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IN
STORAGE

FORT VANCOUVER EXCAVATIONS - X

Southeastern Fort Area

by

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I - INTRODUCTION

This is the tenth interim report detailing the finding and analyses of the 1970-1974 Fort Vancouver Archaeological Project. The focus of this report is upon the excavations conducted during 1973-1974 within the southeastern area of Fort Vancouver (Fig. 1), herein referred to as the "southeastern Fort area". Excavations were conducted under the directions of J. J. Hoffman with the aid of 2 field supervisors--Bryn H. Thomas and Hugh Bunton. Laboratory analyses were conducted under the directions of Lester A. Ross with the aid of 2 laboratory assistants--Charles H. Hibbs and Caroline D. Carley.

The primary purposes for conducting excavations in the southeastern Fort area were to expose the 1845-period stockade lines, Blacksmith Shop, Iron Store and Southeast Bastion. The remains of the stockades lines have been described and interpreted in the seventh report of this series (Hoffman 1974), and the remainder of the archaeological remains not previously discussed form the body of this present report.

The structural locations mentioned above were analyzed for the expressed purposes of identifying past building locations, detailing their methods of construction, reconstructing their architectural features identifying their internal room arrangement and hypothesizing their internal cultural activity areas. For the Blacksmith Shop, this task was accomplished; but in situ remains of the Iron Store and Southeast Bastion were either non-existent or highly questionable. In addition to these structures, 2 others have also been discussed within this report--the Indian Trade Store Privy/Trash Pit and the ex situ remains of the 1845-period Cooper's Shed.

A discussion of the Indian Trade Store Privy/Trash Pit was not included within the ninth report of this series on the Indian Trade Store (Hoffman & Ross 1975) because of its fill which was assumed to have originated from the Blacksmith Shop.

A few ex situ remains from the Cooper's Shed were recovered during the excavation of the Southeast Bastion area; and with these remains, the Cooper's Shed can be positively documented archaeologically.

Finally, the presence of 3 additional HBC period archaeological components were identified--1). a ca. 1829-1834/36 "smudge pit" component, 2). a ca. 1829-1841 unidentified domestic component and 3). a ca. 1834/36-1841 Columbia River flood deposit. The "smudge pit" component had been partially documented in the last report (Hoffman & Ross 1975), while the remaining components represent previously undocumented historic events.

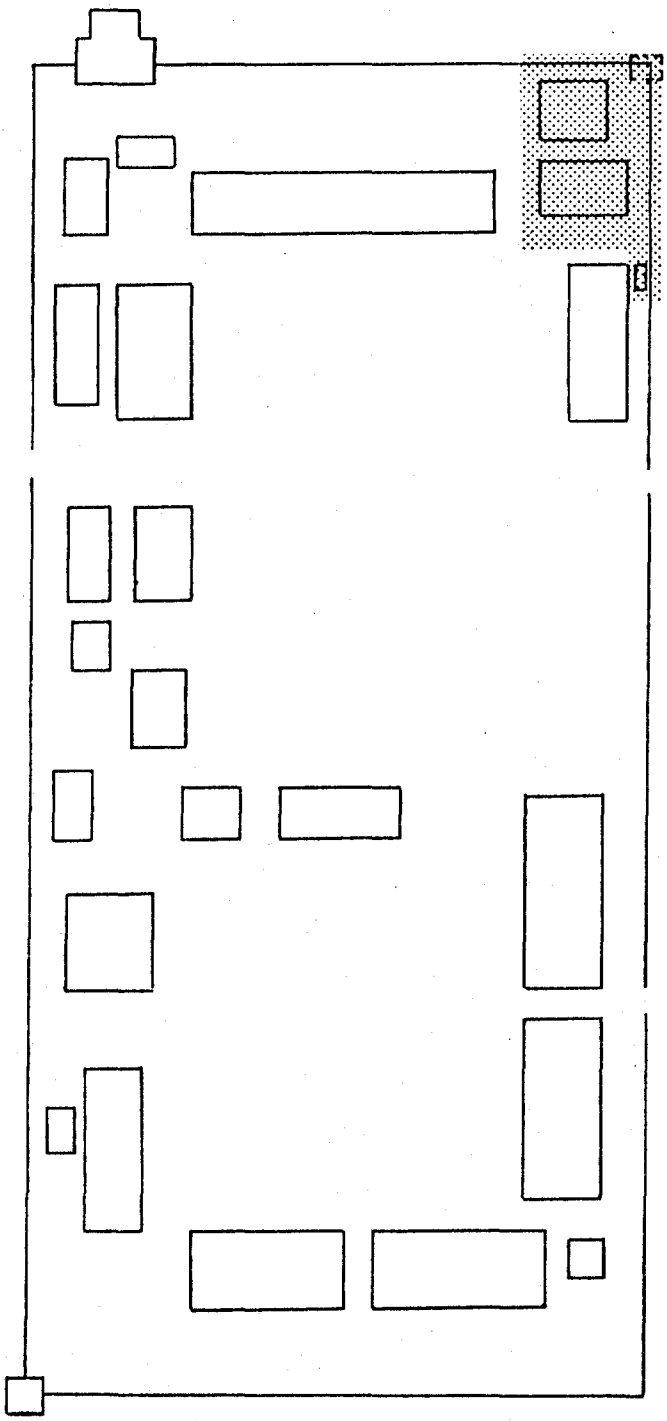


Fig. 1 -- Location of the southeastern Fort area.

II - IN SITU ARCHAEOLOGICAL REMAINS

As shown in the general excavation plat (Fig. 2), the HBC structures covered by this report include the ca. 1834/36-1860 Indian Trade Store Privy/Trash Pit (F523), the ca. 1834/36-1860 Blacksmith Shop, the ca. 1841-1860 Iron Store, the 1848 Southeast Bastion and various post-1836 stockade trenches. In a previous report (Hoffman 1974), descriptions and interpretations have been presented for the various stockade trenches; and to minimize duplication of information, the stockade trenches previously reported will not be further described. However, their association with adjacent structures will be examined and interpreted.

Stockade excavation units (F316, F317, F447 and F502) were excavated just prior to the NPS stockade reconstruction in 1973, and they were not oriented to the FOVA archaeological magnetic grid established in 1970. During the excavation of these stockade trench units, when cultural features were exposed in the walls of the excavation units, they were immediately excavated. These features included F468, F504, F516, F520, F521, F523, and F526; and all were excavated by arbitrarily sized units which had their limits determined by the extent of the cultural deposit. All other excavation units in the southeastern Fort area were oriented to the sitewide magnetic grid, and when possible fill from all excavation units was removed by stratigraphic levels.

Where layered cultural deposits were observed, they were excavated by stratigraphic levels; and when cultural layers were thick or nonrecognizable, the deposits were removed in 0.5 ft. increments. Exluding the stockade trenches, 20 distinct stratigraphic deposits were identified for the area covered by this report (Table 2); and in order to facilitate subsequent interpretive sections, these 20 deposits have been grouped in 5 major archaeological components--Post-HBC Components, Demolition Deposits of HBC Structures, Post-1834/36 HBC Components, 1829-1834/36 HBC "Smudge Pit" Component and Pre-1829 Columbia River Floodplain Deposit (Table 1). Both the Post-HBC and Post-1834/36 HBC components have been subdivided into a variety of minor components, and all subsequent descriptions of the excavated in situ remains, observed within the southeastern Fort area (excluding stockade deposits), will be presented within the appropriate component section to which they belong.

Because of the interrelated nature of the various components within the southeastern Fort area (and hopefully to aid the reader), all stratigraphic profiles and the 2 major excavation maps used in this report have been placed into a single group following this introduction (Figs. 3-12). Also a complete list of the Features excavated, together with a brief description and their assigned components, has been provided in Table 3.

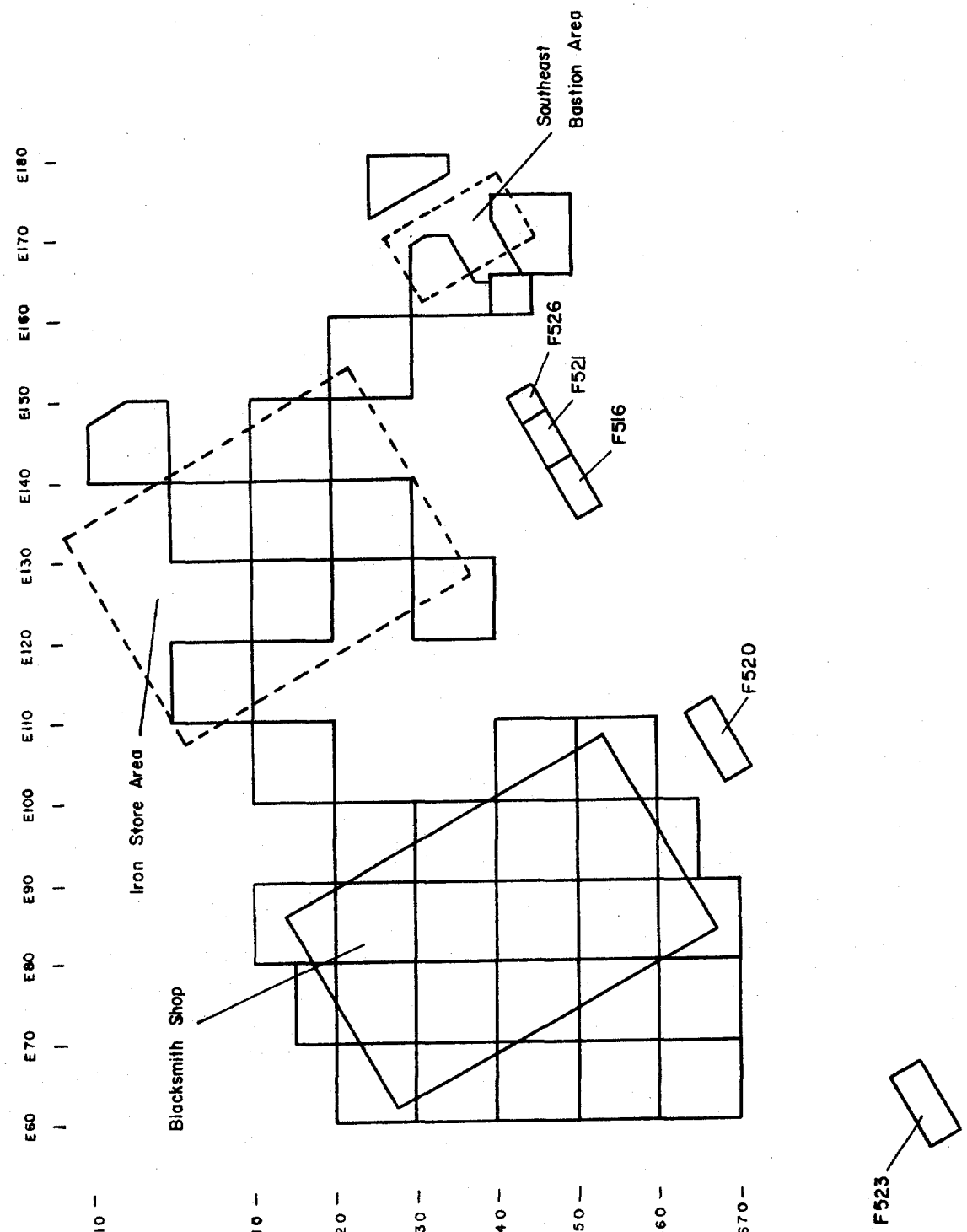


Fig. 2 -- Excavation units and HBC structural locations for the southeastern Fort area.

Table 1 -- Archaeological components defined for the southeastern Fort area (excluding stockade deposits).

1. Post-HBC Components

   1947-1966 NPS intrusive deposits
   Post-1860 to World War II USA deposits
   Late 19th Century Columbia River flood deposit

2. Demolition Deposits of HBC Structures

3. Post-1834/36 HBC Components

   1848 Southeast Bastion
   ca. 1841-1860 Iron Store
   ca. 1834/36-1841 Columbia River flood deposit
   ca. 1834/36-1860 Indian Trade Store Privy/Trash Pit
   ca. 1834/36-1860 Blacksmith Shop
   Post-1834/36 (?) unassigned HBC deposits

4. 1829-1834/36 HBC "Smudge Pit" Component

5. Pre-1829 Columbia River Floodplain deposit

6. Unidentified Deposits

Table 2 -- Stratigraphic deposits in the southeastern Fort area (excluding stockade trenches).

1. Post-HBC construction components

   1a) National Park Service intrusions of 1966.
   1b) Archeological explorations of 1947-1952.
   1c) Vancouver Barracks coarse grey sand.
   1d) Vancouver Barracks, mixed coarse grey sand and native soils.
   1e) Late 19th Century flood deposit.

2. Demolition deposits of HBC structures

   In Blacksmith Shop area layer 2, there was mortar and masonry rubble, scorched clay and scorched native soils. Over Indian Trade Store Privy/Trash Pit the deposit was characterized by native soils with inclusions of HBC material.

3. Post-1834/36 HBC components

   3a) Prepared floor of the Blacksmith Shop.
   3b) Prepared pit for foundation footing of Blacksmith Shop.
   3c) Gravelly buff to yellow soils marbled with dark grey soils; backfill from 1841-1845 south and east HBC stockade excavations.
   3d) Mixed dark brown and buff soils; backfill from 1850-1854 east HBC stockade excavation.
   3e) Metal concentration in Privy/Trash Pit.
   3f) Metal concentration, inclusions of brick, charred and uncharred wood scraps; some mixture with layer 3g.
   3g) Privy deposit; HBC materials mixed with feces and berry (?) seeds.
   3h) Mixed buff and grey soil, no cultural materials. Possible cave-in of privy wall.
   3i) Grey silty clay with inclusions of scorched clay, charcoal, and occasionally ash. Possible Columbia River flood deposit.

4. 1829-1834/36 HBC "Smudge Pit" component

5. Pre-1829 Columbia River floodplain deposits

Table 3 -- Archaeological components and features observed in the southeastern Fort area (excluding stockade trenches).

Components with associated Features	Feature Descriptions
POST-HBC COMPONENTS	
1947-1966 NPS	
F596 (not illustrated)	1947-1952 Caywood trenches in the Blacksmith Shop area
Post-1860 USA	
F332	Waterline trench
F526, F624	Unidentified pits
F555,F583, F609, F680, F686, F690	Rectangular posts
F681, F684, F685	Plow Ruts
F682	Wooden board
Late 19th Century Flood	
No Features	
DEMOLITION DEPOSITS OF HBC STRUCTURES	
F450(?)	Boards in the South Stockade which may have come from the Southeast Bastion.
F591	Mortar and Rubble in the Blacksmith Shop
F593, F644	Wood scraps and a board cast in the Blacksmith Shop
POST-1836 HBC COMPONENTS	
1848 Southeast Bastion	
F450(?)	Boards in South Stockade
F504(?), F505	Posts
ca. 1841-1860 Iron Store	
F688(?)	Stake
F689(?)	Post
ca. 1834/36-41 Flood	
No Features	
ca. 1834/36-1860 Privy	
F523	Privy/Trash Pit

Table 3 (cont.)

Components with associated Features	Feature Descriptions
ca. 1834/36-1860	
Blacksmith Shop	
F539	Mortar
F548	Sill
F573, F595, F598, F602, F605	Interior Footings
F574, F585, F586, F590, F594, F647, F656, F659, F672, F673-F674, F675	Foundation Footings
F576, F581, F582, F584, F588, F600, F603, F604, F608, F610, F625, F652, F653, F654, F658, F678	Posts or Postholes
F599, F601, F606, F607, F616, F617, F618, F642, F643, F645, F646, F649, F650, F651, F664, F667, F669, F670, F671, F679	Sub-floor Pits
F611-615, F619-623, F626-637, F639-641, F660, F665, F666, F668, F676, F676, F727	Stakes
F661	Cast of metal pin
F662, F663	Prepared Floors
Unassigned HBC	
F450(?)	Boards in South Stockade, may belong to the post-1841 SE Bastion
F479(?), F692(?)	Pits, may belong to the pre-1834/36 "smudge pit" component
F504(?), F505(?)	Posts, may belong to the post-1841 SE Bastion
F589(?)	Charred wood scraps, may belong to the pre-1834/36 "smudge pit" component
F687	HBC storage pit
F688(?)	Stake, may belong to the ca. 1834/36 Iron Store
F689(?)	Post, may belong to the ca.1834/36 Iron Store

Table 3 (cont.)

Components with associated Features	Feature Descriptions
1829-1834/36 HBC "SMUDGE PIT" COMPONENT	
F464, F465, F479(?), F485, F495, F592, F655, F657, F677, F683, F691, F692(?), F693	Smudge pits
F468, F484, F485, F516, F520, F521	Pits
F589(?)	Charred wood scraps
F648	Post
PRE-1829 COLUMBIA RIVER FLOODPLAIN	
No Features	
UNIDENTIFIED DEPOSITS	
F544, F575, F597	Wooden stake and stake casts

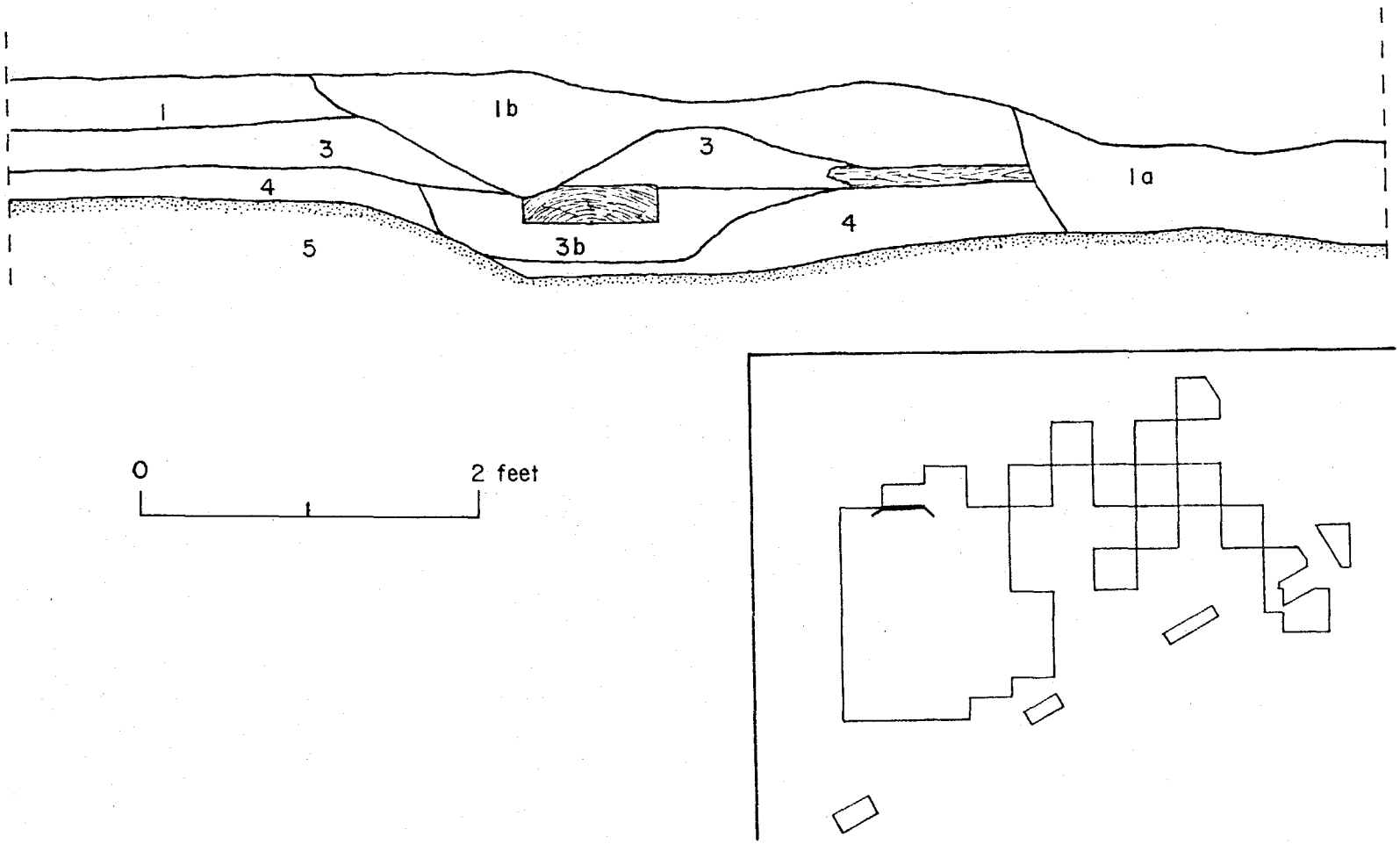


Fig. 3 -- Stratigraphic profile of the north wall of excavation unit S30 E80 in the Blacksmith Shop.

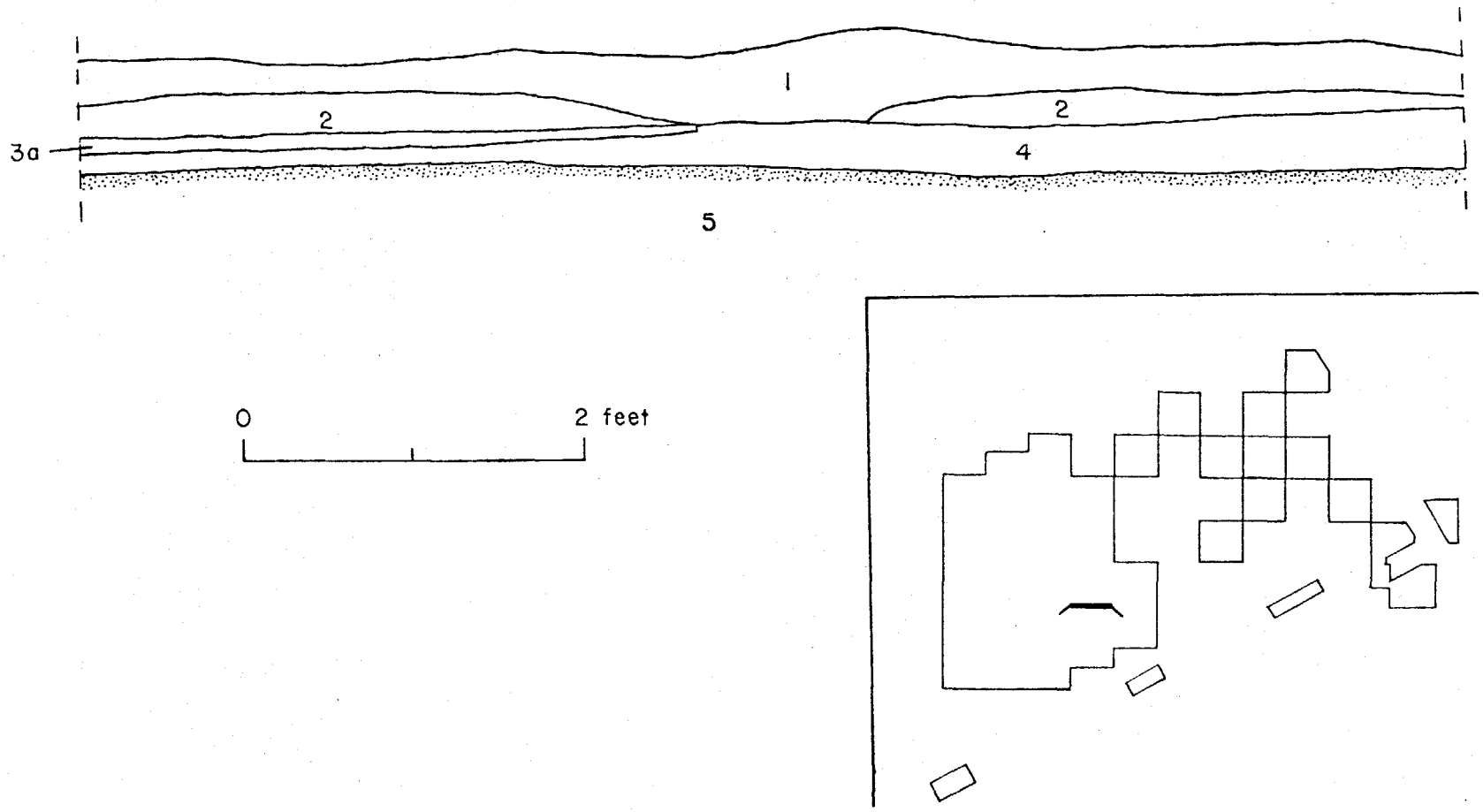


Fig. 4 -- Stratigraphic Profile of the north wall of excavation unit S60 E100 in the Blacksmith Shop.

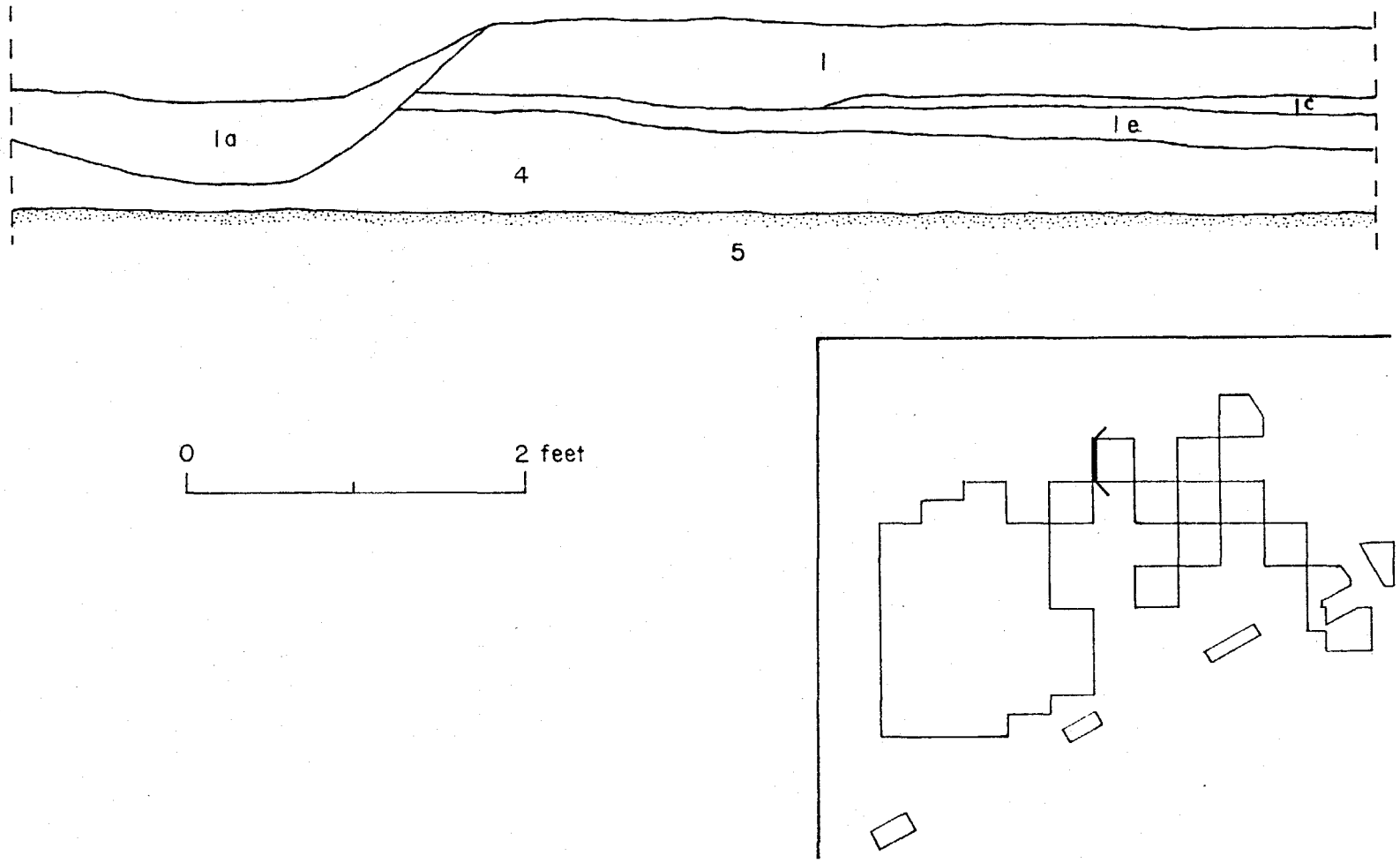


Fig. 5 -- Stratigraphic profile of the west wall of excavation unit S10 E120 in the Iron Store.

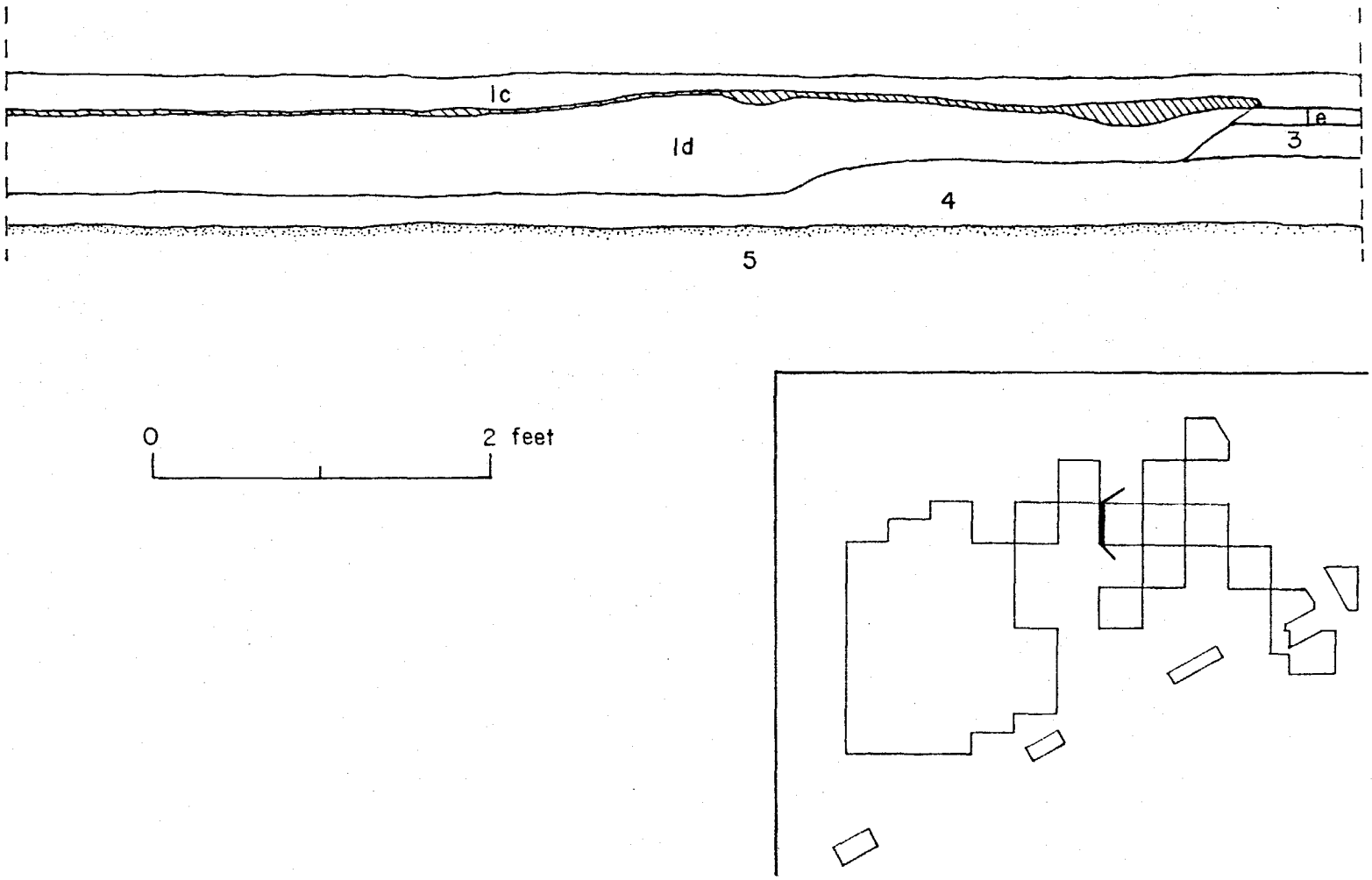


Fig. 6 -- Stratigraphic profile of the west wall of excavation unit S20 E130 in the Iron Store.

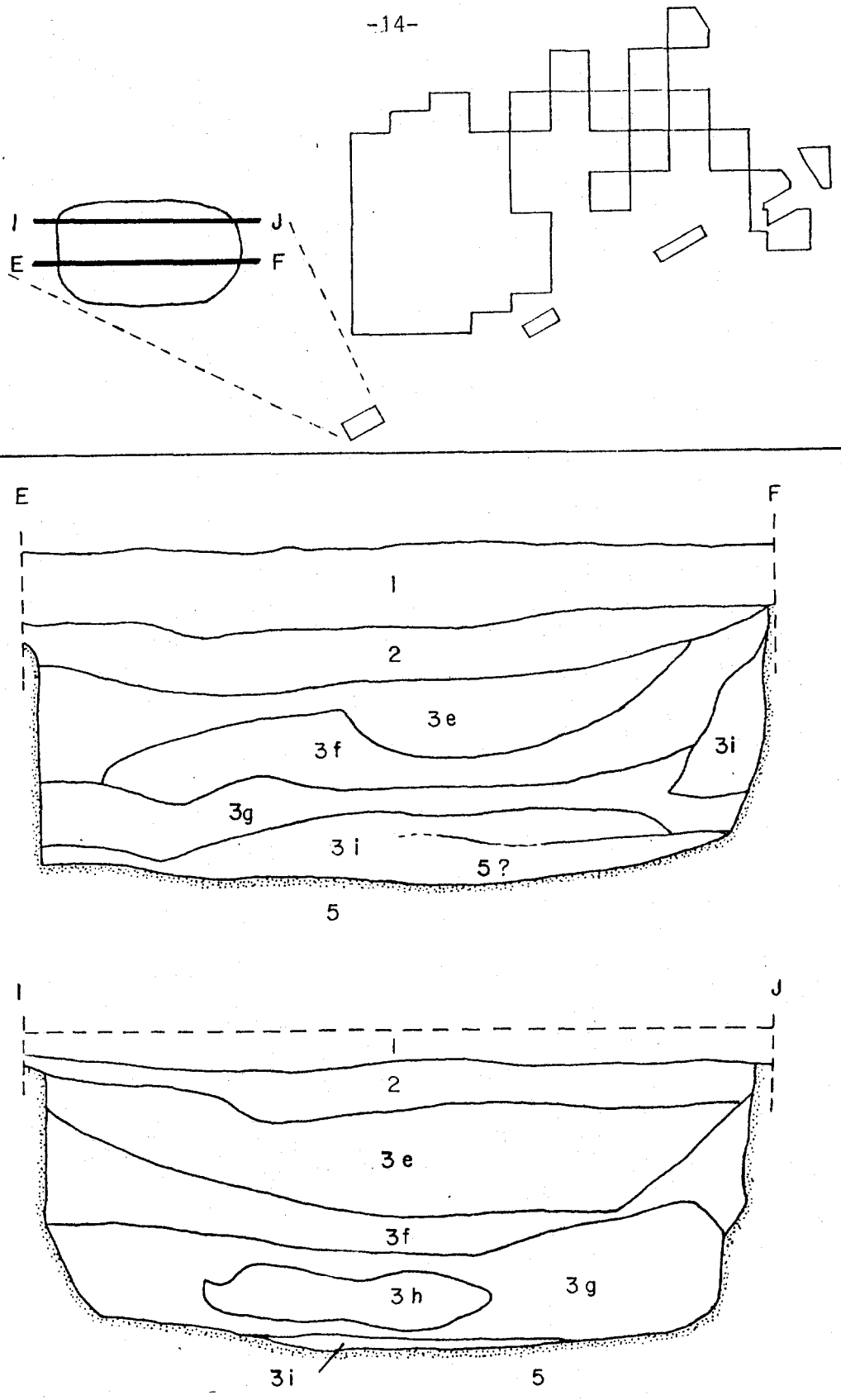


Fig. 7 -- Stratigraphic profiles in the Indian Trade Store Privy/Trash Pit (F523).

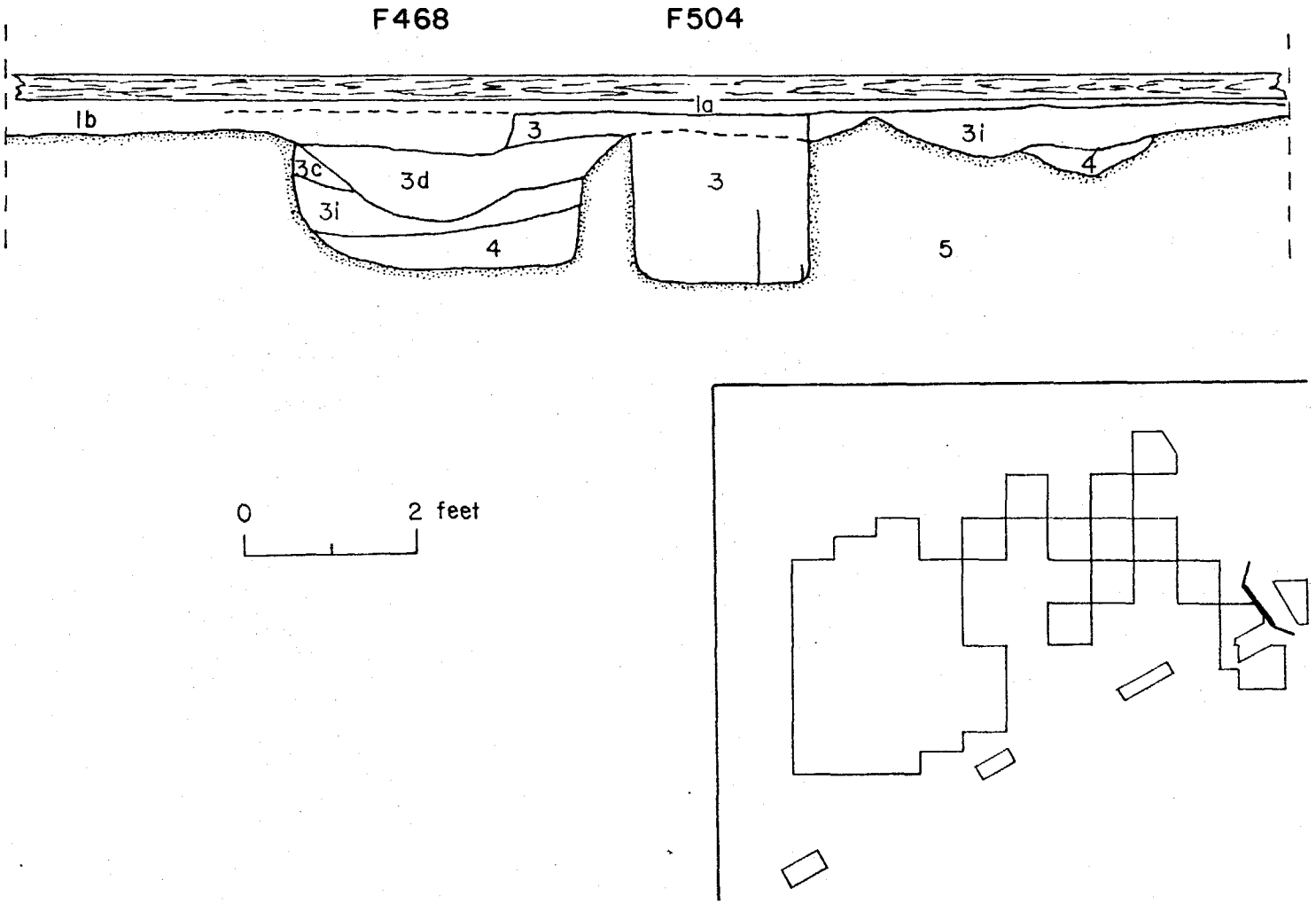


Fig. 8 -- Stratigraphic profile of the west wall of the ca. 1841-1860 East Stockade trench in the Southeast Bastion area.

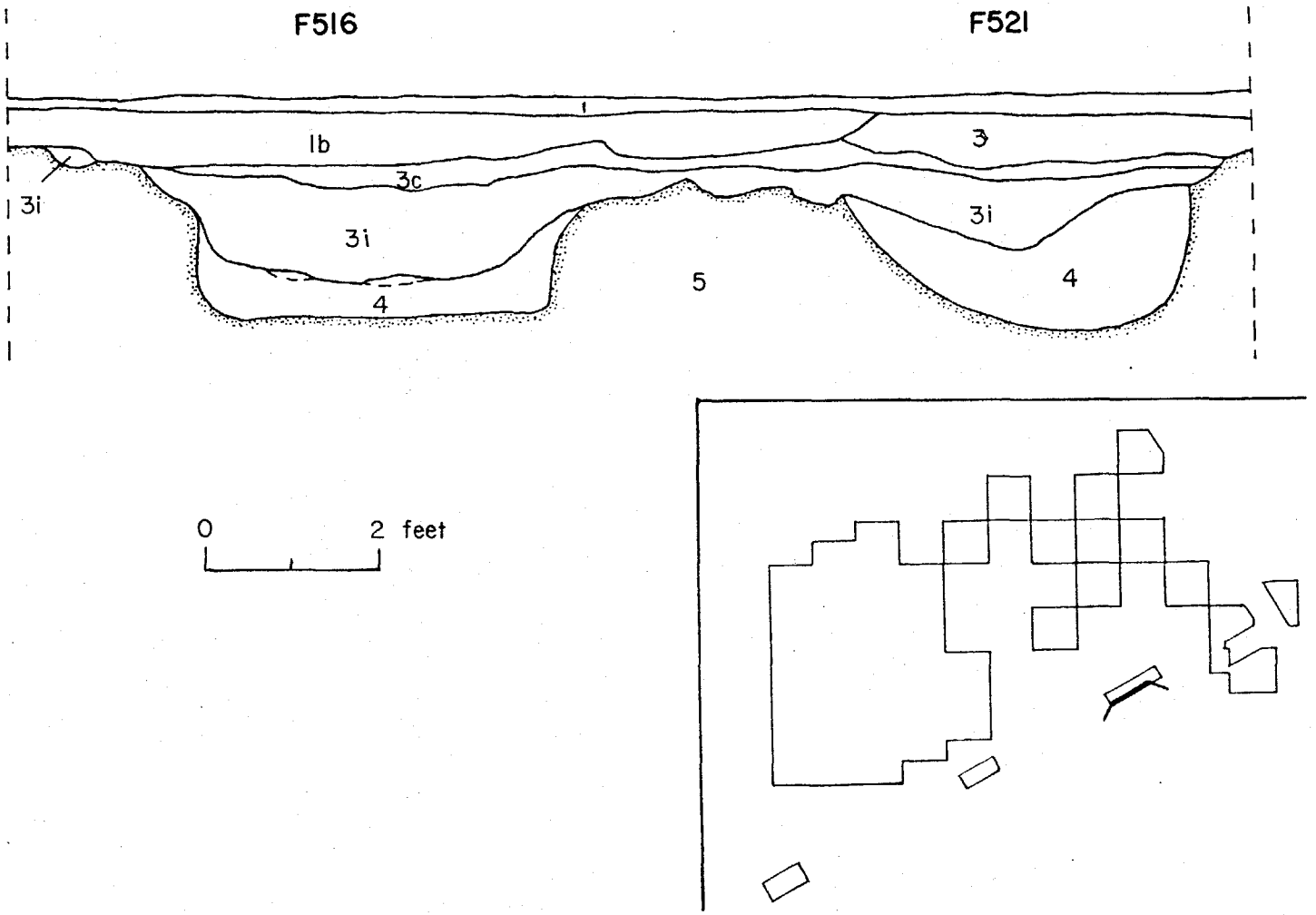


Fig. 9 -- Stratigraphic profile of the north wall of the ca.1841-1854 South Stockade trench showing two large charred pits.

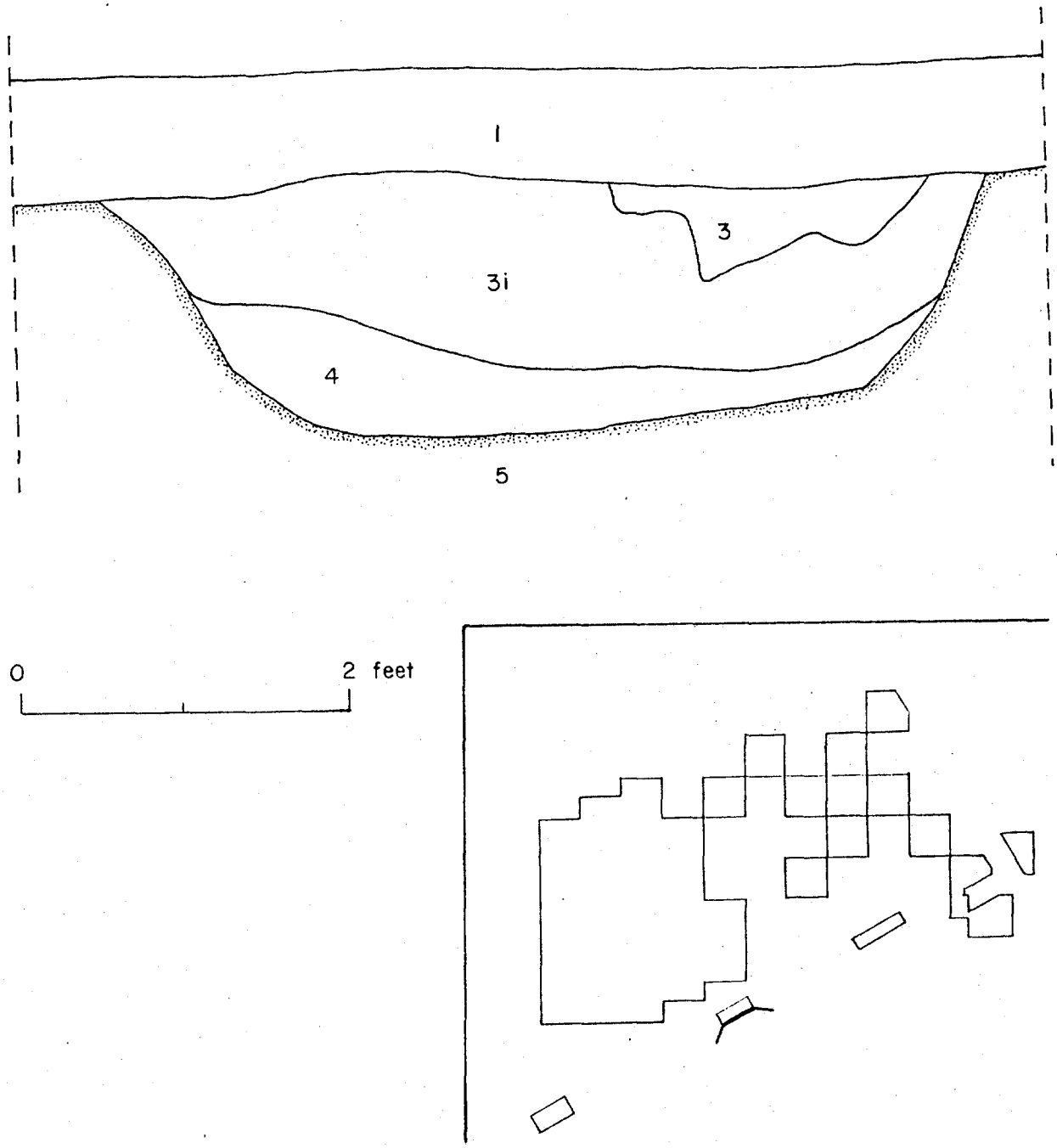


Fig. 10 -- Stratigraphic profile of a large charred pit (F520).

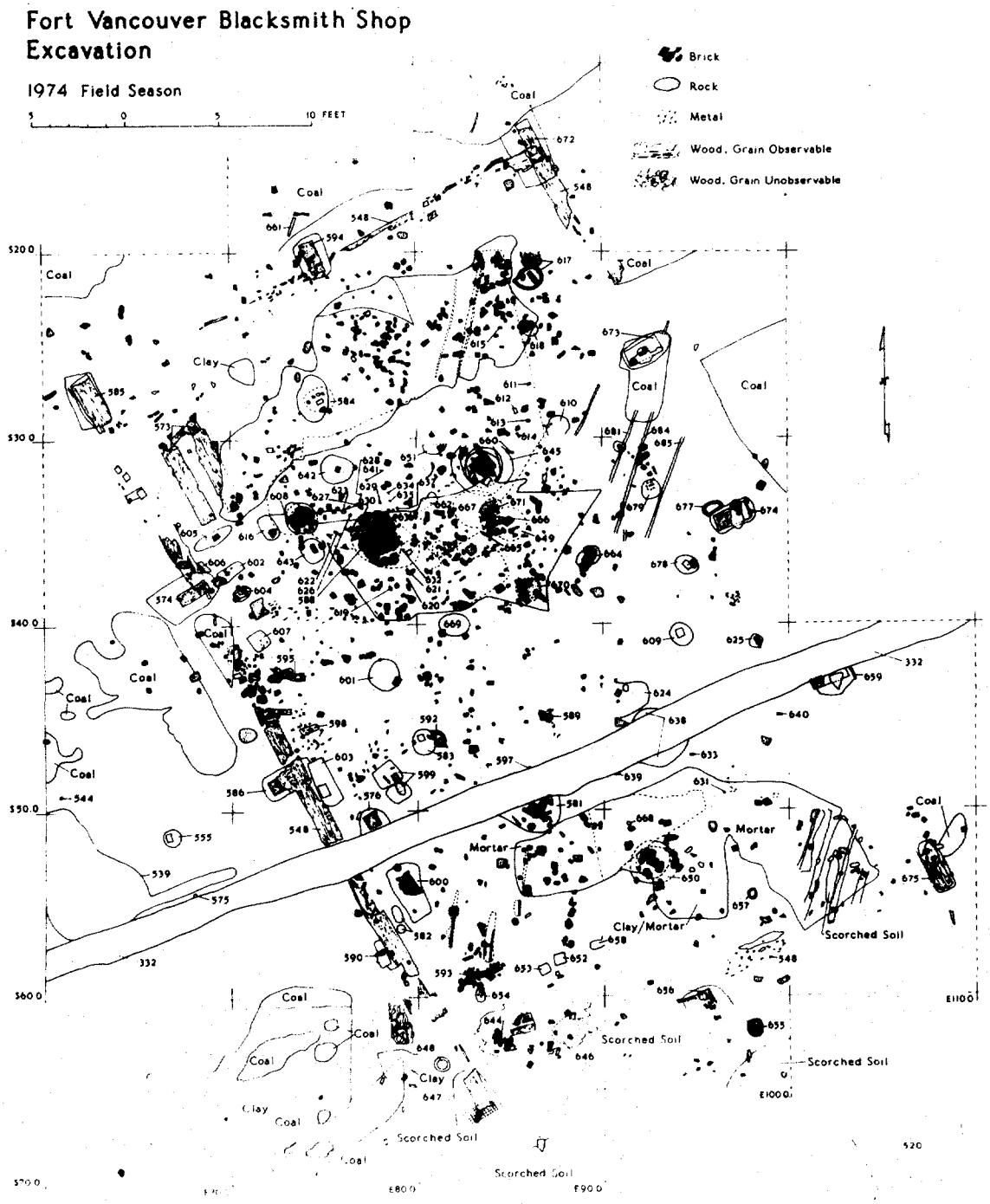


Fig. 11 -- Excavation map of the Blacksmith Shop area.

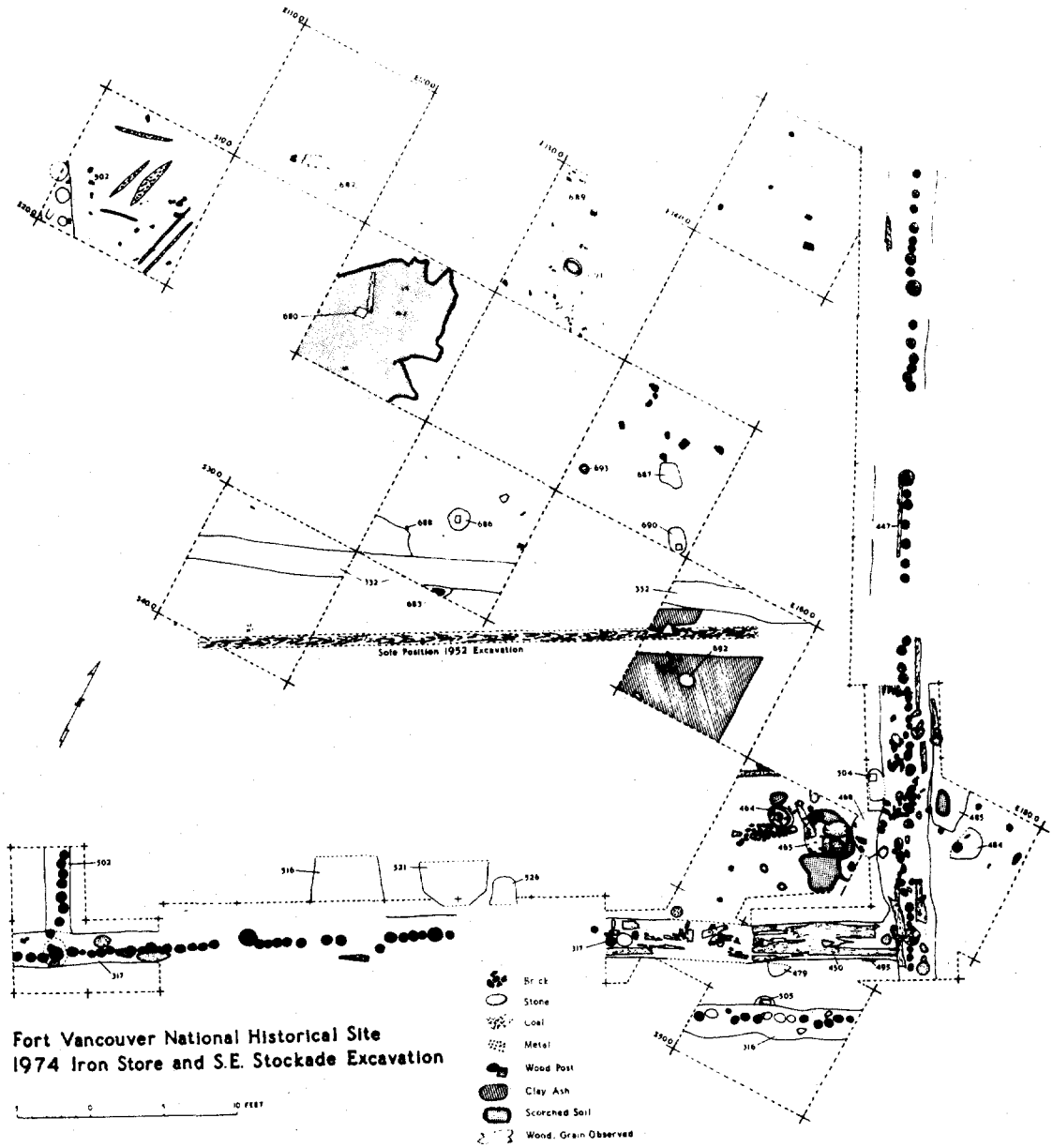


Fig. 1[illegible] Excavation map of the Iron Store and Southeast Bastion areas.

Post-HBC Construction Components

1947-1966 NPS Intrusive Deposits

During the period 1947-1966, the NPS sponsored archaeological excavations and installed subsurface interpretive devices in the southeastern Fort area. The results of these activities both disturbed and covered earlier USA and HBC deposits. Early in this period, Louis Caywood excavated various portions of the area, and when his trenches were recognized during our excavation, they were assigned a feature number. The only such number assigned to the Caywood trenches in the area covered by this report was F596. To preserve the clarity of more relevant features in the HBC deposits, F596 was not depicted on the excavation maps included within this report. In addition to the remains of the Caywood trenches, 2 strata were recognized which have been interpreted as representing backfill from previous NPS excavations (Table 2, Strata 1a-b). These strata represent both backfill from the Caywood excavations as well as backfill from 1966 NPS interpretive installations.

During 1966, the NPS installed asphalt pads with concrete curbs over the Blacksmith Shop and Iron Store locations, and asphalt pads with wooden edging over the 1845 stockade locations. These devices were installed so that their upper surfaces were at ground level--a practice which necessitated the removal of some 0.1-0.6 ft. of the upper deposits. These upper deposits consisted primarily of USA strata, so relatively little damage was sustained by the lower HBC strata. However, the archaeological integrity of the site was seriously damaged by the installation of these interpretive devices.

Post-1860 to World War II USA Deposits

During the 87-year period between HBC and NPS activities within the southeastern Fort area, the United States Army (USA) utilized the area for a wide range of unidentified activities. The *in situ* evidence of these activities consisted of 13 features (Table 3) and 2 strata (Table 2).

The most prominent USA feature observed was a trench prepared for a waterline (F332, Figs. 11-12). Similar trenches traversing the east-west dimension of the Fort site have been previously discussed (Hoffman & Ross 1974a:3;1975). The second most prominent USA feature was an alignment of 5 rectangular posts (Table 3; Figs. 11-12) which were a continuation of the alignment previously reported to the west in the Indian Trade Store area (Hoffman and Ross 1975). An additional rectangular post (F680) was observed to the north of the east-west alignment in the Iron Store area (Fig. 12), but it did not appear to be associated with other USA features.

In the Blacksmith Shop area, 3 narrow linear depressions (F681, F684, F685) were observed both inside and outside the Blacksmith Shop (Fig. 11). These linear features formed parallel patterns which were skewed when contrasted with the north-south and east-west wall alignments of the Blacksmith Shop. While somewhat ambiguous, they appeared to be the remnants of plow furrows from early Army activities.

Three additional USA features were observed (Table 3), but their interpretation remains unknown. Two pits (F526, F627) were uncovered, and one (F624) contained the remains of a few tin cans.

In addition to the above features, 2 USA strata (Table 2, Strata 1c-d) were observed in the Iron Store area. In a few areas these strata were separated by a layer of burned material (Fig. 6), and the lower deposit differed from the upper (1c) by the inclusion of additional silts (Stratum 1e). Within the burned zones, numerous wire nails were observed, and comparisons with a map of past excavations (Caywood 1955:sheet 6 of map 2) indicated that the deposits represented pre-NPS deposition.

Late 19th Century Columbia River Flood Deposit

A late 19th Century Columbia River flood deposit has long been noted as a temporal marker between Vancouver Barracks and HBC deposits (Steele et al.1975; Hoffman and Ross 1973c:8). Outside of the Fort Vancouver stockades, silt deposition from the same flood has been observed over HBC components in the "pond" south of the Kanaka Village area, and it has been dated as the flood of 1894 (Chance: Personal Communication). In the southeastern Fort area, this flood deposit, recorded as Stratum 1e, was observed only in the Iron Store area. (Figs. 6-7) elsewhere within the Fort, it was characterized by a thin stratum of silty clay, found immediately below Vancouver Barracks deposits and above the HBC strata. Shown in sections C-C' and D-D' of the Iron Store, this stratum was a distinct deposit interrupted only by USA and NPS construction activities.

Demolition Deposits of HBC Structures

Deposits from the demolition of the Blacksmith Shop, Indian Trade Store Privy/Trash Pit and possibly the Southeast Bastion were observed. Although the deposits for each structure were descriptively different, they were placed together in this component due to their shared stratigraphic position immediately below USA and above undisturbed HBC deposits.

Blacksmith Shop

Features, strata, or observations of this component in the Blacksmith Shop area included: 1). mortar and masonary rubble variously recorded as stratum 2 and F591; 2). scorched native soils which were observed throughout the shop area, but were concentrated in the interior-exterior southwestern Shop area; 3). burned areas on east foundation footings, marking areas of sill contact; and 4). two wood concentrations (F593 and F644).

Of the three large amorphous mortar and masonary rubble deposits, 2 were in the northern half and one in the southern half of the Shop. All three were centered and generally oriented parallel to the shop width (Fig. 14). These deposits were characterized by coral, mortar and clay with inclusions of brick fragments, angular stones and coal, which varied within and between the three deposits. Located 0.10 to 0.40 ft. below present surface, these deposits documented Shop demoliton and sealed the prepared floors and subsurface features beneath.

Indian Trade Store Privy/Trash Pit

Stratum 2 of the Indian Trade Store Privy/Trash Pit was characterized by a brown soil matrix with inclusions of coal, charcoal and HBC artifacts. This stratum was a striking contrast to the heavy metal concentrations of stratum 3 found immediately beneath (Fig. 7). The distinction between Strata 1 and 2 was not as easy to observe and there was a tendency for the 2 strata to blend together.

Southeast Bastion

The only feature of this component tentatively associated with 1848 Southeast Bastion consisted of at least three wooden boards above and two below (F450) found in the 1845 south stockade trench (Hoffman 1974:Fig.46, West Wall Unit 144).

Post-1834/36 HBC Components

As stated above, all post-1834/36 HBC deposits in the southeastern Fort area have been included within the component, but the previously reported HBC stockades (Hoffman 1974) will not be re-described in the following section. However, one portion of the 1834/36 East Stockade (F502) was uncovered during the excavation of the Iron Store area (Fig. 12, excavation unit S20 E110).

ca. 1834/36-1841 East Stockade

A short section of a previously unreported portion of the 1834/36 East Stockade (F502) was observed in S20 E110 (Fig. 12). This section of the stockade was located between points "F-J" of the "phase II" stockade recorded in a previous report (Hoffman 1974:37). Dimensions of the trench were 2.20 ft. wide x 5.40 ft. long x 2.80 ft. deep. Backfill in the trench was buff with black soil and stones. A single line of pickets was observed including 2 posts 0.60 ft. and 1.00 ft. in diameter and a kingpost 1.30 ft. in diameter. Posts extended between 1.6' and 3.15' below present surface, whereas the kingpost extended to 3.60 ft. below present surface. The kingpost observed in this excavation was located, on centers, 53.20 ft. north of a kingpost observed at point "J" of the phase II south stockade system.

1848 Southeast Bastion

John Hussey, in his historical research on the buildings of Fort Vancouver, demonstrated that the bastion erected in the southeastern Fort area was "...not a long-lived structure" (Hussey 1974:682). Citing a journal entry made by Thomas Lowe on January 24, 1848, Hussey documents the construction date for a Bastion erected in front of the Fort, and further noted that none of the known historical maps or sketches depicted this Bastion (Ibid:681). The only map which noted any anomoly in this area was the Bonneville map of 1854 (Hussey 1972:plate 19), and all that is depicted is a right-angle eastward bend in the eastern stockade. From presently available archaeological evidence, this bend cannot be demonstrated. In fact, no archaeological evidence has yet been recovered which would prove the former existence of a Bastion in the southeastern corner of the Fort.

The only possible *in situ* features observed which *might* have been associated with a structure in the southeastern stockade corner were the boards in South Stockade (F450), first reported by Caywood, and 2 posts (F504 and F505) uncovered during the current excavation. Caywood (1955:8-9) reported that "The rotted remains of three parallel timbers roughly 6 to 8 inches square were found paralleling the inside wall". Actually the timbers were found in a South Stockade trench. It is noted that the timbers had to date later than 1841 since they were resting on Phase III posts, and were probably earlier than 1854 since they were apparently truncated by Phase V construction. The timbers extended 11.00 ft. west of the southeast stockade corner, and terminated at a line just north of the post (F505) outside the 1841-1854 South stockade (Fig. 12).

This post had been truncated by the later (1854-1860) South Stockade, and was apparently contemporaneous with a second post (F504) which was inside the East Stocade and likewise truncated by 1854 construction activities. These 2 posts, like the parallel timbers in the South Stockade trench, *might* have belonged to a structure in this area; but based upon the evidence currently available, this structure cannot be identified nor even partially reconstructed.

ca. 1841-1860 Iron Store

The dates for initial construction of the Iron Store remain obscure. As Hussey (1974:297, 337-338) noted in his most recent examination of the dating problem, the Emmons map of 1841 (*Ibid*:Plate 3) depicted no Iron Store, but both the sketches of Eld and Agate (*Ibid*:Plates 4 and 53), drawn within a month of Emmons map, depicted a building which occupied the same location as the 1845 Iron Store. Hoffman (1974:125) argued that the Eld and Agate sketches demonstrated the 1841 expansion of the East Stockade and that the easternmost building within the southeastern corner was the Iron Store. Referencing Peers Line of Fire map of 1844 which did not depict a building in the Iron Store location, Hussey (1974:298,338) argued that the Iron Store could not be historically identified until its appearance on the 1845 Vavasour map (*Ibid*:Plate 7). For purpose of this report, the earliest date of 1841 has been designated for the Iron Store; but in view of the above problem, it must be emphasized that this is a tentative date which awaits further authentication.

Turning to the in situ remains of the Iron Store, Caywood (1955: 18, sheet 6 of map 2) stated that "efforts to determine the exact location of the Iron Store were not too successful..."--a statement to which the present authors must also concede. Archaeological evidence demonstrating the existance of the Iron Store were exceedingly rare, and the only possible in situ remains were "the sole of the south wall" and "hard-packed area" reported by Caywood (ibid:18) together with a stake (F688) and post (F689) exposed by the current project. Neither the "sole" nor "hard-packed area" was observed in 1974, and we can only accept Caywood's interpretations of them. The stake was found in S30 E140 (Fig. 12) at a depth of 1.10 ft. below present surface. Dimensions of the stake were 0.10 x 0.10 x 0.10 ft., and its width-thickness coincided with similar stakes observed in the Blacksmith Shop (see Table 7). Presumably the stake was much longer, but it was truncated by Stratum 1 deposits.

The wooden post and post hole (F689) was found in S10 E140 beneath Stratum 1e. The dimensions of the post were 0.50 x 0.60 ft., and it extended from 0.40-1.00 ft. below present surface. Neither the stake nor post could be positively attributed to known structure; and because of the massive disturbance in this locality, no structure can be hypothesized. As depicted in Figs. 5-6, all recognizable HBC deposits within the Iron Store area had been removed and replaced by post-HBC deposits including Vancouver Barracks activities and late 19th Century flooding.

ca. 1834/36-1841 Columbia River Flood Deposit

No historical accounts of floods at Fort Vancouver have been found for the temporal period of the southeastern Fort area. From archaeological evidence, a hypothesized flood deposit was found sporadically throughout the southern limits of our excavation, and it has been depicted in stratigraphic profiles as Stratum 3i in the pits along the South and East Stockades trench (Figs. 7-10). It was basically characterized as a moist grey clay with inclusions of scorched clay, ash, charcoal and bone fragments. When deposited on level ground, the clay was relatively thin, only 0.10 ft. thick, and found 0.10-0.40 ft. below present surface. When found in or over a pit, thickness and depth varied.

The known range for the clay deposits extended from F523, a privy south of the Indian Trade Store, east to the exterior of the outer east stockade trench in S35.0'xE180.0' (Fig. 12). The furthest north it was positively recognized was along the inner South Stockade excavation up to the southwestern vicinity of the Blacksmith Shop.

Stratigraphically, the flood deposit was the first (or lowest) stratum in the Indian Trade Store privy (F523), a pit excavated after 1834/36; and was truncated by the 1841 East Stockade and covered by Stratum 3c, 1841-1845 stockade backfill (Figs. 7-8). Like the previously described late 19th Century flood, this ca. 1834/36-1841 flood must have been an extremely high flood; and its limited occurrence within the southeastern Fort area can be explained by the geographic position of the fort relative to the natural soil deposits (see discussion on pre-1829 Columbia River Floodplain Deposits). The natural soil deposit in the southeastern Fort area is the Sauvie silt loam (McGee et al. 1972). One soil sample was collected from Stratum 3i of F516 (Fig. 9) by Bill Alderman of the U.S. Department of Agriculture, Soil Conservation Service. A variety of tests were performed on this sample (see Appendix I), and the mechanical sieve and hydrometer analyses documented the fact that this stratum is a silt loam composed of 21% clay, 71.5% silt, 6.5% sand and 1.0% gravel.

ca. 1834/36-1860 Indian Trade Store Privy/Trash Pit

No known historical account of this privy has been found, but its presence with the ca. 1834/36 eastern stockade enclosure sets an initial date for its construction. As discussed in the report on the Indian Trade Store (Hoffman & Ross 1975), the building known as the Indian Trade Store could have been the same building mapped in 1841 by Emmons as the Missionary Store (Hussey 1957:Plate 2); and it could have been built as early as 1834/36. Presumably, the structure could have been utilized to house visiting missionaries, as well as their supplies; and as such, a privy may have been constructed as well.

Archaeolgically, the privy (F523) was located directly behind the southeast corner of the building known as the Indian Trade Store (Fig. 1) and adjacent to the ca.1834/36-1854 South Stockade (Fig. 16a; see also Hoffman & Ross 1975). Elongated east-west, or parallel to the stockade, the dimensions of the upper walls of the pit were 5.00 x 9.20 ft, narrowing slightly at the base. Pit depth ranged from 0.40 to 4.50 ft. below present surface. Excluding the modern over burden (Stratum 1) there were a total of 6 distinct stratigraphic deposits, each of varying thickness (Fig. 7). Stratum 2, characterized by brown soil with inclusions of crushed coal, charcoal and HBC artifacts, was found deposited uninterrupted over the entire upper portion of the pit. Stratum 3e contained primarily HBC metal and ash, with little or no soil. Although recorded sporadically, a wooden timber with wood scraps and charred wood scraps were found deposited at the top of Stratum 3f, occasionally separating it from Stratum 3e. Stratum 3f primarily contained HBC metal, charred and uncharred wood, and crushed coal; all found in a loose crumbly brown soil matrix. Stratum 3g was characterized by fecal remains mixed with what appear to be berry seeds in a black soil matrix. The presence of HBC metal objects in this stratum indicated mixing between Strata 3f and 3g, especially toward the northern end of the pit. Completely enclosed by Stratum 3g was a lens of sterile buff and grey soil (Stratum 3h). Found in the northern end of the pit, this stratum has been interpreted as a cave-in of the north wall. Finally, a grey clay deposit with inclusions of charcoal (Stratum 3i) was found deposited over the entire base of the pit, directly upon sterile soil. This stratum was also observed in the E-F section along the east pit wall (Fig. 7).

The initial deposit in the pit (Stratum 3i) was the ca. 1834/36-1841 Columbia River flood silt which was immediately covered by a privy deposit of fecal material and domestic trash. Above this privy deposit were the 2 blacksmith trash deposits (Strata 3e-f) separated by a thin layer of wood, and because of the lack of fecal material in Strata 3e-f, it has been hypothesized that the pit ceased functioning as a privy and began being utilized as a trash pit for discarded blacksmithing debris.

ca. 1834/36-1860 Blacksmith Shop

The first positive historical reference to a Blacksmith Shop in the southeastern Fort area was by Emmons in 1841 (Hussey 1972: Plate 2). Emmons map depicted a Blacksmith Shop (with 4 furnaces) in the extreme southeastern corner of what has since been identified as the ca. 1834/36-1841 southeastern stockade. Hussey (1974:311) demonstrated that "according to the 1846-1847 inventory, the 'Forge' (i.e., the Blacksmith Shop) measured 45 x 30 feet"; and that on June 15, 1860, a board of Army officers reported the Blacksmith Shop "...long since abandoned by the Company--in a ruinous condition" (Hussey 1972:156, Plate 24). Long since abandoned indeed, the latest known date for a blacksmith at Fort Vancouver was 1852 (Hussey 1974:336). After this date there is no historical evidence as to the function of the Blacksmith Shop.

In 1947, Caywood began excavations of the Blacksmith Shop area, but not until 1952 were extensive excavations undertaken (Caywood 1955:18). According to Caywood's maps (Ibid: sheet 6 of map 2), only the margins of the Shop were excavated, but from his descriptions it seems probable that some testing must have been done within the interior. The structure uncovered measured approximately 43 x 26 ft. with corner footings in the northwest and northeast, and 2 sills extending from the southwest corner along the west and south walls. Finally, "...a hard-packed earthen floor..." and an "...abundance of coal, charcoal, cinders and iron fragments of all kinds" were reported (Ibid:18). Caywood's observations of the Shop were generally accurate, as far as they went; but the findings from the 1974 excavation were much more complex and have provided a detailed view of the structural foundation and interior structures.

Foundation Remains

The foundation remains of the Blacksmith Shop consisted of 12 primary footings, one repair footing and 4 sill remnants. These remains defined a rectangular structure, roughly 43 ft. (N-S) by 27 ft. (E-W), whose north and south foundation each consisted of one sill with 2 end footings and one central footing. The east and west foundations each consisted of one sill with 2 end footings (shared with the north and south foundations) and 3 central footings.

Foundation Footings. These footings were originally set in prepared rectangular holes, the mean dimensions of which were 1.75 x 2.68 x 0.43 ft. (Table 4). In footing holes, the fill varied according to their location to the interior work areas, but generally it consisted of a black or brown gravelly soil. Cultural items in the footing holes suggested that the holes were partially opened during HBC occupation.

Table 4 -- Characteristics of the foundation footings from the Blacksmith Shop.

Feature #	Type	Footing Width x Length x Thickness (ft)	Footing Depth bs (ft)	Footing Width x Length x Thickness	Distance from last footing (ft)	Remarks
585	wooden block	1.20 x 2.70 x 0.25	0.40-0.65	1.70 x 3.20 x 0.40	0.00	Northwest corner footing;subsurface
--	wooden block	0.50 x 1.10 x 0.25	0.15-0.20		5.40	West foundation repair footing
574	wooden block	0.75 x 1.95 x 0.30	0.45-0.75	2.10 x 3.60 0.50	6.10	West foundation footing;subsurface
586	wooden block	0.83 x 1.70 x 0.20	0.50-0.70	1.40 x 2.90 x 0.50	11.10	West foundation footing;subsurface
590	wooden block	0.90 x 1.40 x 0.20	0.50-0.70	1.80 x 1.20 x 0.50	10.90	West foundation footing;subsurface
647	wooden block	0.90 x 2.20 x 0.15	0.60-0.80	2.80 x 2.90 x 0.60	8.70	Southwest corner footing;subsurface
656	wooden block	0.70 x 1.00 x 0.10	0.60-0.70	2.40 x 1.80 x 0.70	13.10	South foundation footing;subsurface
675	wooden block	0.90 x 2.80 x 0.20	0.60-0.80	1.00 x 2.90 x 0.40	14.20	Southeast corner footing;subsurface
659	wooden block	0.50 x 1.90 x 0.25	0.70-1.00	1.20 x 2.10 x 0.25	11.50	East foundation footing;subsurface

Table 4 (cont.)

Feature #	Type	Footing Width x Length x Thickness (ft)	Footing Depth bs (ft)	Footing Width x Length x Thickness	Distance from last footing (ft)	Remarks
674	wooden block	1.00 x 1.90 x 0.20	0.60-0.80	1.30 x 2.50 x 0.20	10.20	East foundation footing;subsurface
673	wooden block	0.90 x 2.00 x 0.20	0.80-1.00	1.40 x 2.70 x 0.20	10.10	East foundation footing;subsurface
672	wooden block	0.95 x 3.50 x 0.35	0.65-1.00	2.30 x 4.10 x 0.55	12.10	Northeast corner footing;subsurface
594	wooden block	0.80 x 1.80 x 0.20	0.20-0.40	1.60 x 2.30 x 0.40	13.40	North foundation footing;subsurface
585					14.10	Northwest corner footing

One repair footing along the west wall was the only footing which lacked a footing hole. The wood footings of the east foundation were located at the bottom of their footing holes, whereas, along the north, south and west walls the footings were found well above the bottom of their respective holes.

Footings were straight sided rectangular wooden blocks which, if not previously disturbed, ranged from 0.75 to 1.00 ft. in width, 1.40 to 2.00 ft. in length and 0.20 x 0.35 ft. thick. The corner footings were somewhat larger than wall footings, but they corresponded with the above dimensions, except for their lengths which ranged from 2.20 to 3.50 ft. (Table 4). Footing measurements were taken from soil casts and/or wood remains. Generally, wood preservation was better along the north, south and west walls, whereas wood of the east foundation was poorly preserved and here more emphasis had to be placed upon soil casts for measurements. As noted previously, east wall footings were the only footings in the Shop which were burned or scorched. This burning, however, was discrete and limited to areas where the east sill rested upon its footings. Orientation of all footings was perpendicular to the sill orientation (Figs. 11 and 13a).

The archeological dimensions of the Blacksmith Shop were; 42.20 ft. along the west foundation, 27.50 ft. along the south foundation, 43.90 ft. along the east foundation, and 27.30 ft. along the north foundation. Footing locations of the foundations were not spaced by the characteristic 10.0 ft. interval, noted in past excavations (Hoffman & Ross 1974 a:9). Approximately halfway between each corner footing a center footing had been installed, and central footings were observed in all four foundations. Along the east and west walls, the distance between the corner and the central footings were halved again to install additional footings (Fig. 11;Table 4). This halving technique was also observed in the placement of the west foundation repair footing.

Sills. There was no evidence of prepared trenches for the sills. They were found set directly on the foundation footings, and presumably high enough to allow crushed coal to accumulate under the north, east and south sills.

The only juncture of foundation sills was observed over the northwest corner footing. Poor wood preservation and previous exposure (Caywood 1955:18) complicated observations of this structural feature. However, the north sill was found set directly over the footing. The east sill ended abruptly at the south edge of the footing, but a few fragments were found covering the north sill.

Fig. 13 -- Blacksmith Shop Features.

a. Wooden remains of a West wall foundation footing (F586) and its associated sill (F548) (FOVA neg. 069.51-73/195).

b. Interior pit (F581) interpreted as a wooden anvil base in a prepared hole (FOVA neg. 069.51-73/179).



A



B

Interior Structures

A total of 77 recorded features were located within the Blacksmith Shop foundations (Fig. 11). Masonry debris, mortar and clay deposits, prepared shop floors, and wood fragments were not always given feature numbers, but they were still mapped. Basically, six types of features were observed within the Shop: mortar and masonry rubble, prepared floors, posts and post holes, footings, and subsurface pits. None of these appeared to be structural components of the shop frame or foundation, and it has been assumed that these features were remnants of blacksmithing furnishings or activities.

Mortar and Masonry Rubble. Three large amorphous mortar deposits were located, 2 in the north half and one in the south half of the Shop (Fig. 14). These deposits probably denote general areas of masonry structures, but their specific *in situ* stratigraphic location demonstrates that they were demolition deposits, rather than original Shop masonry structures (see previous section on the demolition component).

Prepared Floors. Two areas with prepared shop floors were observed (Fig. 14). Both floors consisted of forge debris or crushed spalls or scale which were compressed into a smooth, hard platy deposit. Upper elevations of the prepared floor were 0.20 to 0.50 ft. below present surface. In areas of maximum concentration the deposits were 0.05 ft. thick, but tapered to a fine veneer which overlapped the general dirt floor of the shop. The two floors were found centered in the northern and southern portions of the Shop, and like the mortar deposits, they were oriented parallel to the width of the Shop.

Posts and Post Holes. Sixteen posts and post holes were observed (Table 5), and all were identified by flat-based vertical wooden post remains or soil casts of the post set in prepared holes. In 6 cases (F582, F610, F652-654 and F658) preservation was so poor that post dimensions could not be obtained. The posts discussed within this section have been variously interpreted as anvil bases, supports for tool benches and possibly supports for bellows (see Chapter on Interpretations).

Dimensions of the squared or rectangular posts ranged from 0.30 x 0.40 ft. to 0.80 x 0.95 ft. The three rounded post were much larger ranging from 1.05 x 1.20 ft. to 1.50 x 1.70 ft. in diameter. The depth of post intrusion from present surface ranged from 0.80 to 3.15 ft. Within this range half of the posts intruded a foot or less. Four posts (F581, F588, F600 and F610) were supported by means other than just a post hole. The large post of F581 (Fig.13b) rested upon a layer of trap springs, while F588 was braced by a collar of bricks packed around the post (Fig. 18b). Both F600 and F610 had reinforced bracing consisting of wooden stakes driven alongside their posts.

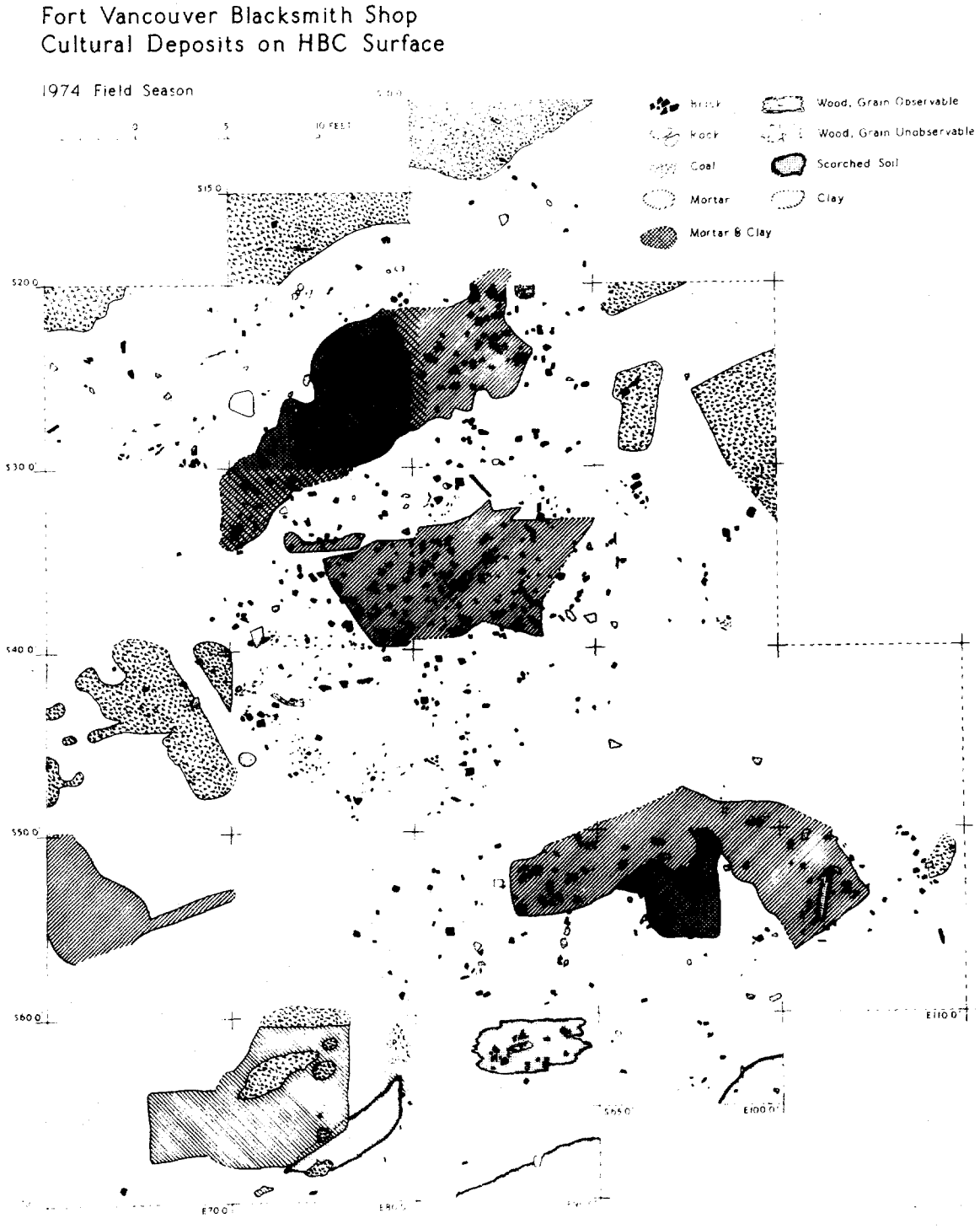


Fig. 14 -- Location of construction debris in the Blacksmith Shop area.

Table 5 -- Post and post hole dimensions in the Blacksmith Shop.

Feature #	Type	Post Width x Length x Thickness (ft)	Post Depth bs (ft)	Post Hole Width x Length x Thickness (ft)	Post Hole Depth bs (ft)
576	wooden post	0.70 x 0.70 x 0.60	0.20-0.80	1.10 x 1.60 x 0.80	0.20-1.00
581	wooden post	1.10 x 1.20 x 1.00	0.60-1.60	1.70 x 3.20 x 1.70	0.40-2.10
582	post hole			0.50 x 0.90 x 1.10	0.70-1.80
584	post cast	0.30 x 0.40 x 0.15	2.05-2.20	1.40 x 1.60 x 2.20	0.10-2.30
588	wooden post	1.50 x 1.70 x 0.70	0.40-1.10	2.60 x 3.80 x 1.60	0.30-1.90
600	wooden post	0.80 x 0.95 x 0.60	0.20-0.80	1.80 x 3.20 x 0.95	0.15-1.10
603	post cast	0.50 x 0.70 x 2.75	0.40-3.15	1.10 x 2.60 x 2.80	0.35-3.15
604	post cast	0.50 x 0.60 x 0.70	0.30-1.00	0.70 x 1.00 x 0.80	0.30-1.10
608	wooden post	1.05 x 1.20 x 1.40	0.20-1.60	1.60 x 1.75 x 1.50	0.20-1.70
610	post hole			1.10 x 1.50 x 1.35	0.35-1.70
625	wooden post	0.30 x 0.40 x 0.50	0.40-0.90	0.70 x 0.80 x 1.20	0.50-1.70
652	post hole			0.60 x 0.65 x 0.30	0.85-1.15
653	post hole			0.55 x 0.55 x 0.50	0.85-1.35
654	post hole			0.60 x 0.80 x 1.25	0.35-1.60
658				0.50 x 0.80 x 0.50	0.60-1.10
678	wooden post	0.30 x 0.50 x 0.70	0.60-1.30	1.00 x 1.30 x 0.80	0.60-1.40

The backfill of the post holes varied from buff to black gravelly soil. Conspicuous in 5 post holes (F584, F588, F604 and F610) was forge debris, and of these 5 only one (F581) was located in the southern sector of the Shop.

Obvious evidence of post removal was observed in the backfill of F584 and F603. All but 0.50 ft. of the original post hole for F584 had been removed and replaced by forge debris and mortar rubble, whereas in F603 the post was removed and its post cast backfilled with trapsprings.

Thirteen of the 15 posts were located in the western half of the Shop (Fig. 11), whereas only 3 (F610, F625, and F678) were located in the eastern half. Posts in the southern sector of the Shop tended to cluster along the foundations. Five posts (F576, F582, F600, F603, and F654) were all found within 3.00 ft. of the west foundation. In the eastern sector, F625 and F678 were located within 4.00 ft. of the east foundation. Posts in the northern sector were located toward the central portion of the Shop.

Interior Footings. Of the 8 interior footings observed, 2 types were observed (Table 6). The most common type consisted of a horizontal wooden board set into a prepared elongated hole. The second type was represented by two parallel horizontal wooden boards set without prepared holes. Presumably, these footings functioned as supports for relatively heavy blacksmithing furniture.

Type 1 footings, although much smaller, were basically the same type of footing observed along the Shop foundations, and the dimensions of their footing holes demonstrated they were very narrow, elongated and shallow features, found at a remarkably consistent depth below present surface. The wood in only one footing hole (F598) was preserved enough to be recognized, whereas the footings in the others were disturbed or removed and the hole backfilled with loose soil mixed with crushed coal and coal dust.

Dimensions of the 2 boards found with the Type II footing (F573) are shown on Table 6. The northern end of the west board was partially destroyed, thus accounting for its shortened length (Fig. 11). Both boards were found on top of and in a Shop floor characterized by crushed coal, coke and scale. The boards were banked by the deposits of this floor allowing a cast to form (Fig. 15b).

Table 6 -- Characteristics of interior footings from the Blacksmith Shop

Feature #	Type	Footing Width x Length x Thickness (ft)	Depth bs (ft)	Footing Hole Width x Length x Thickness (ft)	Depth bs (ft)	Distance From Last Footing
598	I			0.30 x 1.00 x 0.30	0.30-0.60	0.0 ft.
595	I	0.25 x 1.00 x 0.08	0.60-0.68	0.40 x 1.50 x 0.38	0.30-0.68	3.0 ft.
602	I			0.70 x 1.40 x 0.40	0.30-0.70	6.10 ft.
605	I			0.60 x 2.40 x 0.40	0.30-0.70	2.00 ft.
573	II	0.90 x 4.70 x 0.20 1.00 x 5.50 x 0.20	0.10-0.30 0.10-0.30			

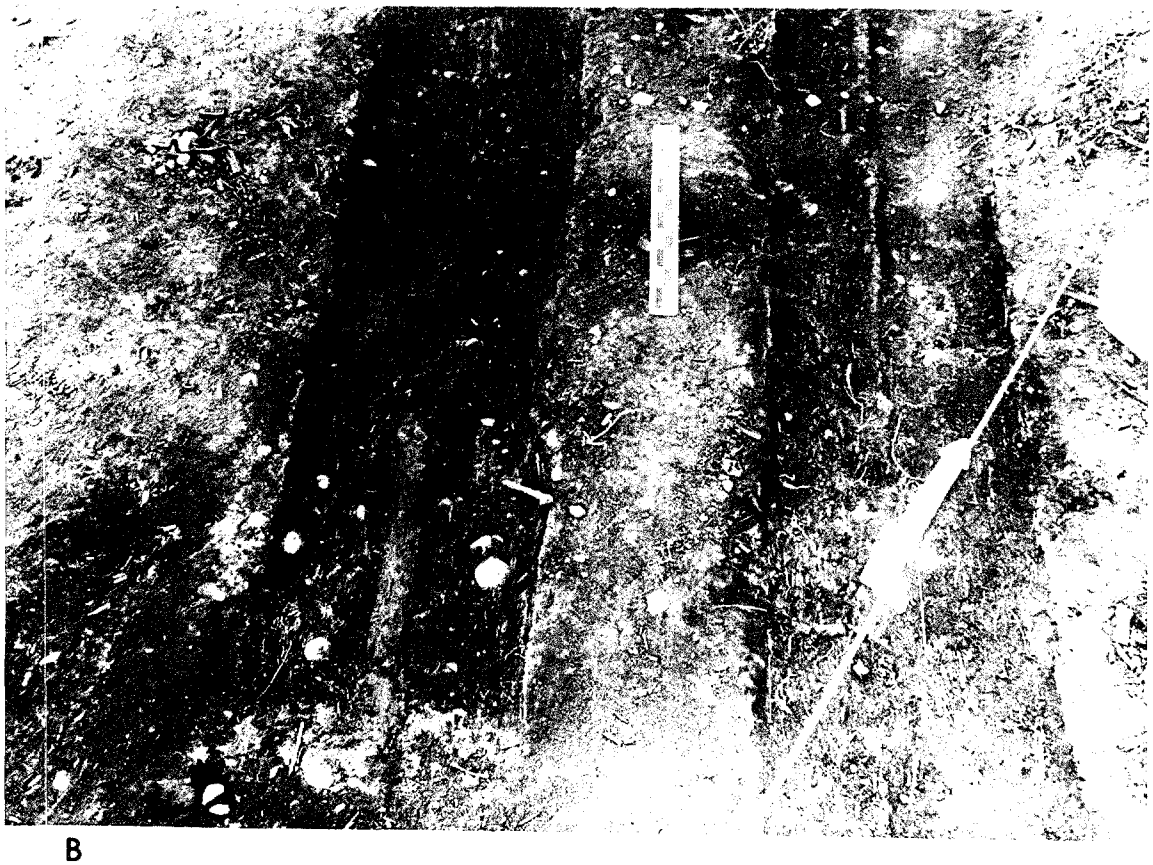
Fig. 15 -- Indian Trade Store Privy/Trash Pit and interior footings within the Blacksmith Shop.

a. Indian Trade Store Privy/Trash Pit (F523) showing concentration of blacksmith debris in upper levels (FOVA neg. 069.51-73/148).

b. Soil casts of a pair of interior footings (F573) within the Blacksmith Shop (FOVA neg. 069.51-74/20).



A



B

Both Type I and Type II footings were located in the northwest corner of the shop. The orientation of the former were east-west, whereas the latter was north-south. Footings were set in pairs with F595 and F598 constituting one pair separated from a second pair (F602 and F605) by a 6.01 ft. gap. The third pair of footings were recorded as one feature (F573).

Stakes. Thirty-one flat based stakes and stake casts were found within the Blacksmith Shop (Table 7). Twenty were rectangular with mean dimensions of 0.10 x 0.24 x 0.46 ft. The mean dimensions of the remaining 11 round stakes were 0.07 ft. in diameter by 0.42 ft. thick. Only 3 retained their wood while the rest were soil casts filled with crushed coal, and coal dust and scale. Twenty-four of the stakes were located in the north half of the Shop (Fig. 16), of these, 15 clustered in the immediate vicinity of a post hole (F588).

