



Hymettiana II: An Ancient Quarry on Mt. Hymettos

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Hymettiana II: An Ancient Quarry on Mt. Hymettos*

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Abstract

In antiquity marble quarries on the western side of Mt. Hymettos supplied builders with useful material. These quarries, many of which are still preserved and visible today from Athens, have received scant attention from archaeologists. Even less attention has been paid to the eastern side of the mountain and the possibility that stone deposits there were exploited in ancient times. This article describes an abortive trial quarry in a zone of dolomite on the east side of Hymettos. It demonstrates that the viability of stone on that side was tested by ancient builders. The Roman period emerges as the most likely date for the quarry on the basis of what is known about quarrying in Greece in different periods of antiquity.

Mount Hymettos lies just east and southeast of Athens and forms the backdrop against which the city has developed throughout history. The mountain takes the shape of a ridge 19 km. long and just over 1000 m. in elevation above sea level at its highest point. It is composed largely of marble, and quarries cut into its western slope provided the ancient Athenians with a good deal of building material. Despite this ancient activity the mountain has proven to be of greater interest to geologists than to archaeologists in modern times. Yet the diligent searcher can discover previously unrecorded antiquities on its slopes. Since 1970 I have been conducting informal and periodic explorations of Hymettos in search of ancient remains. The results are now being embodied in a series of reports. In the first report several rupestrial inscriptions on the west slope were published.¹ In the present study a quarry site on the east slope is examined.

GEOLOGY AND QUARRIES OF HYMETTOS

The basic structure of the mountain—zones and layers of marble, limestone, and micaceous schist—was first studied in the 19th century, primarily by German geologists, the most influential of whom was Richard Lepsius.² In this century Leopold Kober,³ Alfred Philippson,⁴ and Norman Herz in company with the epigraphist W.K. Pritchett⁵ have provided additions and corrections to Lepsius' reconstruction of the geological history of Attica, including Hymettos. The geologists have noted the mountain's ancient quarries but mostly within the context of geological, not archaeological, research. From an archaeological point of view the century-old description of the Hymettos quarries by the topographer Arthur Milchhoefer remains the fullest.⁶ Subsequent explorations by Sterling Dow would have added more information, but the findings were not published.⁷ Finally, Angelina Dworakowska summarizes the written record but without supplementing her research with any on-site inspection.⁸

The ancient quarries are found predominantly on the west slope between the two Byzantine cloisters of Kaisariani and Kareas, 4–5 km. southeast of the Athenian Acropolis (fig. 1). Another important group is located not far south of Kareas. Since the bulk of the quarried material was destined for use in Athens or for export, it was an obvious convenience for the ancients to exploit the stone on the side facing the city and Piraeus, its port.

* I wish to thank Peter and Jeri Krentz and especially John Camp for help and observations at the site and my colleague Imre Boba for translating relevant passages of Polish for me. I am particularly indebted to J. Clayton Fant and Marc Waelkens for refereeing an earlier version of this paper and suggesting a number of improvements. I am responsible for any shortcomings that remain.

¹ M.K. Langdon, "Hymettiana," *Hesperia* 54 (1985) 257–70.

² R. Lepsius, *Griechische Marmorstudien* (Berlin 1890); R. Lepsius, *Geologie von Attika* (Berlin 1893).

³ L. Kober, "Beiträge zur Geologie von Attika," *SBWien (Math.-Nat. Kl.)* 138 (1929) 297–327.

⁴ A. Philippson, *Die griechische Landschaften I: Der Nordosten der griechischen Halbinsel III. Attika und Megaris* (Frankfurt 1952) 802–14.

⁵ N. Herz and W.K. Pritchett, "Marble in Attic Epigraphy," *AJA* 57 (1953) 71–83.

⁶ A. Milchhoefer, *Karten von Attika, Erläuternder Text 2* (Berlin 1883) 25–28.

⁷ Summary of work in E. Blegen, "News Items from Athens," *AJA* 39 (1935) 268.

⁸ A. Dworakowska, "Starozytne kamienioly attyki. Materiały do inventaryzacji," *Archeologia Warszawa* 19 (1968) 85–102; A. Dworakowska, *Quarries in Ancient Greece* (Warsaw 1975).

