

STONEWORKING IN THE GEOMETRIC PERIOD AT CORINTH

(PLATE 75)

DURING THE 1972 SEASON of excavations conducted by the American School of Classical Studies in the Forum of Corinth, material was found which provided evidence of a developing technique of stoneworking in the Late Geometric Period.¹ This took the form of various fragments of worked architectural pieces which apparently had been damaged before being completed and were therefore dumped as waste into a well.² Of greatest interest were two faceted drums which preserved clear traces of the tooling processes used to shape them. A second well provided a damaged poros slab for some industrial or commercial function, which likewise preserved traces of tool marks.³

None of these objects is impressive in itself. Since all, however, were recovered from securely datable Late Geometric contexts, they provide evidence of the methods and tools used for the preparation of architectural blocks in that period. Even taking into account their unfinished state, the pieces show a crudity and an ungainliness which demonstrate that they were the product of a new and experimental craft lacking any depth of developed technique.

The evidence for the birth of the stoneworking craft at Corinth may be found in the appearance of "sarcophagus" graves, those built of cut poros slabs, in the Middle Geometric Period. Graves constructed prior to this period made no use of worked stone. In the Protogeometric period graves were usually rectangular pit burials cut directly into the stereo. Cover slabs consisted of unworked sandstone slabs.⁴ Rarer are completely built graves. One such, Grave 68-1,⁵ may be seen near the Babbis Monument at the west end of the Forum (Pl. 75:a). It was formed of unworked sandstone slabs broken roughly into rectangular shape by hammer blows. No additional trimming was undertaken. Other built graves made use of unfired mud bricks.⁶ But through the Middle Geometric period the standard grave continues to be the pit cut into stereo. In the North Cemetery the great majority are pits covered with sandstone slabs. Two, however, are of the "sar-

¹I wish to thank the staff of the Corinth Excavations for their assistance in the study of this material: Charles K. Williams, II, Director, for his permission to publish this material as well as his many fruitful suggestions; Nancy Bookides, Secretary, for her assistance in cataloguing and researching this material. I also wish to thank Professor Keith DeVries for pointing out the existence of the two drums. The writer, however, takes full responsibility for any errors.

²Well 72-2, Corinthian Late Geometric Period, 750-720 B.C.

³Well 72-4, Corinthian Late Geometric Period, 750-720 B.C.

⁴For Protogeometric graves near the Bema, see Charles K. Williams, II, "Excavations at Corinth, 1973," *Hesperia* 43, 1974, pp. 1-6.

⁵Charles K. Williams, II, "Corinth, 1969: Forum Area," *Hesperia* 39, 1970, pp. 16-20, pl. 8:a. Dated end of the Protogeometric period.

⁶*Ibid.*, p. 20, pl. 7.

cophagus" type of cut sandstone. One of these was a grave built out of sandstone slabs while the other was a hollowed-out sandstone block.⁷ Near the Bema in 1937 Charles H. Morgan excavated a cemetery which contained five pit graves and three built graves.⁸ Those built were constructed of worked poros slabs. In both cemeteries the cut-stone graves date in the period of Middle Geometric II at Corinth.⁹

Grave H¹⁰ is visible today to the west of the Bema (Pl. 75:b).

Grave: L. 1.86, W. 0.83, D. 0.49 m.

Slabs are of a fine-grained, buff-brown local limestone; Th. 0.091–0.095 m. Individual slabs were used for the bottom, north-end, and west-side walls. The east-side and south-end walls were formed by one piece cut to a right angle. Joints were close with gaps of *ca.* 0.001 m. All visible surfaces are roughly finished leaving clear tool marks. Both the pointed chisel and the round chisel with a blade width of 0.017 m. are indicated.

The bottom slab was apparently completed before being placed into the rectangular pit cut in the stereo. Tool marks run parallel to the long axis of the slab. Next, the right-angle slab forming the east and south walls was placed. All exterior surfaces had to have been completed before placement into the pit, but the interior surfaces were

yet to receive their final trimming, as indicated by the tool marks which radiate outward and downward from the upper corners. In the southeast corner the angle was formed by such radiating strokes of the round chisel and, as the angle grew tighter, of the pointed chisel. The interior of the angle was completed by vertical strokes which resulted in a webbing of stone left at the bottom with point holes embedded in it (Pl. 75:c).

Following next in placement was the west-side slab. Final trimming was accomplished by long strokes running diagonally from the upper south corner. Then the uppermost 0.10 m. of the slab was further trimmed by strokes slanting counter to the lower pattern. Lastly the north-end slab was placed and finished by trimming strokes which radiated from both upper corners. All top edges were finished by strokes of the round chisel across the thickness of the slabs.