Subsurface Pits. Twenty-one pits were found, all of which were intrusive from the Shop floor. Dimensions of the pits ranged from 0.80 x 0.80 x 0.50 ft. to 3.00 x 3.30 x 1.50 ft. Mean dimensions of the pits were 1.42 x 1.72 x 0.76 ft. (Table 8). The pits were usually shallow with 52% less than 0.50 ft. deep, 29% were 1.00 ft. deep and 19% were 1.50 ft. deep. Generally the pits were circular, basin-shaped intrusions; however, 3 squared or rectangular shaped pits were also found.

Most of the pits were filled with native soils and inclusions of debris associated with the Shop (Table 9). Four pits (F642, F651, F667 and F671) were covered by the prepared floor of the Shop, whereas F601 and F646 were covered by the dirt floor found elsewhere in the Shop. Three pits (F642, F643 and F649) had pockets of forging debris at the base of the pit, covered by native soils and sparse inclusions of forging debris. Large rounded stones set in F599, F664, F670 and F671 were very suggestive of post bracing.

Two barrel or tub soil casts, both 1.90 ft. in diameter were found in one prepared pit (F645). The second, or top, barrel was intrusive and destroyed all but 0.20 ft. of the sides and base of the first, or lower, barrel cast. What appeared to be wood stave fragments, 0.30 ft. and 0.40 ft. wide were associated with the second barrel. Several large pieces of metal stock were also found with the forging debris backfill of the second barrel (Fig. 18a).

Table 7 --Stake dimensions in the Blacksmith Shop.

Feature #	Width x Length x Thickness (ft)	Depth bs (ft)
611	0.10 x 0.10 x 0.90	0.40-1.30
612	0.15 x 0.30 x 0.25	0.40-0.65
613	0.10 x 0.30 x 0.40	0.40-0.80
614	0.10 x 0.30 x 0.45	0.40-0.85
615	0.10 x 0.15 x 0.15	0.10-0.25
619	0.50 x 0.25 x 0.20	0.30-0.50
620	0.50 x 0.20 x 0.15	0.35-0.50
621	0.50 x 0.50 x 0.50	0.45-0.95
622	0.10 x 0.30 x 0.60	0.25-0.85
623	0.20 x 0.25 x 0.65	0.80-1.45
626	0.10 x 0.15 x 0.25	0.85-1.10
627	0.05 x 0.15 x 0.25	0.90-1.15
628	0.05 x 0.05 x 0.45	1.00-1.45
629	0.05 x 0.05 x 0.15	0.80-0.95
630	0.05 x 0.05 x 0.20	0.65-0.85
631	0.10 x 0.10 x 1.10	0.35-1.45
632	0.50 x 0.50 x 0.10	1.30-1.40
633	0.10 x 0.25 x 0.50	0.35-0.85
634	0.10 x 0.13 x 0.10	0.30-0.40
635	0.05 x 0.05 x 0.50	0.30-0.85
636	0.05 x 0.05 x 0.20	0.60-0.80
637	0.05 x 0.05 x 0.30	0.45-0.80
639	0.10 x 0.25 x 1.60	0.35-1.95
640	0.10 x 0.25 x 0.10	0.70-1.40
641	0.10 x 0.45 x 0.70	0.45-1.15
660	0.10 x 0.30 x 0.60	0.50-1.10
665	0.10 x 0.25 x 0.25	0.50-0.75
666	0.15 x 0.30 x 0.20	0.50-0.70
668	0.20 x 0.20 x 0.85	0.45-1.30
676	0.15 x 0.30 x 0.25	0.50-0.75
727	0.10 x 0.30 x 0.70	0.80-1.50

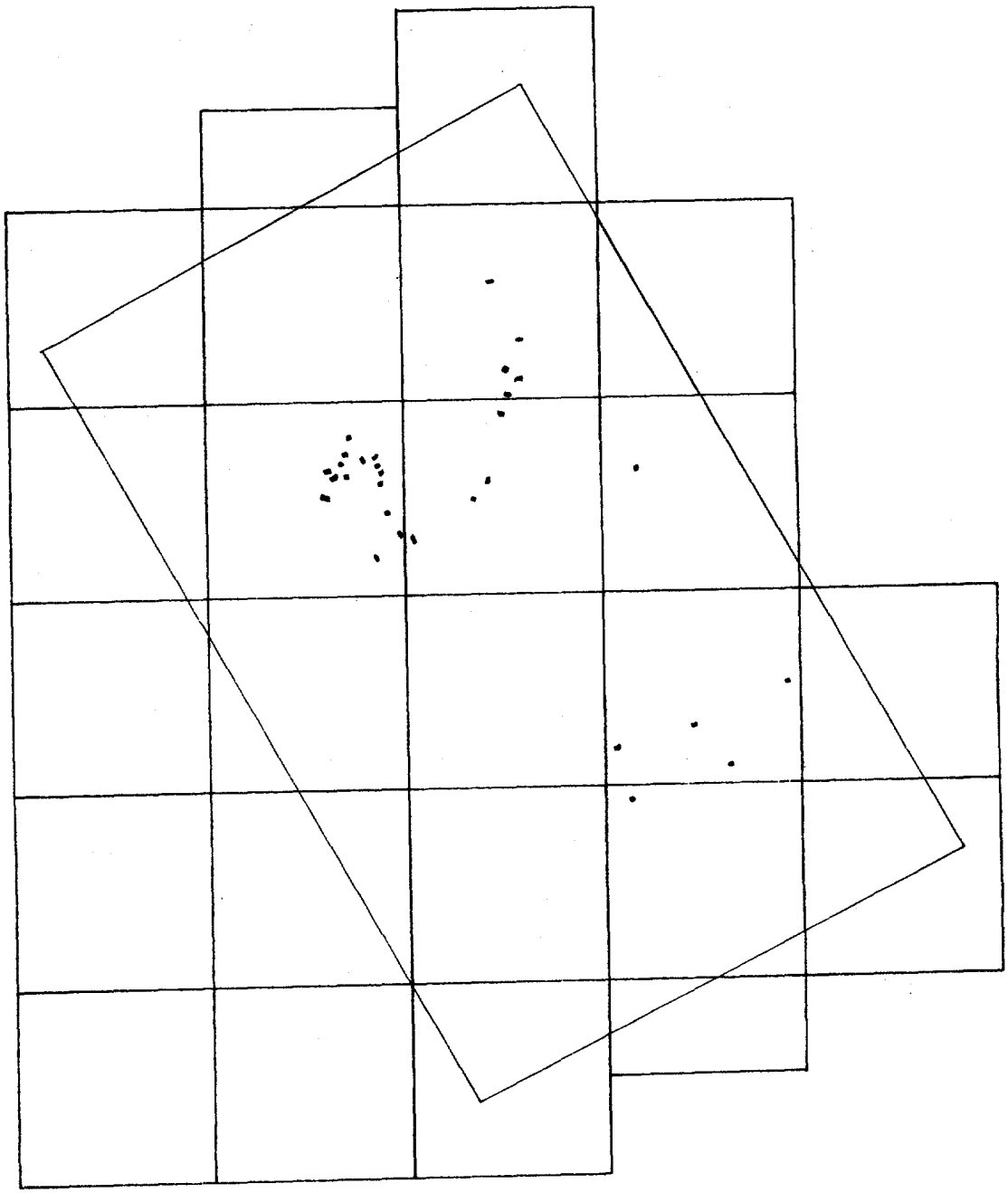


Fig. 16 -- Distribution of stakes within the Blacksmith Shop.

Table 8 -- Subsurface pit dimensions in the Blacksmith Shop.

Feature #	Width x Length x Thickness (ft)	Depth bs (ft)
599	1.40 x 2.30 x 1.05	0.50-1.55
601	1.75 x 1.80 x 0.75	0.45-1.20
606	0.70 x 0.80 x 0.45	0.50-0.95
607	1.00 x 1.00 x 0.45	0.45-0.90
616	0.80 x 1.40 x 0.50	0.25-0.75
617	1.60 x 2.00 x 0.30	0.10-0.40
618	0.80 x 0.80 x 0.50	0.30-0.80
638	2.90 x 3.20 x 1.20	0.30-1.50
642	1.50 x 1.70 x 0.60	0.35-0.95
643	1.30 x 1.30 x 0.40	0.60-1.00
645	3.00 x 3.30 x 1.50	0.50-2.00
646	1.30 x 1.60 x 0.95	0.40-1.35
649	1.60 x 1.70 x 1.45	0.50-1.95
650	2.30 x 2.40 x 1.35	0.20-1.35
651	0.50 x 1.40 x 0.30	0.20-0.50
664	1.00 x 1.30 x 0.45	0.75-1.20
667	2.00 x 2.50 x 0.20	0.50-0.70
669	1.20 x 1.60 x 1.00	0.40-1.40
670	1.20 x 1.40 x 0.80	0.50-1.30
671	1.00 x 1.50 x 0.70	0.30-1.00
679	1.00 x 1.15 x 1.15	0.45-1.60

Table 9 -- Associated debris from the subsurface pits in the Blacksmith Shop.

Feature Number	Mortar	Brick	Stone	Coal	Scale	Clinkers	Metal Objects	Wood	Charcoal
599			×	×				×	
601					×			×	
606				×					
607				×				×	
616	×	×		×					
617		×		×					×
638				×	×				
642				×		×		×	
643				×	×			×	
645				×	×	×	×	×	
646				×				×	
649				×	×		×		
650				×	×			×	
651				×	×				
664	×	×	×					×	
667				×		×			
669									×
670	×	×	×						
671			×	×	×				
679				×	×		×		

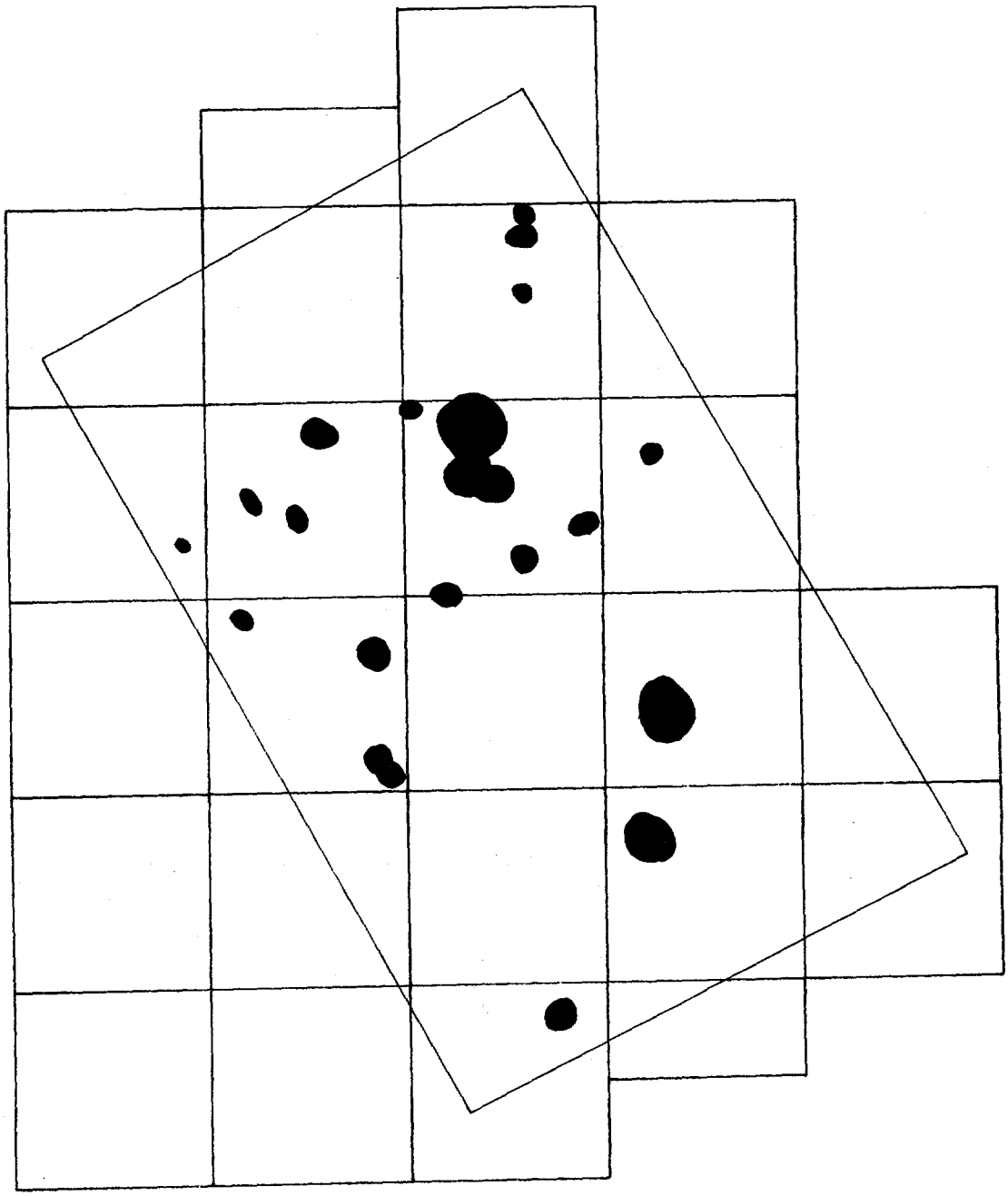
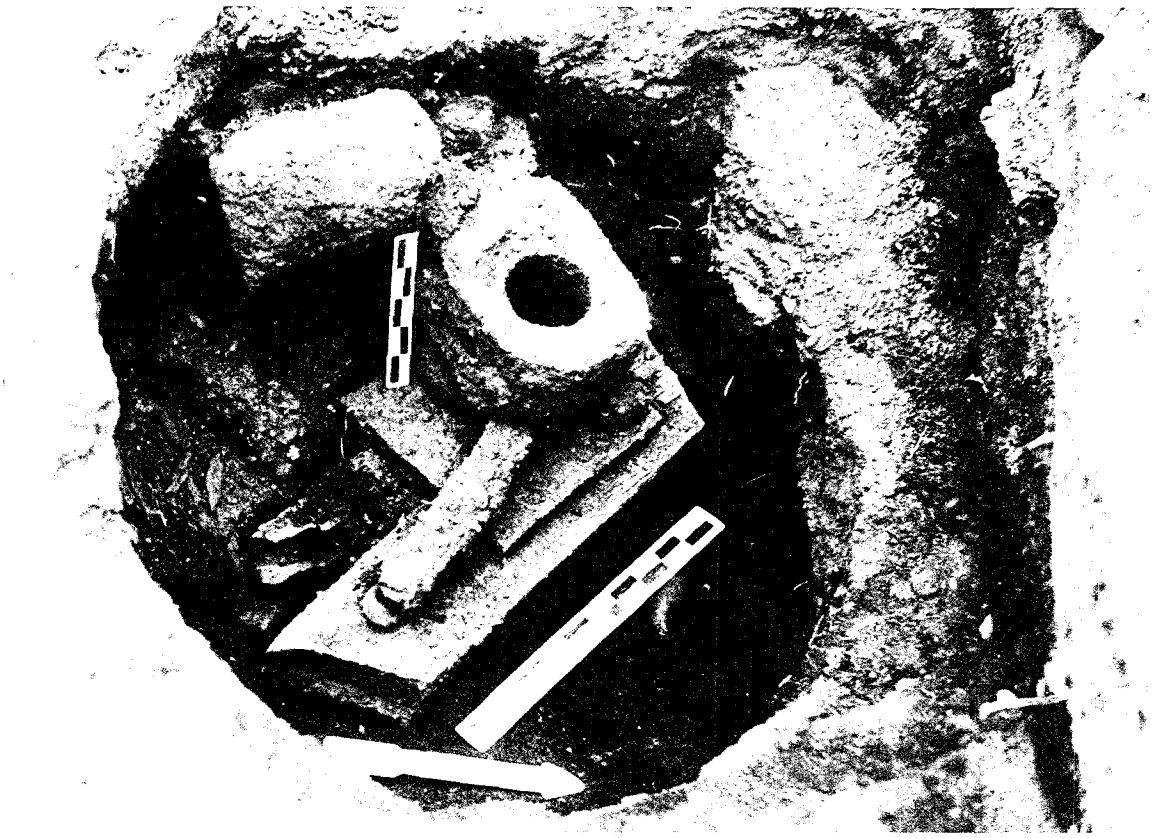


Fig. 17 -- Distribution of subsurface pits within the Blacksmith Shop.

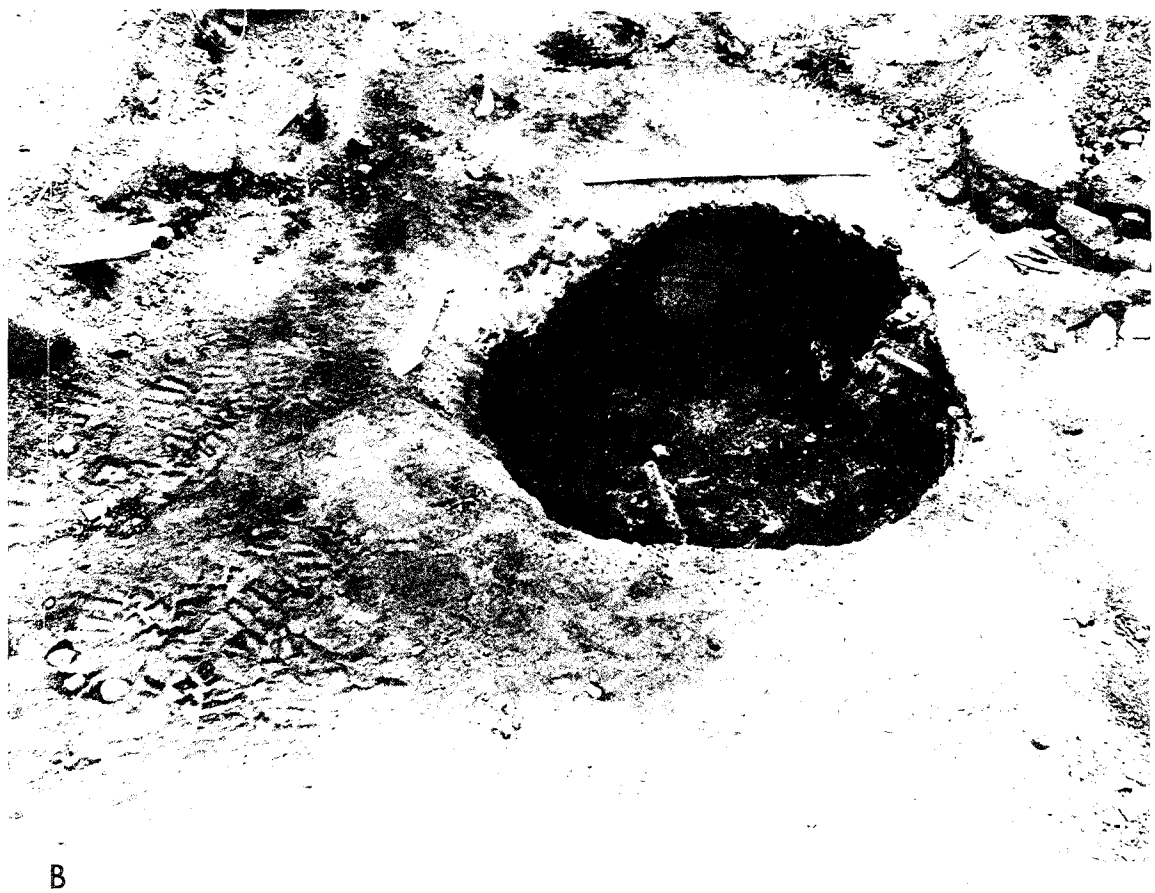
Fig. 18 -- Blacksmith Shop Features

a. Interior pit (F645) interpreted as an accumulation of metal waste inside a slack tub cast for a quenching pit (FOVA neg. 069.51-74/38).

b. Interior pit (F588) interpreted as an anvil base hole with a brick collar (FOVA neg. 069.51-73/197).



A



B

Feature 650 consisted of a prepared pit filled with native soil and wood fragments surrounding a pit full of forging debris. Certainly the majority of the pits were located in the northern Shop half (Fig. 17). Placement of the pits was toward the center of the Shop, instead of near the walls, and roughly oriented along an east-west axis. Only 4 pits (F599, F638, F646 and F650) were located in the southern half of the Shop. Two (F638 and F650) were located in the center of the southern sector, whereas F599 and F646 were placed along the west and south walls (Fig. 11).

Exterior Deposits outside the Shop

Two types of cultural deposits were found immediately outside the Blacksmith Shop foundations--coal and mortar. Coal deposits were the most common, and they consisted of crushed coal mixed with coal dust, ash and native soil (Fig. 14). Generally found 0.30 to 0.50 ft. below present surface, the coal deposits were located along the north, west and east foundations. Stratigraphically illustrated as Stratum 3 in Fig. 3, the coal deposits definitely represent HBC occupation during the Shop period.

A single deposit of packed coral mortar was found 0.10 to 0.50 ft. below present surface to the west of the Blacksmith Shop (Fig. 14).

Post-1834/36 (?) Unassigned HBC Deposits

A number of features observed in the HBC deposits could not be positively assigned to a more specific component (Table 3). All of these features, except one (F687), have been discussed in other component sections where they best fit. The one exception was an HBC cache of bottles, jars and crocks which was found in S20 E150 at a depth of 0.40-0.90 ft. below present surface. It measured 1.50 x 1.90 ft. in size, and appeared to have been truncated by Stratum 1 activities.

1829-1834/36 HBC "Smudge Pit" Component

During the previous excavation of the Indian Trade Store (Hoffman & Ross 1975), a few early (pre-1834/36) HBC cultural features were uncovered; and it was hypothesized that many were the remains of smudge pits used for the processing of hides. Twelve smudge pits were uncovered in the southeastern Fort area, as well as 6 larger pits containing charred remains of wood, bone and coal. These features shared a common stratigraphic position beneath a

ca. 1834/36-1841 Columbia River flood deposit (Stratum 3i), and the deposit in which these features were observed has been identified as Stratum 4.

In the southeastern Fort area, Stratum 4 was variously observed directly beneath deposits of an 1834/36 flood, primary HBC trash, structural demolition, a late 19th Century flood, USA trash and NPS disturbance (Figs. 3-6, 8-10). The deposit was generally observed as a burned soil with charcoal, ash, bone and a few HBC artifacts; but the main cultural features associated with this deposit were the small smudge and larger burned pits.

Thirteen smudge pits were located, and dimensions of the pits (Table 10) varied considerably from 0.50 x 0.50-0.15 ft. to 2.80 x 3.20-1.5 ft. Five of the pits were less than 0.50 ft. deep, while the remainder were deeper than 1.00 ft. The distinctive characteristics of smudge pits were their in situ burning consisting of burned soil and charcoal, commonly with charred corn cobs, wood fragments, twigs and straw. Generally, this was the total fill of the pits; however, in 2 pits (F485 and F655) the burned material was found above a black soil backfill.

Smudge pits were scattered in an east-west direction from the Indian Trade Store to the east stockade trenches, and as far as 56.0 north of the inner south stockade trench (Fig. 19). Locations of the pits were not in relation to the historic structures of the 1834/36 to 1860 period, and this has been satisfactorily demonstrated by a Blacksmith Shop foundation footing which was intrusive into one pit (F677).

Two pits (F479 and F692) were found which fit the size range for smudge pits, but for these 2 pits, no in situ burning was observed. However, F479 was partially destroyed by the 1834/36 construction of the inner south stockade; and F692 was filled with silts from the 1834/36-1841 flood.

Five larger pits, characterized by gravelly black to brown crumbly soil mixed with inclusions of burned soil, ash, coal and wood fragments were also found beneath 1834/36-1841 flood deposits (Fig. 20).

Table 10 -- Smudge pit characteristics

Feature #	Width x Length x Thickness ft.	Depth bs ft.	Burned Soil	Char-coal	Corn Cobs
464	1.50 x 1.90 x 1.15	0.60-1.75	x	x	x
465	2.30 x 3.10 x 1.15	0.60-1.75		x	x
479(?)	? x 1.50 x 1.70	0.80-1.50			
485	2.80 x 3.20 x 1.50	0.90-2.40	x	x	x
495	? x 0.80 x 0.50	1.10-1.60	x	x	
592	0.60 x 0.90 x 0.15	0.55-0.70	x	x	x
655	0.90 x 1.00 x 1.00	0.60-1.60	x	x	x
675	0.50 x 0.50 x 0.15	1.05-1.20	x	x	x
677	0.90 x 1.20 x 0.30	0.80-1.10	x	x	x
683	0.40 x 1.80 x 1.00	0.40-1.40	x		
691	1.10 x 1.30 x 0.50	0.80-1.30	x	x	
692(?)	0.90 x 1.00 x 1.10	0.30-1.40			
693	0.60 x 0.60 x 1.15	0.85-1.00	x	x	

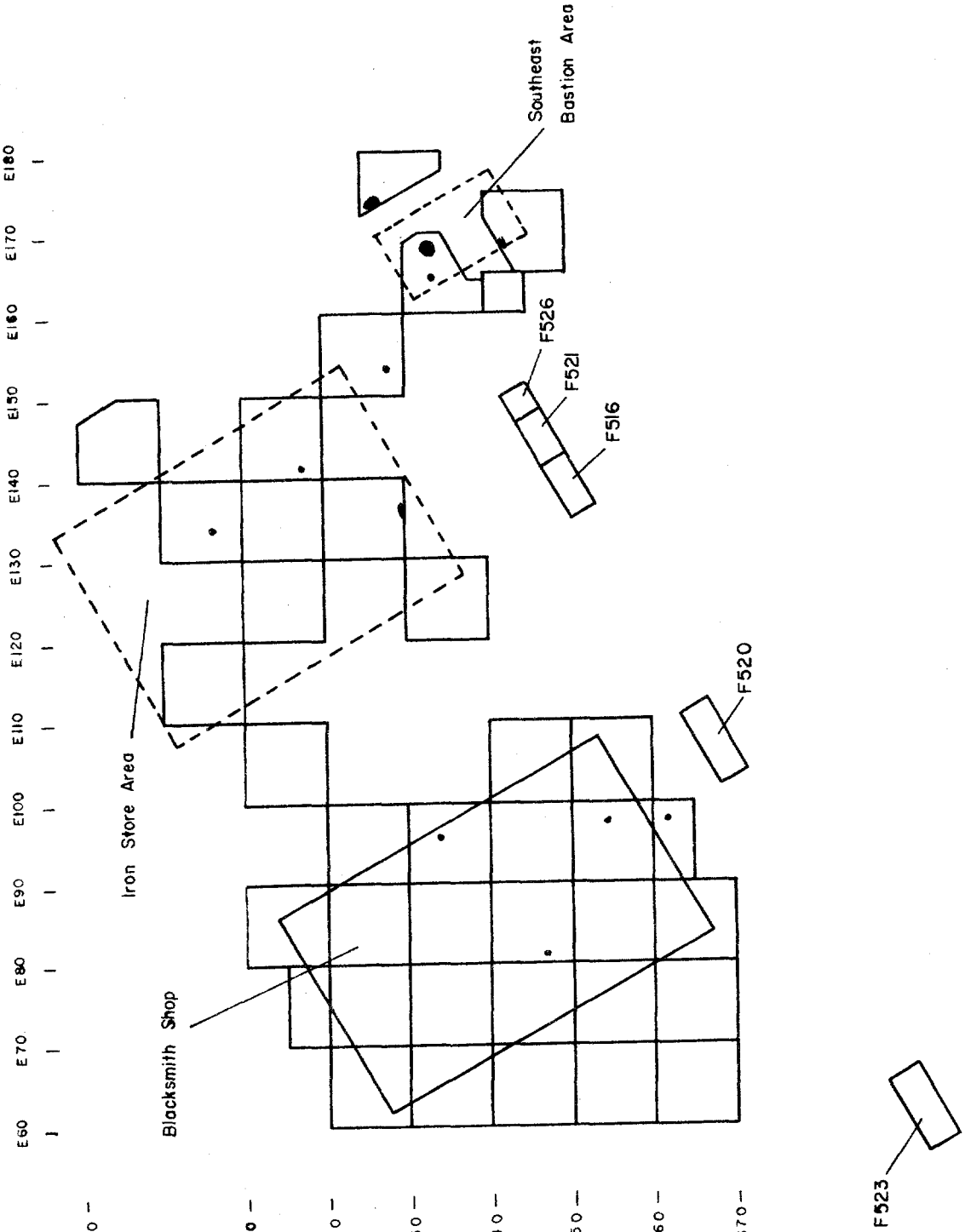


Fig. 19 -- Distribution of smudge pits in the southeastern Fort area.

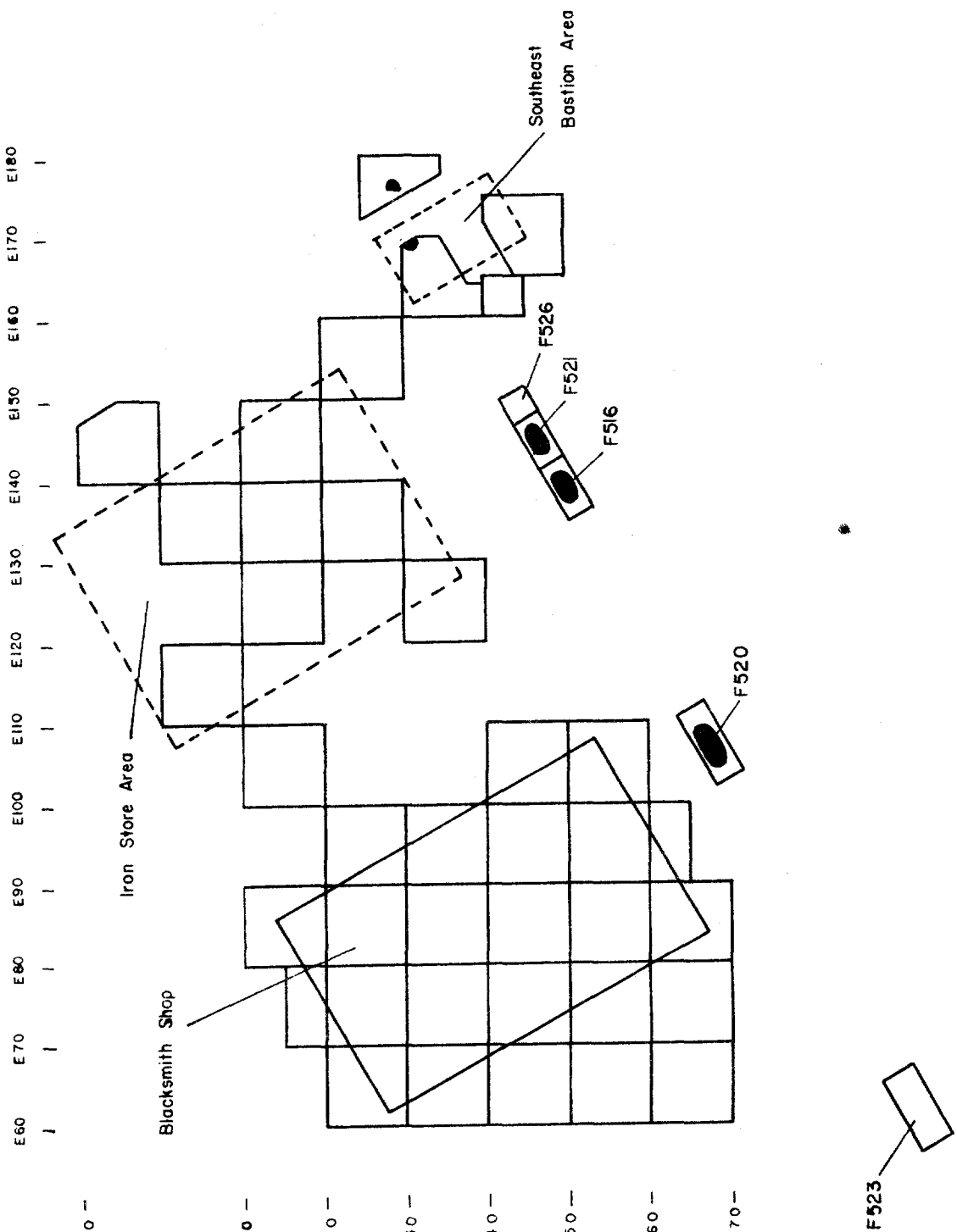


Fig. 20 -- Distribution of large charred pits in the southeastern Fort area.

Complete dimensions of the pits could not be determined, since they had been partially truncated by the NPS trench for the reconstructed stockade, but those dimensions observed appear in Table 11. Widths varied from 2.20 ft. to 5.40 ft. while upper elevations varied from 0.70 to 1.10 ft. below present surface. These pits were observed both inside and outside 1834/36-1841 stockade trenches and because of their stratigraphic relationship beneath the 1834/36-1841 flood deposit and their similarity with smudge pit locations, they have been included within the "smudge pit" component.

Table 11 -- Large charred pit characteristics

Feature #	Width x Length x Thickness (ft.)	Depth bs (ft)	Initial Fill
468	? x 3.40 x 1.40	0.90-2.30	Charcoal, Wood Chips
484	? x 2.30 x 0.40	1.00-1.40	Burned Soil
516	? x 4.20 x 1.40	1.30-2.70	Charcoal, Ash, Bone
520	? x 6.30 x 1.60	0.60-2.20	Coal
521	? x 4.00 x 1.80	1.00-2.80	Charcoal

Two additional features (F589 and F648) have also been included within this component because of their stratigraphic locations. The first feature (F589) consisted of charred wood scraps (Fig. 11) which were found on top of the sterile Columbia River flood plain and presumably with Stratum 4. The second feature was a post hole (F648) found beneath the west sill of the Blacksmith Shop (Fig. 11). This post was in line with a series of posts stratigraphically earlier than the Indian Trade Store (Hoffman & Ross 1975).

Unidentified Deposits

Three Features were excavated which could not be assigned to a specific component (Table 3). One was a wooden stake (F544) similar in size and appearance to a modern survey stake. Casts of 2 similar stakes (F575, F597) were found along the north side of the USA waterline trench (F332) and they did not coincide with known points of the grid used by Caywood (1955:3), nor did they appear to have been utilized in laying out the waterline trench.

Pre-1829 Columbia River Floodplain Deposit

This deposit represented the sterile component of native soils comprising the Columbia River floodplain according to soil surveys conducted by Soil Conservation Service (McGee et.al. 1972:Sheet 57). The southeastern Fort area straddles 2 major soil mapping units--Lauren gravelly loam (LgB) and Sauvie silt loam (SmA).

Lauren gravelly loam consists of dark brown gravelly soil which commonly forms the 50-300 ft. Columbia River terraces (Ibid:22). The Sauvie silt loam consists of dark grayish-brown silty soil which forms along the bottom lands of the Columbia (Ibid:40). Fort Vancouver was located primarily atop a southern extension of a Lauren terrace, but the extreme southeastern Fort area extended into the upper end of Sauvie floodplain. Thus, during periods of extreme high water on the Columbia River, the southeastern corner of the Fort could have been flooded and covered with floodborn silts. Thus, the flood deposits identified in previous sections can be considered as normally expected deposits which marked relatively high floods.

III - MATERIAL CULTURAL REMAINS

Excavations of the southeastern Fort area (discussed in this report) uncovered 80,414 material cultural items including 54,143 artifact and 26,271 non-artifact fragments. In the FOVA Laboratory, this material was cataloged by the area from which it was excavated; and the following descriptions reflect this areal categorization.

BLACKSMITH SHOP AREA

A total of 50,198 material cultural items were recovered from the Blacksmith Shop area, including 31,394 artifact fragments and 18,804 non-artifact fragments (Tables 12-13).

Ceramic Household and Container Fragments

There were 2,811 ceramic household and container fragments recovered, but no complete or partially complete vessels could be reconstructed. Following previous reports, ceramics were divided into 5 major categories and further subdivided into a variety of subcategories (Table 12). A discussion of each descriptive category is presented below.

Common Pottery

Of the 27 fragments of common pottery recovered, 2 were yellow glazed redware and the other 25 were fragments of lustreware. No vessels could be distinguished, and no manufacturing marks were observed.

Mojolica

One fragment of a tin glazed, flaired rim vessel was recovered, but it was too small for identification. No manufacturing marks were observed.

Earthenware

Earthenware fragments, which totaled 2,439, were classified into descriptive subcategories based upon fabric color, glaze color and method of decoration (Table 12).

Table 12 -- Quantitative distribution of artifacts by descriptive category from the Blacksmith Shop area.

Descriptive Category	Sub-total 3	Sub-total 2	Sub-total 1	Total
CERAMIC HOUSEHOLD & CONTAINER FRAGMENTS				2811
Common Pottery Fragments			27	
Yellow Glazed Redware		2		
Lustreware Household		25		
Mojolica Fragment			1	
Undecorated Container		1		
Earthenware Fragments			2439	
Clear Glazed White Fabric		2369		
Undecorated Household	857			
Hand Painted Household	46			
Transfer Printed Household	1452			
Hand Painted Transfer Printed Household	5			
Mold Decorated Household	5			
Undecorated Container	4			
Yellow Glazed White Fabric		2		
Undecorated	2			
Clear Glazed Yellowish-Buff Fabric		35		
Snuff Bottles	35			
Clear Glazed Yellow Fabric		30		
"Mocha" Decorated Household	30			
Green Glazed Buff Fabric		2		
Undecorated Container	2			
Brown & Yellow Glazed Buff Fabric		1		
Undecorated	1			
Stoneware Fragments			295	
Greenish-Gray Fabric		23		
"Canton" Wares	17			
"Chinese Ginger" Jars	4			
Brown Glazes	2			
Brownish-Gray Fabric		200		
"Read's Ale" Bottles	102			
Unidentified Saltglazed Containers	98			
Gray Fabric		48		
Ink or Blacking Bottles	38			
Hand Painted Containers	3			
Unidentified Saltglazed Containers	7			
Yellowish-Brown Fabric		17		
Green Glazed	1			
Unidentified Saltglazed	16			

Table 12 -- cont'd

Descriptive Category	Sub-total 3	Sub-total 2	Sub-total 1	Total
CERAMIC HOUSEHOLD & CONTAINER FRAGMENTS				
Stoneware Fragments (cont.)				
Buff Fabric		6		
Clear Glazed	6			
Unidentified Burned Stoneware		1		
Vitreous China Fragments			48	
Undecorated Household		14		
"Chinese Export" Household		34		
Unidentified Burned Ceramic Fragment			1	
CERAMIC OBJECTS				798
Earthenware Items			790	
White Clay Tobacco Pipe Fragments		785		
Glazed Tobacco Pipe Fragments		5		
Yellowish-buff Glazed	2			
Yellow Glazed	1			
Brown Glazed	1			
Green Glazed	1			
Stoneware Item			1	
Unidentified Fragment		1		
Vitreous China Items			6	
Undecorated Mortar Fragments		6		
Porcelain Item			1	
"Prosser" Button Fragment		1		
GLASS WARES & CONTAINERS				2361
Bottle Fragments			2070	
Tumbler Fragments			15	
Stemmed Glassware Fragments			18	
Bottle Stoppers			2	
Unidentified Glassware Fragments			51	
Unidentified Curved Glass Fragments			204	
Incised Curved Glass Fragments			1	
GLASS OBJECTS				1029
Beads			169	
Tube Beads		87		
Wire Wound Beads		78		
Mandrel Pressed Beads		3		
Unidentifiable		1		
Jewelry Settings			1	
Button Fragments			5	
Window Glass Fragments			799	
Mirror Glass Fragments			6	
Amber Flat Glass Fragment			1	
Flaked Glass Fragment			1	
Melted Glass Fragments			47	

Table 12 -- cont'd

Descriptive Category	Sub-total 3	Sub-total 2	Sub-total 1	Total
METAL BUILDING HARDWARE				39
Hinging Devices			19	
Hinges		9		
Butterfly Hinge	1			
Strap Hinges	3			
Butt Hinges	2			
Unidentified Hinges	3			
Hinge Pins		3		
Hinge Preforms		5		
Pintles		2		
Latching Devices			8	
Door Latch		1		
Door Latch Spindle		1		
Door Latch Keepers		3		
Door Hooks		3		
Locking Devices			12	
Door Lock Internal Parts		2		
Door Lock Plate		1		
Door Lock Striker Plate		1		
Keys		2		
Key Preform		2		
Padlock Parts		3		
Unidentified Locking Mechanism		1		
METAL FASTENERS				2765
Non-Threaded Fasteners			2549	
Nails		2330		
Wrought Rod Nails	919			
Machine Cut Sheet Nails	940			
Cast Nails	20			
Machine Cut Wire Nails	135			
Wrought Closed-eye Nails	13			
Unidentified Rod or Sheet Nails	303			
Staples		25		
Wrought Rod Staples	13			
Machine Cut Wire Staples	12			
Rivets		129		
Bateau Bolts	3			
Bateau Bolts w/Roves	3			
Barrel Rivets	19			
"Hiler" Brass Rivets	3			
Conical Copper Rivet	1			
Straight Copper Rivet	1			
Unidentified Iron Rivets	91			
Unidentified Iron Rivets w/Roves	2			
Unidentified Iron Roves	6			

Table 12 -- cont'd

Descriptive Category	Sub-total 3	Sub-total 2	Sub-total 1	Total
METAL FASTENERS(cont.)				
Non-Threaded Fasteners(cont.)				
Cotter Bolt Parts		12		
Cotter Bolts	8			
Cotter Pins	3			
Cotter Key	1			
Iron Pins		2		
Unidentified Non-Threaded Fasteners		51		
Threaded Fasteners			216	
Screws		20		
Countersunk Screw Washer		1		
Bolt Parts		171		
Bolts	45			
Bolts w/Nuts	2			
Nuts	81			
Washers	39			
Spring Washer	1			
Patent Bolt Washer (USA)	1			
Eye Bolt	1			
Brass Bolt	1			
Threaded Rods		5		
Unidentified Threaded Fasteners		19		
METAL TOOLS				145
Blacksmith Tools			99	
Tongs		20		
Files		61		
Dies		3		
Taps		5		
Punches		8		
Swage		1		
Axe Body Form		1		
Dividers			2	
Chisels			7	
Wedges			4	
Saw Blade			1	
Plane Bits			3	
Auger			1	
Drill Bits			2	
Gimlet			1	
Offset Awls			2	
Screwdriver			1	
Hammer Head			1	
Wrenches			2	
Plow			1	
Harrow Teeth			14	
Scythe Blade			1	
Unidentified Implements			3	

Table 12 -- cont'd

Descriptive Category	Sub-total 2	Sub-total 1	Total
METAL TRAP PARTS			431
Finished Parts		356	
Jaw Posts	4		
Springs	256		
Pan Posts	19		
Pan	2		
Ketches	14		
¼-twist Chains	9		
¼-twist Chain Links	52		
Preforms		44	
Base	1		
Jaw Posts	6		
Jaws	9		
Springs	12		
Pan Posts	8		
Pans	1		
Ketch	1		
Post Nut Template	1		
Swivel Eyes	4		
Swivel O-Ring	1		
Waste Products		31	
Jaw Cutouts	13		
Spring Cutouts	13		
Post Cutouts	5		
AXE PARTS			39
Finished Products		33	
Body	1		
Blades	3		
Polls	25		
Wedges	4		
Preforms		6	
Bodies	4		
Polls	2		

Table 12 -- cont'd

Descriptive Category	Sub-total 1	Total
MISCELLANEOUS METAL HARDWARE		628
Horseshoes	4	
Muleshoe	1	
Horse Bit Cheek Straps	2	
Harness Hardware	17	
Flat Chains	8	
Flat Chain Links	72	
Chain Link w/Closed Eye Nail	1	
Swivel Chain Link	1	
Chain Anchor	1	
Hooks	10	
O-Rings	7	
O-Ring w/1¼-Twist Chain Link	1	
D-Ring	1	
Handle	1	
Wire Handle	1	
Barbed Wedges	22	
Bundling Straps	173	
Barrel Bands	14	
Unidentified Iron Bands	175	
Riveted Copper Bands	1	
Brass Bands	2	
Wire	107	
Woven Copper Wire	1	
Insulated Copper Wire	1	
Iron Tube Fragments	2	
Copper Tube Fragments	1	
S-shaped Cut Copper Object	1	
MISCELLANEOUS METAL PREFORMS		642
Horse Bit Preform	1	
Nut Preforms	18	
Washer Preforms	3	
O-Ring Preforms	5	
Chain Link Preforms	14	
Wedge Template Preforms	8	
Barbed Wedge Template Preforms	7	
Unidentified Poll Preforms	56	
Unidentified Iron Preforms	219	
Unidentified Copper Preforms	2	
Clipped Iron Eyelet Waste	3	
Copper Lug Cutouts	112	
Unidentified Preform Cut Waste	194	

Table 12 -- cont'd

Descriptive Category	Sub-total 3	Sub-total 2	Sub-total 1	Total
METAL PERSONAL & HOUSEHOLD ITEMS				153
Buttons			9	
Buckles			5	
Fabric Hook			1	
Fabric Rivet			1	
Shoe Hook			1	
Metal & Fabric Braid			1	
Finger Rings			2	
Straight Pins			3	
Needles			2	
Fire Steels			7	
Jews Harps			2	
Pocket Knife			1	
Knife Fragments			3	
Utensil Handle			1	
Containers			108	
Copper Kettle Lugs		3		
Tin Can Fragments (USA)		47		
Container Spout		1		
Container Lid		1		
Container Handles		2		
Foil Cigarette Wrapper (USA)		1		
Unidentified Container Fragments		53		
Cast Brass Bell			1	
Brass Cocks			2	
Sheet Metal Funnel			1	
Cast Iron Stove Leg			1	
Lightbulb Bezel (USA)			1	
METAL WEAPONRY ITEMS				57
Cartridges			19	
.30 caliber Krag-rimmed (USA)		1		
.30 caliber Springfield (USA)		15		
.38 caliber Long Colt (USA)		1		
.45 caliber Government (USA)		1		
12 gauge Shotgun (USA)		1		
Lead Ball, Buckshot & Shot			19	
Ball		5		
14 gauge	1			
25-27 gauge	4			
Buckshot (2 sizes)		4		
Shot (2 sizes)		10		
Iron Grapeshot			4	
1/8-lb.		2		
1/4-lb.		2		

Table 12 -- cont'd

Descriptive Category	Sub-total 2	Sub-total 1	Total
METAL WEAPONRY ITEMS(cont.)			
Percussion Caps		2	
2 gauge Musket Gunworm		1	
Flintlock Cocks		3	
Flintlock Frizzens		2	
Flintlock Flashpan		1	
Musket Breech Plug		1	
Musket Mainsprings		2	
Musket Trigger		1	
Musket Thimble		1	
MISCELLANEOUS METAL			8102
Cut Stock		1717	
Square-Rectangular Iron	1179		
Round Iron	287		
Iron Sheeting	113		
Copper Bars	6		
Copper Sheeting	125		
Lead Bars	5		
Stamped Lead Bars	2		
Castings		88	
Lead	70		
Brass	13		
Copper	5		
Unidentified Objects		355	
Iron	282		
Cast Iron	4		
Iron Wire	7		
Copper	52		
Riveted Copper Sheeting	1		
Lead	6		
Unidentified Non-Ferrous	3		
Unidentified Fragments		5942	
Iron	4380		
Crosshatched Iron Spall	1		
Perforated Iron Sheeting	9		
Iron Sheeting	1184		
Cast Iron	5		
Copper	69		
Copper Sheeting	4		
Lead	21		
Zinc Sheeting	261		
Laminated Zinc Sheeting	3		
Unidentified Non-Ferrous	5		

Table 12 -- cont'd

Descriptive Category	Sub-total 2	Sub-total 1	Total
CONSTRUCTION MATERIAL			11260
Brick		7120	
Imported	2171		
Local	4869		
Unknown	80		
Mortar		3966	
Putty		37	
Tile Fragment		1	
Paint		13	
Green	6		
Blue	7		
Concrete		41	
Asphalt		82	
STONE ITEMS			93
Slate Pencil Fragments		11	
Slate Tablet Fragments		35	
Gunflints		3	
Strike-a-light Fragment		1	
Argillite Pipe Fragments		3	
Jewelry Setting		1	
Graphite Crucible Fragments		2	
Ground Sandstone Fragments		24	
Perforated Disc		1	
Projectile Point		1	
Flaked Core		1	
Unidentified Ground Slate Object		1	
Cut & Ground Steatite Fragments		2	
Flaked Stones		3	
Detritus		3	
BONE ITEMS			8
Buttons		3	
Perforated Disc		1	
Composite Bi-pointed Fishhook Barb		1	
Carved Bone Objects		4	
SHELL ITEMS			3
Button		1	
Tortoise Shell Hairpin Fragment		1	
Unidentified Abalone Shell Object		1	
LEATHER ITEMS			5
Shoe Fragments		3	
Unidentified Fragments		2	

Table 12 -- cont'd

Descriptive Category	Sub-total 1	Total
RUBBER ITEMS		11
Heel Fragments	4	
Linoleum Fragments	2	
Unidentified Fragments	5	
WOOD ITEMS		6
Briar Pipe Bowl Fragment	1	
Footing Fragment	1	
Stake	1	
Newspaper Fragment	1	
Wood w/White Paint	1	
Wood w/Blue Paint	1	
MISCELLANEOUS ITEMS		8
Unidentified Plastic Objects	3	
Unidentified Fabric Fragments	3	
Unidentified Material Object	1	
Unidentified Material Fragment	1	
GRAND TOTAL		31394

Table 13 -- Quantitative distribution of non-artifacts by descriptive category from the Blacksmith Shop.

Descriptive Category	Sub-total	Total
Forge Debris		14374
Coal	10133	
Coke	1375	
Clinkers	1486	
Slag	1340	
Compacted Blacksmith Fill	40	
Minerals		17
Mica Schist	1	
Sandstone	1	
Slate	1	
Clay	14	
Bone		1020
Burned Clay		82
Charcoal		4
Charred Corncobs		69
Charred Wood		159
Coral		2852
Peach Pit		1
Shell		119
Wood		78
Unidentified Resinous Substance		12
Unidentified Material		17
GRAND TOTAL		18804

Clear Glazed White Fabric Fragments

White earthenware fragments totaled 2,369 and were classified according to function (i.e. household articles or product containers) and method of decoration (Table 12).

Undecorated Household Fragments. No complete or partially complete articles were reconstructed from the 857 fragments recovered, and no manufacturing marks were observed.

Hand Painted Household Fragments. Of the 46 fragments recovered, the majority were multi-colored floral "cottage ware". Other styles included a few dark blue floral and dark blue "shelledge" fragments. No manufacturing marks were observed.

Transfer Printed Household Fragments. Of the 1,452 fragments recovered, no complete or partially complete articles were reconstructed. One new pattern was recognized, and has been recorded as FOVA Variety #7133. A number of manufacturing marks were observed with known patterns and they are listed in Table 14.

Table 14 -- List of manufacturing marks with identified transfer printed patterns from the Blacksmith Shop area.

FOVA Catalog #	Pattern (FOVA Variety #)	Manufacturing Code
34053	"Alba" (#7003)	CG-IM-3
34099	"Alba" (#7003)	CG-TP-6
35874	"Broseley" (#7011)	CG-TP-6
35874	"Camilla" (#7013)	CG-IM-2
34053	"Chatsworth" (#7015)	CG-IM-3
34387	"Fruit and Flowers" (#7019)	C-TP-3 w/C-IM-1
34099	"Pagoda" (#7024)	CG-IM-3

Hand Painted Transfer Printed Household Fragments. None of the 5 fragments could be identified, but all appeared to belong to the same pattern. No manufacturing marks were observed.

Mold Decorated Household Fragments. Of the 5 fragments recovered, all were too small to be described. No manufacturing marks were observed.

Undecorated Container Fragments. Of the 4 fragments recovered, 2 belonged to a container lid, but they were too small to be reconstructed. No manufacturing marks were observed.

Yellow Glazed White Fabric Fragments

The 2 fragments recovered were both undecorated and too small for reconstruction.

Clear Glazed Yellowish-Buff Fabric Container Fragments

All 35 fragments recovered camefrom snuff bottles, and those fragments with manufacturing marks identified the manufacturer as "R. Currey & Co."

Clear Glazed Yellow Fabric Household Fragments

All 30 fragments recovered came from one "mocha" decorated mug, but not enough of it could be reconstructed for an illustration. The "mocha" decoration consisted of black "fronds" on a white glaze with blue trim at the edges of the glaze. No manufacturing marks were observed.

Green Glazed Buff Fabric Container Fragments

The 2 fragments recovered appeared to be portions of a wide mouthed container, but they were too small for reconstruction. No manufacturing marks were observed.

Brown and Yellow Glazed Buff Fabric Fragments

The single fragment recovered was too small for identification or description. No manufacturing marks were observed.

Stoneware

Stoneware fragments, which totaled 295, were classified into descriptive subcategories based upon fabric color, function and method of decoration (Table 12).

Greenish-Gray Fabric Fragments

Of the 23 fragments recovered, 21 were of Chinese manufacture and consisted of 17 "Canton ware" and 4 "Ginger" jar fragments. The remaining 2 fragments had an undecorated brown glaze, but were too small to be identified. No manufacturing marks were observed.

Brownish-Gray Fabric Fragments

Of the 200 fragments recovered, 102 came from "Read's India Pale Ale" bottles and 98 from unidentified saltglazed containers. No complete or partially complete containers could be reconstructed.

Gray Fabric Fragments

Of the 48 fragments recovered, 38 came from blacking bottles, 3 from a blue hand painted container and 7 from unidentified saltglazed containers. No complete or partially complete containers were reconstructed, and no manufacturing marks were observed.

Yellowish-Brown Fabric Fragments

Of the 17 fragments recovered, 16 were from unidentified saltglazed containers and one had a smooth green glaze. No complete or partially complete wares were reconstructed, and no manufacturing marks were observed.

Buff Fabric Fragments

All 6 fragments recovered apparently came from one bottle--possibly a beer or ginger beer bottle. No manufacturing marks were observed.

Vitreous China

Of the 48 vitreous china fragments recovered, 14 came from undecorated articles and 34 from "Chinese export" wares. No complete or partially complete articles were reconstructed, and no manufacturing marks were observed.

Ceramic Objects

Earthenware

White Clay Tobacco Pipe Fragments

Of the 785 clay pipe fragments recovered, 2 reused pipes were reconstructed (Figs. 21a- b). One was a "TD" pipe with "W/C" spur marks, and the other was a fluted pipe with no spur or manufacturing marks.

Bowls. Six styles of "FORD" pipes were observed (Figs. 21c-h), and one unmarked bowl fragment was found with molded grape leaves on a field of dots (Fig. 21i).

Spurs. Three types of spur marks were observed: "I/F" ("FORD" pipes); "*/*"; and "W/C" ("TD" pipe in Fig. 21a).

Stems. One marked stem fragment was recovered with the words "MURRA./.LASGOW" for Murray, Glasgow.

Glazed Tobacco Pipe Fragments

Five fragments of glazed reed pipes were recovered, but none could be reconstructed. The glaze color included yellow, yellowish-buff, green and brown; and no manufacturing marks were observed.

Vitreous China

Six fragments of a vitreous china mortar were recovered, but not enough fragments were present for a reconstruction. No manufacturing marks were observed.

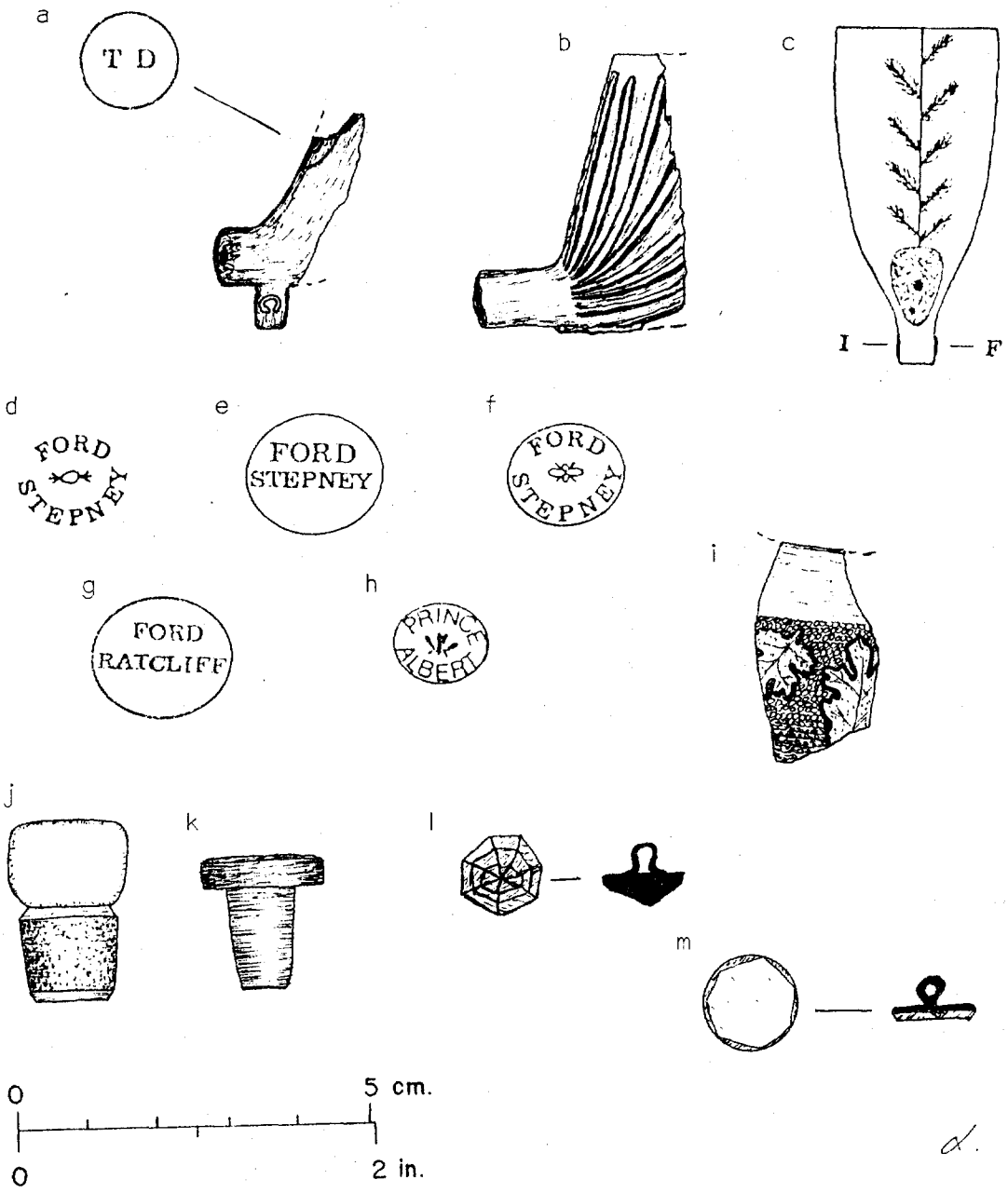


Fig. 21 -- Pipe fragments, glass stoppers and glass buttons from the Blacksmith Shop area: a). "TD" pipe fragment with "W/C" spur marks (FOVA 35410; b). unmarked fluted pipe (FOVA 34501). c-h). FORD pipe fragments; i). unmarked pipe bowl fragment (FOVA 36055); j). glass stopper (FOVA 34863); k). glass stopper (FOVA 36013); l). glass button (FOVA 34861) and m). reconstructed glass and iron button (FOVA 33724).

Glass Wares and Containers

Bottles

Bottle fragments recovered from the Blacksmith Shop area were identified as representing liquor, medicine and cosmetic bottles. The identification of the bottle fragments was based upon comparison with bottles from other areas of the site as well as on attributes which are generally associated with specific functions such as rim size, shape and style.

Fragments identified as representing liquor bottles, specifically rum and wine, were recovered in the greatest quantity. Medicine bottles were also numerous, one of which was the only complete bottle recovered from the area. Generally the clear, round medicine bottles which were identified as prescription medicine bottles and believed to have functioned either for patient use or physician storage. One cosmetic bottle was identified by a fragment from a hair oil or tonic bottle.

Of the 2,070 bottle fragments recovered, one complete pharmaceutical bottle was reconstructed and identified as a medicinal prescription bottle.

BT 30 Medicinal Prescription Bottle	(N=2)
FOVA Field Catalog No:	FOVA 35987 (N=25)
Provenience:	S60 E80, 0.5-1.0'
Illustration:	Fig. 23a
Dimensions:	1 1/8 in.(D) x 5 in.(H)
Capacity:	NA
Color:	Colorless
Manufacturing Technique:	Freeformed with glass pontil mark
Rim Type:	#3
Base Type:	#17
Comments:	A small cork stopper 3/8 in.(D) x 5/8 in.(H) was found in neck of bottle.
Function:	The size, shape and rim attributes of BT 30 led to its classification as a medicinal prescription bottle. The bottle may have functioned as a patient's prescription container or may have been used by a physician to store small quantities of medicines or chemicals.

Six olive green fragments from a champagne bottle were recovered with their interior surfaces coated with orange paint. The bottle was last used as a container for paint, but undoubtedly served in a number of purposes during its existence.

Marked Bottle Fragments

Numerous fragments with raised lettering and one fragment with hand etching were recovered (Figs.22a - k).

The single piece of etched glass was identified as part of a pharmaceutical bottle. The hand etched "2" may have referred to dosage, quantity or ratio of contents within the bottle.

Two product containers were identified from lettered body fragments. One "Udolpho Wolfe's Shiedam Aromatic Schnapps" bitters bottle was represented as well as a cosmetic bottle containing the letters "Hair" on one panel and "...nt" on a side panel.

Bottle Rims

Twenty-six bottle rims were reconstructed and have been classified according to their manufacturing attributes and form into 10 rim types (Table 15). One new type (#30) has been graphically presented in Fig. 23b.

Bottle Bases

Thirty-one bottle bases were reconstructed and have been classified according to their manufacturing attributes and form into 12 base types (Table 16). Six new base types were identified and have been illustrated in Figs. 23c-l and 24 a-c.

Bottle Stoppers

Two ground stoppers were recovered and have been illustrated in Figs. 21j-k.

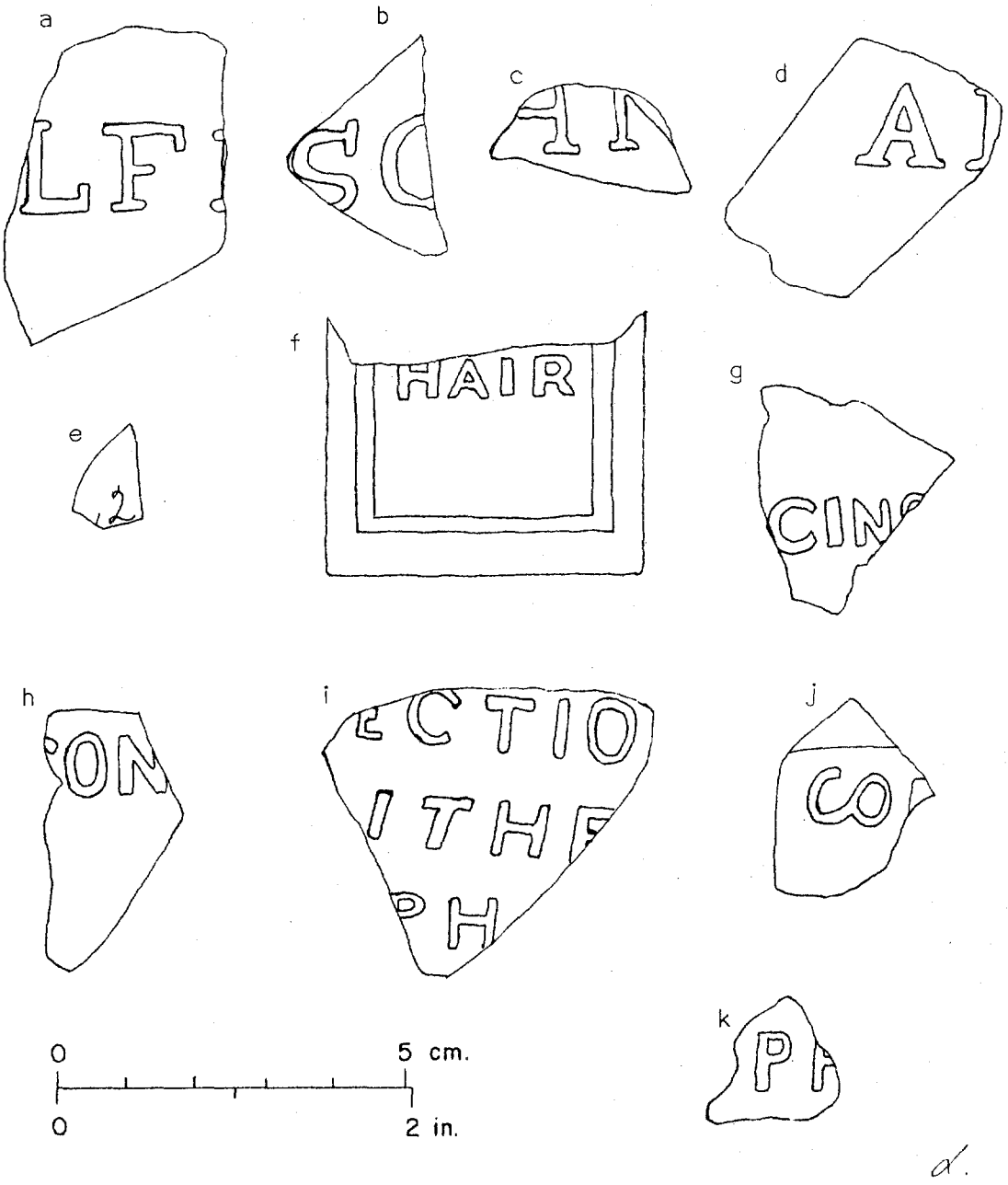


Fig. 22 -- Marked glass fragments from the Blacksmith Shop area: a-d). "Udolopho Wolf's Schiedam Aromatic Schnapps" (various FOVA numbers); e). etched glass fragments (FOVA 35053) and f-k). miscellaneous glass fragments (various FOVA numbers).

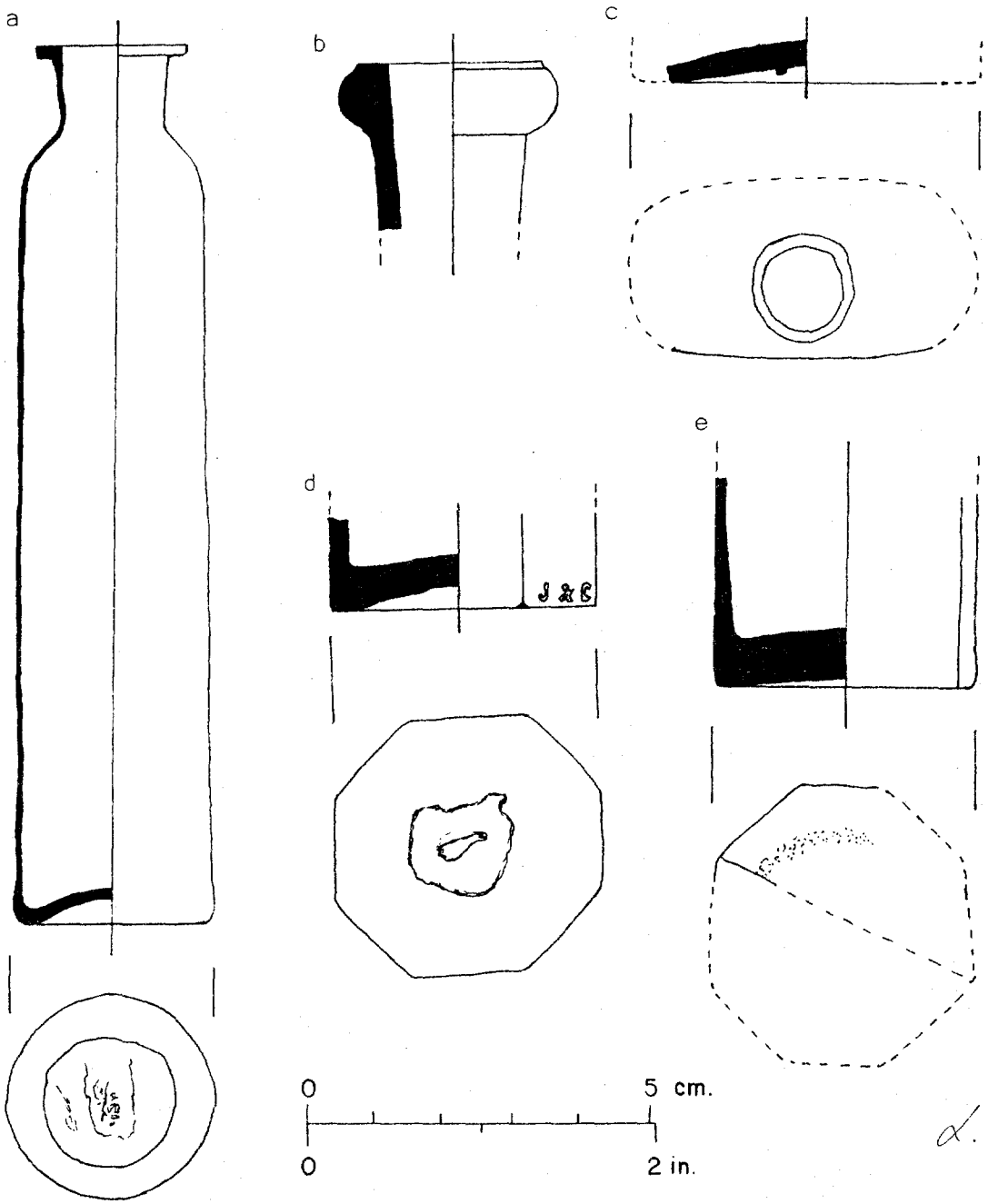


Fig. 23 -- A reconstructed pharmaceutical bottle and bottle rims and bases recovered from the Blacksmith Shop area: a). reconstructed pharmaceutical bottle (FOVA 35987); b). bottle rim Type 30 (FOVA 34276 & 35576); c). bottle base Type 60 (FOVA 34746); d). bottle base Type 66 (FOVA 34674) and e). bottle base Type 67 (FOVA 34805).

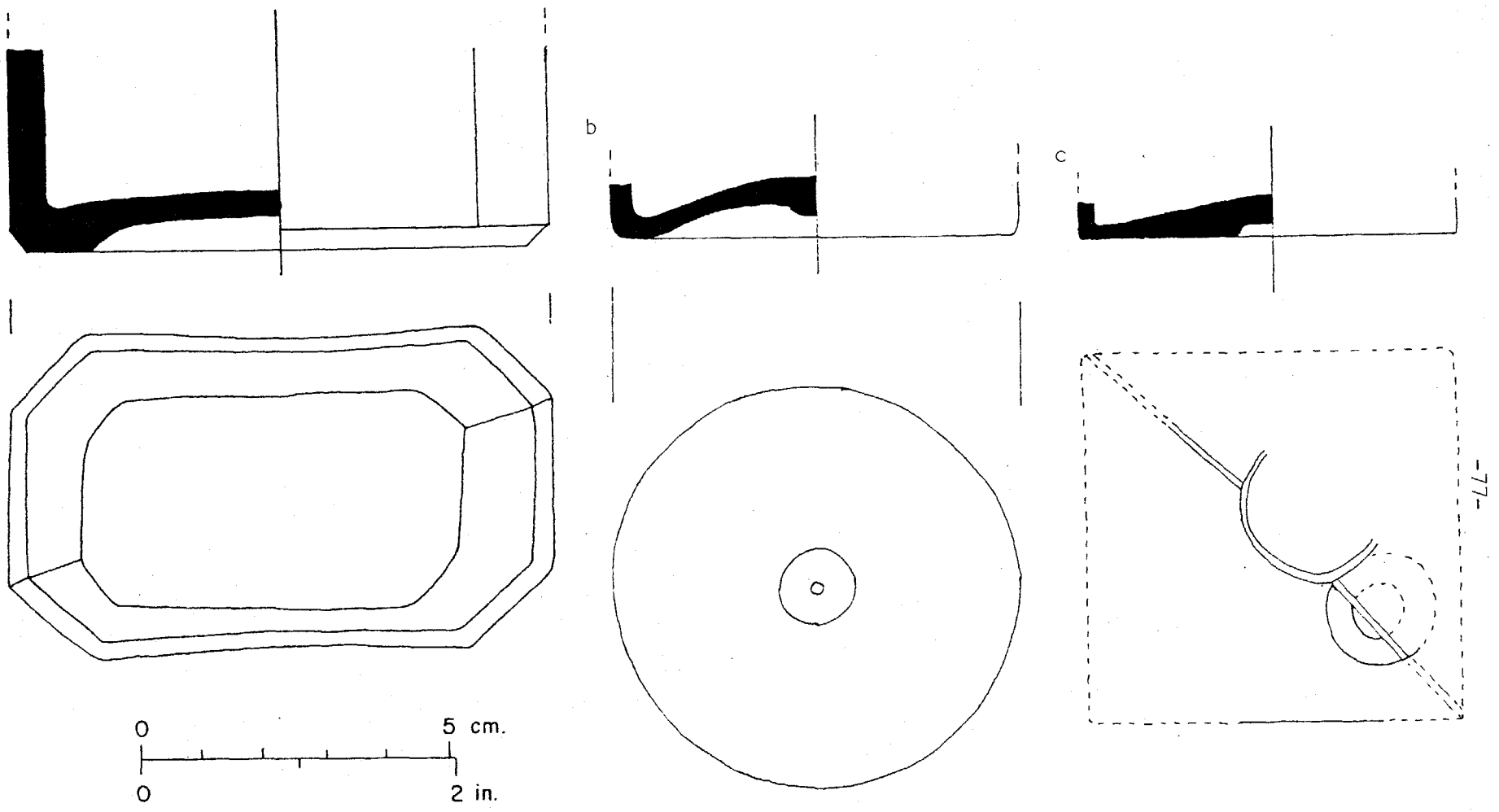


Fig. 24 -- Bottle base types found in the Blacksmith Shop area: a). base Type 65 (FOVA 34422); b). base Type 68 (FOVA 35336) and c). base Type 69 (FOVA 34243).

Table 15 -- Bottle Rim Types from the Blacksmith Shop area as defined by manufacturing attributes and form.

Attributes	Rim Type									
	2	3	6	7	8	9	14	15	26	30
Rim Manufacture										
Rim Shaped From Neck Glass										
Non-overlapping	×	×								
Overlapping Outside Neck			×	×	×					
Overlapping Inside Neck									×	
Rim Shaped from Additional Glass										
Outside Application							×	×		×
Wrapped			×					×		
Rim Form										
Single Lipped										
Straight from Mouth				×						
Flared from Mouth					×					
Convex from Mouth	×					×			×	×
Extended from Mouth		×								
Straight below Mouth			×							
Double Lipped										
Flared							L	B		
Convex							U			
Color										
Dark Olive (Opaque)					×			×		
Olive Green			×	×						
Bluish Green					×				×	
Greenish Blue							×			
Colorless	×	×		×						
Light Green						×		×		×
Frequency	2	3	3	2	2	1	2	8	1	2

Table 16 -- Bottle Base Types from the Blacksmith Shop area as defined by manufacturing attributes and form.

Attributes	Base Type											
	1	4	8	17	35	44	60	65	66	67	68	69
Basal Shape												
Round	×	×	×	×	×					×		
Rectangular						×		×				
Polygonal											×	×
Oval							×					
Octagonal									×			
Basal Cross Section (Excluding Indent)												
Conical(push up)	×		×		×							
Concave		×		×		×	×		×	×	×	
Flat								×				×
Indent Shape												
Circular										×		×
Rectangular								×				
Indent Cross Section												
Flat												×
Concave								×		×		
Central Nipple										×		
Pontil Type												
Bare Iron										×		
Blowpipe		×				×	×				×	
Sand	×										×	
Glass				×	×				×			
Absent			×					×				
Color												
Dark Olive (Opaque)	×											
Olive Green			×									×
Bluish Green						×						
Greenish Blue		×						×		×		
Light Green		×					×	×			×	
Colorless		×		×	×				×			
Frequency	11	4	2	4	1	1	1	2	2	1	1	1

Tumblers

Of the 15 tumbler fragments recovered, no complete or partially complete tumblers could be reconstructed. However, 6 tumbler bases could be identified as belonging to FOVA Tumbler Variety #2003--a plain freeblown variety having a slightly concave, ground and polished base.

Stemmed Glassware

Of the 18 stemmed glassware fragments recovered, no complete or partially complete glasswares were reconstructed or identified. One complete stemmed glassware base revealed a glass pontil mark. Other base fragments showed grinding and polishing.

Glass Objects

Beads

Of the 169 glass beads recovered, there were 87 tube, 78 wire wound, 3 mandrel pressed and one unidentifiable bead (Table 12). Following the classification schemes used in previous reports (Hoffman & Ross 1974b, 1975), all beads recovered were classified according to method of manufacture, stylistic variation, reflectance and color (Table 17).

Jewelry Setting

The only glass setting recovered was a transparent purple setting which was heavily eroded. This setting has a $\frac{1}{4}$ in. diameter, and the remnants of 7-8 side facets and one top facet. Such a setting could have come from a "stoned" ring.

Button Fragments

Of the 5 button fragments recovered, 2 styles were observed--a 7-sided, faceted, molded style and a composite faceted glass and iron style (Figs. 21l and m). The 7-sided style was manufactured from a molded hemisphere of transparent purple glass with a brass "U-shank" imbedded in the flat back. Twenty facets were ground on the front of the button, and the lower facets formed the 7 sides (Fig. 21l).

Table 17 -- Classification of Glass Beads from the Blacksmith Shop area.

Bead Type, Subtype, Class, Reflectance & Color (Variety#)	F5	F4	F3	F2	F1
TUBE BEADS					87
Cane Beads				7	
Single Faceted, Multi-Layered, Extruded Beads			7		
Translucent on Translucent		3			
Purple on Lt. Purple (#1018)	2				
Dk. Purple on Lt. Purple (#1035)	1				
Opaque on Opaque		4			
Lt. Blue on Lt. Blue (#1030)	2				
Purple on Lt. Purple	2				
Hot Tumbled Beads				80	
Plain Single Layer Beads			60		
Transparent		2			
Bluish-Purple (#1047)	2				
Translucent		44			
Yellowish-Green (#1061)	1				
Green (#1016)	1				
Grayish-Blue (#1063)	41				
Dk. Purple	1				
Opaque		14			
White (#1003)	12				
Purple (#1012)	2				
Plain Double Layer Beads			19		
Transparent on Opaque		2			
Red on White (#1037)	2				
Opaque on Transparent		1			
Red on Lt. Green (#1038)	1				
Opaque on Opaque		16			
White on White (#1040)	16				
Striped Single Layer Beads			1		
Transparent		1			
Dk. Purple w/26 White Stripes (#1029)	1				
WIRE WOUND BEADS					78
Plain Single Layer Beads				77	
Cylindrical			1		
Opaque		1			
Blue (#2065)	1				
Spherical			73		
Translucent		6			
Clear (#2025)	1				
Greenish-blue (#2005)	5				
Opaque to Translucent		63			
Blue (#2018)	63				
Opaque		4			
Blue (#2002)	4				

Table 17 -- cont'd

Bead Type, Subtype, Class, Reflection and Color (Variety#)	F5	F4	F3	F2	F1
WIRE WOUND BEADS (cont.)					
Plain Single Layer Beads (cont.)					
Ellipsoidal			1		
Opaque		1			
Bluish-Green (#2067)	1				
Barrel			2		
Transparent		2			
Dk. Amber (#2057)	1				
Yellowish-Green	1				
Applied Decorated Single Layer Beads				1	
Barrel			1		
Opaque		1			
White w/2 Blue & 2 Red Combed Vertical Loups (#2068)	1				
MANDREL PRESSED BEADS					3
Faceted Beads				3	
Spherical			3		
Opaque		3			
Lt. Greenish-Blue (#3002)	1				
Lt. Bluish-Purple (#3003)	1				
Dk. Bluish-Purple (3005)	1				
UNIDENTIFIABLE					1
GRAND TOTAL					169

Window Glass

Of the 799 fragments recovered, the average thickness varied between 1.3-1.4 mm. (Fig. 25).

Mirror Glass

Only 6 fragments of window glass were recovered, and their thicknesses were not measured.

Metal Building Hardware

Building hardware recovered from the Blacksmith Shop appeared to represent a mixture of items associated with shop construction, and with the repair and manufacturing activities of the blacksmiths. A total of 39 items was recovered and included butt, butterfly and strap hinges; hinge pins; pintles; door latch parts, including door hooks, lock parts; and keys. In-shop manufacture of hinges and keys has been hypothesized by the presence of both preformed hinges and keys. However, finished counterparts of the hypothesized preform hinges have not been recovered, and the possibility exists that the preforms represent finished objects of unknown function.

Representative specimens of preformed and finished building hardware appear in Figs. 26 - 31.

Metal Fasteners

Metal fasteners are defined as any device designed to pass through or into any item(s) for the purpose of rigidly joining those items. A total of 2,765 metal fasteners was recovered from the Blacksmith Shop, and they have been subdivided into non-threaded fasteners (those which are secured by means of percussion and which rely on the pressure of the shank against the material being secured) and threaded fasteners (those which are secured by means of threads).

Non-Threaded Fasteners

A total of 2,549 items, or 92.2% of all metal fasteners consisted of non-threaded fasteners, and major categories included nails, staples, rivets, cotter bolts and parts, and iron pins.

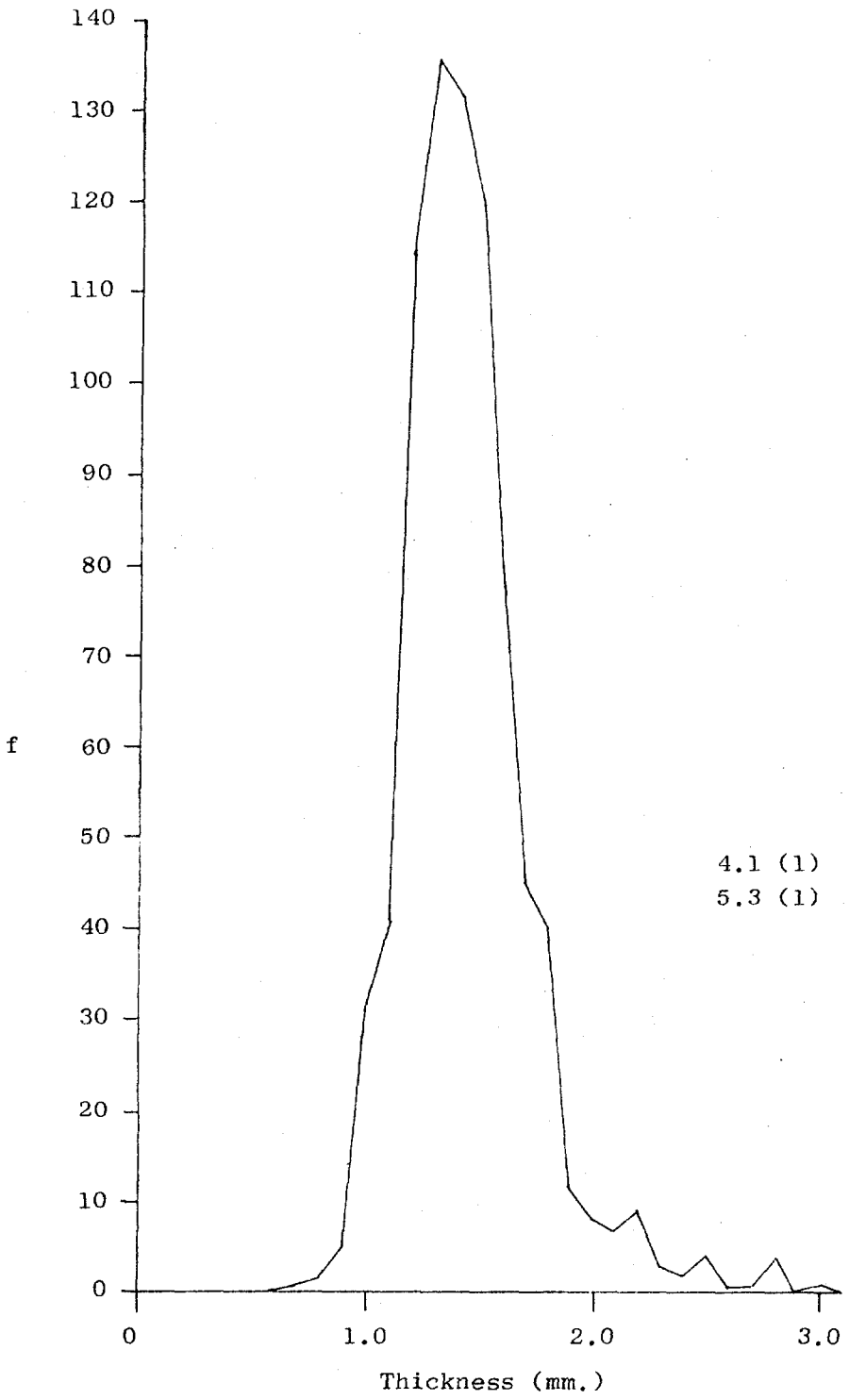


Fig. 25 -- Frequency of window glass thicknesses for the Blacksmith Shop area (N = 799).

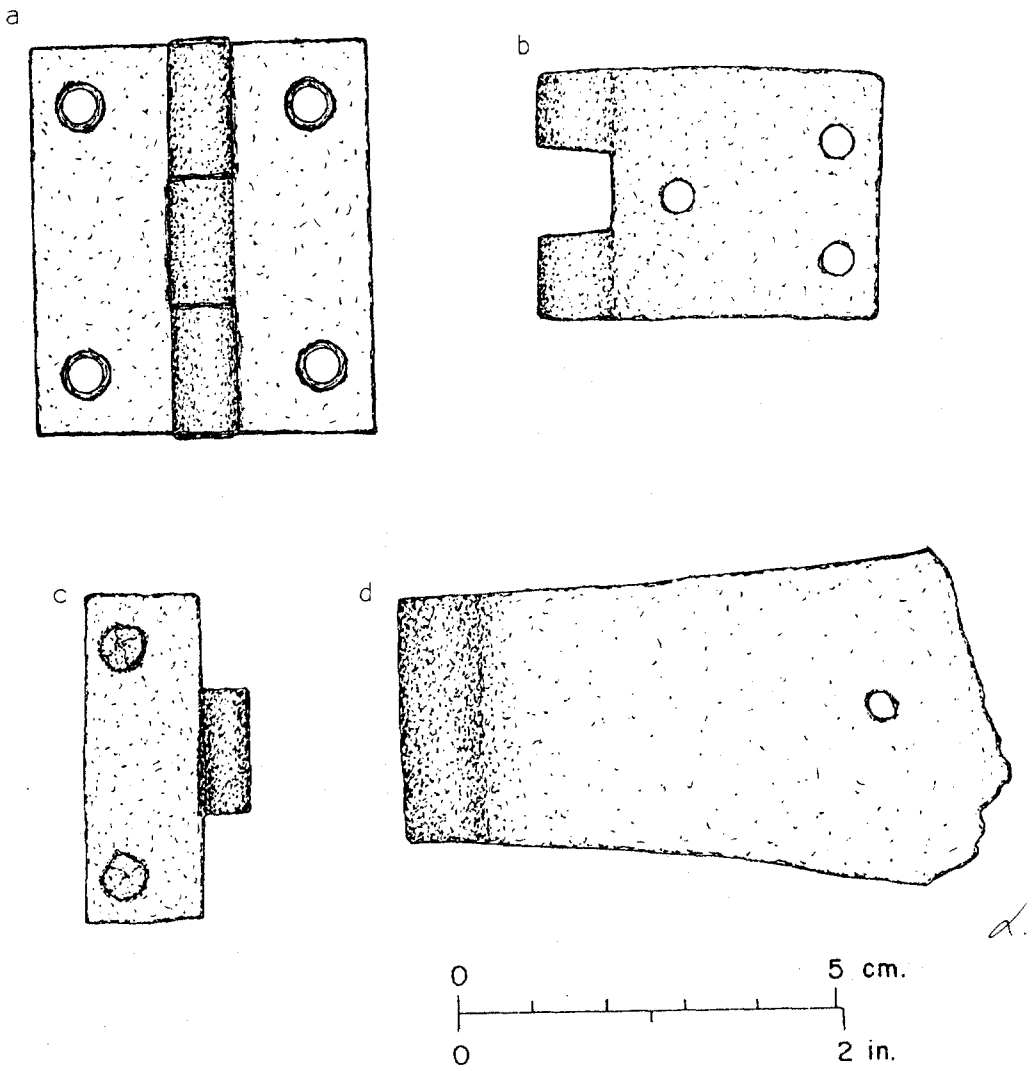


Fig. 26 -- Hinges from the Blacksmith Shop area: a). butt hinge (FOVA 34894); b). hinge (FOVA 35359); c). butt hinge w/#1002 nails (FOVA 34290) and d). butterfly hinge (FOVA 35776).

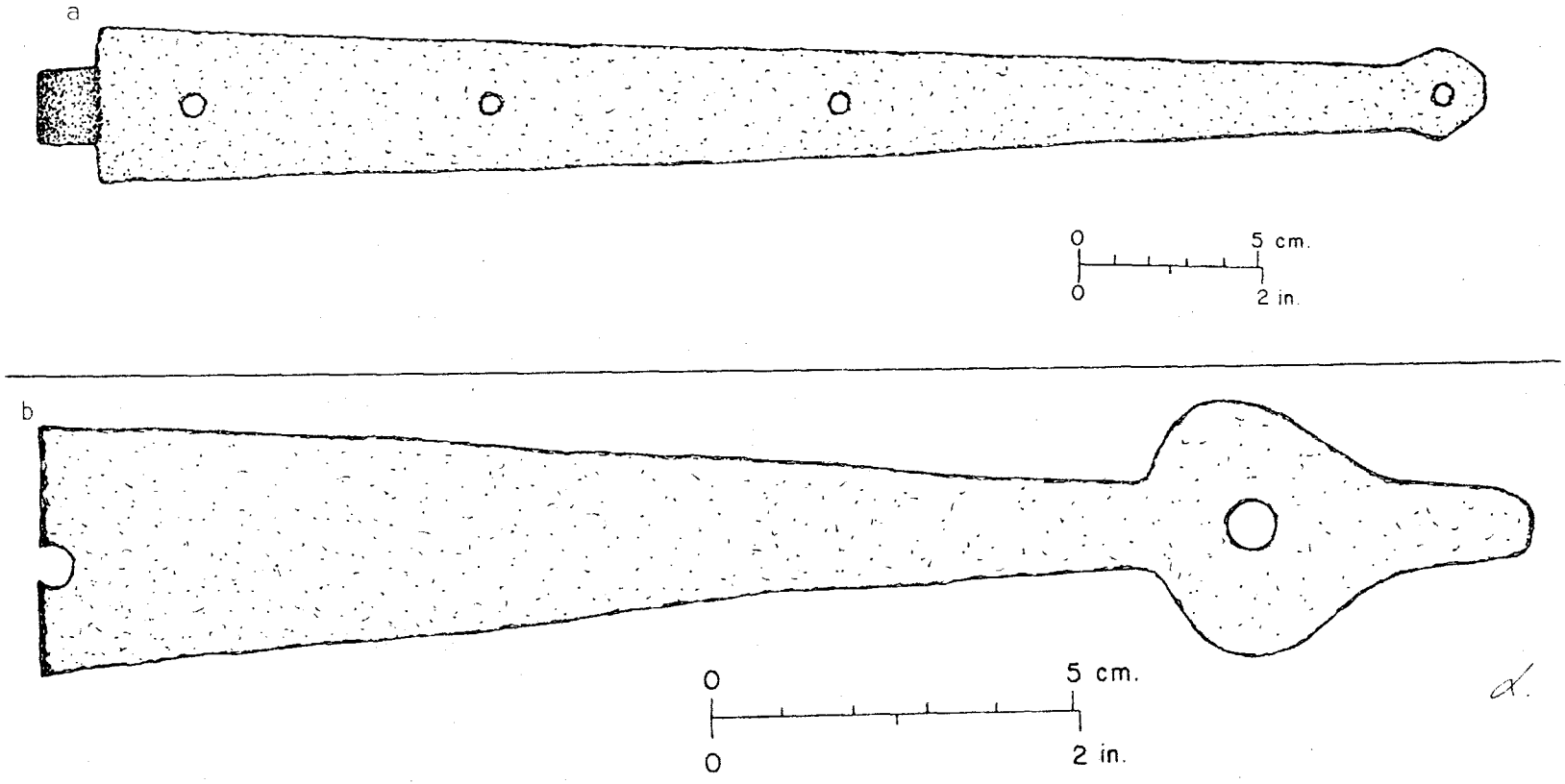


Fig. 27 -- Strap hinges from the Blacksmith Shop area: a). strap hinge (FOVA 34441) and b). strap hinge (FOVA 34549).

