enclosure consisted of a light terrace wall set in a shallow bedding. A ramp of earth led informally down to the market square. This ramp shows two distinct surfaces. The lower, evidently that which gathered subsequent to the building of the temple, produced pottery of the early fourth century B.C. On it lay another stratum of earth and pottery of the early third century. Other evidence indicates that at this period the top of Kolonos Agoraios, originally probably a steep and rugged hill, was dressed down to form a level area. This process involved trimming down the mouths of a double cistern outside the precinct to the south, and the chambers, fallen into disuse, were consequently filled. This cistern yielded a bronze shield, taken by the Athenians from the Lacedaemonians;¹ with it was found a quantity of pottery and of lamps all dating from the late fourth and early third centuries B.C.² The twenty-one coins offer a check to this dating: of these, three are to be placed in the last half of the fourth century B.C. and three in the interval 307–283 B.C.³ Deposits of exactly this same period were also found in the cistern over which the northern precinct wall was set⁴ (Fig. 1). Though this period seems late for the construction of the temple precinct enclosure, it must be considered as established upon this evidence.

When the double cistern to the south of the temple went out of use, a new water supply was brought in an underground channel from the direction of the Pnyx to a draw-basin conveniently placed outside the southwestern corner of the precinct (Fig. 1). No traces of a house to be connected with this supply have survived. Presumably it served the priest or the temple garden. Nor, indeed, were there ever any other dwellings along the plateau, although abundant wells and cisterns on the east, south and west slopes attest the popularity of the region for private houses and metal-workers' establishments. But the central area must have been left open under sacred jurisdiction,⁵ possibly to accommodate the crowds that came to the festival of the Hephaisteia.⁶

¹ *Hesperia*, VI, 1937, pp. 347–348; *A.J.A.*, XL, 1936, p. 189.

² Cf. *Hesperia*, III, 1934, pp. 313 ff., Group A. The classification of lamps throughout this article follows that of Broneer, *Corinth*, IV, *The Terracotta Lamps*.

³ For the identification and dating of the coins mentioned in the article I am indebted to Mrs. Shear.

⁴ See p. 396, note 2.

⁵ Possibly this area belonged to the Eurysakeion, a sanctuary for which we have evidence in the neighborhood. Cf. Judeich, *Topographie von Athen*², p. 368.

⁶ G. Deubner, *Attische Feste*, pp. 212 ff.; *I.G.*, I², 84 (421 B.C.) gives orders for the festival at which two hundred Athenian youths were required to lift the sacrificial animals on the altar.

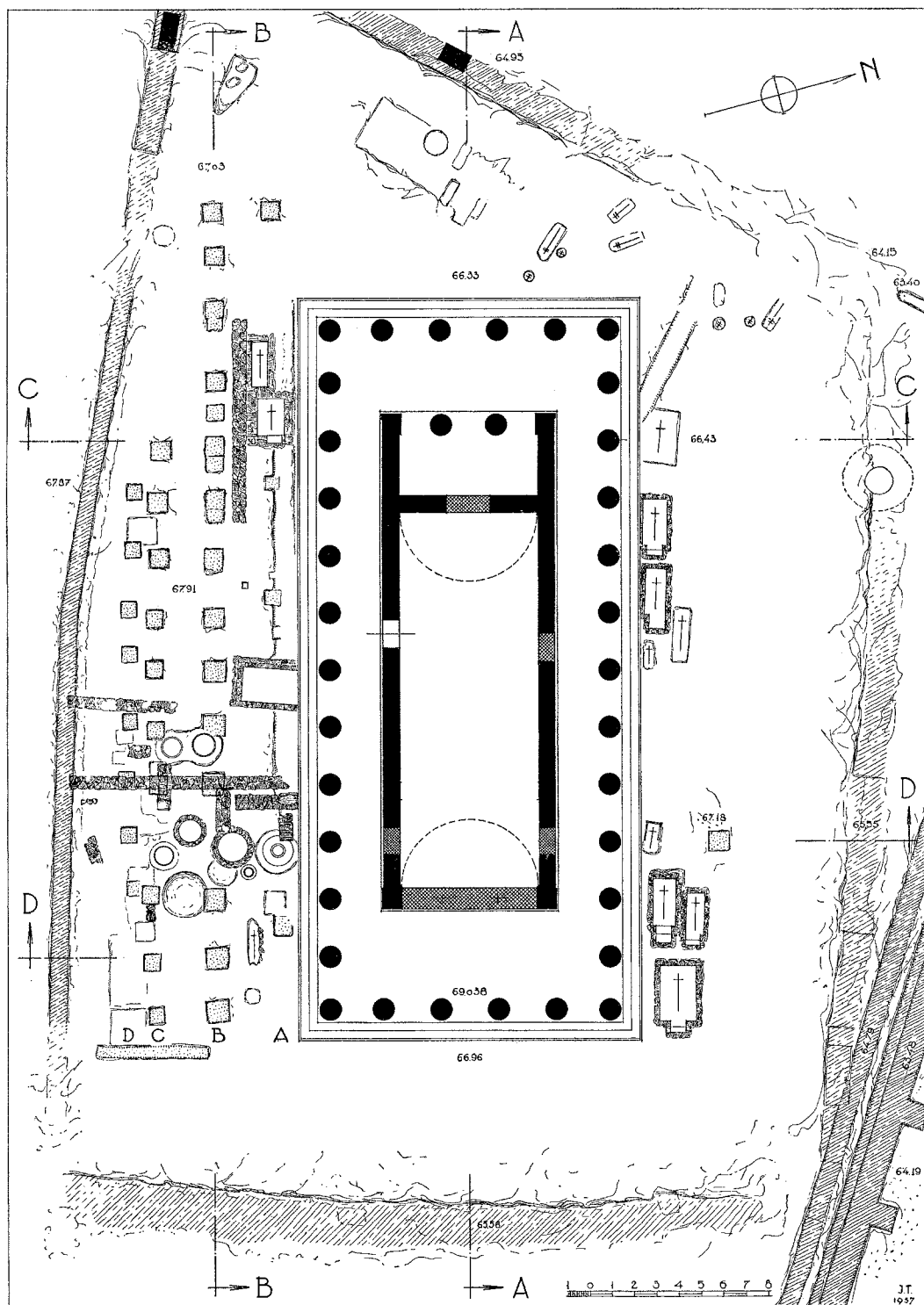


Fig. 2. Plan of the Hephaisteion. Precinct, Actual State

Some time not long after this construction of the peribolos wall in the early third century B.C., a large triple-aisled building was set into the northern shoulder of the hill (Fig. 1). Though the peribolos wall may have been extended to join the retaining wall back of this building, no certain bedding has yet been observed. The restoration of the line on Fig. 1 is hypothetical. The eastern end of the enclosure must have remained as it was first built until it was later extended eastward to join the monumental stairway.¹ Set on



Fig. 3. Area Southwest of the Temple seen from its Roof. Arrow points to later Draw-shaft

the axis of the thoroughfare between the Temple of Apollo and the Metroon (Fig. 1), this stairway led up to a terrace across the front of the Hephaisteion. It was built, to judge from pottery found beneath it, not earlier than the mid-first century A.D. During this early Roman period foundations of obscure purpose were erected south of the temple on the western edge of the plateau; these forced the diversion of the old water-channel around them to a new draw-shaft. Later still, some time in the early second century A.D., a sizable private house, possibly for the priest of Hephaistos, was built just to the west of

¹ *Hesperia*, VI, 1937, p. 221.

the peribolos wall (Fig. 1). The precinct itself underwent no significant change until its final desolation in late Roman times. Possibly as early as the fourth century A.D. it was transformed under Christian auspices. The temple was converted into the church of St. George by setting an apse in the eastern end and by piercing the walls with new doors (Fig. 2).¹

Nearby sprang up the buildings and store-houses of the monastery that flourished here chiefly from the tenth to the late twelfth centuries A.D. Straggling walls, a cistern, and graves clustered close to the church (Fig. 2), storage jars for olives, grain and oil intruded



Fig. 4. The East End of the Area to the South of the Hephaisteion as seen from its Roof

into the area that had been once garden, confusing the plan as it appears today (Figs. 4–5). After the invasion of the Franks and of the Turks, the whole area was deserted until the visits of travellers and of tourists. And finally the excavators, having laid bare traces of the garden, are planning to replant it and to restore so far as possible a fifth century temple to its original appearance.

Looking more closely at details within the temenos enclosure (Fig. 2), we cannot detect any trace of an altar bedding or of anything else pertaining to the cult. Indeed the

¹ The plan of the temple given on Fig. 2 is that of its actual state as a Museum in 1936. The roof, as indicated, is a barrel-vault. The apse had been removed and a wall substituted. In the spring of 1937, the Greek archaeological authorities are removing this wall and restoring two columns in the pronaos. Cf. A. Orlandos, *Archeion*, II, 1936, pp. 207 ff.



Fig. 5. The West End of the South Area, as seen from the Roof of the Hephaisteion

entire precinct seems to have been given over to the formal planting of which we found sufficient remains to suggest the scheme of the temple garden (Fig. 1).

Only the most fortunate of chances preserved this plan. A glance at sections (Fig. 6) taken through the temple reveals how the steep sides of Kolonos Agoraios presented a problem to the temple architect; for the original slope was so great that on the north he was forced to bed the temple several courses deep. On the south, however, he had to cut down the hill-top in order to bring the rock even so low as the level of the euthynteria.