This grave shows no final finishing, thus preserving the tool marks. Exterior surfaces were only superficially examined as they were hidden by the stereo, but certainly they must have been treated with the same rough trimming before being put into place. The completion of the interior presented a more difficult problem. The tight space within the grave necessitated cutting from the upper corners. With the use of one piece for the east and south walls it was necessary to leave extra stone to reinforce the corner during transportation. Once in place the difficult corner had to be cut with chisels alone; apparently the drill was not yet known to the stone cutters. The west-side slab was placed next and trimmed away from the south end toward the still vacant north end. This north slab was placed last and trimmed from the upper corners toward the middle of the slab, in each case the easiest direction for the stone cutter.

In the Late Geometric period stoneworkers apparently began to expand their craft into architectural applications. Well 72-2 provided a deposit of discarded poros frag-

⁷Carl W. Blegen, Hazel Palmer, Rodney S. Young, *Corinth*, XIII, *The North Cemetery*, Princeton 1964, pp. 30–31.

⁸Charles H. Morgan, "Excavations at Corinth, 1936–37," *AJA* 41, 1937, pp. 543–545, pl. 13:2.

⁹Cemetery date: J. N. Coldstream, *Greek Geometric Pottery*, London 1968, p. 95.

¹⁰Examined by the writer in 1976.

ments which included a block, two drums, and a number of smaller broken pieces.¹¹ The material began at a level 4.20 m. below the top of the well with the discovery of a faceted drum, A-72-31. Within the remaining depth to the bottom at 6.60 m. the other fragments were recovered. Included in this material was a poros block whose dimensions resemble those of a mud brick of twice normal thickness.¹² Near the bottom the second, smaller, faceted drum was found, A-72-32. Many smaller fragments and chips of column facets and pieces of blocks were also recovered. Traces of burning were consistently noted, suggesting that a fire caused the damage that resulted in the discarding of this material.

1. Faceted drum of poros.¹³ Pl. 75:d

A-72-31. Max. diam. bottom, 0.369, top, 0.318 m.; pres. H. 0.378 m.

Broken away at top. All worked surfaces preserve tool marks.

Coarse-grained, gray, local limestone.

Fragment of drum with seven highly irregular facets, back fourth cut away in a single plane. Facet 1 (numbered clockwise from the back): W. 0.17 m., worked with horizontal strokes by a round chisel, blade W. 0.017 m. Parts of this surface were broken away. Facet 2 (visible to right in Pl. 75:d): W. 0.14 m., in a similar state of trimming. Finer, short counter strokes with a flat chisel extend 0.02 m. from the angle with facet 1. Facet 3: W. 0.146 m. All strokes slant down *ca.* 45° from the middle of the facet. Traces of the round chisel (W. 0.017 m.) appear below those of the flat chisel (W. 0.02 m.). Maximum preserved length for one stroke channel was 0.07 m. The angle between facets 3 and 4 would be at the front

of the drum. Facet 4: W. 0.126 m., badly pitted and preserves no complete tool channels. Strokes were horizontal with both the round and the flat chisels. Facet 5: W. 0.17 m., trimmed by long horizontal strokes with the round chisel; no secondary work with the flat chisel is indicated. Facet 6: W. 0.044 m., badly pitted, but does preserve flat-chisel channels slanting slightly downward from front to back. Facet 7: W. 0.056 m., also badly damaged, but does preserve flat-chisel channels running counter to those of facet 6. Back: W. 0.26 m., worked in long horizontal strokes *ca.* 0.17 m. in length made by a slightly rounded drove with a blade 0.06 m. in width. Secondary trimming was then performed with a flat chisel in countering strokes. This counter trimming occupied the (viewer's) right 0.08 m. edge ending in a low trimming ridge. Evidently it was the intention to trim the back completely with the flat chisel. Bottom: mostly broken away. It had been picked down and trimmed with a flat drove (W. 0.04 m.) and a round chisel.

This irregularly faceted drum displays a variety of tooling patterns as well as poorly planned shaping. Facets 1–5 would have formed a roughly symmetrical, five-faceted half drum centered on facet 3. Two additional facets were cut to the left, however, evidently to attain the desired degree of curvature. The intended front, facet 3, was trimmed down first, with diagonal strokes, and then the flanking facets were trimmed away from their angles with facet 3 by horizontal strokes. To achieve a smooth surface,

¹¹Field Notebook 538, pp. 8–17. Corinth Pottery Lots 72-123–72-127. There was Roman disturbance at the very top; below this the well is one deposit, dated Corinthian Late Geometric. Pottery analysis is by Professor Keith DeVries.

¹²Uncatalogued, not seen by the writer. Corinth Pottery Lot 72-126. Dimensions: 0.50 × 0.60 × 0.20 m. thick.