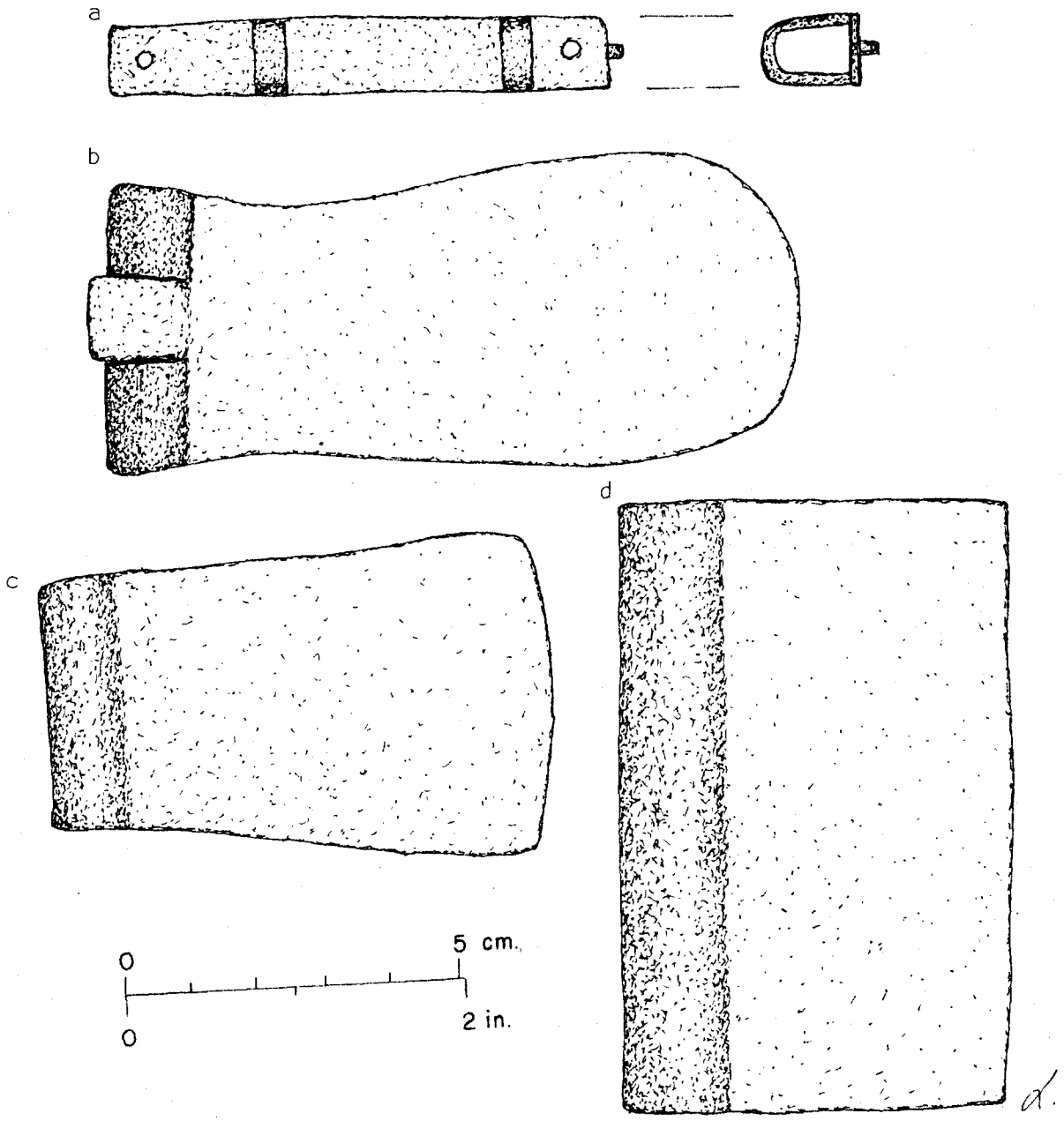


Fig. 28 -- A sliding bolt keeper and hinge preforms from the Blacksmith Shop area: a). sliding bolt keeper (FOVA 35634); b). hinge preform (FOVA 34187); c). hinge preform (FOVA 36073) and d). hinge preform (FOVA 34366).

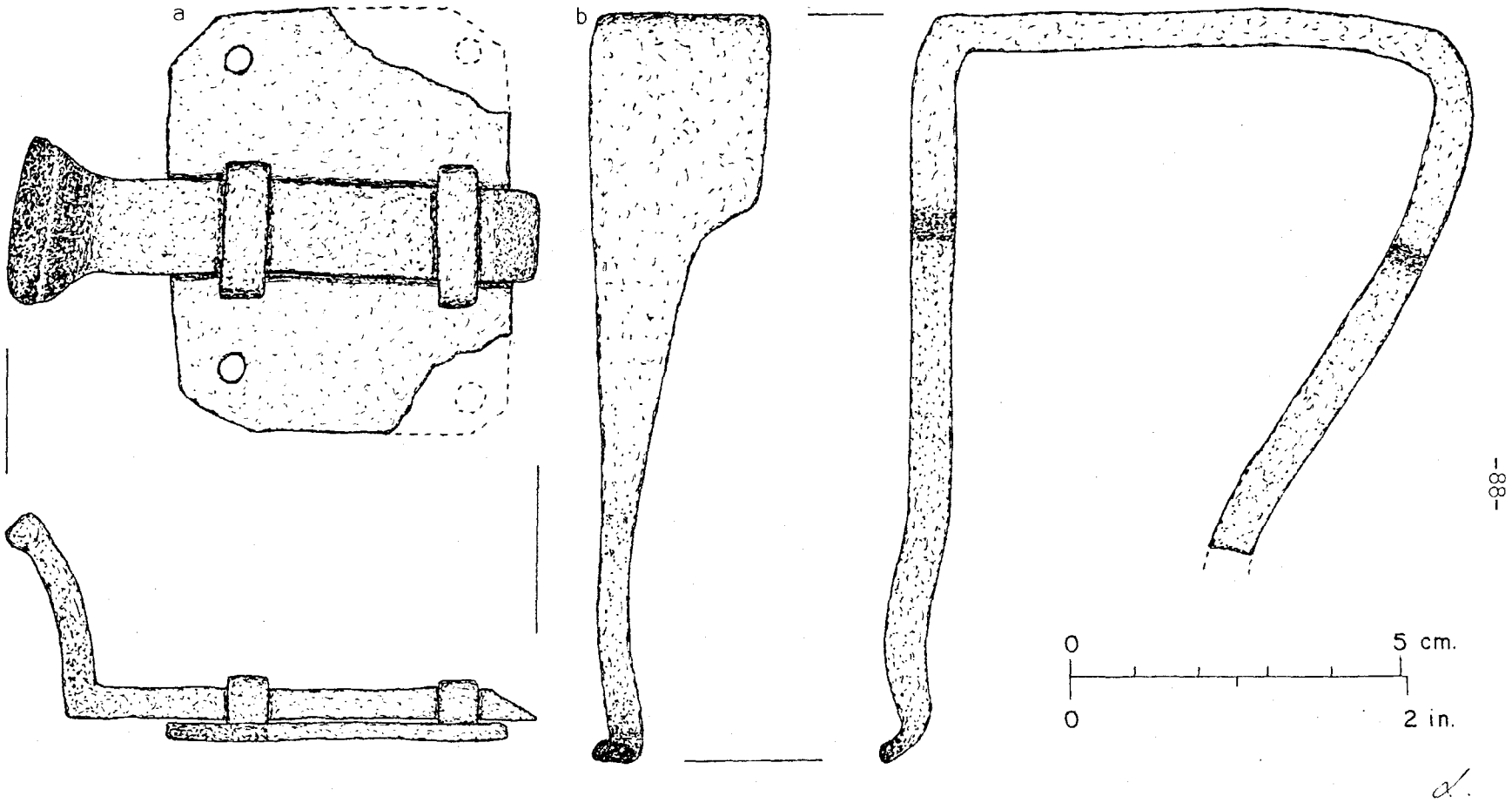


Fig. 29 -- Door latch and door latch keeper from the Blacksmith Shop area: a). door latch (FOVA 35299) and b). door latch keeper (FOVA 34442).

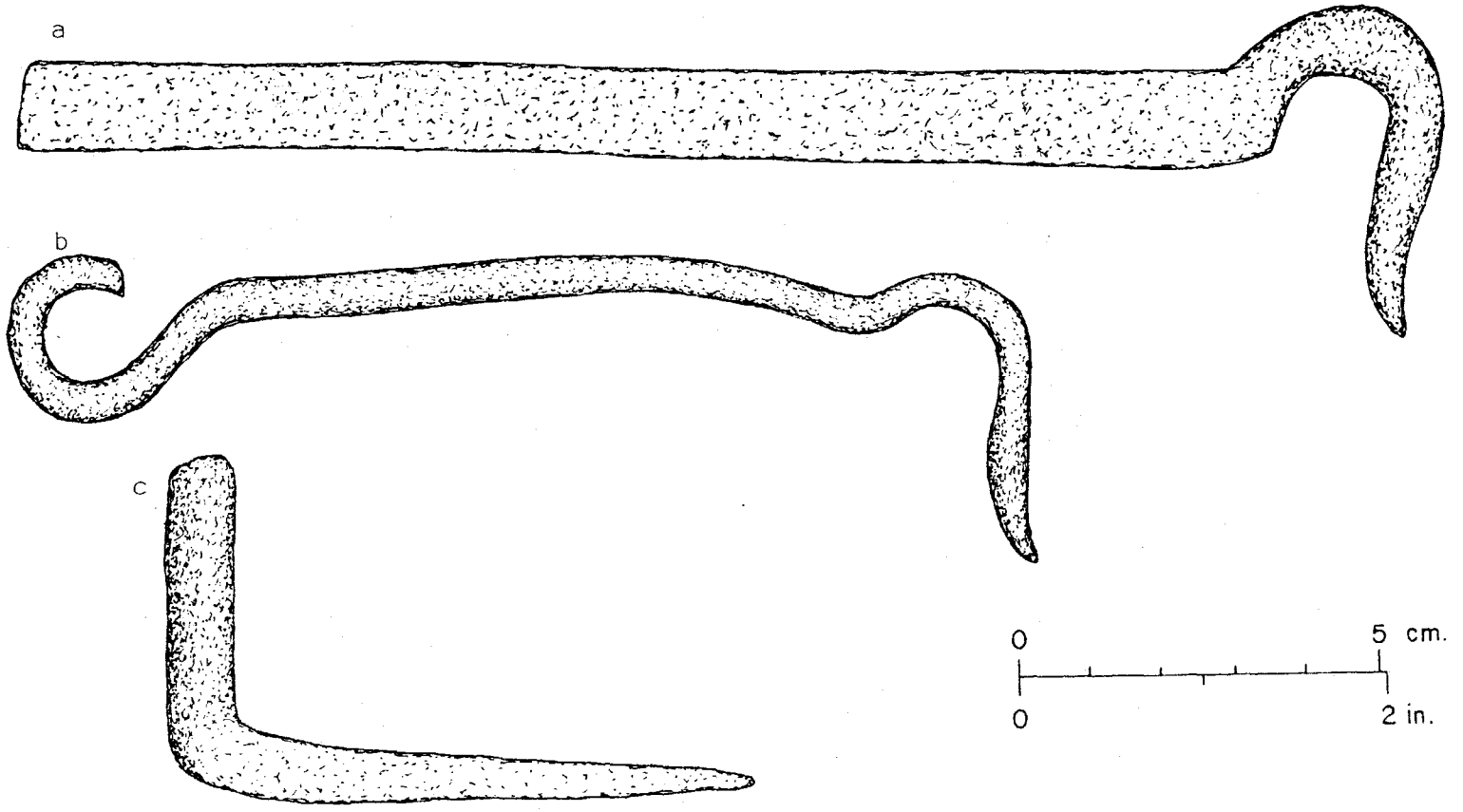


Fig. 30 -- Door hooks and a pintle from the Blacksmith Shop area: a). door hook (FOVA 35362); b). door hook (FOVA 33778) and c). pintle (FOVA 35360).

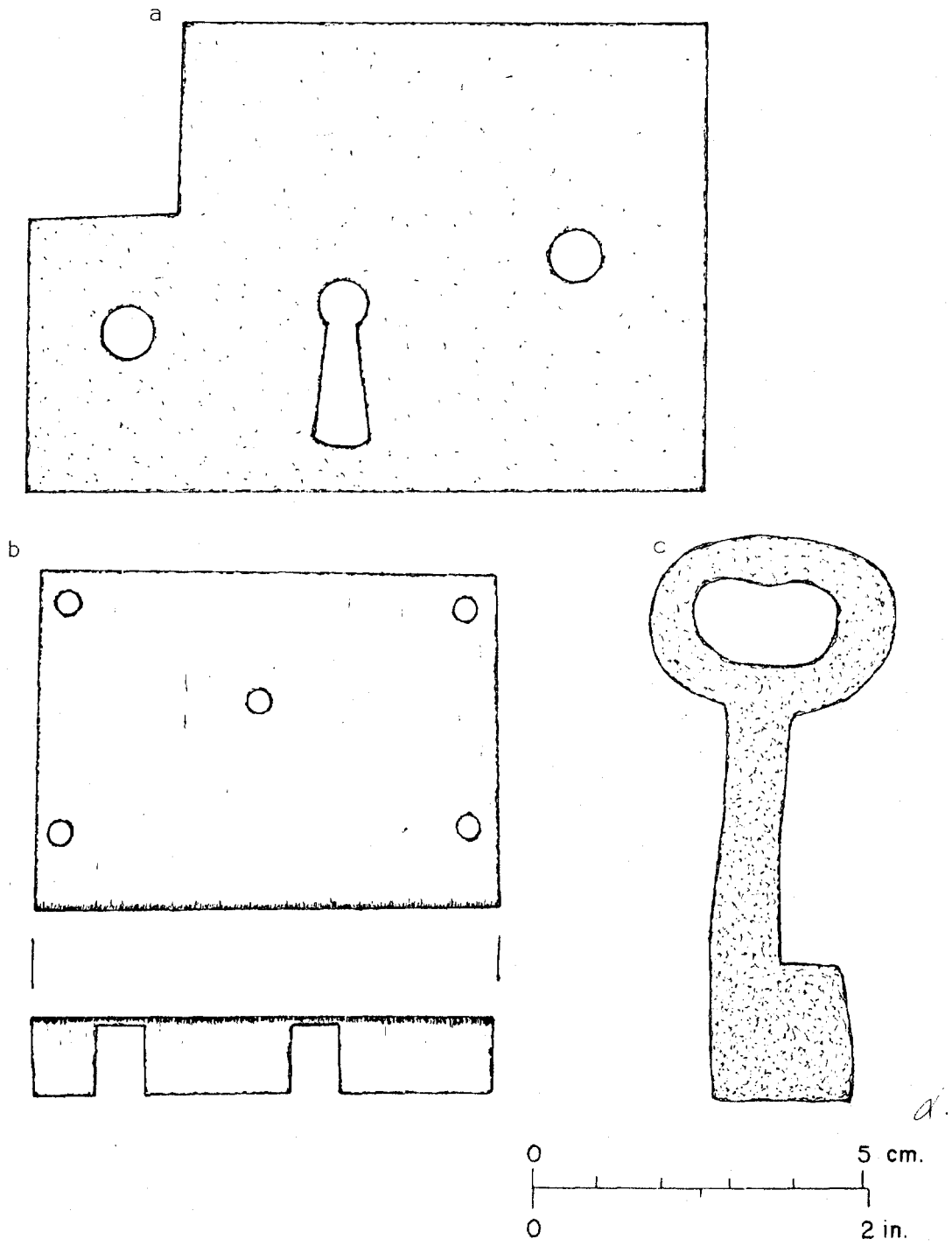


Fig. 31 -- A lock plate, furniture lock and a key preform from the Blacksmith Shop area: a). lock plate (FOVA 34074); b). furniture lock (FOVA 32805) and c). key preform (FOVA 33086).

Nails

The nails from the Blacksmith Shop were characterized by a wide range of stylistic variability and relatively low frequencies for any single variety. A total of 2,330 nails was recovered, of which wrought rod nails and machine cut sheet nails constituted 79.8% of the assemblage. On all building sites at Fort Vancouver, with the exception of the Fur Store area (Hoffman & Ross 1974), wrought rod nails have been more numerous than machine cut nails. The relatively high frequency of machine cut sheet nails in the Blacksmith Shop area was probably due to the relatively late date of initial construction of buildings within this area, thus resulting in lesser accumulations of wrought rod nails.

A total of 483 complete nails or 20.7% of all nail fragments, was analyzed and 69 varieties have been identified including 51 varieties of wrought rod nails. This relatively wide variation in nail styles in conjunction with the relatively low frequencies for any single variety may in part have been due to the functional aspect of blacksmithing, in that numerous items containing nails were probably repaired, disassembled or assembled resulting in the deposition of a wide range of stylistically and functionally diverse fasteners.

One variety of machine cut wire nail was recovered from HBC context indicating that prior to ca. 1866, wire nails were available in limited quantities. The very low frequencies of similar specimens from other areas within the Fort (Steele et al. 1975) suggests that wire nails were rarely, if at all, utilized by the HBC, and they were probably imported relatively late.

Nail sizes from the Blacksmith Shop area were generally below 10d (Fig. 32), and when compared to larger buildings within the Fort (Hoffman & Ross 1974a, 1974b and 1975), these smaller nail sizes indicated relatively light construction with 1-2 in. boards. Both wrought rod and machine cut sheet nails appear to have been utilized interchangeably for light structural construction while only machine cut nails were used for shingling.

Wrought Rod Nails

A total of 919 wrought rod nails were recovered including 286 complete nails. Fifty-one varieties were identified, including 15 new varieties (Figs. 33 - 39); but only 5 varieties appeared to have been utilized in quantity for structural purposes. Two varieties of horseshoe nails were recovered in quantity (FOVA Varieties #1032, #1104) and have been correlated with horse/mule shoeing activities outside the southwest corner of the Blacksmith Shop. A tabulation of identified varieties together with suggested metric populations appears as Table 18. The major varieties are discussed below.

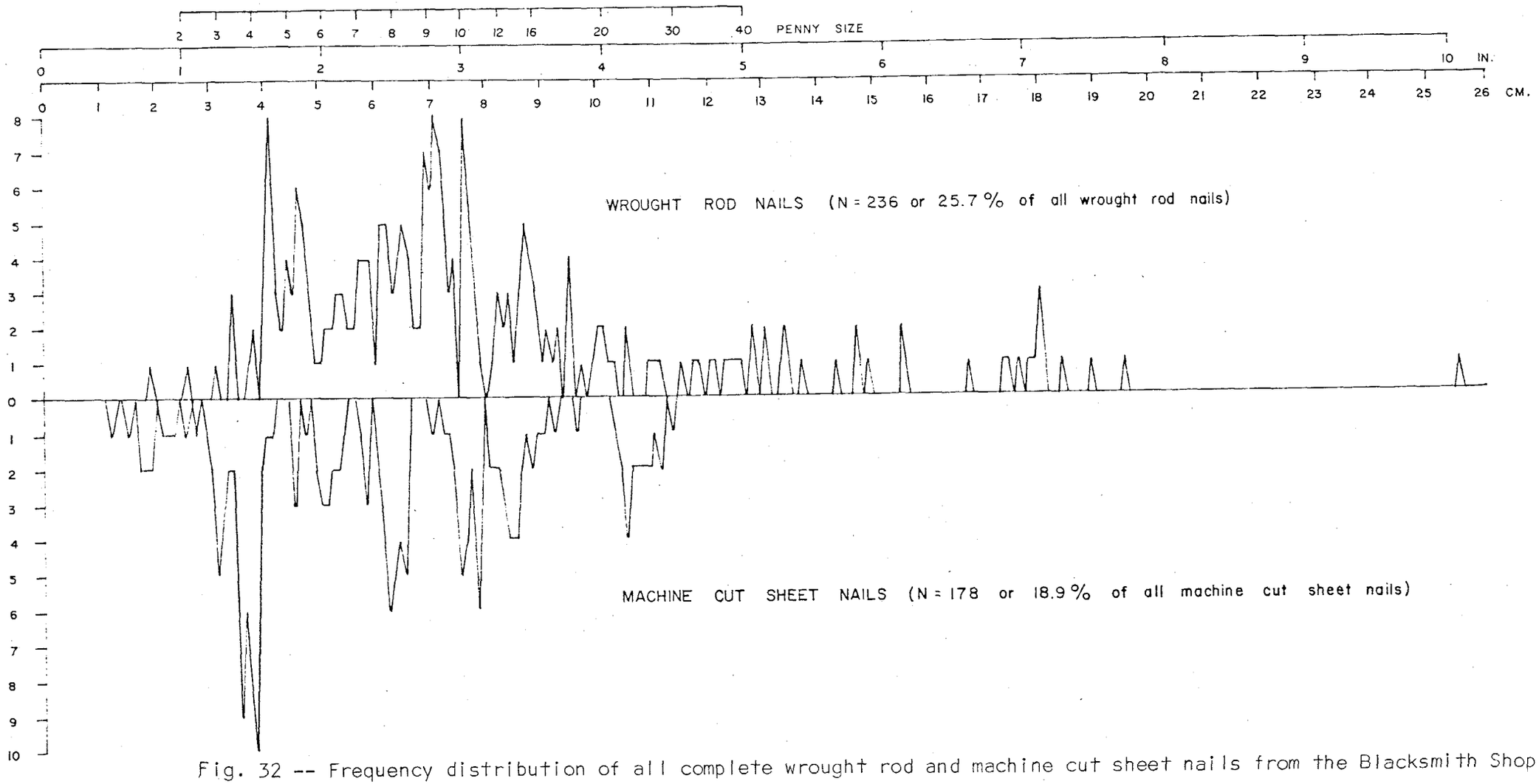


Fig. 32 -- Frequency distribution of all complete wrought rod and machine cut sheet nails from the Blacksmith Shop area.

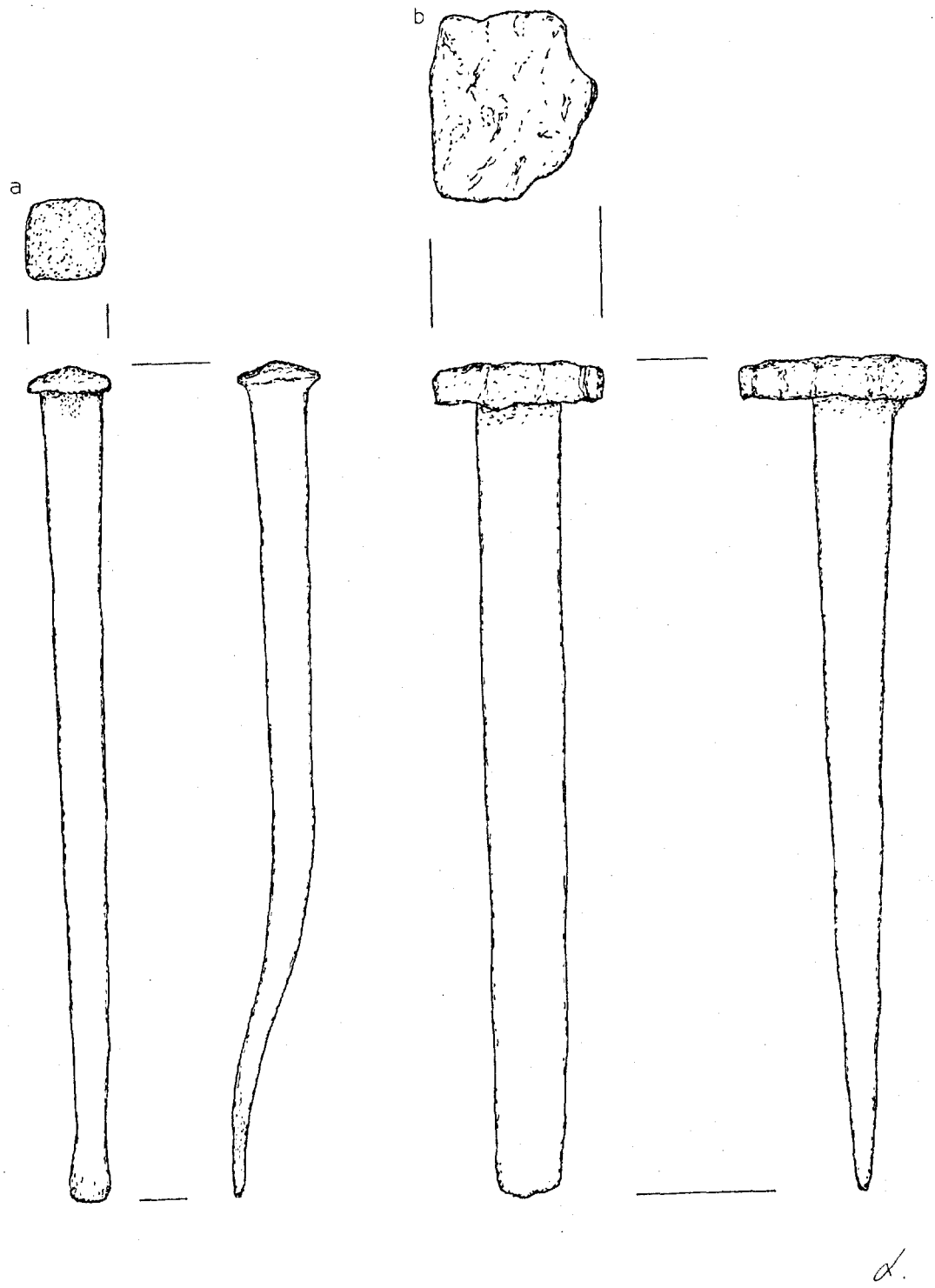


Fig. 33 -- New wrought rod nail varieties from the Blacksmith Shop area: a). nail Variety #1117 (FOVA 32295 -- L=18.9cm) and b). nail Variety #1118 (FOVA 33235 -- L=6.2cm).

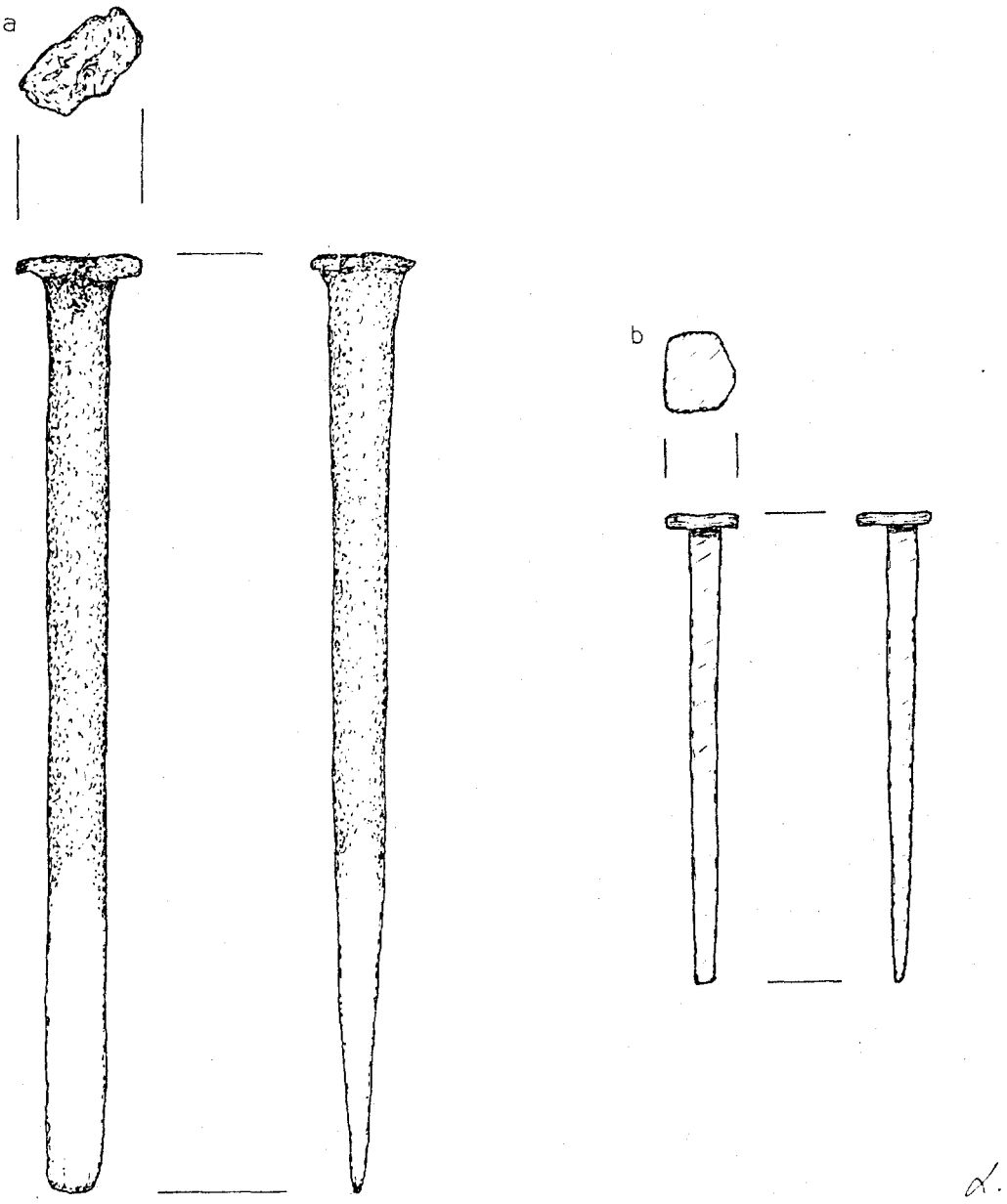


Fig. 34 -- New wrought rod nail varieties from the Blacksmith Shop area: a). nail Variety #1119 (FOVA 33328 -- L=8.93 cm.) and b). copper nail Variety #1120 (FOVA 33558 -- L=4.105 cm).

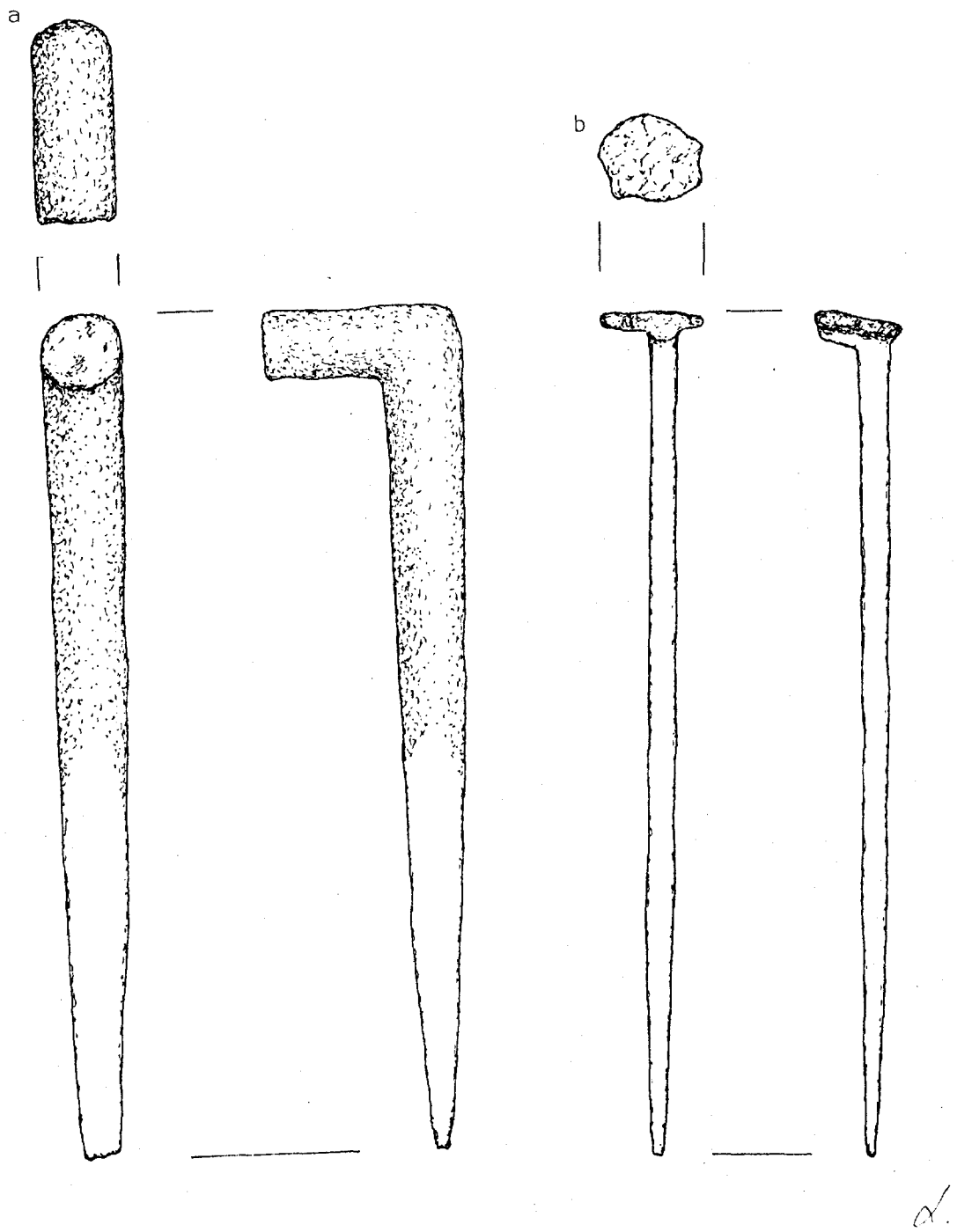


Fig. 35 -- New wrought rod nail varieties from the Blacksmith Shop area: a). nail Variety #1121 (FOVA 34162 -- L=7.21 cm.) and b). nail Variety #1123 -- L=14.72 cm.).

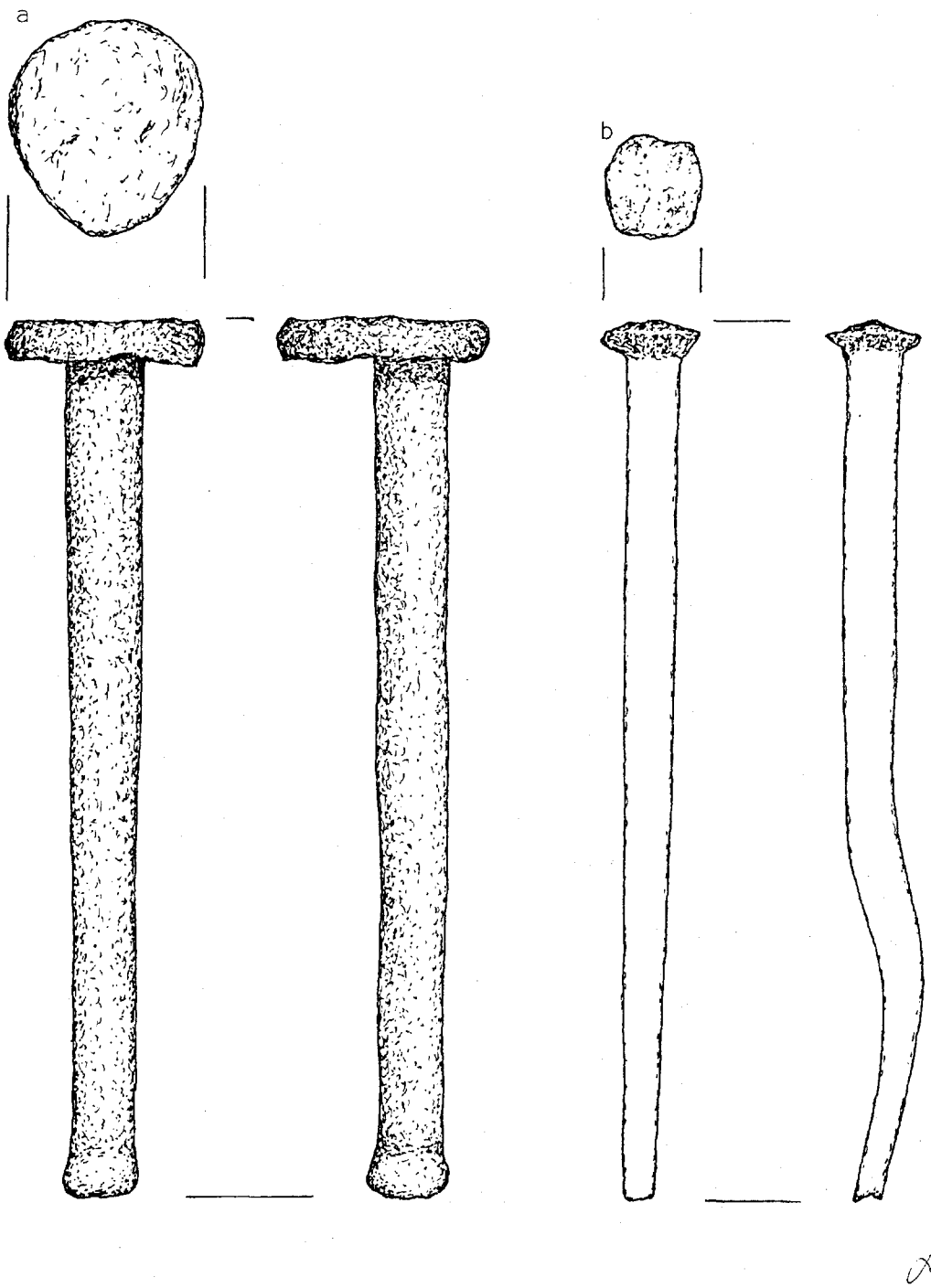


Fig. 36 -- New wrought rod nail varieties from the Blacksmith Shop area : a). nail Variety #1124 (FOVA 34524 -- L=6.92 cm.) and b). nail Variety #1125 (FOVA 34810 -- L=18.03 cm.).

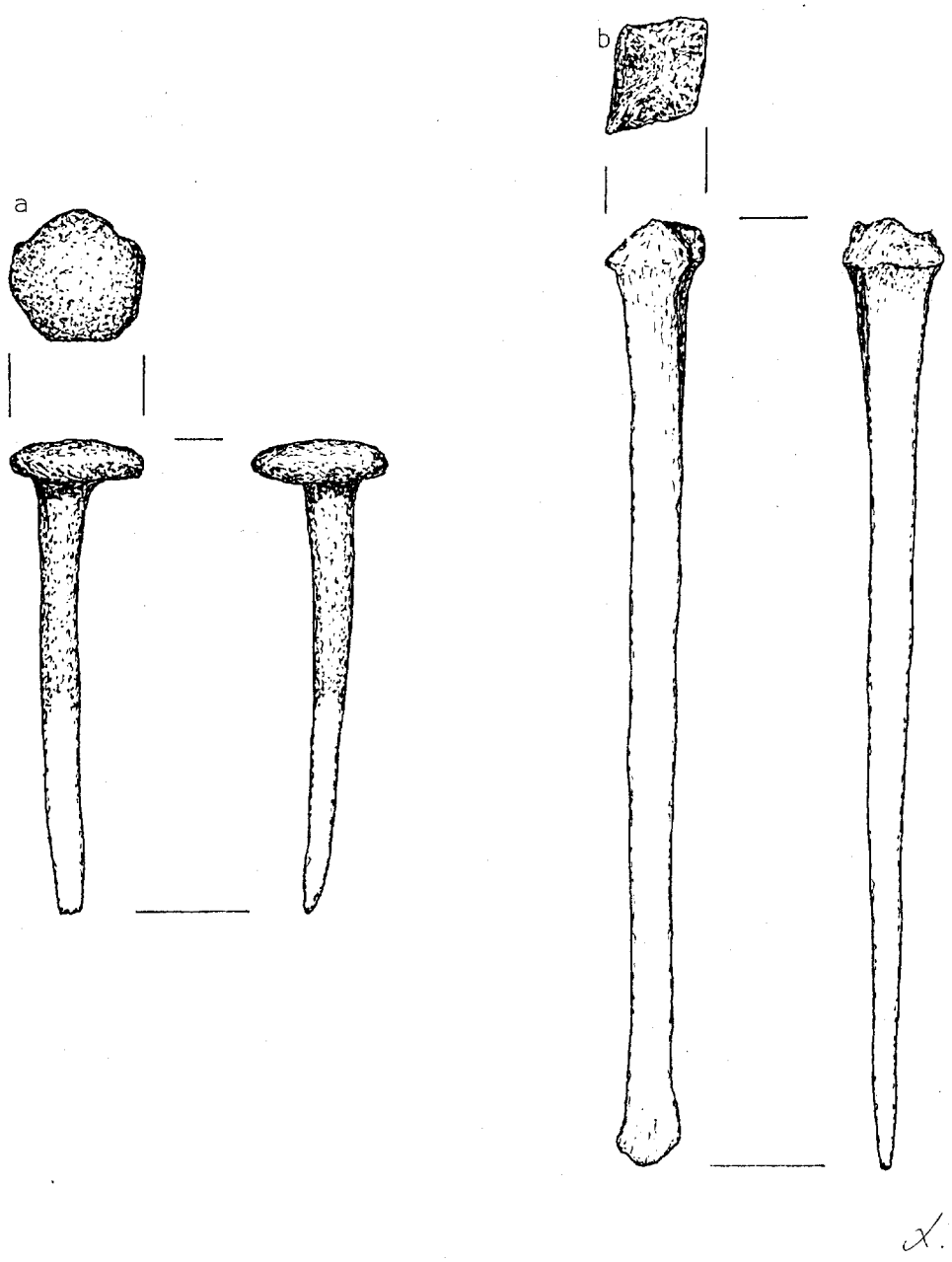


Fig. 37 -- New wrought rod nail varieties from the Blacksmith Shop area: a). nail Variety #1126 (FOVA 34868 -- L=4.125 cm.) and b). nail Variety #1127 (FOVA 34868 -- L=17.4 cm.).

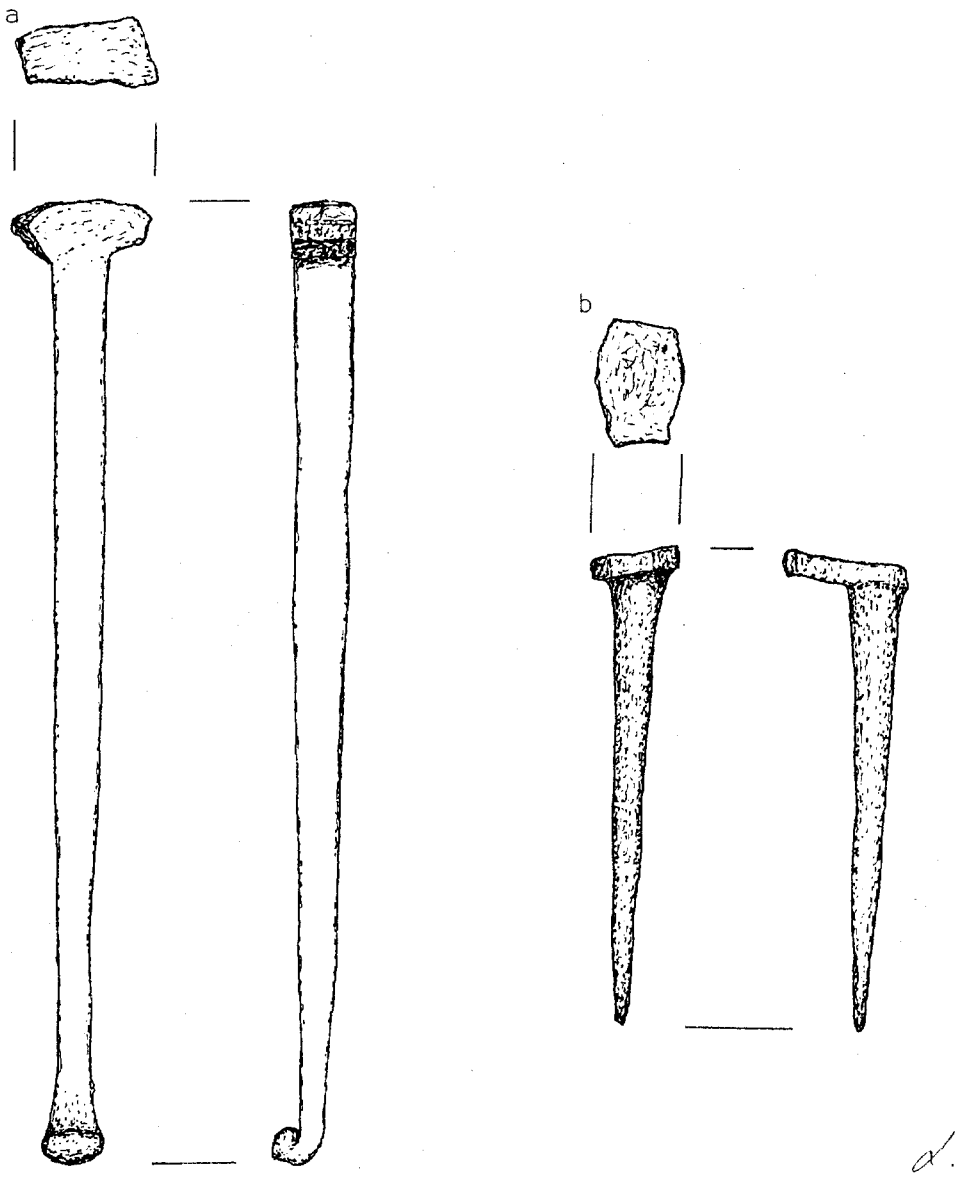


Fig. 38 -- New wrought rod nail varieties from the Blacksmith Shop area: a). nail Variety #1128 (FOVA 35097 -- L=17.3 cm.) and b). nail Variety #1129 (FOVA 35232 -- L=5.39 cm.).

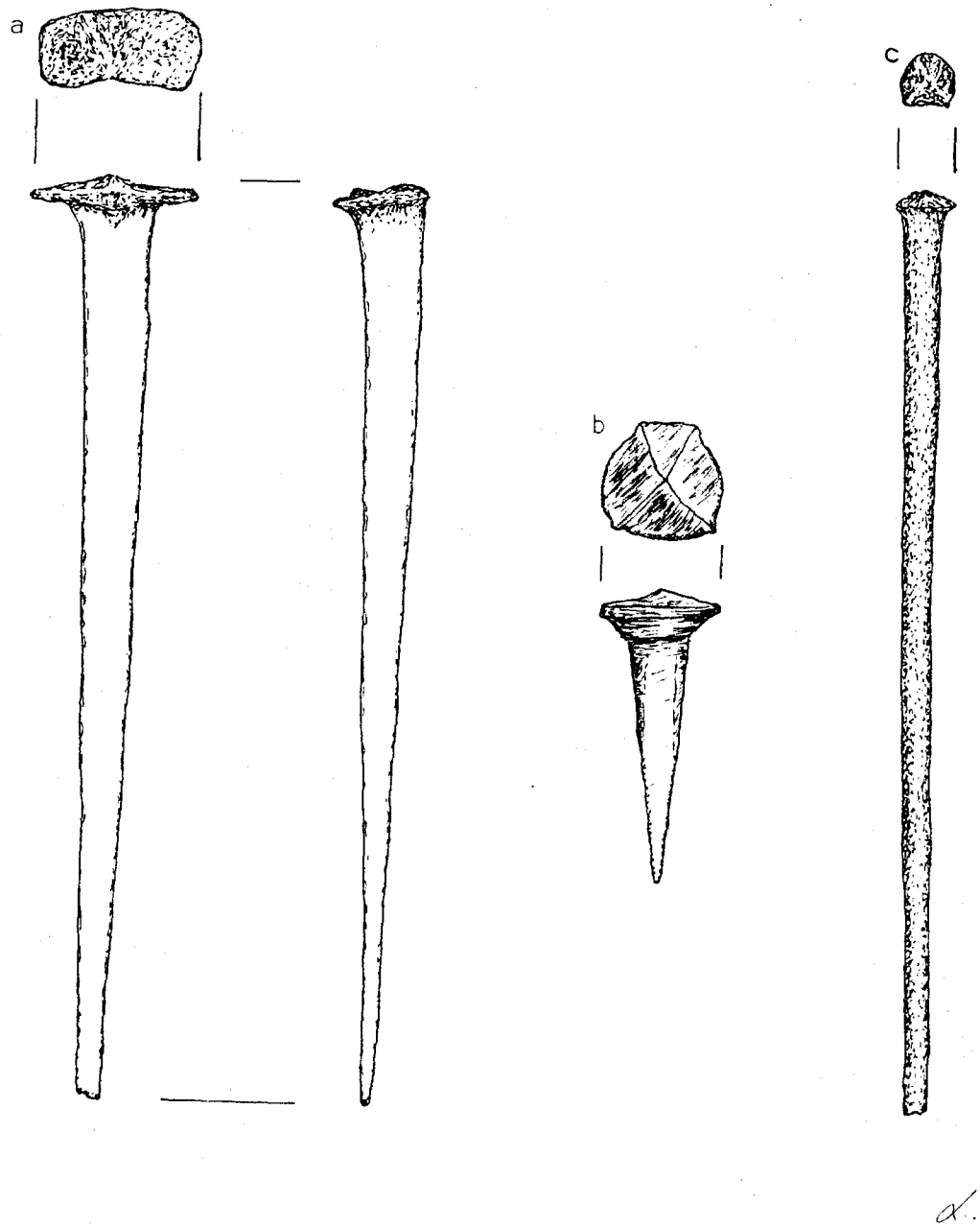


Fig. 39 -- New wrought rod nail varieties from the Blacksmith Shop area: a). nail Variety #1130 (FOVA 35286 -- L=10.3 cm.); b). copper nail Variety #1131 (FOVA 35456 -- L=3.96 cm.) and c). nail Variety #1132 (FOVA 32799 -- L=10.97cm).

Table 18 -- Varieties and hypothesized populations for complete wrought rod nails from the Blacksmith Shop area.

Variety # (Population)	Penny Size or Inches	Length (cm)	Thickness (mm)	Number Measured	Total Frequency
1001	1-20d	1.9-10.2	2.2-5.2	27	30
(1)	8-9d	6.3-6.9	3.5-4.5	(11)	
(2)	12d	8.1-8.4	4.2-5.0	(6)	
1002	3d-6"	3.1-15.5	2.9-9.6	73	79
(1)	4-6d	4.1-5.4	2.9-3.9	(17)	
(2)	8-12d	6.7-7.9	4.1-5.4	(29)	
1004	7-9d	6.1-7.2	4.3-4.5	2	2
1008	16-40d	9.1-12.8	4.7-5.2	2	2
1009	9d-10"	7.1-25.5	4.9-11.8	14	14
1013	40d	12.5	8.6	1	1
1014	5-7"	13.0-17.8	8.0-9.2	6	6
(1)	5"	13.0-13.4	8.0-8.1	(4)	
1018	5-6½"	12.3-16.7	6.4-9.7	2	2
1021	7-10d	6.0-7.8	5.9-6.4	2	2
1022	6-8d	5.3-6.5	4.6-6.9	5	5
1024	40d	12.6	8.2	1	1
1025	4-8d	3.8-6.1	6.1-7.4	4	4
1026	9-10d	7.1-7.4	6.1-6.2	2	2
1027	12.30d	8.2-11.1	8.7-10.8	3	3
1030	3 3/8"	8.7	13.4	1	1
1032	1 5/8-2¼"	4.1-5.7	3.7-6.7	6	31
1035	30d	11.5	8.3	1	1
1038	8-9d	6.2-6.9	6.7-7.1	3	3
1042	18d	9.5	9.7	1	1
1043	6"	14.9	8.4	1	1
1045	36d	11.8	10.7	1	1
1051	2d	2.6	3.3	1	1
1053	4d	3.7	5.9	15	15
(1)	10d	7.2-7.7	4.3-5.0	(5)	
(2)	12-16d	8.3-9.1	4.7-5.1	(6)	
1061	8d	6.4-6.8	5.9-7.4	3	3
1066	5½-7"	14.3-18.0	5.3-6.5	4	4
1069	8-9d	6.2-7.2	7.2-9.1	2	2
1072	7d	5.9	3.7	1	1
1074	30-40d	12.0	6.2	1	1
1075	6-7d	5.5	6.9	1	1
1076	5-9d	4.5-6.9	5.7-7.5	3	3
1086	7d	5.5	5.7	1	1
1099	16d	8.9	6.6	1	1
1101	4-9d	3.8-7.0	6.0-9.6	2	2

Table 18 -- cont'd

Variety # (Population)	Penny Size or Inches	Length (cm)	Thickness (mm)	Number Measured	Total Frequency
1102	7d	5.7	8.5	1	1
1104	1½-2"	4.0-5.2	4.2-5.5	10	18
1117	7½"	18.9	12.4	1	1
1118	8d	6.2	5.9	1	1
1119	16d	8.9	6.1	1	1
1120	4-5d	4.1	2.9	1	1
1121	9-10d	7.2	7.0	1	1
1123	5 3/4"	14.7	6.9	1	1
1124	9d	6.9	7.0	1	1
1125	7"	17.9	11.7	1	1
1126	4-7d	4.0-5.8	5.2-7.3	10	10
1127	6 3/4"	17.3	10.6	1	1
1128	6 3/4"	17.4	11.4	1	1
1129	6d	5.3	6.3	1	1
1130	10-30d	10.5	6.3	1	1
1131	4d	4.0	7.7	1	1
1132	30d	11.0	6.0	1	1
Unid.				7	15
TOTAL					286

Variety #1001. This variety has been correlated with the historic wrought rod "clasp" nails and has been described in FOVA Report #IX (Hoffman & Ross 1975). The relatively high frequency observed in the Blacksmith Shop indicated, in the absence of flooring, the existence of cabinetry or molding for doors or windows. The variety has been illustrated in FOVA Report #IV (Hoffman & Ross 1973b: Fig. 24c).

Variety #1002. A "Rosette" faceted head with a convergent "sharps" tip, and the most common wrought rod nail utilized at the Fort. The metric populations observed for the Blacksmith Shop suggest it was utilized predominately in 4-12d sizes (Table 18) possibly in the fastening of 1-1½ thickness roofing planks. Illustrated in FOVA Reports IV & VI (Hoffman & Ross 1973b Fig. 24b; 1974a Fig. 12b).

Variety #1009. A rosette-faceted head, flat tip "spike", this variety was the most common spike-size fastener recovered at Fort Vancouver and has been described and illustrated in previous reports (Hoffman & Ross 1973b:Fig. 24i; 1974b:130). Together with "diamond" faceted spikes (Variety #1014), these varieties appear to have been the predominate spikes used in the Blacksmith Shop and may have been utilized to fasten light to medium joists or crossmembers.

Variety #1032. Commonly termed horseshoe nails, this variety has been illustrated (Hoffman & Ross 1973b:Fig. 26i) and described (Hoffman & Ross 1975). Analysis of all complete specimens tended to support the hypothesis that #1032 nails represent worn specimens of Variety #1104 horseshoe nails (Hoffman & Ross 1975). Both varieties undoubtedly represent horse or mule shoeing nails which accumulate between the Blacksmith Shop and Indian Trade Store (see Hoffman & Ross 1975: Fig. 69, for surface frequencies in the eastern portion of the Indian Trade Store).

Variety #1104. Identified as horseshoe nails, this variety has been previously discussed and illustrated (Hoffman & Ross 1974b:136, Fig. 65), and was associated with horse or mule shoeing activities in the area between the Blacksmith Shop and Indian Trade Store.

Variety #1126. This variety is thus far unique to the Blacksmith Shop and appears to be a variation of a "dog" nail, designed to affix metal work such as hinges and reinforcing strap. It was manufactured from round stock tapered to a rectangular spade or flat tip. The head was a relatively large,assymetrical flat head with a flush base (Fig.37a). This nail variety, together with other variants of "dog" nails (Varieties #1021, #1022 & #1024), may have been associated with the construction or hinging of doors.

Machine Cut Sheet Nails

Machine cut sheet nails were more numerous than wrought rod nails with 940 fragments being recovered. A total of 286 complete specimens comprising 10 stylistic varieties were observed (Table 19), with 3 varieties represented in nearly equal proportions--the British "clasp" nail (Variety #2001), the American "common" nail (Variety #2002) and the American reverse crimp "shingling" nail (Variety #2004). All nail varieties have been described and illustrated in previous FOVA reports.

Previously, Variety #2001 has been correlated with construction activities ca. 1845-46, while Varieties #2002 and #2004 have been dated at ca. post-1845, and in the case of shingling size (4d) Variety #2004 nails post-1850 (see Hoffman & Ross 1974b and 1975 for discussion). Based upon these suggested initial dates, a tentative sequence of structural change has been hypothesized. Since the predominate nail sizes in wrought rod nails were replicated by the Variety #2001 and Variety #2002 nails, it is suggested that these machine cut nails were utilized for repair (i.e., replacement of Variety #1001 and Variety #1002 nails) sometime after 1845. The shingle nail size (4d) population of Variety #2004 nails have no counterparts in wrought rod varieties and it is suggested that they may represent initial and relatively late (post-1850) repair shingling or veneer sheathing of the Blacksmith Shop roof.

Cast Nails

A total of 20 cast nails were recovered and 7 varieties were identified (Table 20). Presently, it is unknown how cast nails were utilized. Historically they were used to construct agricultural structures (gates, fences, etc.) as well as in ship and boat construction. Since brass and copper castings were recovered from the Shop, it is possible that cast nails were being manufactured at the shop in small quantities.

Closed Eye Nails

Thirteen closed eye nails were recovered and 3 have been illustrated (Figs. 40c-e).

Table 19 -- Varieties and hypothesized populations for complete machine cut sheet nails from the Blacksmith Shop area.

Variety # (Population)	Penny Size Or Inches	Length (cm)	Thickness (mm)	Number Measured	Total Frequency
2001	4-30d	3.8-11.3	1.6-4.1	46	46
(1)	4d	3.8-3.9	2.3-2.4	(3)	
(2)	6d	5.1-5.3	2.5-3.0	(5)	
(3)	8d	6.2-6.5	2.8-3.3	(6)	
(4)	10d	7.4-8.0	3.1-3.6	(7)	
(5)	20-30d	10.3-11.3	3.2-4.1	(19)	
2002	4-16d	3.5-9.0	2.1-4.1	65	65
(1)	5-6d	4.5-5.1	2.5-3.1	(8)	
(2)	7-8d	5.8-6.5	3.0-3.5	(19)	
(3)	10d	7.4-7.8	3.2-3.7	(12)	
(4)	12-16d	8.0-9.0	3.4-4.1	(20)	
2003	4-10d	3.5-7.7	2.7-4.0	2	2
2004	2-6d	2.7-5.3	2.0-3.4	44	44
(1)	2-4d	2.7-3.8	2.0-3.1	(42)	
(2)	6d	5.0-5.3	2.8-3.4	(2)	
2005	4-8d	4.0-6.1	2.6-3.0	6	7
2006	3-4d	3.5	2.9	1	1
2010	1d	1.8	2.1	1	1
2018	8d	6.5	2.0	1	1
2020	203d	2.5-3.0	2.2-2.9	2	2
2023	½-1"	1.2-2.3	1.9-2.2	10	10
TOTAL					179

Table 20 -- Varieties of cast nails from the Blacksmith Shop area.

Variety #	Penny Size or Inches	Length (cm)	Thickness (mm)	Number Measured	Total Frequency
4001	1"	1.7	3.1	1	1
4002	3/4-1¼"	2.2-3.2	3.1-3.5	4	2
4003	3/4"	2.0	1.7	1	1
4004	1½"	3.6	3.1		1
4007	1-1 3/4"	2.7-4.3	4.2-4.4		3
4008	1¼-1½"	3.1-3.9	2.1-2.7		2
4015	--	--	--	--	1
Unid.					6
TOTAL					17

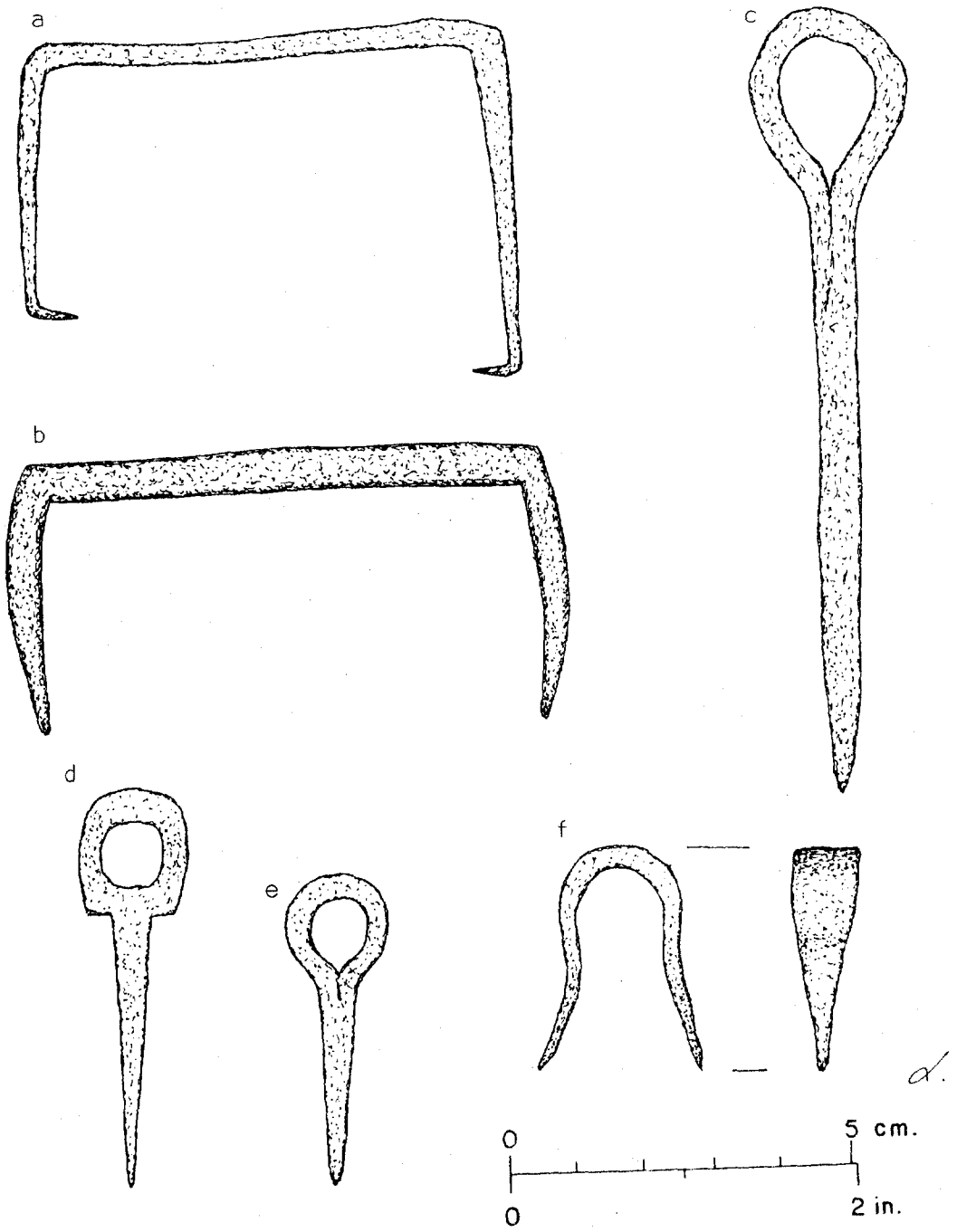


Fig. 40 -- Staples and closed eye nails from the Blacksmith Shop area: a). staple (FOVA 34873); b). staple (FOVA 35532); c). closed eye nail (FOVA 33261); d). closed eye nail (FOVA 34115); e). closed eye nail (FOVA 34115) and f). staple (FOVA 35259).

Staples

A total of 13 wrought rod and 12 machine cut wire staples were recovered from the Blacksmith Shop area. Wire cut staples appeared to have been associated with U.S. Army occupation and no new styles were identified. All wrought rod staples appeared to have been associated with HBC Blacksmith Shop activities, and 3 new styles were identified and illustrated (Figs.40a-b and f).

Rivets

A total of 129 rivets were recovered including 19 barrel rivets, 6 bateau bolts with and without roves, and 3 brass rivets marked "S.Hiler New York" (Fig.41c). All rivets have been correlated with HBC activities (e.g., see the rivet accumulation in N.E. corner of Indian Trade Store in Hoffman & Ross 1975). The various rivet styles are illustrated in Figs. 41c-g.

Bateau Bolts

Bateau bolts have been historically associated with york boat construction, but they may also have been used in any situation where layers of wood needed to be pinioned together. A bateau bolt without rove was previously illustrated and described as nail Variety #1094 (Hoffman & Ross 1974b:Fig. 641). However they were usually used with a rove, or diamond shaped washer, over which the bateau tip was rivet splayed to provide permanent securing. Two styles of bateau bolts with roves are illustrated in Figs. 41a-b.

Cotter Bolt Parts

A total of 12 cotter bolt parts including 8 bolts, 3 cotter pins and 1 cotter key were recovered and all appear to have been utilized by the HBC. No evidence of manufacture was recovered in the way of preforms. Of the 8 cotter bolts, at least three styles have been defined (Figs. 42a-b), and 3 styles of cotter pins have been recognized. Two of the pin styles were reported and illustrated in the Indian Trade Store report (Hoffman & Ross 1975:Fig. 20i,k); and the third style is illustrated in Fig. 42d.

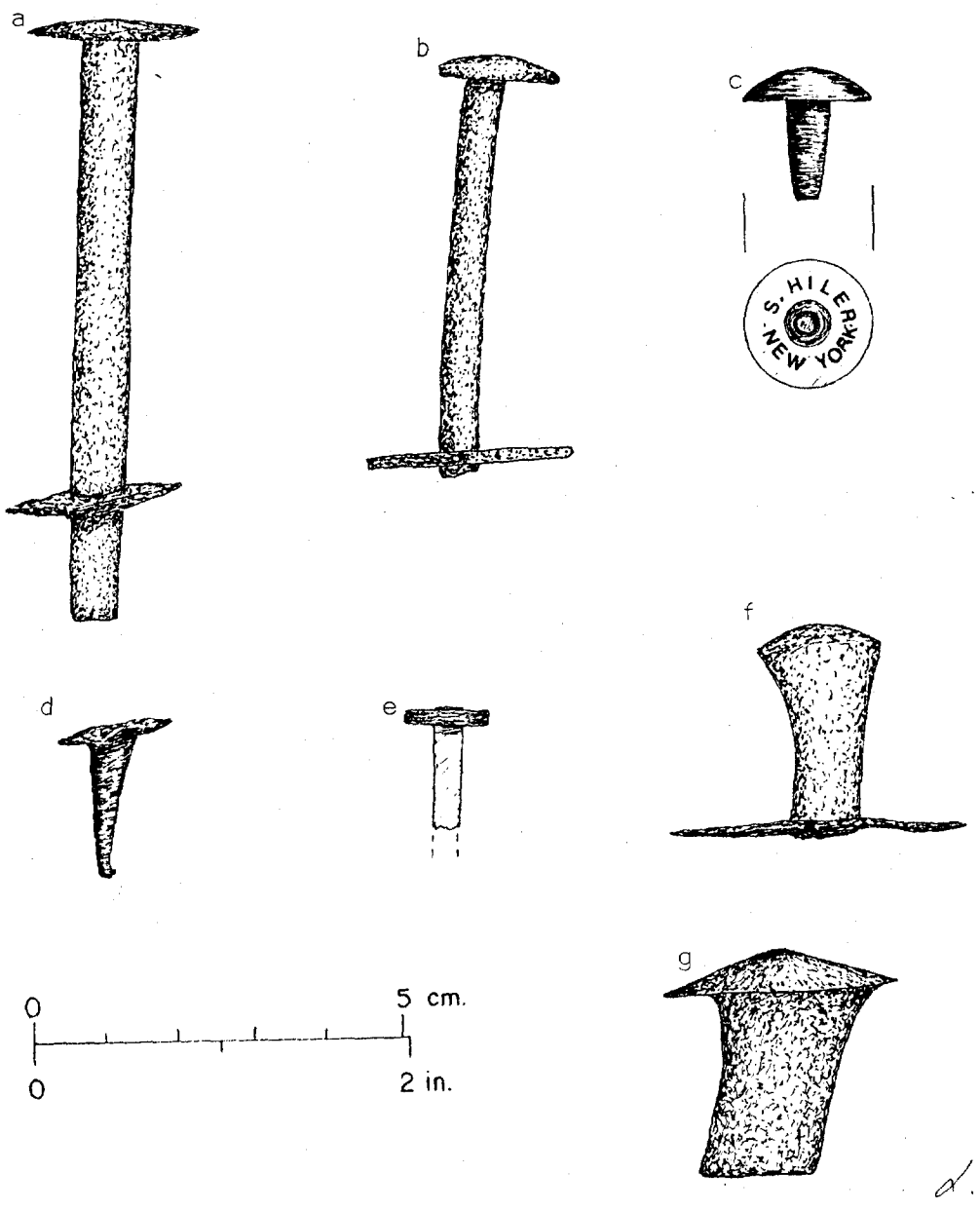


Fig. 41 -- Bolts and rivets from the Blacksmith Shop area: a). bateau bolt w/rove (FOVA 35950); b). bateau bolt w/rove (FOVA 32802); c). "S. HILER" brass rivet (FOVA 34877); d). conical copper rivet (FOVA 34960); e). copper rivet (FOVA 34285); f). rivet w/rove (FOVA 36023) and g). rivet (FOVA 34529).

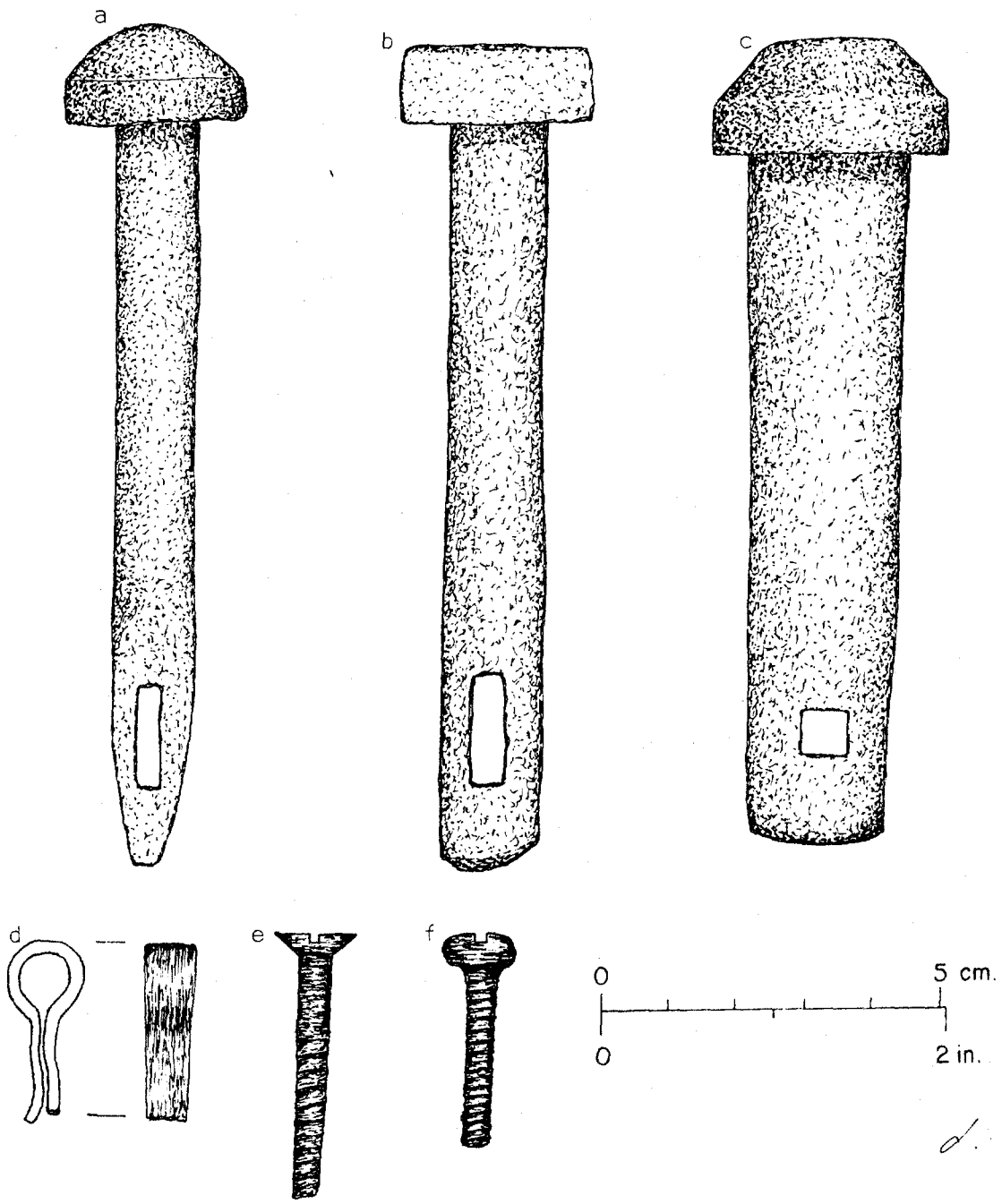


Fig. 42 -- Cotter bolts, a cotter pin and screws from the Blacksmith Shop area: a). cotter bolt (FOVA 36068); b). cotter bolt (FOVA 35629); c). cotter bolt (FOVA 33383); d). cotter pin (FOVA 35993); e). screw (FOVA 35462) and f). screw (FOVA 34961).

Threaded Fasteners

The most common types of threaded fasteners were screws and bolt parts (Table 12), and both appear to have been related to HBC activities in the Blacksmith Shop. Some of the bolts and bolt parts were manufactured in the shop area, as exemplified by the presence of nut preforms, washer preforms and tapping tools. Screws may have been strictly an imported item (see Hussey 1972:222).

Screws

A total of 20 iron screws consisting of 2 stylistic varieties were recovered from the Blacksmith Shop and on the basis of stratigraphic context, 2 stylistic varieties were related to HBC activities. One style, a flat, countersunk head with a convergent to semi-convergent tip (Fig. 42a), appears to have been related to the HBC "wood screw nails" which were inventoried by "miscellaneous sizes" (Hussey 1972: 222). Two sizes have been distinguished in the Blacksmith Shop--1 and 1½ in. lengths. The second style is a round (fillister) head with flush base screw that had a non-tapering shank (Fig. 42f). It was probably utilized with a nut for sheet metal work, and the size, measuring from the base of the screw head, was approximately 1 in.

Bolt Parts

A total of 171 bolt parts was recovered, consisting of a wide variety of finished and preformed bolts, nuts, and washers.

Forty-five finished iron bolts were recovered as well as 2 iron bolts with nuts, a brass (or copper) bolt (Fig. 48d), and an iron eye-bolt (Fig. 48e). With the exception of 2 bolt styles (not illustrated) associated with U.S. Army activities, all other bolts were feasably related to HBC activities. Of the HBC bolts, 17 styles have been identified as being either used or manufactured at the Blacksmith Shop (Figs. 43-48a-c).

Both round and square stock were utilized in manufacturing the bolts from the Blacksmith Shop. Two modes of head manufacture were observed occuring on both types of stock, single piece heads formed from the distal end of the stock, and two-piece heads, wherein metal was wrapped around the distal stock end.

Based upon the presence of 37 nut preforms in the Blacksmith Shop, some portion of the 81 nuts recovered must have been manufactured in the Shop. Two styles of nuts appear to have been used and both were manufactured in the Blacksmith Shop. The finished styles are illustrated in Figs. 49a-b.

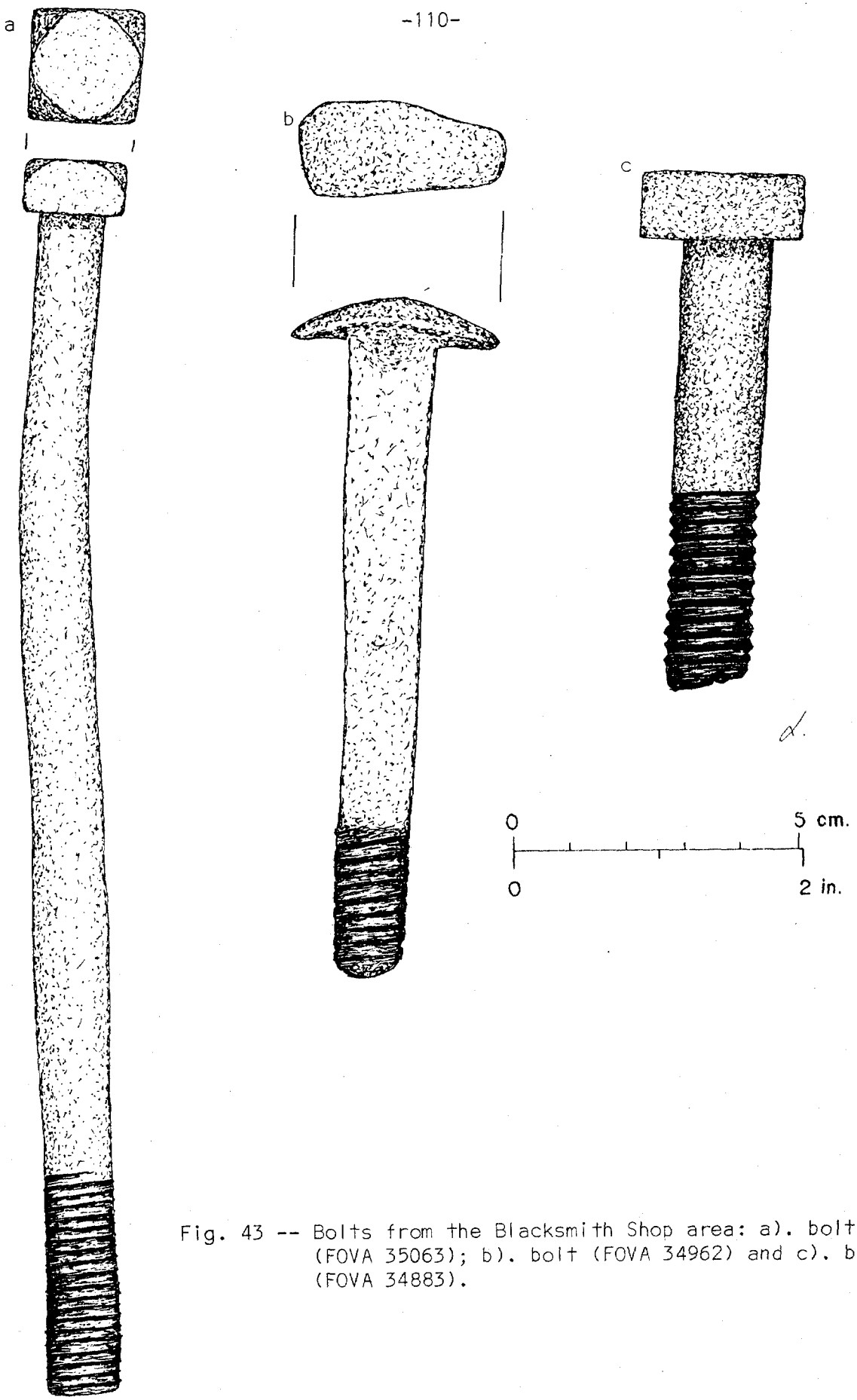


Fig. 43 -- Bolts from the Blacksmith Shop area: a). bolt (FOVA 35063); b). bolt (FOVA 34962) and c). bolt (FOVA 34883).

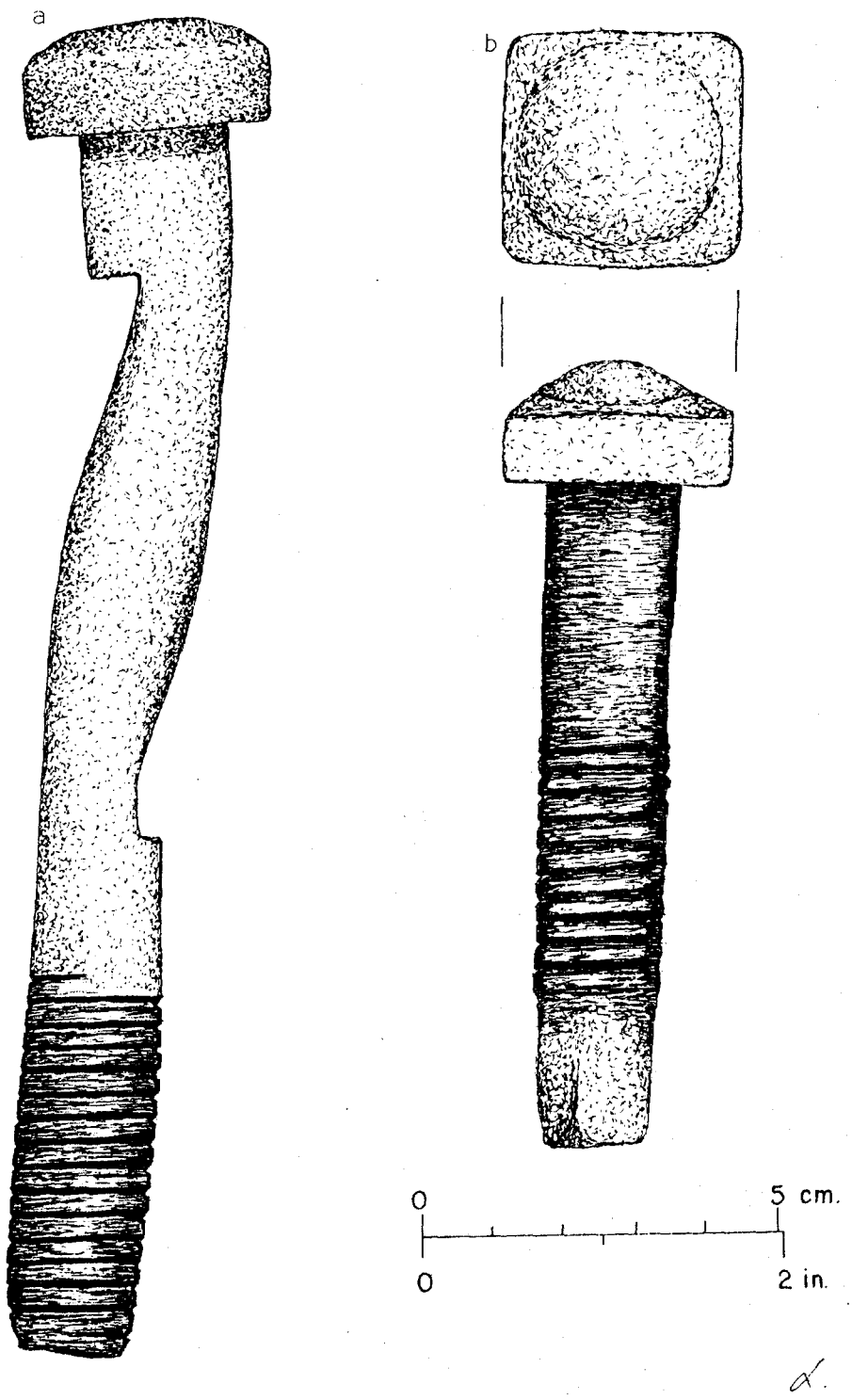


Fig. 44 -- Bolts from the Blacksmith Shop area: a). bolt (FOVA 36067) and b). bolt (FOVA 35585).

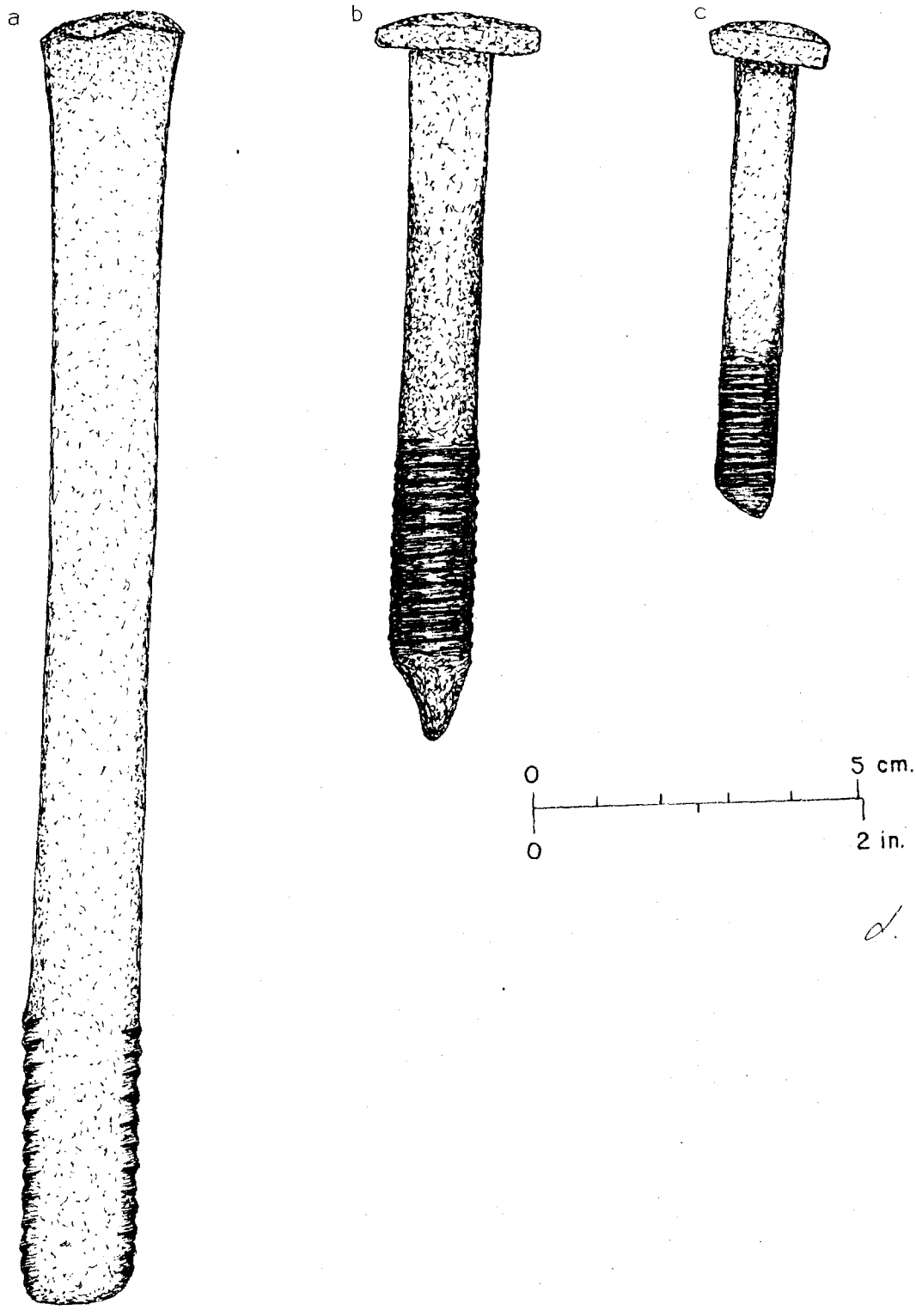


Fig. 45 -- Bolts from the Blacksmith Shop area: a). bolt (FOVA 32803); b). bolt (FOVA 34433) and c). bolt (FOVA 32235).

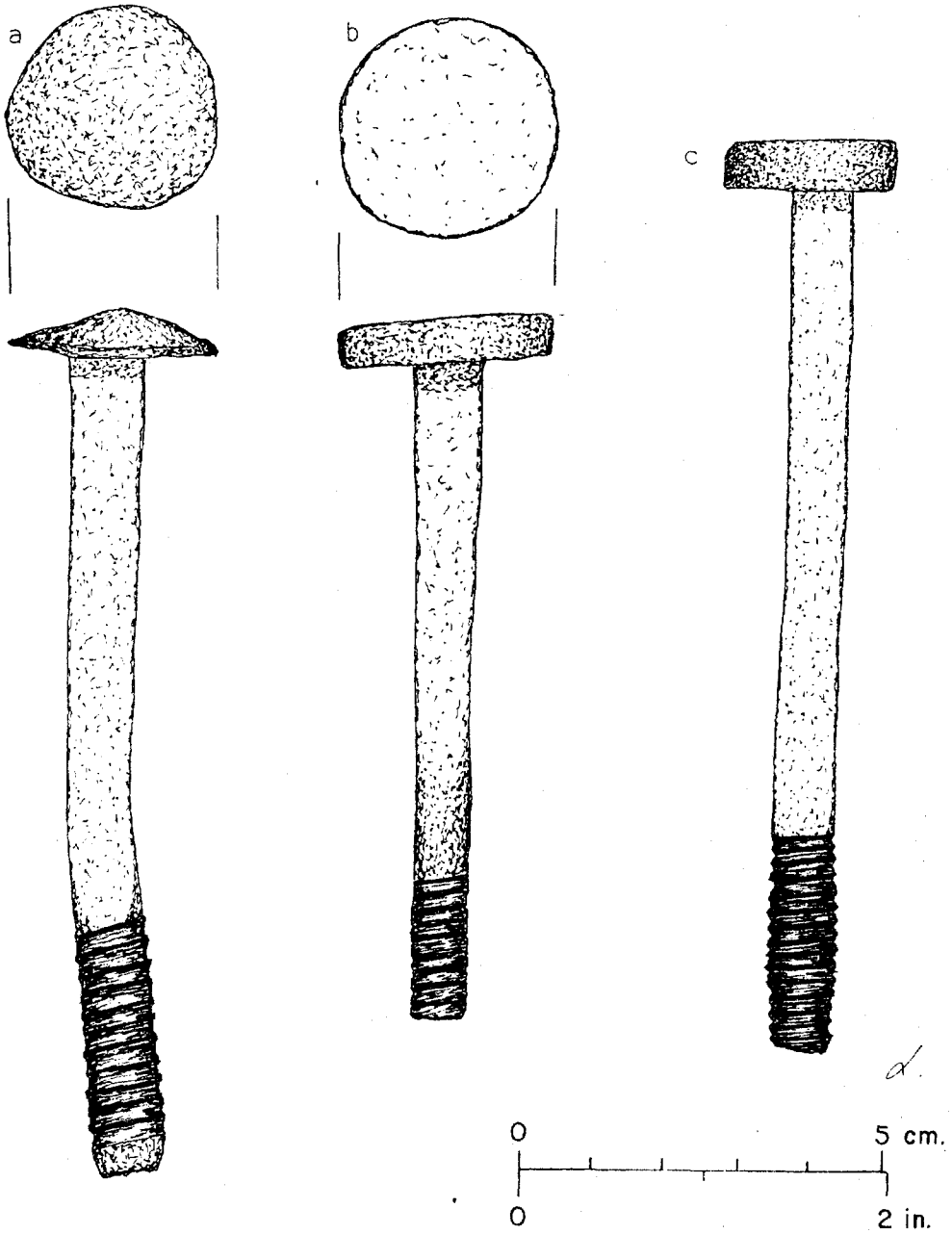


Fig. 46 -- Bolts from the Blacksmith Shop area: a). bolt (FOVA 34433); b). bolt (FOVA 34962) and c). bolt (FOVA 34535).