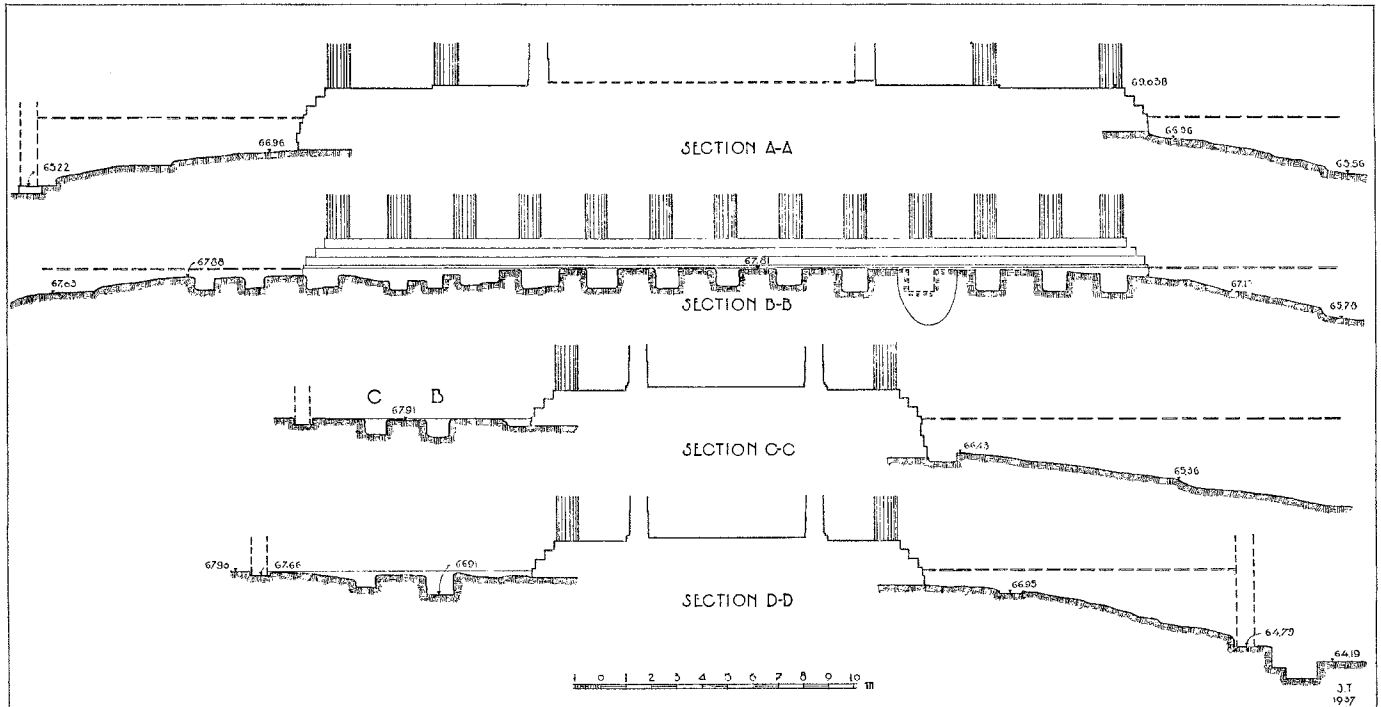


Fig. 6. Sections through the Hephaisteion

Thus it followed that planting along the south side required sizable holes in the bedrock to retain the requisite earth. Despite the confusing Byzantine intrusions, the disposition of these cuttings is clear (Figs. 2, 4-5). Two main rows catch the eye (Fig. 2, B, C), running parallel to the temple. Of these Row B extends westward for two cuttings beyond the temple, in order evidently to turn northward along the western end. The cuttings can be traced no farther to the north on account of the fall in bedrock just at this point. Again, on the northern side, the cuttings for plants would have been set in the earth filling, long since washed away. But just where the line coincides with the highest part of bedrock here on the north, the bottom of one cutting is preserved, opposite the fourth column from the east (Figs. 2, 6, D-D). The size and depth are identical with those of the cuttings of this row on the south. Thus it is established that the planting extended

around three sides of the temple. Across the front of the temple, although bedrock at the southeast corner rises high enough to be decisive, no cutting exists. Here a shallow channel, 0.45 m. wide ($1\frac{1}{2}$ Greek feet)¹ marks the limit of the southern planting. The front of the temple would naturally be left open to give easy access and a clear façade to the Agora.

Along the south side, in addition to the two main rows of cuttings are two others, irregularly placed and obviously subordinate. For reference all the rows are lettered from the temple outward: A, B, C, D (Fig. 2). The individual holes are numbered according to the column opposite which they fall, counting from the east.

Row A includes only three certain cuttings in addition to Cutting A 15 which is evidently really the westward extension of Row B. Its holes are irregularly spaced; their width is 0.65 m. (2 Greek feet), their depth 0.30 m. (1 Greek foot).

Row B gives the essential line. It alone can turn the northwestern corner. Indeed, the corner cutting falls so close to the wall that the spacing would seem to have been based on this limitation. Row B passes through the narrowest section of the south side of the peribolos approximately down the centre.

The cuttings of Row B are larger than those of the other rows. From cuttings 1–9 they average 0.90 m. square (3 Greek feet) and from cuttings 10–15, 0.75 m. square ($2\frac{1}{2}$ Greek feet). Their depth varies from 0.65 m.—0.90 m. (2–3 Greek feet). Their sides are roughly perpendicular. Except for the enlargement of cuttings 9, 10, 11, 11*a*, 13, the holes were set carefully opposite the columns. Row B alone produced flower pots, which were found as they were placed, in the centres of the holes, their lips at a depth of *ca.* 0.50 m. below the ancient ground level.

Row C is less regular. It runs parallel to Row B at an interval equal to an intercolumniation, which gives a system of planting on squares. The cuttings were set only approximately opposite each column. They stop at the eleventh column in order to allow the precinct wall to swing northward. The cuttings measure, like those of the smaller set in Row B, *ca.* 0.80–0.75 m. square ($2\frac{1}{2}$ Greek feet) and they are markedly shallower, on the average 0.60 m. (2 Greek feet).

Row D is most irregular. The holes are badly dug, rough at the sides and very uneven at the bottom. They are *ca.* 0.75 m. square ($2\frac{1}{2}$ Greek feet), 0.45 m. deep ($1\frac{1}{2}$ Greek feet).

From the plan alone, it might reasonably be argued that Row B is the original row, that Row C is supplementary to it, and Rows A and D are later.

THE FLOWER POTS

The flower pots were found exclusively in Row B, ten being nearly complete. Fragments were also found in Cutting A 15, which, as has been noted, is really the north-

¹ Dimensions will be given approximately in Greek feet (Attic foot of 0.2957 m.) so that comparison can easily be made with literary statements of measurements. The cuttings are too ragged to permit of accurate measurement.

ward extension of Row B. Three small fragments from Cutting C 11 are evidently only strays brought in with the abundant pot-sherds that were found in the hole.

The flower pots are all, with one exception, similar in type and in fabric. The exception, B 5 *a*,¹ differs sufficiently in shape and in fabric from the other examples to suggest that it differs also in date. Since it was found in the same hole with a more complete pot, B 5 *b*, it would seem to be among the earlier specimens.

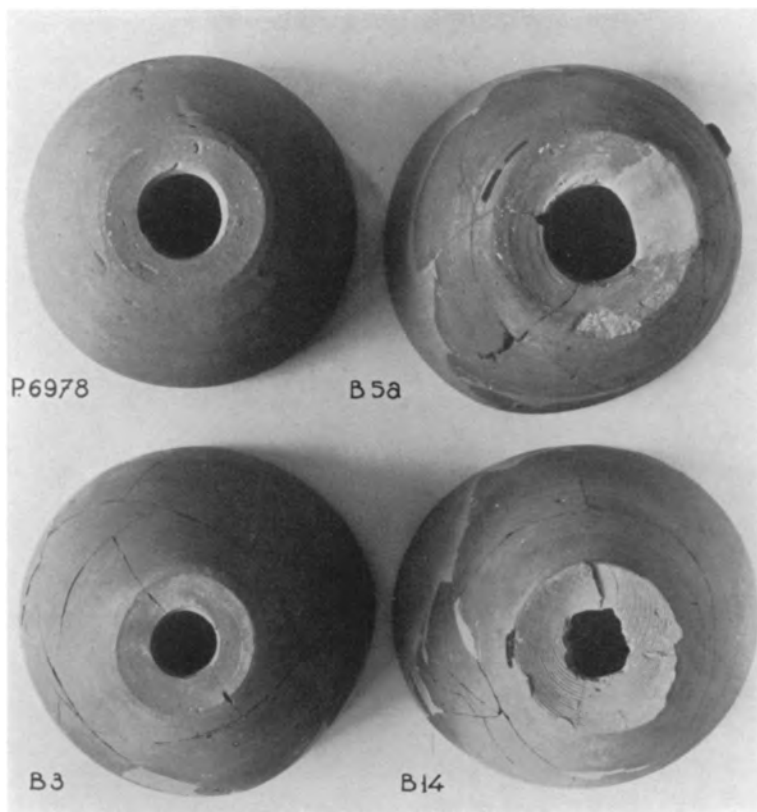


Fig. 7. The Bottoms of Flower Pots

Two groups may be distinguished among the remaining pots. Group A includes B 2, 3, 7, 10 *a*, 12, which are well-made, of fairly rounded shape. The height varies from 0.17–0.185 m., the diameter of the rim from 0.23–0.25 m. The bottoms are neatly cut so that the pots can stand alone; the holes in the bottom are larger than those of modern flower pots (Fig. 7). Group B includes B 5 *b*, 10 *b*, 11, 14. These are all less well-made, more flaring in shape and taller than those of Class A, varying from 0.182–0.21 m. The

¹ Flower pots will be given the numbers of the cuttings in which they were found; *a* refers to the lower, or earlier of two pots when two were found together, *b* to the upper or later.

diameter averages 0.24 m. They were roughly cut off the wheel with a string. The holes in the bottom are smaller than those of Group A.