¹³Corinth Pottery Lot 72-125.

first the stone was roughly shaped by picking with the pointed chisel. A degree of flatness was then achieved by long strokes with a drove. Additional evenness was attained by trimming with first the round and then the flat chisels. The final finishing step, smoothing by abrasion to eliminate the tool marks, had not yet been undertaken on this drum. This step, however, may be seen on the second drum fragment recovered from Well 72-2.

2. Faceted drum of poros.¹⁴

Pl. 75:e

A-72-32. Max. diam. bottom 0.215, top 0.187 m.; pres. H. 0.378 m.

Broken away at top, rough picked on bottom.

Coarse-grained, gray, local limestone.

Fragment of drum with five irregular facets, back half cut away in a single plane. Facet 1: W. 0.04 m., horizontal marks made by a flat chisel placed slightly on edge, producing a long-sided V channel. Facet 2: W. 0.088 m., largely finished by abrasion. In the lower right corner traces of horizontal flat-chisel strokes. Facet 3: W. 0.108 m.,

mostly finished smooth; a mass of rough-picked stone survives at the bottom. Trimming was incomplete: vertical strokes by a flat chisel cut into the base of this mass from above. Facet 5: W. 0.056 m., also partially trimmed. Horizontal strokes of a flat chisel extend from the front toward the back for two thirds of the facet into a rough-picked ridge occupying the remaining third. The maximum preserved tool-channel dimensions are 0.02 × 0.04 m. Back: W. 0.184 m., badly damaged, but does preserve two horizontal tool channels and one vertical channel made by a rounded drove, maximum channel width 0.04 m.

This drum fragment displays a rough symmetry about the front facet 3. Again the tooling pattern is not consistent. Vertical trimming cuts were made on facets 3 and 4; apparently trimming began here first, and then horizontal cuts were made on the flanking facets. The process of shaping is simpler than for 1. After picking out the rough form, parallel strokes with a flat chisel were deemed sufficient to level off the facet. Only on the back was the drove used, evidently thought satisfactory for a surface not intended to be seen.

The backs of both drums were cut parallel to the axis of the drum shaft while the facets reflect the slope of the tapering sides. Thus the drums appear to have been intended to be placed in an engaged position. Abrasion was used to attain the final finishing, elimination of the tool marks, even before trimming was completed, apparently by the use of an abrasive medium, such as sand, rather than a tool such as the rasp.¹⁵

The poros debris found in this well, two drums, a block, and the other smaller fragments, are too incomplete to suggest any certain function. 1 is of a scale suitable for a small column; a column of similar diameter cut into 20 facets was found in western Corinth.¹⁶ 2 is much smaller, more on the scale of the poros stones also found in west-

¹⁴Corinth Pottery Lot 72-127.

¹⁵The writer's experiment in Corinth, 1977. Smoothing by sand abrasion removes individual stone grains, resulting in a "sandy" feel to the surface. This type of surface may also be observed on flat-bladed, poros mason's floats, such as those found on Temple Hill (see Mary Campbell Roebuck, "Excavations at Corinth: 1954," *Hesperia* 24, 1955, pp. 152-153, pl. 61:b). Polishing by rasp produces a smoother surface by planing down and crushing the individual stone grains. Such crushing is not seen here.

¹⁶Henry S. Robinson, "A Sanctuary and Cemetery in Western Corinth," *Hesperia* 38, 1969, p. 31, pl. 8, no. 68.

ern Corinth.¹⁷ The flat backs, less well finished than the facets, indicate that these pieces were intended to be engaged, possibly as wall antae or door jambs. The area of Corinth near this well was the scene of building activity later on, in the Protocorinthian period; these fragments may be the only surviving traces of earlier activity.¹⁸ After being damaged, perhaps by a fire, they were all discarded before being completed.

One additional piece of evidence for Corinthian stoneworking in the Geometric period was provided in the clearance of Well 72-4.¹⁹

3. Poros slab with rows of depressions. Pl. 75:f

MF-72-27. Max. pres. L. 0.420, max. pres. W. 0.262, Th. 0.064 m.

Fine-grained, buff-brown, local limestone.

Slab with one preserved edge, top and bottom surfaces preserved.

Top and surviving edge trimmed flat with a flat chisel, then smoothed by abrasion (wear?) leaving only faint tool marks. Side preserves vertical strokes of blade held slightly on edge. Of principal interest is the pattern of holes cut into the

top surface: eight rows of three holes forming three files, two holes of a ninth row, and one half hole of a tenth row. The rows are at an angle in relation to the preserved edge, and the three files trace a shallow arc. The holes were formed by vertical blows with a pointed chisel, flaking off small chips of stone. A circle of four to six blows formed the hole and then, if additional depth was desired, an additional one to three blows were made to deepen the hole. The resultant holes are *ca.* 0.02 m. in diameter and *ca.* 0.003 m. deep.