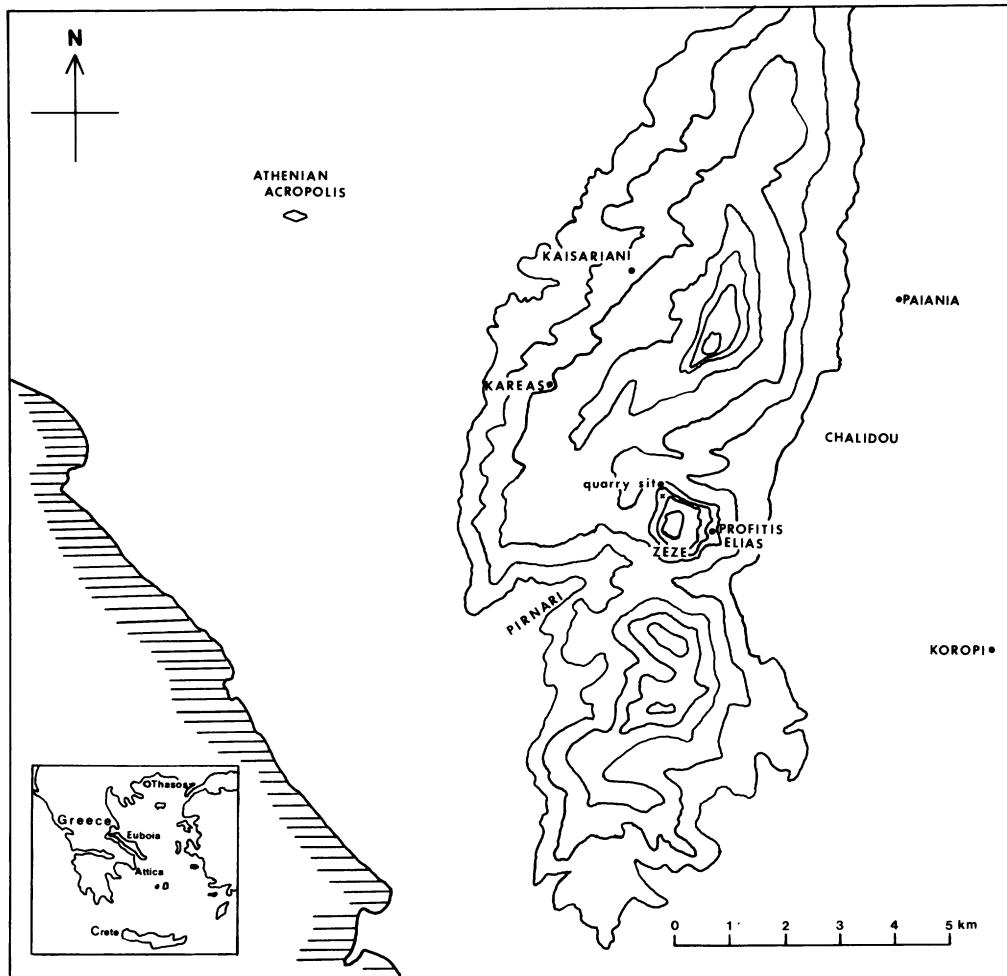


Fig. 1. Contour map of Mt. Hymettos showing places mentioned in the text. Inset of Greece.

Documentation of ancient quarry workings on the opposite side of Hymettos is more difficult to obtain. Several quarries are indicated at the northeast end of the mountain on the map of Hymettos of E. Curtius and J. Kaupert,⁹ and Lepsius confirms their antiquity, apparently from autopsy.¹⁰ These quarries all seem to have perished as a result of the intense modern industrial and domestic development that has plagued this region for some time. Further south, at the town of Paiania (formerly Liopesi), the same map shows more ancient quarries, and quarries are mentioned there by Philippson, but without discussion or indication of their date.¹¹ Some of these have vanished, but others are still preserved. None of those that I examined is ancient. Telltale signs of modern working, in the form of remnants of drill holes for blasting powder, are to be seen throughout. It does not seem likely

that these are ancient pits reworked with modern equipment after the map was drawn, since their present size is no greater than that indicated by Curtius-Kaupert.