One other flower pot has been found in the Agora (P 6978, Fig. 10), far from our garden, 150 m. to the south of the Stoa of Attalos. It stood complete, though cracked, in one layer of earth that lay flush with its lip; it was covered by another deposit. The shape is not unlike that of the flower pots from our garden but the fabric is somewhat different.

The fabric of all the pots is thin and hard-baked; wheel-marks show as grooves. The lip

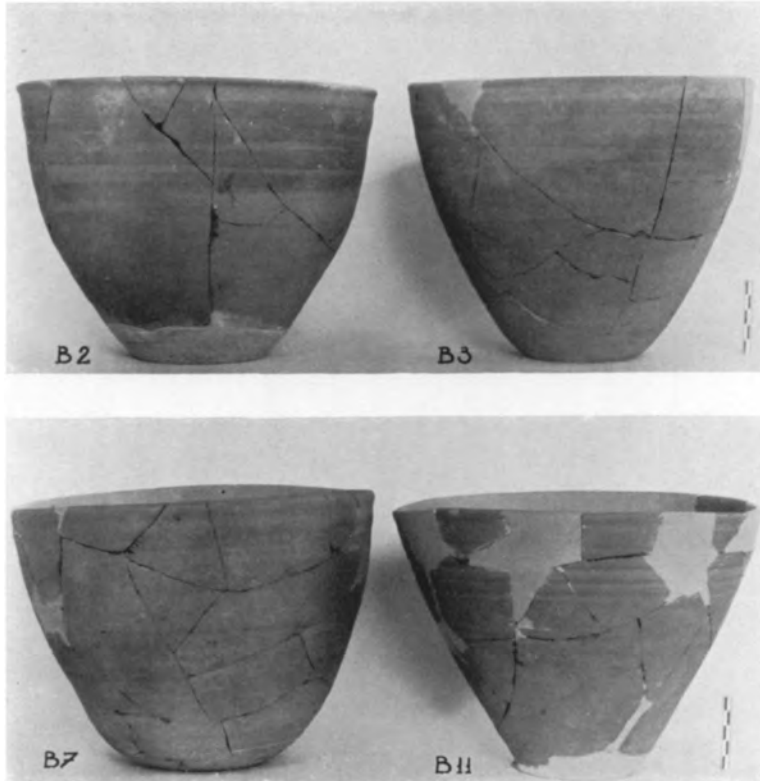


Fig. 8. Flower Pots

is sometimes thickened indiscriminately toward the inside or outside. A thin clay slip covers the surface. The firing gave a variety of colors to the slip, which vary from red to buff to bluish-gray. The core usually burned gray.

A brief catalogue follows. The numbers in parenthesis are those of the Agora Inventory.

A 15 (P 8702)

Ten small fragments, one from the rim, one from the base.

B 2 (P 6984) Fig. 8

H. 0.185 m., diam. at rim, 0.234 m., diam. of hole, 0.03 m. Fragments missing from the side. The hole was later deliberately enlarged. The bottom is finished to stand. Class A.

B 3 (P 7261) Figs. 7-8

H. 0.187 m., diam. 0.22 m., diam. of hole, 0.031 m. Fragments missing from sides. The bottom is neatly finished. Class A, almost identical with B 2.

B 5 a (P 7052) Figs. 7, 9

H. 0.186 m., diam. 0.234 m., diam. of hole, 0.052 m. Much of one side missing. Brownish core, brownish gray slip. The sides are thick; the bottom finished to stand.

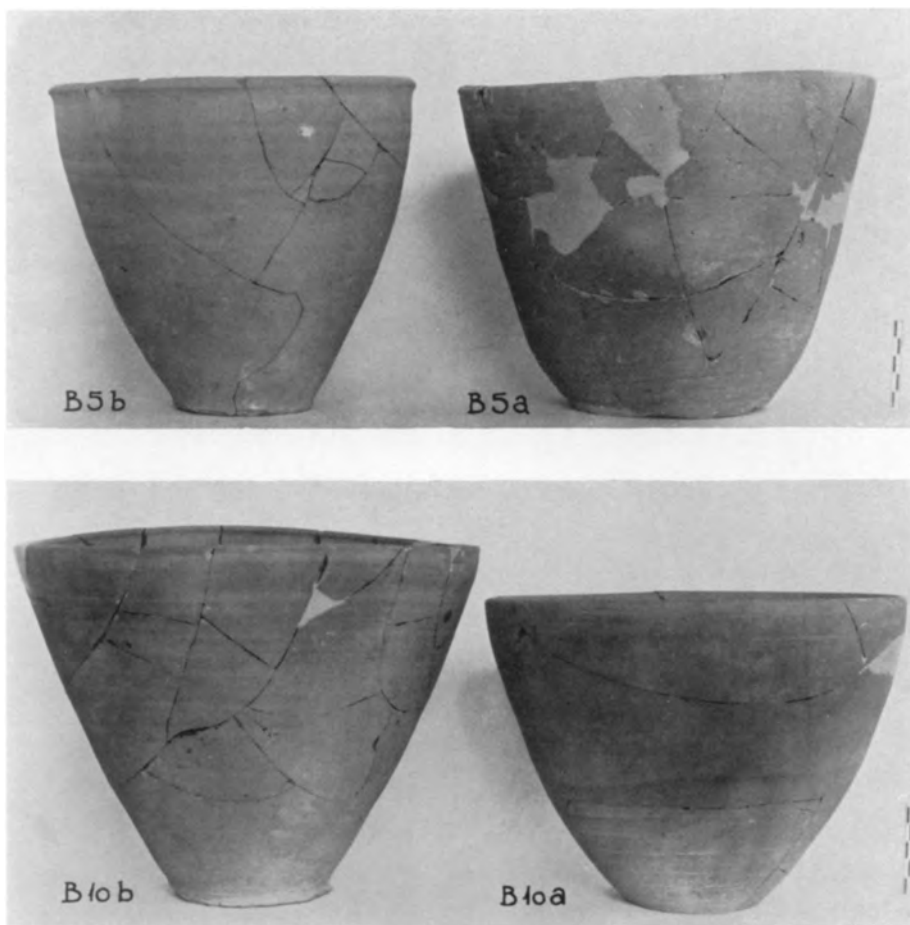


Fig. 9. Flower Pots

B 5 b (P 7051) Fig. 9

H. 0.19 m., diam. 0.21 m., diam. of hole, 0.031 m. One small piece missing. Bottom roughly finished, irregular hole. Class B.

B 7 (P 7099) Fig. 8

H. 0.18 m., diam. estimated, 0.25 m. Part of the upper side missing. The bottom was not cut, but was later trimmed to stand. The hole was later enlarged. Class A.

B 10 a (P 7053) Fig. 9

H. 0.17 m., diam. 0.23 m., diam. of hole, 0.029 m. A few bits are missing. Rounded shape, bottom cut off with an instrument, to stand. Class A.

B 10 b (P 6983) Fig. 9

H. 0.21 m., max. width at rim, 0.259 m., diam. of hole, 0.025 m. Bottom roughly cut off with a cord and the hole poked carelessly through. Class B.

B 11 (P 7098) Fig. 8

H. ca. 0.182 m., diam. 0.234 m. Much missing from the upper part, bottom broken away. The bottom was of the rough type. Class B.

B 12 (P 7248)

Diam. est., 0.23 m. Fragmentary. The lower part and a portion of the rim preserved. The hole in the bottom was enlarged later with a pointed instrument; bottom finished to stand. Buff clay. Class A.

B 14 (P 7054) Figs. 7, 10

H. 0.188 m., diam. 0.238 m. Part of rim missing. Bottom roughly cut off. The hole was enlarged later with a pointed instrument. Class B.

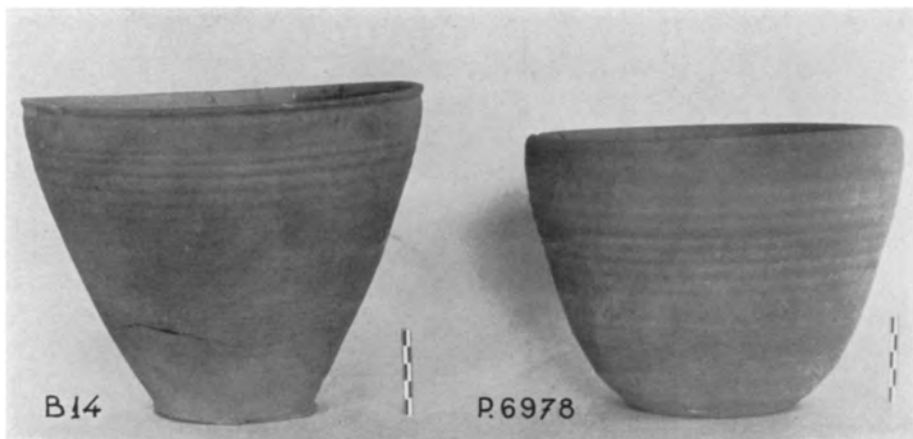


Fig. 10. Flower Pots

C 11 (P 8704)

No dimensions preserved. Three fragments, one from the rim.