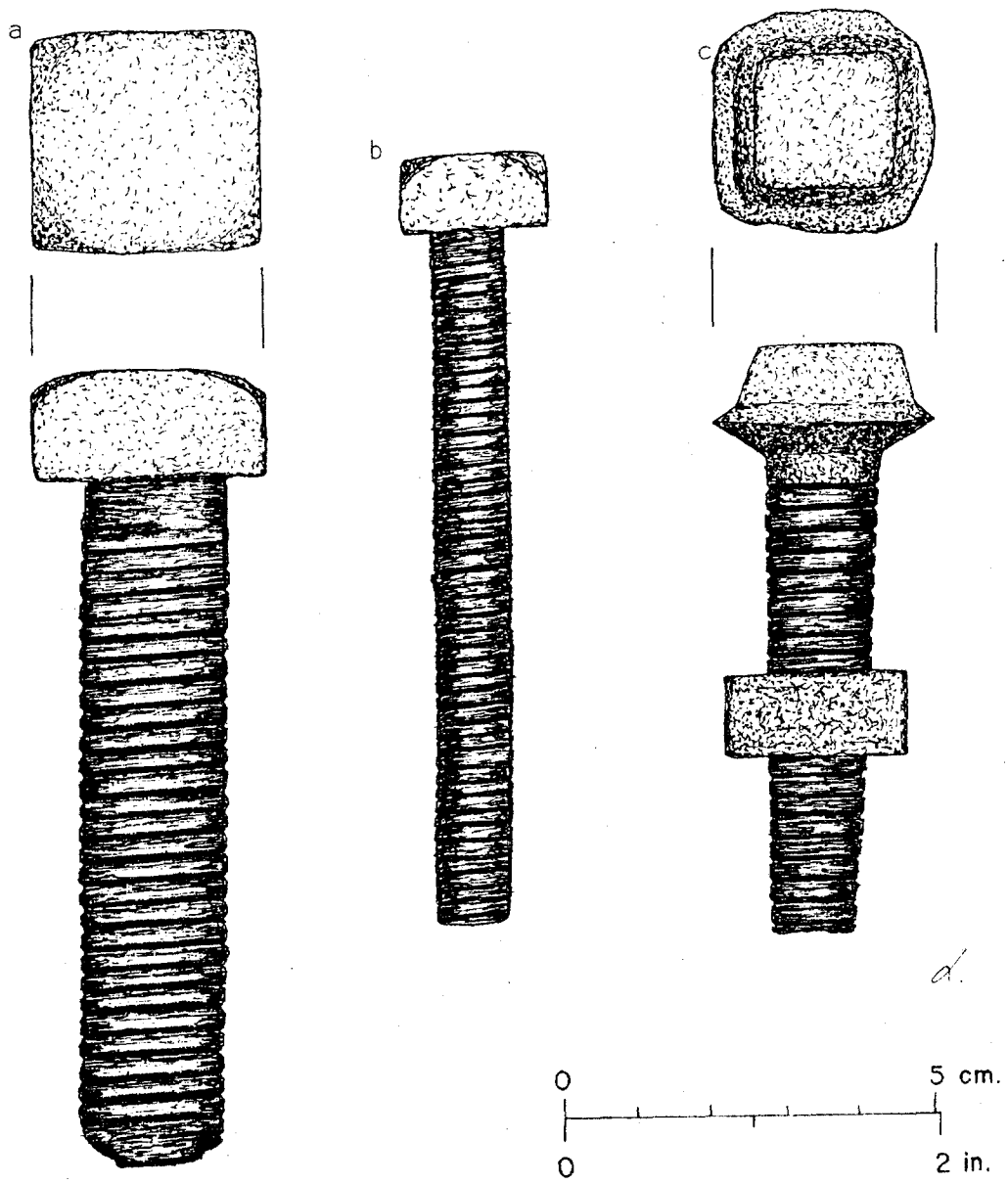


Fig. 47 -- Bolts from the Blacksmith Shop area: a). bolt (FOVA 35630); b). bolt (FOVA 35351) and c). bolt w/nut (FOVA 34536).

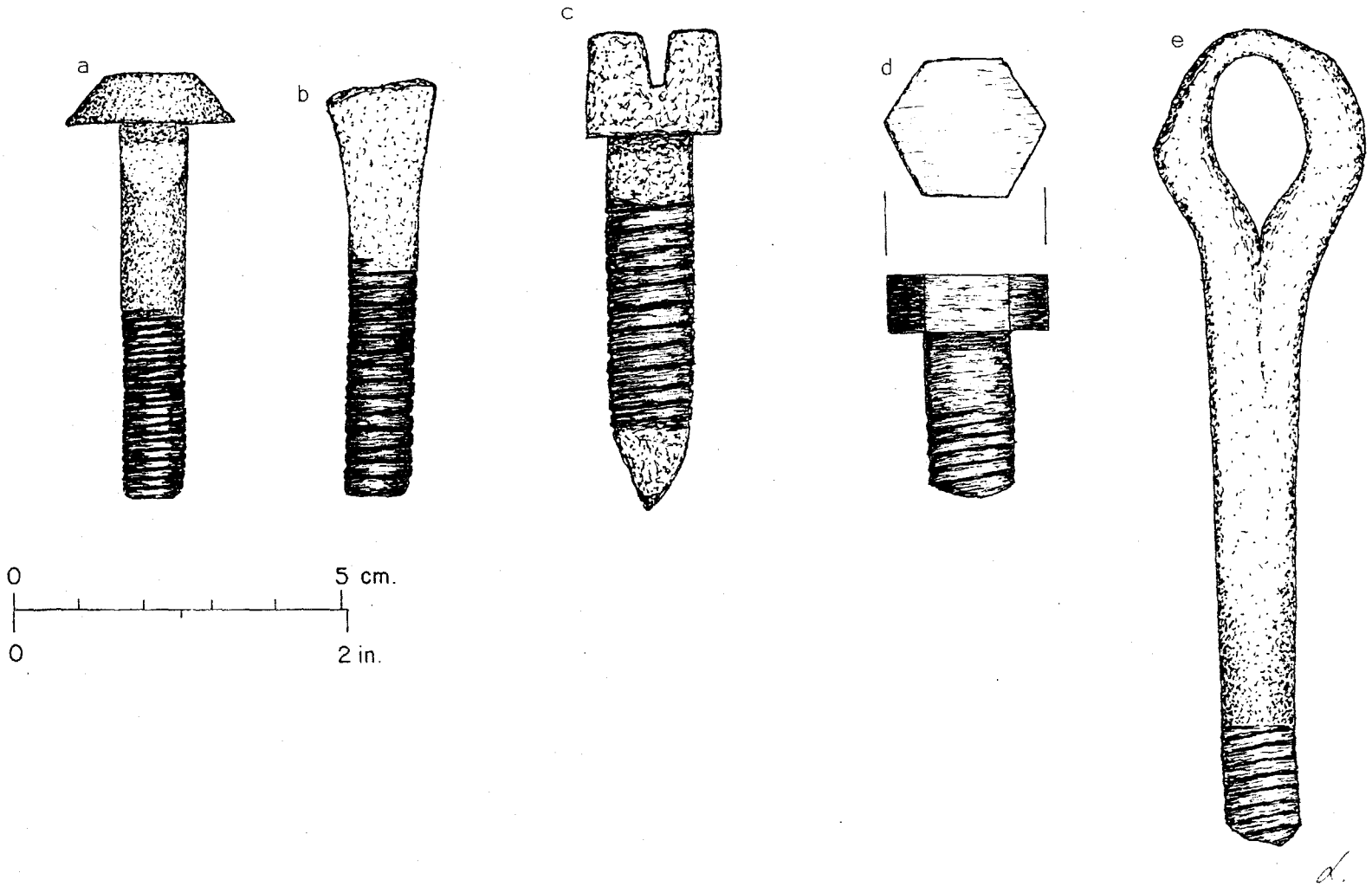


Fig. 48 -- Bolts from the Blacksmith Shop area: a). bolt (FOVA 34251); b). bolt (FOVA 35235); c). bolt (FOVA 35351); d). brass bolt (FOVA 36026) and e). closed eye bolt (FOVA 34538).

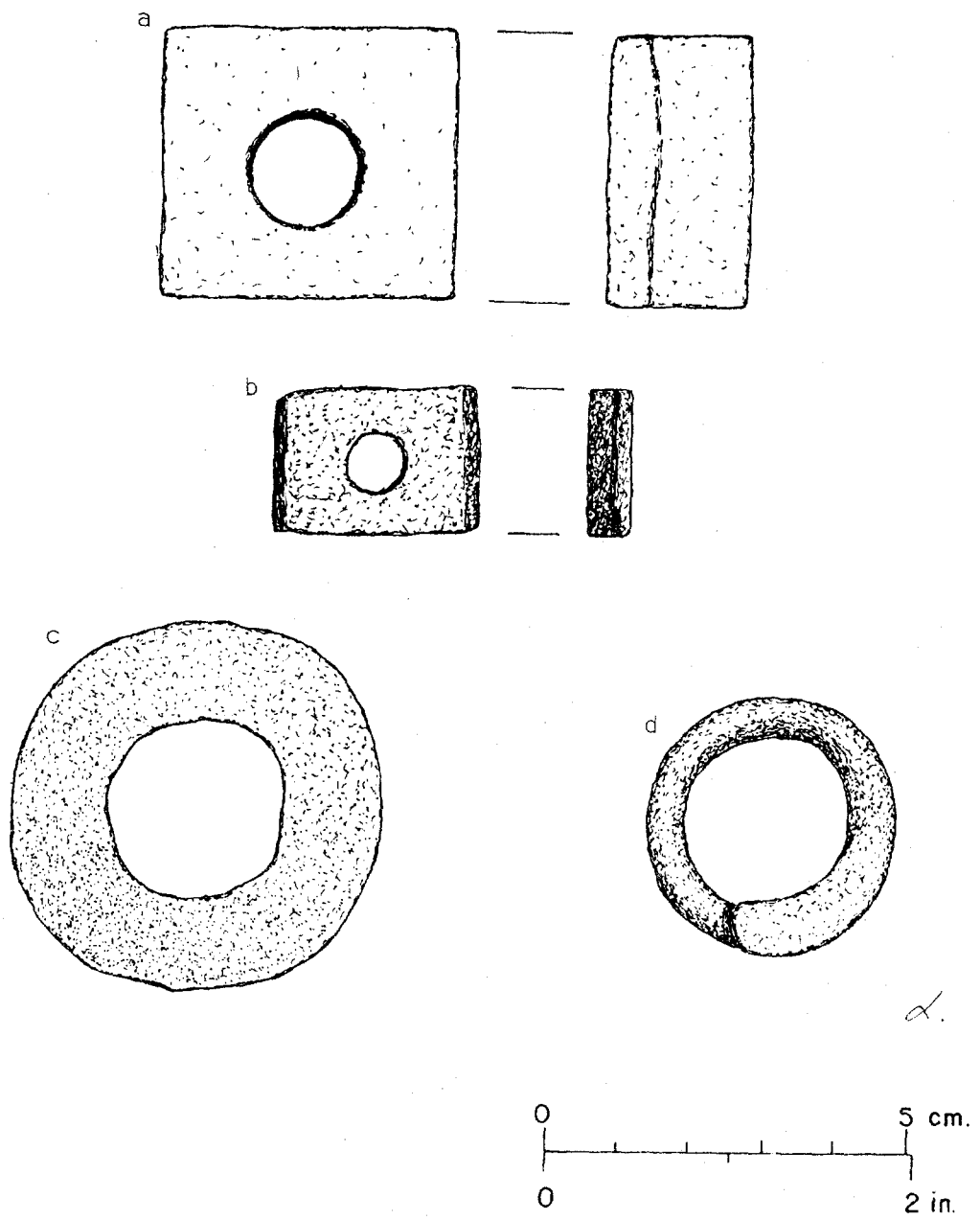


Fig. 49 -- Nuts, washer and spring washer from the Blacksmith Shop area: a). nut (FOVA 34884); b). nut (FOVA 34884); c). washer (FOVA 32393) and d). spring washer (FOVA 34629).

Bolt washers were both utilized and manufactured in the Blacksmith Shop. With the exception of a 20th Century patent bolt washer, all washers are presumed to have been associated with HBC activities. Two styles of finished washers were recovered, consisting of flat circular washers and spring washers, and both were manufactured in the shop. Observed stylistic variations in finished washers are illustrated in Figs. 49c-d.

Metal Tools

A wide variety of tools and implement parts were recovered from the Blacksmith Shop including the tools of the blacksmith as well as other tradesmen tools being manufactured or repaired. The "blacksmith tools" consist only of those items that could be related to the forging and working of metal, and from this Shop, 8 blacksmithing tool types were recovered (Table 12). In addition, a blacksmith probably utilized numerous supplementary tools which could also have been used by other tradesmen (e.g., dividers, wedges, etc.), and these tools have been illustrated in Figs.50-55a-b. Comparative historical data for the Blacksmith Shop likewise suggested that a wide range of tools not specifically related to the working of metal were also kept in the Shop (Hussey 1974:pp324-327). With the exception of beaver traps and axes (discussed under separate sections) the only implements being repaired, and possibly manufactured, were agricultural implements (plows, harrow teeth, scythe blades).

Blacksmith Tools

A total of 99 blacksmith tools were recovered, with file and tong fragments comprising over 80% of the identified tools. Tap and die equipment was also recovered in quantity indicating the probable manufacture of threaded fasteners. One impliment tentatively identified as an axe body form (Fig. 55c) was recovered that could have been used as a mandrill over which the axe eye was formed during axe manufacture.

Tongs

Of the 20 tong fragments recovered, 6 styles of tong heads have been identified and illustrated (Figs. 56 - 57). Predominate styles include flat and square angle tongs for the grasping of square-rectangular stock. One manufacturing mark, a portion of an impressed letter, was observed on the handle near the hinge pin but it could not be identified. No direct evidence for the local manufacture of tongs has yet been recovered, but it could be expected that blacksmith marks on tongs probably indicated both ownership and maker, whereas marks on axes and trap springs probably denoted the actual manufacturer of the item.

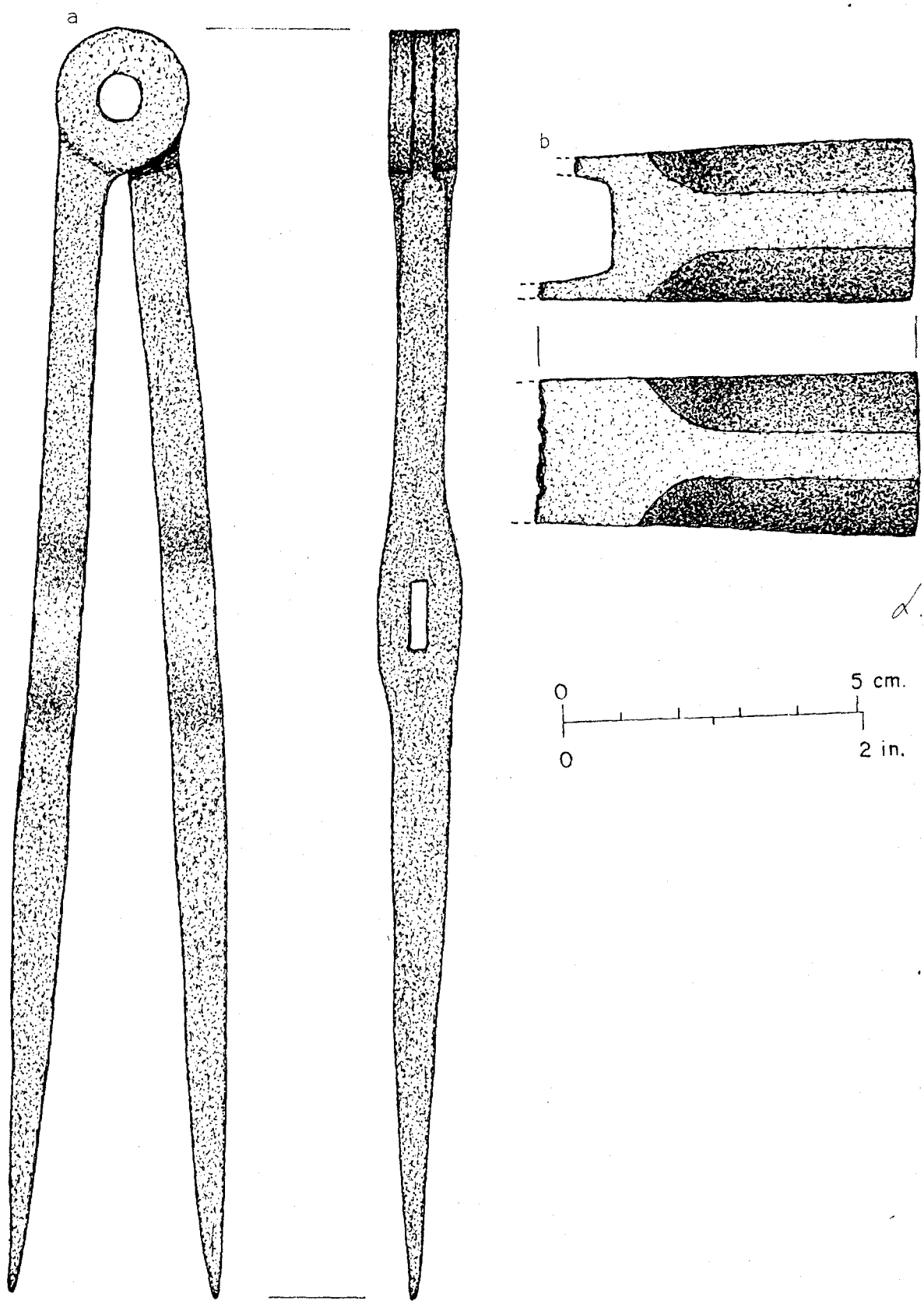


Fig. 50 -- Dividers and hammers from the Blacksmith Shop area: a). dividers (FOVA 35591) and b). hammer (FOVA 35831).

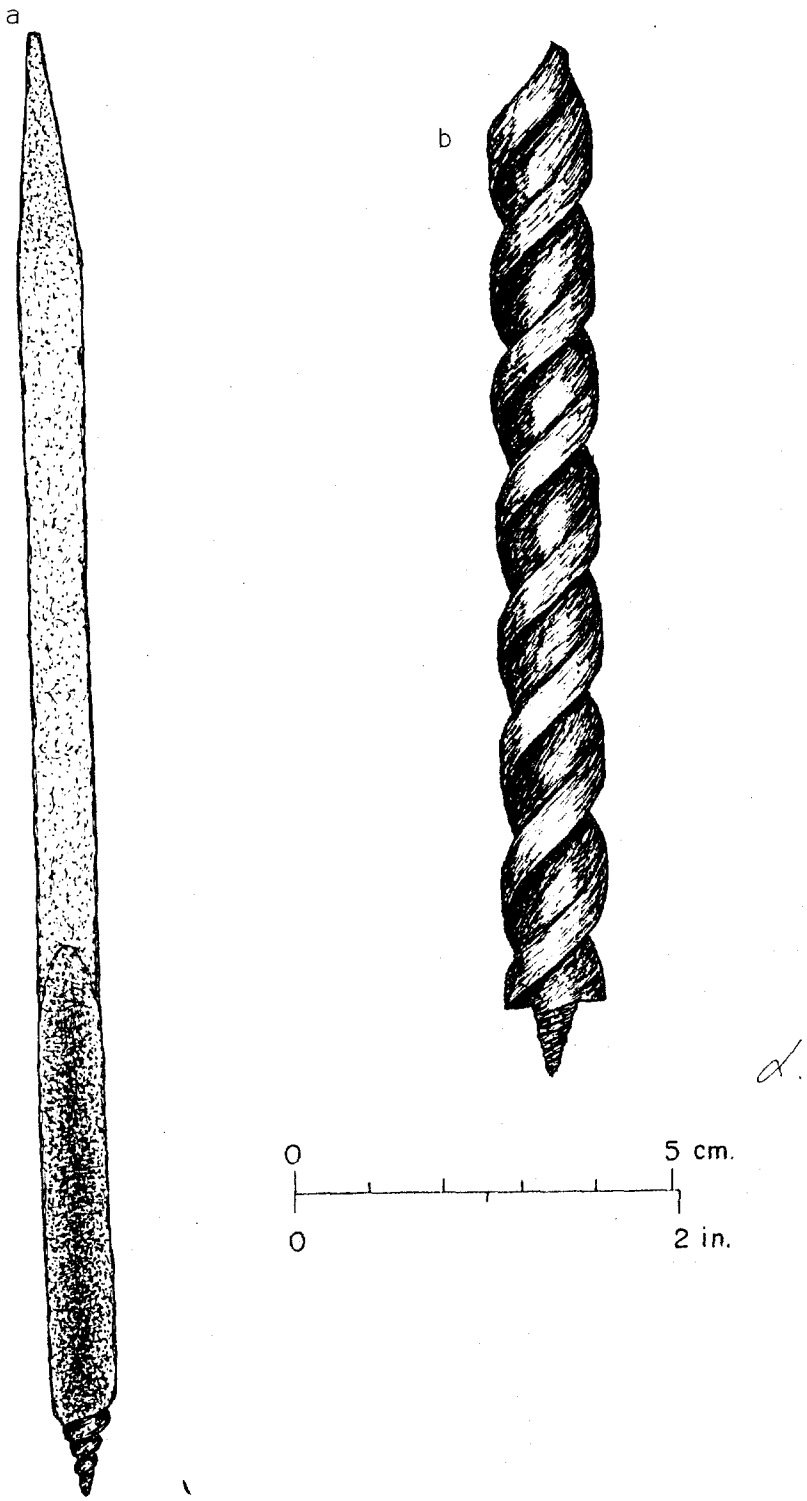


Fig. 51 -- Wood drill bits from the Blacksmith Shop area: a). drill bit (FOVA 34446) and b). auger bit (FOVA 34375).

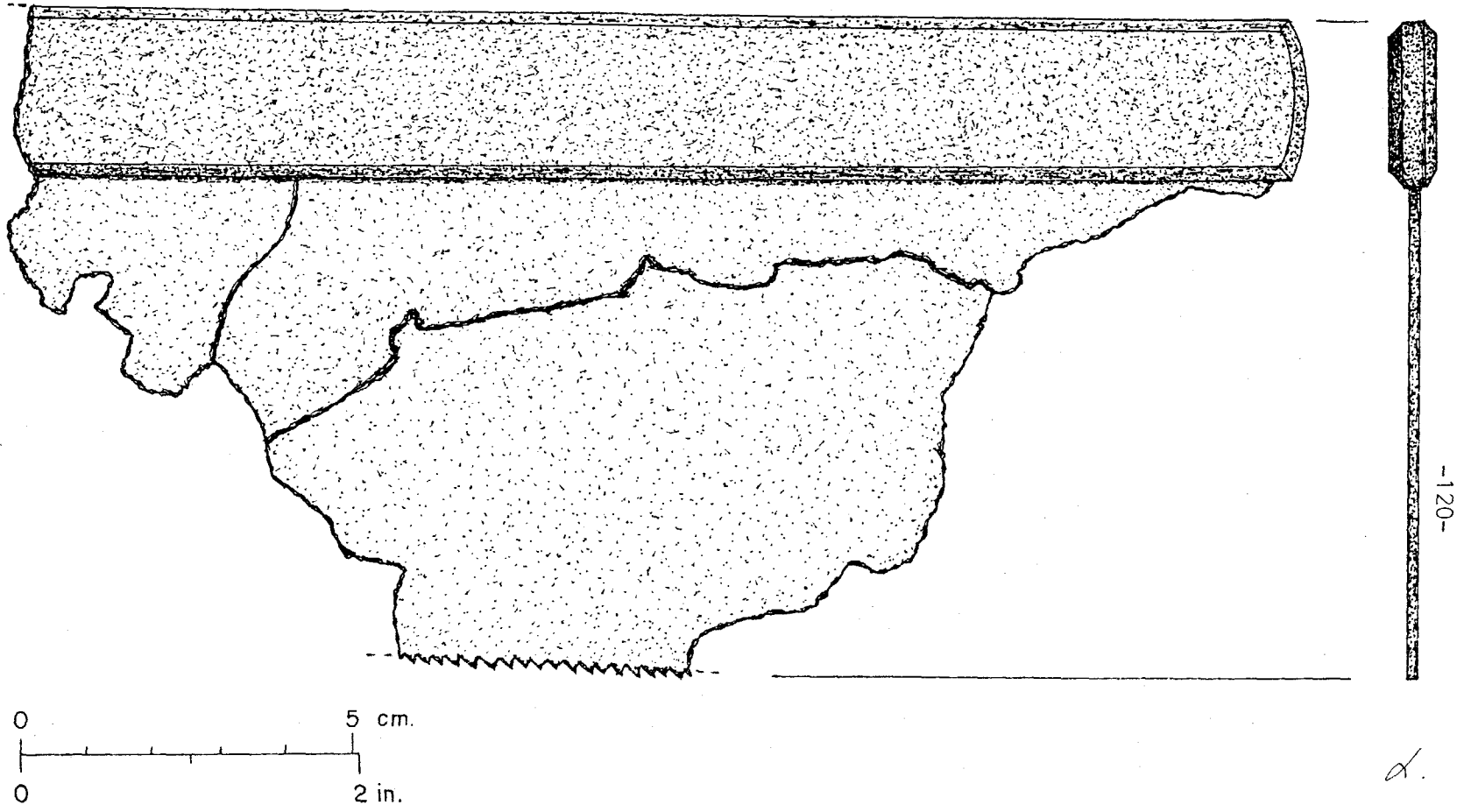


Fig. 52 -- Saw (FOVA 35115) from the Blacksmith Shop area.

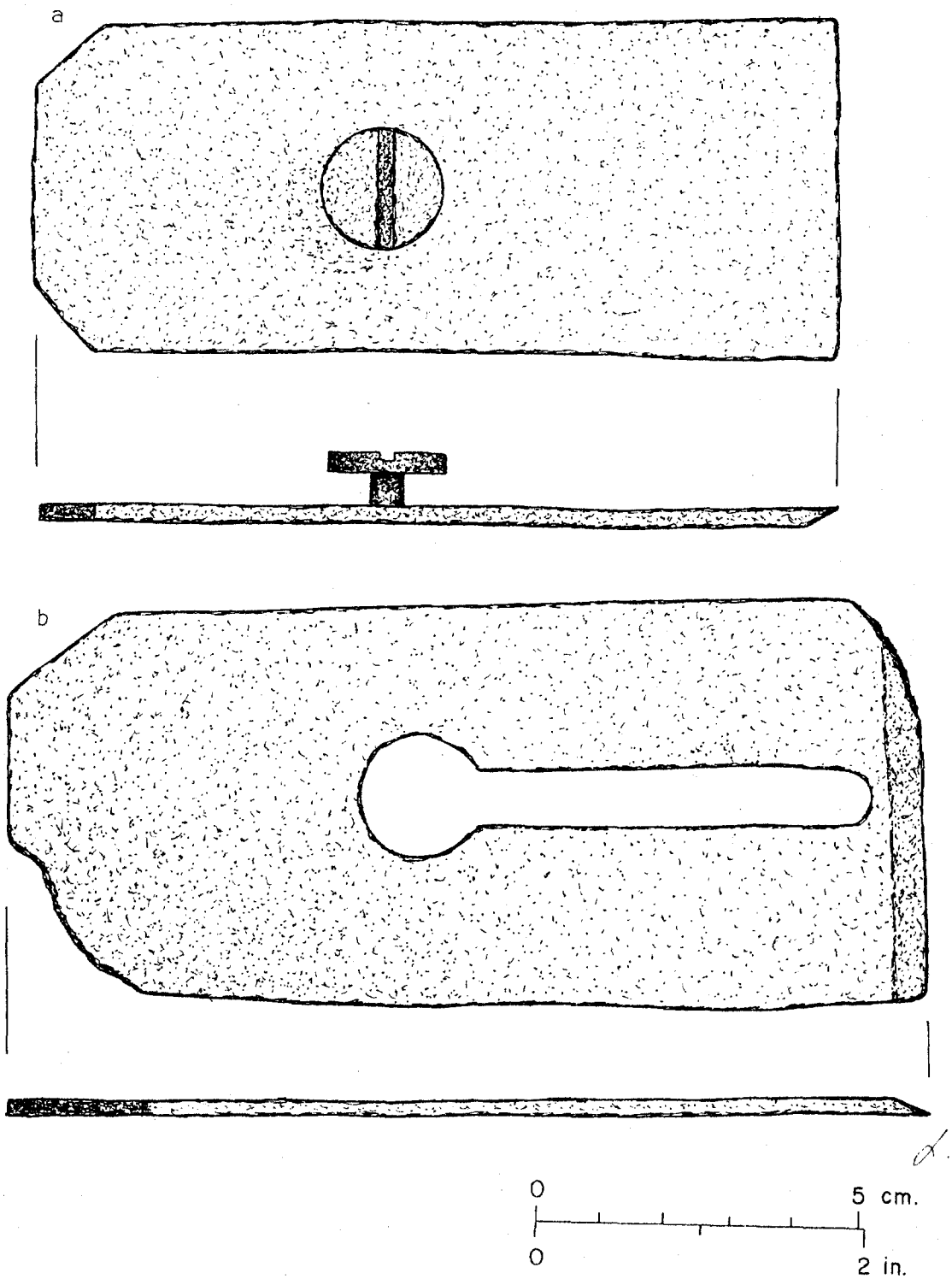


Fig. 53 -- Plane bits from the Blacksmith Shop area: a). plane bit (FOVA 34903) and b). plane bit (FOVA 34903).

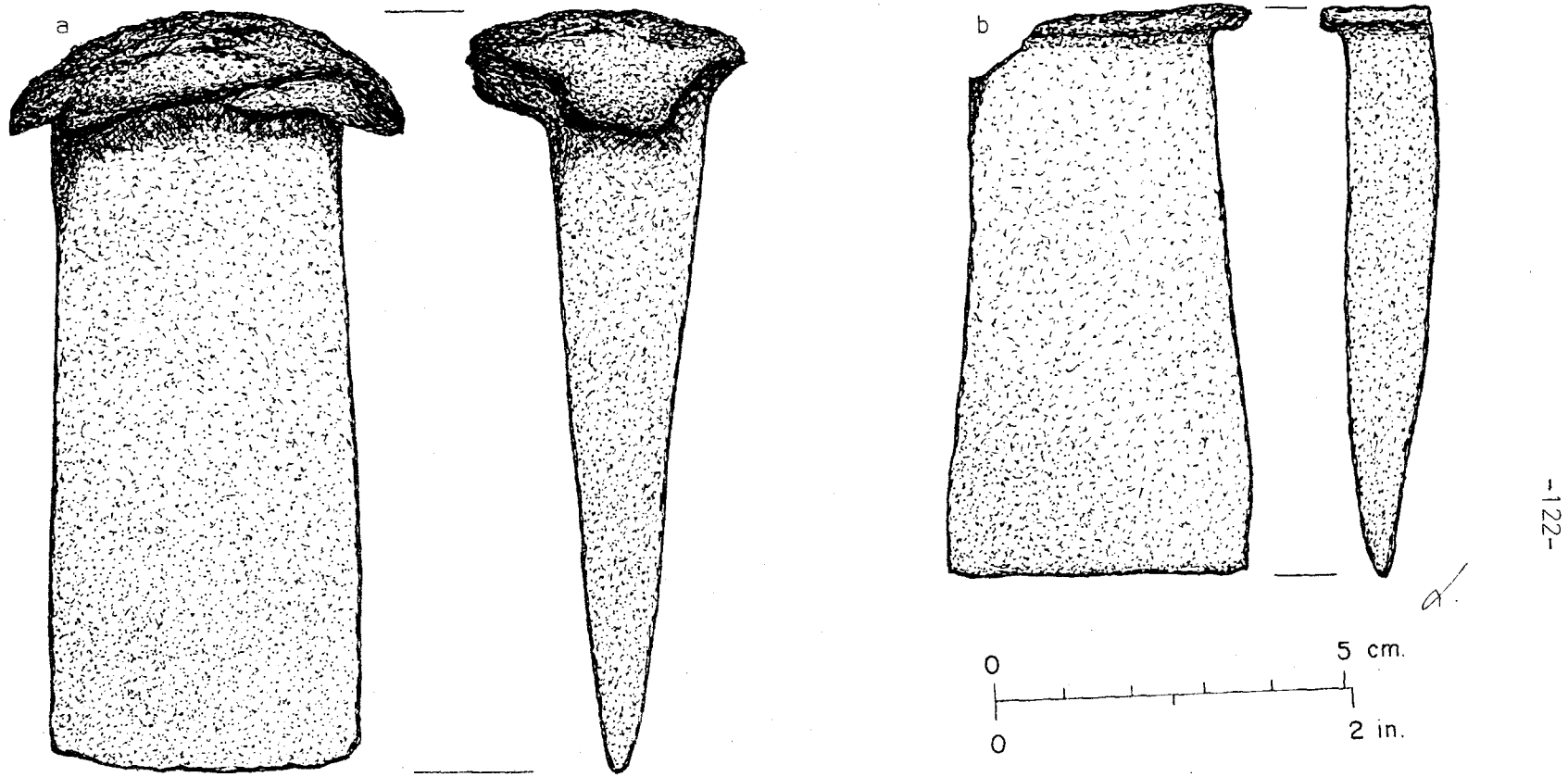


Fig. 54 -- Wedges from the Blacksmith Shop area: a). Wedge (FOVA 32516) and b). wedge (FOVA 34688).

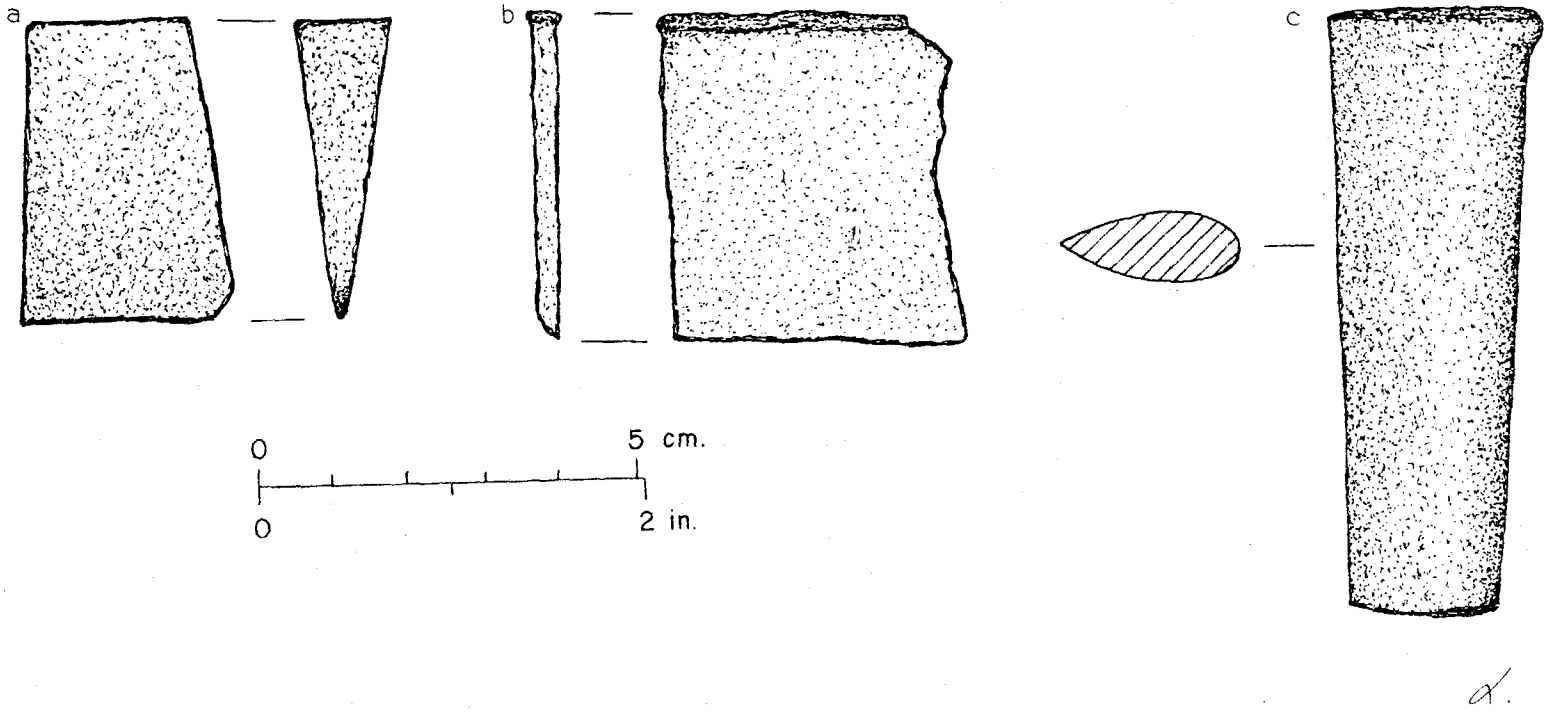


Fig. 55 -- Wedges and axe body form from the Blacksmith Shop area: a). wedge (FOVA 34555); b). wedge (FOVA 32358) and c). axe body form (FOVA 33249).

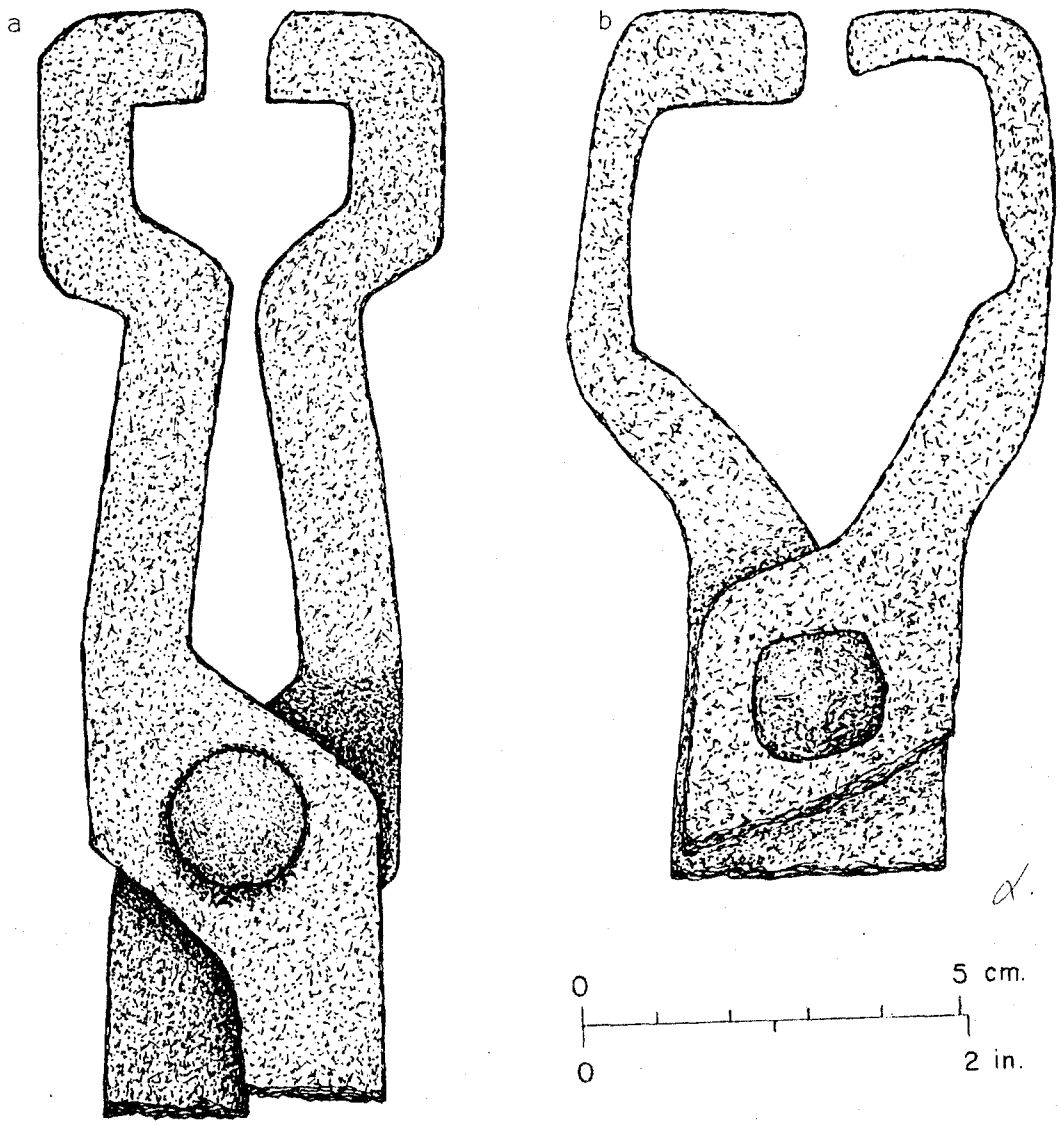


Fig. 56 -- Tongs from the Blacksmith Shop area: a). tongs (FOVA 33542) b). tongs (FOVA 34692).

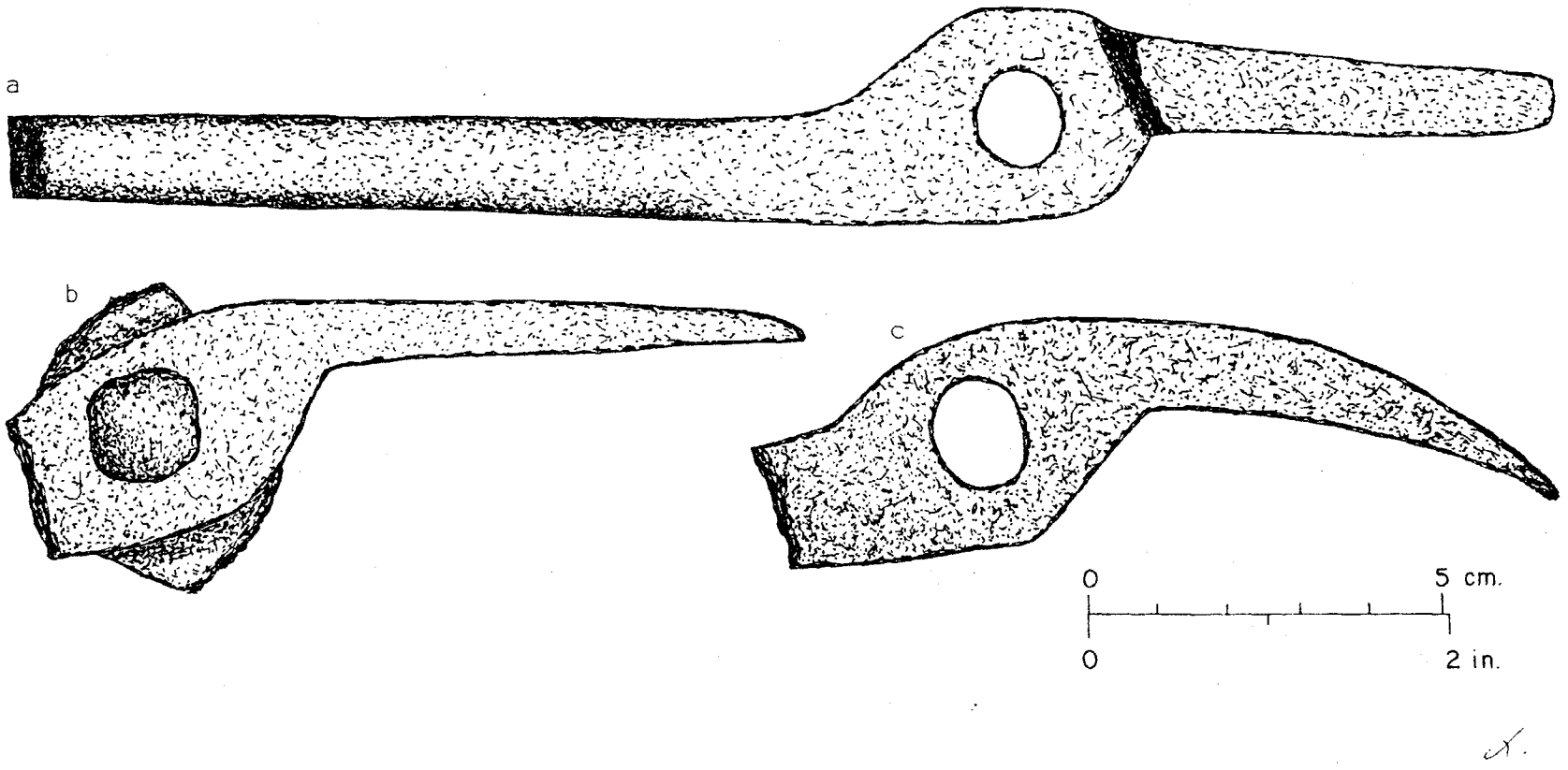


Fig. 57 -- Tongs from the Blacksmith Shop area: a). tongs (FOVA 35890)· b). tongs (FOVA 34122) and c). tongs (FOVA 33770).

Files

The types and quantities of files recovered reflect the primary responsibility of the Blacksmith Shop, in that all are functionally related to the working of metal, either in a cold or hot state. A total of 61 file fragments were recovered including 47 identifiable fragments representing at least 4 styles. "Flat bastard" (N=31) and "half-round bastard" (N=14) were the most common styles recovered. A triangular file fragment and a complete square "double ended taper" file (Schroeder 1970,353) were also recovered. Only two complete files were recovered, a 12" flat bastard, and a 19" square double ended taper file, and these have been illustrated in Figs. 58a-b.

Stock Dies and Taps

Stock dies and taps were integral to the manufacture of threads on screws, bolts and nuts, and they were utilized in the Blacksmith Shop by at least 1845 (Hussey 1974:325). Stock dies were utilized to form the exterior threads on screws, bolts, and other threaded rod fasteners. Three specimens were recovered from the Blacksmith Shop, representing 2 styles of dies that differ in the mode of attachment to the stock, and in their thread formation. One style, illustrated in Fig. 59c, had a threading diameter of 7/8 in., and it appeared to be a counterpart to the stock die recovered from the Indian Trade Store (Hoffman & Ross 1975:Fig. 41e). This die was probably utilized for cutting threads in larger (7/8 to 1 in.) diameter bolts. A second style was represented by two dies and has been illustrated in Figs. 60a-b. The cutting surfaces of both specimens appeared to have amounted to not more the 1/3 the circumference of the surface being threaded, and it is hypothesized that they were utilized where threading was not continuous around the circumference of a shank, as in the production of threaded trap posts.

Stock taps were utilized to cut interior threads such as for nuts, and 5 taps were recovered representing 5 variations of stock attachment with at least 2 types of cutting surfaces. Two specimens had a tapered cutting section with a circular cross section and continuous thread pattern around the circumference (Fig. 59a). Both taps could cut interior threads in holes with diameters from at least 1/3 to as great as 3/4 inch. The second type of cutting surface was represented by 3 specimens (Fig. 59b) which had a tapered cutting surface with square cross section. The threads were cut into the corners of the shank and therefore discontinuous around the circumference. This type of cutting surface probably allowed the metal residue to escape, but it may also have functioned as a tap for irregular holes or where thread tolerances were not critical such as in the threading of trap post nuts. The diameter of holes that could be threaded with these dies ranged from 7/16 to 9/16 inch.

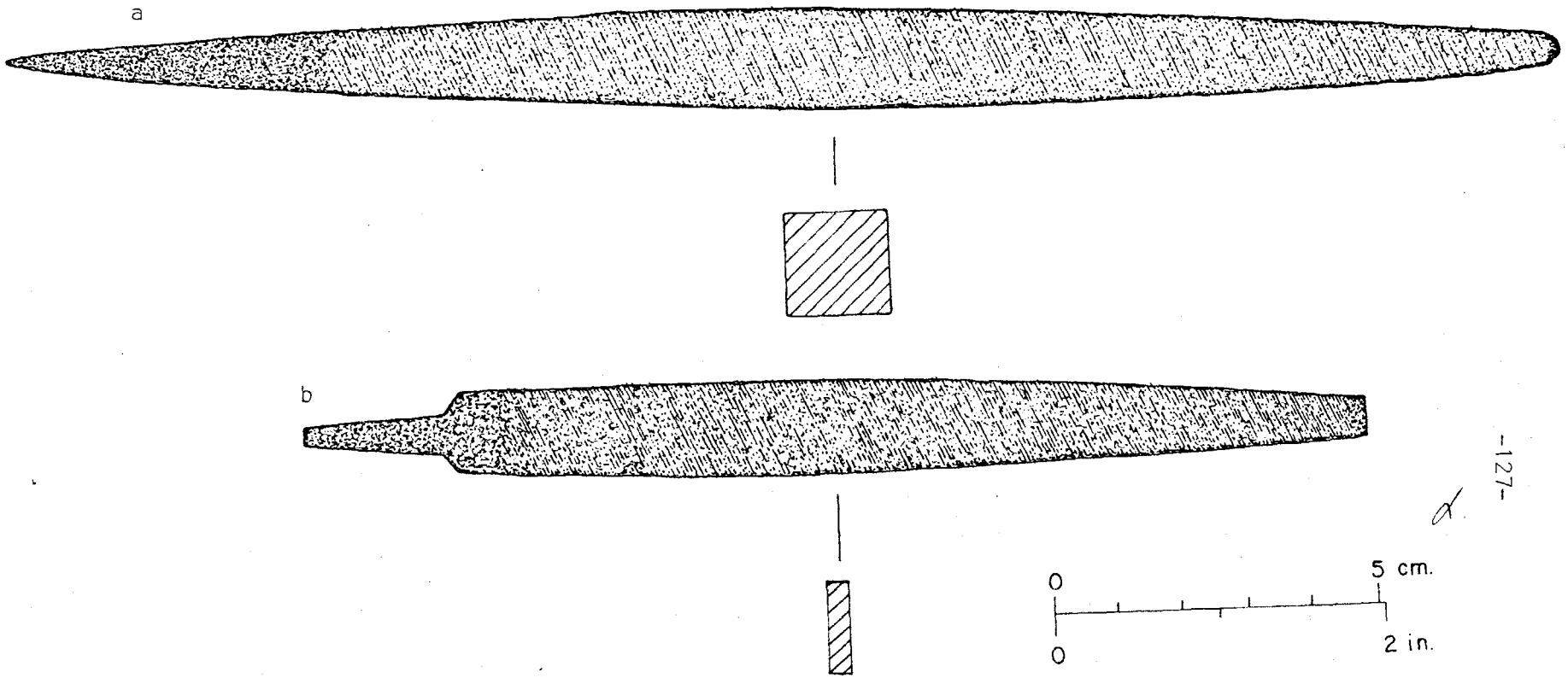


Fig. 58 -- Files from the Blacksmith Shop area: a). file (FOVA 32811) and b). file (FOVA 35369).

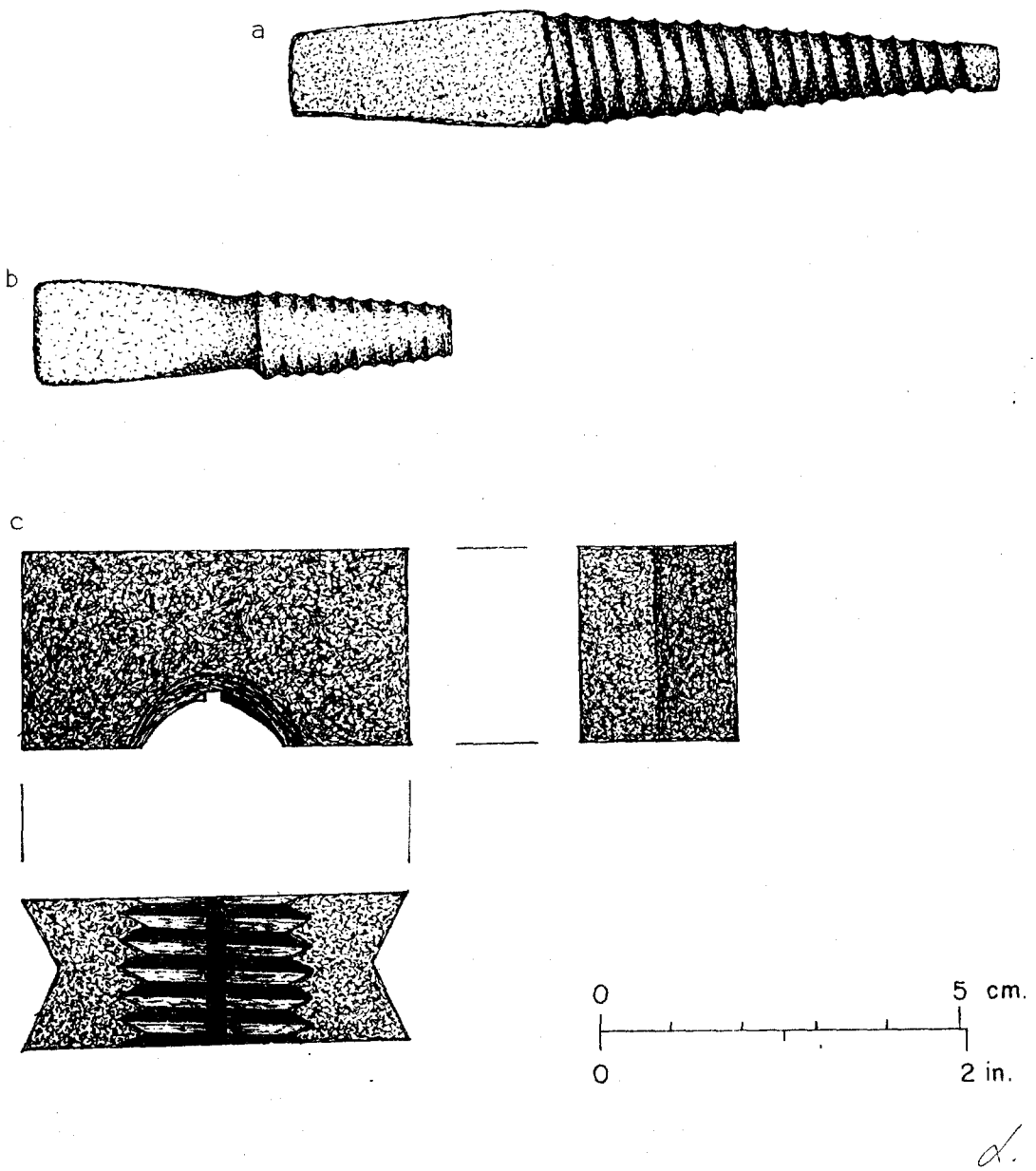


Fig. 59 -- Tap & die from the Blacksmith Shop area: a). tap (FOVA 34076); b). tap (FOVA 34825) and c). die (FOVA 33229).

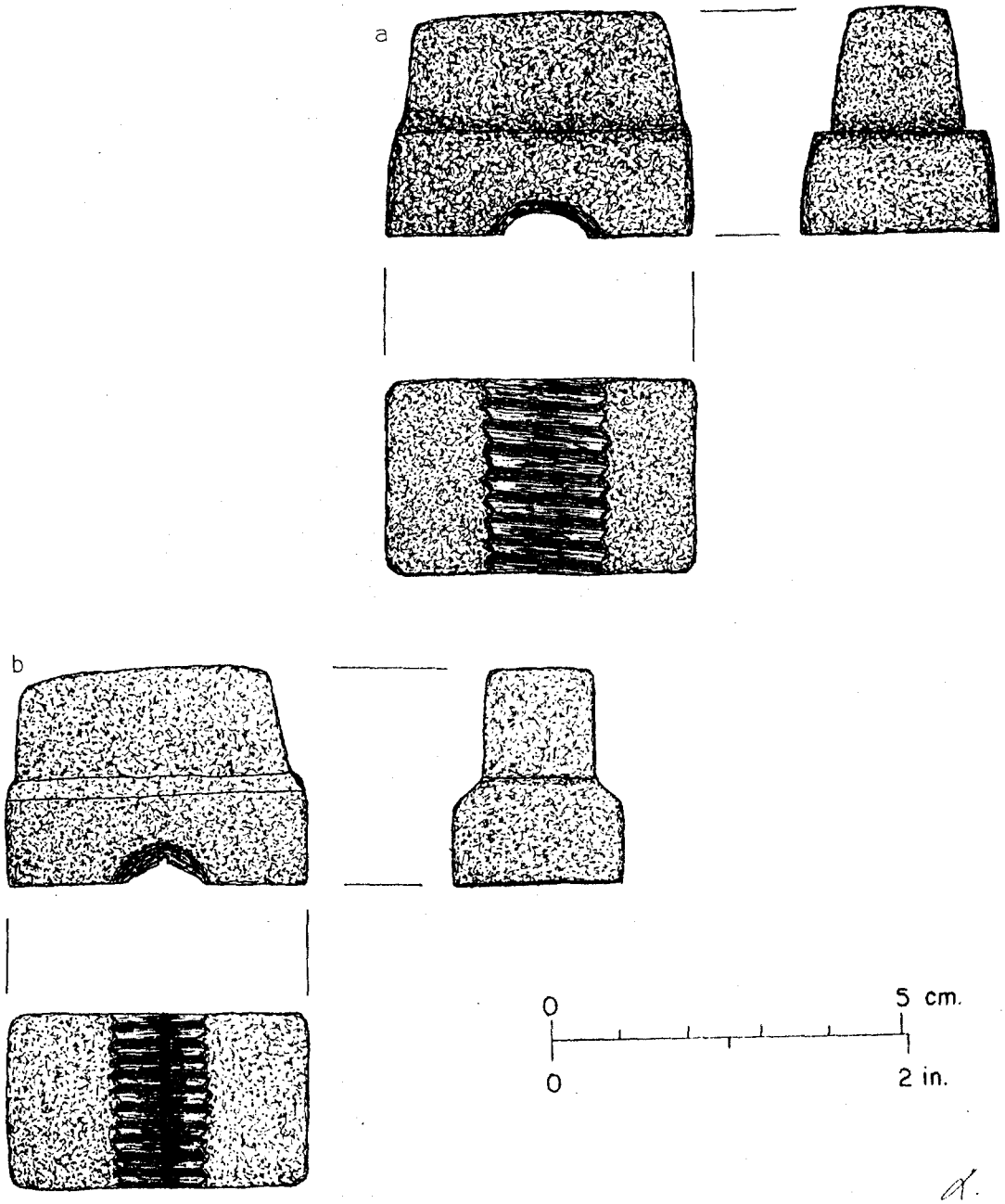


Fig. 60 -- Dies from the Blacksmith Shop area: a). die (FOVA 34377) and b). die (FOVA 34377).

Punches

A total of 8 punches were classified on the basis of the presence of a discernable shank for grasping, a semi-converging tip of generally circular shape, and a splayed or flat head region. The variations in punch shapes are illustrated in Figs. 61 - 62, and the 3 styles that were reported for the Indian Trade Store appear to be replicated by specimens from the Blacksmith Shop (Hoffman & Ross 1975: Fig. 42a,c-d).

Swage

Only one tool was recovered, a bottom swage (Fig. 63b).

Axe Body Form

The axe body form has been termed an "axe swage" or "pattern" by Smith (1966:156) and may be equivalent to the HBC term "axe mandrell" (Hussey 1974:325). Axe body forms were used to form the eye on an axe, and were inserted into the eye of the axe while the blade or poll was being dressed (Smith 1966:156). One form was recovered from the Blacksmith Shop and has been illustrated in Fig. 55c.

Chisels

Chisels were distinguished from wedges by the presence of a shank for gripping. Seven chisels were recovered, and their stylistic variations have been illustrated in Figs. 65 - 66. At least 2 styles replicted specimens recovered from the Indian Trade Store area (Hoffman & Ross 1975:Figs. 41b,d).

Offset Awls

Two offset awls were recovered which were stylistically identical to awls previously reported (Hoffman & Ross 1975:Fig. 44b). They may, however, represent awl preforms, and thus possibly indicate awl manufacturing in the shop.

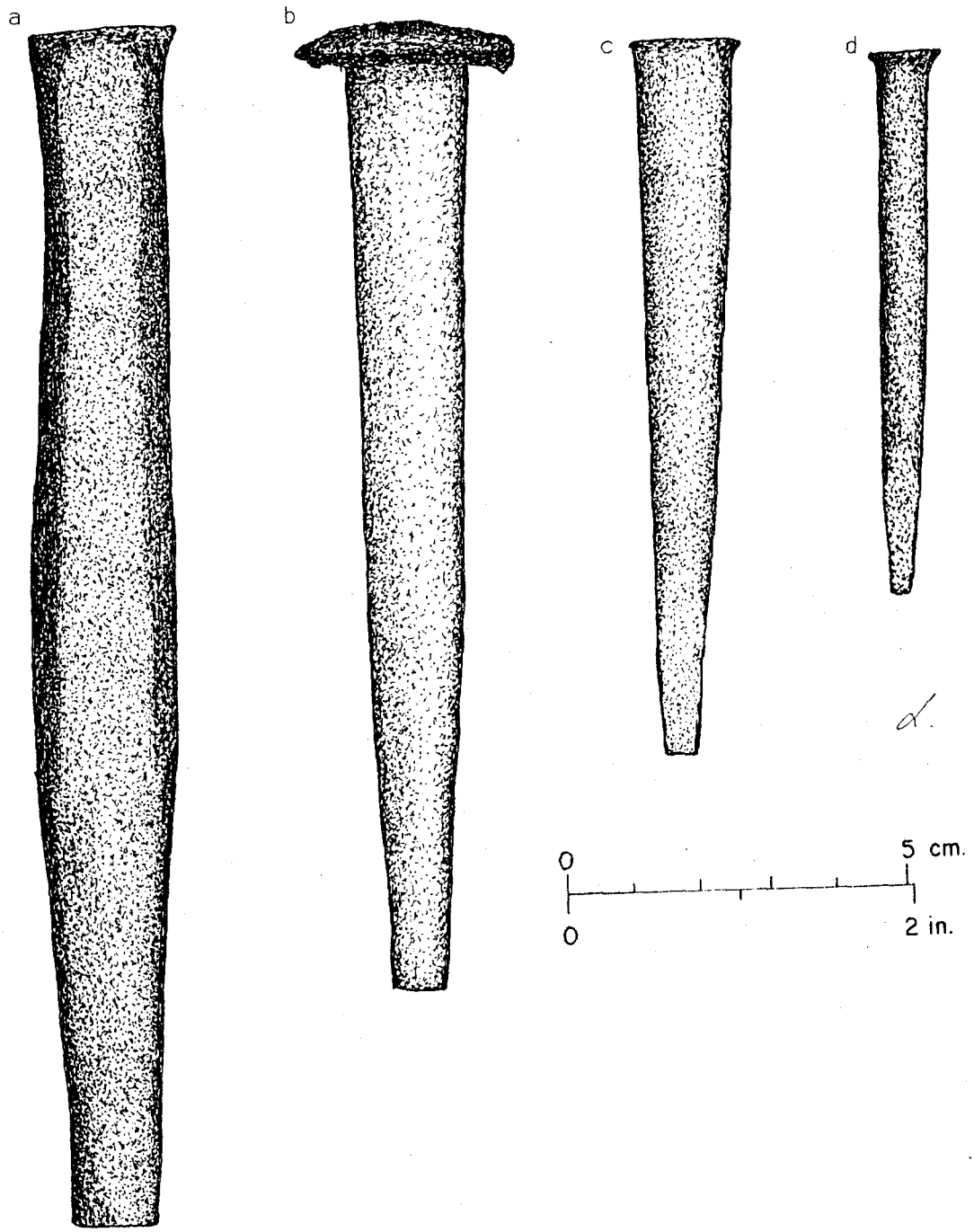


Fig. 61 -- Punches from the Blacksmith Shop area: a). punch (FOVA 35367); b). punch (FOVA 35891); c). punch (FOVA 35955) and d). punch (FOVA 34902).

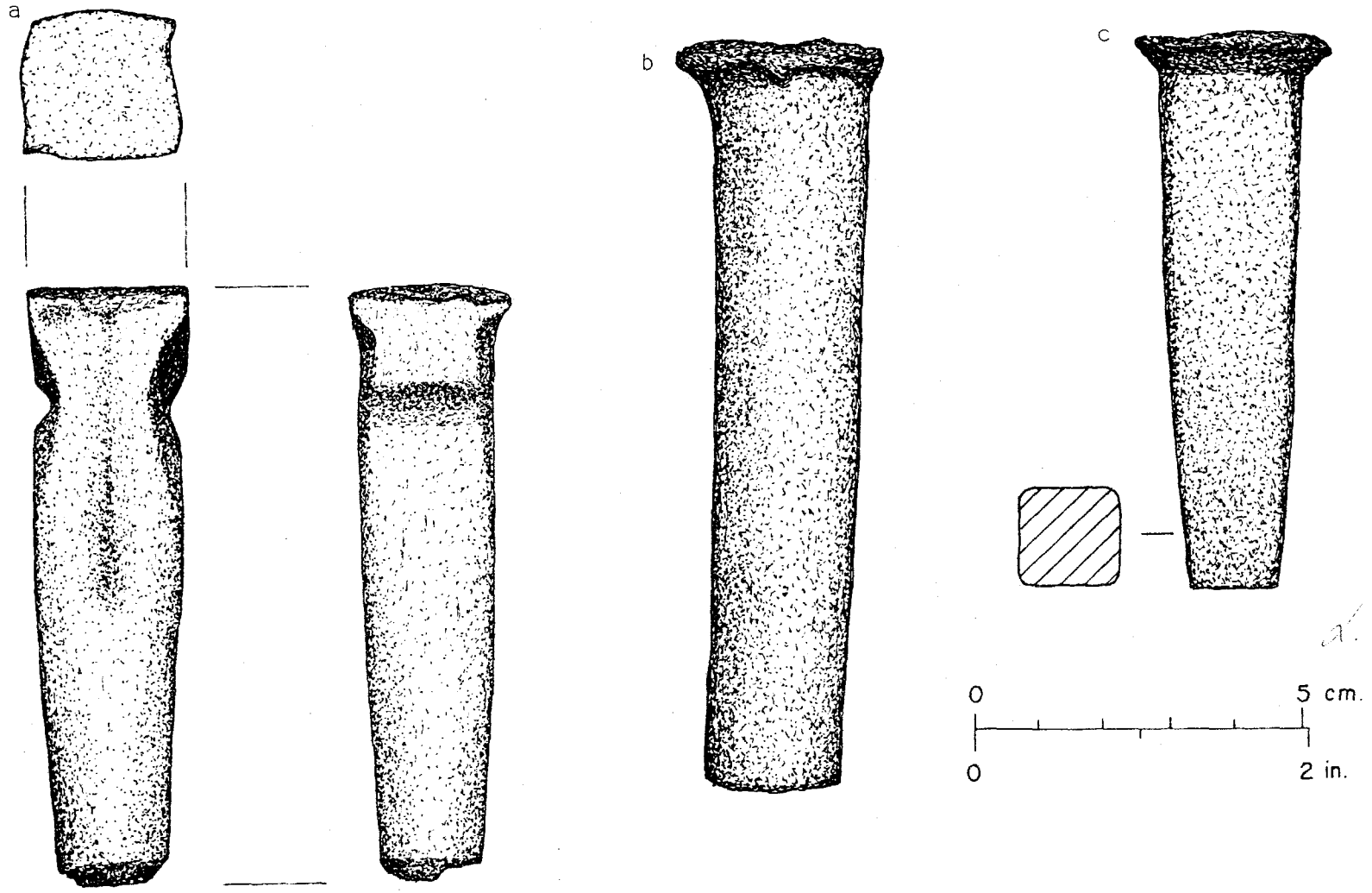


Fig. 62 -- Punches from the Blacksmith Shop area: a). punch (FOVA 34376); b). punch (FOVA 34902) and c). punch (FOVA 33240).

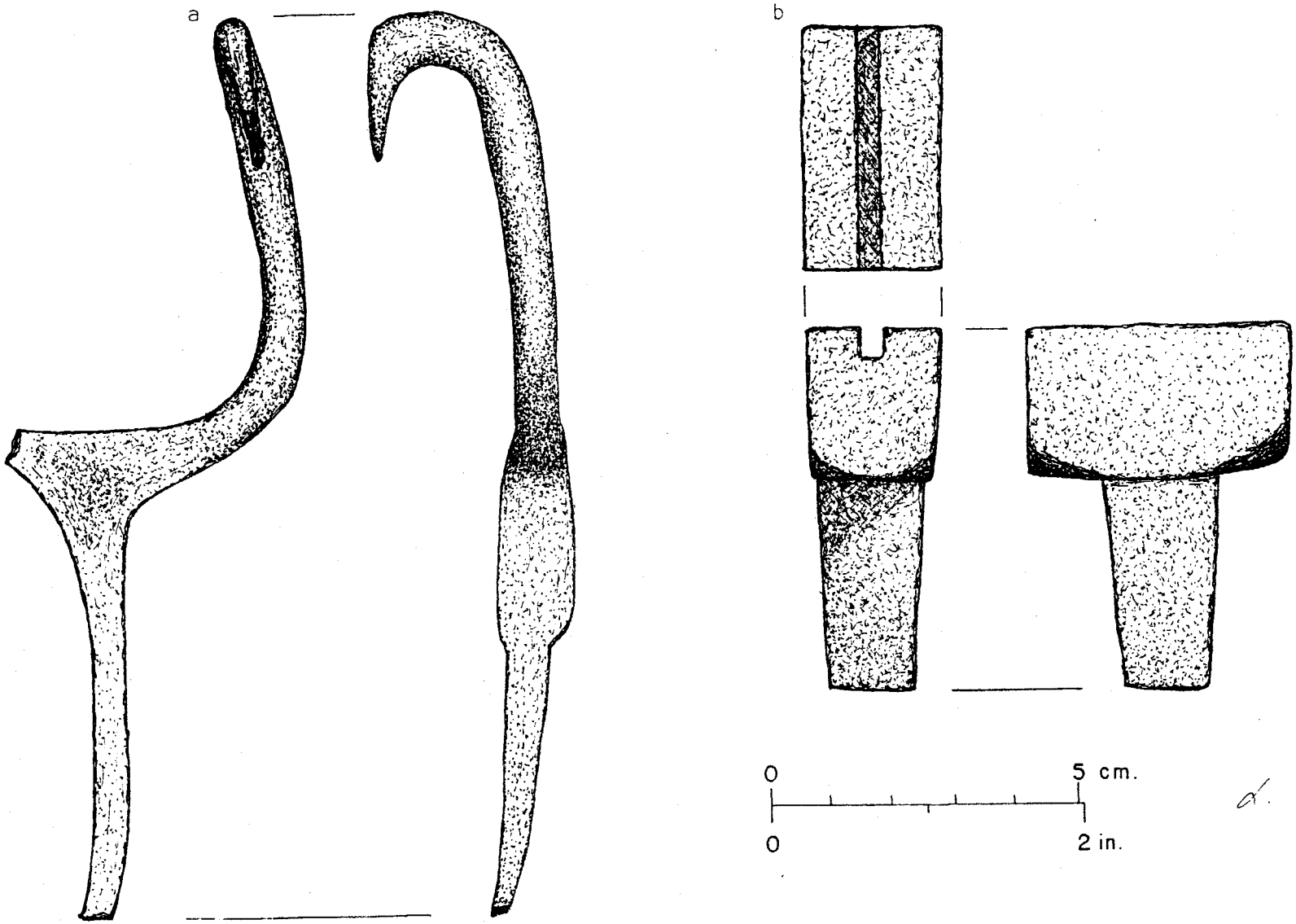


Fig. 63 -- Unid. implement and swage from the Blacksmith Shop area: a). Unidentified implement (FOVA 34557) and b). swage (FOVA 34186).

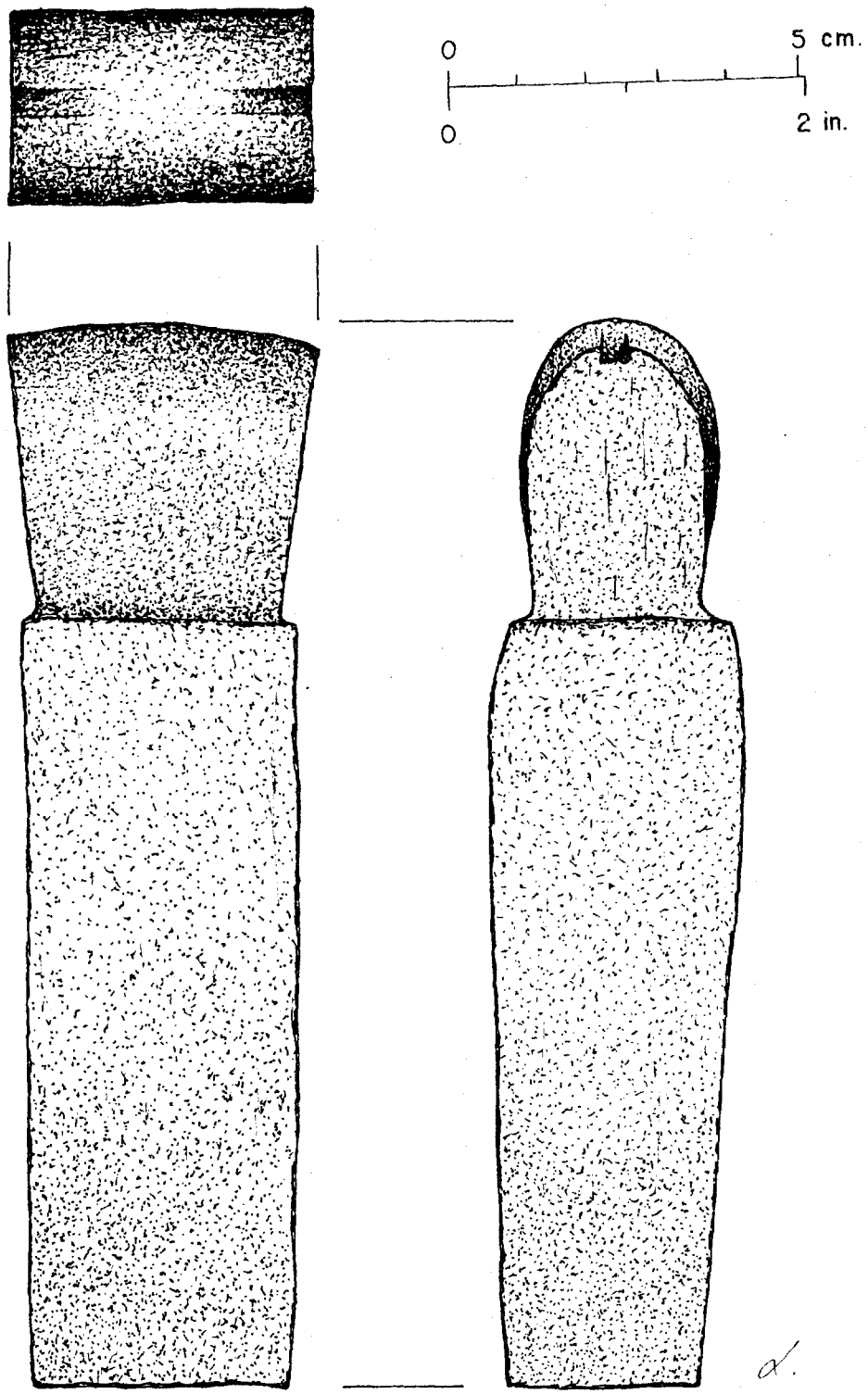


Fig. 64 -- Unidentified tool (FOVA 32869) from the Blacksmith Shop area.

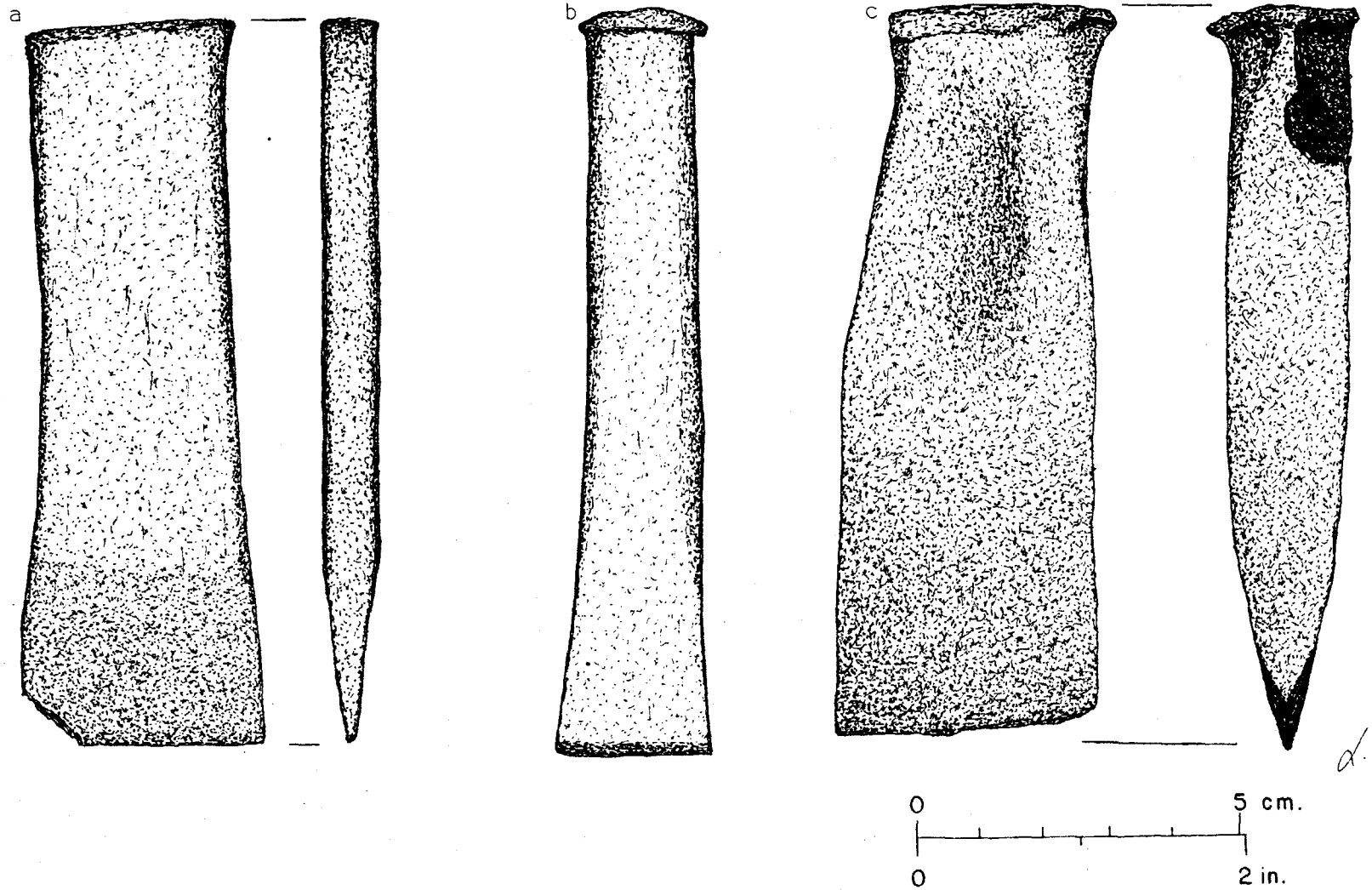


Fig. 65 -- Chisels from the Blacksmith Shop area: a). chisel (FOVA 34755); b). chisel (FOVA 34901) and c). chisel (FOVA 33152).

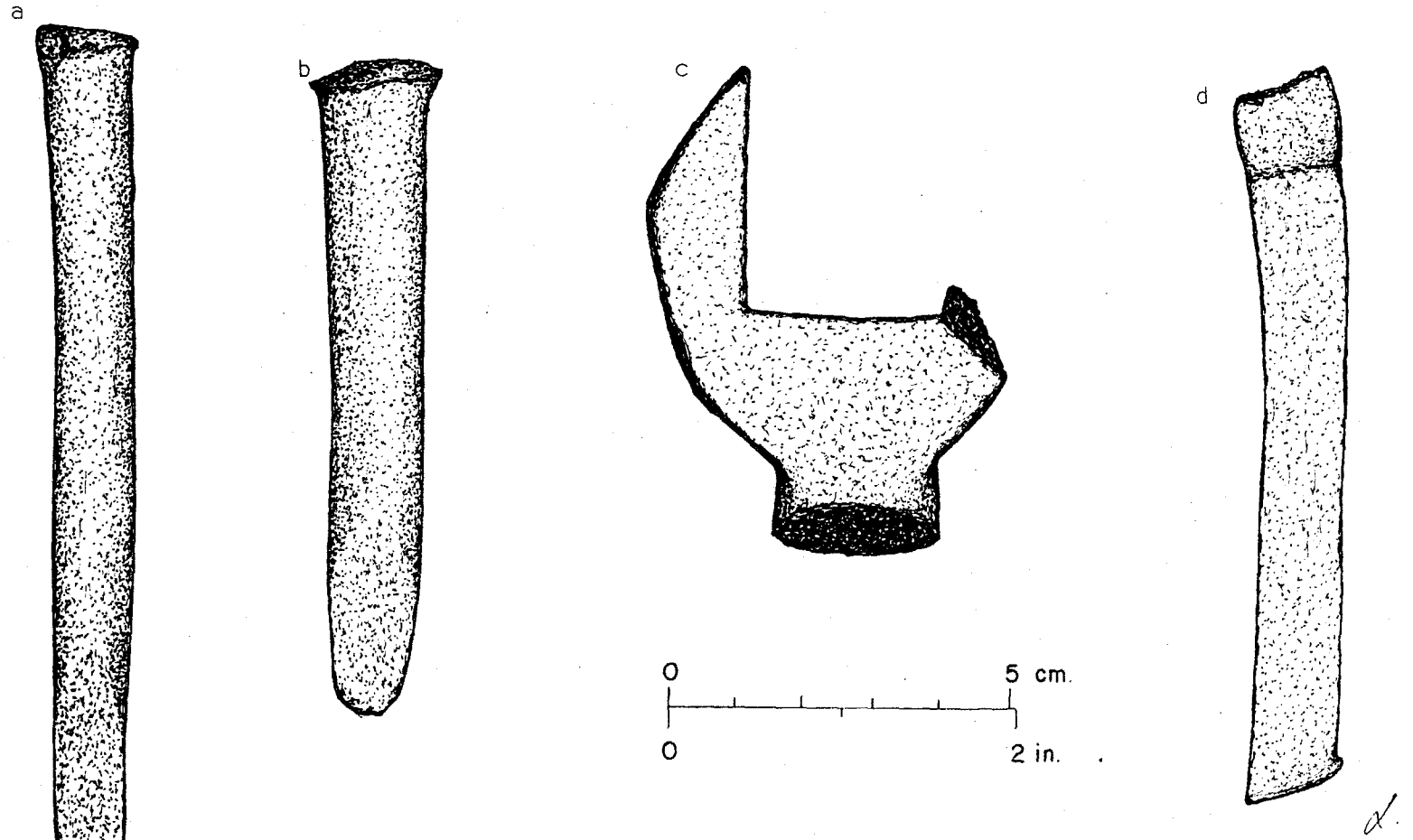


Fig. 66 -- Chisels, wrench and harrow tooth from the Blacksmith Shop area: a). chisel (FOVA 32734); b). chisel (FOVA 34901); c). wrench (FOVA 34448) and d). harrow tooth (FOVA 35639).

Wrenches

Two wrench fragments were recovered, one of which was associated with an HBC component. Its bit was 1 1/8 inch wide and has been illustrated in Fig. 66c.

Harrow Teeth

Fourteen harrow teeth were recovered which had been manufactured from uniformly square iron rod. To use, they were inset vertically into a wood or iron frame such that one corner formed the leading edge of the harrow tooth. All teeth recovered were worn on the leading edge and their tips were bevelled at an angle through use (Fig. 66d).

Trap Parts

The most frequent metal tool recovered from the Blacksmith Shop were traps, with 431 finished and preformed specimens having been identified. Analysis of this assemblage indicated that at least 2 trap styles or sizes were manufactured and assembled in the Shop, and both qualitatively and quantitatively, it can be demonstrated that the manufacture of traps was an integral feature of the Shop activities. On the basis of manufacturing marks found on trap springs, 2 blacksmiths, George Folster (1830-47) and Joseph Ouide Beauchamp (1843-47) were primarily responsible for the manufacture of trap springs, and perhaps of all trap parts.

Finished Trap Parts

A total of 356 finished parts were recovered including jaw posts, springs, pan posts, pans, ketches and trap chains (Table 12).

Finished Jaw Posts

Four specimens representing one style with a squared receiver were recovered. This style is only oneof 4 previously reported (Hibbs: 1975:report in progress), and is identical to the jaw posts utilized with a complete trap reconstructed from F523 (Fig. 134) a representative example is illustrated in Fig. 67a.

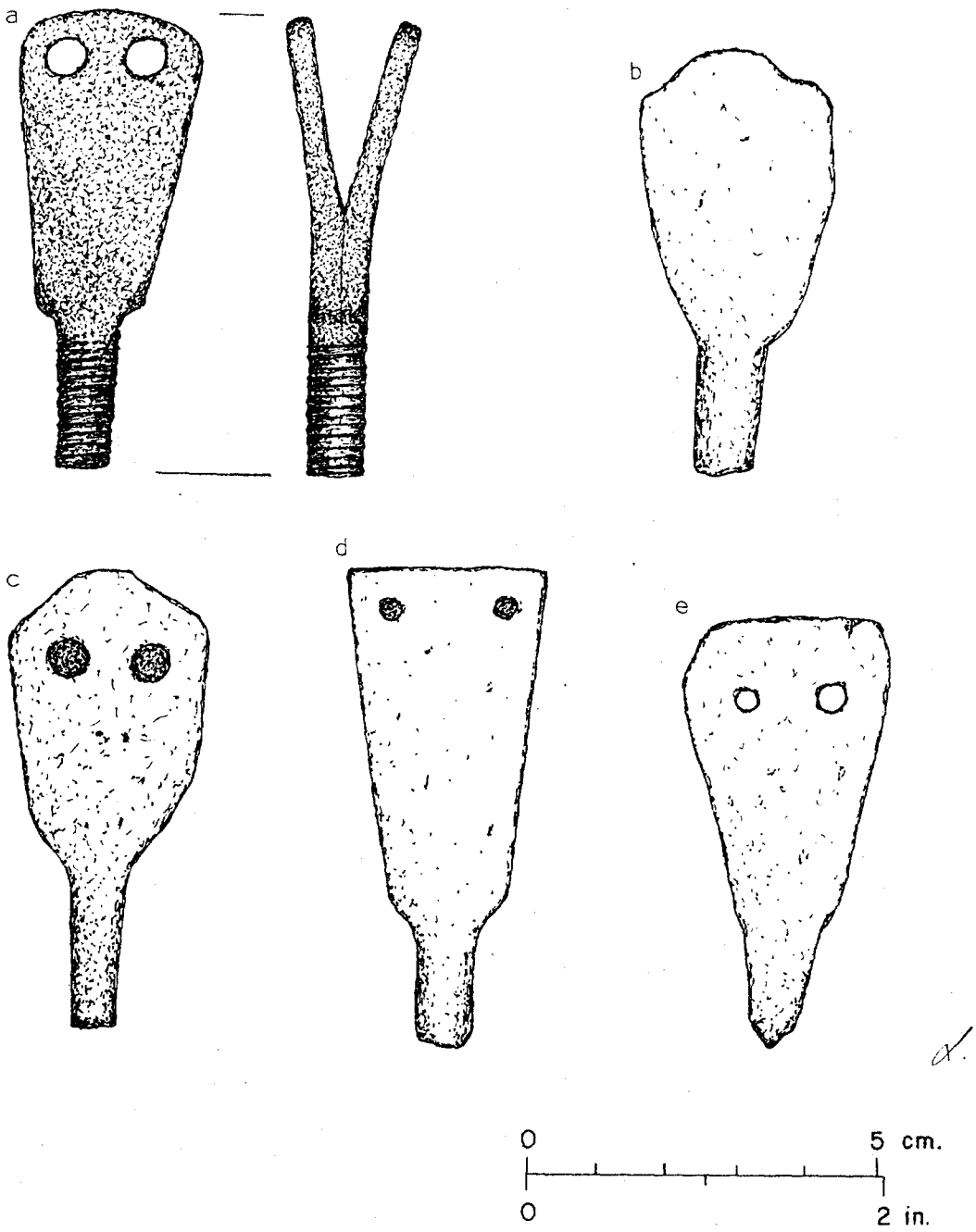


Fig. 67 -- Trap jaw posts and preforms from the Blacksmith Shop area: a). trap jaw post (FOVA 36077); b). jaw post preform (FOVA 36078); c). jaw post preform (FOVA 35024); d). jaw post preform (FOVA 36078) and e). jaw post preform (FOVA 36029).

Finished Trap Springs

Trap springs were the most frequent trap part recovered with 256 specimens identified. Thirty-one specimens were complete and all were of the same style, being a recurved iron band with upper and lower bows which attached to the jaw post (lower bow) and jaws (upper bow) (Fig. 68). Correlation of the interior diameters of the upper and lower bows of the complete specimens suggest that at least 2 sizes were manufactured (Fig. 69), probably to accomodate 2 types or sizes of trap jaw posts. Makers marks appeared on 25 specimens (but on only 3 complete springs) and all were located on the neck of the upper bow (Fig. 68). Two marks were readable, a block impressed "GF", and a letter impressed "JB". They probably represent the initials of George Folster, Fort Vancouver blacksmith 1830-32, 1835-47 (Hussey 1974:331-35), and Joseph Ovide Beauchamp, Fort Vancouver blacksmith from 1843-47 (Hussey 1974:334-335). Of the 2 individuals, Beauchamp appears to have been primarily responsible for manufacturing trap springs between 1843-1847, as his initials appear on 15 of the 25 marked specimens, while Folster was identified on only one specimen. Examples of the manufacturing marks appear in Fig. 68.

The condition of the finished springs suggest that they were generally deposited at the same stage of utilization, and the deposition of Beauchamp trap springs in several archaeological features suggests contemporaneity of those features. Only five specimens were purposefully clipped as if in a state of repair or reuse. The remainder of the fragmented specimens appear to have been broken by rusting or accidental breakage, at the bend.

Finished Trap Pan Posts

Nineteen trap pan posts were recovered, and 2 styles were observed--posts with rectangular riveted anchors and posts with circular, threaded anchors. Rectangular, rivet anchored specimens have been recovered partially assembled with trap bases from F523 and appear in the reconstructed HBC trap illustrated in Fig. 134 . The circular, threaded anchor style has yet to be found assembled with trap parts. However, on the basis of having only a single hinge hole it has been classified as a pan post. Seven specimens were identified as having rectangular anchors, while 12 circular anchor specimens were recovered. The representative variation in shape for each style has been illustrated in Figs. 70a - b and Figs. 70c - d respectively.

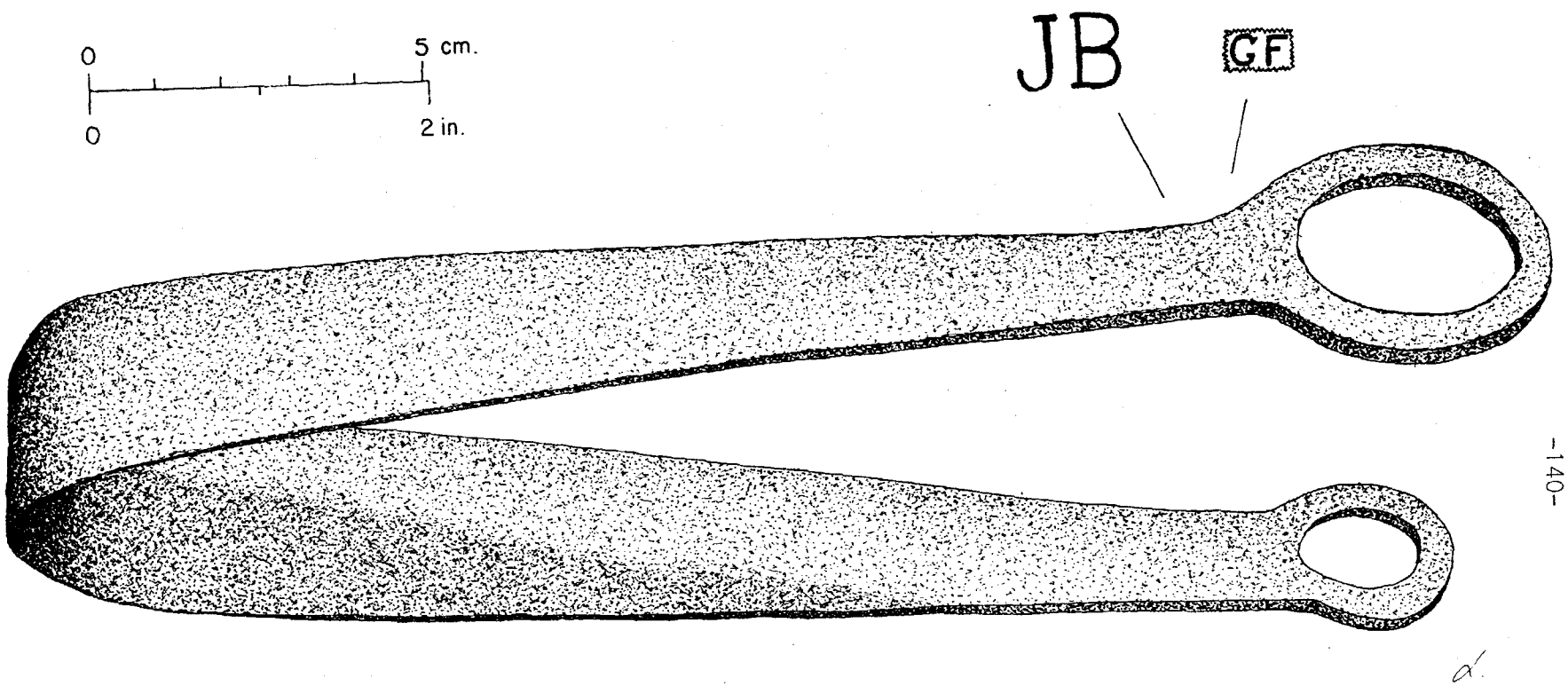


Fig. 68 -- Reconstructed trap spring with makers' marks found on springs from the Blacksmith Shop.