THE ZEZE QUARRY

There are no further reports of quarry sites on the east side of Hymettos, nor do maps show any quarries. Yet in 1975 I found the quarry which is the object of this study considerably to the south of those examined by Lepsius. Since the site is certainly ancient and has never been mentioned before, the quarry deserves some attention.

The quarry is located just west of the top of the secondary height (611 m. above sea level) of a massive projection in about the middle of the east side of Hymettos (figs. 1-3). The projection is strongly accentu-

⁹ E. Curtius and J. Kaupert eds., *Karten von Attika* (Berlin 1881-1891) Sheet IV.

¹⁰ Lepsius 1890 (*supra* n. 2) 26.

¹¹ Philippson (*supra* n. 4) 809.

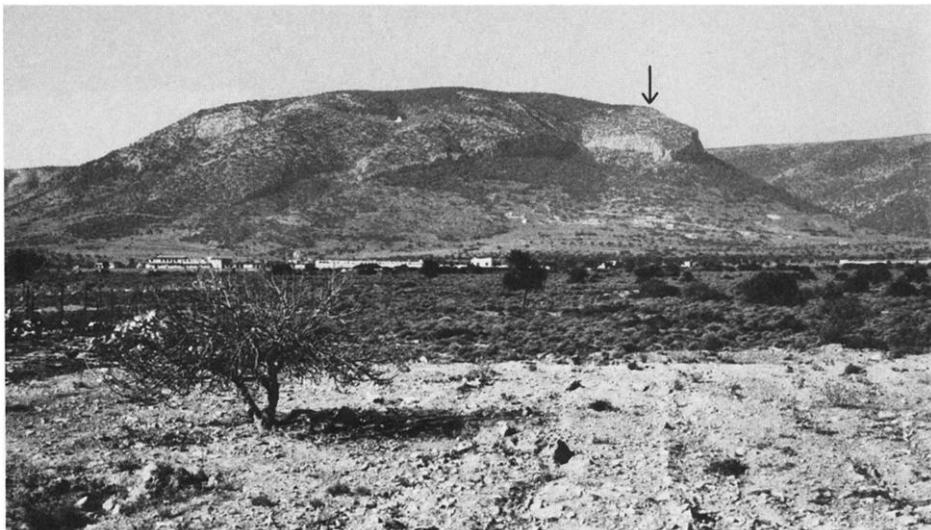


Fig. 2. Zeze from the east. Arrow marks height 611.

ated along its perimeter by exposed cliffs whose grayish appearance from a distance is responsible for the name of the projection, Zeze, from a root meaning "black" in Albanian.¹² Zeze is quite isolated, although an access road has recently been bulldozed around to the back side where the projection joins the mountain by a flat, spacious neck. Here there are some vegetable patches and sheep pens. Otherwise the area remains as remote from human activity today as it has been for centuries. This explains why the quarry has gone unreported. Earlier investigators in their more cursory surveys obviously felt little inducement to explore thoroughly such a remote place. Except for a depression with a chapel resting on an ancient foundation on its eastern side, the rest of Zeze was left unexplored. In addition, German and Greek cartographers who made contour maps of Hymettos must not have surveyed Zeze, else it is difficult to understand how the quarry could have gone undetected. Instead, the drawn contours of Zeze are probably based on visual estimations and instrument readings taken from a distance. This would account for the figures given for the highest elevation of Zeze, 659.8 m. (Curtius-Kaupert) and 664 m. (Philippson).

The Zeze quarry consists of two roughly rectangular pits excavated vertically into the rock. The pits lie side by side with a rock balk 2.7 m. wide separating them. They are almost joined at their east end where the balk is partially cut away (fig. 4). The larger pit measures 22 m. east to west by 8 m. north to south; north of this the smaller pit is 14 m. by 8 m. A filling

of earth, working chips, and vegetation (euphorbia, Jerusalem sage, prickly oak) hampers visibility, but it appears that the opening of the pits began at the west. From there the floors seem to slope down to the east, serving as ramps for the removal of quarried stone. The present floor levels vary in depth but average about 1 m. from the surrounding rock surface. The ancient floors of the pits, nowhere visible, need not be much deeper.