(P 6978) Figs. 7, 10

H. 0.16 m., diam. 0.215 m. Bottom cut off evenly. Wheel-run ridges prominent. Gritty, slightly micaceous clay, bright red in color.

Similar ancient flower pots are otherwise almost unknown. Minoan examples were gaily decorated and placed at the windows and light wells of the palace at Knossos.¹ An interesting fourth century specimen was found at Olynthos (Fig. 11).² Its curious shape, small size, and smooth exterior indicate that it also belongs in the ornamental class. Pots found at Pompeii seem to resemble ours more closely. They too are flaring in shape, but are

¹ A. J. Evans, *Palace of Minos*, III, p. 277, figs. 186, 187.

² Olynthos Inv. 22. H. 0.084 m., diam. 0.122 m. Unglazed. I am indebted to Dr. D. M. Robinson for permission to include this piece.

pierced not only in the bottom but also on the side one-third of the way up. They were found buried deep below the contemporary ground level.¹

The flower pot found near the Stoa of Attalos (P 6978) offers a fixed point in chronology. Both the earth in which it was set and that which covered it contained eastern and western Terra Sigillata and other wares assignable to the reign of Augustus. The color, the clay, and the fabric are identical with those of a certain class of early Roman unguentaria. The flower pots from the garden, moreover, also find close parallels for their fabric in other classes of the bulbous type of unguentarium that was common at about the turn of the era. The pots themselves are susceptible of no more precise dating.



Fig. 11. Flower Pot from Olynthos

EVIDENCE FOR DATING

The fragments of pottery yielded by the earth in which the plants grew should also help us in dating the garden. Fig. 12 shows how Byzantine deposits overlay the rock above it. It is surprising, therefore, that in at least fourteen cuttings the original earth filling was undisturbed and was almost intact in several others. When, moreover, the flower pot was found in the condition in which it was set in the ground, the sherds in the earth were consistently late Hellenistic. Where the pots were found in fragmentary condition, late Roman or Byzantine sherds appeared in the earth around them.

The ancient pottery from the cuttings for the plants shows only two periods: latest Hellenistic and late Roman. Since the Roman belongs to the time after the Herulian sack of Athens in 267 A.D., it indicates not a period of planting but one of devastation. In

¹ R. Paribeni, *Not. Scavi*, 1902, p. 567. I am most grateful to Cav. Ing. L. Iacono of the Naples Museum for writing me about the Italian examples and giving me references. He mentions flower pots from Pompeii and others from Ponza, but says that none has so far been found in Herculaneum. His article, *Osservazioni sui Viridarii di Pompeii*, 1910, is deposited unpublished in the library of the Naples Museum.

only eight holes of the two main rows was it found to any significant depth and then usually the intrusive cutting was clear. It penetrated the shallow cuttings of Rows A and D in far more instances, but even there sufficient late Hellenistic or early Roman sherds survived to suggest that they formed the first filling. The coins from Rows A and D were all Greek.

The pottery from Rows B and C was abundant. The sherds in Row B were small and scanty, as befits a well-sifted garden bed. Considerable early Hellenistic and even pre-Hellenistic pottery appeared, particularly in Cuttings B 5, 7, 10, 11 *a*, 14, 15, and in A 15. It seems possible that some of these sherds survived from an early planting. The latest sherds must indicate the date of the last planting. For Row B this is the very latest Hellenistic period. Black glaze was degenerate. When this glaze was applied only over the upper part of the exterior surface of saucers the date must be late in the first century B.C. Megarian bowls with long petals, much incised West Slope ware, Gray ware, and late Hellenistic unguentaria were abundant. The very latest pieces (from Cutting B 12), a bit of eastern Terra Sigillata and a rouletted fragment, set the date of the filling down somewhere near the beginning of the Christian era. The lamp fragments consist of one of Type VII and three of Type XVIII of the late second century B.C. Since these sherds are all too small and insignificant to repay illustration, parallels are offered the reader in the publication of Group E from the Agora.¹ The coins support this dating: two are of Athens of the third century B.C., two of New Style, one of the Delian cleruchy after 166 B.C.

In Row C the pottery had the same late Hellenistic character as that in Row B. In several cuttings the pottery was extremely abundant, often including more than a hundred sherds and thus offering much material for study. Most of it finds parallels with that from the same Group E just mentioned but even later wares appear. A "Delian" bowl, "Blister Ware," very late stamped ware, and bits of eastern and western Terra Sigillata may be noted. Eleven fragments from Type XVIII lamps may be dated like those from Group E, but another is unglazed and the base and the shape find parallels only with the most degenerate forms of that class that are found in Augustan contexts. The coins from Row C do not help us, for four are of Greek fabric, but illegible, and one is of Athens of the third century B.C.

The first planting of Row B, then, seems to be earlier than that of the rest of the rows; the last planting of Row B is contemporary with or very little earlier than that of Row C; Row C was filled with earth some time during the reign of Augustus, and Rows A and D, though they probably originated then, were later disturbed.

The precise chronology is not clear. The logical occasion of the first planting seems to have been the elaboration of the sanctuary by the formal enclosure and the introduction of the running-water system in the early third century B.C. This was an active period for public building. It has been suggested for the construction of the Porch and Propylaia of the New Bouleuterion and for some important modification to the Tholos.² It is also the

¹ *Hesperia*, III, 1934, pp. 392 ff. Mr. A. W. Parsons gave me the benefit of his knowledge of the Roman pottery, most of which can be studied only in the unpublished Agora material.

² *Hesperia*, VI, 1937, p. 167.

date of the first inventory of the priests of Asklepios and of expenditures for the gods and for their festivals.¹ One of these festivals, the Chalkeia, was in the hands of the metal-workers. In its earlier stages, it is recorded as in honor of Athena, in its later period, Hephaistos is also mentioned. It seems not unreasonable to connect this festival with the temple of Athena and of Hephaistos which the metal-workers erected in the heart of their colony. Nor does it seem impossible to associate the beautification of the sanctuary and hill-top with this revival of Athenian attention to their gods.²

As has been noted, however, the chief period of the garden falls considerably later. History offers an explanation of this renovation of the temple garden in the late first century B.C. The excavations have revealed that the large Hellenistic building along the north side of the precinct and even the terrace wall behind it were rebuilt with concrete at no distant date. Their destruction can be accounted for only by the visit of Sulla to Athens, March 1, 86 B.C.³ His soldiers, after making a breach in the wall just west of this region, committed every sort of violence to the citizens and to their buildings. No doubt Hephaistos was forced to contribute "loans" from the temple treasure to those soldiers. Any produce of his garden, had it escaped the needy citizens during the siege, would also have been confiscated by the army that had already cut trees in the Lyceum and at the Academy.

After this desolation, Athens took more than two decades in which to recover.⁴ Then in the Agora region began enlarging, paving, and other planting.⁵ On the eastern slope of Kolonos Agoraios, as we have noted, a stairway from the market-square to the temple was among the improvements. The garden, in its greatest extent, clearly belongs to this program. Its neat greenery must have been appreciated by the tourists of this period. But its life could not have been long. The undisturbed condition of the flower pots implies that they are the representatives of the last systematic planting. Some time after the reign of Nero, but still in the first century A.D., the new branch of the water-system went out of use.⁶ Very possibly for lack of water the garden died. Or possibly plants with shallow roots or small flowers were substituted to keep the place green till the coming of the barbarians and of the Christians.

¹ W. S. Ferguson, *Hellenistic Athens*, 1911, pp. 161 ff.

² Deubner, *Attische Feste*, pp. 35 ff., considers that the connection, mentioned in late times, of Hephaistos with the festival of the Chalkeia is not significant, for Athena (called Ergane and also Archegetis in this relation) was the chief deity. Is it not possible, however, that this Athena is she who shared both the temple with Hephaistos and his festival, the Hephaisteia? Cf. *I.G.*, I², 84 (421/0 B.C.) which is usually interpreted as referring to the goddess in our temple. Surely to this Athena and Hephaistos would a festival of the bronze-workers be most suitably dedicated. Actually, *I.G.*, II², 674. 16 (277/6 B.C.) records a sum paid in connection with the Chalkeia just at the time when we trace expenditures on our sanctuary.

³ Ferguson, *Hell. Ath.*, pp. 450 ff. Cf. *Arch. Anz.*, XLV, 1930, col. 89 for the burning of the Pompeion at the Dipylon.

⁴ Ferguson, *Hell. Ath.*, p. 456.

⁵ See above p. 409.

⁶ A coin of Nero was found beneath the new branch of the water-system, yet the latest pottery that filled its man-holes dates in the first century A.D. Mr. Rodney Young informs me that the main branch stayed open into the first half of the second century A.D.