Industrial activity has been noted in the area where 3 was found in the Late Geometric and Protocorinthian periods.²⁰ The slab resembles some type of counting board or abacus, although at this date presumably not for coins. As for the tooling, of note is the use of compression flaking to form the holes. A drill might well have been the ideal tool for this function but apparently was not available here as it was not for Bema Grave H.

The tools used in the Geometric period as indicated by the marks on this selection of stone artifacts are varied. The pointed chisel appears in the Middle Geometric Bema Grave H as does the round chisel (W. 0.017 m.). On the Late Geometric drums the rounded drove (W. 0.06 m.) is commonly used while the flat drove (W. 0.04 m.) appears but once. Secondary trimming is now accomplished by the round chisel (W. 0.017 m.) and the flat chisel (W. 0.02 m.). Final finishing is accomplished by abrasion. Adams has noted that iron chisels have been found in the Athenian Agora which date to about 900 B.C., and one was found in a Protogeometric grave at Vrokastro on Crete.²¹ The knife was also in use during the Geometric period, notably on Crete. Adams has seen that, on the mainland, the knife continued to be used for sculptural details into the 6th century B.C.,²² but its use has not been detected on any of the pieces discussed here.

¹⁷ *Ibid.*, pl. 9, no. 70.

¹⁸ Charles K. Williams, II, "Corinth, 1971: Forum Area," *Hesperia* 41, 1972, pp. 144-151.

¹⁹ Field Notebook 546, pp. 109-112, Field Notebook 548, pp. 32-36, Corinth Pottery Lot 72-64, Corinthian Late Geometric period.

²⁰ Williams, *op. cit.* (footnote 18 above).

²¹ Sheila Adams, *The Technique of Greek Sculpture in the Archaic and Classical Periods*, Oxford 1966, p. 10.

²² Lauren Adams, *BritArchRep*, Suppl. XLII, *Orientalizing Sculpture in Soft Limestone from Crete and Mainland Greece*, Oxford 1978, pp. 137-138.

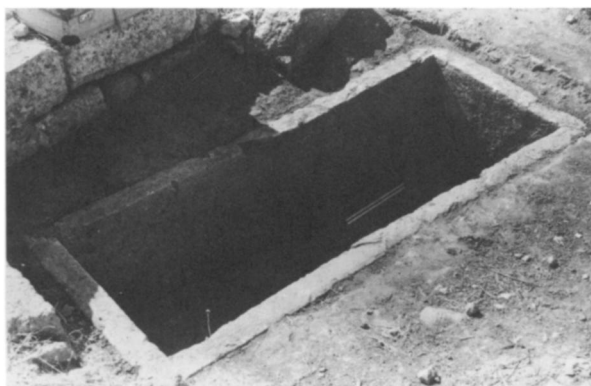
The stoneworking craft was evidently born in the Middle Geometric period at Corinth, employing the soft, local sandstones and limestones. These stones allow long, raking tool strokes to be applied. As the craft developed, a greater range of tools came into use, and more complex patterns of tooling were experimented with. In the Late Geometric period this tooling was overly complex and not particularly systematic, a natural occurrence with a young craft lacking an established tradition of technique. And yet many of the techniques and tools are present which would allow for the future development of more elaborate applications in either sculpture or architecture.

ALAN C. BROOKES

UNIVERSITY OF NORTHERN IOWA
Department of Art
Cedar Falls, IA 50613



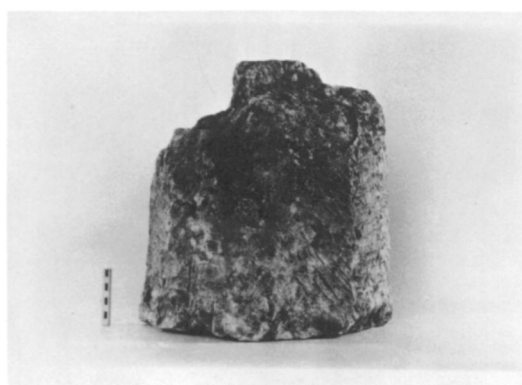
a. Protogeometric Grave 68-1 from north



b. Bema Grave H from northwest



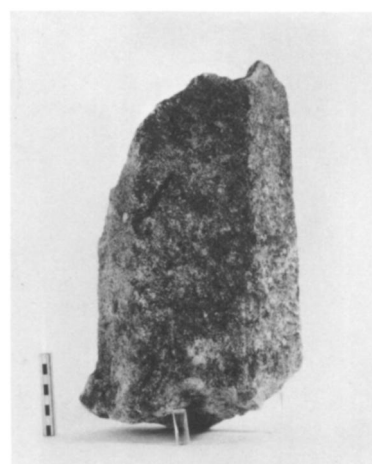
c. Detail of southeast corner, Bema Grave H



d. A-72-31



e. A-72-32



f. MF-72-27