The side walls of the pits are vertical as far as exposed. A close inspection of the visible surfaces failed to reveal any of the tool marks or other signs of working so characteristic of many ancient quarries. This is due to the fact that the site is in a highly exposed situation. The quarry faces are consequently badly weathered, and this has caused the effacement of all traces of working marks.

A number of quarried monoliths, some intact, some broken and fragmentary, lie in and around the pits. Most noticeable is a fully rounded, untapering monolithic column shaft, 4.48 m. long and 0.7 m. in diameter, lying just above the larger pit (fig. 5). The ends of the shaft are plain. The end nearest the pit has been worked flat, while the other end retains a boss-like projection to one side. Several cracks running through the shaft are probably ancient and the cause for its abandonment. Another monolithic shaft lies mostly buried in working chips in the larger pit. Its length is 4.01 m. By clearing away the rubble in a small area beside the shaft I was able to determine by feel that it had been partly disengaged from bedrock, so that its

¹² Albanian place-names are common in Attica, the result of Albanian settlement there after the Ottoman Turkish

conquest of Albania in the 14th century.

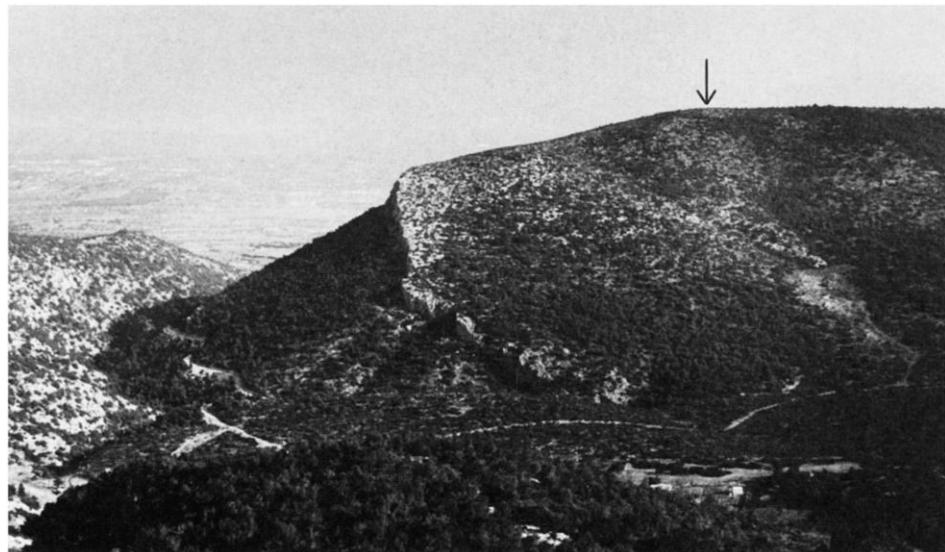


Fig. 3. North part of Zeze from the west. Arrow marks height 611.

shape in section resembles a horseshoe, rounded above, straight at the sides, and flat underneath. The flat underside is the result of transverse cuttings made along a line where the shaft is still attached to bedrock. Once detached it would have been given a wholly cylindrical form like its companion lying above the south pit. Abandoned before this stage the shaft has a thickness of 61 cm. measured from underside to top of curve. In the same pit, and also mostly buried by rubble, is an ashlar block 4.95 m. long. I could not take the measurement of any of its other dimensions.

Sixteen roughly squared blocks, not counting fragmentary pieces, are scattered about the surface around the pits. They range between 2 and 5 m. in length. The larger blocks are only very roughly formed (fig. 6), while the smaller ones have a more regular shape (fig. 7). On the narrow long sides of one large and one smaller block are slit-like cuttings, 20 cm. wide and 7 cm. deep, probably intended to provide purchase for crowbars to help in moving them. Like the monolithic columns several of the blocks have cracks which rendered them useless.