HORTICULTURE

In order to restore the planting, we must face the final and essential question: what grew in this garden? It is tempting to picture the formal decorative planting with which present taste sets off architecture. But present taste must not dictate schemes or plants that were unknown to the temple gardeners. We must, therefore, first consider ancient fashions in gardening and then ancient horticultural usage before we attempt to choose our plants.

A surprising amount of information about ancient horticulture has survived.¹ The earliest garden so far excavated surrounded a festival hall at Assur; it is datable to the early eighth century B.C.² Over two hundred cuttings were found, not unlike ours, but circular in shape and joined by irrigation canals. The excavators restore rows on rows of small fruit trees, possibly pomegranates, arranged with what must have been an impressive formality. Possibly this tradition of the formal garden was taken over by the Persians to astonish the Greeks of the late fifth century B.C. Lysander, on a visit to the garden of the Persian king, expresses his admiration of its geometry even more than of its horticulture (Xenophon, *Oec.*, IV, 21 f.).

ὥς καλὰ μὲν τὰ δένδρα εἶη, δι' ἴσον δὲ [τὰ] πεφυτευμένα, ὁρθοὶ δὲ οἱ σίτχοι τῶν δένδρων, εὐγώνια δὲ πάντα καλῶς εἶη, . . . εἶπεν . . . πάντα μὲν ταῦτα θανμάζω ἐπὶ τῷ κάλλει, πολὺ δὲ μᾶλλον ἄγαμαι τοῦ καταμετρήσαντός σοι καὶ διατάξαντος ἕκαστα τούτων.

When the king claimed all this as his own work, Lysander, looking at his beautiful perfumed robes, at the splendor of his necklaces and bracelets, was incredulous. The king assured him that he never sat down to a meal without having first sweated at some task of war or of horticulture.

By Hellenistic times formal gardens had become popular and works entitled *κηπουρικά* instructed the gardener.³ Certain cities were famous for their gardens, chiefly in Sicily and in the East, but also in Greece, notably Thebes, Kleonai, and Sikyon. Private individuals also had their gardens: that of Epikouros was willed to the city of Athens, that of Theophrastos became the *περίπτεος* of the Peripatetics. Attalos III, that eccentric Perga-

¹ Three general articles give abundant information on the garden in antiquity: Daremberg and Saglio, *s. v. Hortus* (Lafaye), 1899; Marie Gothein, "Der griechische Garten," *Ath. Mitt.*, XXXIV, 1909, 100-144. She has also done a history of gardens in several volumes that was not available to me. Pauly-Wissowa, *Realenc.*, *s. v. Gartenbau* (Olck), 1912. Giuseppe Spano is preparing an extensive work on ancient gardens.

² Andrae, *Mitt. der deutschen Orient-Gesellschaft*, 33, June, 1907, pp. 17 ff. 30 ff., Figs. 7-12. Cf. H. Thiersch, *Pharos*, 1909, p. 220 whose suggestion that the holes were cut for awning posts is invalidated by the irrigation arrangements. I owe these references to Prof. Valentin Müller.

³ Pliny, *N.H.*, Int. Bk. XIX. Cf. (Plato) *Minos* 316 e τὰ περὶ κήπων ἐργασίας συγγράμματα καὶ νόμιμα. Schmid, *Griechische Literaturgeschichte*, VII, 1, p. 706 dates this dialogue in the fourth century B.C.

For gardens in Attica, see P.-W., *Realenc.*, *s. v. Gartenbau*, cols. 783 ff. Though many private gardens are mentioned in Aristophanes and the other comic dramatists, Demosthenes, etc., they have not appeared in the excavations of Delos, Priene, and so forth.

mene prince, cultivated his own garden, but unlike that of the Persian, his garden produced only a harvest of poisons and drugs.¹

This craze for horticulture was brought back to Rome by the soldiers from their eastern campaigns. Soon the moralists of Italy began to decry the luxurious taste.² Hothouses were developed to acclimatize importations.³ Columella refers to the art of gardening as once neglected but now (in the reign of Nero) much honored.⁴ We read of these gardens in the works of Pliny and of his contemporaries: vast estates laid out in complicated mathematical patterns. Varro recommends a rectilinear system of planting (I, VII, 3):

“Praeterea quae arbores in ordinem satae sunt, eas aequabiliter ex omnibus partibus sol ac luna coquunt. Quo fit ut uvae et oleae plures nascantur et ut celerius coquantur.” This order is suggested so that the trees may be equally warmed by the sun and moon, thus producing more and earlier grapes and olives.

Vergil (*Georgics*, II, 285 ff.) lays out his paths in lines as straight as those of companies in battle, but not purely for spiritual comfort:

“Non animum modo uti pascat prospectus inanem,
Sed quia non aliter viris dabit omnibus aequas
Terra neque in vacuum poterunt se extendere rami.”

These schematic gardens set off the “nemora tonsilia,” that is, the shrubs which were cut into fantastic shapes—geometric or animal, or sufficiently ambitious as to render a hunt or a naval battle or to spell the name of the artist or of the owner. This rococo invention is attributed to one Matius, a friend of Augustus.⁵ In the time of Augustus and a little later, we note painted frescoes, as at the House of Livia, and literary compositions, as Vergil’s *Georgics*, which contain something of ornamental gardens as well as of agriculture. Poetry retains for us the fragrance and charm of these gardens which were contemporary with that of Hephaistos (*Georgics*, IV, 116 ff., especially 130 ff., which gives us the common flowers).

“Hic rarum tamen in dumis olus albaque circum
Lilia verbenasque premens vescumque papaver
Regum aequabat opes animis, seraque revertens
Nocte domum dapibus mensas onerabat inemptis.
Primus vere rosam atque autumnos carpere poma . . .
. . . illi tiliae atque uberrima tinus,
Quotque in flore novo pomis se fertilis arbor
Induerat, totidem autumnos matura tenebat.
Ille etiam seras in versum distulit ulmos
Eduramque pirum et spinos iam pruna ferentis
Iamque ministrantem platanum potantibus umbras.”

¹ Plutarch, *Demetrius*, XX; Justin, XXXVI, 4, 3.

² e.g. Horace, *Odes*, II, 15; Pliny, *N. H.*, XIX, 50 f.

³ Seneca, *Epistles*, 122, 8.

⁴ Bk. X, *Praef.* 6.

⁵ Pliny, *N. H.*, XII, 13.

"Yet as he planted herbs here and there among the bushes, with white lilies about and vervain and slender poppy, he matched in contentment the wealth of kings, and returning home in the late evening would load his board with unbought dainties. He was first to pluck roses in spring and apples in autumn... Luxuriant were his limes and wild laurels (or pines) and all the fruits his bounteous tree donned in its early bloom, full as many it kept in the ripeness of autumn. He, too, planted out in rows elms far grown, pear-trees when quite hard, thorns even now bearing plums, and the plane already yielding to drinkers the service of its shade." (Translation by Fairclough.)

Pompeii and Herculaneum have preserved archaeological evidence for the gardens of this period. By cleaning out the holes left in the earth when the roots or trunks of trees or plants decayed and by pouring in plaster in order to take a cast, the Italian excavators have sometimes been able to identify at least the families of these plants. In the House of the Centenary they found the plan of a garden, lacking symmetry, but merely setting flowers and small plants around the fountain and in front of the columns. There were also traces of a wooden trellis for an arbor between the columns of the peristyle and around the fountain.¹ In another house the plant holes grouped themselves around a table of colored marble and a low water basin. On the north and east sides, the holes for wooden posts, each wedged in its hole by a sherd, imply a pergola facing south and west.² Many other such gardens were found, of which the most sensational is that of M. Loreius Tiburtinus in the New Excavations in which a long *piscina* extends through an orchard.³ The excavators have taken great pains to restore the original plants or at least those that might well have grown in these gardens. Thus it is possible for us even now to form a clear picture of the gardens of the very period in which we are interested.

The taste for horticulture continued until the very end of Roman civilization. In the works of Alkiphron, Longos, Libanios, and Achilles Tatius,⁴ we read of luxuriant gardens as the settings for sentimental scenes. Rich and poor, public building and temple alike enjoyed the refreshment of shade and flowers.

Now the garden of Hephaistos was public or rather sacred property. Information about temple gardens has survived only in literature and in inscriptions. Like the other more famous garden in Athens, that of Aphrodite where stood the statue of Alcamenes, ours was probably known as a *κῆπος*.⁵ The *ἄλλος* or temple grove was more pretentious, including large stands of timber, pasturage, and tilled lands like those of a mediaeval monastery.⁶ But because our garden was a temple garden, its care and protection must have fallen under the same laws.

¹ *Not. Scavi*, 1902, p. 568.

² *Not. Scavi*, 1905, pp. 87, 91.

³ T. Price and A. W. van Buren, "The House of Marcus Loreius Tiburtinus," *Mem. Am. Acad. Rome*, XII, 1935, pp. 151 ff. Professor van Buren also gave me many valuable references. Cf. *Not. Scavi*, 1910, pp. 253 f.; p. 315, fig. 1.

⁴ Alkiphron, fr. 6, 1—9; Longos, *Pastoralia*, II, 3 ff., IV, 1 ff.; Ps. Lucian, *Am.* 12; Libanios, XI, *Antiochokos*, I, 338 ff.

⁵ Pausanias, I, 19, 2.

⁶ A full discussion, D. and S., *s. v. Lucus* (Thédénat), pp. 1351 ff.