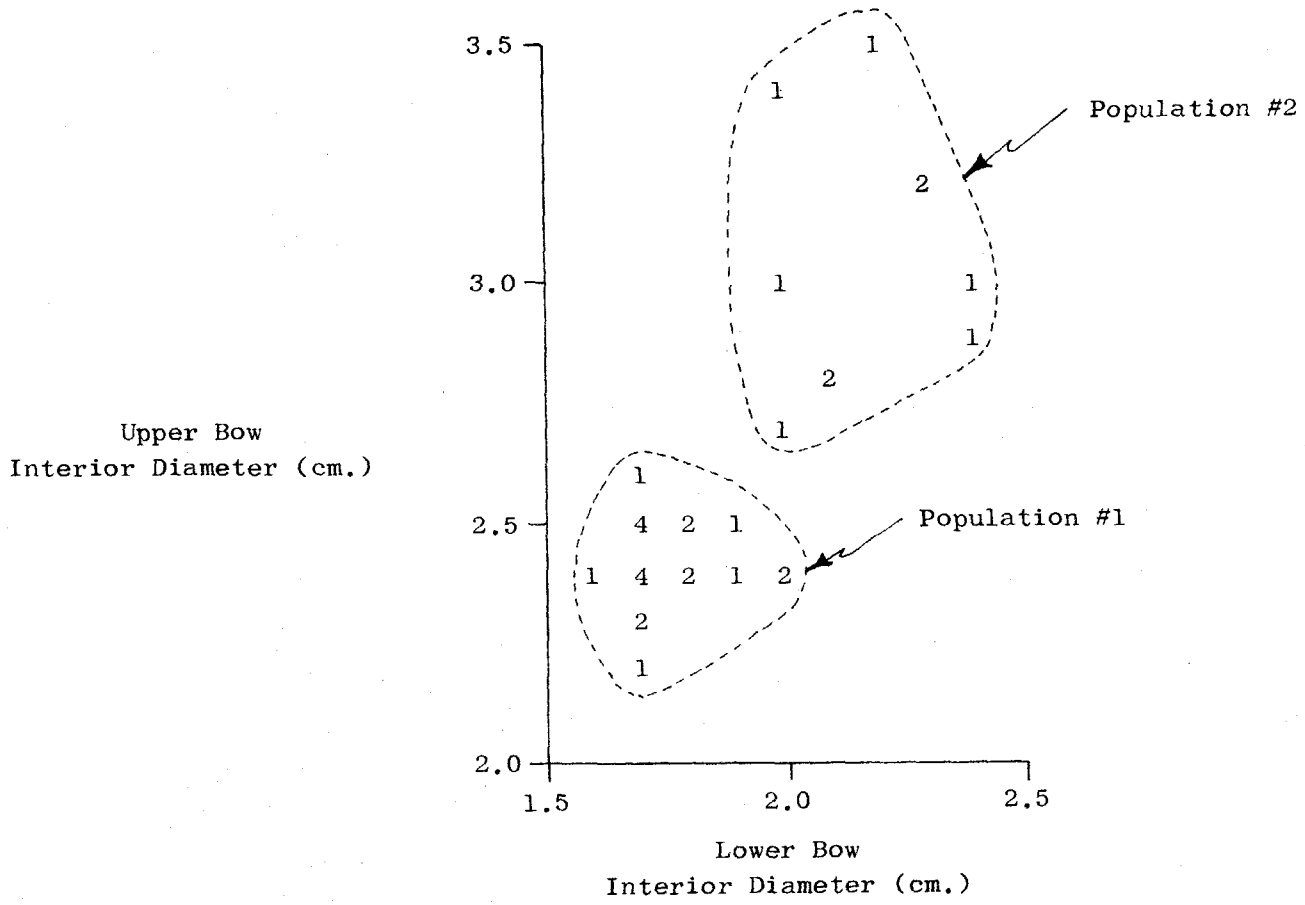


Fig. 69 -- Trap spring sizes as determined by the correlation of upper and lower bow interior diameters of complete springs from the Blacksmith Shop (N = 31).

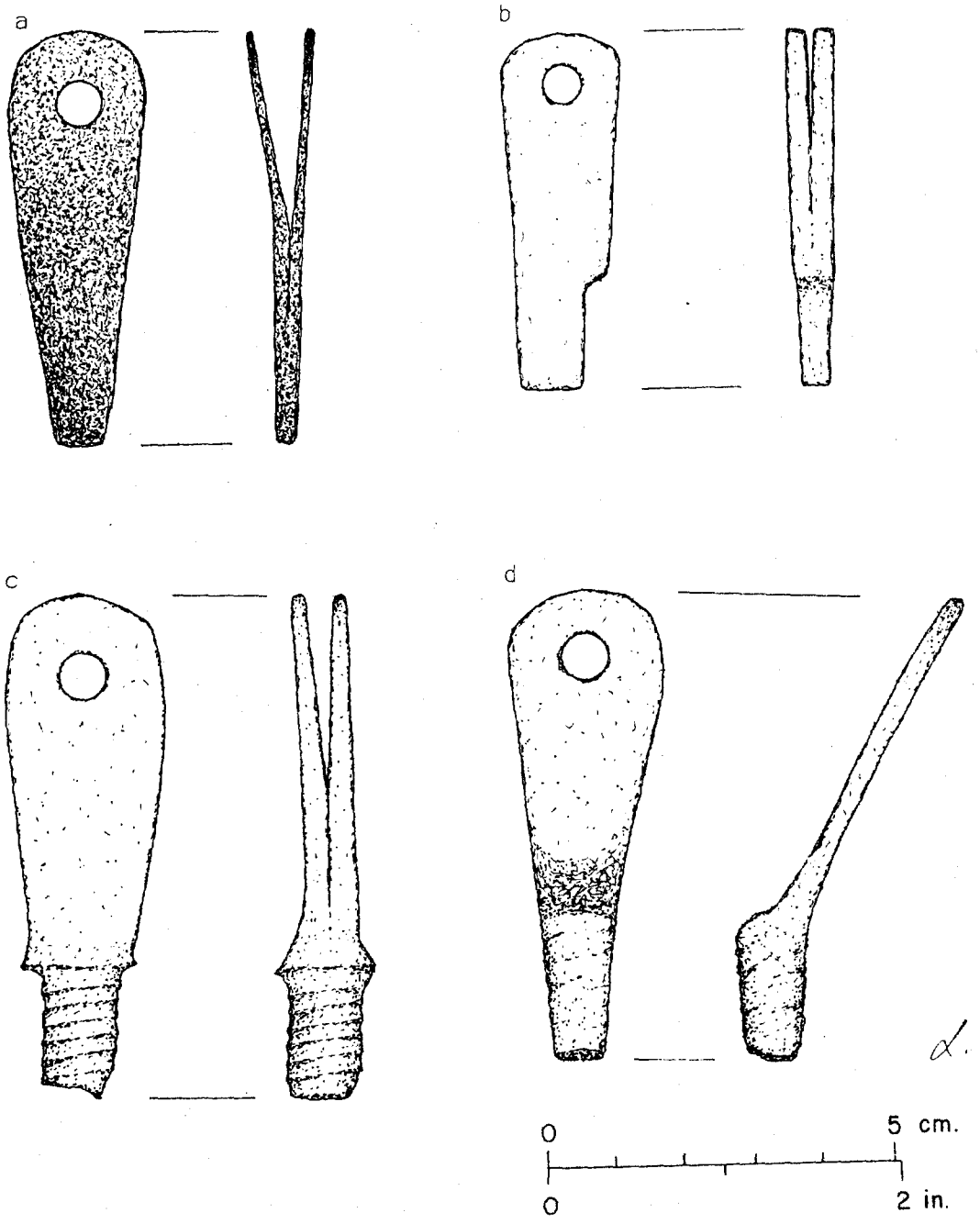


Fig. 70 -- Pan posts from the Blacksmith Shop area: a). pan post (FOVA 35168); b). pan post (FOVA 32605); c). pan post (FOVA 35777 and d). pan post (FOVA 32605).

Finished Trap Pans

Two finished trap pans were recovered, with one style (Fig.71a) having been identified. This style had an oval pan face and is identical to the specimen illustrated in the reconstructed HBC trap from F523. In addition, this style has been recovered in various stages of partial manufacture from the adjacent Indian Trade Store area (Hibbs 1975:report in progress).

Finished Trap Ketches

Fourteen finished trap ketches were recovered from the Blacksmith Shop and 2 stylistic varieties were identified (Figs. 72a- b). This style consisted of a simple triangular tab of iron sheet metal truncating to a semi-convergent end with a rolled eyelet for anchoring the ketch to the trap base. Examples from the Indian Trade Store and F523 found assembled with base fragments, indicate that the ketch could be attached to the base with the eyelet turned up or down, perhaps depending upon the height of the pan assembly. A similar specimen has been included in the reconstructed HBC trap from F523 (Fig. 134).

Measurements of the lengths of 6 complete specimens indicate that 2 ketch sizes were present--ca. 2½ in. (6.5-7.2 cm) and ca. 3½ in. (8.6-9.3 cm); suggesting use with 2 different sized trap assemblies.

1/4-Twist Trap Chain

The chain utilized for anchoring traps has been identified as ¼-twist chain. A total of 52 chain links and 9 portions of chain were recovered and a representative specimen has been illustrated in Fig. 73a. Based upon the correlation of chain link length to stock thickness, 3 metric populations have been defined. These include botha ca. 1¼ in. and 1 5/8 in. population manufactued from ca. ¼ in. round stock, and a ca. 1½ in. population manufactured from 3/16 in. stock (Fig. 74). Links within an individual chain vary in length, but stock diameter tended to remain uniform. The 2 different stock sizes observed suggest a functional difference in the use of trap chain (i.e., small diameter link utilized with lighter traps for presumably smaller animals, and large diameter links utilized with heavy duty, larger traps).

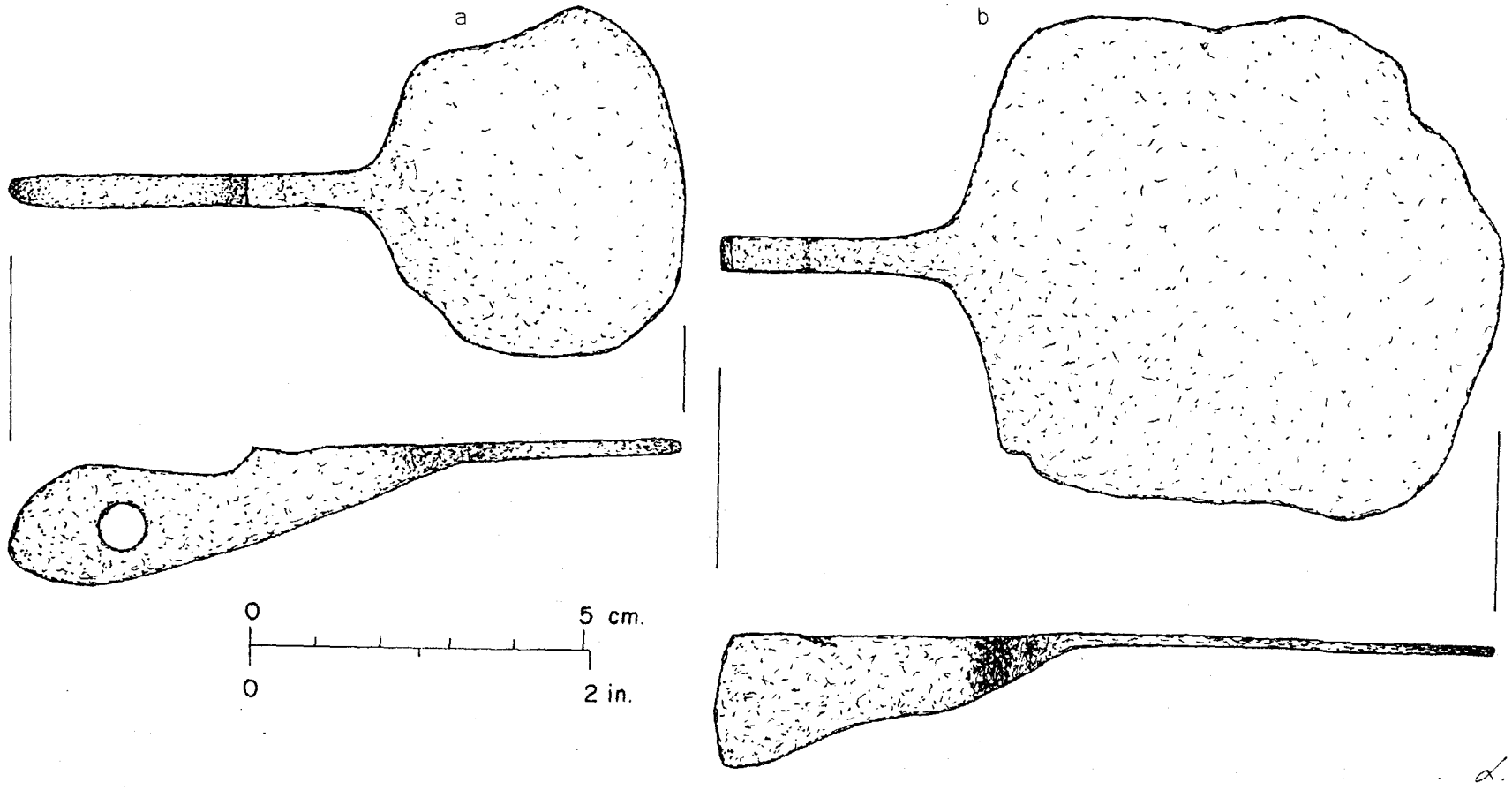


Fig. 71 -- Pan and preform from the Blacksmith Shop area: a). pan (FOVA 35363) and b). pan preform (FOVA 32301).

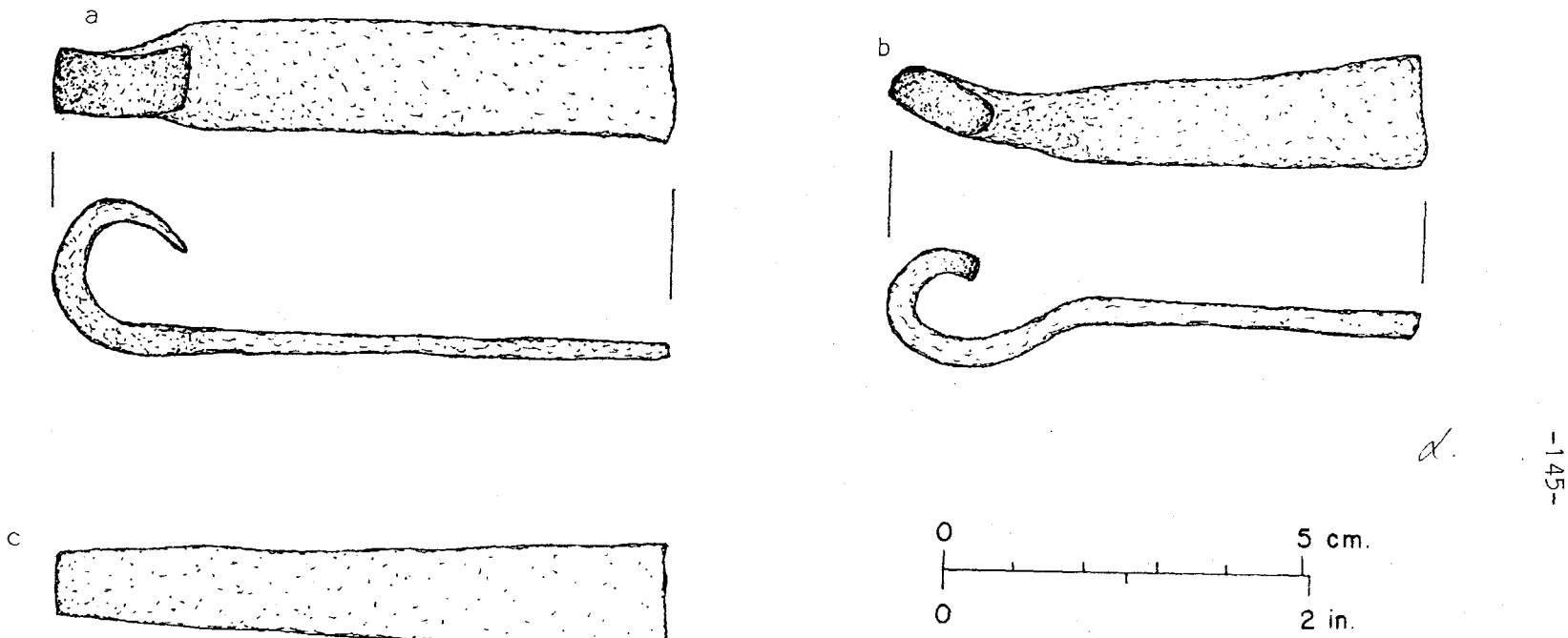


Fig. 72 -- Ketches and preform from the Blacksmith Shop area: a). ketch (FOVA 33272); b). ketch (FOVA 33546) and c). ketch preform (FOVA 32207).

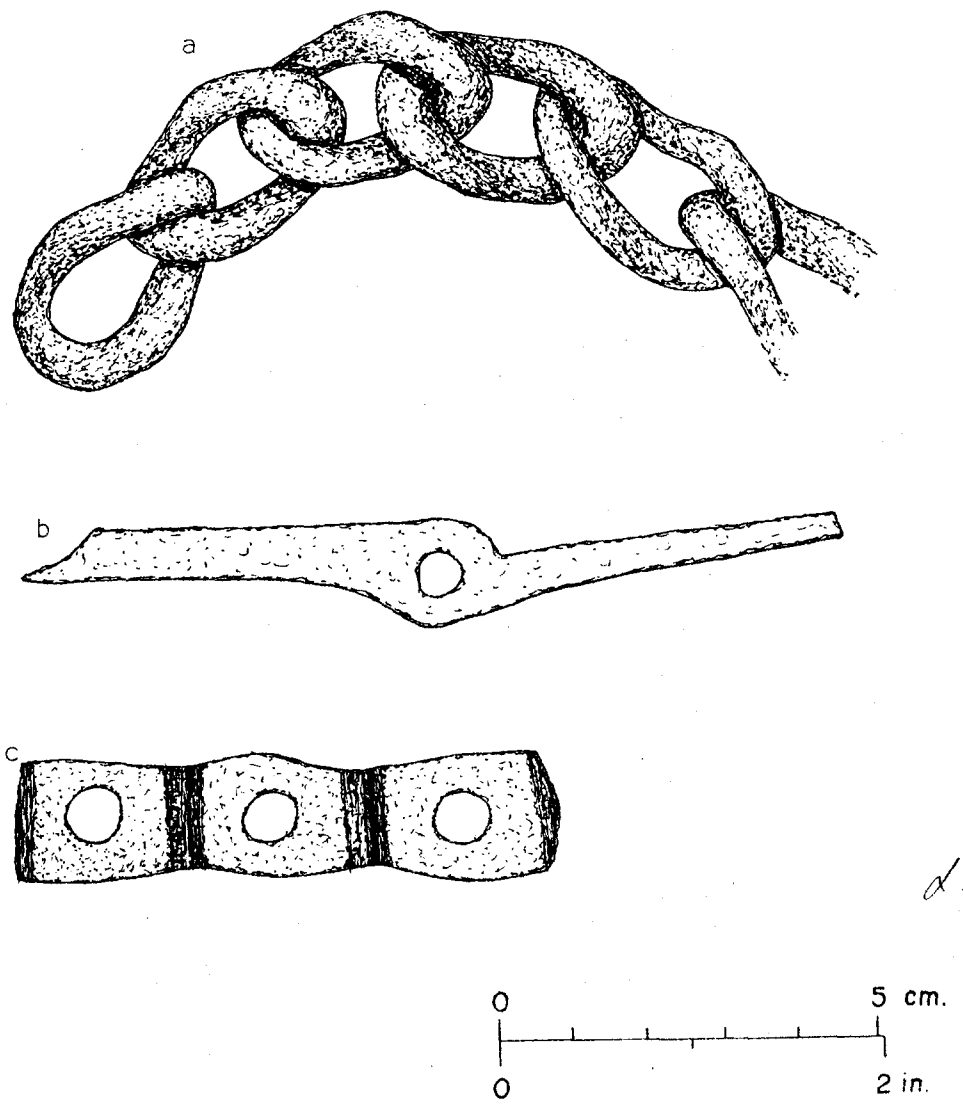


Fig. 73 -- Trap chain, swivel o-ring and trap nut preforms from the Blacksmith Shop area: a). trap chain (FOVA 34192); b). trap swivel o-ring preform (FOVA 32324) and c). trap nut preforms (FOVA 33667).

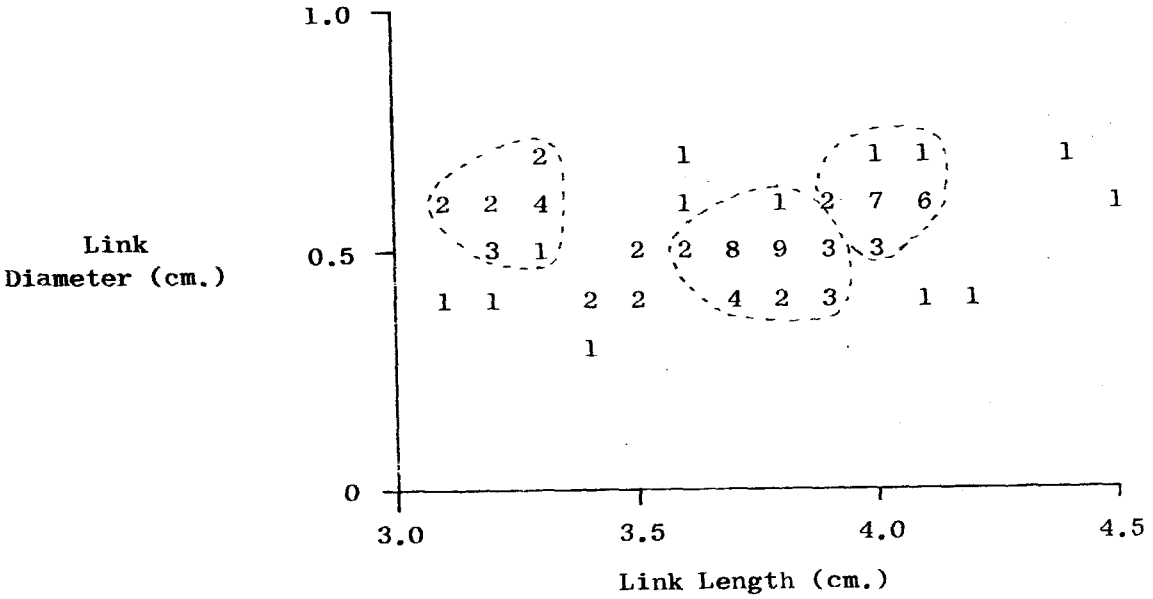


Fig. 74 -- Hypothesized $\frac{1}{4}$-twist "trap" chain populations as determined by the correlation of chain link length with stock diameter for the Blacksmith Shop (N = 81).

Preform Trap Parts

With the exception of ¼-twist trap chain, every portion of the HBC trap was represented in partial stages of manufacture. A total of 44 specimens were identified, the highest frequency yet recovered from an area of the Fort.

Preform Trap Base

One partially manufactured fragment of the cross component of a trap base was recovered. It was manufactured from 1 x ¼ in. (2.51 x 0.65 cm.) rectangular iron bar stock, and appears to have been welded to the pallet portion of the base.

This specimen represents one stage in the manufacture of trap bases similar to the one illustrated in the reconstructed HBC trap from F523 (Fig. 134).

Preform Trap Jaw Posts

Six preform trap jaw posts representing the manufacture of at least 2 styles (squared vs. oval receiver) of finished jaw post were recovered. For squared receiver posts, 2 specimens representing 2 stages in the manufacture of the finished jaw posts from the Blacksmith Shop (Fig. 67a) were identified, and are illustrated in Figs. 67d-l.

The second style, having an oval receiver, was not recovered in finished form from the Blacksmith Shop. However, 4 preform specimens representing at least 2 stages of manufacture were observed indicating that the style was also manufactured in the Shop. The 2 stages of manufacture have been illustrated in Figs.67b - c . Similar specimens have been recovered from the Indian Trade Store area, but a finished form has yet to be identified.

Preform Jaws

A total of 9 specimens were recovered representing at least 4 stages in the manufacture of offset-hinged trap jaws. Similar preform specimens were recovered from F523. One stage of manufacture is illustrated in Fig. 75l.

Preform Trap Springs

Twelve specimens of partially manufactured trap springs were recovered and are consistent with the finished style recovered from the Fort. At least 3 stages of manufacture have been identified and illustrated by the 2 specimens in Figs. 76a-b.

Preform Pan Posts

Of the 8 partially finished trap pan posts recovered, 6 represent the manufacture of the finished rectangular riveted anchor pan post, and its variations (Figs. 75c- d) appear to be represented. The preform specimens represent at least 2 stages in the manufacturing process- 1). completed blanks prior to hinge hole punching, and 2). completed blanks with incomplete hinge hole punching. Two specimens related to the manufacture of the circular threaded anchor pan posts have also been identified and represent only one stage of manufacture (Fig. 75a-b).

Preform Trap Pans

One specimen of a preform trap pan was identified but appears to be of a different style than the finished pans recovered from the Shop (Fig. 71b). On the preform specimen, illustrated in Fig. 71b, the pan face is rectangular and larger in size than the finished form. A similar specimen has been reported from F523 and is illustrated in Fig. 134.

Preform Trap Ketch

One specimen was recovered and is illustrated in Fig. 72c.

Preform Trap Post Nut Template

One specimen of a trap post nut template, from which the finished trap post nuts were cut, was recovered and has been illustrated in Fig. 73c.

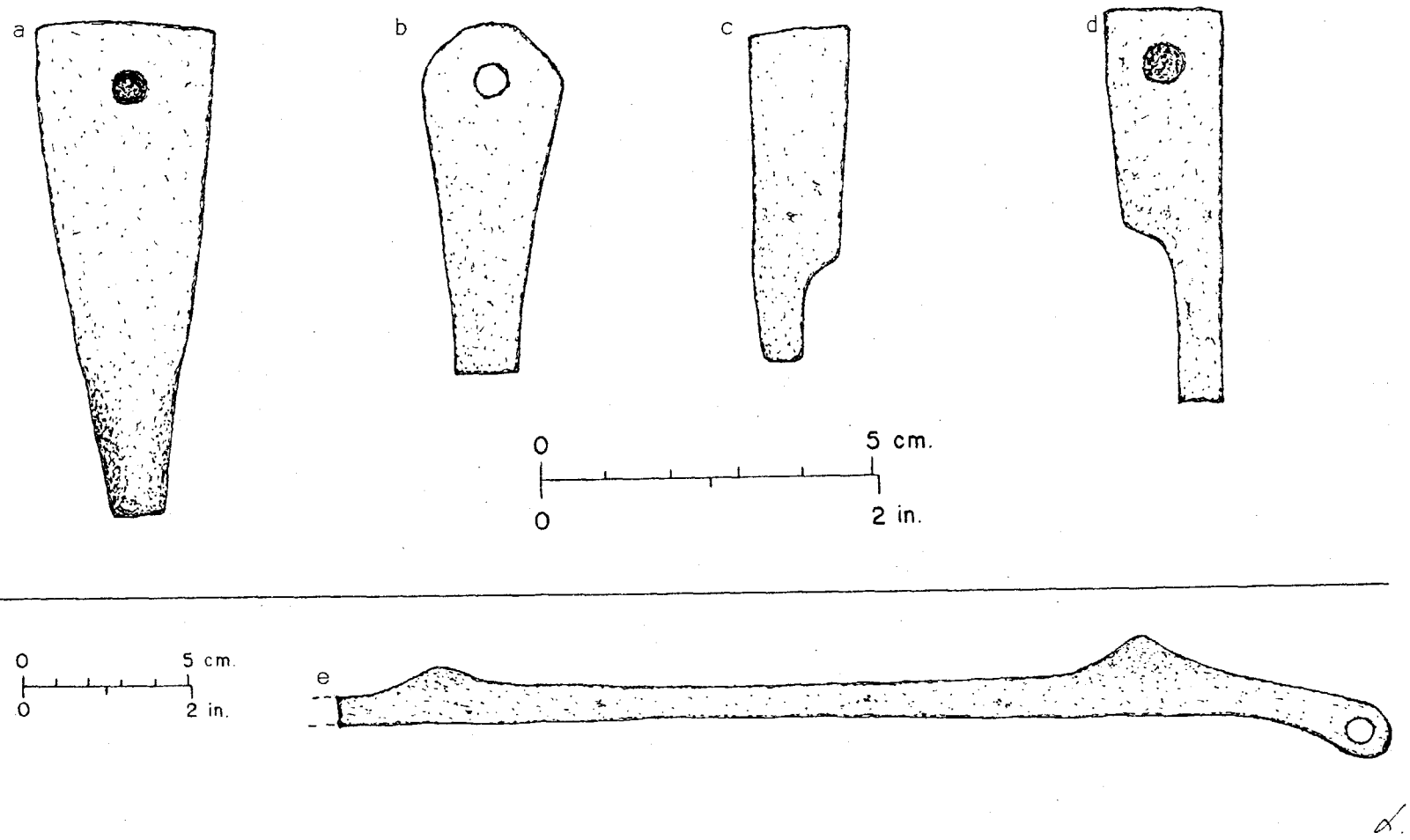


Fig. 75 -- Pan post prefroms and jaw preform from the Blacksmith Shop area: a). pan post preform (FOVA 34898); b). pan post preform (FOVA 35203); c). pan post preform (FOVA 32440); d). pan post preform (FOVA 32586) and e). jaw preform (FOVA 32250).

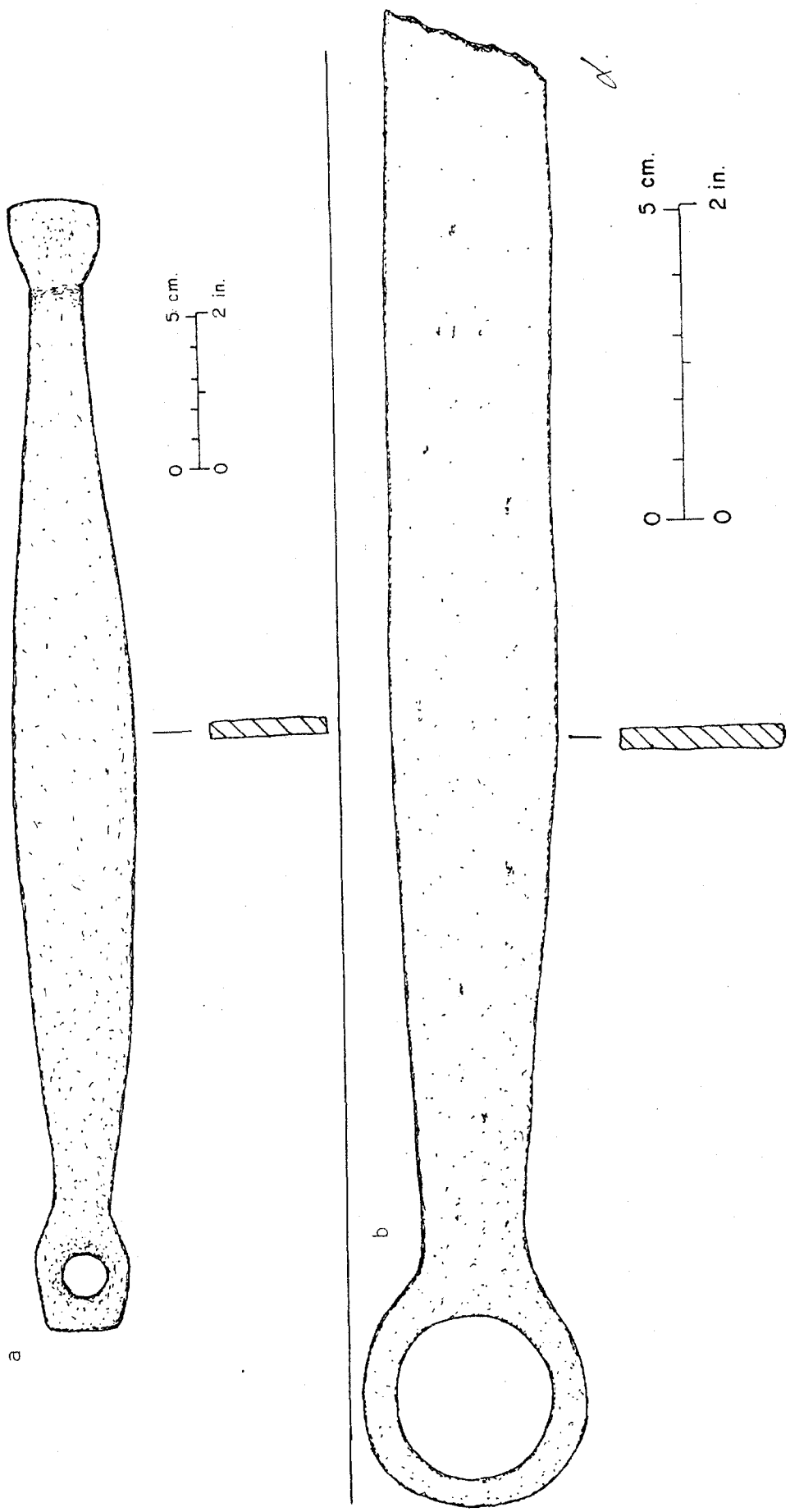


Fig. 76 -- Spring preforms from the Blacksmith Shop area: a). spring preform (FOVA 35470) and b). spring preform (FOVA 32655).

Preform Swivel O-rings and Swivel Eyelets

Swivel o-rings and swivel eyelets were used together in fastening the chain to the trap (usually to one of the springs). Swivel eyelets may also have been used by themselves, as in attaching chain directly to the pallet, such as in the partially assembled trap from the Indian Trade Store area (Hoffman & Ross 1975, Fig. 37).

One specimen of preform swivel o-ring, illustrated in Fig. 73b , has been identified and is comparable to the finished specimen recovered from F523 (Fig. 134) and included in the reconstructed HBC trap (Fig. 134).

Swivel eyelet preforms were recovered in quantity from F523 and have been defined as nail Variety #1065, illustrated in the Fur Store report (Hoffman & Ross 1974b, Fig. 63f). A specimen reconstructed with the HBC trap from F523 has been illustrated in Fig. 134 .

Waste Products

A total of 31 waste products from the manufacture of trap jaws, springs and posts were recovered. Trap jaw and spring cutouts have previously been illustrated in the Fur Store report (Hoffman & Ross 1974b: Fig. 80).

Axe Parts

The axe parts recovered from the Blacksmith Shop include a finished axe, axe polls, blades, wedges, and preformed axe bodies and polls (Table 12).

One finished axe was recovered (Fig. 77), and it appeared to be of the "Michigan" type. This axe style is hypothesized as being imported to Fort Vancouver, since neither partially manufactured forms have been excavated, nor did such axes appear on the HBC inventories of "country-made articles".

All other axe parts and preforms are of the Hudson's Bay type axe described in FOVA Report VIII (Hoffman & Ross 1974b). The 4 axe body preforms recovered were of the type inventoried as "square-head axes", and 2 specimens are similar to the hypothesized Type 1 axes described and illustrated in FOVA Report VIII (Hoffman & Ross 1974b:Fig. 83). This type of axe was manufactured with a poll, and the stock extremeties offset to form a one piece body and blade. Measurements of poll lengths on assembled preforms suggest that at least 2 axe sizes were being manufactured, a 1 3/8 in. size and a 1 7/8 in. size.

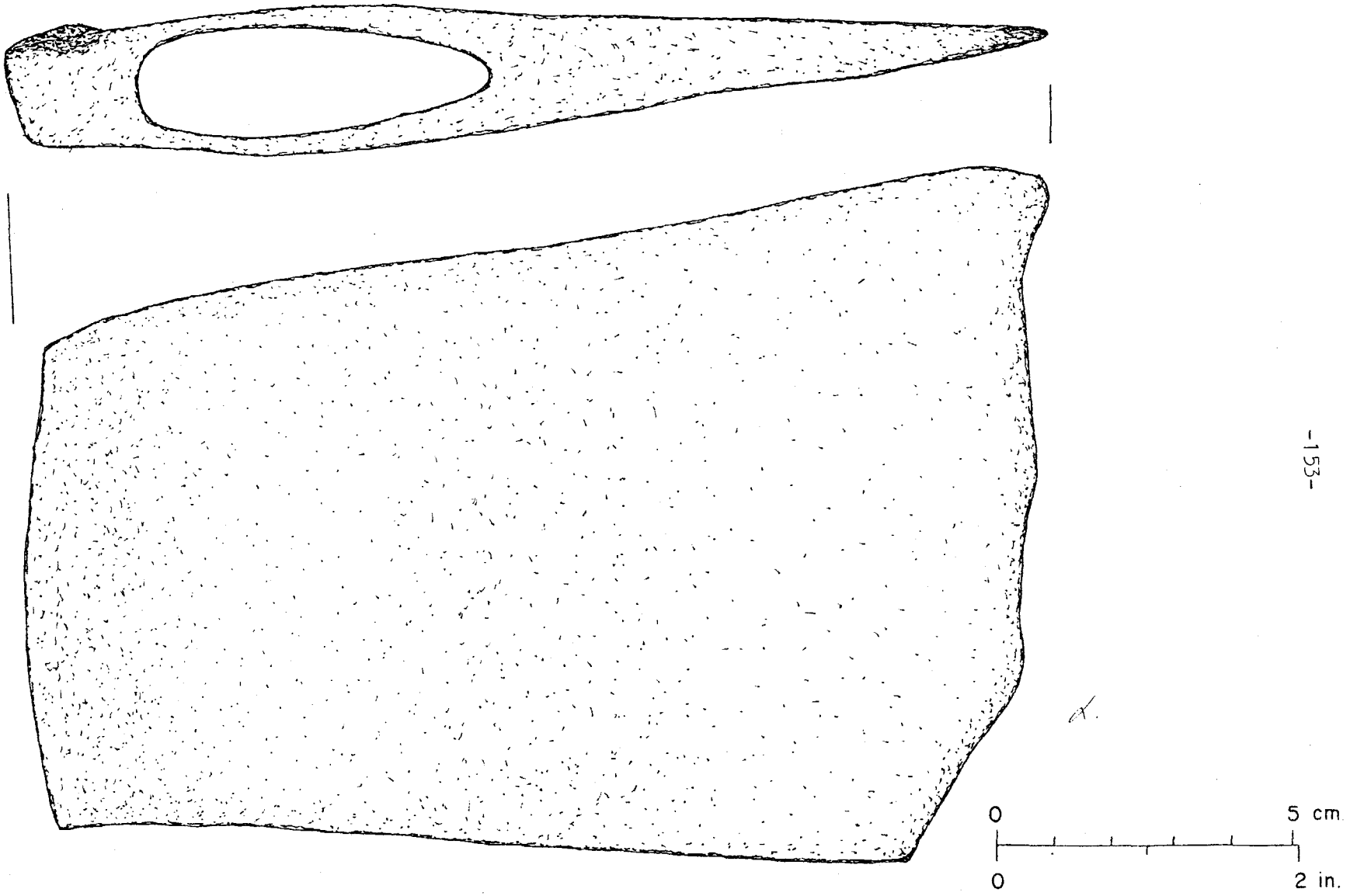


Fig. 77 -- Axe (FOVA 33228) from the Blacksmith Shop area.

A total of 8 axe polls were identified based on the presence of a circular anchor pin hole centered on a rectangular blank cut from rectangular iron stock. Further, in order to distinguish axe polls from other kinds of items with similar attributes (for instance, nut preforms) only those sizes that were consistent with poll sizes on assembled square head axes have been considered as axe polls. A total of 8 specimens were found to correlate with axe polls assembled with the axe body, and two sizes of polls appear to have been manufactured in the Blacksmith Shop, a 1 3/8 in. size and a 1 7/8 in. size.

The 2 axe sizes recovered consisted of small square head axes manufactured from 1 3/8 x 3/8 in. stock and middling square head axes manufactured from 1 7/8 (or 1 3/4) x 3/8 in. stock.

Comparisons of axe parts from the Blacksmith Shop with a previously excavated blacksmith assemblage (ca. 1836) from the Fur Store area (Hoffman & Ross 1974b) and the inventoried metal stock on hand in 1844 in the Iron Store (Hussey 1974:348) suggest that the later Blacksmith Shop was functionally different from the early ca. 1836 shop. Only one axe style, the "squareheaded", was manufactured in the ca. 1845 Shop, as compared to both "round-headed" and square-headed being manufactured in the earlier assemblage. Further, 3 sizes of axes were recovered from the earlier assemblage, and they were manufactured from stock with widths of $1\frac{1}{2}$, $2\frac{1}{2}$, and $3\frac{1}{2}$ inches in width--conforming to the 3 axe sizes identified by the HBC as "small", "middling" (or "half"), and "large" (Hoffman & Ross 1974: 150). However, only 2 sizes were recovered from the later Blacksmith Shop, and they were made from 1 3/8 inch width and 1 7/8 inch width stock. This conforms closely to flat bar iron sizes of 1 3/8 x 3/8 inch and 1 3/4 x 3/8 inch inventoried for the Iron Store in 1844; and there is no indication of stock with widths of $1\frac{1}{2}$ or $3\frac{1}{2}$ inches in that inventory (Hussey 1974:347). It seems reasonable to assume that axe manufacturing in the early Blacksmith Shop within the Fur Store area produced a greater range of axe styles and sizes which were different from those produced in the later Blacksmith Shop. Axe remains from the late Blacksmith Shop appeared to represent a minor industry, not representative of a principal depot manufacturing center for axes (Hussey 1974:304).

In addition to the 16 axe parts recovered, 4 axe wedges were identified.

Miscellaneous Metal Hardware

A total of 628 specimens of miscellaneous hardware was recovered from the Blacksmith Shop. Hame hardware chain and chain links, hooks, barbed wedges, bundling strap and metal bands were the most frequent artifacts recovered (Table 12). Other items not previously reported have been illustrated, and include an o-ring with a $1\frac{1}{4}$-twist chain link (Fig. 78a), a chain anchor (Fig. 78b), and 2 cassette/chest handles (Figs. 78c-d).

Horseshoes & Muleshoes

A total of 4 horseshoes and one mule shoe were recovered, and all specimens were in finished form. In 1846, horseshoes were inventoried as being "country-made" (Hussey 1972:292). However, there is no archaeological evidence that horse or mule shoes were manufactured in the Blacksmith Shop. A horseshoe, similar to the Blacksmith Shop specimens, was recovered from F523 and has been illustrated in Fig. 142.

Horse Bit Cheek Straps and Preforms

Two finished specimens and a partially manufactured cheek strap were recovered indicating the manufacture of these items. Inventories of "country-made" articles do not list horse bits or cheek straps and the items may have been only sporadically manufactured on an on-call basis. One finished cheek strap is illustrated in Fig. 79a and a cheek strap preform is shown in Fig. 79b.

Harness Hardware

Of the 17 fragments of harness hardware, 2 complete ferrules and 2 partially complete tips were recovered. Similar complete ferrules have been recovered from F523 and are illustrated in Fig. 143a-c. Two types of tips were identified, a flat strap iron style with a welded hook at the end (Fig. 80) and a sheet metal, circular shape tip with a welded eyelet end. The second type has been recovered complete with fastener, o-ring, and hook from F523 and is illustrated in Fig. 143a. No preforms were recovered.

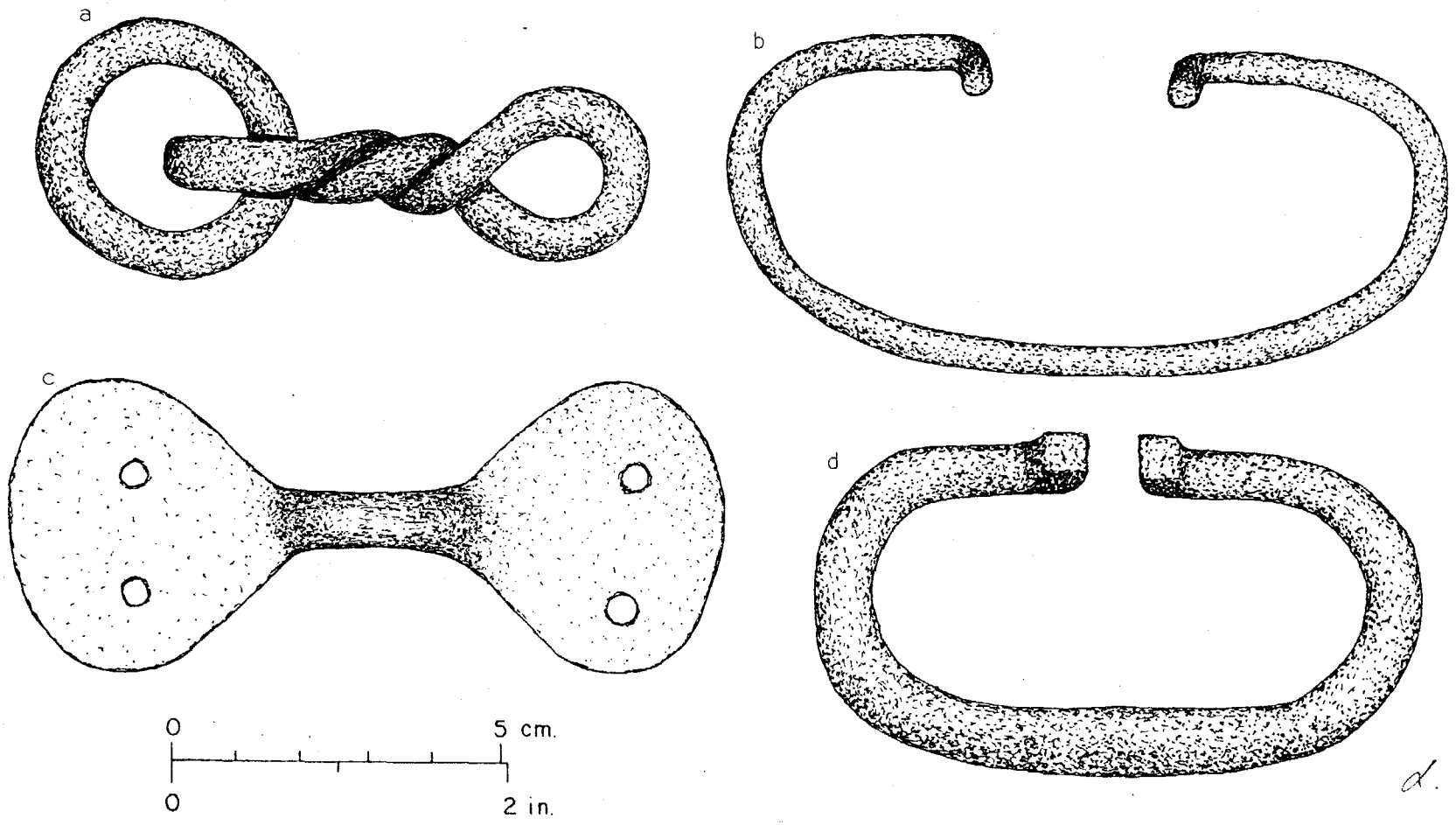


Fig. 78 -- O-ring, metal handles and chain anchor found in the Blacksmith Shop area: a). o-ring w/1¼-twist link (FOVA 34389); b), chain anchor (FOVA 34386): c). wire handle (FOVA 32341) and d). handle (FOVA 32420).

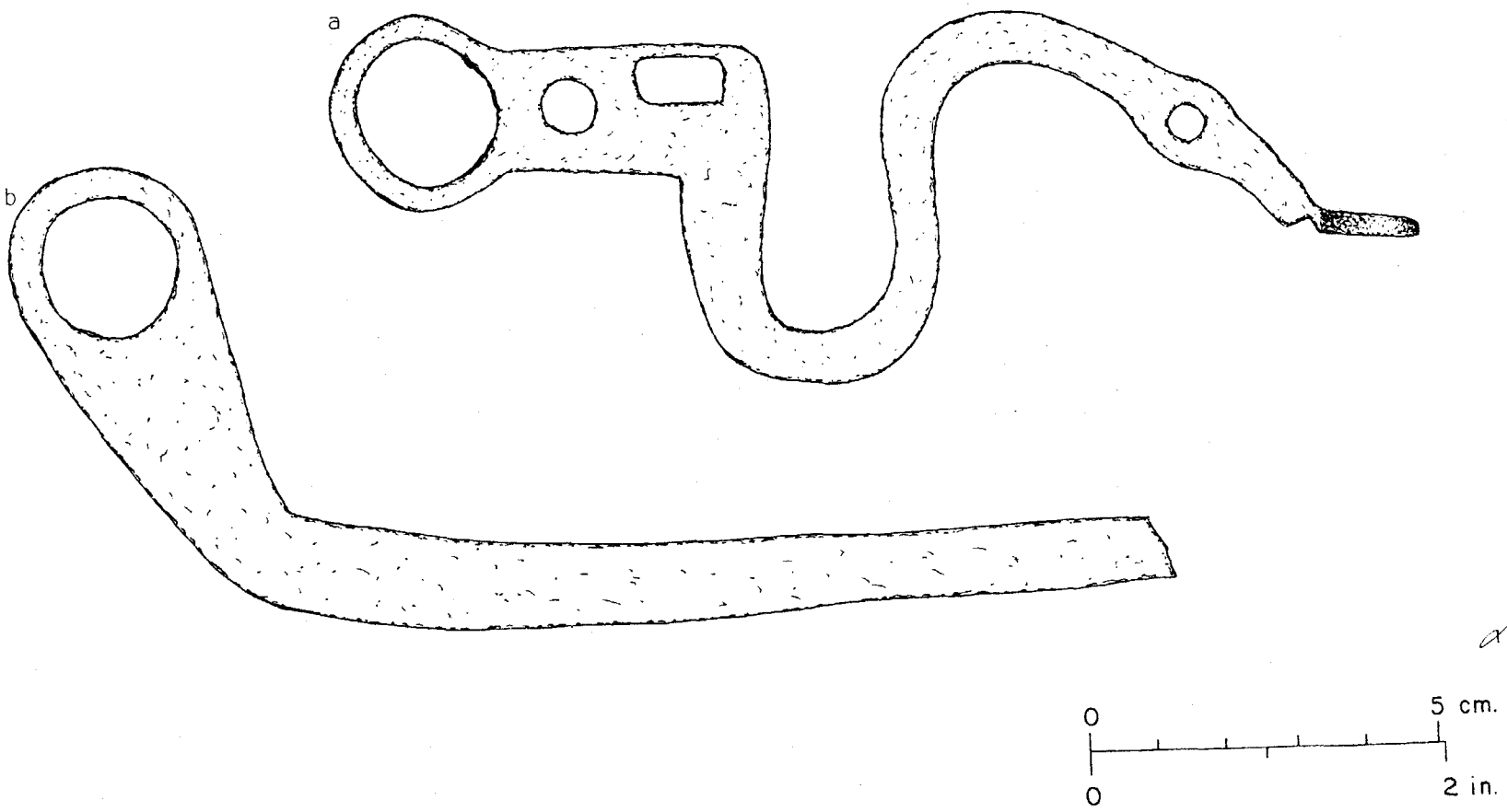


Fig. 79 -- Horse bit cheek strap and preform from the Blacksmith Shop area: a). horse bit cheek strap (FOVA 34554) and b). horse bit cheek strap preform (FOVA 35476).

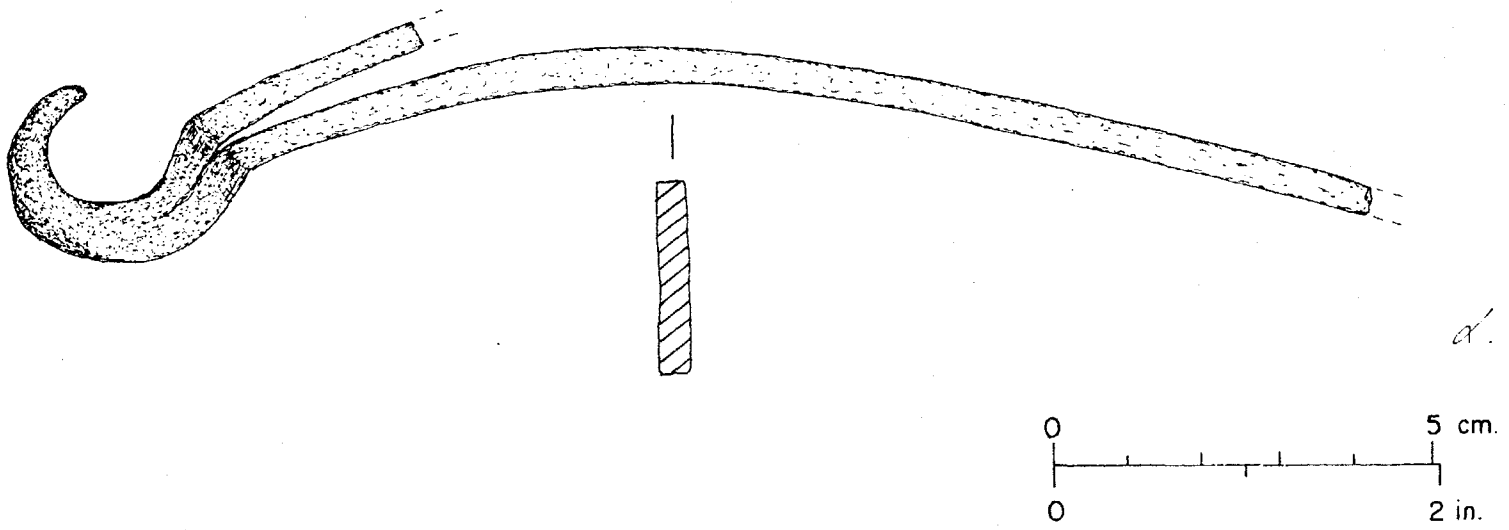


Fig. 80 -- Hame tip (FOVA 35371) from the Blacksmith Shop area.

Chain, Chain Links and Preforms

A total of 82 specimens of flat-oval chain was recovered, consisting of various lengths of chain, individual chain links, and a swivel-end link (Table 12). In addition, $\frac{1}{4}$-twist chain was recovered and has been discussed above in relationship to its use with traps. The overall length of flat chain ranged from 1 3/8 - 4 7/8 inches (3.6-12.4 cm.), and one population of 1 5/8-1 3/4 inch (4.2-4.4 cm.) links was identified. Specimens were predominately manufactured from $\frac{1}{4}$ inch (0.7 cm.) and 3/8 inch (1.3 cm) circular stock.

A total of 14 flat chain link preforms were recovered from the Shop, indicating manufacture of at least a portion of the chain, representative specimens of finished flat chain, flat chain preforms and a swivel link have been illustrated in Figs. 81a-b and 82a.

An examination of the depot inventories of 1846 (Hussey 1972) suggests that small sizes of flat chain may have been utilized as trace chains while larger sizes were utilized as hauser and ship's anchor chain.

Hooks

Of the 10 hooks recovered, 6 were complete or nearly complete, and 5 have been illustrated in Figs. 82b, 83-84.

Barbed Wedges

A total of 22 items descriptively termed "barbed wedges" were recovered. In addition, 15 template preforms were recovered that represented partial manufacturing stages of "barbed wedges". At the present time it is unknown how the finished wedges were utilized; however, they could represent axe wedges. Similar specimens have only been recovered from the immediate vicinity of the Shop including F523 and the Iron Store. Thus, they appear to be exclusively related to activities of the late Blacksmith Shop. The variation of shape and size of finished specimens has been illustrated in Figs. 85d-g , and the representative preform stages are illustrated in Figs. 85a-c.

Bundling Strap

Of the 173 bundling straps recovered, 12 were complete and comparable in bundle shape and type to straps recovered from the Iron Store (Figs. 174a-c). Only 4 variations of strap type and shape were identified from the Blacksmith Shop. Square and rectangular bundles using flat rectangular strap, and circular bundles using both square rod and circular rod straps.

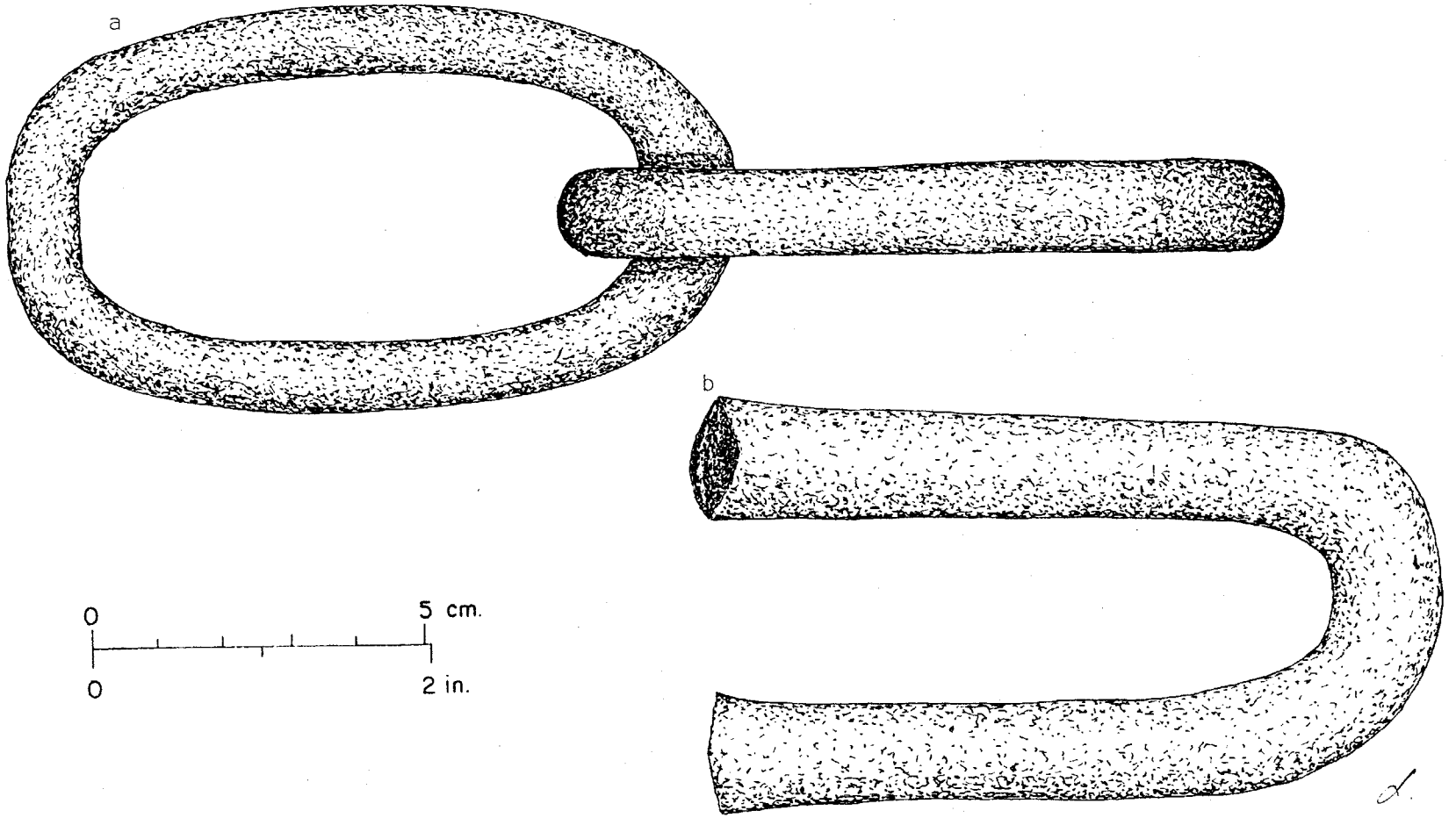


Fig. 81 -- Flat chain and preform from the Blacksmith Shop area: a). flat chain (FOVA 32632) and b). flat chain link preform (FOVA 35377).

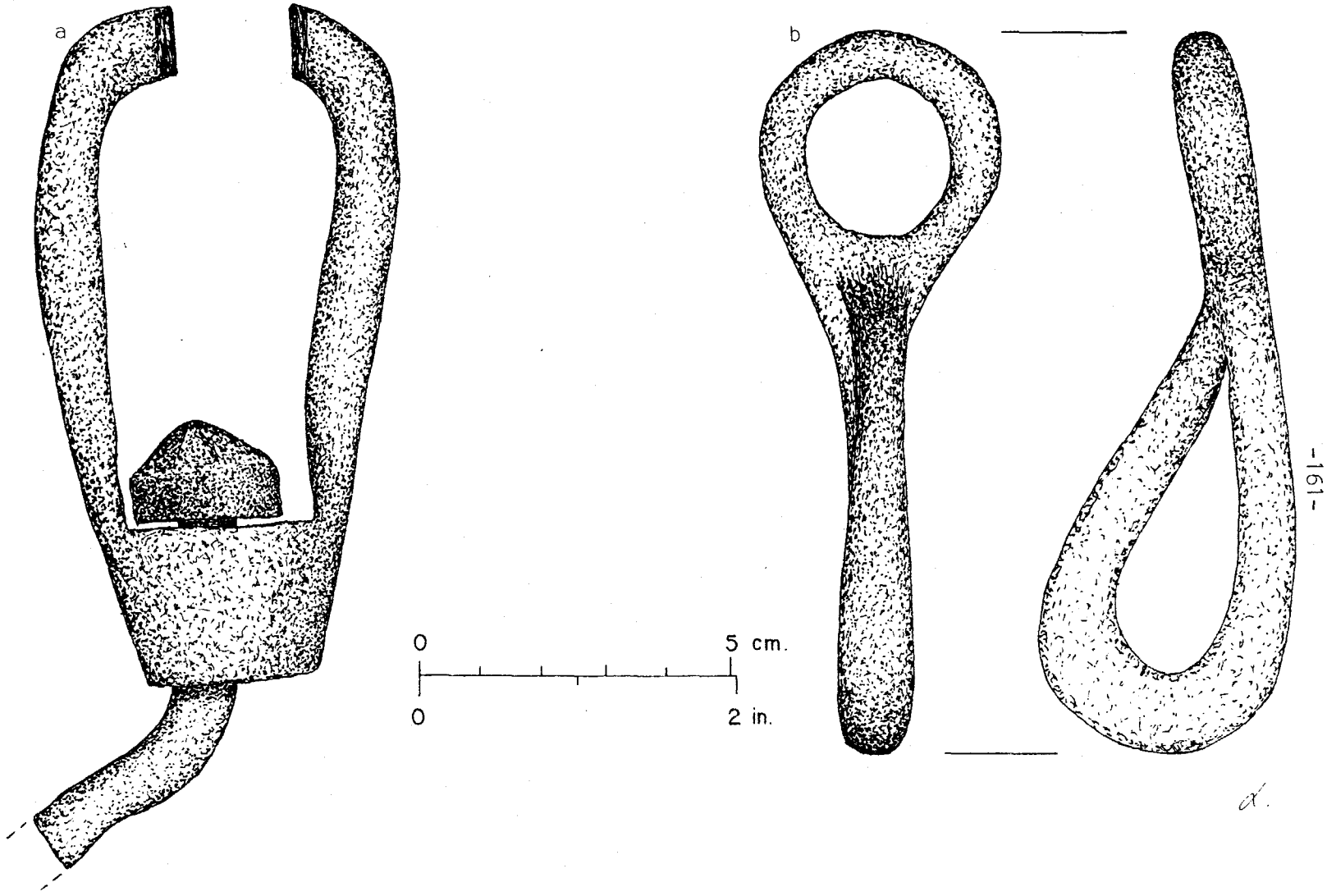


Fig. 82 -- Swivel chain link and reconstructed hook from the Blacksmith Shop area: a). swivel chain link (FOVA 34299) and b). reconstructed hook (FOVA 32812).

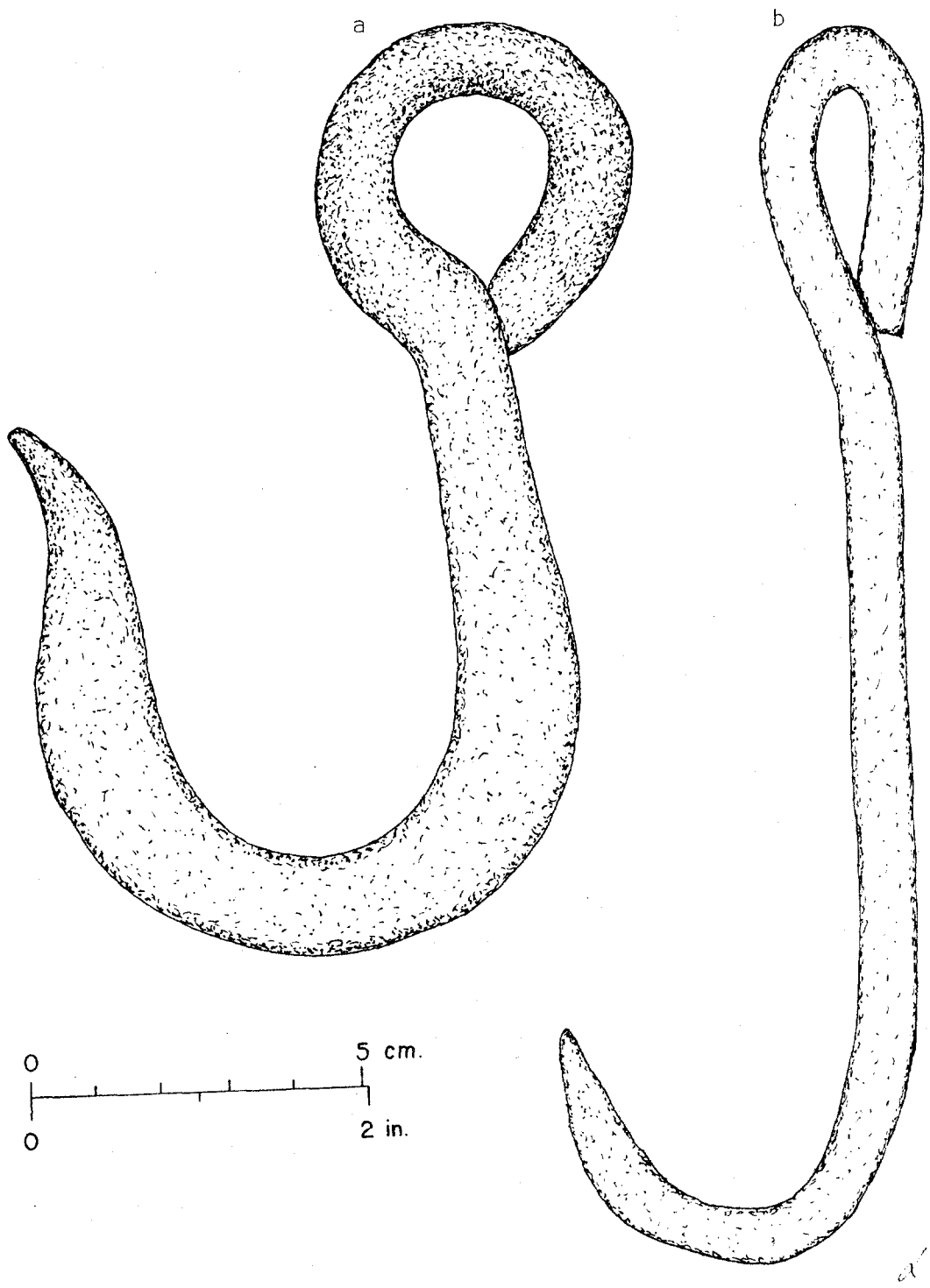


Fig. 83 -- Hooks from the Blacksmith Shop area: a). reconstructed hook (FOVA 34445) and b) hook (FOVA 34198).

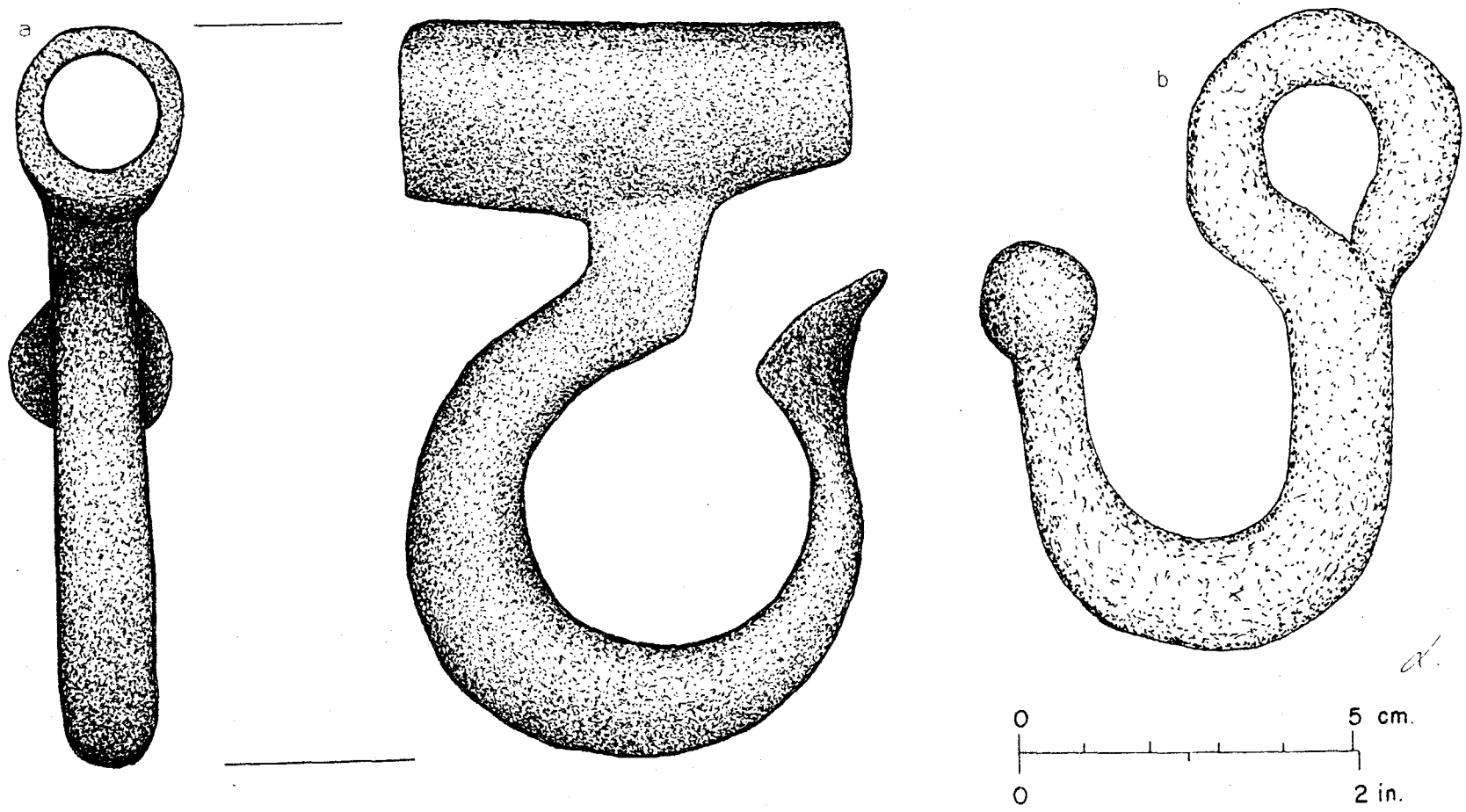


Fig. 84 -- Hooks from the Blacksmith Shop area: a). closed eye hook (broken apart) (FOVA 32377) and b). hook (FOVA 32921).

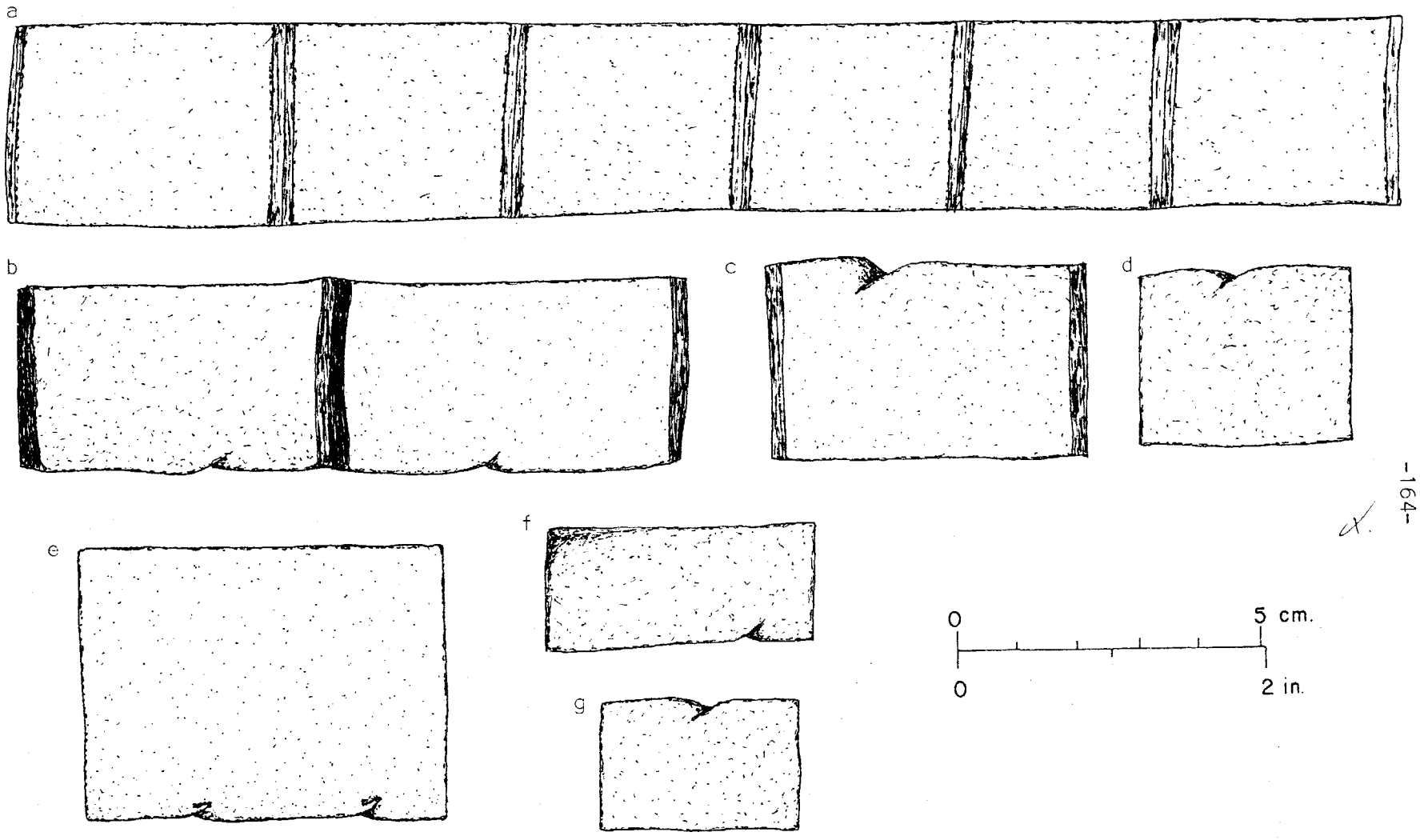


Fig. 85 -- Miscellaneous barbed wedges and preforms from the Blacksmith Shop area: a). barbed wedge preform template (FOVA 35759); b). barbed wedge preform (FOVA 33529); c). barbed wedge (FOVA 32813); d). barbed wedge (FOVA 32813); e). barbed wedge (FOVA 34917); f). barbed wedge (FOVA 34297); g). barbed wedge (FOVA 34562).

Miscellaneous Metal Preforms

A total of 642 partially manufactured, or preform, specimens were recovered, representing items that were manufactured in the Blacksmith Shop. The highest frequencies of identified preforms (representing the primary blacksmith manufactures) included trap parts, axe parts, threaded nuts, chain links, and copper lugs (Table 12).Preforms having counterparts in finished artifacts recovered from the Blacksmith Shop have been described in their respective hardware categories.

O-ring Preforms

Five specimens were recovered and they probably represent the manufacture of o-rings for use with traps. A representative specimen has been illustrated in Fig. 86a.

Copper Lug Cutouts

Copper lug cutouts are circular pieces of copper sheet metal representing the waste from punching the rivet hole in copper lugs. A total of 112 specimens were recovered, and, together with a complete copper lug, indicate evidence of copperware manufacture in the Blacksmith Shop. The cutout, illustrated in Fig. 86b, is representative of the shape and general size of the specimens recovered.

Miscellaneous Metal

A total of 8,102 specimens were recovered representing the debris from a wide range of metal forging and casting activities associated with the Blacksmith Shop. One manufacturing mark was identified on lead bar stock, "JAMES McCULLOUCH . N.Y.", and is illustrated in Figs. 86c-d.

Cut Stock

Cut stock was identified on the basis of otherwise unmodified stock having been clipped or cut to shape by the blacksmith. They represented the closest approximation to the actual stock sizes used in the Blacksmith Shop. Of the 1,717 specimens recovered, square-rectangular and circular iron rod was most frequent (Table 12) and based upon a sample of 540 randomly selected specimens, the dimensions of flat rectangular, square, and circular iron rod and iron sheet stock utilized in the Blacksmith Shop have been hypothesized (Tables 21-24). Stock size measurements varied by as much as $\frac{1}{4}$" and in identifying stock size only clustered measurements have been regarded as valid.

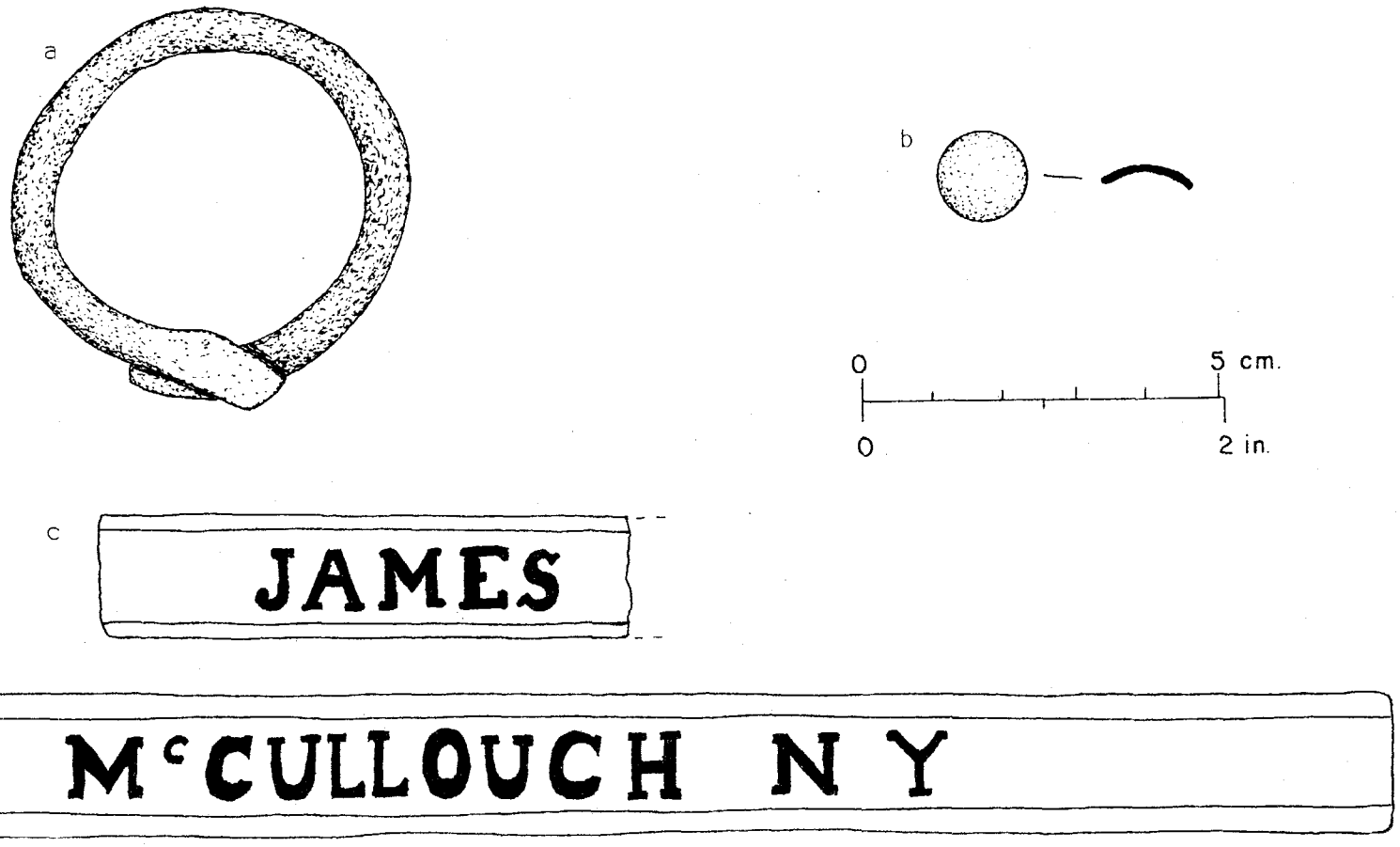


Fig. 86 -- Miscellaneous metal hardware from the Blacksmith Shop area: a). o-ring preform (FOVA 34826); b). copper lug cutout (FOVA 33108) and c-d). reconstructed lead bars w/raised letters.

Table 21 -- Hypothesized stock sizes for flat, rectangular stock utilized in the Blacksmith Shop.

Hypothesized HBC Stock Size (Inches)	Statistical Centrum (cm)	Width Range (cm)	Thickness Range (cm)	Frequency
1/ 2 x 1/4	1.2 x 0.6	1.0-1.4	0.5-0.8	7
1 x 1/4	2.5 x 0.7	2.1-2.8	0.4-1.1	28
1 3/8 x 3/8	3.4 x 0.8	3.1-3.7	0.5-1.1	65
1 5/8 x 3/8	4.1 x 0.9	3.8-4.3	0.6-1.1	151
1 3/4 x 3/8	4.5 x 0.8	4.4-4.7	0.7-1.0	23
2 1/2 x 1/2	6.4 x 1.2	6.3-6.5	1.1-1.4	4
2 1/2 x 7/8	6.4 x 2.2	6.4	2.1-2.3	3
3 x 7/8	7.7 x 2.2	7.6-7.7	2.1-2.3	4
Miscellaneous Sizes		1.6-7.8	0.4-2.1	28
	TOTAL			313

Table 22 -- Hypothesized stock sizes for square stock utilized in the Blacksmith Shop.

Hypothesized HBC Stock Size (Inches)	Statistical Centrum (cm)	Width Range (cm)	Thickness Range (cm)	Frequency
1/4 x 1/4	0.7 x 0.7	0.6-0.8	0.6-0.8	14
3/8 x 3/8	0.9 x 0.9	0.9-1.0	0.8-1.0	14
1/2 x 1/2	1.3 x 1.3	1.2-1.4	1.1-1.4	13
1 3/8 x 1 3/8	3.4 x 3.4	3.3-3.4	3.3-3.5	4
Miscellaneous Sizes		1.7-11.3	1.6-11.5	9
	TOTAL			54

Table 23 -- Hypothesized stock sizes for circular stock utilized in the Blacksmith Shop.

Hypothesized HBC Stock Size (Inches)	Modal Diameter (cm)	Diameter Range (cm)	Frequency
1/4	0.7	0.6-0.8	35
3/8	1.0	0.9-1.1	17
1/2	1.2	1.2-1.4	14
5/8	1.7	1.5-1.8	19
3/4	1.9	1.9-2.1	16
7/8	2.2	2.2-2.7	13
1 1/2	3.7	3.7	1
TOTAL			115

Table 24 -- Hypothesized stock sizes for flat sheet stock utilized in the Blacksmith Shop.

Hypothesized HBC Stock Size (Inches)	Modal Thickness (cm)	Thickness Range (cm)	Frequency
1/8	0.3	0.3-0.5	14
1/4	0.7-0.8	0.6-0.9	18
3/8 or 1/2	1.1	1.0-1.4	23
5/8	1.6	1.6-1.7	3
TOTAL			58

Flat-Rectangular Rod Stock

Of the 540 sample specimens, 313 (58%) were flat rectangular rod stock. In HBC terminology this compares with the "flat bar iron" stock inventoried for the Iron Store in 1844 (Hussey, 1974:347), and stock sizes from the Blacksmith Shop generally conformed to the Iron Store inventory. Only one size, 1 5/8" x 3/8 ", recovered from the Blacksmith Shop does not appear on the inventory, while 4 inventoried sizes were not identified in the Shop. This suggests that manufacturing activities in the shop required only a portion of the raw materials stored in the Iron Store. More importantly, the most frequently inventoried sizes in the Iron Store occured in very low frequencies or were totally absent in the Blacksmith Shop. Of the 4 stock sizes which were primarily utilized in the Shop, those of 1 3/8 x 3/8, 1 5/8 x 3/8, and 1 3/4 x 3/8 inches have been related to the manufacture of axes, and the 1 x ¼ inch stock correlated to the manufacture of bolt parts.

Square Rod Stock

This stock was inventoried as "square iron" by HBC (Hussey 1974: 348), and only 4 of the 12 inventoried sizes were identified in the Blacksmith Shop. A total of 54 specimens, or 10% of the sample, were identified. This stock was probably utilized for a variety of metal fasteners including square shanked bolts and spikes.

Circular Rod Stock

Probably inventoried as "round bolt iron" (Hussey 1974:348), 115 specimens, or 21% of the sample, were identified. Seven sizes were identified and all appear on the 1844 Iron Store inventory. The stock was probably utilized for bolt and rivet manufacture in the Blacksmith Shop.

Flat Sheet Iron

Fifty-eight specimens, or 11% of the sample, were recovered and 4 sizes identified. Comparisons of stock on hand in 1844, show sheet iron was inventoried as "single" or "double" sized (Hussey 1974:348).

The size ranges of all types of stock recovered indicate that the Blacksmith Shop was primarily engaged in light manufacturing activities (only 2 specimens of heavy stock were recovered being 3 7/8 in. and 4½ in. square iron).

Metal Personal and Household Items

Of the 153 items recovered (Table 12) those new or unique items not previously reported have been illustrated in Figs. 87a-d and 88-90.

Buttons

Of the 9 buttons recovered, all were complete and new types have been illustrated in Figs. 87a-c (Table 25).

Table 25 -- Types of metal buttons found in the Blacksmith Shop area.

Type	Diameter (mm)	Frequency	Figure
I. Single-Piece Loop-Shank			
F.	15.9	1	--
P. Phoenix Button*	15.8-16.0	2	--
IV. Single-Piece 4-Hole			
B.	13.0	1	--
G. Lead	18.5	1	--
N.	16.6	1	87a
O. Japanned Black Brass	13.5	2	87c
P. Iron	13.5	1	87c
TOTAL		9	

*See text

Two Phoenix buttons were recovered, and following the classification system designed by Emory Strong (1960; 1968; and personal communication) both buttons were different (Table 26).

Table 26 -- Phoenix buttons found in the Blacksmith Shop area.

Strong's Type #	Strong's Style #	Regiment #	Size
I	1	27	Small
I	1	28	Small

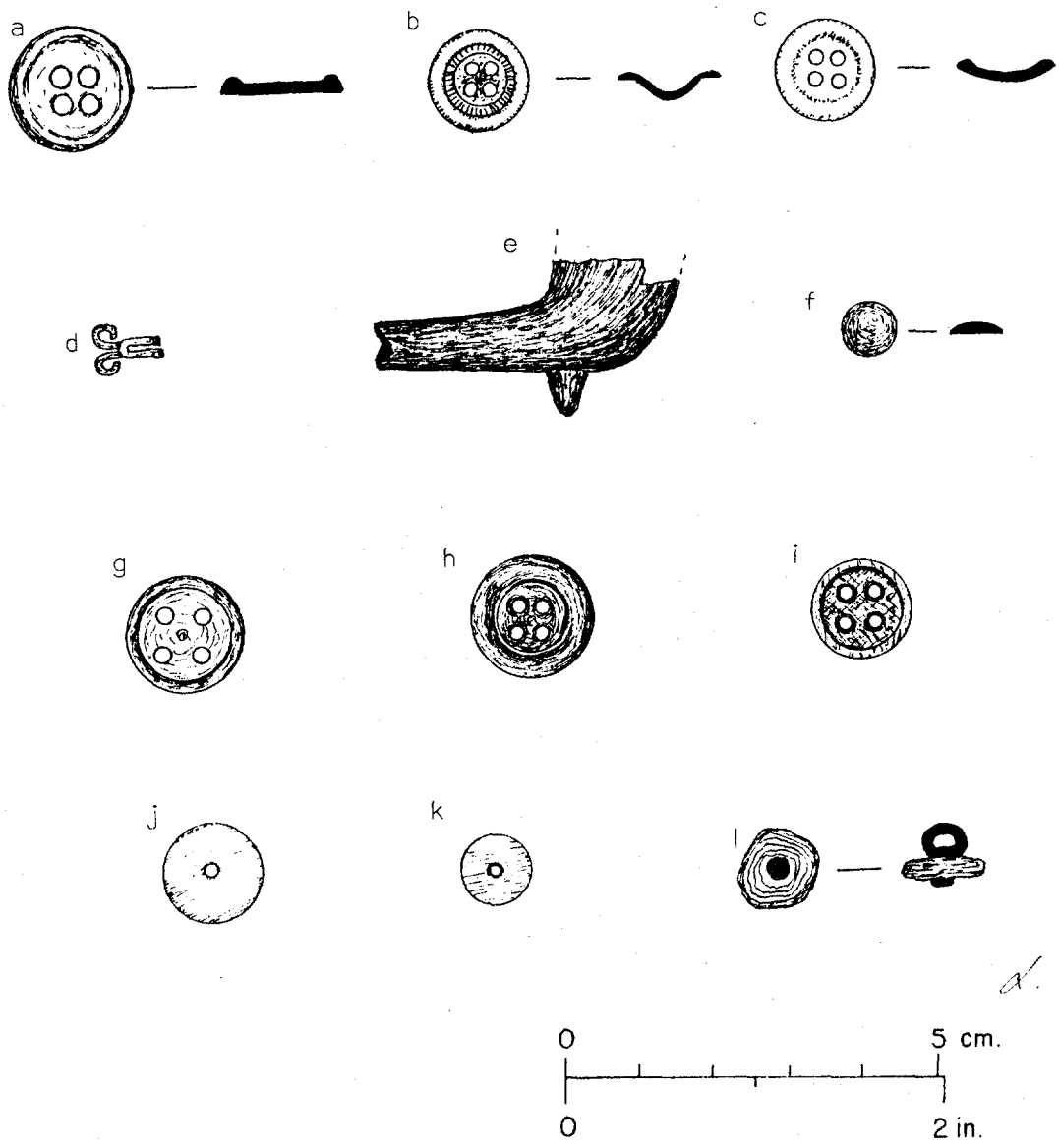


Fig. 87 -- Personal items from the Blacksmith Shop area: a). metal button Type IV N (FOVA 35952); b). jappaned metal button Type IV O (FOVA 34688); c). iron button Type IVP (FOVA 34544); d). fabric hook (FOVA 34360); e). argillite pipe fragment (FOVA 35439); f). stone jewelry setting (FOVA 32227); g). bone button (FOVA 35500); h). bone button (FOVA 34140); i). bone button (FOVA 34409); j). bone disc (FOVA 34215); k). stone disc (FOVA 32969) and l). shell button (FOVA 34410).