PURPOSE AND DATE OF THE QUARRY

The Zeze quarry is either an abandoned prospection which never reached an operational stage, or else it did function for a short time. I incline toward the

former view. On the assumption that the combined volume of both pits is at least 288 m.³ and that the abandoned blocks on the site amount to no more than 150 m.³ in volume, a case could be made for a brief operating phase of the quarry in which some material was taken away for use. But the ramps into the pits reduce their volume considerably, and the figure for the volume represented by the abandoned blocks on the site is not secure because it does not include the numerous fragmentary pieces that are present. My impression is that the amount of quarried material and debitage lying in and around the pits is sufficient to fill them.¹³ The quarry, then, was a trial working, made for the purpose of ascertaining the quality of the stone and the feasibility of its exploitation. A concerted effort, involving up to a year's labor, was made to find some usable material, but it eventually became apparent, as piece after piece cracked and broke either during extraction from bedrock or while being taken out of the pit, that the rock was not of suitable quality for serious use. The trial was then given up. The quarriers seem to have left the area altogether without making further tests on Zeze. At least I have not found any other traces of quarry working there.

There is no artifactual, epigraphical, or historical evidence to indicate when the prospection on Zeze was made, but two considerations, the presence of mono-

¹³ The working chips here are not concentrated in heaps as at many ancient quarry sites but form a thick, irregular layer all around the pits. This is perhaps the result of centuries of grazing flocks of sheep and goats who have passed

this way over many centuries. It is less probable that, at this level and remote site, debris heaps were dispersed by erosion or human action.



Fig. 4. Zeze quarry, from north pit into south pit through cut-away balk

lithic columns and the kind of stone into which the quarry is cut, can help us to narrow the chronological possibilities.

Monolithic columns of large scale were sometimes used by Greek temple builders, especially in the sixth century B.C., but it does not seem likely that the Zeze quarry belongs to such an early date. Building activity of that time did take place not far from the quarry, in the small depression of Profitis Elias high on the east side of Zeze (fig. 1), where remains of two sixth-century temples have been uncovered,¹⁴ but it is difficult to relate our quarry to this site. Though not far apart, the quarry and the temples are separated by rough terrain. The builders at the Profitis Elias site doubtlessly always relied on some closer deposits of stone. We do not know of any other sixth-century building project in the area for which monoliths from Zeze might have been considered, then given up in favor of other stone.

The kind of stone into which the Zeze quarry is cut argues decisively against a date in the Greek period. It is not grayish marble, the principal component of the mountain, but the rock dolomite, here basically white but strongly toned by veins of red, the whole weathering to gray. R. Lepsius offers the fullest discussion of the dolomites of Hymettos.¹⁵ They occur mainly in

Pirnari (fig. 1), the gorge which divides Hymettos in half, and at various other places on the mountain. In Lepsius' discussion the reddish tone, which is caused by appreciable amounts of ferrous oxide, is mentioned only in connection with the Pirnari variety. Lepsius did not analyze any specimens from Zeze, which lies immediately north of the gorge, but the material of the ancient quarry clearly fits his description of the Pirnari dolomite. The quality of its variegation would not have found favor with Greeks searching for building stone, and so the Zeze quarry should not date to Greek times even as a trial working. The red tone is sufficiently prominent on the surrounding unquarried native rock to have dissuaded Greeks from ever initiating a search for rock in this area. The stone used in the two temples at Profitis Elias, grayish white with no admixture of red, was more suited to Greek tastes. I have not succeeded in finding the quarry that supplied the material for these buildings, though it was presumably nearby.

If variegated stone held no attraction for the Greeks, it did for the Romans, who had a predilection for building with monoliths of veined and colored marble and other stone.¹⁶ It is thus an attractive possibility that a Roman prospector opened the quarry on Zeze. Technical considerations lend support to this

¹⁴ N. Kotzias, “Ανασκαφή ἐν Προφήτῃ Ἡλίᾳ ‘Υμηττοῦ,” *Prakt* (1949) 51–74; (1950) 144–72. The place is visible in Figure 2 as a white spot high up in the middle of Zeze. The spot is the whitewashed chapel of Profitis Elias dating

to the 15th or 16th century.