Pausanias mentions temple groves of ash, cypress, evergreen oak, plane trees, and pines.¹ At the famous sanctuary of Apollo at Gryneion, he remarks (I, 21, 7):

κάλλιστον ἔλσος δένδρων καὶ ἡμέρων καὶ ὅσα τῶν ἀκάρπων δομῆς παρέχεται τινα ἢ θέας ἡδονήν. (A most beautiful grove of trees, both cultivated and those which, without bearing fruit, are pleasant to smell and to see.)

In these groves often grew famous trees upon which votive tablets were hung.² The tree or plant associated with the god usually formed the essential character of the garden, but no rigid connection between deity and plant was maintained. And Hephaistos seems to be the one god without a plant of his own.

Inscriptions show us that in sacred precincts practical need dictated planting. Beside this need existed also a religious impulse. Archedamos, at Vari, besides decorating a whole cave and inscribing his name everywhere founded a less enduring monument: *κάπον νύμφαις ἐφύτευσεν*.³ But the economic necessity seems to have dominated. At Delos, in 434 B.C., the Amphictyony ordered the leasing of the sacred lands, gardens, and houses—all doubtless for tithes and revenues.⁴ In Amorgos, in the fourth century, a sacred lease specified that the lessee must plough the salt lands, plant and cultivate vines and figs, tend to walls, fences, and manure.⁵ He must plant vines according to the specifications of and in the presence of the temple board:

τὰς ἀμπέλους τὰς ἐκκοπτομένας ἀποδιδόσθωσαν οἱ νεωποῖαι. τὰς τράφας (= τάφρους) δρύξει . . . ὅπου ἂν σταθμῇσονται οἱ νεωποῖαι τετράποδας καὶ τρίποδας· καὶ τὰ φντὰ ἐμβαλεῖ παρόντων τῶν νεωποιῶν ἀμπέλους εἴκοσι δι' ὁπόσου ἂν κελεύσιν οἱ νεωποῖαι, συνκᾶς δέκα καθ' ἕκαστον τὸν ἐνιαυτόν.

The perfect description of a temple surrounded by its lands may be read in the *Anabasis* (V, 3, 12). Xenophon, with the prize-money that he won on his Persian expedition with the ten thousand, bought land at Skillos near Olympia where he built a temple to Artemis. There, still awaiting the excavator, this small model of the Ephesian temple lies; it was immediately surrounded by fruit trees. The lands included meadows and woods, hunting, pasturage, and a small river. At the festival the goddess furnished the visitors from her lands with barley meal, loaves, wine, sweetmeats, and a share of the animals from sacrifice or chase. Beside the temple, Xenophon set up an inscription, warning the lessee in the care of the temple:

Ἱερὸς ὁ χώρος τῆς Ἀρτέμιδος, τὸν ἔχοντα καὶ καρπούμενον τὴν μὲν δεκάτην καταθεῖν ἐκάστου ἔτους· ἐκ δὲ τοῦ περιττοῦ τὸν καθὼν ἐπισκευάζειν. ἂν δέ τις μὴ ποιῇ ταῦτα τῇ θεῷ μελήσει.

¹ VII, 5, 10; II, 13, 3; II, 11, 4; II, 36, 8; 37, 1; VII, 22, 1.

² Gothein, *Ath. Mitt.*, XXXIV, 1909, pp. 115 ff.

³ *I.G.*, I², 784. Cf. Michel, *Recueil d'inscriptions grecques*, no. 1228, II century B.C. A Greek dedicates [τὸν] βω[μ]ὸν καὶ [τὸν] ἀνθεῶνα θεοῖς.

⁴ *I.G.*, I², 377: [τὴν] γῆν τὴν ἐν Ἀθήναις τὴν [ἐξ] ἑρὰν ἐμίσθωσαν καὶ τοὺς κήπους καὶ τὰς οἰκίας καὶ . . .

⁵ *I.G.*, XII, 7, 62.

Similarly severe regulations are familiar.¹ They protected even the temple vine-props, which were tempting to the thief.² When suit was brought against rich Corcyraeans for cutting the vine-props in the sanctuary of Zeus and Alkinoos, the fine was large (Thucy., III, 70, 4) *ζημία δὲ καθ' ἐκάστην χάρακα ἐπέκειτο στατήρ*. For these props seem to have

supported the very life of the vine³ which must have formed a "shady walk" such as Kimon planted at the Academy.⁴ These walks are recommended by Vitruvius (V, 9, 5) for planting at all the temples of the gods.⁵ He gives two reasons: "since a refined and rarefied air comes from green things" they are good for the eyes, and because such walks are storage places for wood which can be used in times of siege (and so Sulla found them).

Besides the general history of horticulture, numerous details of ancient usage in the cultivation of orchard and of vineyard have come down to us. Less has been preserved concerning the care of flowers. We have, however, the details of the plan of the Greek, presumably Hellenistic, pleasure garden.⁶ The main alley (ours must lie between Rows B and C) was called the *περίπατος* or *δρόμος*. This should be wide enough, as is ours, to permit the passage of a litter. Thence ran

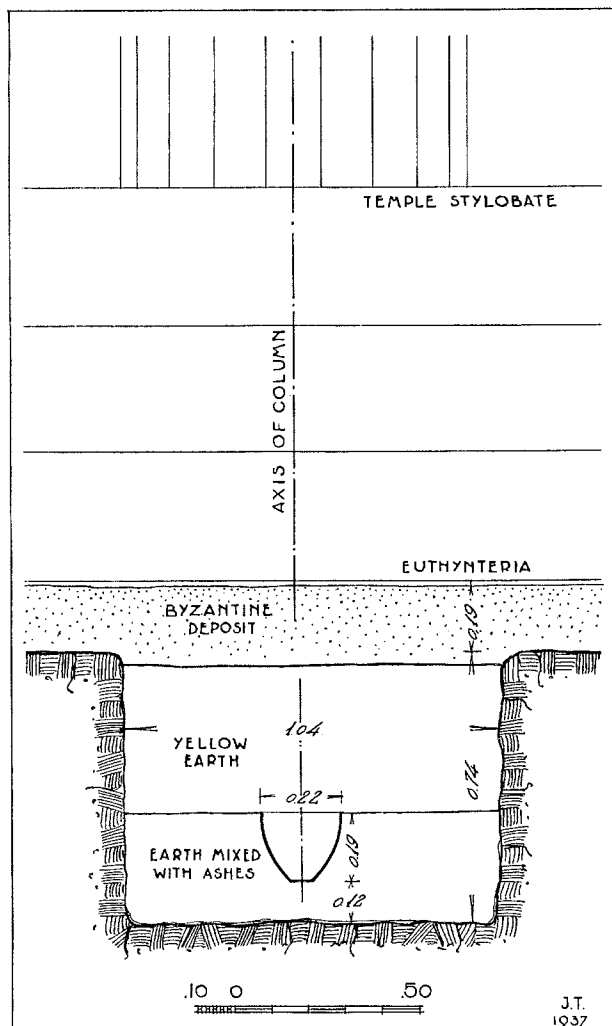


Fig. 12. Section through Cutting B3

¹ *I.G.*, XII, 7, 62; sheep that pasture within the precinct become the property of the goddess. Cf. Prott-Ziehen, *Leges Sacrae*, II, 1, no. 34 for bibliography.

² Cf. Aristophanes, *Vesp.* 1201.

³ *Ibid.*, 1291; *Ach.* 985: τὰς χάρακας ἦπτε πολὺ μᾶλλον ἔτι τῷ πυρὶ, ἐξέχει δ' ἡμῶν βίβη τὸν οἶνον ἐκ τῶν ἀμπέλων, cf. Theophrastus, *H. P.*, II, 1, 2.

⁴ Plutarch, *Cimon*, 13: ἄλσος ἡσκημένον ὑπ' αὐτοῦ δρόμοις καθαροῖς καὶ συσκόλοις περιπάτοις.

⁵ Cf. *Frag. Hist. Graec.*, II, p. 259: Dicaearchus, 23: τὴν μὲν ἀγορὰν ἔχουσα κατὰ δένδρον πᾶσαν, στοαῖς ἀνειλημμένην διαταῖς (at Anthedon).

⁶ D. and S., s. v. *Hortus*, pp. 284 f.

side paths or *παράδρομίδες*. Flower beds were, in Roman times at least, edged by bricks arranged in elaborate designs. The columns or aligned trees were encircled by thistles or periwinkles. The wall that enclosed the garden should be obscured by hedges or trained vines. A hedge was recommended as superior to a wall in cheapness and durability.¹ We may, if we will, place such a hedge along the east end of our garden.

But what may we plant in the rectangular cuttings? Fig. 12 shows a section through a cutting that contained a flower pot (B 3). At first sight, at least to us, the method of planting seems strange. The pot, like all the others, is set in the centre of the hole (Figs. 13–15). Like every one of its companions, it was broken before placement (Fig. 16). The earth in which it was set lay flush with its lip; this earth had been well-sifted and it seemed to contain ashes. It is probably what modern Greek gardeners call *σταχιόχωμα*—ash-earth, to hold the moisture and to fertilize the plant. The bottom of the pot usually rested *ca.* 0.12–0.15 m. above the bottom of the cutting. Its top lay *ca.* 0.30–0.50 m. below the ancient ground level as it is shown on the temple euthynteria. Above the pot the entire cutting was filled in with light yellow earth.