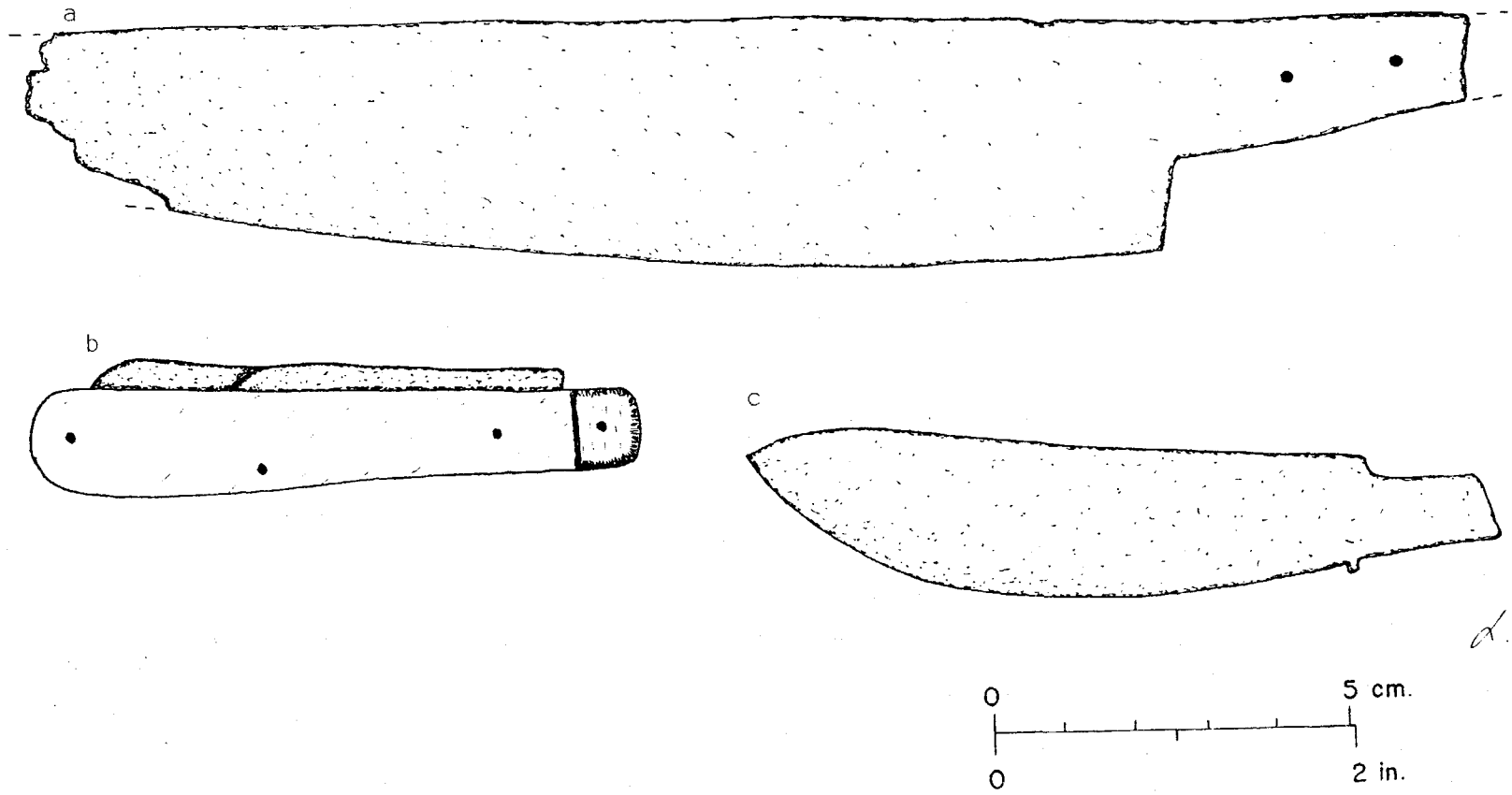


Fig. 88 -- Knives from the Blacksmith Shop area: a). knife blade (FOVA 35774); b). pocket knife (FOVA 34178) and c). knife blade (FOVA 34545a).

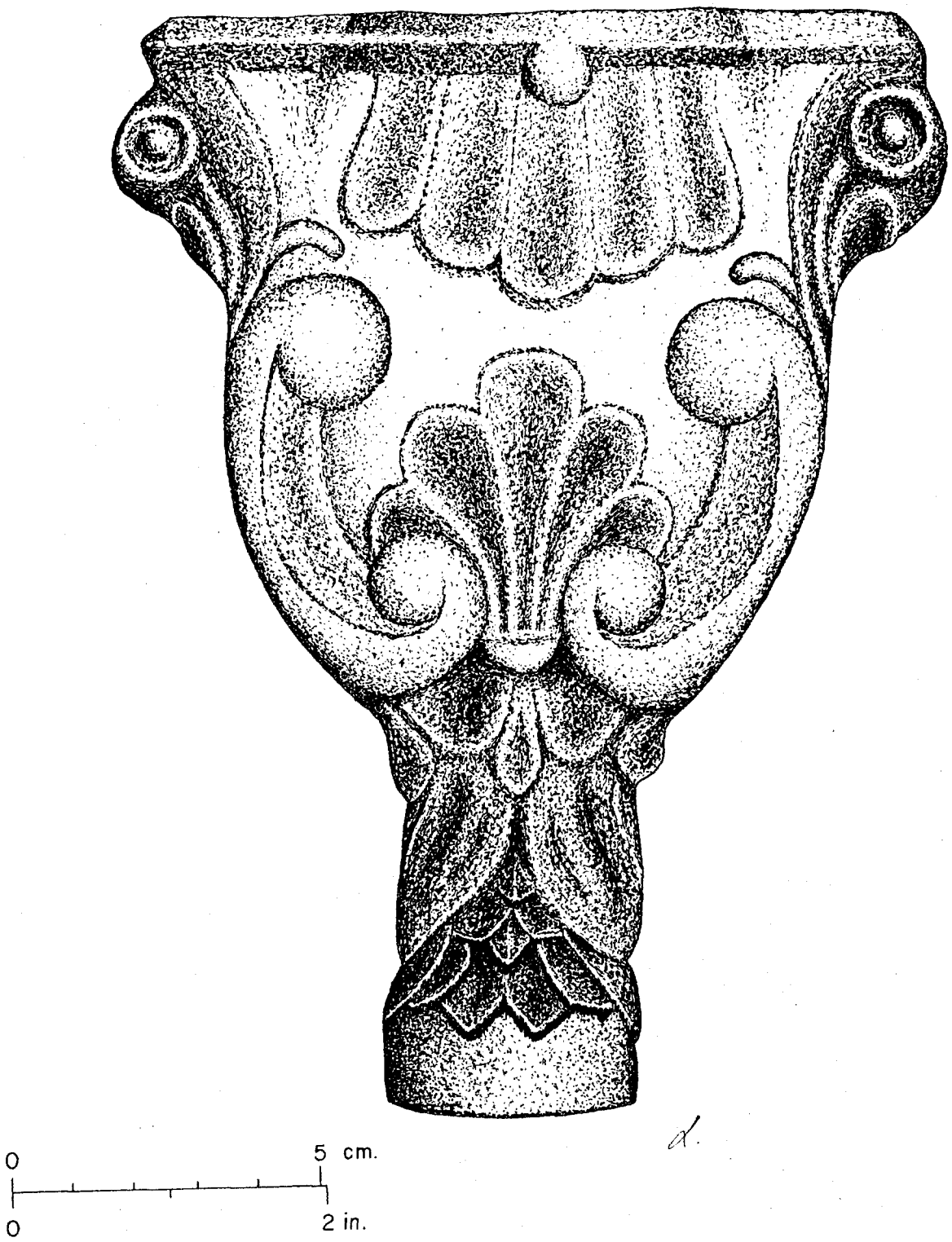


Fig. 89 -- Stove leg (FOVA 34439) from the Blacksmith Shop area.

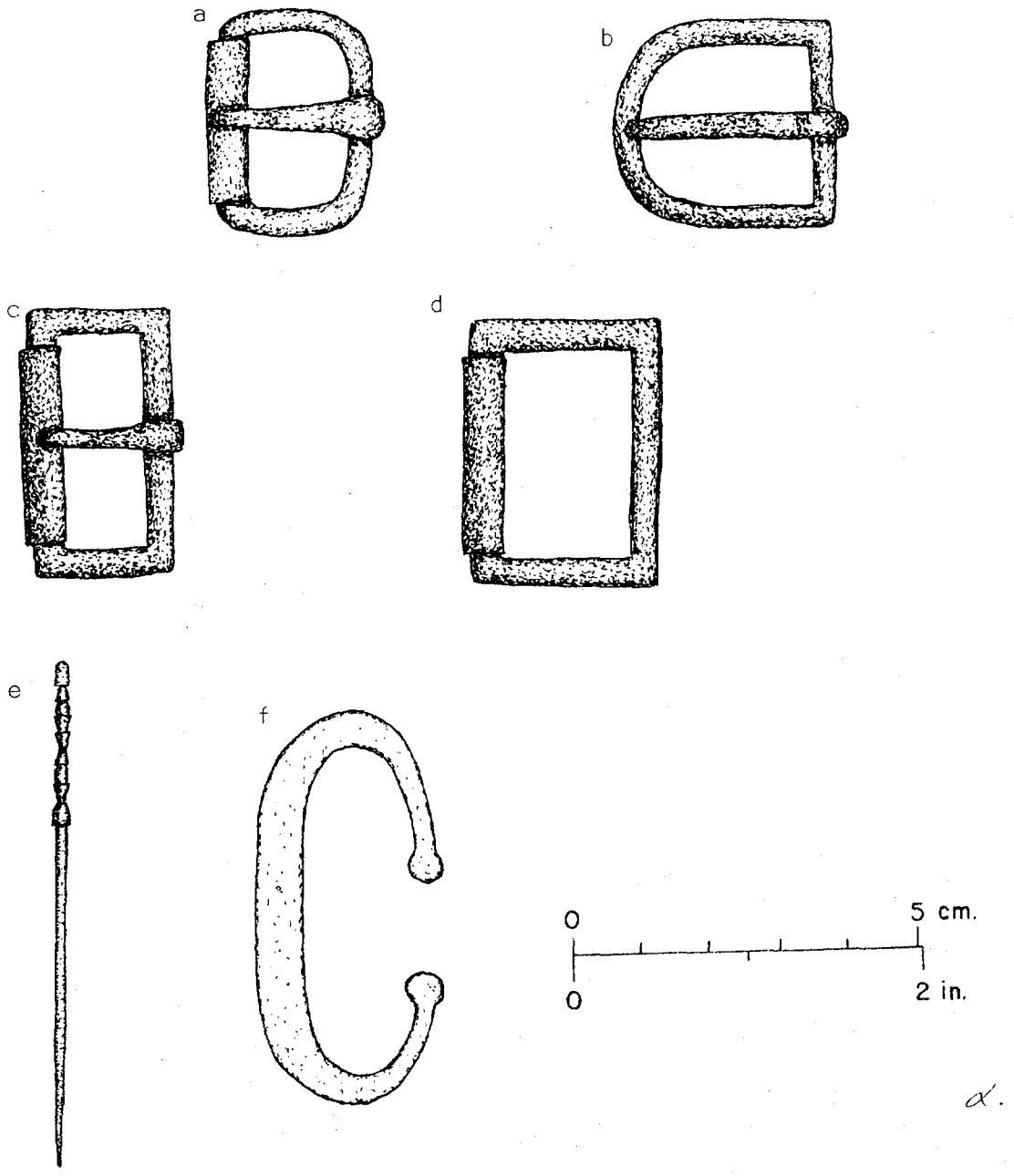


Fig. 90 -- Buckles, brass scratch-all (for leather) and firesteel from the Blacksmith Shop area: a). buckle (FOVA 34708): b). buckle (FOVA 34623); c). buckle (FOVA 35020); d). buckle (FOVA 35356); e). brass scratch-all (FOVA 35887) and f). firesteel (FOVA 35775).

Metal Weaponry Items

Of the 57 items recovered (Table 12), those new or unique items not previously reported have been illustrated in Figs. 91.

Cartridges

.30 caliber Springfield

Among the .30-06 Springfield cartridges recovered, the following headstamps were observed:

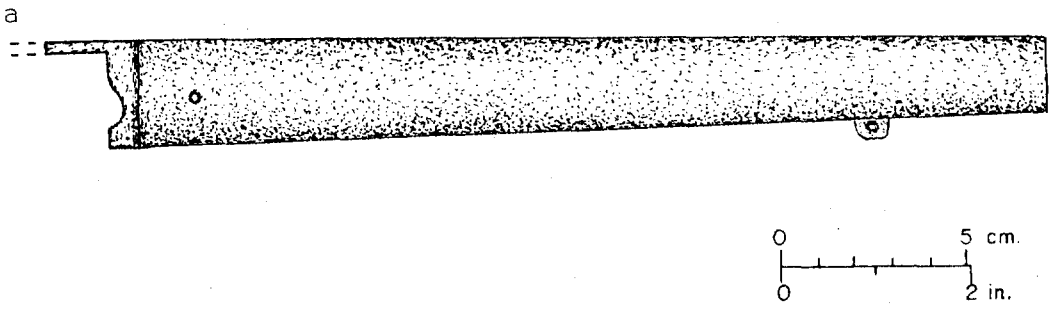
"F A	10	04"	(N=1)
"F A	1	05"	(N=1)
"F A	2	05"	(N=2)
"F A	3	05"	(N=1)
"F A	4	05"	(N=1)
"F A	5	05"	(N=2)
"F A	6	05"	(N=2)
"F A	7	05"	(N=1)
"F A	11	05"	(N=1)
"F A	12	05"	(N=1)
"F A	2	06"	(N=1)
"UMC	2	06"	(N=1)

Construction Material

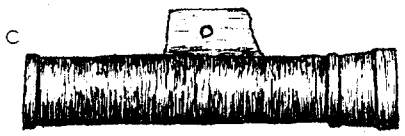
Of the 11,260 fragments of construction material recovered, the 2 most common items collected were bricks (63.2%) and mortar (35.2%) (Table 12).

Bricks

Of the 7,120 fragments of brick recovered (Table 27), 29.5% were imported British firebrick (Variety #1001, illustrated in Hoffman & Ross 1973b: Figs. 39a-b) and 67.7% were local Willamette Valley construction brick (Variety #1004, illustrated in Hoffman and Ross 1973b: Figs. 39h-k). These bricks were probably used in the construction of the Shop forge(s), with the firebrick used for the hearth and firepot while the construction brick was used for the base and chimney.







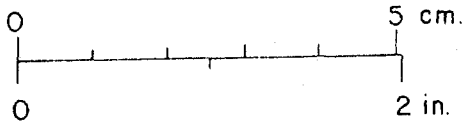


Fig. 91 -- Weaponry items from the Blacksmith Shop area: a). pistol barrel (FOVA 34179); b). 2-gauge musket gunworm (FOVA 35023) and c). musket thimble (FOVA 35358).

Table 27 -- Identification of brick varieties on the basis of comparative composition for the Blacksmith Shop area.

Attributes	Imported			Local				Unknown		
	1001	1002	1014	1003	1004	1005	1008	1007	1011	Unid.
Texture										
Clay				×	×	×	×			
Silt	×	×	×	×	×	×				
Sand	×	×	×						×	
Gravel								×		
Inclusions										
Gravel	×		×	×		×	×			
Charcoal	×									
Micro-silica Grains		×							×	
Clay Accretions					×					
Organic Matter				×						
Porosity										
Porous		×	×	×	×	×	×		×	
Non-porous	×							×		
TOTAL	2098	5	68	5	4819	44	1	74	3	3

Only 65 brick fragments were recovered for which one or more dimensions could be measured. Imported bricks (Variety #1001) had a thickness which measured 6.4-7.2 cm. (2½-2 7/8 in.) and a width 10.2-11.3 cm. (4-4½ in.); while local bricks (Variety #1004) had a thickness 4.9-5.6 cm. (1 7/8-2 1/4 in.) and a width 9.3-9.9 cm. (3 5/8-3 7/8 in.). No complete bricks were recovered, and it is hypothesized that when the forges were dismantled, the complete bricks were removed for use elsewhere. Reuse of bricks by the HBC has been noted elsewhere within the Fort (Hoffman & Ross 1973a:49), but because of the relatively late date of this shop, it might be presumed that either the USA or local residents salvaged the bricks for their own use.

In previous reports (Hussey 1972:48-49; Hoffman & Ross 1972:58-65, 1973a:47-49; 1973b:133-135, 163-164), it has been demonstrated that local Willamette Valley bricks were first imported to the Fort in 1844. If this date is valid, then the presence of the local brick in this Shop must indicate forge construction or repair after 1844.

Stone Items

The unique and new stone items recovered included a black argillite pipe fragment (Fig. 87l), a jade(?) jewelry setting (Fig. 87f) and a perforated disc which has been ground as though it had been utilized as a washer (Fig. 87k).

Bone Items

The unique and new bone items recovered include 3 four-hole buttons (Figs. 87g-i) and a perforated disc (Fig. 87j).

Shell Items

One shell button with a brass shank was recovered, and has been illustrated in Fig. 87l.

INDIAN TRADE STORE PRIVY/TRASH PIT (F523)

A total of 12,168 material cultural items were recovered from F523, including 10,319 artifact fragments and 1,849 non-artifact fragments (Tables 28-29). Because of its sealed stratified deposits the major categories of artifacts have been tallied by their strata in Table 30.

Ceramic Household and Container Fragments

There were 925 ceramic household and container fragments recovered, and a number of partially complete vessels were reconstructed including one mojolica container, one 1-gallon stoneware "crock" and one "Day & Martin" blacking bottle. Following previous reports, ceramics were divided in 5 major categories and further subdivided into a variety of subcategories (Table 28). A discussion of each descriptive category is presented below.

Common Pottery

The 12 fragments of common pottery recovered were all lustreware, including one jug spout. Two fragments with a red on blue transfer printed pattern were observed, but the design could not be discerned.

Mojolica

Forty-three fragments of a blue banded, greenish-blue tin glazed container were recovered (Fig. 92), and its outside diameter was ca. $5\frac{1}{2}$ inches. The container was only partially reconstructed, and its height could not be determined. Both the inside and outside were glazed, but just inside the rim was a thin unglazed strip. No manufacturing marks were observed, and the function of the container remains unknown.

Earthenware

Earthenware fragments, which totaled 600, were classified into descriptive subcategories based upon fabric color, glaze color and method of decoration (Table 28).

Table 28 -- Quantitative distribution of artifacts by descriptive category from F523.

Descriptive Category	Sub-total 3	Sub-total 2	Sub-total 1	Total
CERAMIC HOUSEHOLD & CONTAINER FRAGMENTS				925
Common Pottery Fragments			12	
Lustreware Household		12		
Mojolica Fragments			43	
Blue Banded Household		43		
Earthenware Fragments			600	
Clear Glazed White Fabric		598		
Undecorated Household	246			
Hand Painted Household	1			
Transfer Printed Household	349			
Undecorated Container	2			
Yellow Glazed White Fabric		2		
Hand Painted	2			
Stoneware Fragments			267	
Greenish-gray Fabric		2		
"Canton" Ware	2			
Brownish-gray Fabric		261		
"Read's Ale" Bottles	15			
Unidentified Saltglazed Containers	246			
Gray Fabric		4		
Blacking Bottles	4			
Vitreous China Fragments			3	
Undecorated Household		1		
"Chinese Export" Household		2		
CERAMIC OBJECTS				104
Earthenware Items			103	
White Clay Tobacco Pipe Fragments		103		
Porcelain Item			1	
"Prosser" Button		1		
GLASS WARES & CONTAINER FRAGMENTS				860
Bottle Fragments			786	
Tumbler Fragments			10	
Stemmed Glassware Fragments			2	
Bottle Stopper			1	
Pressed Glassware Fragments			2	
Unidentified Glassware Fragments			4	
Unidentified Curved Glass Fragments			55	

Table 28 -- cont'd

Descriptive Category	Sub-total 3	Sub-total 2	Sub-total 1	Total
GLASS OBJECTS				1965
Beads			63	
Tube Beads		32		
Wire Wound Beads		30		
Mandrel Pressed Bead		1		
Button			1	
Window Glass Fragments			1894	
Broken Fragments		313		
Cut Fragments		1581		
Mirror Glass Fragments			7	
METAL BUILDING HARDWARE				26
Hinging Devices			10	
Strap Hinges		6		
Butt Hinges		2		
Strap Pintle		1		
Non-ferrous Hinge		1		
Latching Devices			3	
Door Latch Bar		1		
Door Thumb Latch		1		
Shutter Nail		1		
Locking Devices			13	
Stock Lock Parts		8		
Padlock Parts		5		
METAL FASTENERS				873
Non-threaded Fasteners			789	
Nails		720		
Wrought Rod Nails	342			
Machine Cut Sheet Nails	310			
Machine Cut Wire Nails	7			
Closed Eye Nails	2			
Unidentified Rod or Sheet Nails	61			
Wrought Rod Staples		4		
Bateau Bolt		1		
Roves		4		
Rivets		5		
Piton w/Ring		1		
Cotter Bolt Parts		11		
Cotter Bolts	2			
Cotter Bolt w/Key	1			
Cotter Keys	2			
Cotter Pins	6			
Unidentified Non-threaded Fasteners		43		

Table 28 -- cont'd

Descriptive Category	Sub-total 3	Sub-total 2	Sub-total 1	Total
METAL FASTENERS(cont.)				
Threaded Fasteners			84	
Screws		4		
Bolt Parts		66		
Bolts	40			
Eye Bolt	1			
Bolts w/Nuts	8			
Bolts w/Nuts & Washers	3			
Nuts	12			
Washer	1			
Spring Washer	1			
Unidentified Threaded Fasteners		14		
METAL TOOLS				109
Blacksmith Tools			43	
Tongs		21		
Flatter		1		
Offset Flatter		1		
Hotset Hardy		1		
Punches		3		
Files		10		
Threading Tap		1		
Hammer Polls		2		
8 in. Iron Ruler		1		
Unidentified Sledge		1		
Axe Pattern or Mandrel		1		
Wedges			3	
Saw Parts			7	
Wood Plane Blades			3	
Drawknife			1	
Auger Bits			3	
Caulking Tool (?)			1	
Plow Blades			3	
Scythe Parts			7	
Sickle Blade			1	
Pitchfork			1	
Shovel Parts			3	
Pike Tip			1	
Harrow Teeth			32	

Table 28 -- cont'd

Descriptive Category	Sub-total 2	Sub-total 1	Total
METAL TRAP PARTS			242
Finished Parts		213	
Assembled Trap Parts	5		
Bases	2		
Crosses	13		
Jaw Posts	8		
Jaws	2		
Springs	157		
Pan Post	1		
Pans	2		
Ketches	3		
Swivel Eyes	12		
Swivel O-Ring	1		
$\frac{1}{4}$-twist Chain Links	7		
Preforms		28	
Bases	4		
Jaw Posts	3		
Jaws	5		
Springs	15		
Pan	1		
Waste Product		1	
Jaw Cutout	1		
AXE PARTS			22
Finished Products		10	
Bodies	7		
Polls	2		
Wedge	1		
Preforms		12	
Bodies	9		
Polls	3		
MISCELLANEOUS METAL HARDWARE			674
Horseshoes		4	
Singletree Hardware		11	
Single Clevis		1	
Adjustable Clevis		11	
Flat Chains		5	
Flat Chain Links		88	
Splayed Flat Chain Link		1	
3/4-twist Chain Link		1	
Hooks		28	
O-Rings		7	
Handles		2	
Crank Handle		1	
Belaying Pin		1	
Splicing Eye		1	

Table 23 -- cont'd

Descriptive Category	Sub-total 2	Sub-total 1	Total
MISCELLANEOUS METAL HARDWARE (cont.)			
Closed Eyes		16	
Hook w/Chain & Closed Eye Nail		1	
Swivels		3	
Barbed Wedges		5	
Bundling Straps		72	
Barrel Bands		33	
Iron Bands		338	
Copper Plated Iron Band		1	
Straps w/Nails		5	
Copper Flashing		2	
Wire		36	
MISCELLANEOUS METAL PREFORMS			60
Hinge Preforms		7	
Key Preforms		1	
Adjustable Clevis Preform		1	
Singletree Iron Preform		1	
Socketed Tool Handle Preform		1	
Barbed Wedge Template Preforms		4	
Copper Lug Cutouts		3	
Unidentified Preforms		42	
METAL PERSONAL & HOUSEHOLD ITEMS			67
Buttons		3	
Button Shank		1	
Buckle		1	
Brass Shoe Taps		3	
Belt Shackle		1	
Finger Rings		3	
Needle		1	
Fire Steel		1	
Knife Blade		1	
Containers		44	
Copper Kettle Rim Fragment	1		
Copper Kettle Lug	1		
Unidentified Container Fragments	42		
Stove Parts		5	
Drawer Handles		2	
Chest Handle		1	

Table 28 -- cont'd

Descriptive Category	Sub-total 2	Sub-total 1	Total
METAL WEAPONRY ITEMS			16
Lead Shot		3	
Flintlock Cock		1	
Musket Band w/Swivel		1	
Musket Breech Plugs		5	
Musket Mainspring		1	
Trigger Guard		1	
Percussion Cap		1	
Cannon Trunnion Plates		2	
Sword Handle		1	
MISCELLANEOUS METAL			3701
Cut Stock		1029	
Square-Rectangular Iron	355		
Round Iron	179		
Iron Sheeting	482		
Lead Bars	2		
Zinc Sheeting	11		
Unidentified Objects		292	
Iron	286		
Non-ferrous	5		
Iron Sheet w/Brass Patch	1		
Unidentified Fragments		2380	
Iron	1017		
Non-ferrous	104		
Iron Sheeting	1259		
CONSTRUCTION MATERIAL			581
Bricks		569	
Imported	241		
Local	325		
Unknown	3		
Mortar		12	
MISCELLANEOUS ITEMS			94
Gunflint		1	
Unidentified Plastic Fragment		1	
Woven Vegetable Fiber		4	
Wood Chips w/Paint		8	
Sealing Wax Fragments		12	
Unidentified Material		68	
GRAND TOTAL			10319

Table 29 -- Quantitative Distribution of non-artifact by descriptive category from F523.

Descriptive Category	Sub-total	Total
Forge Debris		840
Coal	741	
Coke	62	
Clinkers	34	
Slag	3	
Minerals		7
Graphite Fragment	1	
Asphaltum	2	
Limestone Fragments	2	
Soil Sample	1	
Melted Sand	1	
Bone		660
Charred Wood		87
Coral		11
Shell		23
Tobacco		1
Wood Fragments		63
Wood w/Tar Fragments		157
GRAND TOTAL		1849

Table 30 -- Stratigraphic distribution of artifacts by descriptive category from F523.

Descriptive Category	Stratum 1	2	3e	3f	3g	3i
CERAMIC HOUSEHOLD & CONTAINER FRAGMENTS						
Lustreware	2	7	2			1
Blue Banded Mojolica	4	13	25	1		
Undecorated Earthenware	40	107	78	14	6	
Transfer Printed Earthenware	64	127	129	6	11	2
Undecorated Earthenware Container			1	1		
"Read's Ale" Bottles	4	5	6			
Saltglazed Containers	26	71	138	2	2	1
Blacking Bottles		1	1	1		
CERAMIC OBJECTS						
Clay Pipes	13	25	42	13	6	2
GLASS WARES & CONTAINERS						
Bottles	88	183	382	43	71	2
Tumblers		1	5	2	2	
Stemmed Glassware			1			
Pressed Glassware		2				
GLASS OBJECTS						
Beads	5	12	12	6	17	8
Cut Window Glass	8	11	77	98	1378	8
Mirror Glass			1	2	2	2
METAL BUILDING HARDWARE						
Hinges			8	4		
Latching Devices		1	1	1		
Locking Devices		1	11			
METAL FASTENERS						
Wrought Rod Nails	17	35	226	33	10	3
Machine Cut Sheet Nails	18	44	205	28	4	1
Machine Cut Wire Nails	2	1	4			
Wrought Rod Staples			4			
Bateau Bolt		1				
Roves		1	1	1		
Rivets			3	1		
Cotter Bolt Parts	2	2	7			
Screws			4			
Bolt Parts	4	9	42	8	1	

Table 30 -- Continued

Descriptive Category	Stratum 1	2	3e	3f	3g	3i
METAL TOOLS						
Blacksmith Tools		4	35	3	1	
Wedges		1	1		1	
Saw Parts			7			
Wood Plane Blades			3			
Drawknife			1			
Auger Bits			3			
Caulking Tool (?)				1		
Plow Blades			1	1	1	
Scythe Parts			5	2		
Sickle Blade			1			
Pitchfork			1			
Shovels			2		1	
Pike Tip			1			
Harrow Teeth			31		1	
METAL TRAP PARTS						
Assembled Trap Parts			4		1	
Finished Bases		1	1			
Finished Crosses				1		
Finished Jaw Posts	1		4	3		
Finished Jaws		1	2			
Finished Springs	2	9	62	13	65	5
Finished Pan Post			1			
Finished Pans		1		1		
Finished Ketches		2	1			
Finished Swivel Eyes	1	3	8			
Finished Swivel O-ring			1			
¼-twist Chain Links	2	1	4			
Preform Bases			13	1	1	1
Preform Jaw Posts			3			
Preform Jaws		1	5			
Preform Springs		3	4	2	5	1
Preform Pan			1			
Jaw Cutout			1			
AXE PARTS						
Finished Bodies		1	4	2		
Finished Polls			1	1		
Finished Wedge		1				
Preform Bodies	1		7		1	
Preform Polls			3			

Table 30 -- Continued

Descriptive Category	Stratum 1	2	3e	3f	3g	3i
MISCELLANEOUS METAL HARDWARE						
Horseshoes			3	1		
Singletree Hardware		2	5		2	
Single Clevis				1		
Adjustable Clevis			8	3		
Flat Chains & Links		15	58	18	1	
3/4-twist Chain Link			1			
Hooks		1	26	1		
O-rings			7			
Handles		1	1			
Belaying Pin			1			
Splicing Eye			1			
Closed Eyes		5	8	2	1	
Swivels			2	1		
Barbed Wedges	1		4		1	
Bundling Straps	5	12	50	4	1	
Barrel Bands		4	23	6		
Iron Bands	13	26	238	42	12	1
MISCELLANEOUS METAL PREFORMS						
Hinge Preforms			3	2		
Key Preform				1		
Adjustable Clevis Preform			1			
Singletree Iron Preform			1			
Socketed Tool Handle Preform			1			
Barbed Wedge Template Preforms		1	2			
Copper Lug Cutouts					3	
METAL PERSONAL & HOUSEHOLD ITEMS						
Buttons				1	3	
Buckle				1		
Brass Shoe Taps		1	2			
Belt Shackle			1			
Rings			3			
Needle				1		
Fire Steel			1			
Knife		1				
Kettle Fragments		1	1			
Container Fragments			42			
Stone Parts		2	3			
Drawer Handles				1		1
Chest Handle						1

Table 30 -- Continued

Descriptive Categories	Stratum 1	2	3e	3f	3g	3i
METAL WEAPONRY ITEMS						
Lead Shot		2			1	
Flintlock Cock				1		
Musket Band			1			
Musket Breech Plugs	1		4			
Musket Mainspring	1					
Trigger Guard					1	
Percussion Cap			1			
Trunnion Plates			1		1	
Sword Handle				1		
MISCELLANEOUS METAL						
Cut Stock	22	98	771	73	38	2
CONSTRUCTION MATERIAL						
Imported Bricks	27	23	89	59	32	3
Local Bricks	25	64	190	26	12	4
MISCELLANEOUS ITEMS						
Gunflint				1		
Sealing Wax			5	5	2	

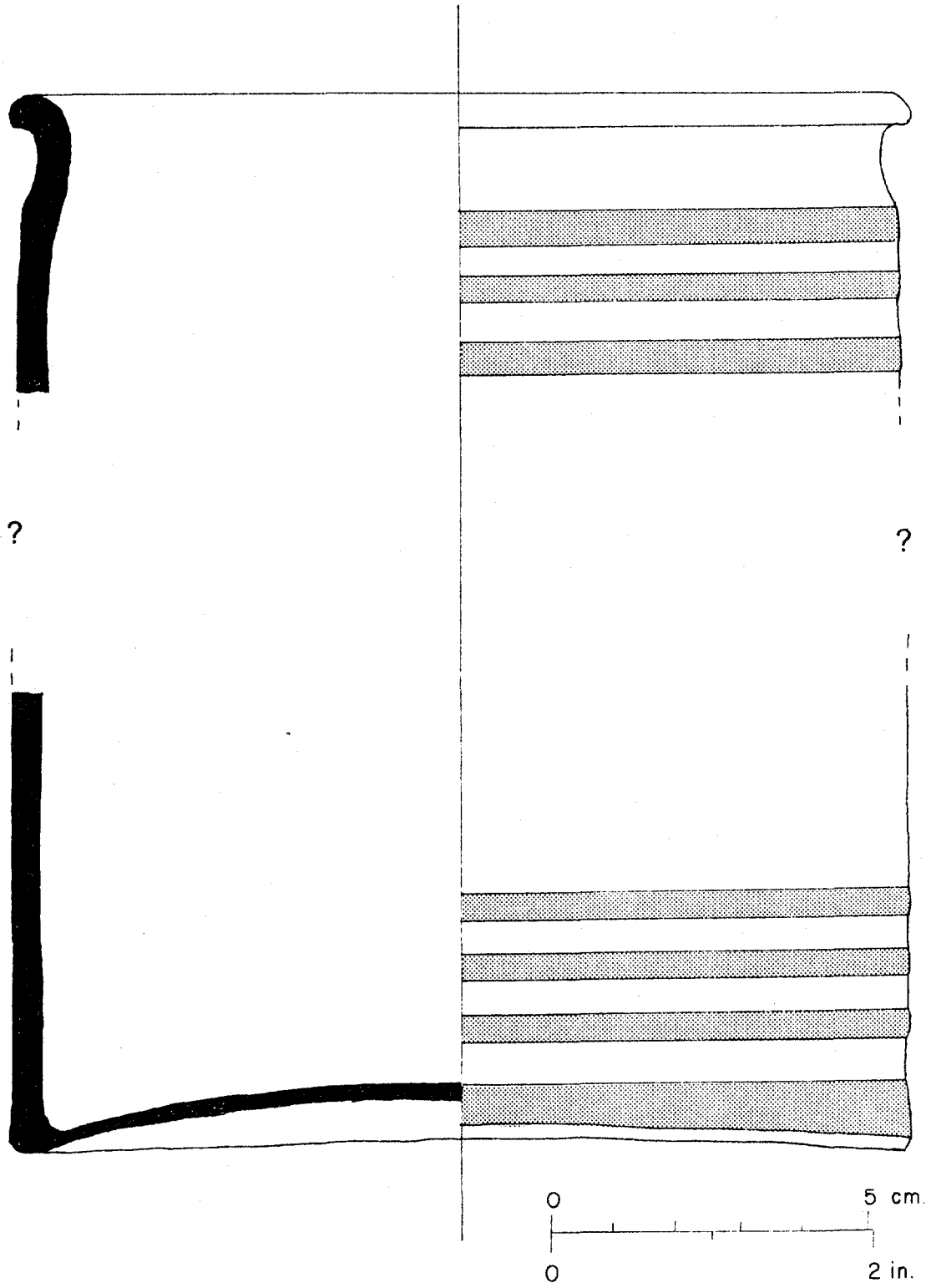


Fig. 92 -- Reconstructed "Mojolica" crock from F523 (Various FOVA numbers).

Clear Glazed White Fabric Fragments

White earthenware fragments totaled 598 and were classified according to function (i.e., household articles or product containers) and method of decoration (Table 28).

Undecorated Household Fragments. No complete or partially complete articles were reconstructed from the 246 fragments recovered, and no manufacturing marks were observed.

Hand Painted Household Fragment. Only one fragment was observed, and it was too small for identification and description.

Transfer Printed Household Fragments. Of the 349 fragments recovered, no complete or partially complete wareswere reconstructed. Only 2 patterns were observed with identifiable manufacturing marks: "Pagoda" (FOVA Variety #7024) with a CG-TP-3 mark; and "Fruit and Flowers" (FOVA Variety #7019) with C-TP-3 w/C-IM-1 marks.

Undecorated Container Fragments. The 2 fragments recovered were from an undecorated container lid, but no manufacturing marks were observed.

Yellow Glazed White Fabric Fragments

Two hand painted fragments were recovered, but they were too small to be identified or described.

Stoneware

Stoneware fragments, which totaled 268, were classified into descriptive subcategories based upon fabric color, function and method of decoration (Table 28).

Greenish-Gray Fabric Fragments

The 2 fragments recovered were blue hand painted "Canton ware", but no complete or partially complete wares were reconstructed.

Brownish-Gray Fabric Fragments

"Read's Ale" Bottle Fragments. Of the 15 fragments recovered, no complete or partially complete bottles could be reconstructed; and no fragments retained portions of the impressed label.

Unidentified Saltglazed Container Fragments. From the 246 fragments recovered, one partially complete "crock" was reconstructed (Fig. 93). Only the base and body could be reconstructed, but from comparisons with previously observed "crocks", it was similar to the styles found in the Fur Store area (Hoffman & Ross 1974b: Figs. 12 and 13a-b). Based upon a reconstructed volume of ca. 346 cu. ins., this "crock" held 1½ gallons (within the Winchester Wine Gallon or American Liquid systems). As such, it could have been either a British or American "crock".

Gray Fabric Fragments

All 4 fragments were from blacking bottles, and one fragment still retained approximately half of its original multi-colored label (Fig. 94). The label consisted of black and red pigments applied directly to the outside surface of the bottle. This pigment must have been applied with a transfer print, and after removal of the inked paper, the inks were air-dried and not fired. Maximum liquid capacity of the bottle was ca. 420 ml. which equals 15 fluid ounces, 3/8 quart or 3/4 pint in the Imperial system. This quantity seems to be an odd volume, but when figured into other British or American systems it does not come close to matching a "normal" volume. From careful examination of the label when first unwrapped in the Laboratory, the following words could be observed in the 12 lines of text in the center section of the label:

...unpleasant	Line 10
...will retain the	Line 11
...in any climate	Line 12

Undoubtedly this represents the manufacturers method of extolling the virtues of the product.

Vitreous China

The 3 fragments recovered consisted of one undecorated and 2 blue hand painted "Chinese export" fragments. No complete or partially complete wares were recovered, and no manufacturing marks were observed.

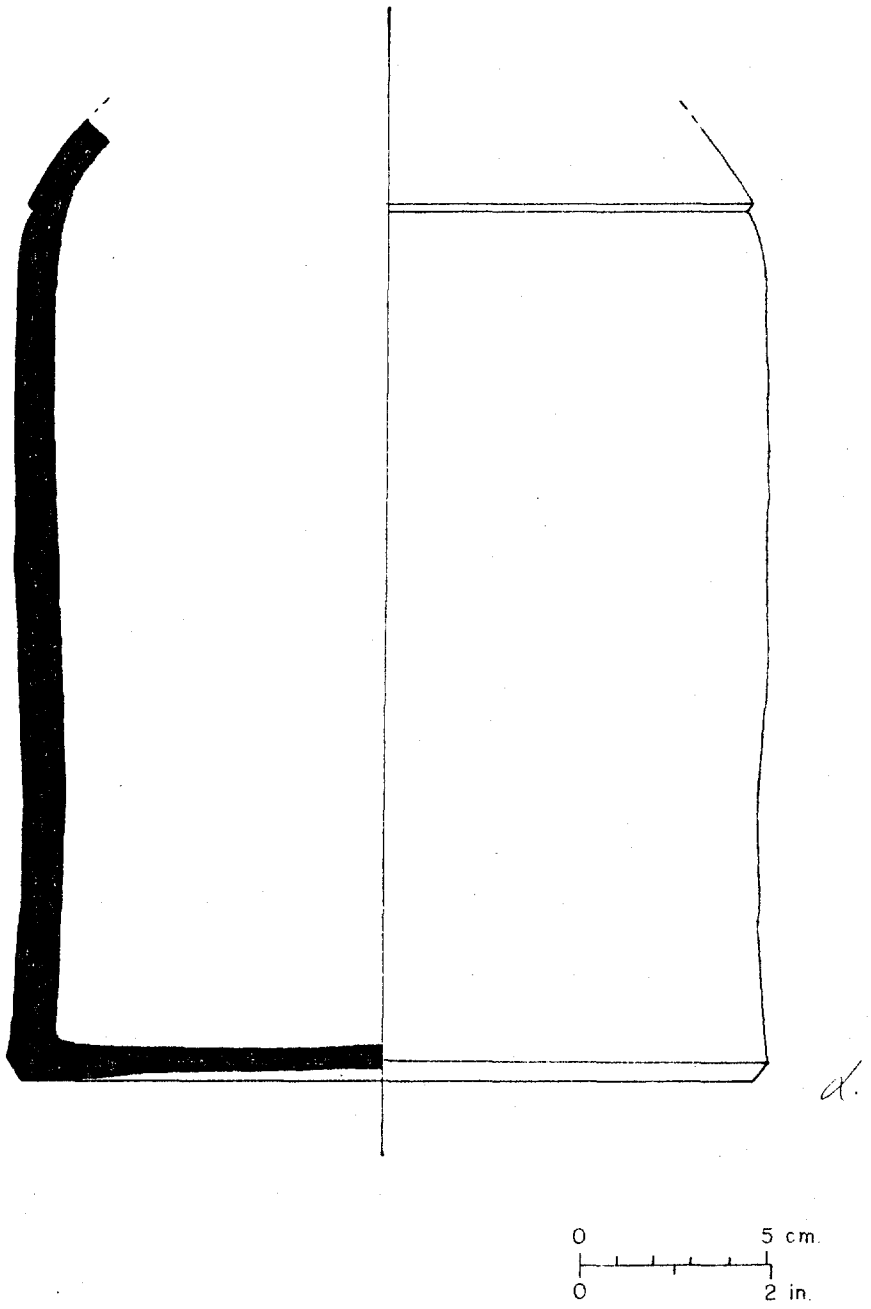


Fig. 93 -- Stoneware "crock" from F523 (Various FOVA numbers).

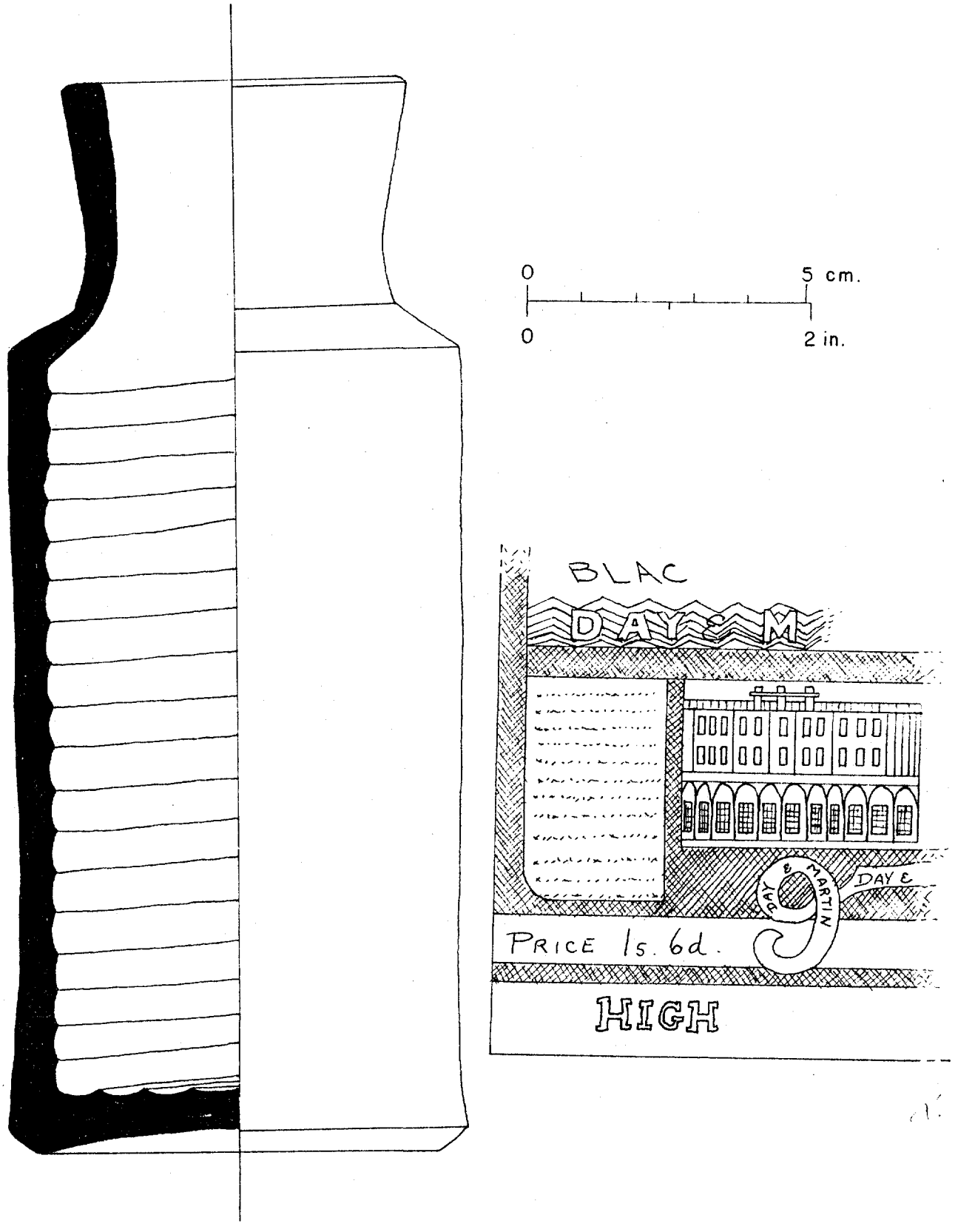


Fig. 94 -- Reconstructed "Day & Martin" blacking bottle and label (FOVA 27590) from F523.

Ceramic Objects

Earthenware

White Clay Tobacco Pipe Fragments

Of the 103 pipe fragments recovered, no pipes could be reconstructed.

Bowls. Two styles of "FORD" pipes were observed (Figs. 95a-b). In addition, one fragment with a "head" bowl was observed, but it was too small for identification and description.

Stems. One floral decorated stem was observed. It had a vine with flowers on each side of the stem, and probably represents a variety of "FORD" pipes.

Porcelain

"Prosser" Button

One plain white, 4-hole "Prosser" button was recovered (Fig. 95c).

Glass Wares and Containers

The 786 bottle fragments recovered revealed no distinct or separate assemblages within the privy pit. The fragments as well as identified bases and rims were distributed throughout the privy. Level 3 revealed a quantitative concentration of fragments, and the one complete apothecary bottle recovered was reconstructed with fragments from levels 3 and 5. Additional rims and bases identified as belonging to medicine bottles were recovered from levels 3,4 and 5. Liquor bottles were recovered from levels 1, 2, 3 and 5. Food bottles were recovered from levels 2, 3, and 4.

Of the 786 bottle fragments recovered, one complete bottle was reconstructed and identified as an apothecary bottle. Medicine, bitters, food and liquor bottles were also identified from base and rim fragments. There were an equal number of medicine and liquor bottles, specifically rum and wine. The most numerous bottle remains were represented by base fragments of food bottles. There was a minimum number of 15 bases (Type 31) which have been identified as belonging to bottle Type 10-- a food or condiment bottle (Ross & Carley 1975).

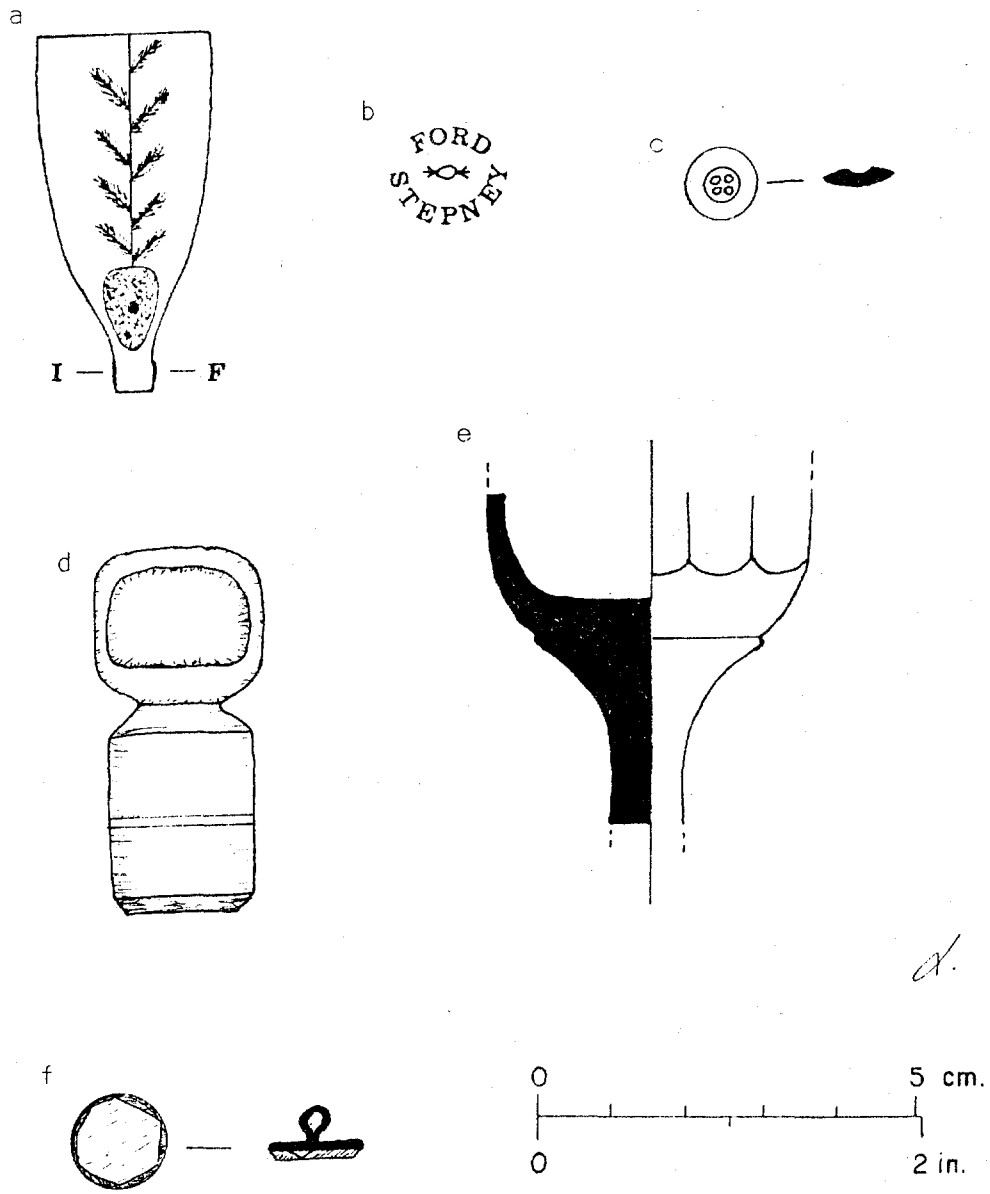


Fig. 95 -- Clay pipes, buttons and glassware from F523: a-b). FORD pipe fragments; c). "Prosser" button (FOVA 27592); d). glass stopper (FOVA 27740); e). stemmed glassware Variety #1014 (FOVA 27135); and f). iron backed glass button (FOVA 28245).

BT31 Apothecary Bottle	(N=1)
FOVA Field Catalog nos:	FOVA 28169, 28304, 28317 (N=7)
Provenience:	Levels 3 and 5
Illustration:	Fig. 96a
Dimensions:	1 7/16 in. (D) x 3¼ (H)
Capacity:	80 ml (ca. 3 oz--Imperial)
Color:	Colorless
Manufacturing Technique:	Freeformed with glass pontil mark on base.
Rim Type:	#49
Base Type:	#72
Comments:	The small square bottle revealed no seam lines and therefore was probably freeformed. The square shape would have been created by slapping the cylindrical freeformed bottle with a wooden paddle called a battledore (Munsey 1970:31). Broken glass in the center of the slightly concave base (Type 72) indicated contact with a glass pontil during manufacture. An unusual characteristic of the base was the ground surface on 3 sides and 4 corners. The ground surfaces were frosty in appearance, not having been polished. The fact that the only ground or roughened surfaces on the base were those points at which the base would have come into contact with another surface may be indicative of roughing to reduce the tendency of the basal surface to slip and slide. The bottle may have been part of a doctor's carrying bag, which would have had compact compartments for storing bottles while moving from place to place. If part of such a kit, the ground surface may have resulted from an attempt to fit the bottle perfectly within an exact area, perhaps grinding was necessary to level the bottle.

The rim (Type 49) was formed from the neck glass and extended straight out from the neck. The rim was 8-sided and formed by horizontal grinding and polishing of the outside edges. Ground surfaces were also evident inside the neck area and on top of the rim. The grinding on top of the rim had been polished and formed a circle, but did not cover the entire diameter of the rim. Four grooves also existed on top of the rim (Fig. 96a). Three of these grooves were fairly deep and rough appearing as though they had been cut at some time after manufacture.

The size, color and closure device of the bottle excluded the possibility of its having been a snuff jar. According to Munsey, a snuff jar would have been at least 4 inches in height dark green or amber in color and would have been sealed with a closure sealed over with wax to insure freshness of the snuff (Munsey 1970:77).

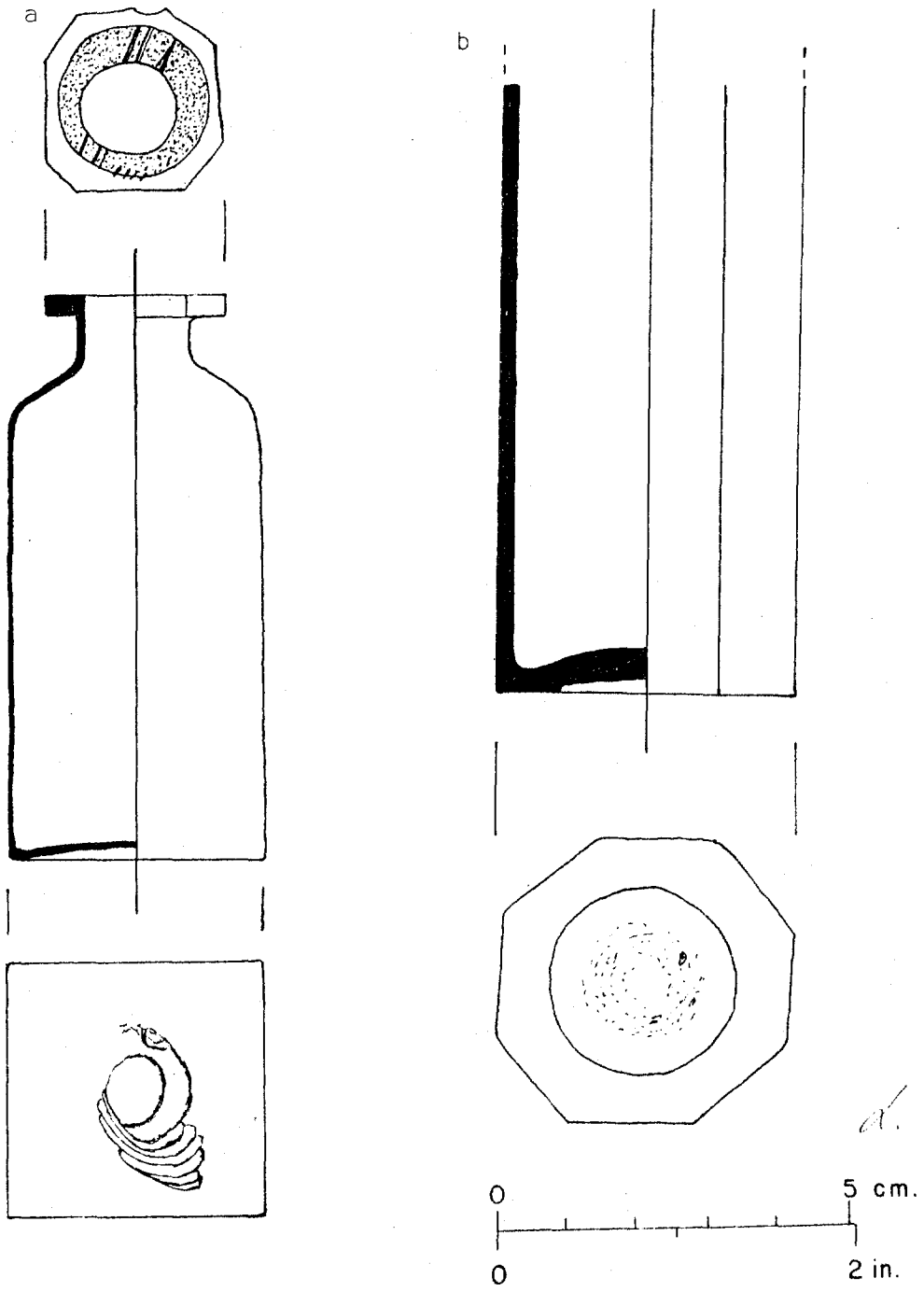


Fig. 96 -- Bottles from F523: a). bottle Type 31 (Various FOVA numbers) and b). bottle base Type 73 (FOVA 28024).

The size, color and closure device do suggest its use as an apothecary bottle. Munsey points out that reusable drug bottles were made with matching glass stoppers which were ground to insure near perfect closure. The inside of the bottle was often ground also to insure good closure (Munsey 1970:174). A bottle such as this one would probably have been reused a number of times and was most likely used for the storage and dispensing of medicine by a professional doctor or druggist.

Marked Bottle Fragments

Two marked olive green fragments were recovered with raised lettering which read: "...OLFE'S,...AM". These fragments came from an "Udolpho Wolfe's Shiedam Aromatic Schnapps" bitters bottle.

Bottle Rims

Eleven rims were reconstructed and classified into 7 different types on the basis of their manufacturing attributes and form (Table 31). No new rim types were identified. One rim (Type 15) had a cork wire around the neck below the lower lip.

Bottle Bases

Twenty-four bases were reconstructed and classified into 6 different types on the basis of their manufacturing attributes and form (Table 32). Two new base types were identified and have been graphically illustrated (Figs. 96a-b).

Bottle Stopper

One large colorless stopper was recovered, and measured ca. 2 in. in length (Fig. 95d).

Tumblers

Of the 10 tumbler fragments recovered, no complete or partially complete tumblers were reconstructed. However, one complete tumbler base was recovered. This base, unlike most tumbler bases, showed no signs of grinding or polishing. The roughened surface of the base contained small chips of glass suggesting contact with a sand pontil during manufacture. The absence of grinding and polishing on the base is suggestive of an inexpensive product. The tumbler was plain, revealing no evidence of faceting.

Table 31 -- Bottle Rim Types from F523 as defined by manufacturing attributes and form.

	Rim Type						
	3	6	15	26	34	39	49
Rim Manufacture							
Rim shaped from neck glass							
Non-overlapping	×						×
Overlapping (inside neck)				×			
Rim shaped from additional glass							
Outside application			×	×		×	
Wrapped		×	×			×	
Interior ground							×
Mouth ground							×
Rim Form							
Single Lipped							
Convex from mouth				×			
Extended from mouth	×						×
Straight below mouth		×					
Double Lipped							
Flared			B		B		
Triple Lipped							
Straight						L	
Flared						U&M	
Color							
Dark olive (Opaque)			×				
Olive green		×					
Bluish green	×						
Light green				×	×		
Colorless	×						×
Frequency	2	1	3	1	2	1	1

Table 32 -- Bottle Base Types from F523 as defined by manufacturing attributes and form.

	Base Type						
	1	30	31	35	61	72	73
Basal Shape							
Round	×	×	×	×			
Square						×	
12-sided					×		
Octagonal							×
Basal Cross section (Excluding Indent)							
Conical (push up)	×			×			
Concave		×			×	×	
Flat			×				×
Base ground						×	
Indent Shape							
Circular		×	×				×
Indent Cross section							
Concave		×	×				×
Central Nipple		×					
Pontil Type							
Blowpipe					×		
Sand	×						×
Glass				×		×	
Absent		×	×				
Color							
Dark olive (opaque)	×	×					
Bluish green					×		
Blue							×
Light green			×				
Colorless				×		×	
Frequency	3	1	15	1	2	1	1

Stemmed Glassware

Two stemmed glassware fragments were recovered and have been classified as FOVA Variety #1014. The freeblown work had approximately 12 horizontally ground facets decorating the bowl. The stem and bowl appeared to be manufactured from one piece of glass (Fig. 95e).

Pressed Glass

The 2 fragments recovered have been identified as the pressed glass pattern known as "Peacock Eye".

Glass Objects

Beads

Of the 63 beads recovered, there were 32 tube, 30 wire wound and one mandrel pressed bead (Table 28). Following the classification schemes used in previous reports (Hoffman & Ross 1974b; 1975), all beads were classified according to method of manufacture, stylistic variation, reflectance and color (Table 33).

Button

One flat, edge faceted, iron backed glass button was recovered (Fig. 95f), and was manufactured by leading a thin sheet of transparent very dark reddish-purple glass to an iron disc with a loop-shank. The glass had 7 facets ground around its edge.

Window Glass

Of the 1,894 window glass fragments recovered, 1,581 had scored edges representing remnants of cut panes. This deposit of cut fragments was unique to this privy pit, and similar deposits have not been observed elsewhere within Fort Vancouver. No measurements were obtained for glass thickness.

Mirror Glass

Only 7 fragments of mirror glass were recovered, and their thicknesses were not measured.

Table 33 -- Classification of glass beads from F523.

Bead Type, Subtype, Class, Reflection & Color (Variety#)	F5	F4	F3	F2	F1
TUBE BEADS					32
Cane Beads				4	
Single Faceted Multi-Layer Extruded Beads			4		
Opaque on Opaque		4			
Lt. Blue on Lt. Blue	4				
Hot Tumbled Beads				28	
Plain Single Layer Beads			19		
Translucent		16			
Green (#1016)	1				
Grayish-Blue (#1063)	15				
Opaque		3			
White (#1003)	3				
Plain Double Layer Beads			9		
Opaque on Opaque		9			
White on White (#1040)	9				
WIRE WOUND BEADS					30
Plain Single Layer Beads				30	
Spherical			27		
Transparent		2			
Greenish-Blue (#2005)	1				
Dk. Blue (#2033)	1				
Opaque to Translucent		24			
Blue (#2018)	24				
Opaque		1			
Blue (#2002)	1				
Ellipsoidal			2		
Translucent		1			
Greenish-Blue (#2039)	1				
Opaque		1			
White (#2009)	1				
Bi-Oblate			1		
Opaque to Translucent		1			
Greenish-Blue (#2047)	1				
MANDREL PRESSED BEADS					1
Faceted				1	
Spherical			1		
Opaque		1			
Bluish-Purple (#3004)	1				
GRAND TOTAL					63

Metal Building Hardware

A total of 28 items of building hardware were recovered including 12 hinging, 3 latching and 13 locking devices. In addition, 7 partially manufactured (preform) hinges and one key preform were recovered, indicating local manufacture of those items.

Hinging Devices

Three varieties of strap hingeswere recovered: 1). Three specimens of pintle-hung strap, with the receiver formed by recurving and laminating the stock, 2). one specimen of pintle-hung strap, with the receiver formed by recurving, but not laminating, the stock, and 3). two specimens of double interlocking, "T"-or "cross-garnet, hinge with the receiver formed by recurving and laminating the stock. The varieties are illustrated in Figs. 97a-c.

Two butt hinges representing two stylistic varieties were recovered: 1). a triple interlocking post with three countersunk anchor eyelets, 2). a single interlocking 45° camming post with three countersunk anchor eyelets manufactured by recurving and laminating the stock. The specimens are illustrated in Fig. 98a-b.

A single specimen hypothesized as a strap anchored pintle was recovered and is illustrated in Fig. 99 . The strap, forming the anchor of the post, was fastened to the side of a door or shutter of approximately 1" thickness. A similar specimen was reported and illustrated in FOVA Report #VIII (Hoffman & Ross 1974b: Fig. 78b). Seven preforms were recovered and are assumed to represent hinges manufactured at Fort Vancouver. They include one pintle-hung strap hinge, three butterfly hinges, a three holed butt hinge and two "T" or "crossgarnet" strap hinges. Four are illustrated in Figs. 100a-d.

Latching Devices

Two fragments of thumb latch parts were recovered consisting of a thumb latch (Fig. 101a) and a latch bar (Fig. 101b). A shutter nail manufactured from circular stock was also recovered.

Locking Devices

Four fragments representing at least 2 sizes of stock locks were recovered including 2 back plates with internal mechanisms and 2 bolts. In addition, 3 backplates with mechanisms for rectangular case--or cassette--type locks were recovered (Figs. 102a-b and 103a).

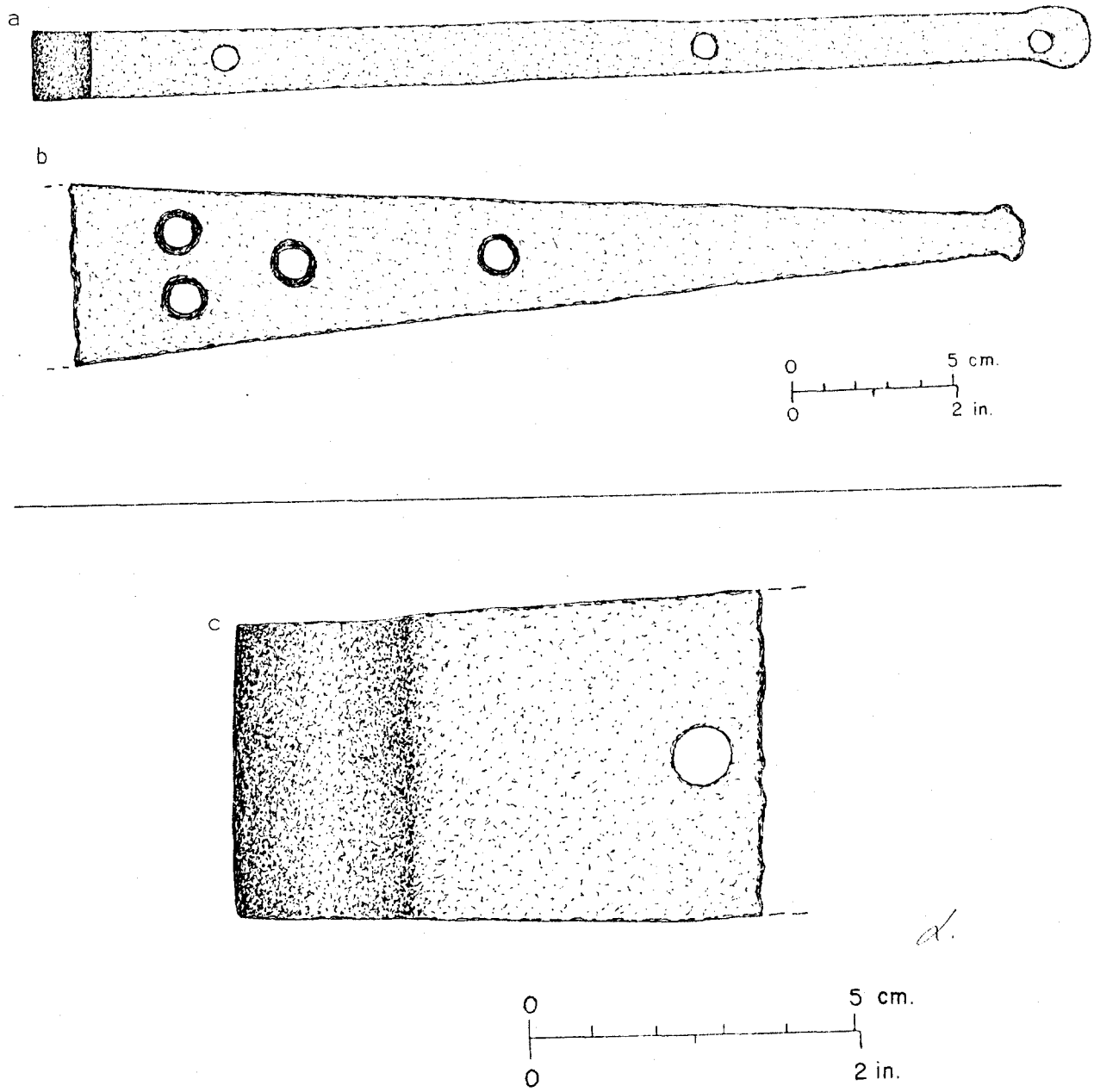


Fig. 97 -- Strap hinges from F523: a). strap hinge (FOVA 28358); b). strap hinge (FOVA 27611); and c). strap hinge (FOVA 27611).

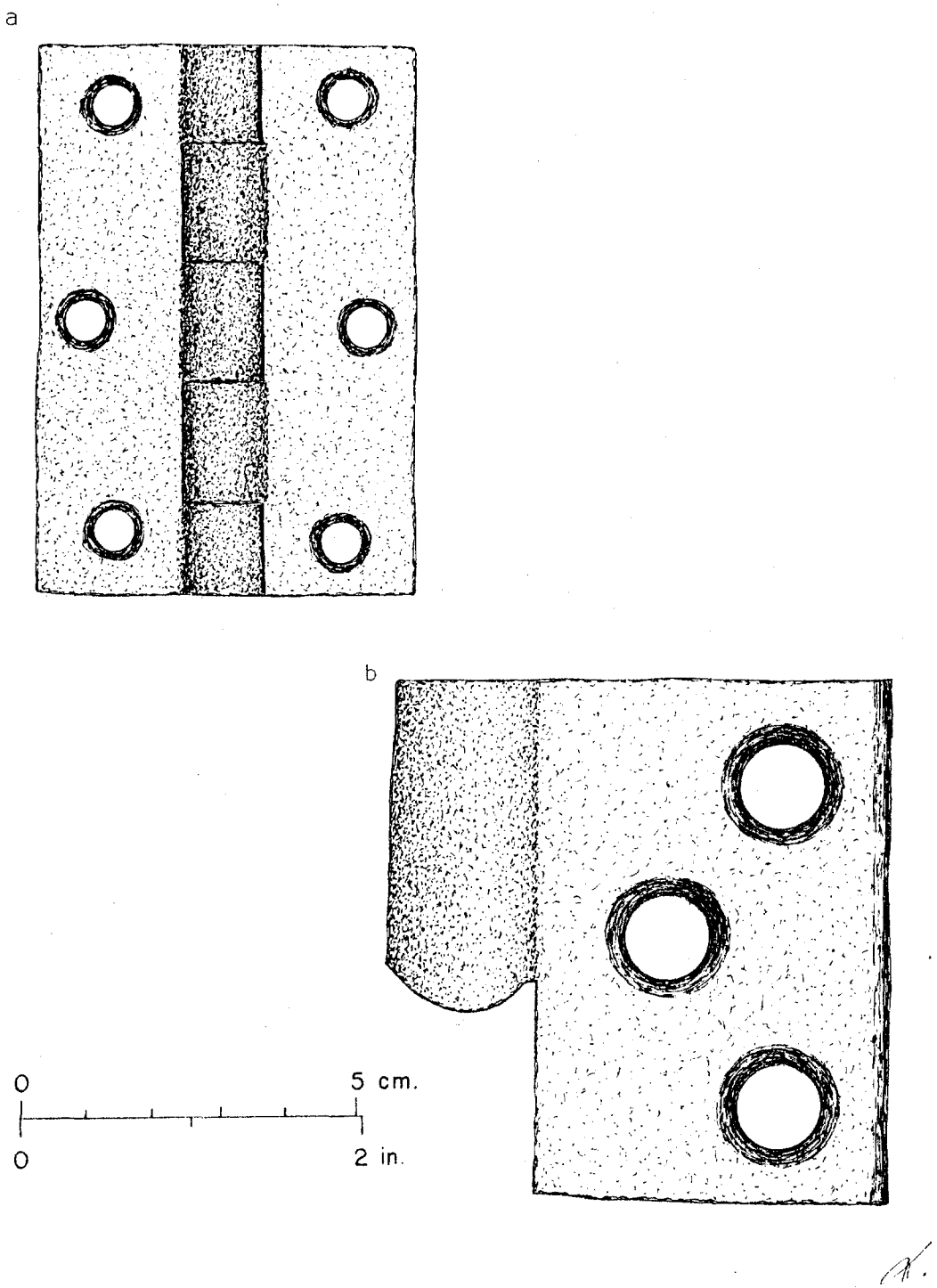


Fig. 98 -- Butt hinges from F523: a). butt hinge (FOVA 28539) and b). butt hinge (FOVA 28018).

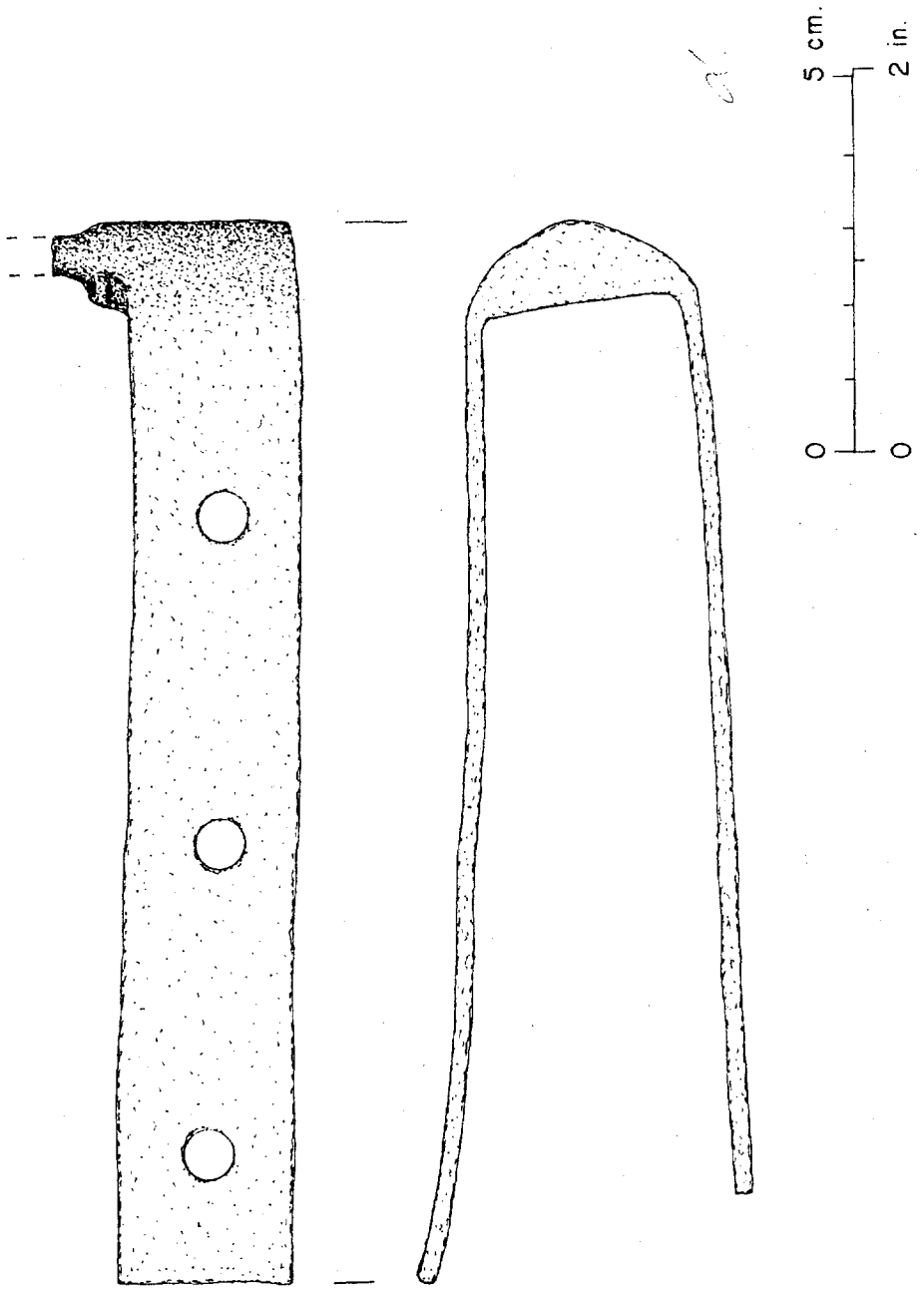


Fig. 99 -- Strap pintle (FOVA 27803) from I523.

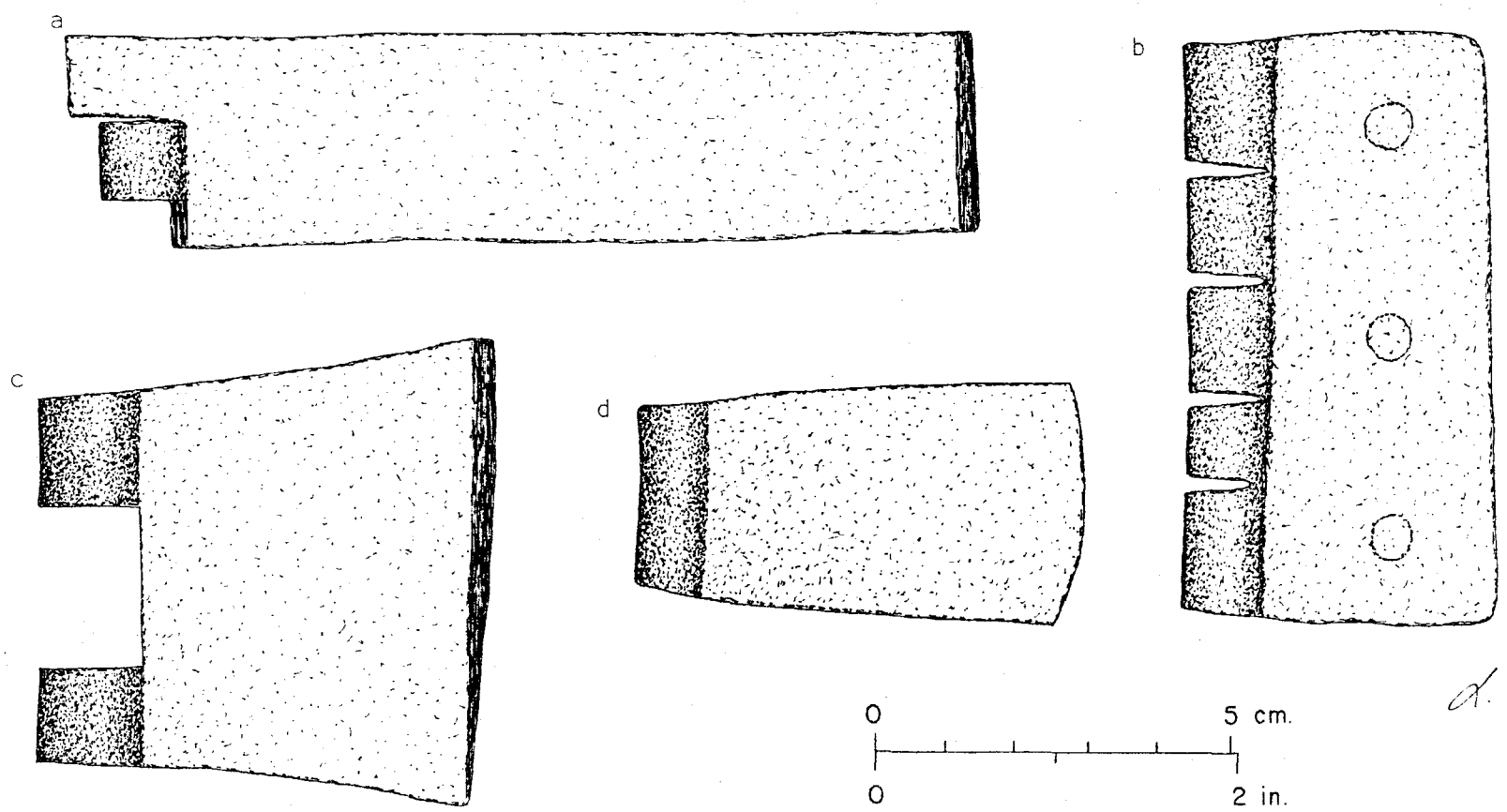


Fig. 100 -- Hinge preforms from F523: a). hinge preform (FOVA 27563); b). hinge preform (FOVA 27611); c). hinge preform (FOVA 28280; and d). hinge preform (FOVA 27583).

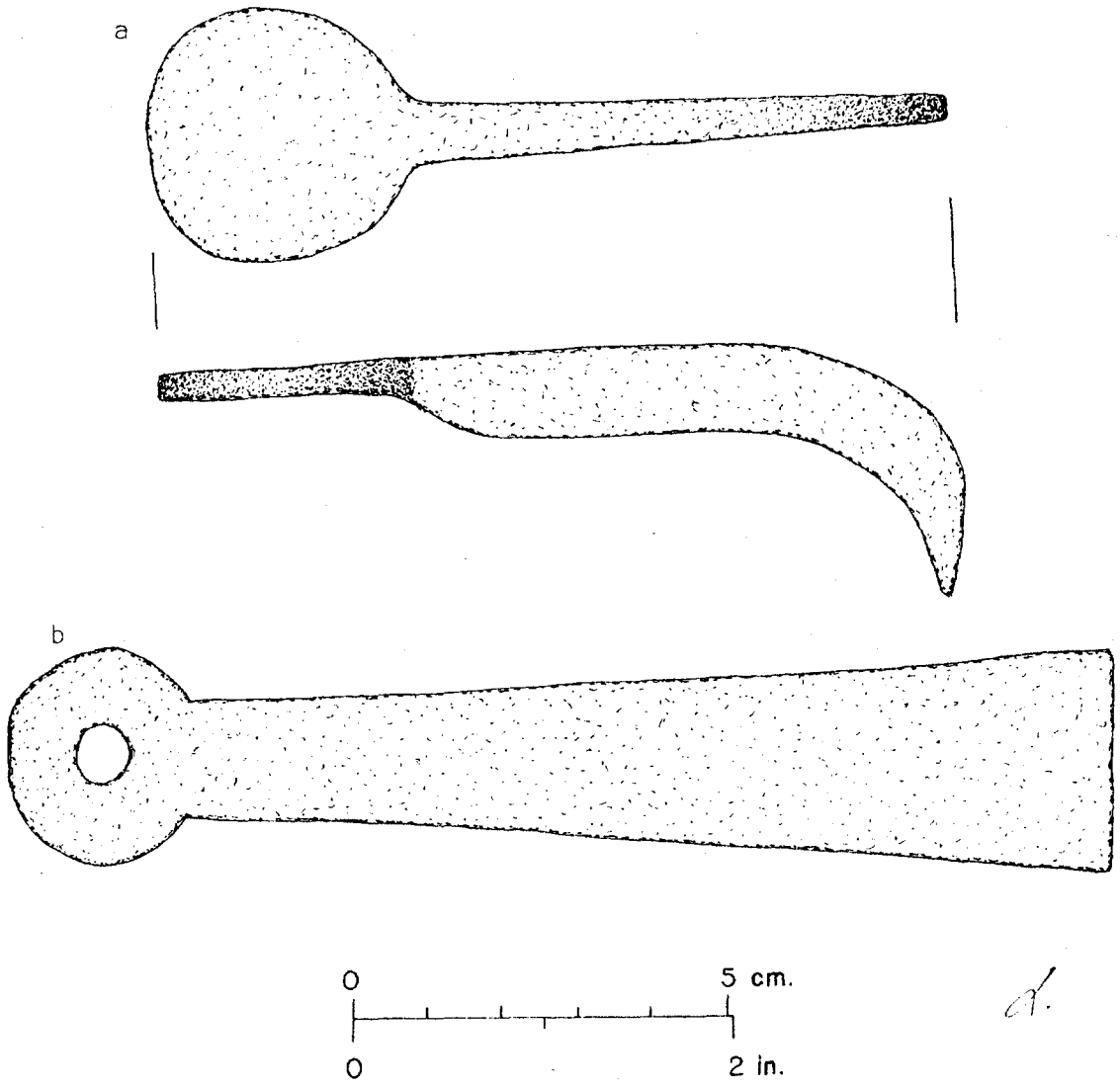


Fig. 101 -- Latching devices from F523: a). thumb latch (FOVA 28014) and b). latch bar (FOVA 28589).

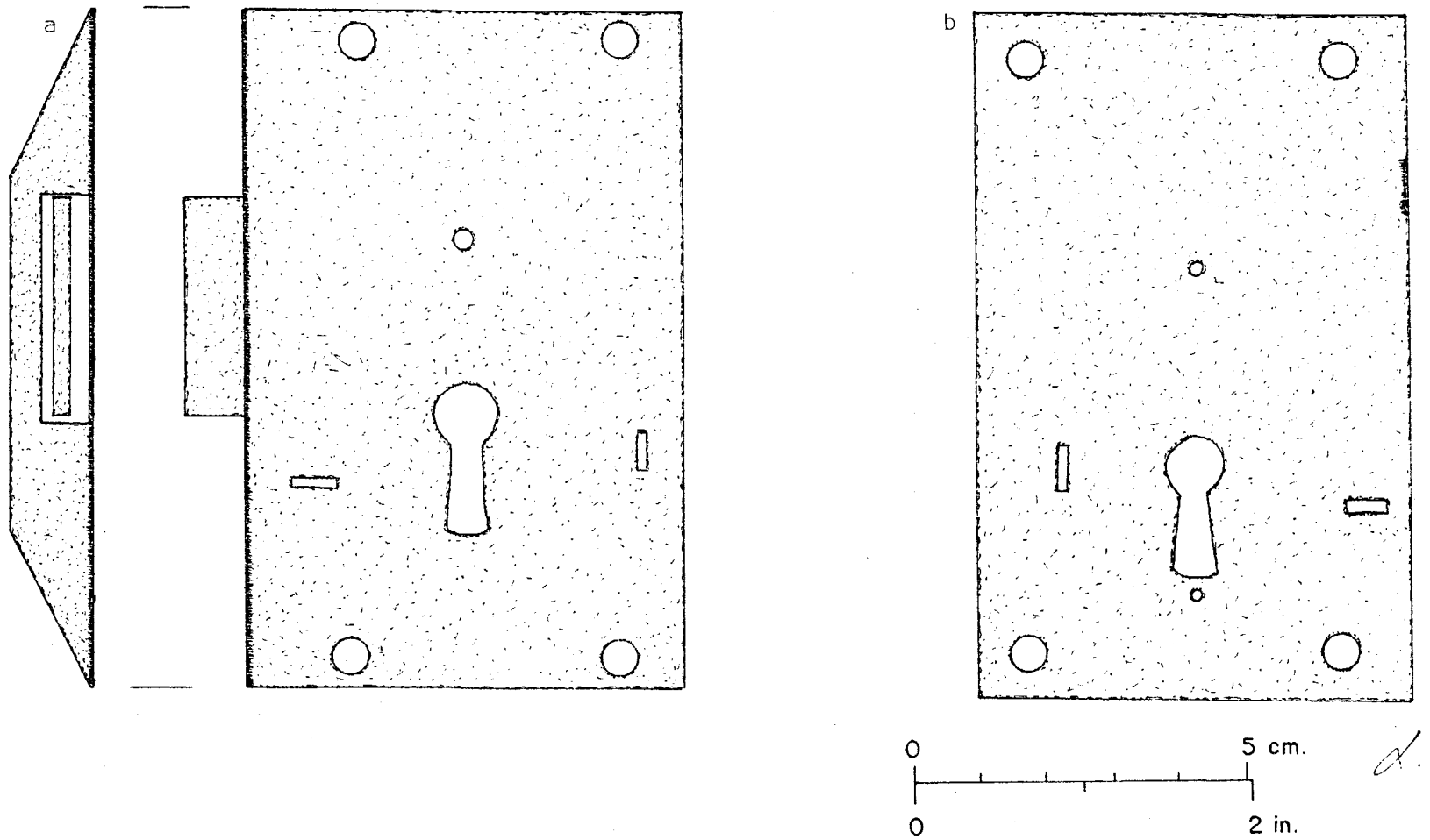


Fig. 102 -- Cassette locks from F523: a). reconstructed case lock (FOVA 28566) and b). case lock (FOVA 27967).

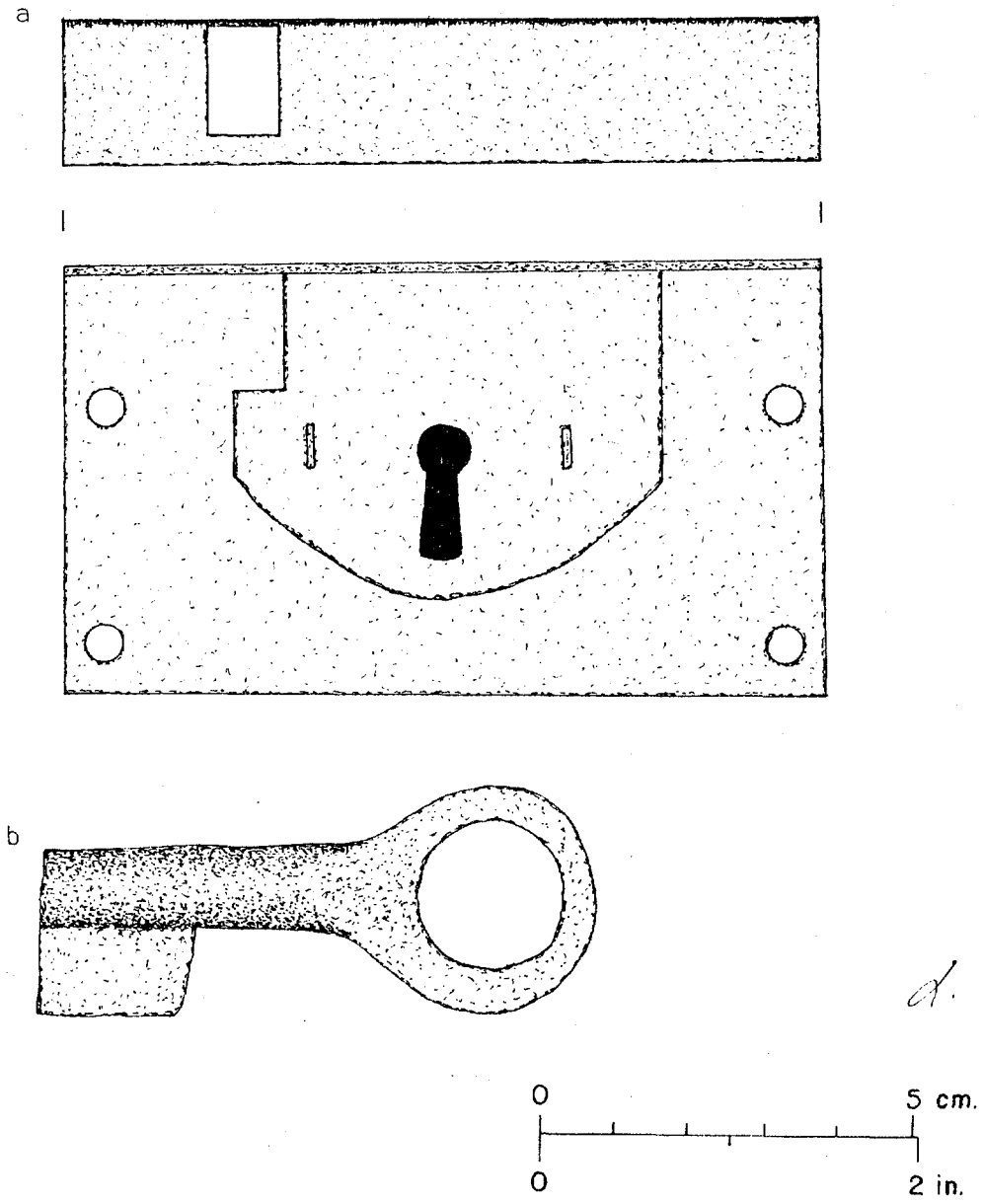


Fig. 103 -- Cassette lock and key preform from F523: a). case lock (FOVA 28214) and b). key preform (FOVA 27278).

One specimen of a key preform, similar to specimens recovered from the Blacksmith Shop (Fig. 31c) is illustrated in Fig. 103b.

Three nearly complete "patent" padlocks were recovered; and a representative specimen is illustrated in Fig. 104a. All were of the same size, being ca. 3" in width, and contained patent marks on the keyhole cover plate. Two styles of escutcheon and cover plate were observed and three different styles of patent marking. "WR Patent", with crown, was observed on two specimens while a "WR" or "VR" "Patent" with crown appears on the third. "WR" presumeably represented William Rex or William IV (1830-1837), King of England. The variation in escutcheon/cover plate design and variation in hallmarks are illustrated in Figs. 104a-c. Stylistically, the padlocks presumeably manufactured between 1830-1837, are the same as post-1837, "VR", or Victoria Regina, padlocks recovered from past Fort Vancouver excavations.