¹⁵ Lepsius 1893 (*supra* n. 2) 155–57.

¹⁶ Strab. 9.5.16.

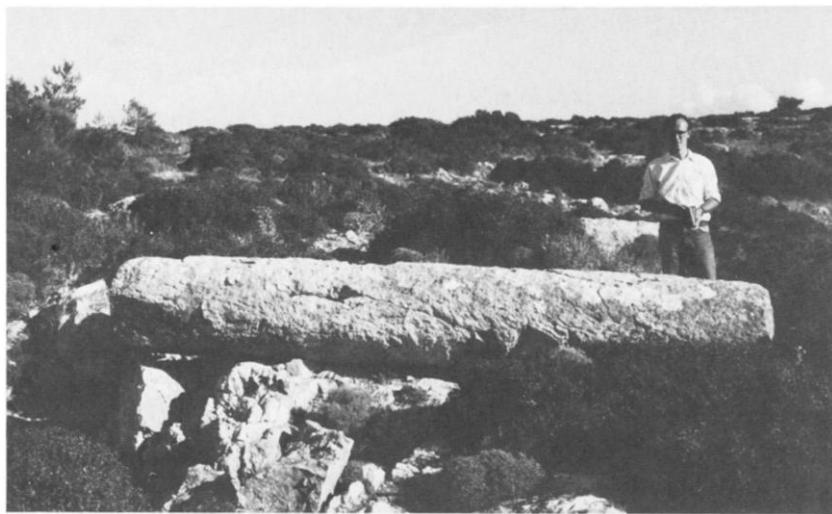


Fig. 5. Monolithic column shaft above south pit from the west

suggestion. The partially worked column shaft lying in the south pit closely resembles a number of abandoned shafts in Roman quarries in the Aegean. The largest is a shaft 11 m. long in the quarry of Kylyndri in southern Euboea.¹⁷ A shaft closer in size to the Zeze shaft and probably of Roman date is preserved in a quarry in eastern Crete.¹⁸ An account of the method of quarrying Roman examples on the island of Thasos reads as though it were describing the Zeze piece.¹⁹ Quarrying is essentially a conservative activity, and techniques changed little from ancient to Mediaeval times,²⁰ and so we should not consider these similarities as constituting absolute proof. Yet the Zeze column shaft so closely resembles Roman examples as to suggest strongly that it belongs to the same period.

Recently a good parallel strengthening the possibility that the Zeze quarry is Roman has been identified on the west side of Hymettos. There, among the concentration of quarry pits on the slope south of Kaisa-

riani monastery, Josiah Ober has found a Roman cognomen, Cethagus, lettered twice in Greek onto two faces of a small quarry.²¹ His interpretation of the find as a test pit of Cethagus is convincing, as is his argument for a date of the graffiti in the Augustan period. The pit is similar to the Zeze trials, differing only in being a cavity with high side walls hollowed out of sloping rock instead of a rectangular pit cut vertically into level rock. There are no monolithic columns at Cethagus' quarry, but a number of test blocks are preserved, large and rough-hewn like those on Zeze. Ober suggests that some of the larger ones may be "dummies" of columns.

The test pieces from Cethagus' quarry were not left lying about but were used nearby to construct a small structure which Ober calls a makeshift shelter for workmen. The structure was previously examined by J. Carpenter and D. Boyd, who provisionally identified it as a storeroom for equipment or an office for a

¹⁷ A good illustration of this column is included in the study of the quarry by V. Hankey, "A Marble Quarry at Karystos," *BMBeyr* 18 (1965) pl. 4.14.

¹⁸ See M. Durkin and C. Lister, "The Rods of Digenis: An Ancient Marble Quarry in Eastern Crete," *BSA* 78 (1983) 69–96. The authors date this shaft and others and the quarry they are in to the Greek period, influenced by the resemblance between wedge marks in the Cretan quarry and Classical Greek examples in Athens. Wedge marks in ancient quarries have been discussed most thoroughly by J. Röder, "Zur Steinbruchgeschichte der Rosengranits von Assuan," *AA* 1965, 515–34. His study, although oversimplified (cf. C. Nylander, "Bemerkungen zur Steinbruchgeschichte von Assuan," *AA* 1968, 6–10), shows that the type of wedging used in the Cretan quarry was actually more common in Roman than in Greek times. I see no compelling reason for

calling the Cretan quarry Greek and would date it instead to the Roman period.