A clarifying passage has been preserved by Cato (*De Agri Cultura*, LII, repeated CXXXIII):

Quae diligentius propagari voles, in aullas aut in qualos pertusos propagari oportet et cum iis in scrobem deferri oportet. In arboribus, uti radices capiant, calicem pertundito, per fundum aut qualum ramum, quem radicem capere voles, traicito; eum qualum aut calicem terra inpleto calcatoque bene, in arbore relinquito. Ubi binum fuerit, ramum sub qualo praecidito. Qualum incidito ex ima parte perpetuum, sive calix erit, conquassato. Cum eo qualo aut calice in scrobem ponito. Eodem modo vitem facito, eam anno post praecidito seritoque cum qualo. (When you wish to layer more carefully, you should use pots or baskets with holes in them and these should be planted with the scion in the



Fig. 13. Cutting B 3 partially excavated

¹ Columella, XI, 3, 2–7.

trench. To make them take root while on the tree, make a hole in the bottom of the pot or basket and push the branch that you wish to root through it. Fill the pot or basket with earth, press it in thoroughly and leave it on the tree. When it is two years old, cut off the branch below the basket, cut the basket down the side and through the bottom, or, if it is a pot, shatter it and plant the branch in the trench with the basket or pot. Use the same method for the vine, cutting it off the next year and planting it with the basket.)



Fig. 14. Cutting B 14 in relation to the Hephaisteion



Fig. 15. Cutting B 14, showing Flower Pot *in situ*

Certainly Pliny is echoing Cato—although he writes less clearly—when he gives directions for layering (*N. H.*, XVII, 97 f.):

“Propaginum duo genera: ramo ab abore depresso in scrobem quattuor pedum quoquo et post biennium amputato flexu plantaue translata post trimatum, quas si longius ferre libeat, in qualis statim aut vasis fictilibus defodere propagines aptissimum, ut in his transferantur. Alterum genus luxuriosius, in ipsa arbore radices sollicitando traiectionis per vasa fictilia vel qualos ramis terraeque circumfartis, atque hoc blandimento inpetratis radicibus inter poma ipsa et cacumina—in summa etenim cacumina hoc modo petuntur—audaci ingenio arborem aliam longe a tellure faciendi; eodem quo supra biennii spatio abscisa propagine et cum quasillis sata.” That is, either the branch is layered into the

ground and transplanted thereafter by means of a basket or pot, or else, a more expensive method, it may be layered upon the tree itself, by drawing the root through the pot or basket, thus by a daring trick inducing a new tree to grow high among the fruit of the old. After two years this layer may be cut off and planted with the basket.

This is, indeed, a well known practice even to this day. The *Encyclopaedia Britannica*¹ gives similar instructions for "layering by circumposition." When the branch to be slipped or "layered" is too high to admit of being turned directly down into the earth beside the parent tree so that it may take root while still attached to the parent, a stand is prepared on the branch to support the sawn flower pot or box. "But gardeners often dispense with



Fig. 16. Cutting B 7, showing Flower Pot *in situ*

the pot." A recent French treatise² discusses the layering of a vine into a basket "marcotte en panier," which should measure *ca.* 0.25–0.30 m.—a little longer than our pots. The basket should be of osier sufficiently good to last about a year so that when it is placed in the earth, it will rot, thus allowing the layer freely to extend its roots.

It seems probable that the flower pots found in the garden of Hephaistos were used for layering. This hypothesis explains the depth at which our pots were buried and the same holds for those found in the House of the Centenary at Pompeii (see above p. 414). In many cases the holes in the pots are too big for mere drainage, or, if originally small, were deliberately enlarged later. Clearly these large holes were to accommodate the branch that was passed through them for layering. It seems probable that pots would be used to

¹ Eleventh Edition, 1910, *Horticulture*, p. 755.

² J. A. and A. F. Hardy, *Traité de la taille des arbres fruitiers*, pp. 265 ff.

layer not low-growing plants or vines, but trees, or shrubs high enough to require "layering by circumposition." Possibly also baskets were used in the rock-cuttings that did not contain flower pots. Cutting B 9 showed clearly an oval patch of dark earth which might well be interpreted as the traces of a rotted basket (Fig. 17).

Only little more evidence has survived that can be added to that which we have considered. The damp earth, still nourishing surface grasses and weeds, did not retain the ancient root marks as they were preserved in Pompeii.¹ But throughout all the earth appeared bits of carbonized vegetable matter, some as thick as a finger, which upon microscopic analysis turned out to be roots.² They were unfortunately too far deteriorated to



Fig. 17. Cutting B 9, showing dark patch of earth

permit of ascription to any single plant, but in certain particulars they resembled the roots of the vine or ivy.

In Cutting B 14 the tip of a bronze blade was found in the earth. It is markedly curved and its tip is hooked (Fig. 18).³ It suggests the knife described at length by Columella (IV, 25) which he calls the *falx vinitoria*. This pruning-hook or bill-hook had many parts, each named, of which mediaeval drawings survive.⁴ The shape of our bit is not unlike that of the *scalprum* which was used to smooth down—*allevare*— the cut made

¹ The holes that appear in the earth in Cutting B 3 (Fig. 12) are the burrows of ground animals.

² The analysis was undertaken separately by Professors Politis and Krimba. The ivy is not the English or American ivy, but the ancient *κιστός*, a member of the grape vine family which relationship its leaf betrays.

³ Agora B 388; P. L. 0.024 m. The tip only is preserved, the broader side is broken.

⁴ D. and S., s. v. *Falx*, Fig. 2865.

in pruning. More probably is it the tip from a simple pruning-hook such as have been found in Etruria, Pompeii,¹ and in England.² The two examples from Luni in Etruria (Fig. 19 *g*) are so close to our specimen as to leave no doubt that it was a pruning-hook, probably to be fitted with a short handle; it is a rarer form than the less curved pruning-hook shown on Fig. 19 *b*.

A glance at the plan of the garden (Fig. 1) shows that a serious problem presented itself to the temple gardener. For along the west and north sides of the temple were normal planting conditions, that is, unlimited earth for roots. The gardener would presumably have chosen his plant as suitable for spacing of an intercolumniation, *ca.* 2.60 m., which is very close to nine Greek feet. This interval Theophrastos (II, 5, 6) names as proper for the pomegranate, myrtle, and laurel. But on the south side the gardener was restricted by having to set his plants into holes in the rock. Now for the vine and the fruit-tree, the size of the holes to be dug in the soil is clearly specified in ancient writings. Xenophon (*Oec.*, XIX, 3) gives two and a half feet for depth and two feet for breadth. Pliny (XVII, 80) and Columella (V, 5, 2) extend the depth to three or four feet. This the *Geoponica* (V, 12) increases to four feet as a minimum (showing how gardeners gradually learned more as time went on), Theophrastos, though he knows better himself, reveals the ignorance of the gardener of his day (II, 5, 2):

λέγουσι δέ τινες ὡς οὐδεμία κατωτέρω διίχνεϊται τριῶν ἡμιποδίων. δι' ὃ καὶ ἐπιτιμῶσι τοῖς ἐν μείζονι βάθει φυτεύουσιν.

(Some say that no root goes deeper than one and one-half feet and blame those who plant deeper.)

It is interesting to note how closely these dimensions tally with those of our cuttings. In other words, the gardener spaced and dug his holes as though he were digging them in earth and not in rock. In order to give room for cultivation, he followed the system recorded by Columella (IV, 4), namely that of cutting vine holes square with perpendicular sides, a method unknown to us. "Id enim praecipue observandum est ne similis alveo scrobs sed ut expressis angulis velut ad perpendiculum frontes eius dirigantur. Nam vitis supina et velut recumbens in alveo deposita, postea cum ablaqueatur, vulneribus obnoxia est." The holes cut for trees should be wider at the bottom than at the top (V, 10). Actually in a number of the cuttings in Row B the sides have been hacked out to widen the bottom.



Fig. 18. Bronze Blade

¹ G. Vitali, *Studi Etruschi*, V, 1931, p. 429, fig. 2; cf. *ibid.*, VII, 1933, p. 321, figs. 1–14. I owe this reference to Miss Pease.

² W. Flinders Petrie, *Tools and Weapons*, London, 1917, pl. LVII, 60–67.

If we look carefully, we note other traces of the struggles of the gardener to keep the plants in Row B on the south side in good condition. We remarked that the first eight holes were larger, particularly deeper, than the rest and that most of the following cuttings were enlarged by the simple expedient of placing a supplementary rectangular cutting beside the original. Cutting 11 *a* was also inserted to supplement Cutting 12, which was set in shallow bedrock. Similarly, Cuttings B 14, 15, and A 15, falling in shallow bedrock, would permit the roots of the plant to extend and did not need enlargement. The occurrence of two pots in one hole shows that defective plants had soon to be replaced. And finally the use of pots for layering, that expensive method, indicates that every precaution



Fig. 19. Pruning-knives from Etruria (after *Studi Etruschi*, V, p. 429, fig. 2)

was needed to start the plants. Indeed, the lack of thorough replanting after the last Augustan attempt suggests that, on the south side at least, the garden was soon given up as a failure.