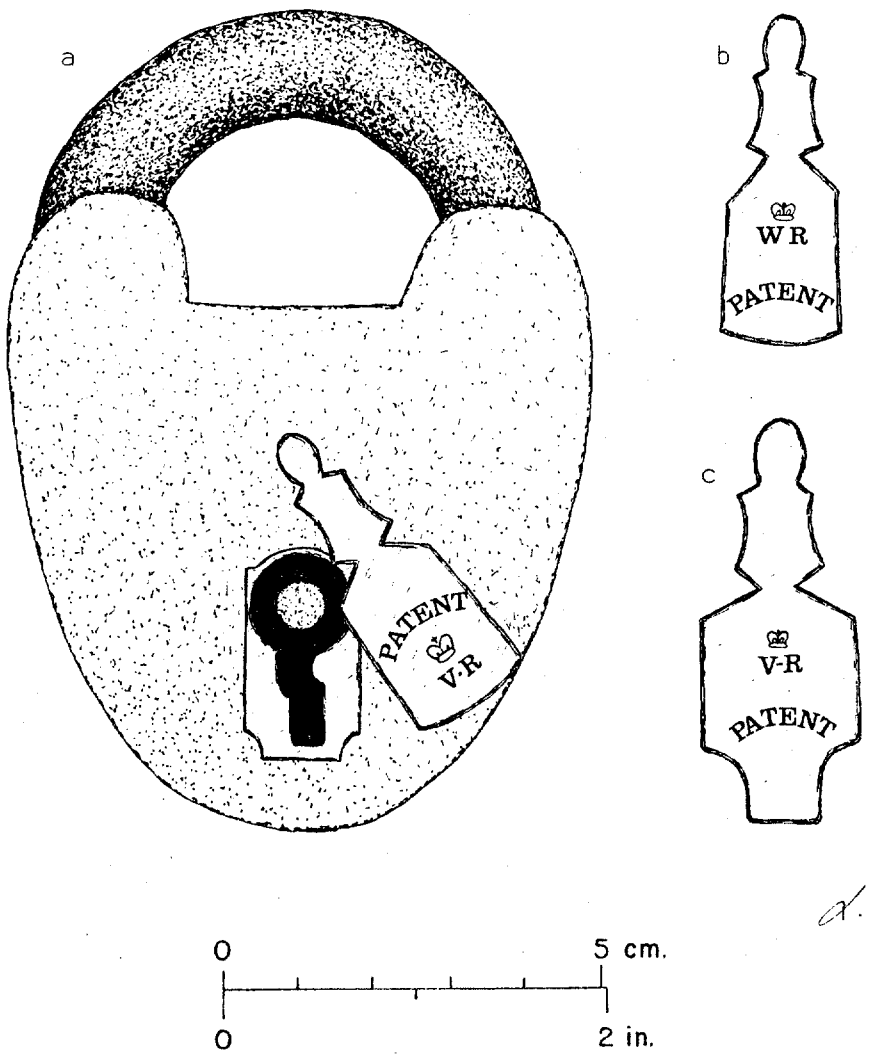


Fig. 104 -- Padlock with keyhole cover plate variations from F523: a). post-1837 Victoria padlock (FOVA 27388 and 27747); b). 1830-1837 William keyhole cover plate (FOVA 27388) and c). post-1837 Victoria keyhole cover plate (FOVA 28529).

Metal Fasteners

Non-Threaded Fasteners

Nails

There were 720 nails recovered from F523 together with 8 nails with strap. Of the 342 wrought rod nails, 88 complete specimens have been identified and 22 varieties described (Table 34). Two varieties of wrought rod nails appear as significant populations, rosette sharps (Variety #1002) nails of 8-10d size, and countersunk flat tip (Variety #1038) hinge nails. Eight specimens of the 8-10d rosette sharps nails were double crimped indicating use in a laminated door or shutter of 1½" thickness. Together with the hinge nail population, it appears likely that door or shutter remains, possibly from the prior structure, were deposited in or over the privy. Seven new varieties of wrought rod nail were defined and illustrated (Figs. 105-108).

There were 309 machine cut sheet nails recovered including 78 complete specimens representing 5 stylistic varieties (Table 35). One significant population of flathead reverse crimp "shingling" (Variety #2004) nails were also recovered. They were probably derived from the deposition of shingles from the privy or adjacent Indian Trade Store (Hoffman & Ross 1975), and appear to spacially correlate with the simultaneous deposition of the wrought rod hinge nails. One new variety of machine cut sheet nail was recovered and it is illustrated in Fig. 109a.

One specimen of machine cut wire nail was recovered from a possible HBC context (Level 2) and is illustrated in Fig. 109b.

Two specimens of closed eye nails were also recovered, one having a barbed shank. They are illustrated in Figs. 110a-b.

Miscellaneous Non-Threaded Fasteners

Four wrought rod staples were recovered and 3 have been illustrated in Figs. 111a-c . In addition, a bateau bolt (Fig. 112a) made from circular stock, an iron piton with ring (Fig. 110c) of unknown function, and a variety of roves, rivets, and cotter bolt parts were recovered. The new varieties are illustrated in Figs. 113a-f . Of the 43 unidentified non-threaded fastners recovered, 2 complete specimens are illustrated in Figs. 112a-c.

Table 34 -- Varieties and hypothesized populations of complete wrought rod nails from F523.

Variety # (Population)	Penny Size or Inches	Length (cm)	Thickness (mm)	Number Measured	Complete Specimens
1001	5-16d	4.5-8.7	2.8-4.1	6	7
1002	4d-6½"	3.6-16.3	2.0-7.8	26	26
(1)	8-10d	6.6-7.9	3.3-4.9	(15)	
1007	4 3/4"	11.9	4.3	1	1
1009	4-4 3/4	10.5-11.9	4.7-6.2	7	7
1013	5½"	14.1	7.6	1	1
1014	7"	17.0-18.0	8.9-9.5	12	12
1017	7½"	18.9	7.3	1	1
1022	6-12d	5.0-8.1	5.5-8.0	2	2
1031	4½"-9"	11.8-23.2	12.5-17.5	2	2
1038	3-6d	3.1-4.7	4.2-5.3	12	17
(1)	3-4d	3.1-3.6	4.2-4.6	(11)	
1042	18d	9.5	9.3	1	1
1077	12d	8.5	6.9	1	1
1086	8d	6.2	5.6	1	1
1095	7½"	19.6	21.3	1	1
1108	5½"	14.2	8.0	1	1
1135	5½"	14.4	20.7	1	1
1136	4½"	11.8	10.7	1	1
1137	10d	7.7	5.8	1	1
1138	10d	7.3	6.6	1	1
1139	5½"	13.8	10.8	1	1
1140	9d	7.1	4.2	1	1
1141	3½"	9.3	10.1	1	1
Unid.	3½"	9.3	10.1	1	1
TOTAL (including seven "nails w/straps")					349

Table 35 -- Varieties and hypothesized populations of complete machine cut sheet nails from F523.

Variety # (Population)	Penny Size or Inches	Length (cm)	Thickness (mm)	Number Measured	Complete Specimens
2001	8-30d	6.6-10.9	2.1-3.9	11	13
(1)	20-30d	10.2-10.9	2.8-3.9	(8)	
2002	5-18d	4.4-9.2	2.1-4.5	13	16
(1)	12-16d	8.2-8.7	3.0-3.7	(6)	
2004	3-8d	3.0-6.0	1.5-2.7	40	44
(1)	3-4d	3.1-3.9	1.6-2.7	(36)	
2005	3-7d	3.4-5.7	2.2-3.0	4	4
2029	9d	6.9	3.1	1	1
Unid.					231
TOTAL (including one "nail w/strap")					309

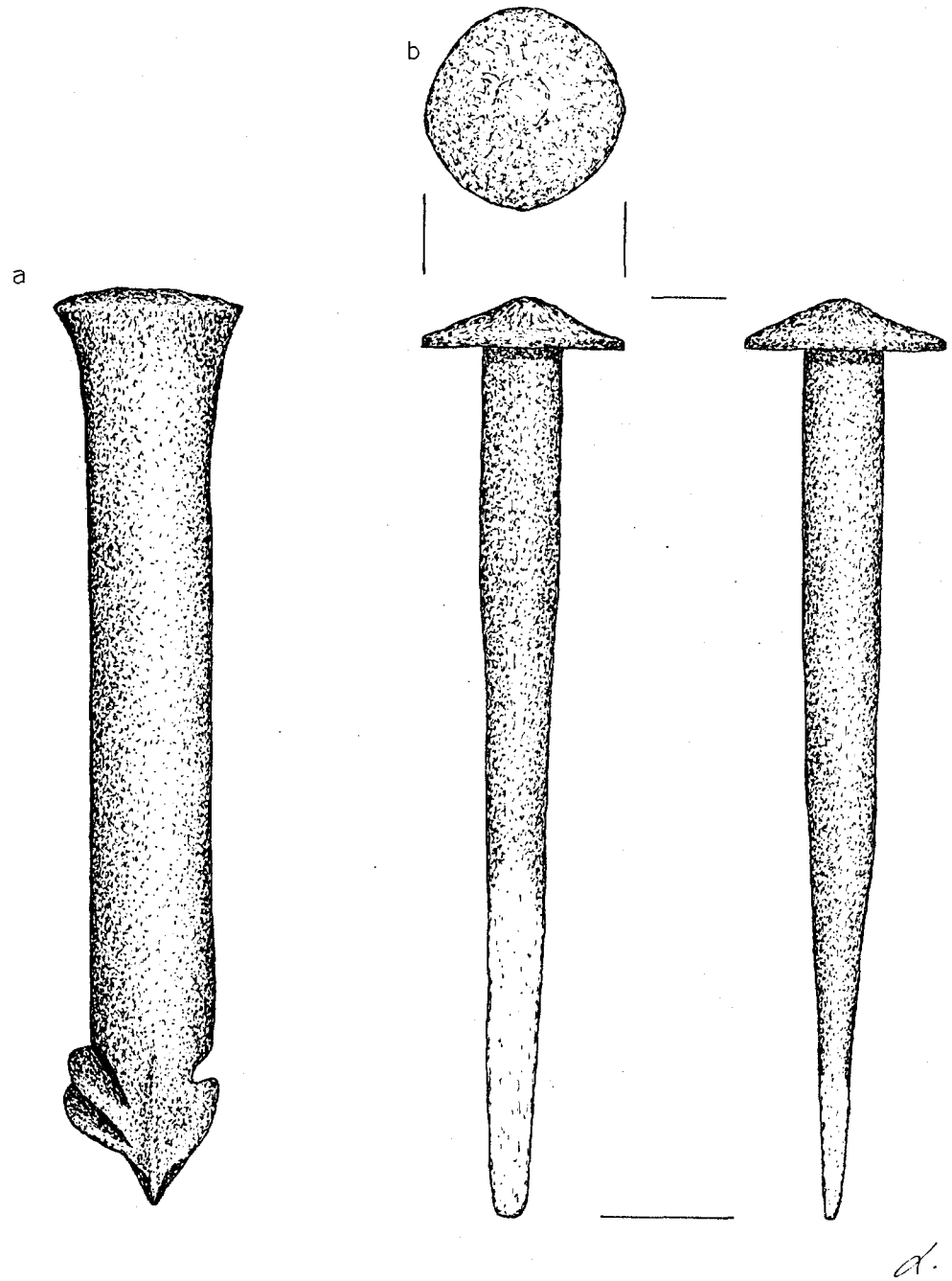


Fig. 105 -- New wrought rod nail varieties from F523: a). nail Variety #1135 (FOVA 27926 L=14.42 cm) and b). nail Variety #1136 (FOVA 27769 L=11.82cm).

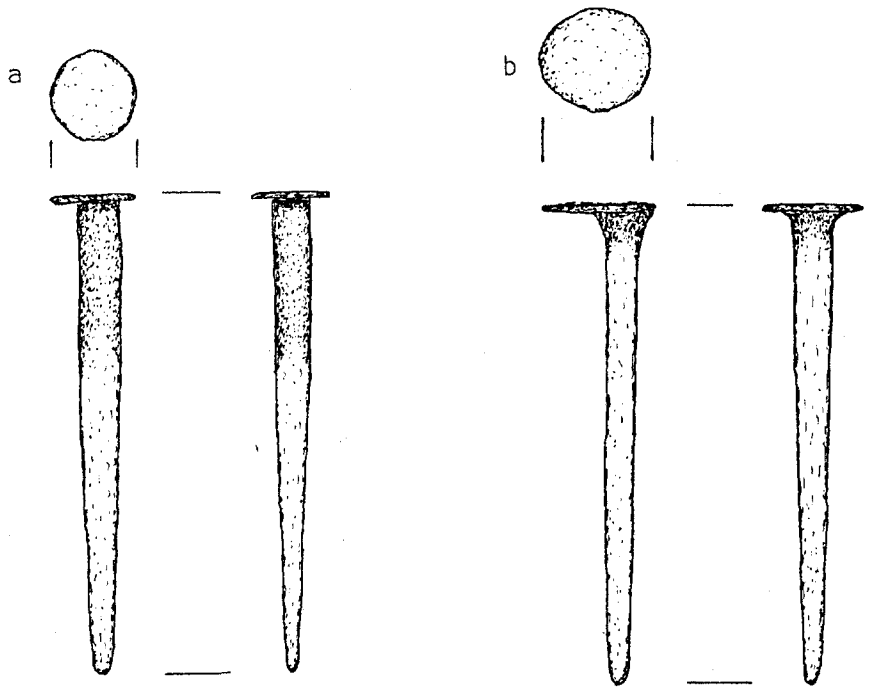


Fig. 106 -- New wrought rod nail varieties from F523: a). nail Variety #1137 (FOVA 27743 L=7.71cm) and b). nail Variety #1138 (FOVA 27272 L=7.31cm).

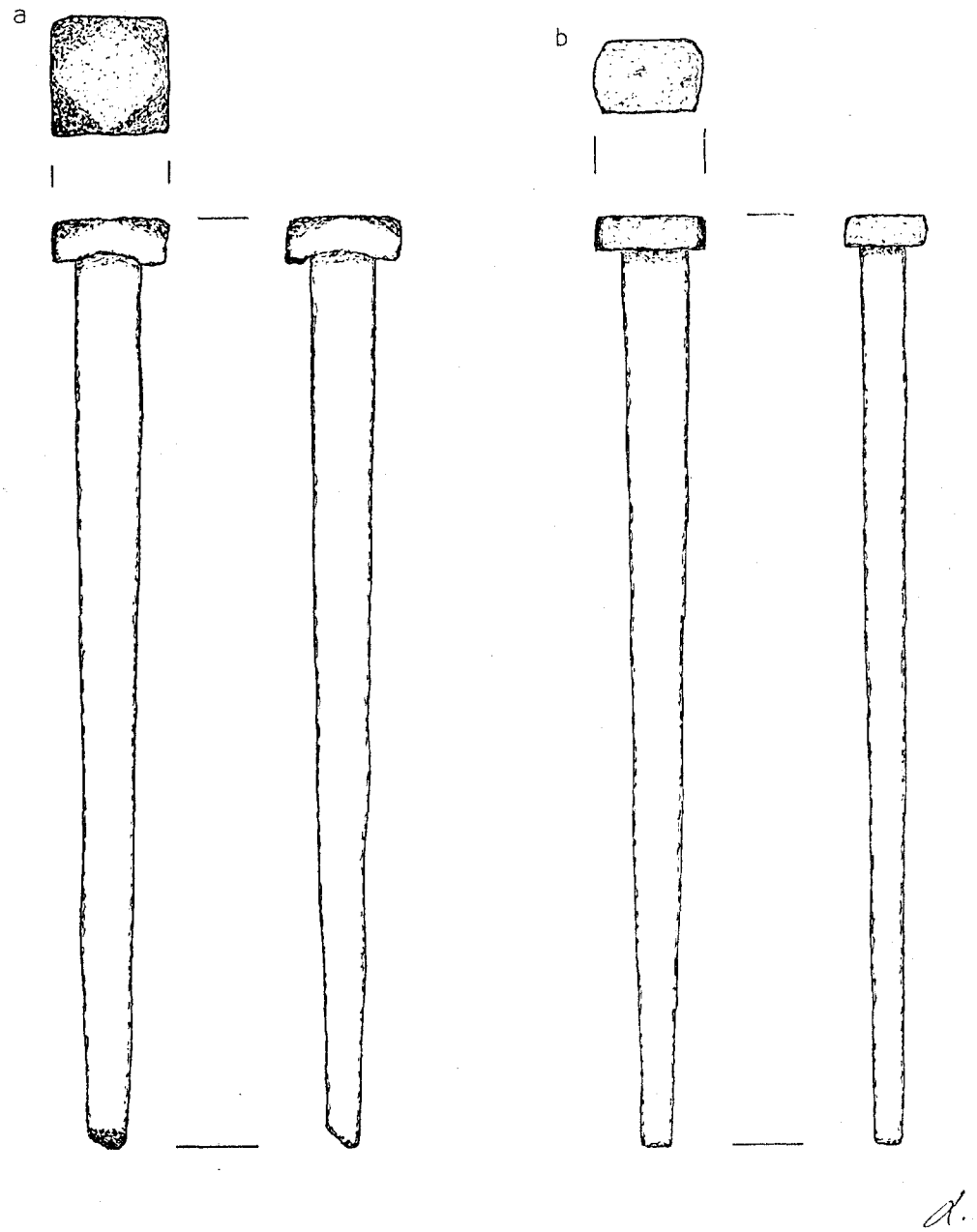


Fig. 107 -- New wrought rod nail varieties from F523: a). nail Variety #1139 (FOVA 27529 L=13.8cm) and b). nail Variety #1140 (FOVA 27243 L=7.5cm).

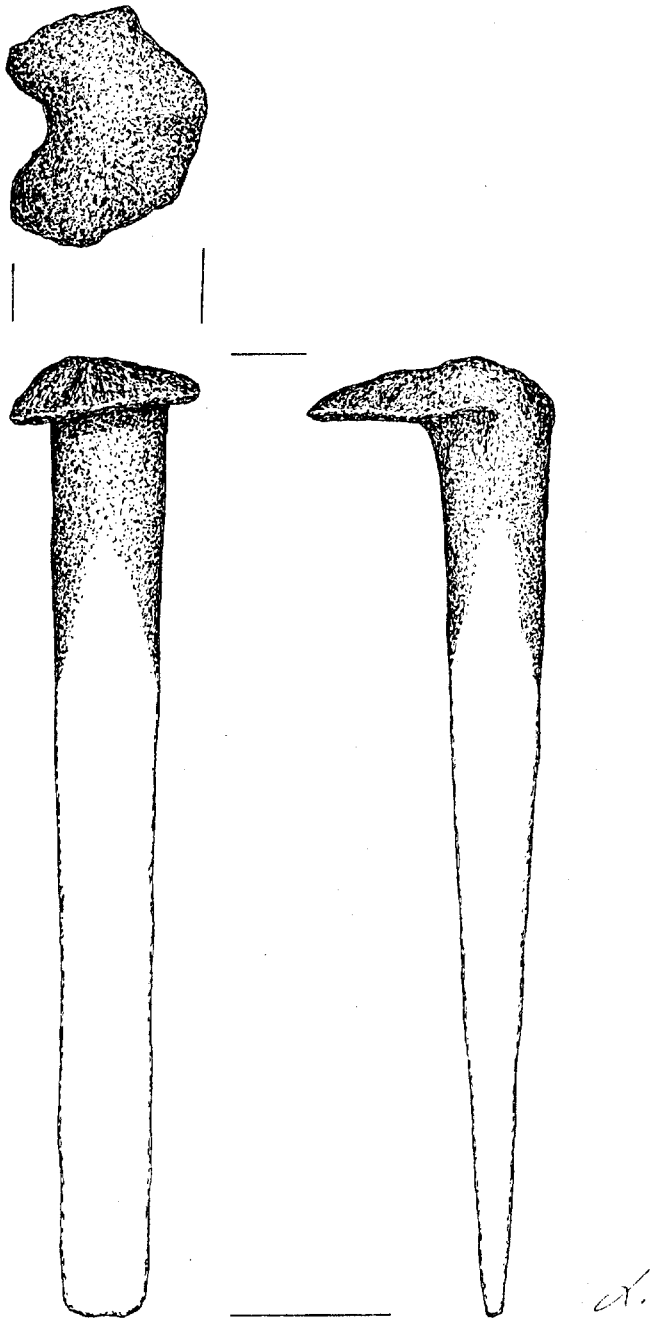


Fig. 108 -- New wrought rod nail Variety #1141 (FOVA 28230 L=9.2cm).

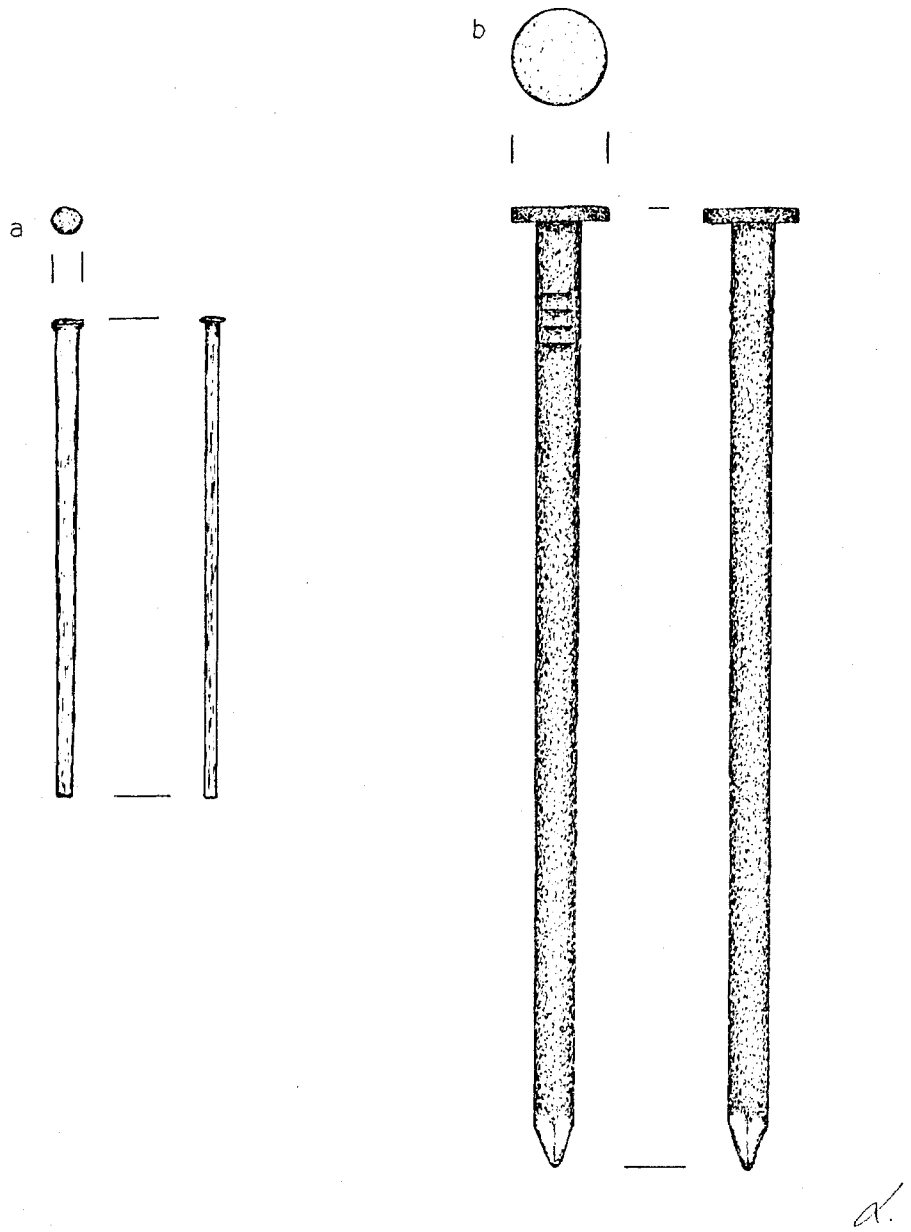


Fig. 109 -- New machine cut sheet and wire nail varieties from F523: a). nail Variety #2029 (FOVA 27600 L=6.94cm) and b). nail Variety #3004 (U.S. Army) (FOVA 27477 L=8.4 cm).

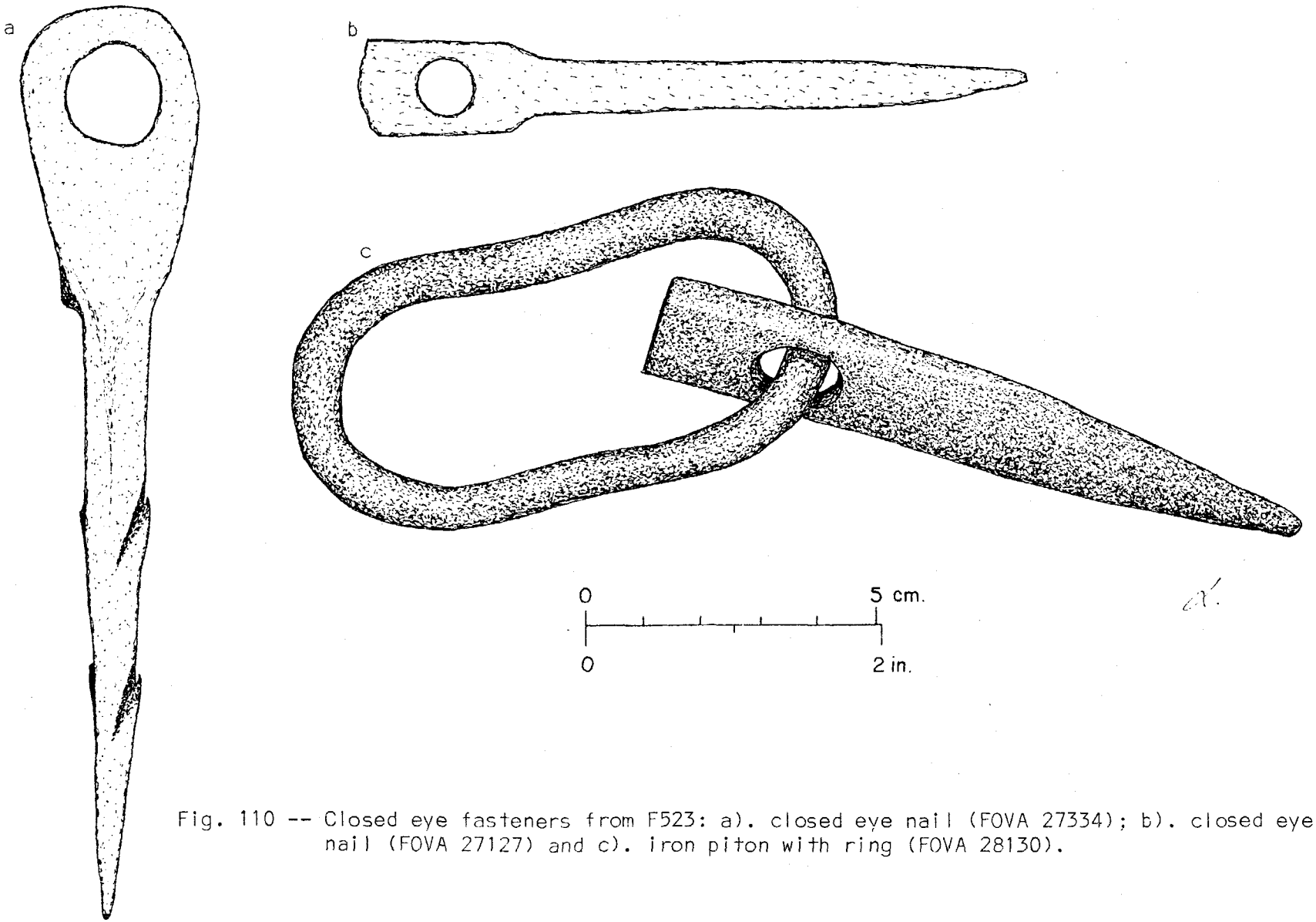


Fig. 110 -- Closed eye fasteners from F523: a). closed eye nail (FOVA 27334); b). closed eye nail (FOVA 27127) and c). iron piton with ring (FOVA 28130).

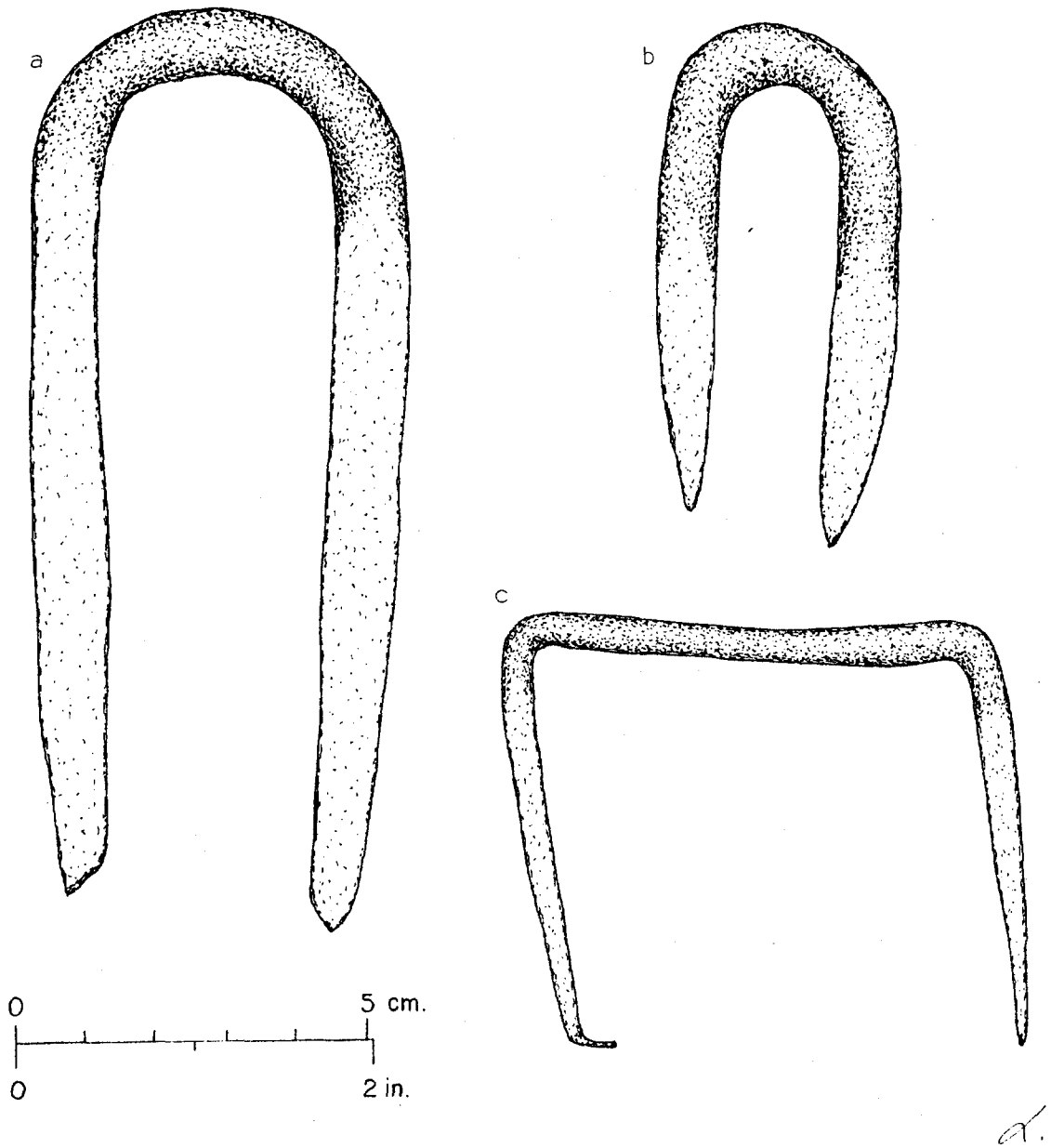


Fig. 111 -- Staples from F523: a). staple (FOVA 28184); b). staple (FOVA 27259); and c). staple (FOVA 27760).

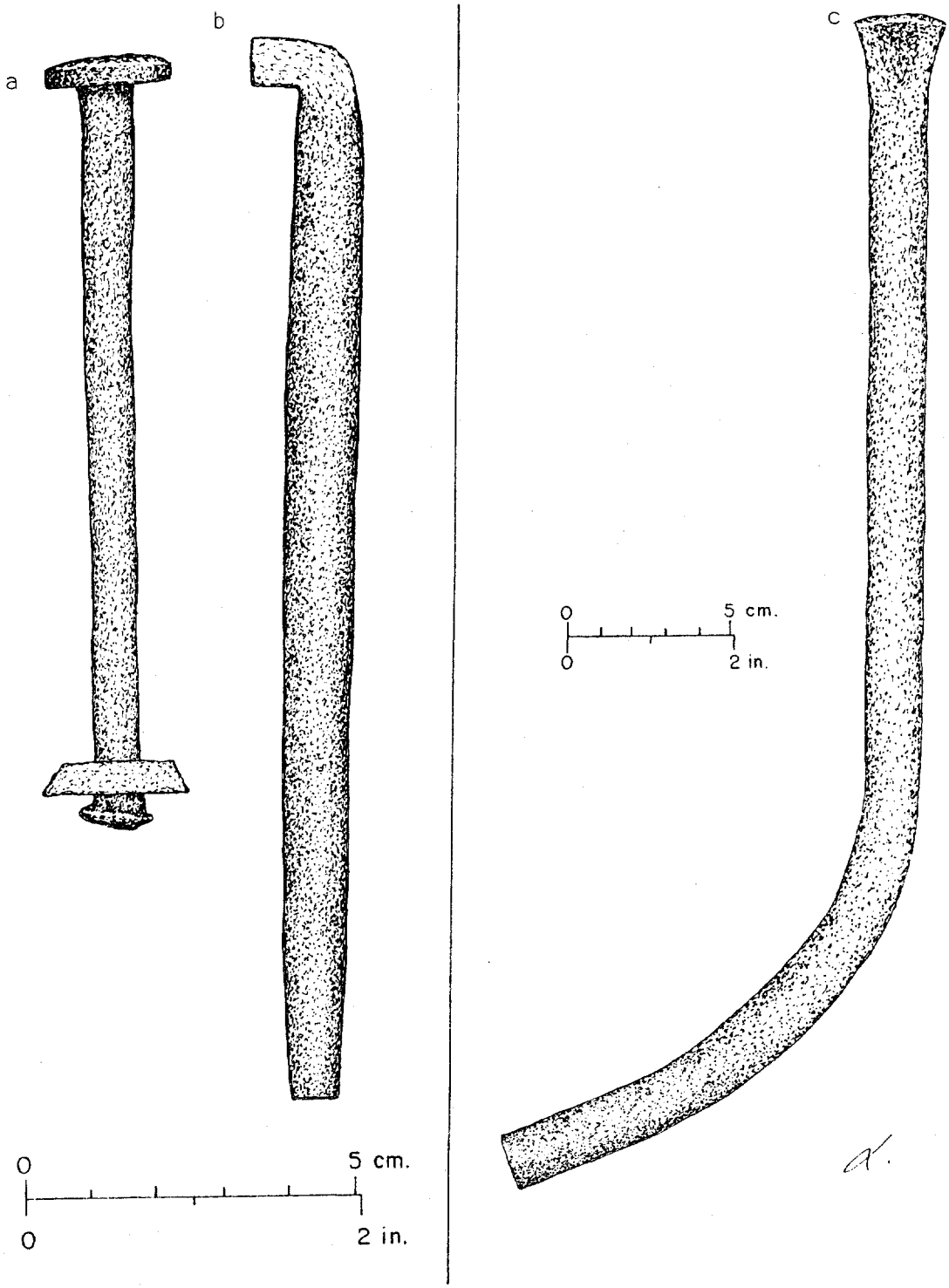


Fig. 112 -- Bateau bolt and iron pins from F523: a). bateau bolt (FOVA 27198); b). iron pin (FOVA 27619 and c). iron pin (FOVA 27793).

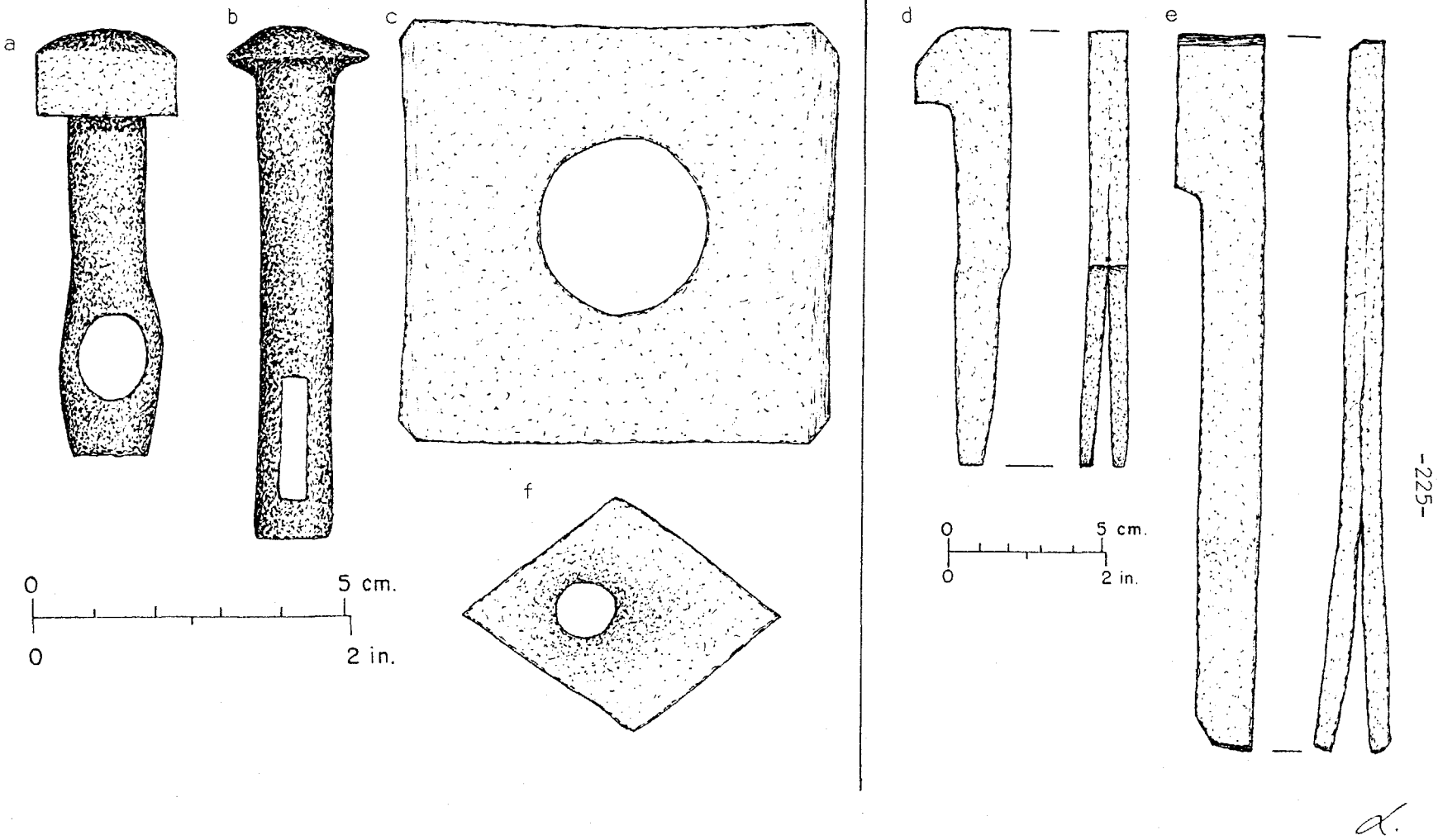


Fig. 113 -- Cotter bolt parts from F523: a). cotter bolt (FOVA 28129); b). cotter bolt (FOVA 27870); c). rove (FOVA 27619); d). cotter key (FOVA 28569); e). cotter key (FOVA 27252) and f). rove (FOVA 28538).

Threaded Fasteners

A total of 84 threaded fasteners was recovered. Two screws were identified, both from HBC stratigraphic contexts, and one is illustrated in Fig.114a. Of the 51 iron bolts recovered (including bolts with nuts, and bolts with nuts and washers), 12 styles were identified. Only one of these was duplicated in the Blacksmith Shop (Fig. 46a), but the general method for manufacturing bolts appears to be similar to those recovered from the Shop. The styles are illustrated in Figs. 114b-d, 115, 116a-d.

The nuts and washers recovered were consistent with styles reported for the Blacksmith Shop. Specimens recovered in assembled forms have been illustrated with their respective bolt style (Figs. 114b-c).

One eye bolt was recovered and it is illustrated in Fig. 116e.

Metal Tools

The 108 tools recovered from F523 were predominately blacksmith tools and agricultural implements. Only one hypothesized preform was recovered (an implement handle), and the bulk of the finished specimens were either fragmented or purposefully clipped, suggesting that the items were associated with metal trash in a state of repair. Local manufacturers (or possibly owner's) marks were observed to occur on tong fragments and a blacksmith's flatter, while imported manufacturing marks occurred on plow parts, scythe blades, a hypothesized caulking tool, and a hafted flatter. New or unique items previously unreported have been illustrated in Figs. 117-133.

Blacksmith Tools

Of the 43 blacksmith tools recovered, 21 specimens were tongs. At least 8 styles of tong jaws have been identified, and new styles are illustrated in Figs. 117-120. Four different manufacturers (or owners) initials were observed on the shanks of jaws. These included "JB", hypothesized as the initials of Joseph Ouide Beauchamp Fort Vancouver blacksmith between 1843-1847 (Hussey 1974: 334-35); "VF", a mark that does not correlate with any known Blacksmith at Fort Vancouver; a partial mark "-L", possibly representing either Andre Lachapelle, Fort Vancouver blacksmith from 1828-1832 and 1834-1840, or Andrew Louttit, Fort Vancouver blacksmith from 1840-1844 (Hussey 1974: 331-35), and one unidentified mark. The marks and their respective tong style are illustrated in Figs. 120a-b.

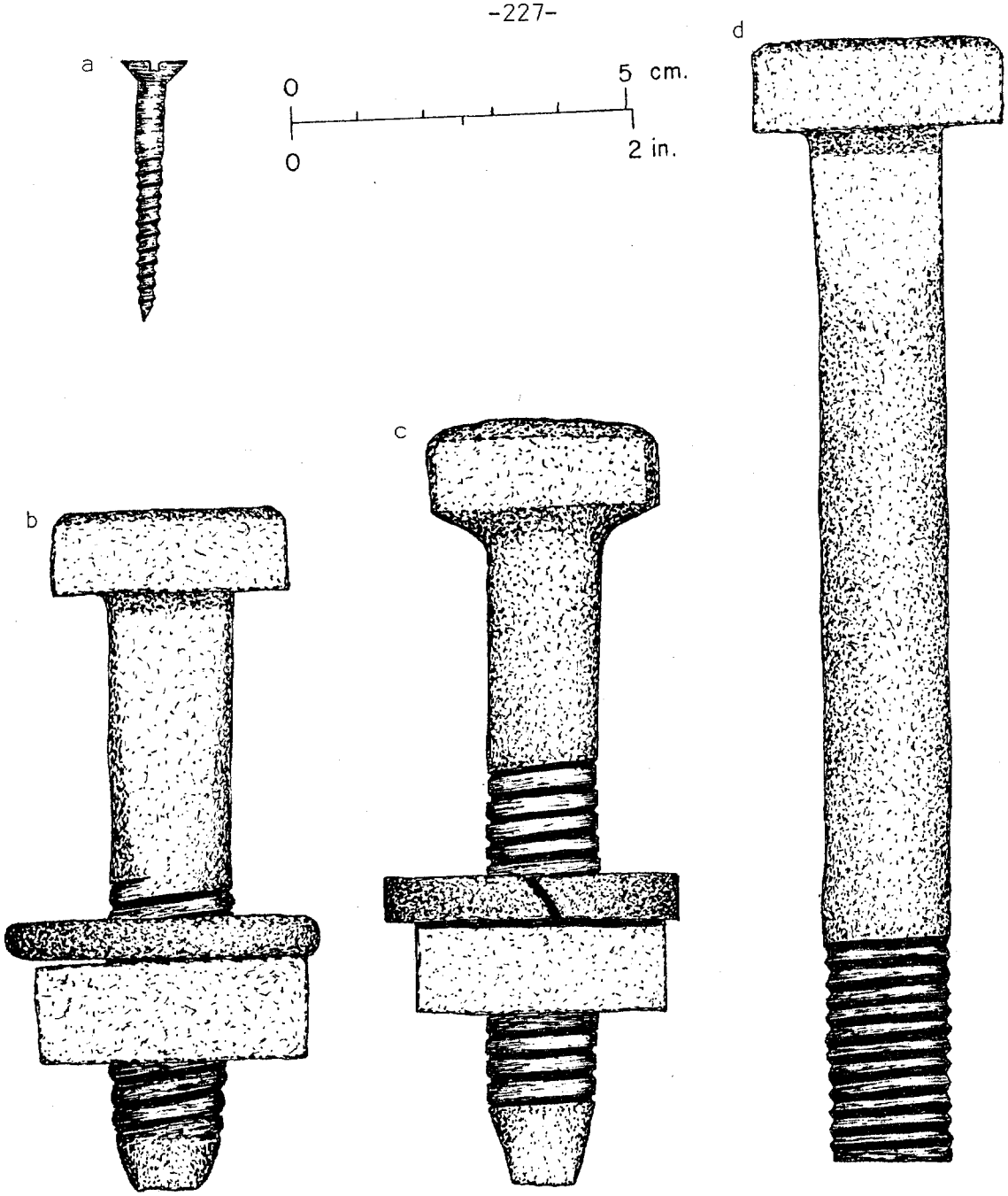


Fig. 114 -- Screw and bolts from F523: a). screw (FOVA 27322); b). bolt, nut and washer (FOVA 28196); c). bolt, nut and washer (FOVA 28532); and d). bolt (FOVA 28385).

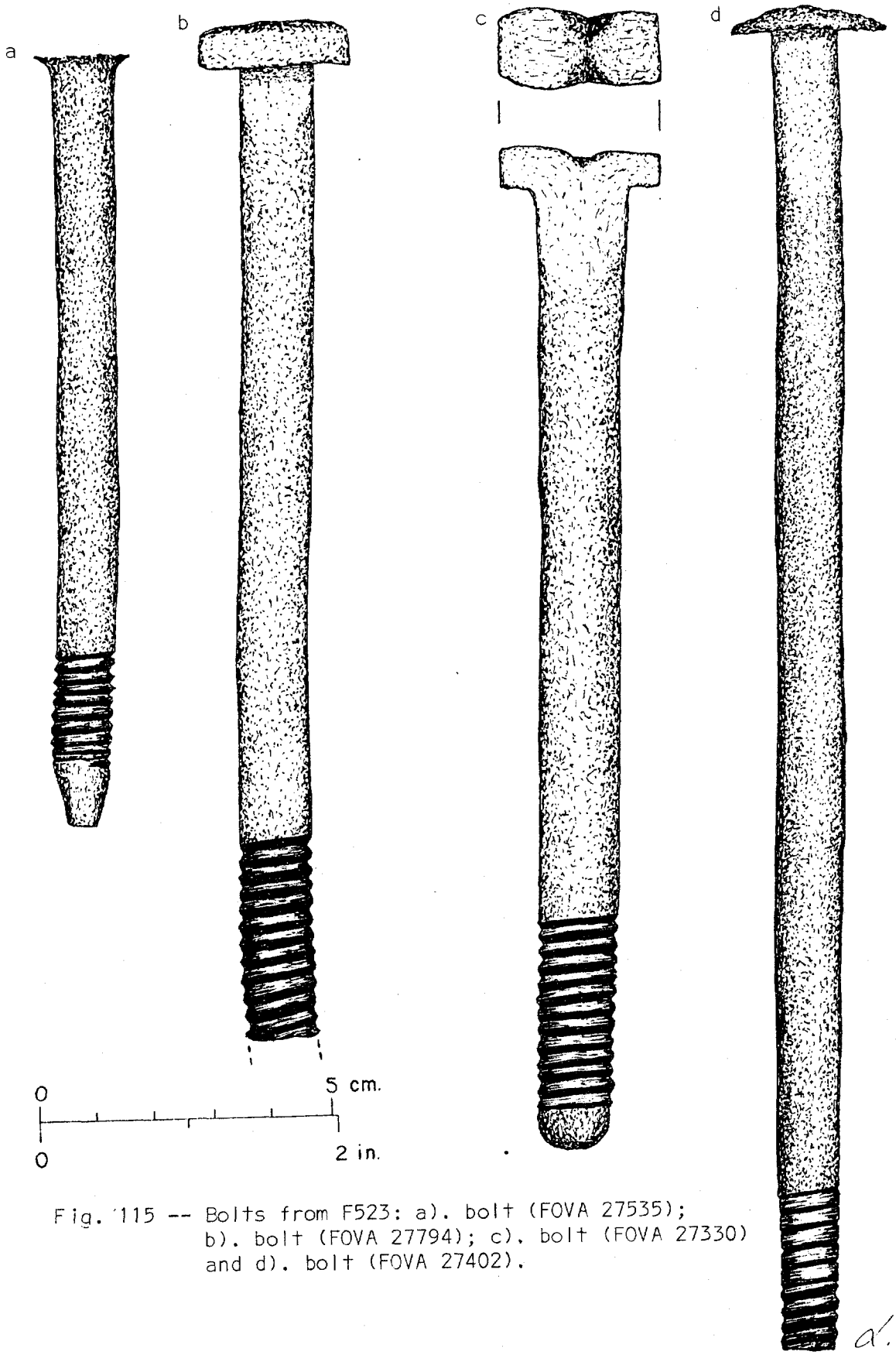


Fig. 115 -- Bolts from F523: a). bolt (FOVA 27535); b). bolt (FOVA 27794); c). bolt (FOVA 27330) and d). bolt (FOVA 27402).

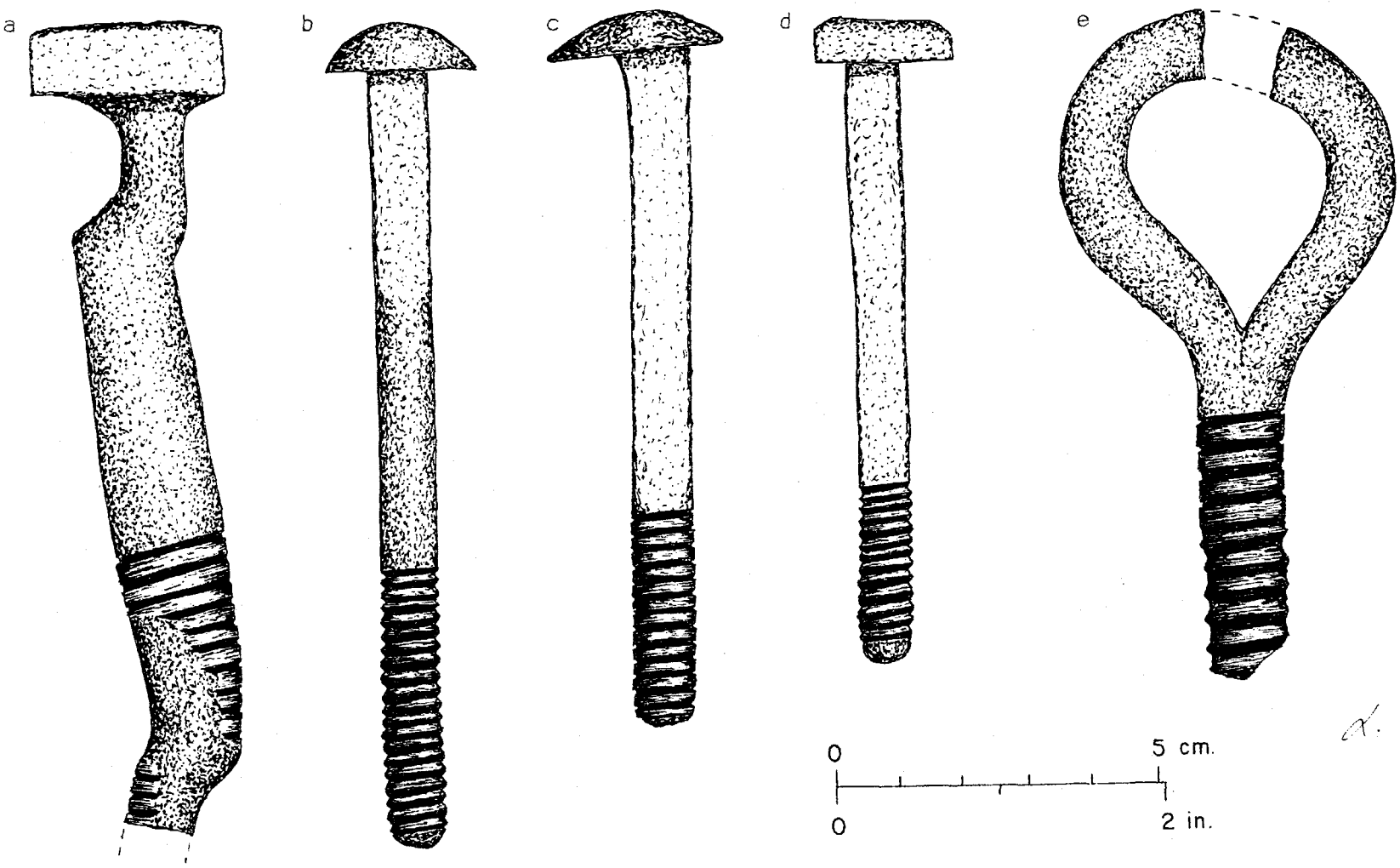


Fig. 116 -- Bolts and an eye bolt from F523: a). bolt (FOVA 28341); b). bolt (FOVA 27330); c). bolt (FOVA 27903); d). bolt (FOVA 28350) and e). closed eye bolt (FOVA 27168).

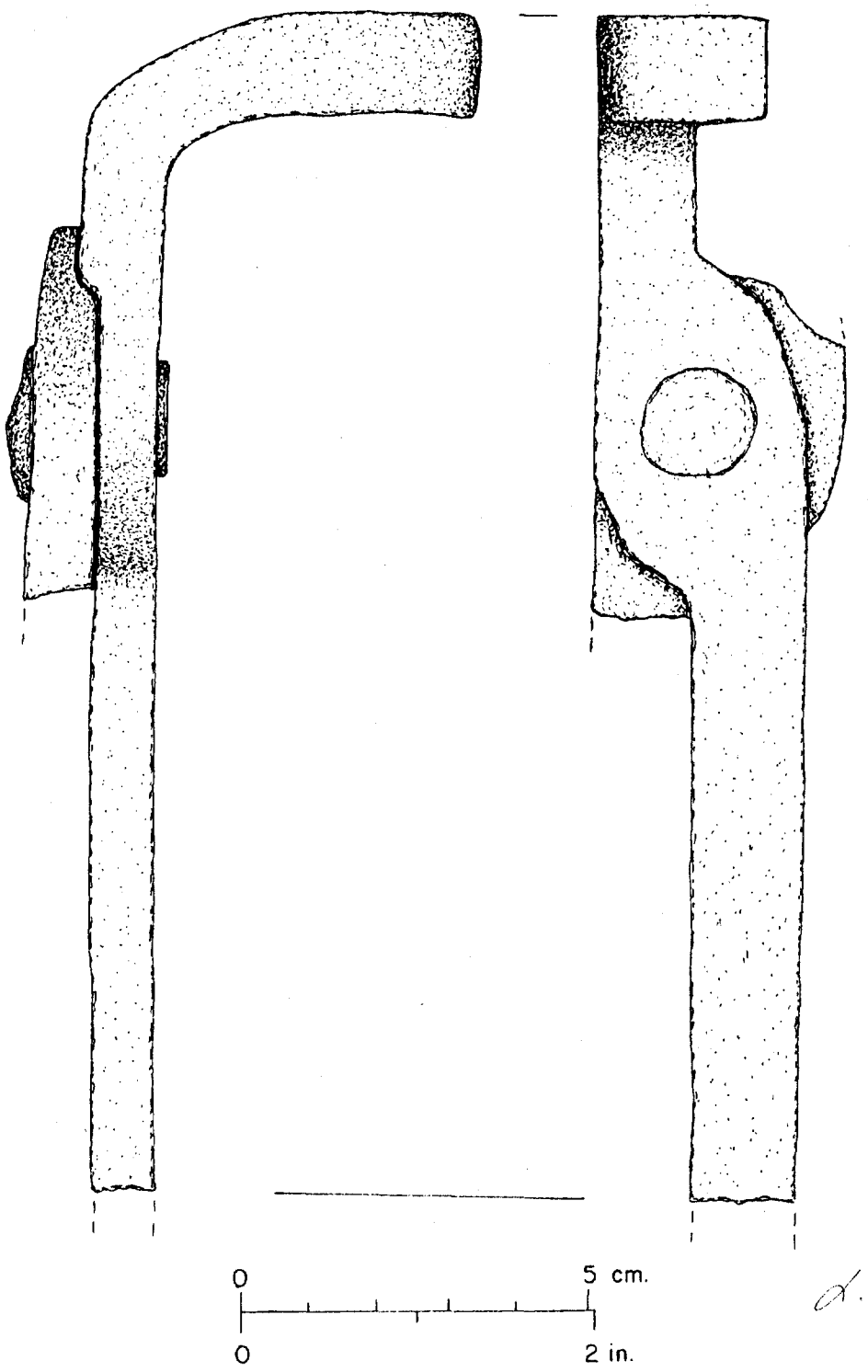


Fig. 117 -- Tong (FOVA 27166) from F523.

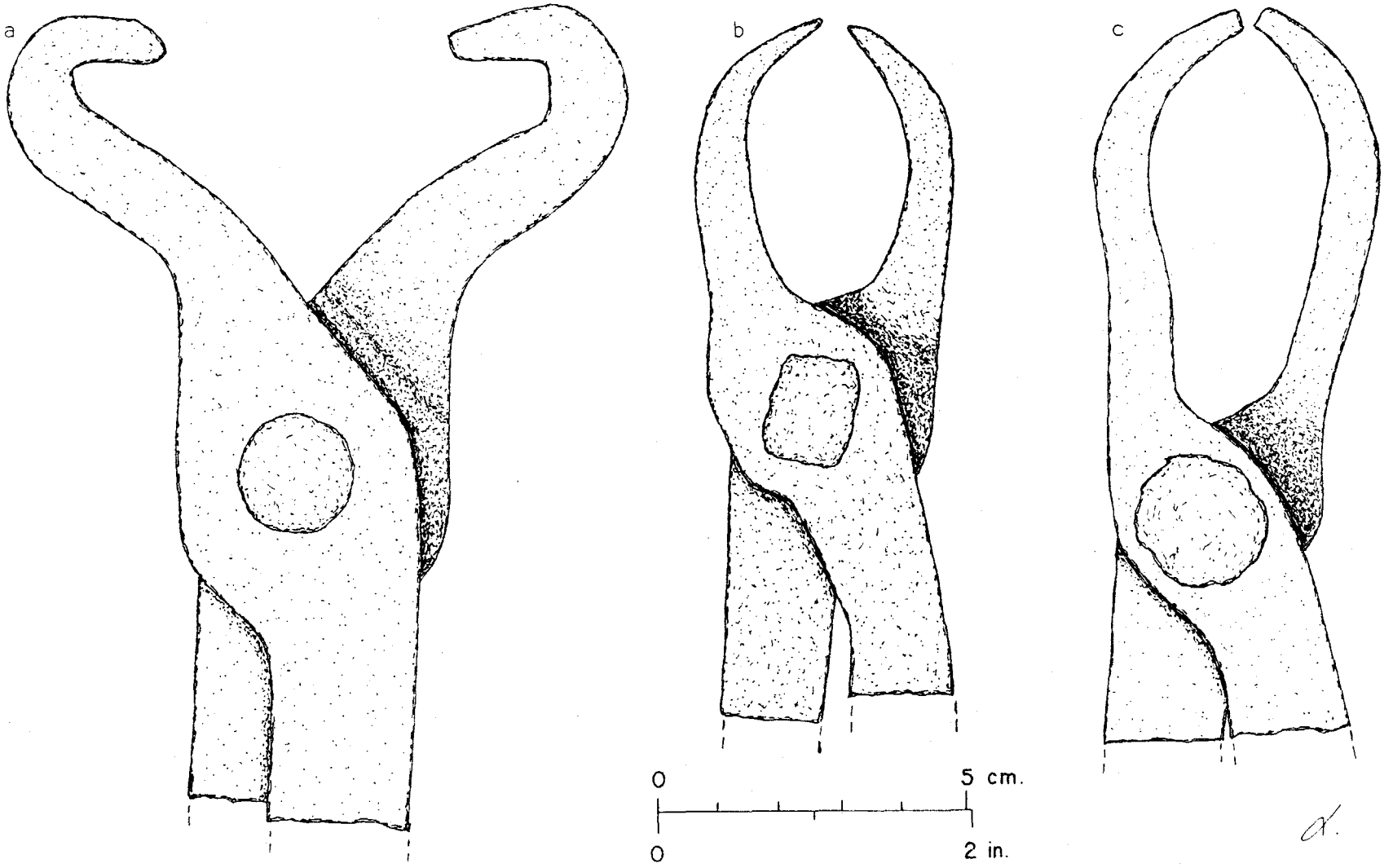


Fig. 118 -- Tongs from F523: a). tong (FOVA 27561b); b). tong (FOVA 28534) and c). tong (FOVA 27399).

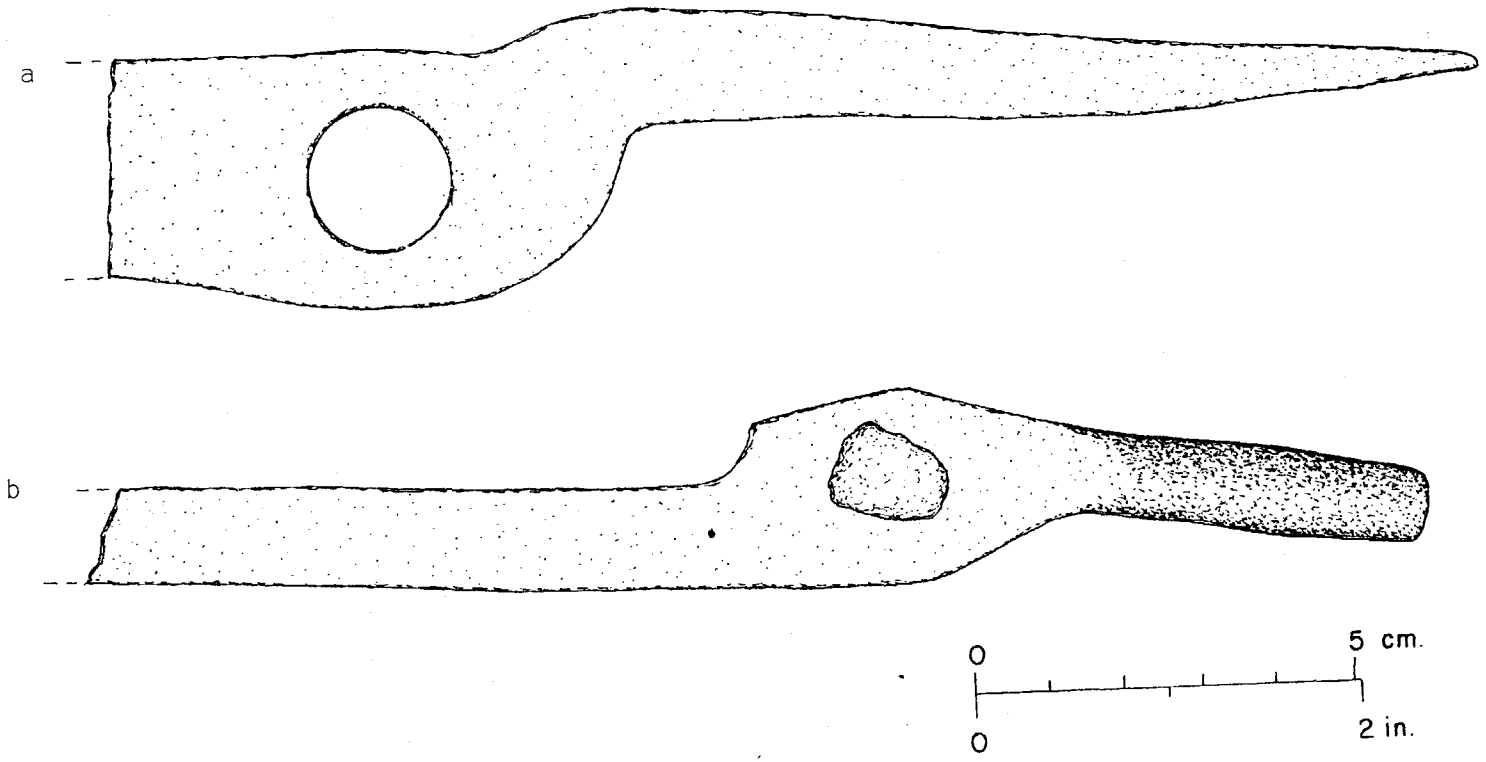


Fig. 119 -- Tongs from F523: a). tong (FOVA 27924) and b). tong (FOVA 27333).

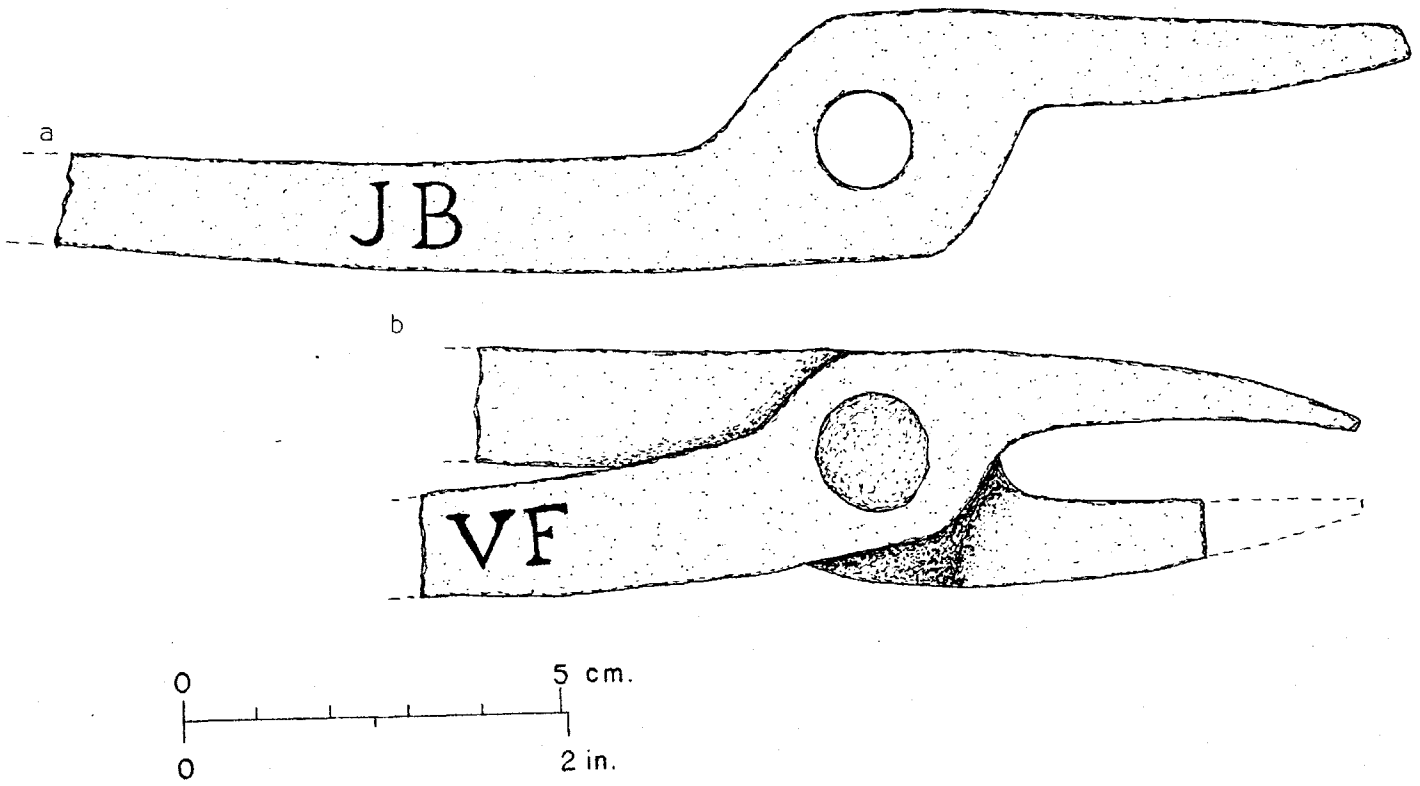


Fig. 120 -- Tongs from F523: a). tong (FOVA 28189). and b). tong (FOVA 28384).

Two styles of flatters were recovered. One style, illustrated in Fig. 121a, was hafted and a manufacturing mark, possibly "ITT" was impressed near the face. It is hypothesized as being an imported item. The second style, illustrated in Fig. 122 , was a hand held offset flatter with the initials "AM" block impressed into the handle shank. Presumably the initials stood for Allan Morrison, Fort Vancouver blacksmith from 1838-1841. "AM" has also been recovered on axe bodies from the Fur Store area (Hoffman & Ross 1974b: 155).

Twenty other blacksmith tools were recovered including an 8 inch iron ruler (Fig. 123), a new style of threading tap (Fig 121c), an axe body form (Fig. 124a), a circular or rattail file (Fig.121b), 3 new styles of punches (Fig.125a-c, and a hot set hardy (Fig. 124b).

Miscellaneous Tools

A total of 18 tools associated with woodworking and 48 agricultural implements were recovered. Unique woodworking tools included a hypothesized caulking tool with an impressed, unidentifiable, manufacturing mark (Fig. 126a), a draw knife (Fig. 127b), a saw handle (Fig. 126b), a solid plain bit (Fig. 127a) and 2 wedges (Figs. 128a-b).

Three plow parts were recovered including a plow share that appears to either have been locally manufactured or repaired (Fig. 129). The remaining two specimens, illustrated in Figs. 130a-b , were marked "RANSOME PATENT 835" and "RANSOME PATENT 836". Presumeably "RANSOME" was the British manufacturer, and the parts were probably the ones listed in the 1844 Fort Vancouver Sales Shop inventory of "Goods on Hand" as #835 and #836 plough shares (Hussey 1972:222).

Thirty-two harrow teeth were also recovered and are identical to specimens reported from the Blacksmith Shop (Fig. 66d). Of the scythe fragments recovered, one complete blade, illustrated in Fig. 131a, was marked "DOUBLE", presumeably a size or strength designation, and it was probably imported. The blade measured approximately 40 inches in length and probably was of the type inventoried in 1844 as "40 inch hay scythes" (Hussey 1972:273). Two other scythe blades were marked, one being unidentifiable and the other containing "BUR (or P) GOY_, CADRA_ _" (Fig. 131b). One scythe handle (minus wood) was also recovered (Fig. 132a), but no manufacturing marks were present.

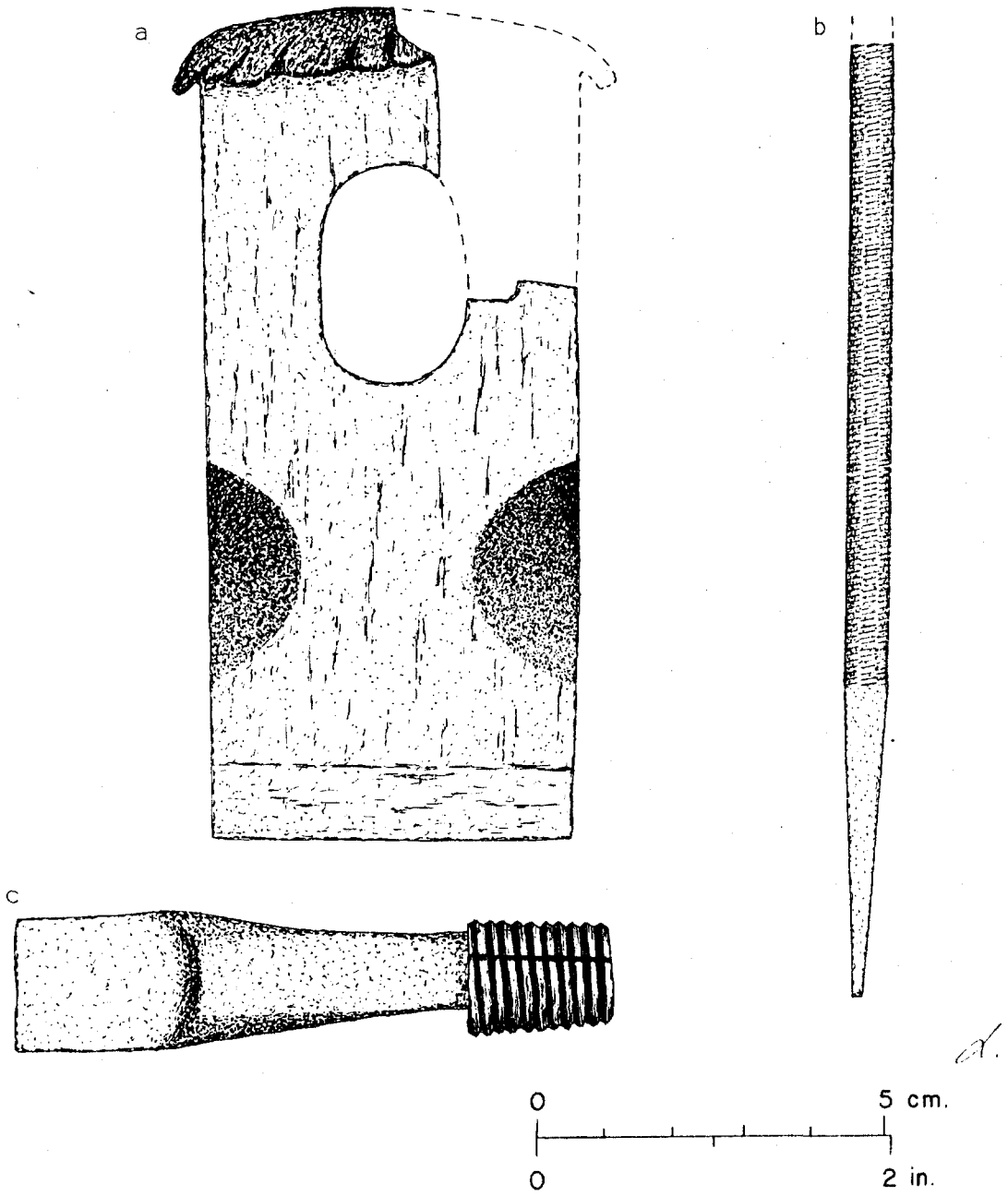


Fig. 121 -- Blacksmith tools from F523:a). flatter (FOVA 27960); b). round file (FOVA 27548) and c). tap (FOVA 27338).

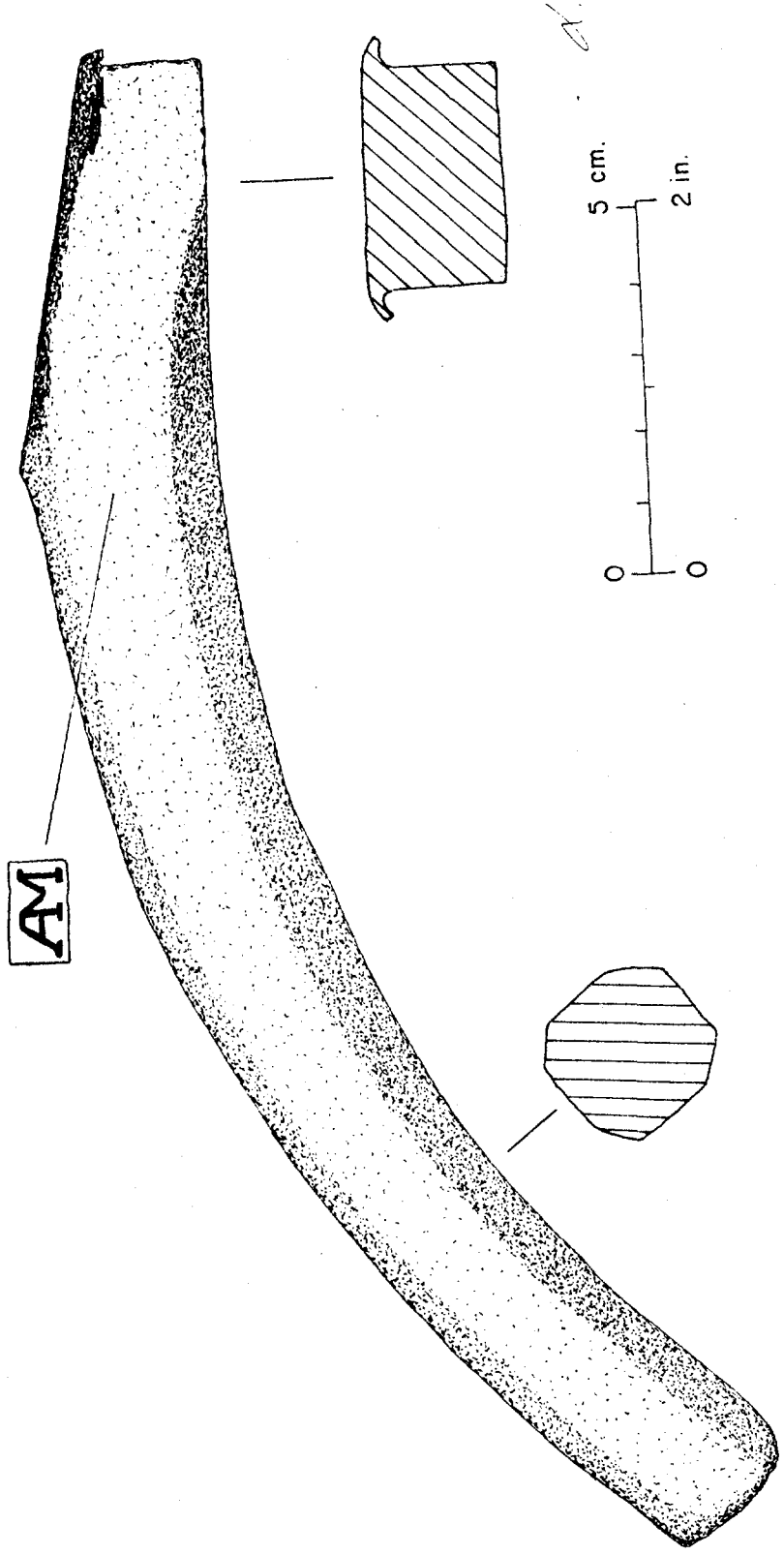


Fig. 122 -- Offset flatter (FOVA 27405) from F523.

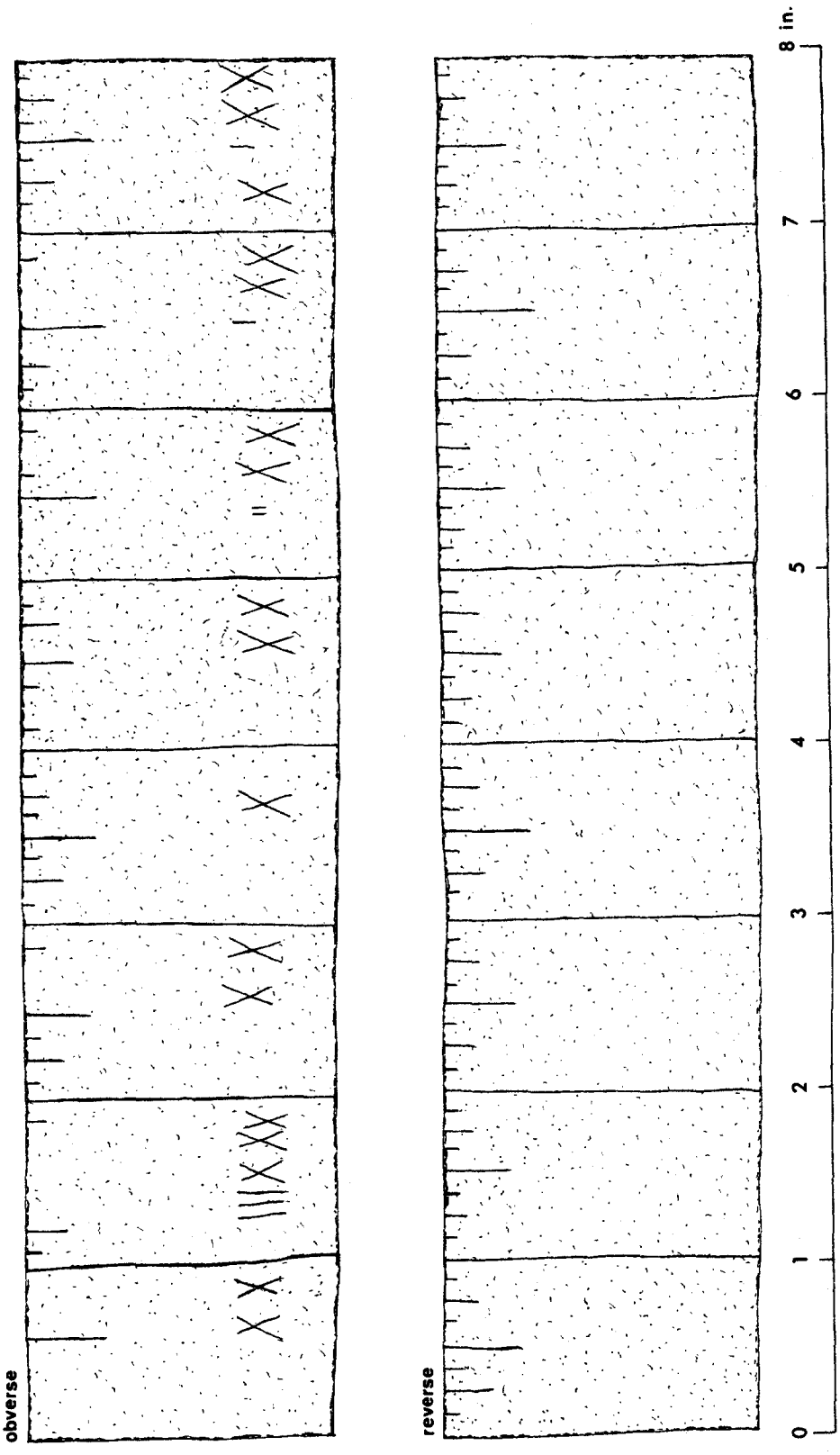


Fig. 123 -- Flat iron rule (FOVA 28158) from F523.

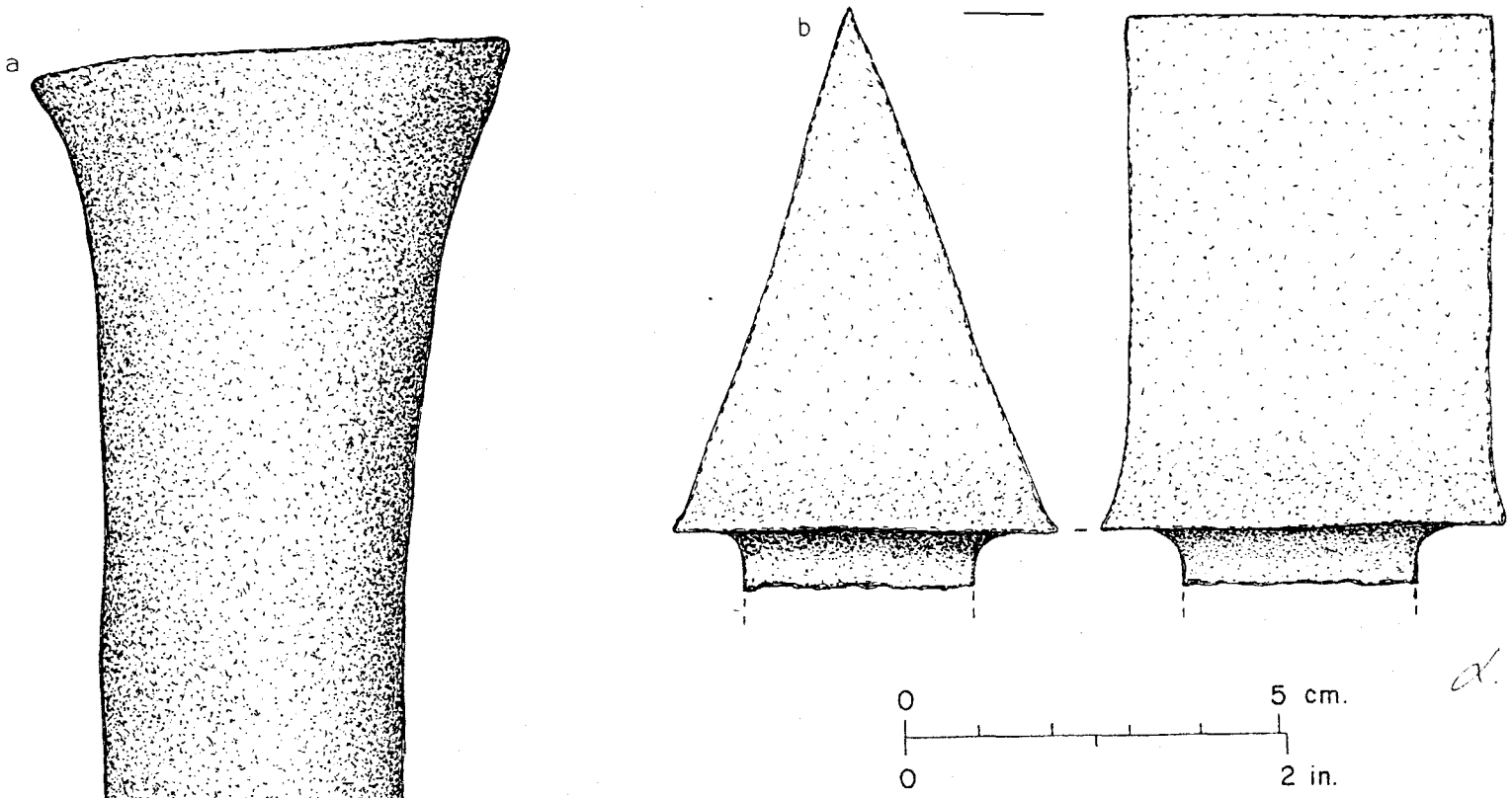


Fig. 124 -- Blacksmith tools from F523: a). axe body form ("oval punch")(FOVA 27681); b) hot set hardy (FOVA 27746).

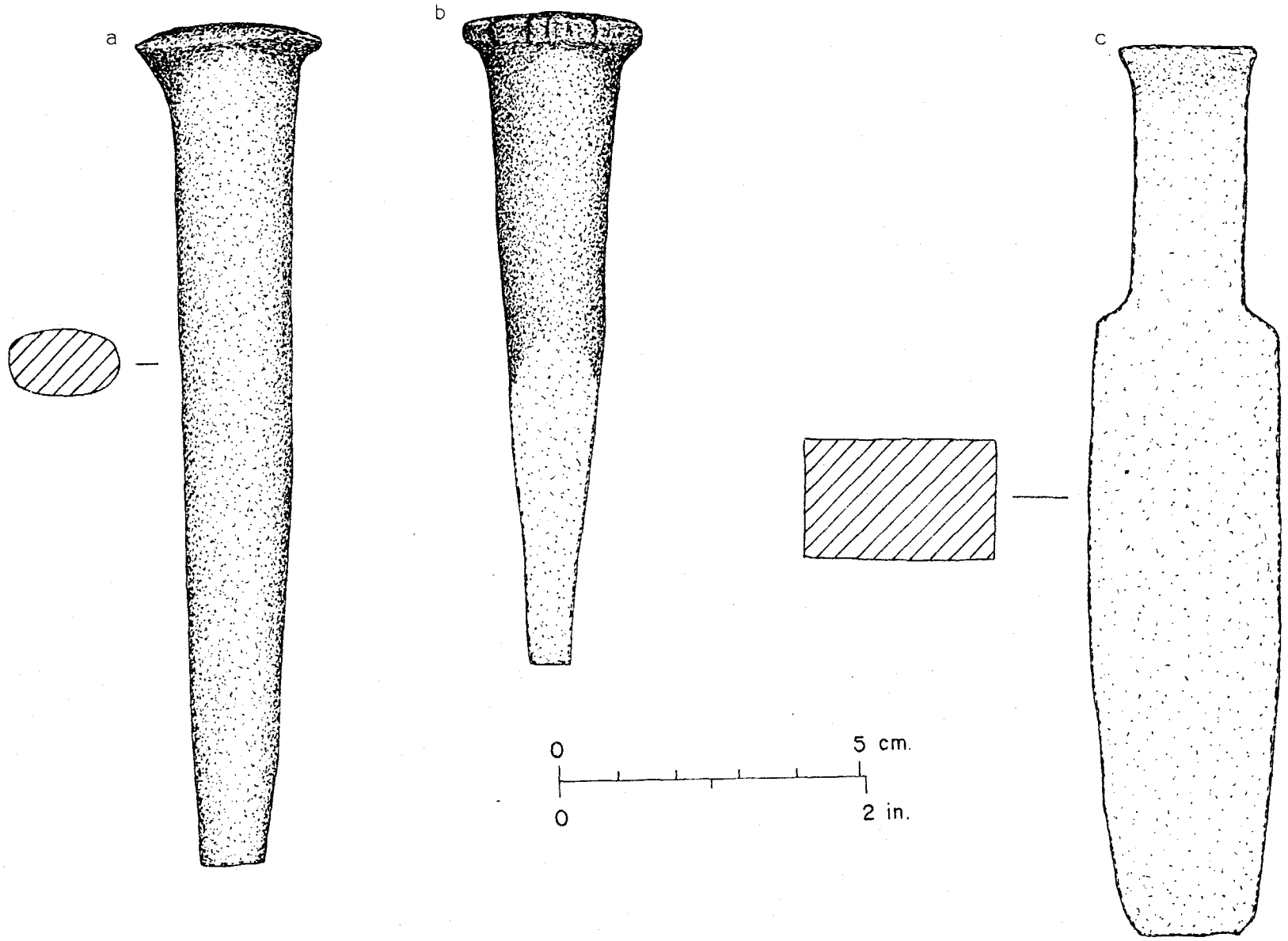


Fig. 125 -- Punches from F523: a). punch (FOVA 28263); b). punch (FOVA 27542) and c). punch (FOVA 28390).

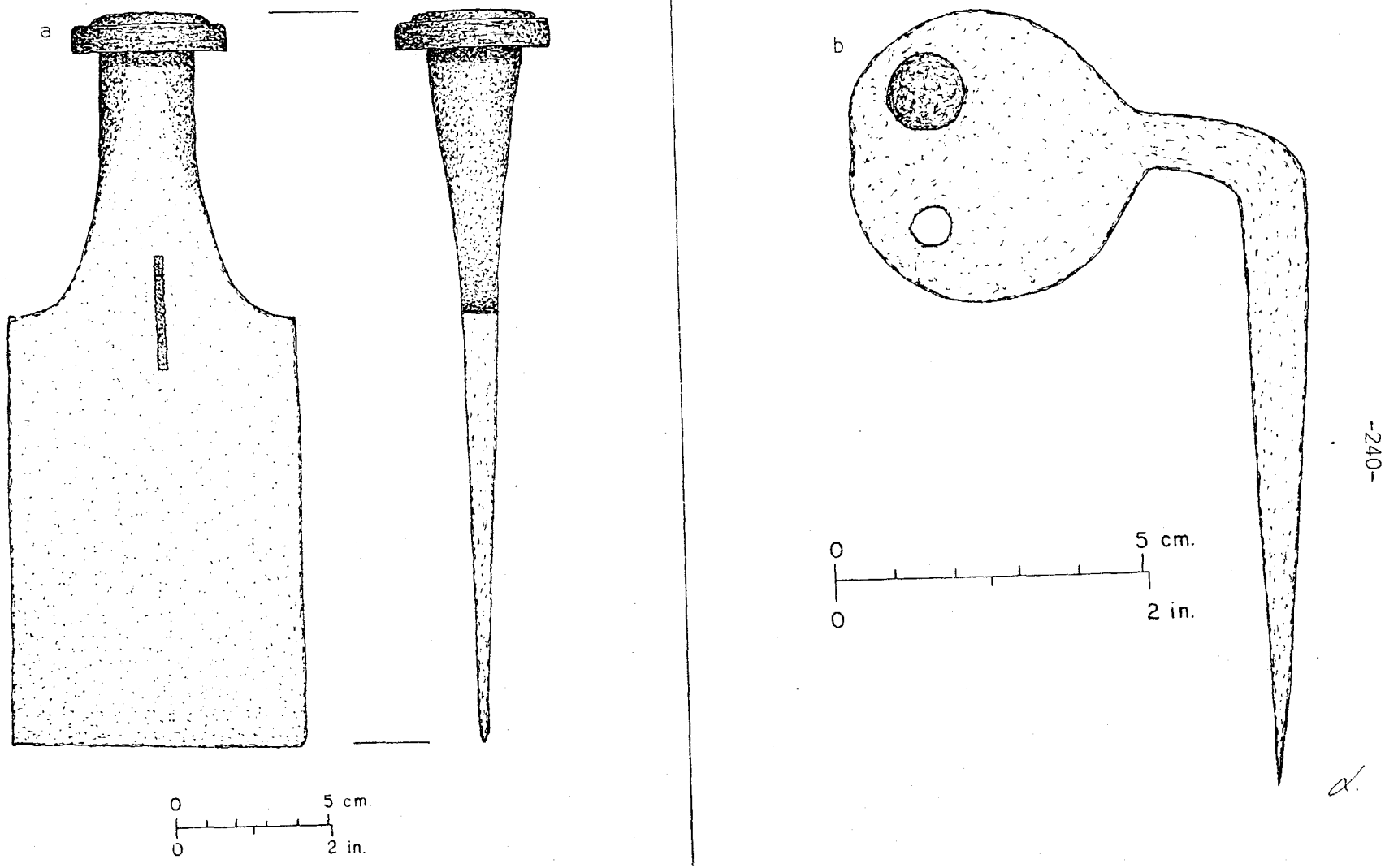


Fig. 126 -- Tools from F523: a). caulking tool (?) (FOVA 27615) and b). saw handle (FOVA 27390).