¹⁹ J.-P. Sodini, A. Lambraki, and T. Kozelj, *Aliki I: Les carrières de marbre à l'époque paléochrétienne (Études théâsiennes 9)*, Paris 1980) 118. The site of Aliki has Roman and Byzantine quarries. Sodini and colleagues convincingly date those with unfinished columns to Roman times because of the absence of Christian graffiti in them.

²⁰ This is well brought out by J. Ward-Perkins in two studies: "Quarrying in Antiquity," *ProcBritAc* 57 (1971) 137–58; "Quarries and Stoneworking in the Early Middle Ages: The Heritage of the Ancient World," *Settimane di Studio del Centro Italiano di Studi sull'Alto Medioevo* 18 (1971) 525–44.

²¹ J. Ober, "Rock-Cut Inscriptions from Mt. Hymettos," *Hesperia* 50 (1981) 68–73.



Fig. 6. Roughly outlined blocks in the Zeze quarry

quarry manager.²² Whatever its function it was built in anticipation of further quarry operations which for some reason did not transpire. Ober is surely correct in arguing that the test pit and hut were part of a private venture of Cethagus, prompted by the popularity of Hymettian marble in the Roman period. The Zeze quarry, if Roman in date, was also probably opened by a private individual for the same reason. A number of pieces were quarried before he gave up the work because of the poor quality of the stone. The entrepreneur did not need to identify ownership by scratching his name on the quarry walls, nor did his workmen have to build a hut in which to store their tools.

A Byzantine date should also be considered for the Zeze quarry. Byzantine architecture inherited a great deal from the Romans. Several Roman building forms suitable for its own development were directly borrowed and often stonework from Roman buildings was reused. Large-stone construction in Byzantine architecture was fostered by the domical character of some of its churches and the three-aisled basilica plan of others, both types of which provided architects with ample opportunity for using large, monolithic columns and blocks. The best place to observe this is Constantinople. The columns of its early churches attest clearly to the cost which Byzantine emperors were willing to undergo in adorning the city's places of worship with varieties of colored stone from Greece and other places in the eastern Mediterranean. Build-

ers in less cosmopolitan settings were often forced by budgetary restrictions to build with local materials.

In Byzantine Attica this led to the frequent use of Attic stone in church construction, the material often being reemployed from Roman buildings. In a well-studied church in Athens, for example, the Church of the Holy Apostles of around A.D. 1000, the dome is supported by four monolithic columns of Hymettian marble taken from some ancient building.²³ When fresh stone was needed, the marble deposits of Hymettos' western slope were so near at hand and so plentiful that it must be doubted that any deposits on the opposite side of the mountain were ever seriously considered as sources of building stone by Byzantine ar-



Fig. 7. Smaller ashlar blocks in the Zeze quarry

²² J. Carpenter and D. Boyd, "Dragon Houses: Euboia, Attika, Karia," *AJA* 81 (1977) 189–93.

²³ See A. Frantz, *Agora XX: The Church of the Holy Apostles* (Princeton 1972) 7.



Fig. 8. Monolithic column shaft on western side of Mt. Hymettos

chitects working in Athens. If the Zeze quarry is Byzantine, the intended use of its stone would have been in some local project east of the mountain.

The closest Byzantine building activity to the quarry was on Zeze itself, at the chapel of Profitis Elias mentioned earlier. Excavations revealed that the present chapel was preceded by two earlier ones, the first of which was built, according to the excavator, no later than the 11th century.²⁴ It is unlikely, however, that our trial quarry was made in connection with this construction, because the ancient temple upon whose foundations the successive churches were raised provided the ready-made blocks and supports needed by the later builders.