The purpose of layering into pots for this garden was clearly to start the plants under as good auspices as possible and to assure rapid growth. What plant is implied by the process of layering into pots? The resinous evergreens that our present taste would prefer are not layered. Cato lists for our convenience¹ as desirable for layering: the olive, fig, pomegranate, quince, and all other fruit trees, the laurel, the myrtle, Praenestine nuts, the plane, and the vine. The larger of these trees are eliminated from our consideration by the

¹ Cato, *de Agri Cultura*, LI; CXXXIII, he adds "Cyprian and Delphian laurel" plum, Abellan nuts. Pliny, *N.H.*, XVII, 96; cf. *Geoponica*, X, 3, which lists for layering, as well as for other ways of propagating, the following: apple-trees and their like, as the cherry and jujube-tree, a thin shelled nut, the periwinkle, and the myrtle, medlar, almond, pear, mulberry, citron, olive, quince, black and white poplar, ivy, chestnut, fig, pomegranate, fig-mulberry, butcher's broom, vine, box, willow, laburnum, apricot, plum, palm, pistache, plane, and laurel.

inadequate size of the cuttings and by the absence of sufficient water on the rocky plateau. Small fruit trees, such as the pomegranate or quince, would grow but probably not bear much fruit or reach a healthy maturity in the restricted cuttings. Remembering their probable use at Assur (see above p. 412) and that the given spacing suits them, we must consider them as a possibility.

More probable, however, for an Augustan garden are the shrubs and half-shrubs that lend themselves to topiary work.¹ Of these, the types of plants that are layered must be considered. They are: the laurel, box, myrtle, and chamaiplatanos or dwarf plane. The latter, however, could hardly grow so far from ground water. The box, although a great favorite in Italy, seems not to have flourished freely in Greece. It is, however, noted by Theophrastos as quick-growing, leafed like the myrtle, and suitable for exposed, rocky places.² The myrtle needs much manuring and watering, which makes it less suitable for the thin soil and the dry site than the laurel. The common laurel and the Thasian laurel (*ruscus hypoglossum*) are better candidates for the given position and great favorites in Greek gardens. This shrub could reach a height of 1.50–2.50 m. and show red or white flowers against evergreen foliage. Trimmed neatly (we hope not into fantastic shapes!) it would accent, if modestly, the rhythm of the columns.

What may we place in Row C? It has been noted that the flower pots were set in Row B and not in Row C. This suggests a difference in the care and method of planting between the two rows but it does not necessarily imply a different plant. Another gardener might discard the pot or might use a basket. But when to this difference in method of planting is added a difference in the size of the holes, two types of plant seem to be implied. Row C would have required a smaller plant to suit the smaller and shallower cuttings. Hence it follows that the height of the plants was graded downward from the temple to the precinct wall. The subordinate Rows A and D must have held the subordinate plants. Their shallowness suggests that they were dug at a time when the ground level had risen, so that the roots of the plants could reach out into the earth over the level surface of bedrock.

The bits of roots that were analyzed by the horticulturists as probably coming from the vine or ivy should now be considered. Theophrastos gives us a suggestion. He remarks (*C. P.*, III, 10, 8; cf. *H. P.*, I, 6, 3 f.) that pomegranate and apple trees because they have few and shallow roots, require but light earth and live but a short time, are suitable for planting together with the vine. Though he realizes that all parasites harm a tree, many ancient gardeners did plant the vine along the fruit trees, that is the vine called the *ἀραδενδράς*. From it a wine was made.³ For although the Greek vine does not seem to have been trained regularly, as in Italy, to grow on posts and trellises, it is often thus shown. Xenophon points out (*Oec.*, XIX, 17 f.) that one should follow the suggestion of Nature,

¹ Cf. P.-W., s. v. *Gartenbau*, col. 830 for a list of common plants for topiary work.

² *H. P.*, III, 3, 1; 6, 1; 15, 5.

³ D. and S., s. v. *Vinum*, p. 918. Theophrastos, *C. P.*, I, 10, 4; III, 10, 8; V, 5, 4.

noting when the vine tries to climb a tree and providing it with a support. In Demosthenes' time these climbing "tree-vines" seem to have been a regular feature of the orchard.¹ Hieron, on his fantastic ship, walked the decks in the shade made by ivy and vines that grew in pithoi, watered by lead pipes (Athen., V, 207 d):

ἐν οἷς κῆποι παντοῖοι θαυμασίως ἦσαν ὑπερβάλλοντες ταῖς φυτεῖαις, διὰ κεραμίδων μολυβδινῶν κατεστεγνυμένων ἀρδενόμενοι, ἔτι δὲ σκηναὶ κιτιοῦ λευκοῦ καὶ ἀμπέλων, ὧν αἱ ῥίζαι τὴν τροφήν ἐν πίθοις εἶχον γῆς πεπληρωμένοις, τὴν αὐτὴν ἀρδενσιν λαμβάνουσαι καθάπερ καὶ οἱ κῆποι. αὗται δὲ αἱ σκηναὶ συνεσκίαζον τοὺς περιπάτους.

In Roman times, vines and ivy were commonly planted among trees or beside columns, to "form their ringlets" and to thicken the shade by making a pergola or *καλύβη*.²

Though the cuttings are inadequate for a large pergola vine, a small variety could grow, weakly, in such a hole. After all, the vine and ivy made shade for Hieron even when cramped in pithoi. From Row D a vine could be trained on posts to the precinct wall on one side, and to the trees on the other. The frequent allusions to vine-props in sanctuaries suggest that the priests or the lessees of temple gardens considered grapes and wine a requisite.

For the planting and care of vines a great body of ancient instructions has been preserved, chiefly in Book V of the *Geoponica*. Many details are of interest for us. The method of choosing the earth reads surprisingly like a modern soil test (*Geoponica*, V, 7): "To choose the earth in which to plant the vine, take a clod, put it in a glass vessel, mixed with rain water. Stir it thoroughly. When you see through the glass that the earth has settled, then taste the water and the taste will be that of the wine. For if it smells or tastes bitter, salty, or bituminous or otherwise bad, don't use it, but if sweet, plant in it." For planting, various points must be noted (V, 18 ff.): the slip should be smeared with cow's dung; acorns and broken vetch and licorice should be put in as fertilizer. A handful of dried grape-stones should be dropped in each hole, from the black grape for the white and *vice versa*. Bank the vine well with straw to keep it warm during the winter.

¹ Demosthenes, LIII, 15: ὅσα ἐντὶ φυτὰ ἀκροδρόνων γενναῖα ἐμβεβλημένα καὶ τὰς ἀναδενδράδας ἐξέκοψε...

² Cf. Longos, *Pastoralia*, IV, 2 f. (II cent. A.D.?):

εἰσέρωθι ἀμπέλον ὕψηλην, καὶ ἐπέκειτο ταῖς μηλέαις καὶ ταῖς ὄχραις περκαύουσα καθάπερ περὶ τοῦ καρποῦ ἀνταῖς προσερχόουσα . . . ἦσαν δὲ κυπάριττοι καὶ δάφναι καὶ πλάτανοι καὶ πίτυς· ταύταις πάσαις ἀντὶ τῆς ἀμπέλου κιτιὸς ἐπέκειτο . . . ἐν μετεώρῳ δὲ οἱ κλάδοι συνέπιπτον ἀλλήλοις καὶ ἐπῆλ-
λαττον τὰς κόμης.

Cf. Achilles Tatius, I, 15 (III cent. A.D.): ἀμπέλαι δὲ ἐκατέρωθεν τοῦ δένδρου, καλὰμοις ἐποχοῦμεναι τοῖς φύλλοις ἔθαλλον καὶ ὁ καρπὸς ὥραιαν εἶχε τὴν ἄνθην καὶ διὰ τῆς ὁπῆς τῶν καλὰμων ἐξεκρέματο καὶ ἦν βόστρυχος τοῦ φυτοῦ. The formal built pergola seems to have been Roman rather than Greek, D. and S., s. v. *Pergula*. A particular vine, the *vitis pergulana*, grew on it, cf. Columella, III, 2, 28.

Ps. Lucian, *Am.* 12, 410 (II cent. A.D.): παντὶ γε μὴν δένδρῳ περιπλέγδην ὁ φίλερως προσεῖρπυζε κιτιὸς· ἀμφιλαφεῖς ἀμπέλαι πυκνοῖς κατήγηγντο βότρυσιν. "Close to every tree the ivy clung lovingly and the vines, spreading wide, were hung with thick clusters of grapes."

After so many hundreds of years, we can scarcely hope to form a more exact picture of the garden. But we may first plant a small fruit tree like the pomegranate and a sizable shrub like the laurel in the two main rows on north and south and extend one row across the back of the temple. Then we may suppose that after the straining days of Sulla's campaign, the trees or shrubs were replanted and clipped in accordance with the formal taste of the day and that vines and ivy were planted with them and beside them to stretch their shade to the precinct wall, to the trees and to the columns. A hedge would close the eastern end; flowers would follow the line of the wall and mark the edge of the walks. Birds would gather among the leaves as they do today in the modern park just west of the temple. Longos (*Pastoralia*, IV, 2) describes for us the garden of Hephaistos:

σκιὰ τε ἦν θέρος καὶ ἡρος ἔνθῃ καὶ μετοπώραν ὁπώρα, καὶ κατὰ πᾶσαν ὥραν τροφή
(In the summer there was shade, in the spring flowers, and in the autumn fruits,
and for every season its own charm.)

DOROTHY BURR THOMPSON