Beyond Zeze the evidence for Byzantine building activity east of Hymettos is plentiful.²⁵ Because of Zeze's remote location, Byzantine quarry activity on it would probably have been the work of builders from one of the nearby communities, Paiania, Koropi, or Chalidou.²⁶

CONCLUSION

The possibility of a Byzantine date cannot be dismissed altogether, but in my opinion the cumulative weight of the argument for a Roman date of the Zeze quarry is decisive. We have seen that Roman building methods and taste lent themselves to the use of monoliths of variegated stone and that at times Hymettian material was favored. In addition, the west slope of

Hymettos has provided a good Roman parallel. For these reasons I believe that the Zeze quarry should be dated to the Roman period. It thus furnishes evidence for some slight Roman entrepreneurial interest in stone on the east side of the mountain. I have explored much of the rest of this side without finding further evidence of ancient quarrying. Even if such evidence should turn up in the future, it will surely be in the nature of small test pits rather than operational quarries. The stone that paid off was on the west side, and to it most Roman businessmen confined their investments on Hymettos.



Fig. 9. Circular trace of a quarried disk on the west side of Mt. Hymettos

²⁴ Kotzias 1949 (*supra* n. 14) 63–64.

²⁵ The most useful survey of the Byzantine remains of Attica is contained within the article by J. Koder, "Hellas," *Reallexikon zur byzantinischen Kunst* 2 (1971) 1121–30.

²⁶ For the first two places, see J. Koder and F. Hild, *Tabu-*

la Imperii Byzantini I: Hellas und Thessalia (Vienna 1976) 193, s.v. Koropi; 203–204, s.v. Liopesi. For Chalidou, see N. Kotzias, "Ἐνεπίγραφον χριστιανικὸν ἀνάγλυφον," *ArchEph* (1925–1926) 190–97.

APPENDIX

MONOLITHIC COLUMNS ON MT. HYMETTOS

Zeze is not the only site on Hymettos with monolithic columns. W. Schuchhardt reported one such column in another quarry about an hour's walk northeast of the summit.²⁷ Dworakowska believes that this would place it among the quarries around Paiania,²⁸ where my investigations turned up nothing ancient. On the western side of the mountain, 19th-century visitors to Greece reported column shafts in the hollow at the entrance of which the church complex of Kareas is situated.²⁹ Later in the same century none of them could be found.³⁰ No doubt they fell victim to renewed quarrying in the interim. There is a plain, monolithic shaft lying on the slope 1 km. south of Kareas (fig. 8). It is 3.08 m. long and 0.56 m. in diameter. Although previously unrecorded this column shaft is surely not unknown since it lies in the open just below an ancient quarry from which it was probably extracted. Today a forest road passes right by it.

We have seen from the previous discussion that uncer-

tainty attaches to the date of monolithic columns on this mountain. Schuchhardt thought that the column he mentioned on the east side was early Greek. It and those on the west side are, like their counterparts on Zeze, much more likely to be Roman or Byzantine. The only datable working trace near any of them is what appears to be a fairly certain piece of Byzantine quarrying not far south of and upslope from the extant monolith noted in the preceding paragraph. It takes the form of a circular cutting 0.61 m. in diameter measured at its bed (fig. 9). Similar cuttings are found in the now submerged part of the Early Christian quarry on Thasos. There disks for making tabletops were removed in large numbers, and a great many shallow, circular cuttings remain.³¹ On Hymettos I have found only this one disk cutting. Pentelic marble was no doubt the favored material for table tops in Byzantine churches in Attica.

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²⁷ "Die Sima des alten Athenatempels der Akropolis," *AM* 60/61 (1935–1936) 103.

²⁸ Dworakowska 1968 (supra n. 8) 92, no. 22.

²⁹ E. Dodwell, *A Classical and Topographical Tour through Greece during the Years 1801, 1805, and 1806* (London 1819) 482; W. Leake, *The Derni of Athens*² (Lon-

don 1841) 47.

³⁰ Milchhoefer (supra n. 6) 27.

³¹ Sodini et al. (supra n. 19) 115, figs. 73, 75; 116. For the tabletops themselves, see J.-P. Sodini and K. Kolokotsas, *Aliki II: La basilique double (Études thasiennes 10*, Paris 1983) 196–97.