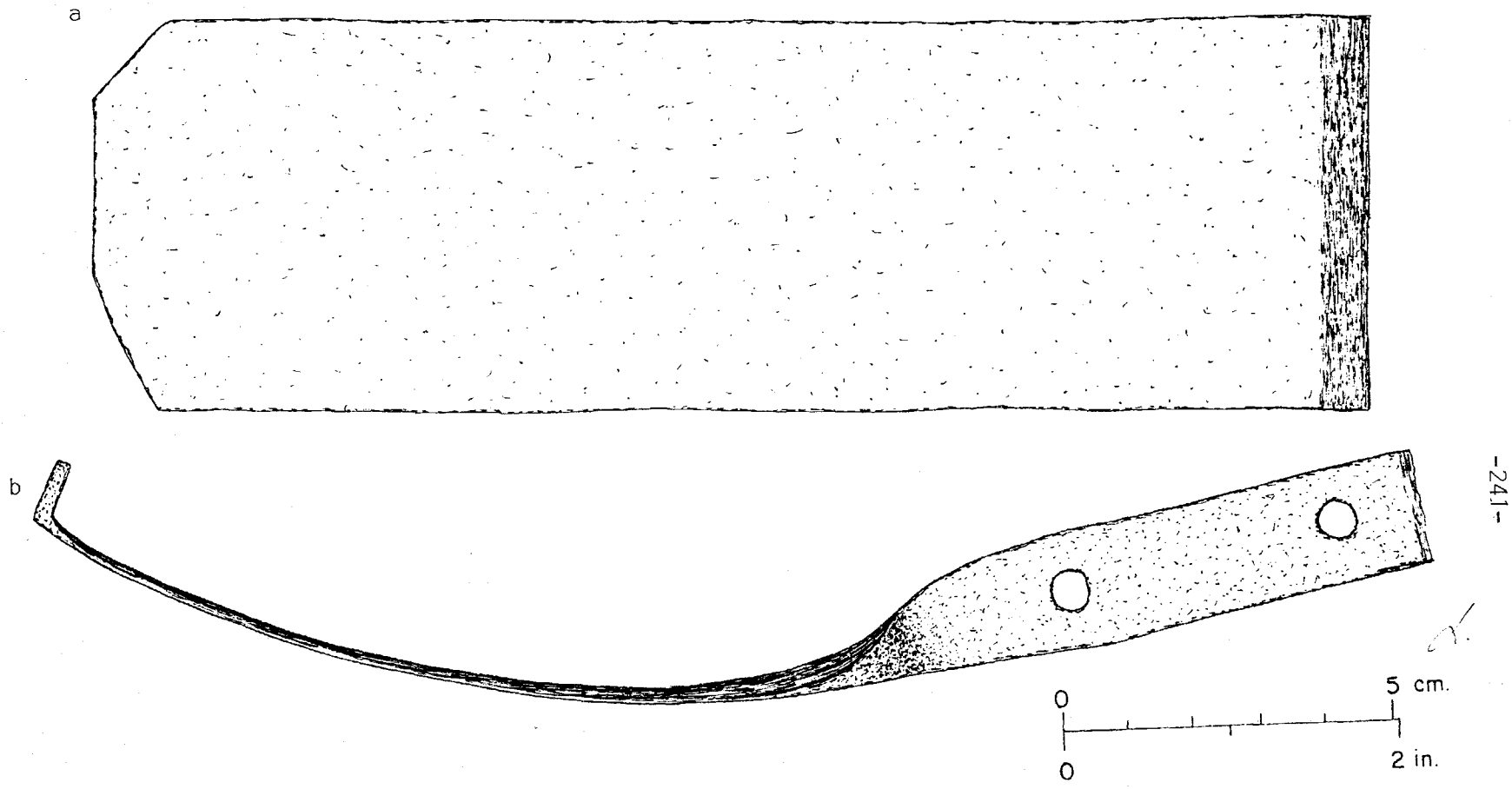


Fig. 127 -- Woodworking tools from F523: a). wood plane bit (FOVA 27973) and b). drawknife (FOVA 27973).

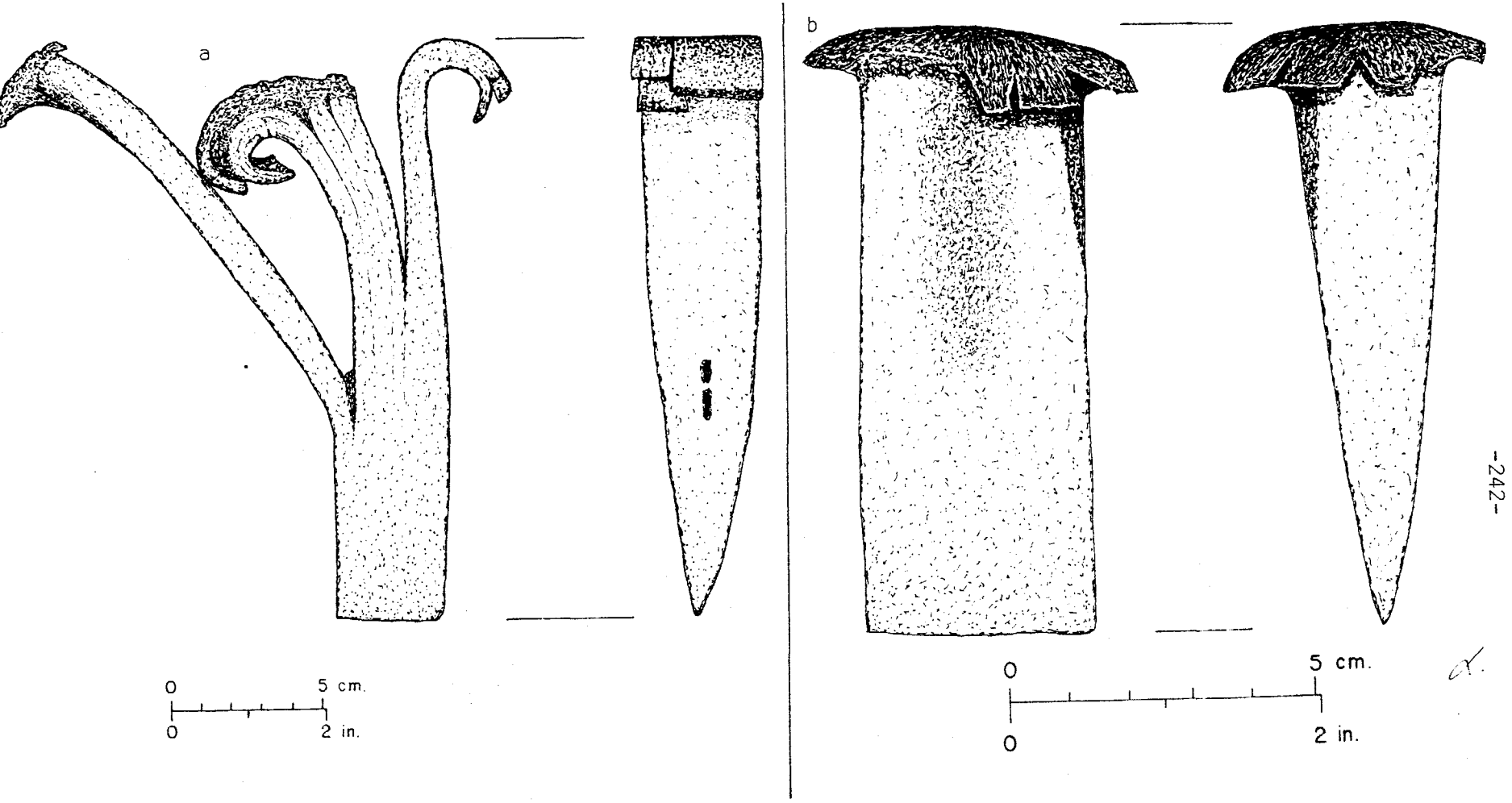


Fig. 128 -- Wedges from F523: a). wedge (FOVA 27974) and b). wedge (FOVA 27819).

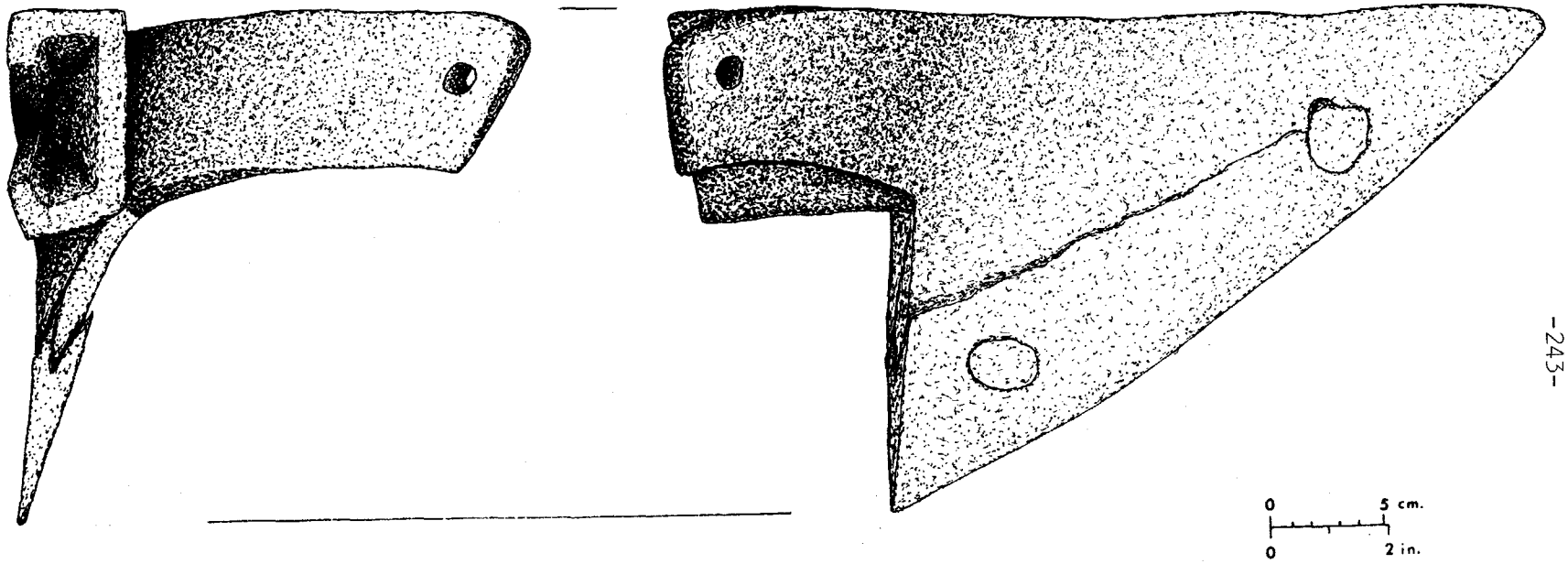


Fig. 129 -- Plow share (FOVA 27640) from F523.

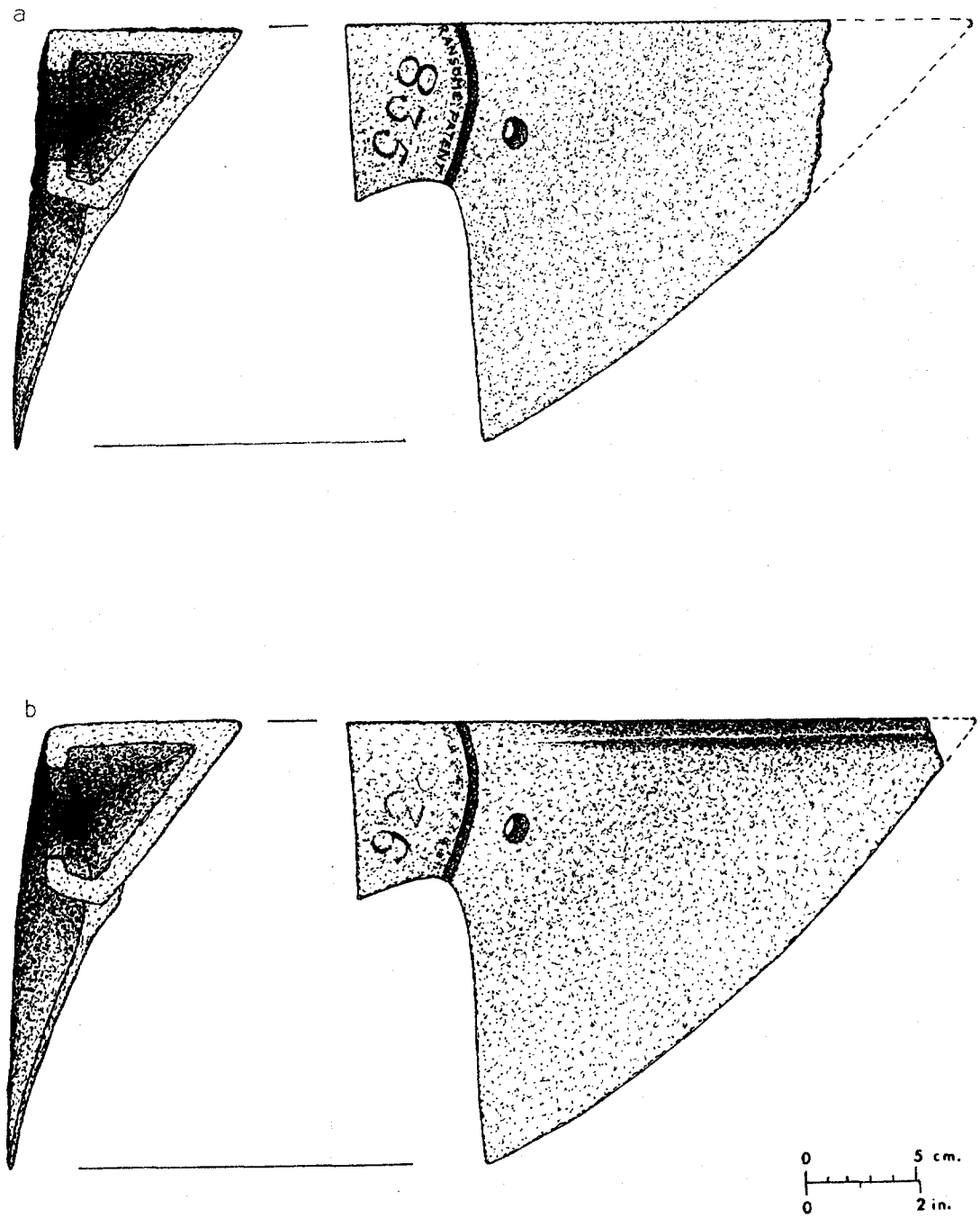


Fig. 130 -- Plow shares from F523: a). "Ransome Patent, 835" plow share (FOVA 27798) and b). "Ransome Patent, 836" plow share (FOVA 27569).

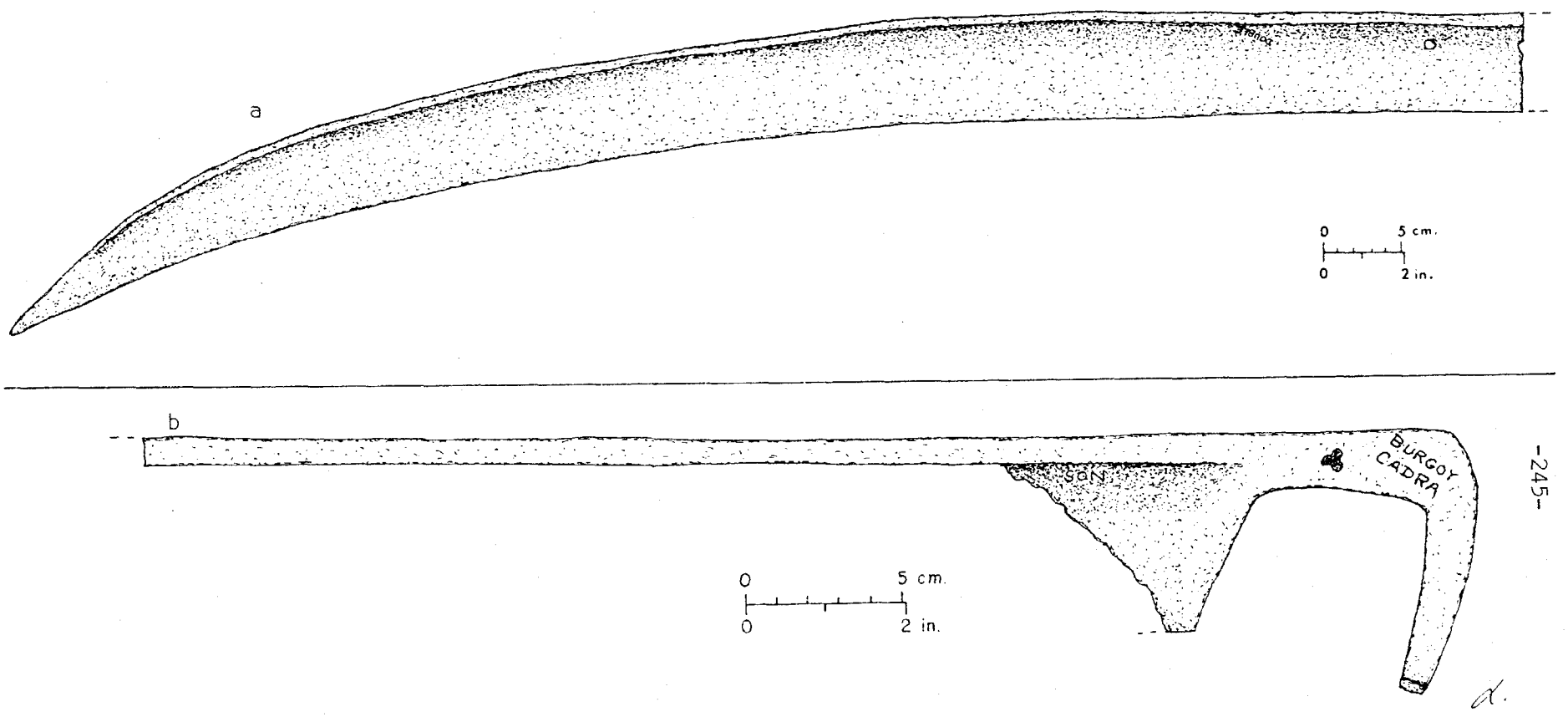
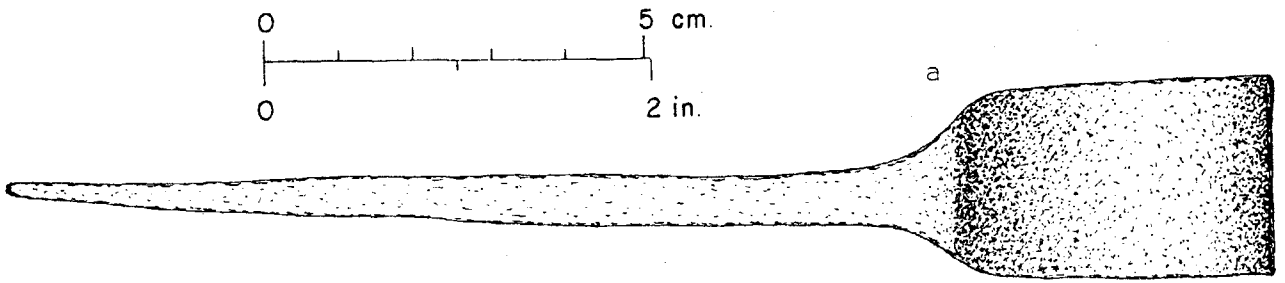


Fig. 131 -- Scythe blade from F523: a). "double" scythe blade (FOVA 27613) and b). "Burgoy Cadra" scythe fragment (FOVA 28185).



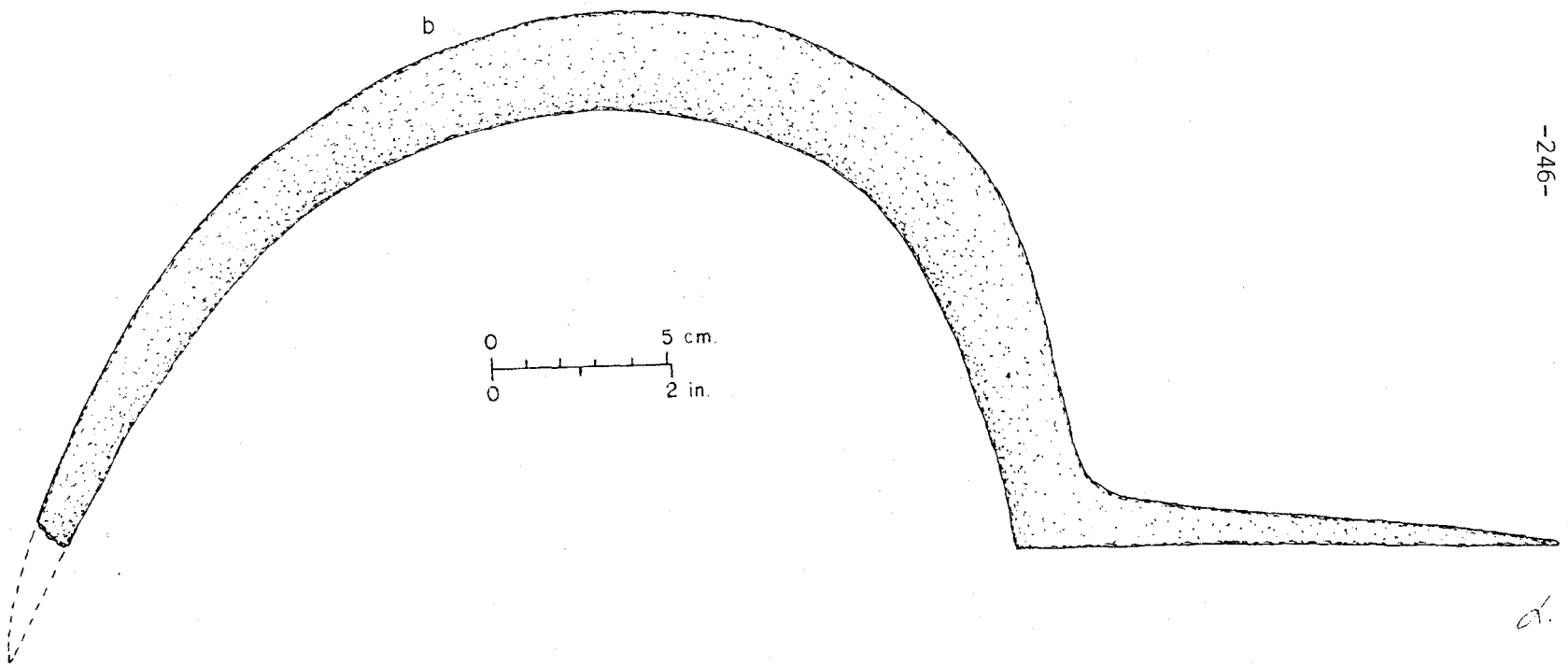


Fig. 132 -- Agricultural tools from F523: a). scythe handle (FOVA 27925) and b). sickle (FOVA 28543).

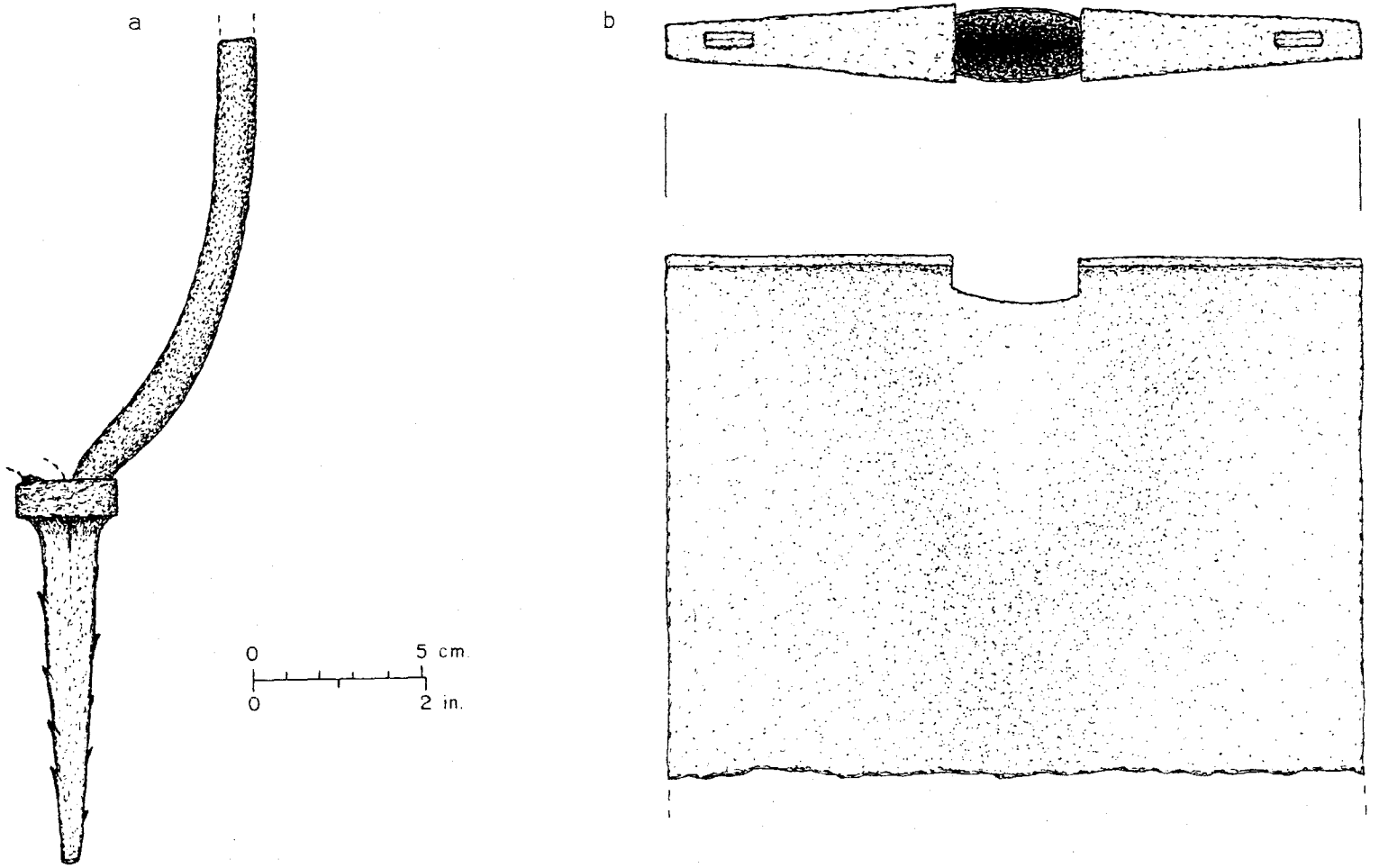


Fig. 133 -- Agricultural tools from F523: a). pitchfork (FOVA 28348) and b). shovel fragment (FOVA 27638).

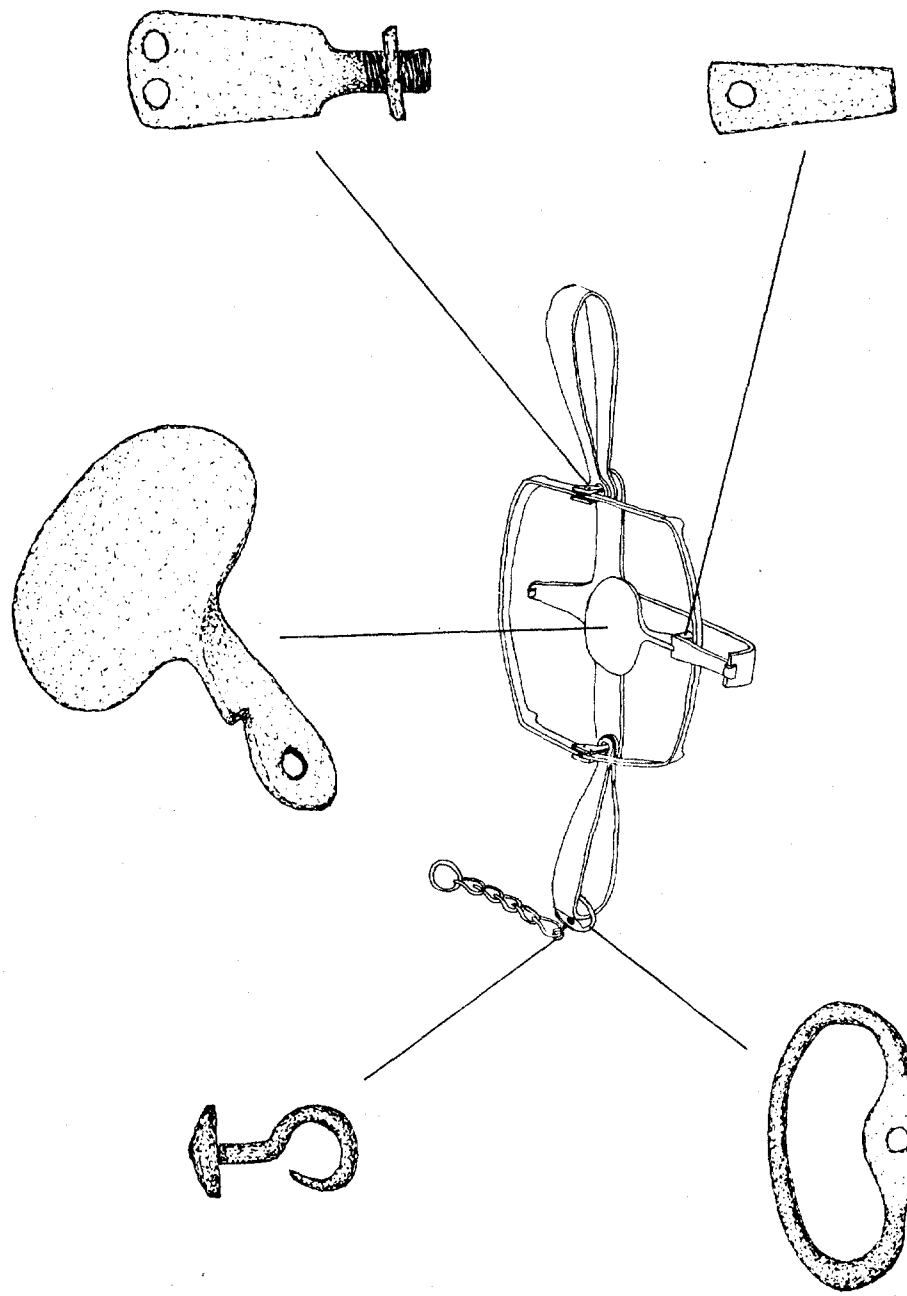


Fig. 134 -- Reconstructed HBC trap from F523.

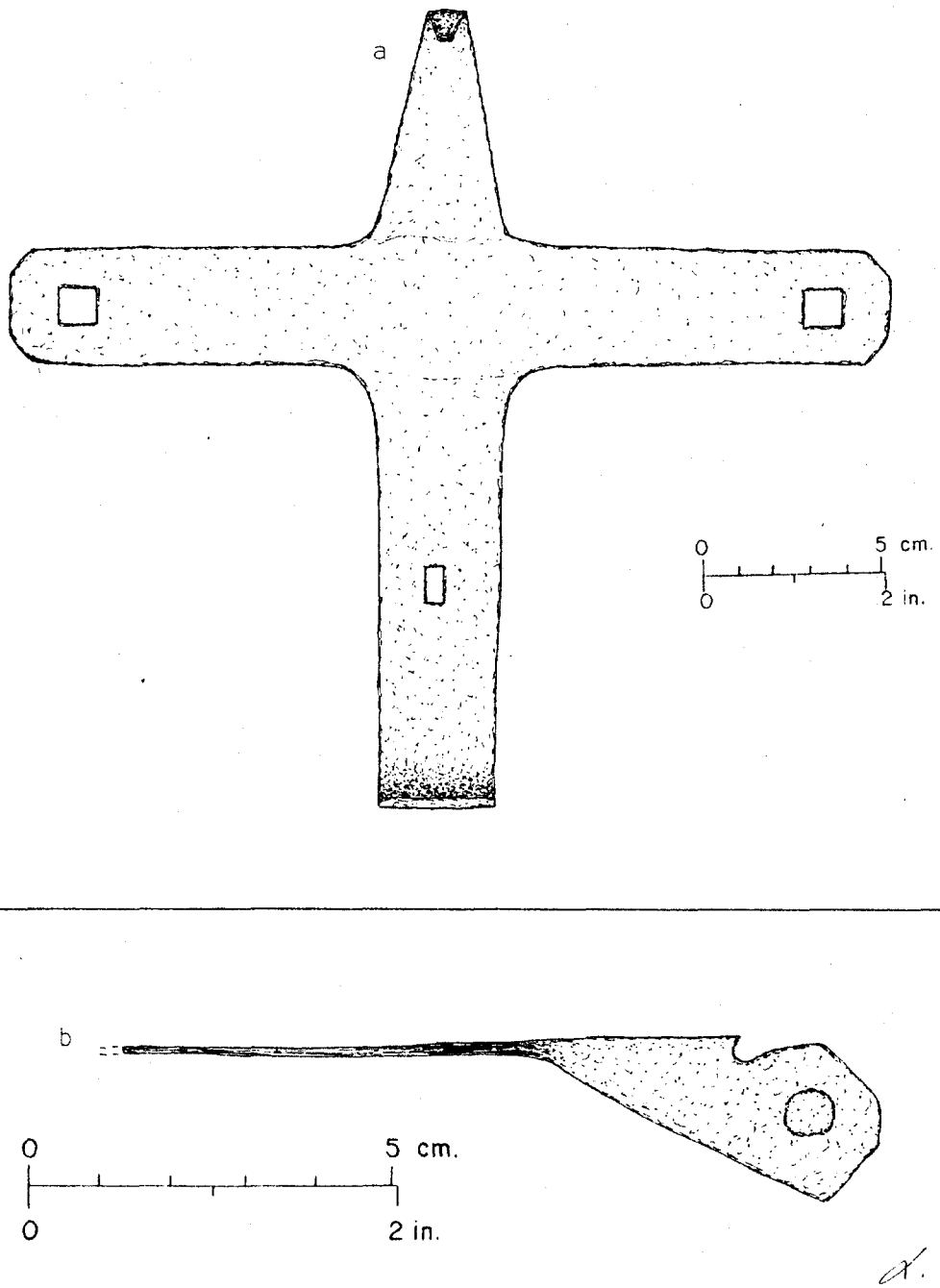


Fig. 135 -- Trap base (FOVA 27568) and trap pan preform (FOVA 28508).

The 13 finished crosses recovered were unique, in that all specimens had a circular hole at the midpoint in addition to having circular jaw post holes at both ends. Since all assembled trap bases thus far recovered have been without the center hole, it is hypothesized that these items may be parts of folding-type traps for which the base components rotated upon one another. This type of trap has been recorded as being used by the Pacific Fur Company (Russell 1967), and in 1841 the HBC Fort Vancouver depot inventories listed "pallets" and "crosses" separately from complete traps (Hussey 1972:291). These recovered specimens may therefore represent either a folding-type trap or a component trap here-to-for not recognized at Fort Vancouver. The specimens were manufactured at the Fort as the "JB" mark of Joseph Ouide Beachamp (Fort Vancouver blacksmith, 1843-1847; Hussey 1974:334-35) occurs on one specimen. This mark has also appeared on tongs from F523 and finished trap springs from the Blacksmith Shop. To date, this type of cross has only been found in F523 and the adjacent stockade area (Fig. 138a).

Jaw Posts

A total of 8 specimens, representing 3 different styles of jaw posts, were recovered and all have previously been reported. Three specimens of a double hinged flat topped post with threaded base were identified and are identical to the 4 jaw posts found assembled with jaws (see Fig.134). This style has also been recovered from the Indian Trade Store and was manufactured in the Blacksmith Shop (Hoffman & Ross 1975). The second style, having a triangular top, has been recovered in preforms (see the Blacksmith Shop of this report) but never finished. The base of the post was threaded. The third style, a triple-holed variety, has been reported from the Indian Trade Store area (Hoffman & Ross 1975).

Jaws

Two nearly complete jaws, together with the 5 specimens assembled with posts, were recovered. Six specimens are of the same size and style, having plain rounded ends with a single hinge hole cutout. Similar specimens have been reported from the Fur Store, Indian Trade Store, and Blacksmith Shop

Trap Springs

A total of 157 complete and fragmented trap springs were recovered, and all were of the style previously identified as being manufactured at Fort Vancouver (Hoffman & Ross 1974b: 151-152; 1975). As with specimens recovered from the Blacksmith Shop, the hole in the upper bow was larger in diameter than that of the lower bow, such that the lower would be securely anchored to the jaw post base while the upper portion could slide freely along the shanks of the jaws. Correlation of the internal diameters of upper and lower bows for 10 complete specimens indicate that the springs were of sizes comparable to those recovered from the Blacksmith Shop (Fig. 69).

Sixteen trap springs contained manufacturing marks, and 4 different marks were identified. Two marks probably represent known Fort Vancouver blacksmiths (from Hussey 1974). Six specimens had a " GF " (George Folster, 1830-32 and 1835-47) and one specimen had a " TS " (Thomas Scott, 1844-46). Two other marks have not been identified, a " G " or " C ", that may have been the mark of William Cannon or Canning (Fort Vancouver blacksmith 1835-1836); and a sunburst mark " ✵ " of unidentified origin. These marks have been illustrated in Fig. 136 . Notably missing on trap parts was the mark of " JB " (Joseph Beauchamp, 1843-47) which was the predominate mark found on trap springs recovered in the Blacksmith Shop. His mark, however, was found on tongs and a trap cross from F523.

Based on the bow diameters of marked specimens, springs marked GF (George Folster) were of a different size than springs marked G or C (possibly for William Cannon). Five springs marked GF were uniformly 2.4-2.6 cm. in diameter, while 3 specimens marked G were uniformly 3.2-3.3 cm. in diameter. Since all marks occur on the upper bow, the difference suggests a real difference in the size (and possibly function) of the trap springs being manufactured by the two individuals.

The stylistic variation of the complete assemblage of springs has been illustrated in Figs. 137a-c , and 2 complete springs have been included in the illustrated reconstructed HBC trap (Fig. 134).

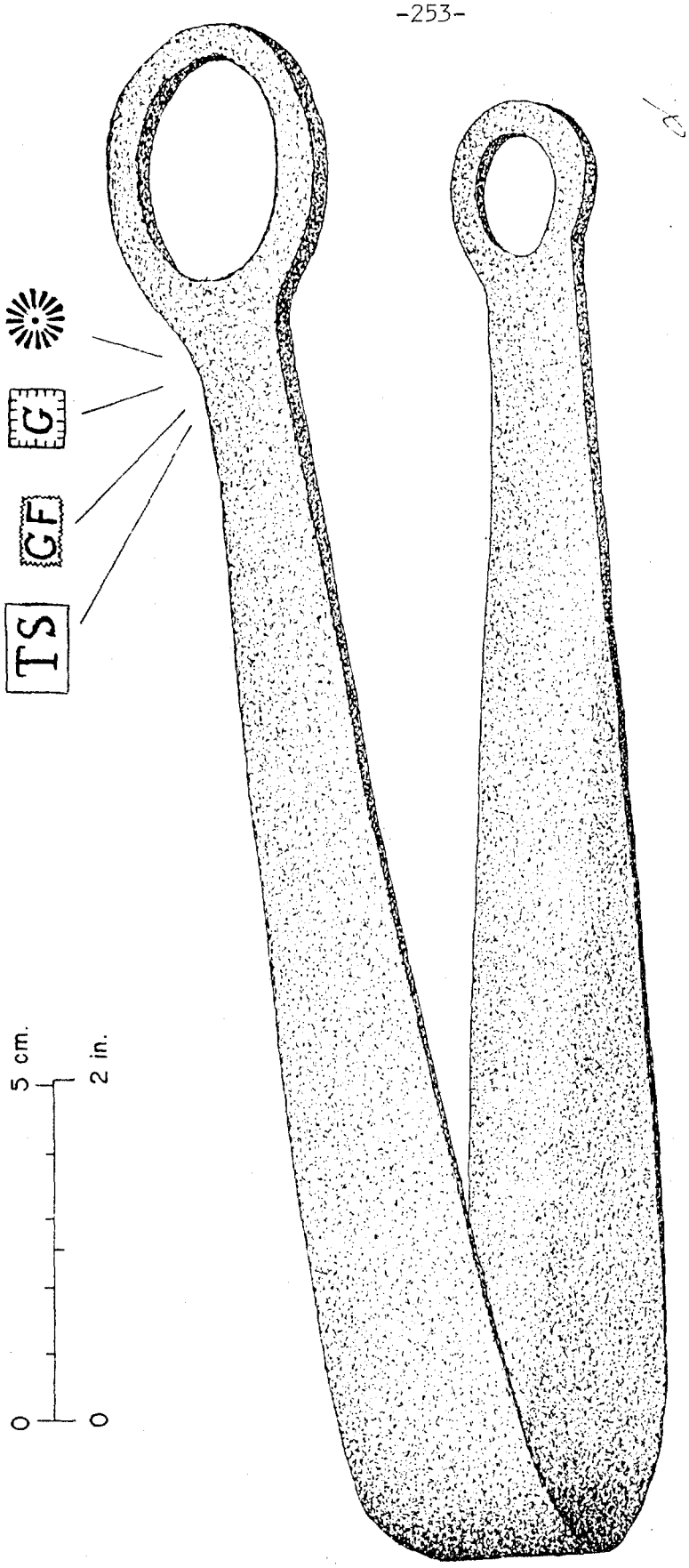


Fig. 136 -- Trap springs from F523.

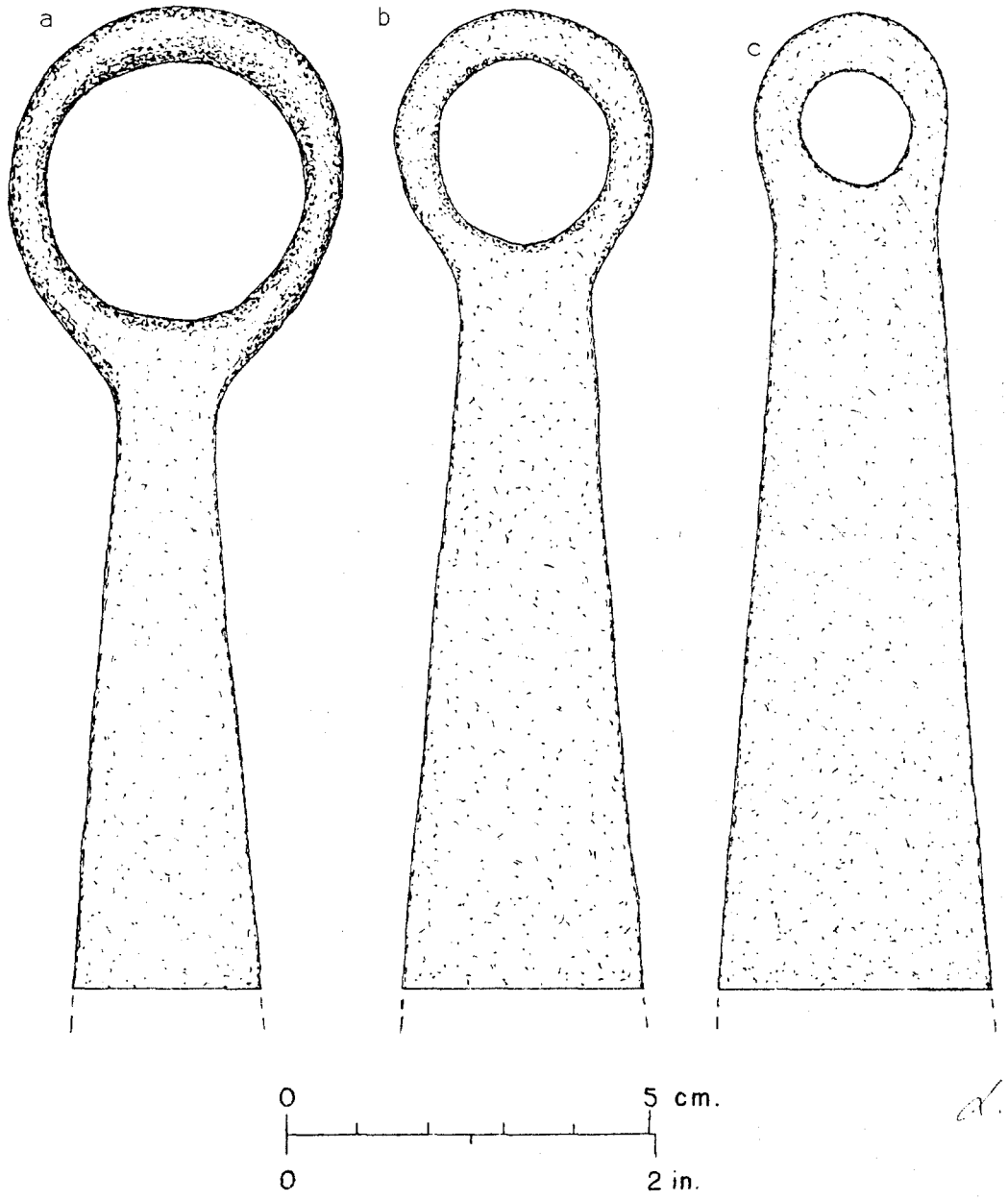


Fig. 137 -- Trap spring variations (FOVA 27245, 27297 and 28226).

Pan Posts

One specimen of a finished pan post was recovered, together with 2 specimens assembled with base fragments. The assembled posts have single hinge holes with rectagonal, riveted anchors. This style was definitely manufactured at the Blacksmith Shop and is illustrated with the reconstructed HBC trap (Figs. 134). The non-assembled post was manufactured with a single hinge hole and had a circular threaded base. Similar specimens were manufactured in the Blacksmith Shop (Fig. 70d).

Pans

Of the 2 trap pans recovered, one specimen was complete and has been included in the illustrated reconstruction of an HBC trap (Fig.134). Both specimens were manufactured locally and differ only in pan face shape and size, the illustrated specimen had an oval face, and the second had a larger, rectangular face.

Ketches

Three complete specimens and a fourth, assembled with a pan and trap base fragment, were recovered. They are consistent with the previously reported and illustrated styles manufactured in the Blacksmith Shop (Figs.72a-b).The assembled specimen has been illustrated in the reconstruction of an HBC trap (Fig. 134).

Swivel Eyes

A total of 12 specimens was recovered, and on the basis of having been observed on a complete HBC type trap in possession of the Oregon Historical Society, a specimen has been illustrated with the reconstructed HBC trap (Fig. 134). Formerly classified and illustrated as nail Variety #1065 (Hoffman & Ross 1974b: Fig. 63h), they have since been redefined (Hoffman & Ross 1975), and were probably manufactured in both the early and late Blacksmith Shops. One size population is represented in the assemblage with the overall length ranging from 7.5-9.6 cm. and the distance from head to eyelet bend ranging from 4.5-5.5 cm.

Swivel O-Ring

One specimen was recovered and has been included, assembled with a swivel eye, in the reconstructed HBC trap (Fig.134). Swivel o-rings were locally manufactured, as preforms and have been reported from the Blacksmith Shop.

Preform Parts and Manufacturing Waste

A total of 28 preforms was recovered, predominately partially manufactured trap springs. In addition, one specimen of jaw cutout was identified.

Trap Base Preforms

Five specimens were recovered and represent at least 2 stages in the manufacture of the HBC cross and pallet trap base style. Representative specimens are illustrated in Figs. 138a-c.

Trap Jaw Post Preforms

Of the 3 specimens of trap jaw post preforms recovered, 2 were identified as representing one stage, that of partial hinge hole punching, in the manufacture of peaked-tip, circular based jaw posts (see Blacksmith Shop section in this report).

Trap Jaw Preforms

At least 4 stages of manufacture are represented in the 5 jaw preforms recovered, and at least 2 specimens of partially manufactured offset-hinge jaws were recovered. Finished specimens of this type were recovered from Caywood's excavations assembled with single hole jaw posts. The various preform specimens have been illustrated in Figs. 139a-c.

Trap Spring Preforms

Fifteen specimens representing at least 3 stages of manufacture were recovered and are consistent with the hypothesized manufacturing sequence for trap springs from the Blacksmith Shop (Fig. 76). Representative specimens have been illustrated in Figs. 140a-b.

Trap Pan Preform

One specimen of rectangular faced trap pan was recovered with a partially punched hinge hole (Fig. 135b).

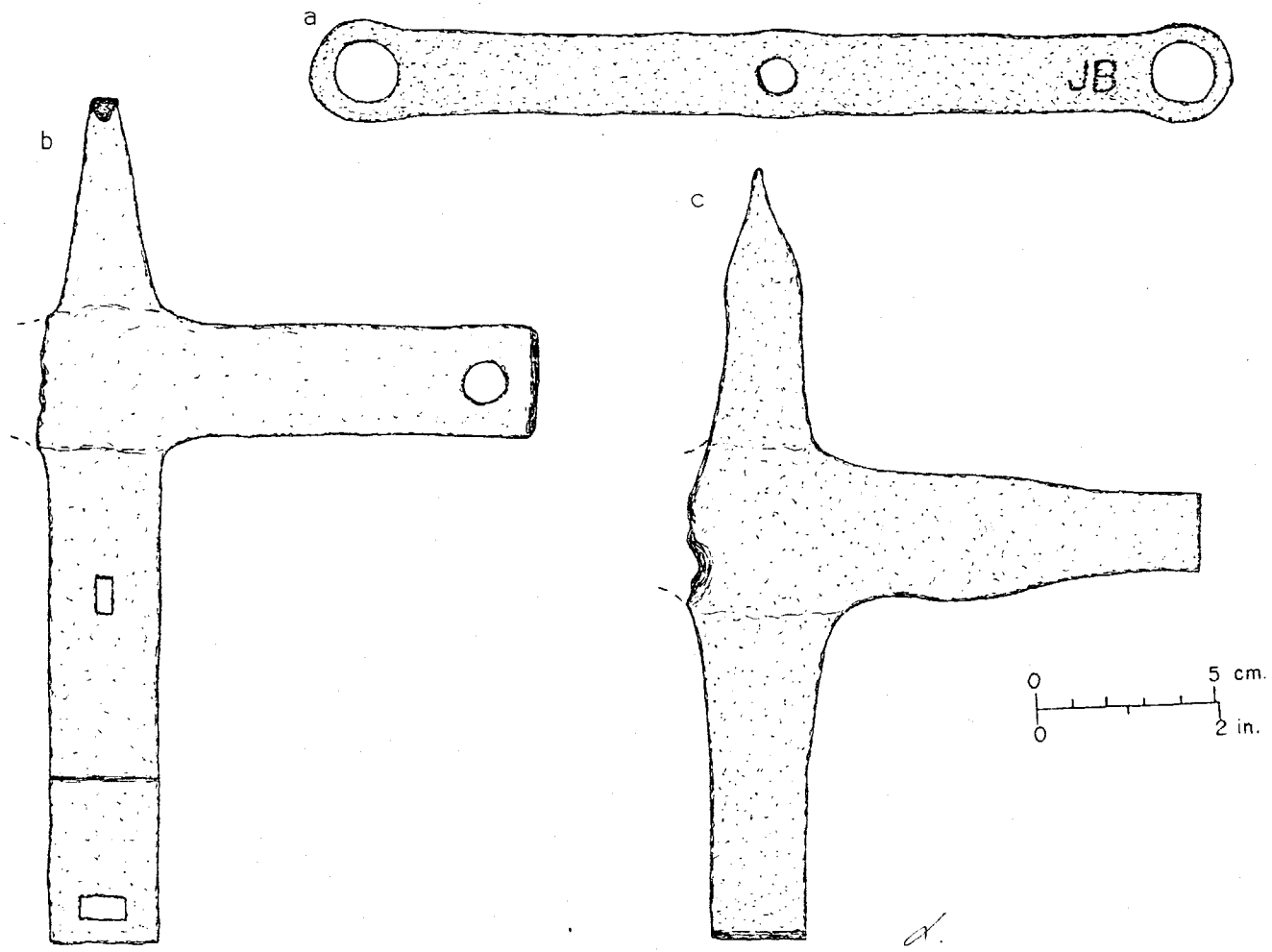


Fig. 138 -- Trap cross and base preforms from F523: a). trap cross (FOVA 28568); b). trap base preform (FOVA 27969) and c). trap base preform (FOVA 27967).

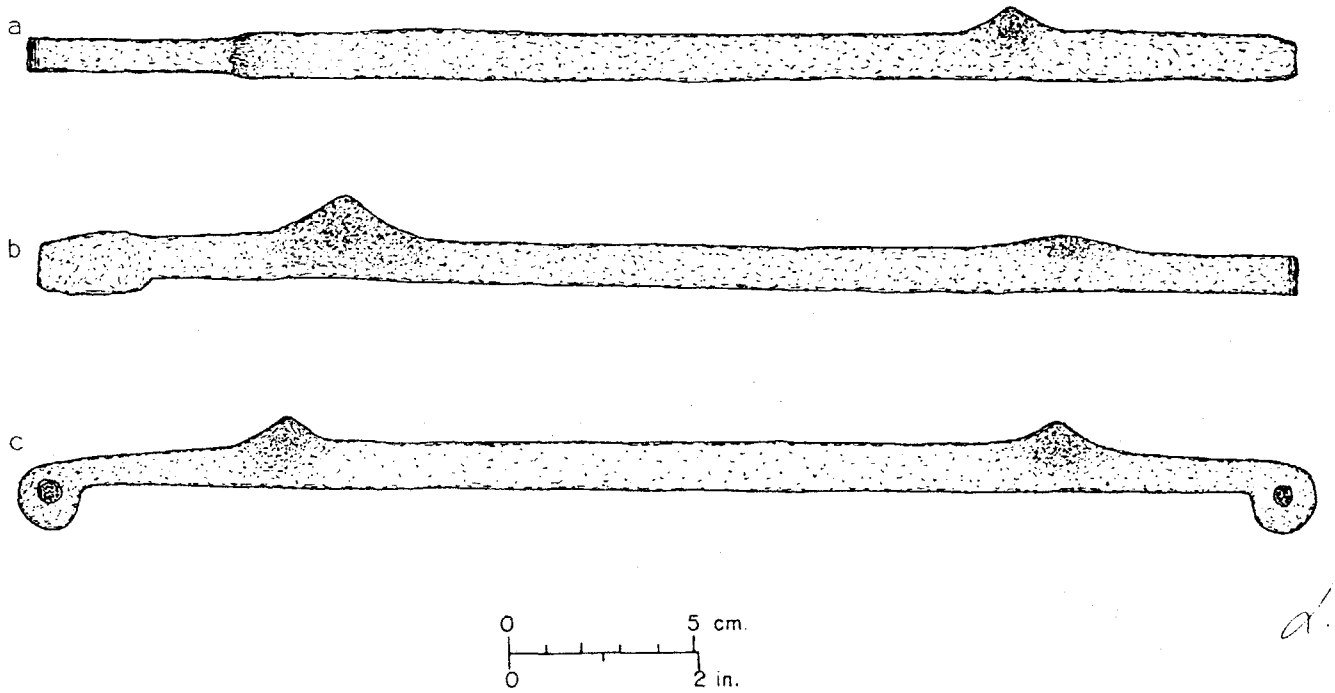


Fig. 139 -- Trap jaw preforms from F523: a). trap jaw preform (FOVA 28360); b). trap jaw preform (FOVA 27931) and c). trap jaw preform (FOVA 27335).

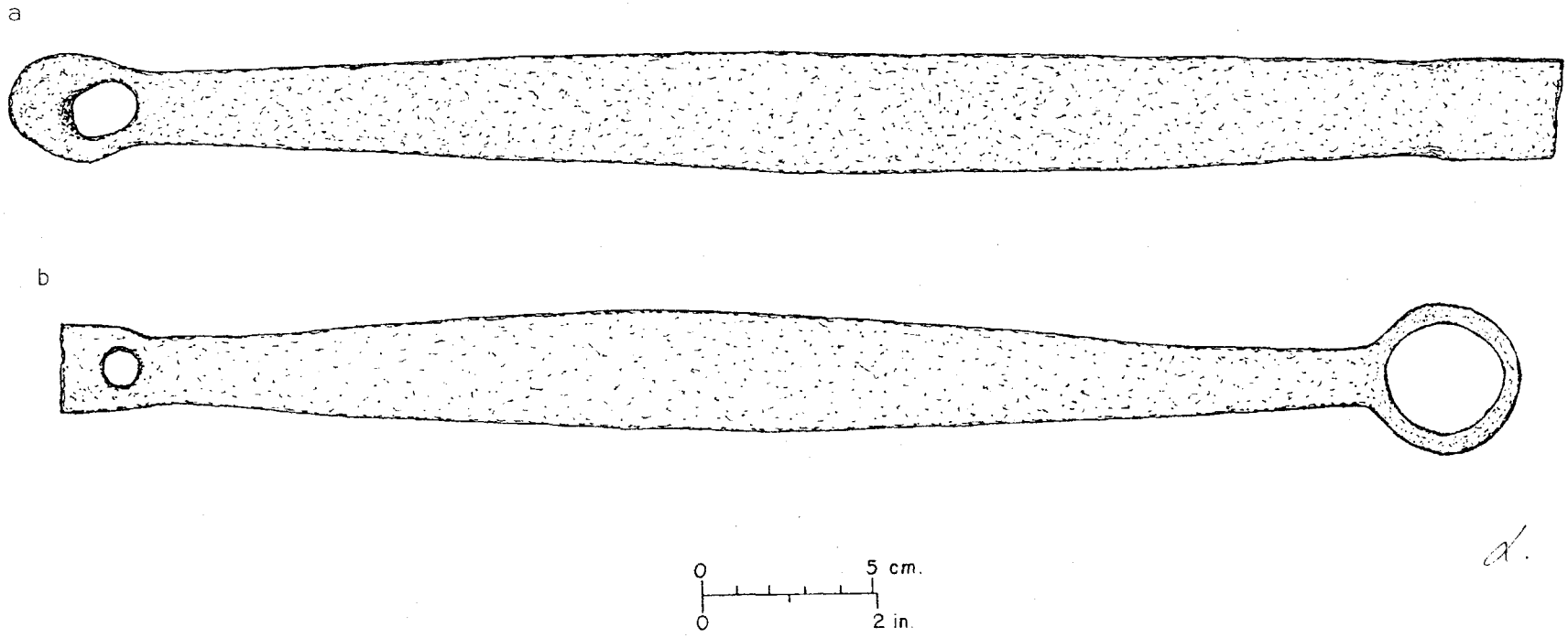


Fig. 140 -- Trap spring preforms from F523: a). trap spring preform (FOVA 27547) and b). trap spring preform (FOVA 28066).

Axe Parts

A total of 22 axe parts were recovered including 10 finished and 12 preform specimens. Both round and square head axes were identified in finished and partially manufactured form. In addition, 3 preform polls, one finished axe poll and one axe wedge was recovered. Examples of these have been defined and illustrated in previous reports.

Finished Parts

Three polled, "square head", axes and 4 "round head" axes were recovered. On the basis of the measurement of stock width, square head axes of 1 3/8- 1 1/2 inch size and 2 3/8-2 1/2 inch size, and round head axes of 1 3/4 inch and 2 3/8-2 1/2 inch size were identified. These sizes conform to previously reported sizes from both the Fur Store and the Blacksmith Shop with the 1 3/8-1 1/2 inch and 1 3/4 inch sizes relating to the ca. 1845 "small" and "middling" sized axes, and 1 3/8- 1 1/2 inch sizes relating to the earlier Blacksmith Shop sizes of "small" and "middling" (Hoffman & Ross 1974b:150). One manufacturing mark, AL , impressed on a 2½ inch squarehead axe was recovered, and has been correlated with either Andre' Lachapelle (Fort Vancouver blacksmith, 1828-1840) or Andrew Louttit (Fort Vancouver blacksmith, 1840-44).

Preform Axes

Of the 9 axe bodies recovered, 2 represented the partial manufacture of square head axes, and 6 were preform round head axes, with one specimen unidentified. Square head preforms occurred in both 1 3/8-1 1/2 in. and 1 3/4 in. sizes, while round head axe preforms occurred in 1 3/8-1 1/2 in., 1 3/4 in. and 2 1/2 in sizes. Of the 3 preform polls recovered, one previously unreported size, of 2 in. width, was identified. All specimens recovered were of ca. 3/8 in. stock thickness.

With the exception of a 3½ in. size axe recovered from the 1947-1952 NPS excavations, all axe specimens recovered have been no larger than 2½ in. in head width. Present evidence suggests that the inventoried "small", "middling" and "large" axe sizes were manufactured from stock sized 1 3/8-1 1/2 in., 1 3/4 in. and 2 1/2 in. in width and 3/8 in. in thickness (see Fig. 141).

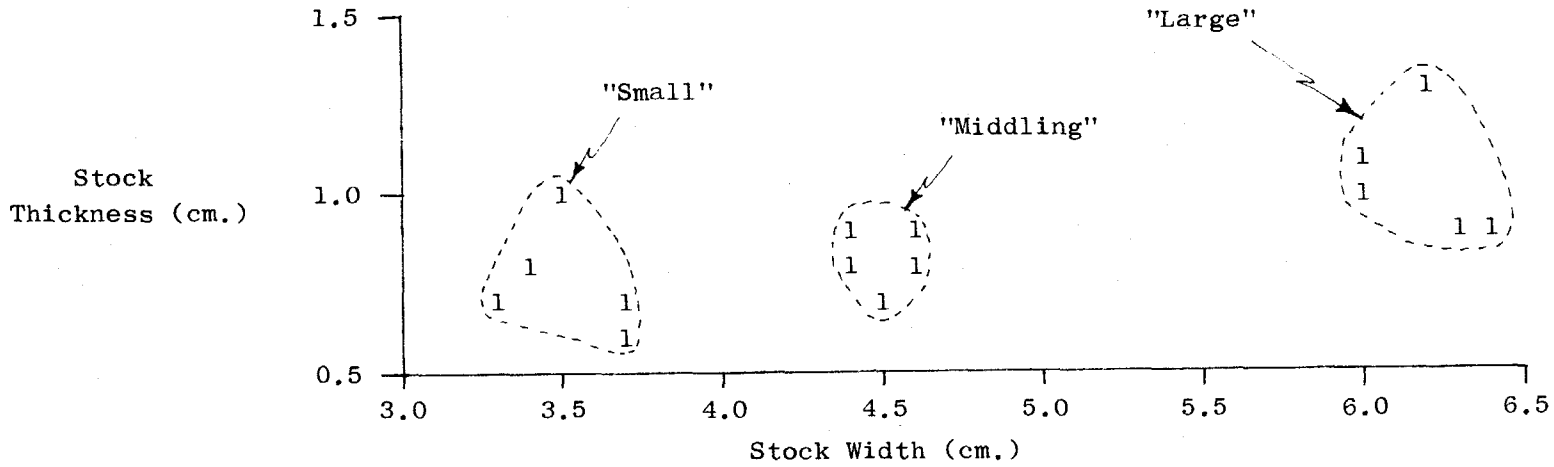


Fig. 141 -- HBC axe sizes as determined by the correlation of stock width to stock thickness on finished and preform axe bodies from F523 (N = 15).

Miscellaneous Metal Hardware

The 675 items recovered consisted of a wide variety of agricultural and industrial accessory hardware (Table 28). With the exception of 6 preforms, a partially manufactured singletree ferrule, an adjustable clevis, and 4 barbed wedge templates, all specimens were either fragmented or complete finished objects; and the assemblage appears to represent, for the most part, recycled metal trash. One manufacturing mark was identified, "COLEY ", occurring on a hook.

Horseshoes

Of the 4 horseshoes recovered, one unique repaired specimen, having a triangular caulk, has been illustrated in Fig. 142. All other specimens exhibited excessive wear, and were probably worn-out shoes.

Singletree and Harness Hardware

Eleven specimens of singletree and harness hardware and one preform singletree ferrule were recovered. Of the finished specimens, 5 singletree ferrules and 2 hames were identified. The hames consisted of circular wrapped sheet metal with a welded eyelet end (Fig.143a). The preform singletree ferrule (Fig.143c) is thus far unique and verifies that "country-made swingle tree irons" (Hussey 1972:292) were manufactured at the Fort. A complete singletree ferrule is illustrated in Fig. 143b.

Single and Adjustable Clevises

One specimen of a single clevis (Fig.144a) and 12 adjustable clevises, including one preform specimen, were recovered. Adjustable clevises have here-to-fore not been reported from the Fort. They were probably utilized with agricultural equipment, expecially plows, where a height adjustment was necessary. The assemblage suggests repair and replacement of these parts at the Fort. Five styles of adjustable clevis have been identified and have been illustrated in Figs.144b-147a-b. While the preform is illustrated in Fig.147c.

Hooks

A total of 28 hooks were recovered including one probable imported specimen marked "COLEY" (Fig.148a). Six complete specimens were identified and are illustrated in Figs.148b-151a. Also a complete hook was recovered attached to a flat chain link and closed eye nail, and is illustrated in Fig.151b.

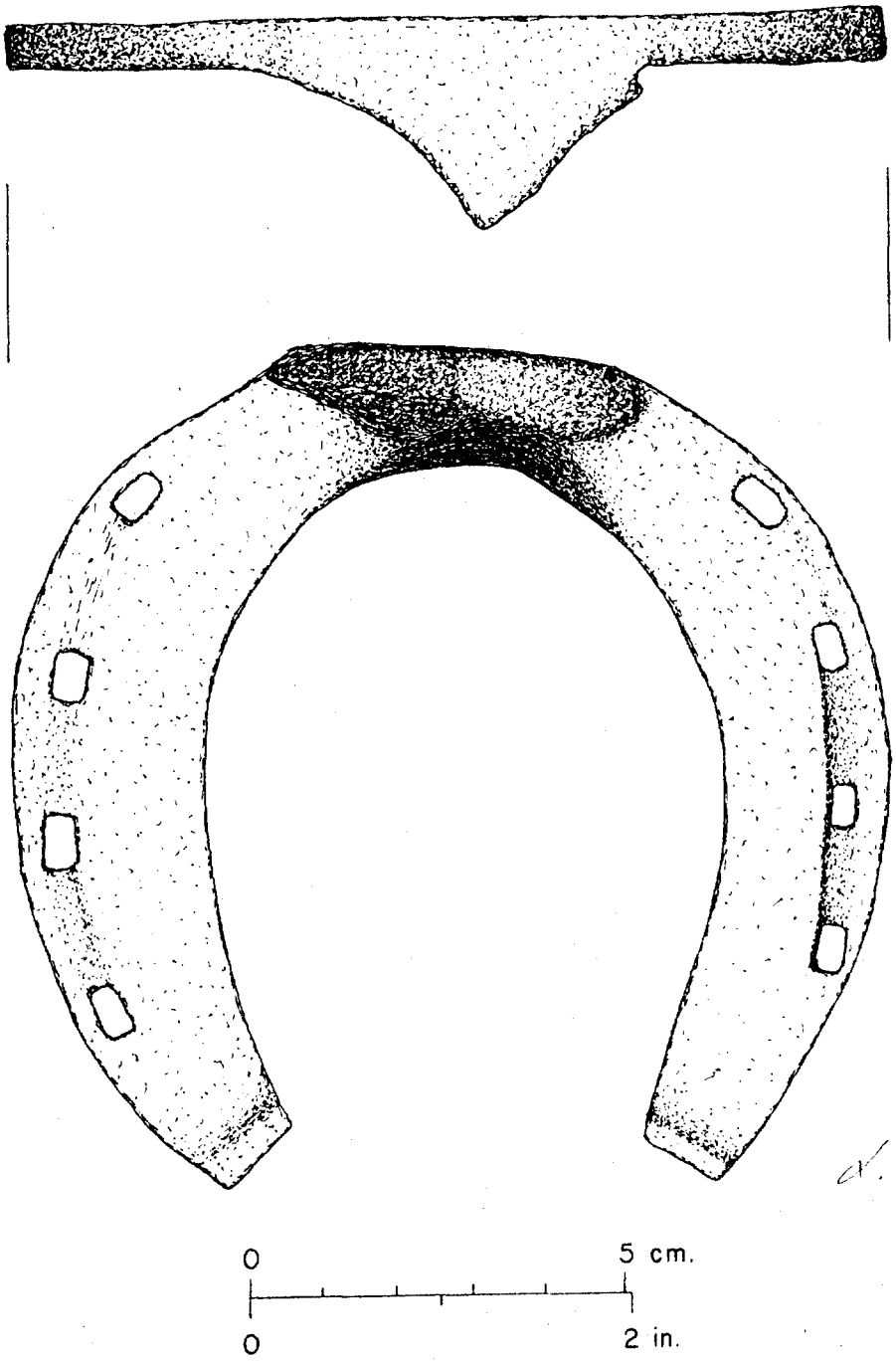


Fig. 142 -- Horseshoe (FOVA 28188) from F523.

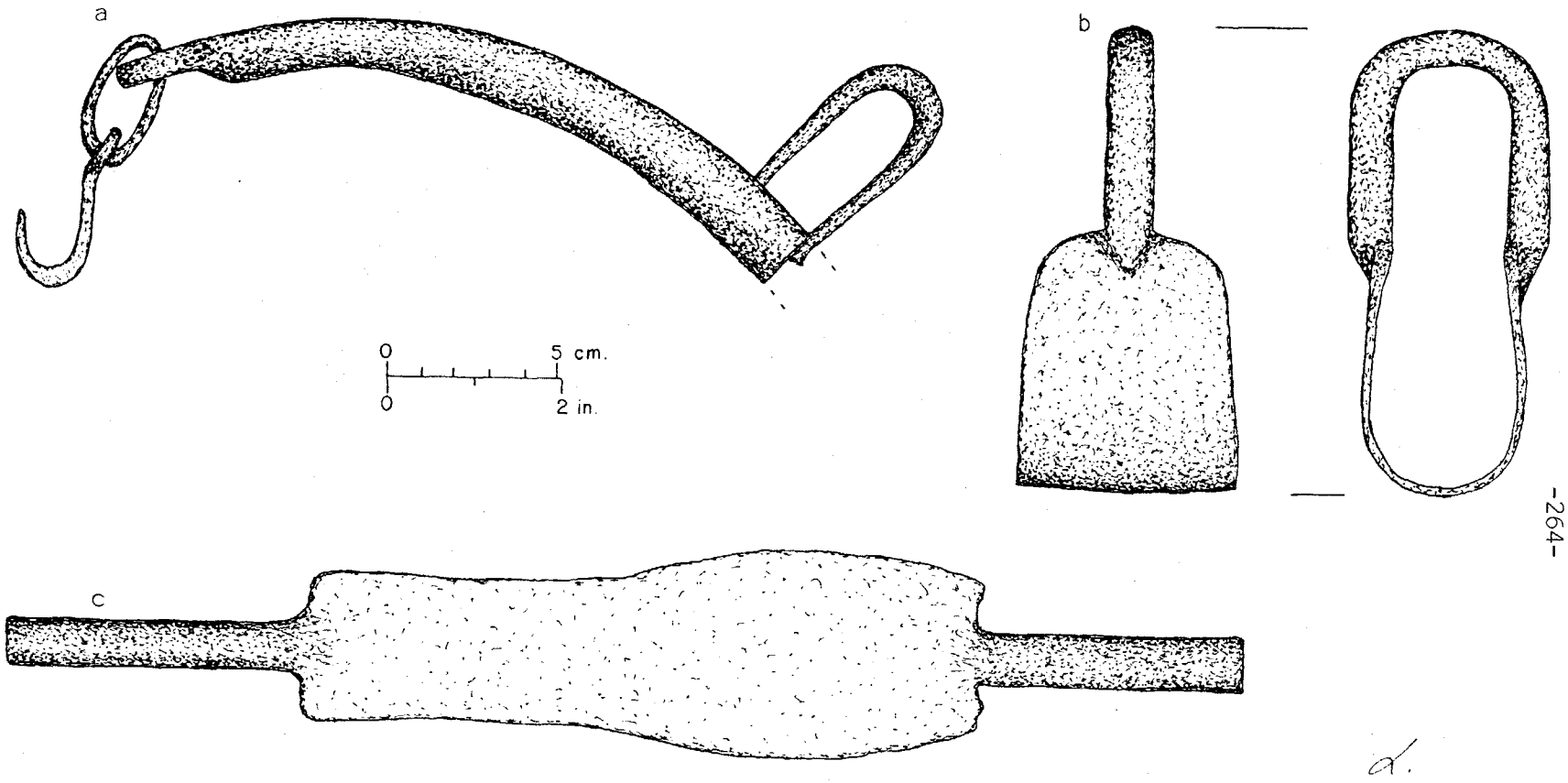


Fig. 143 -- Harness and singletree hardware from F523: a). hame tip (FOVA 27128b); b). singletree ferrule (FOVA 27724) and c). singletree ferrule preform (FOVA 27570).

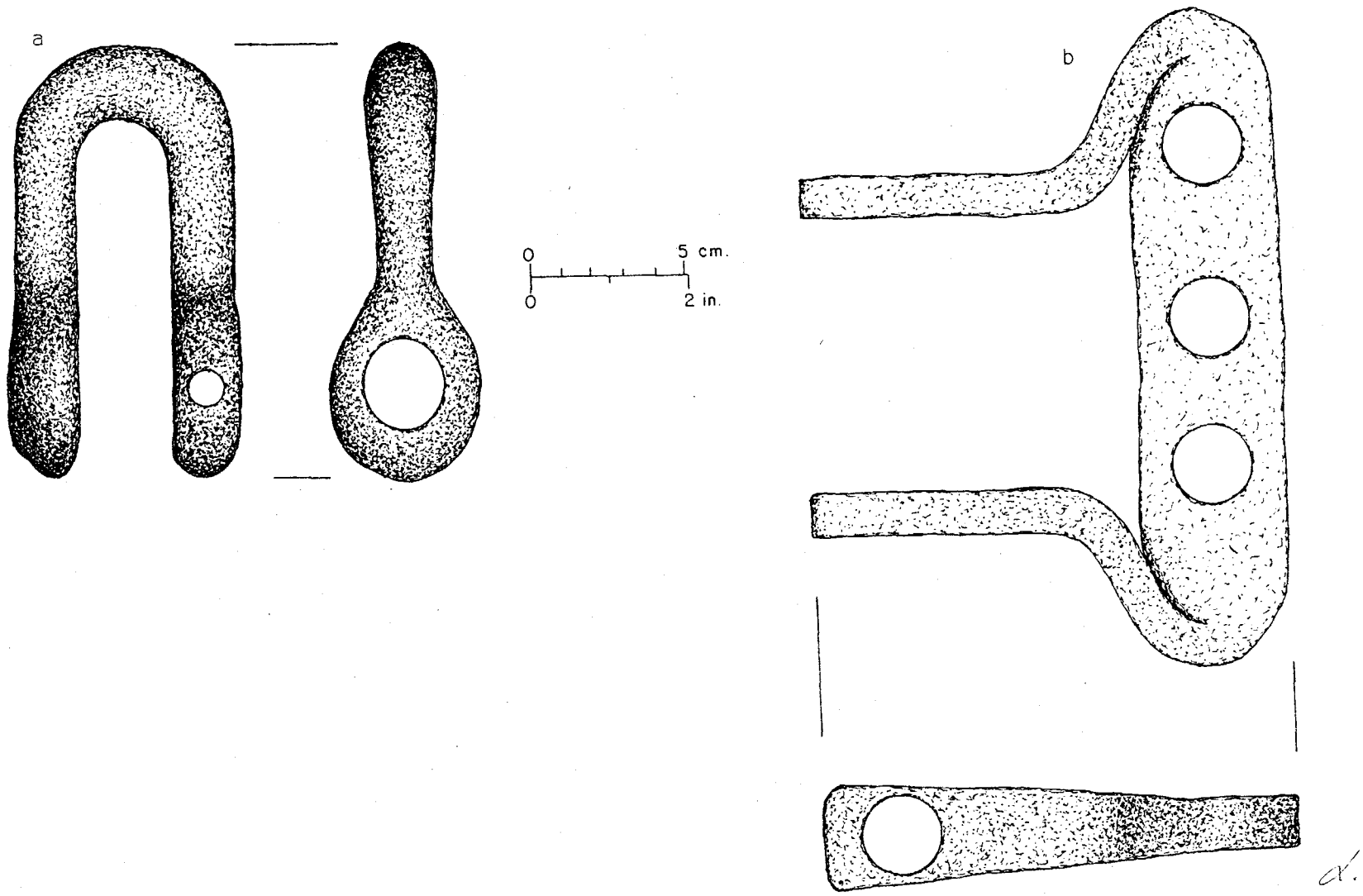


Fig. 144 -- Clevises from F523: a). single clevis (FOVA 27616) and b). adjustable clevis (FOVA 27572).

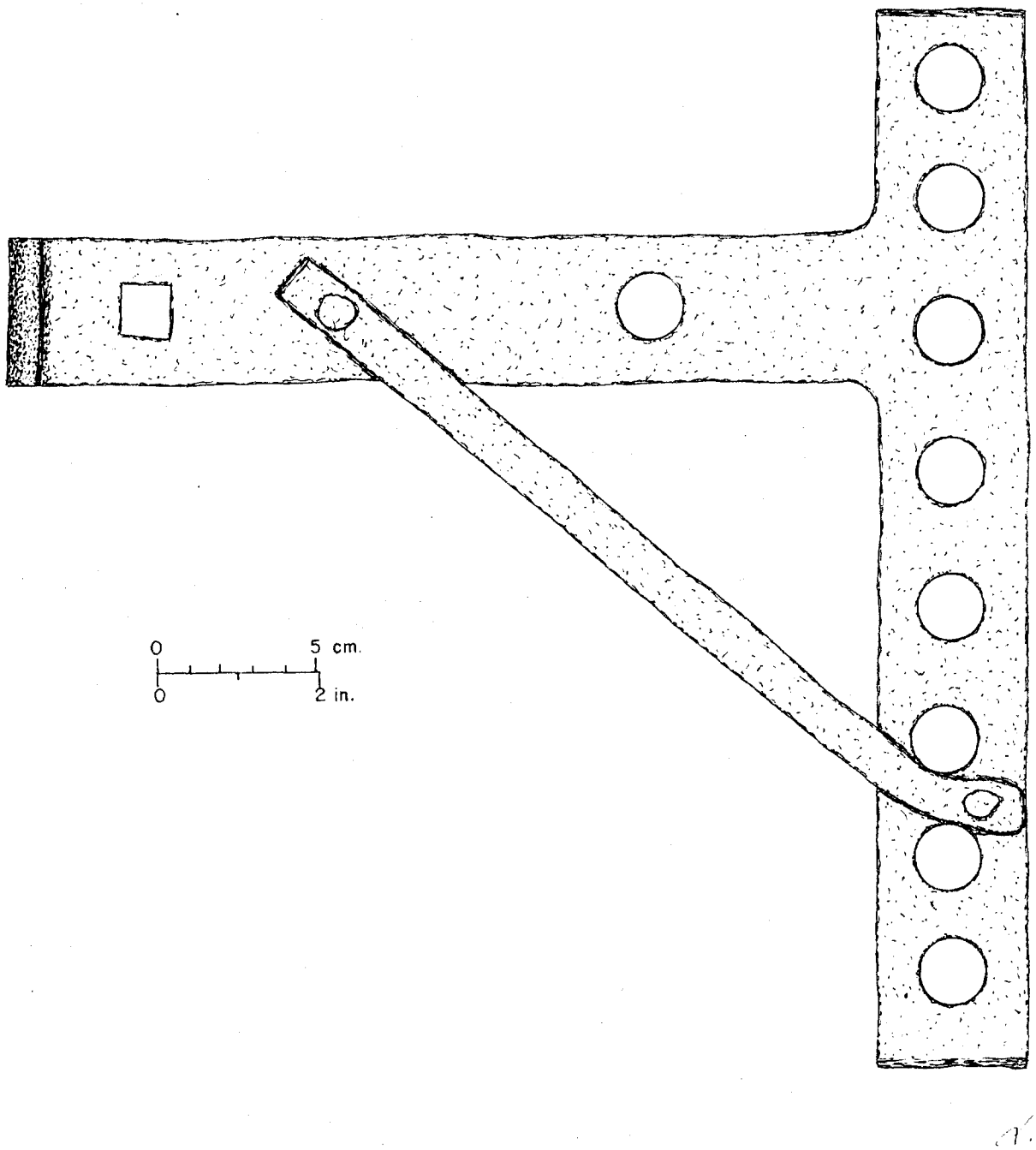


Fig. 145 -- Adjustable clevis (FOVA 27398) from F523.

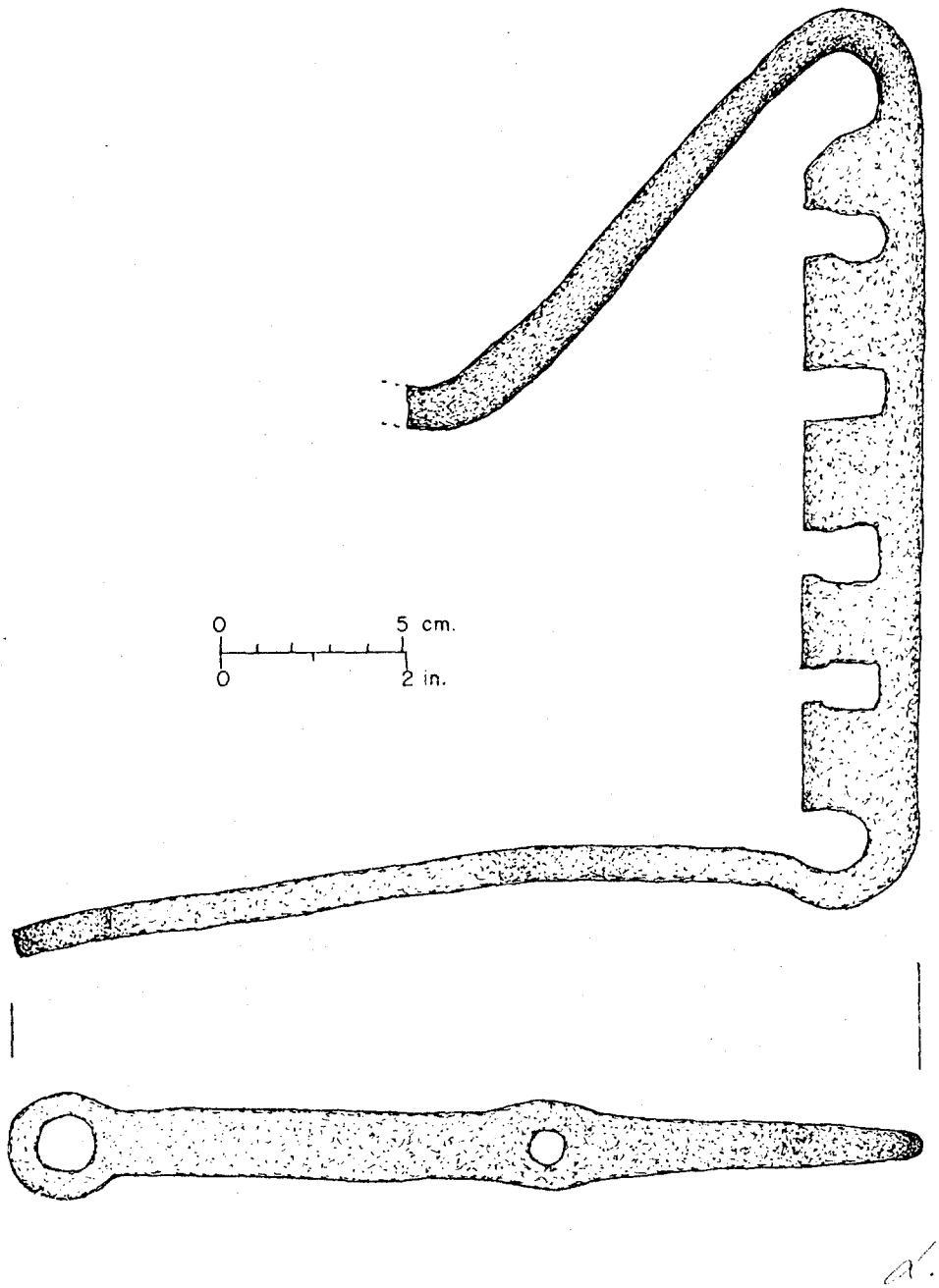


Fig. 146 -- Adjustable clevis (FOVA 27336) from F523.

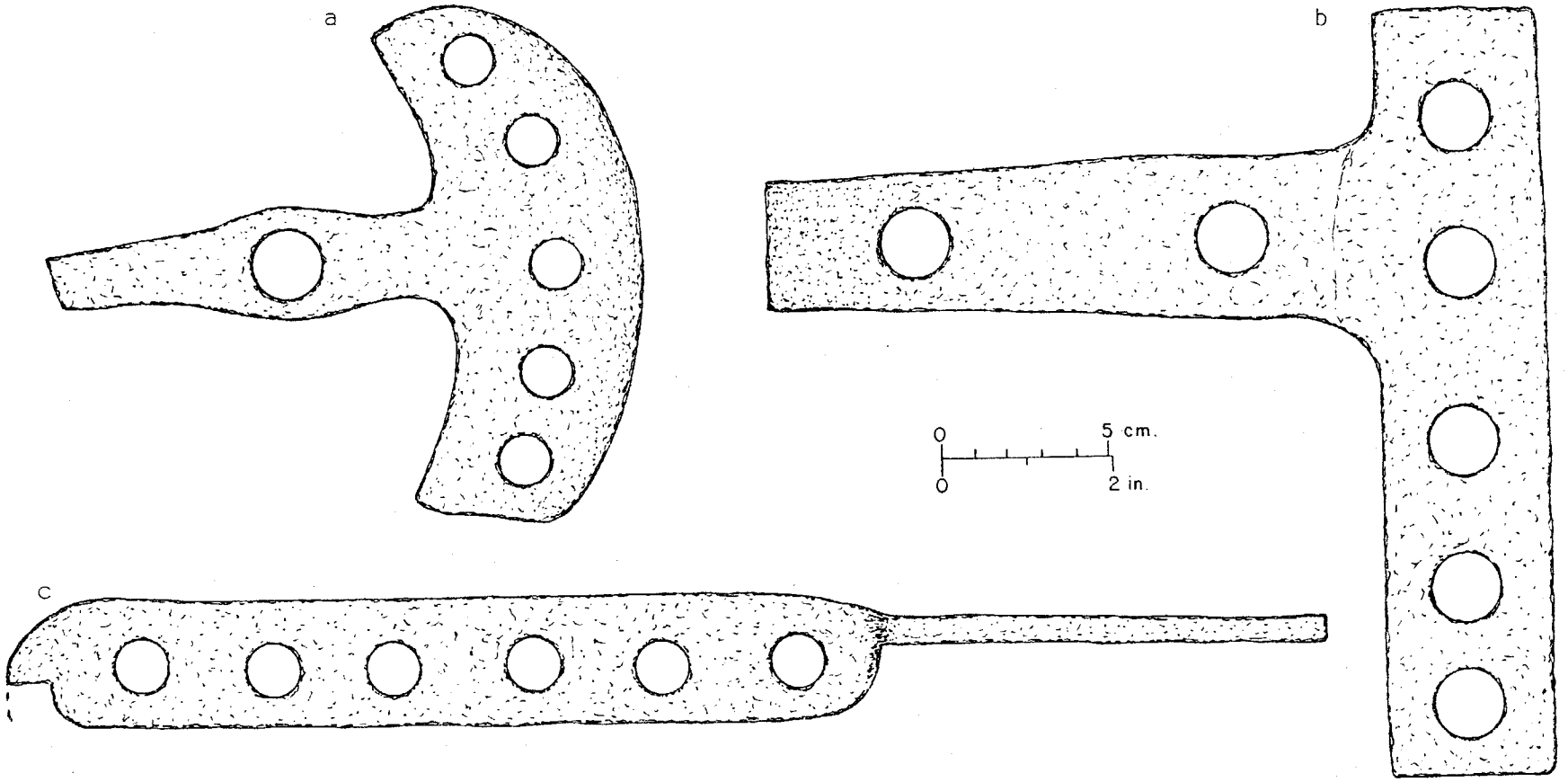


Fig. 147 -- Adjustable clevises and preform from F523: a). adjustable clevis (FOVA 27993); b). adjustable clevis (FOVA 28545); and c). adjustable clevis preform (FOVA 28195).

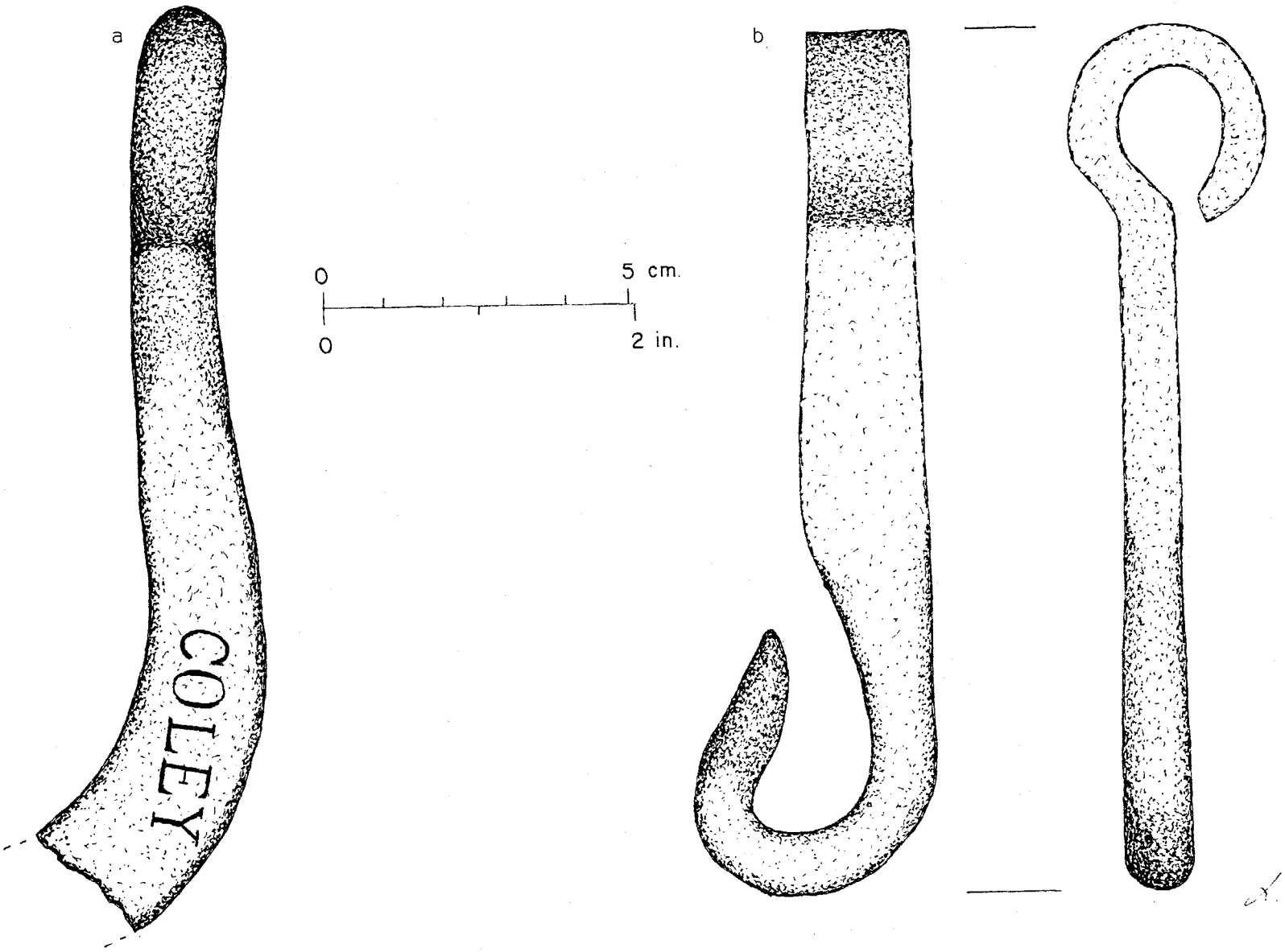


Fig. 148 -- Hooks from F523: a). "COLEY" hook fragment (FOVA 28250) and b). hook (FOVA 28342).

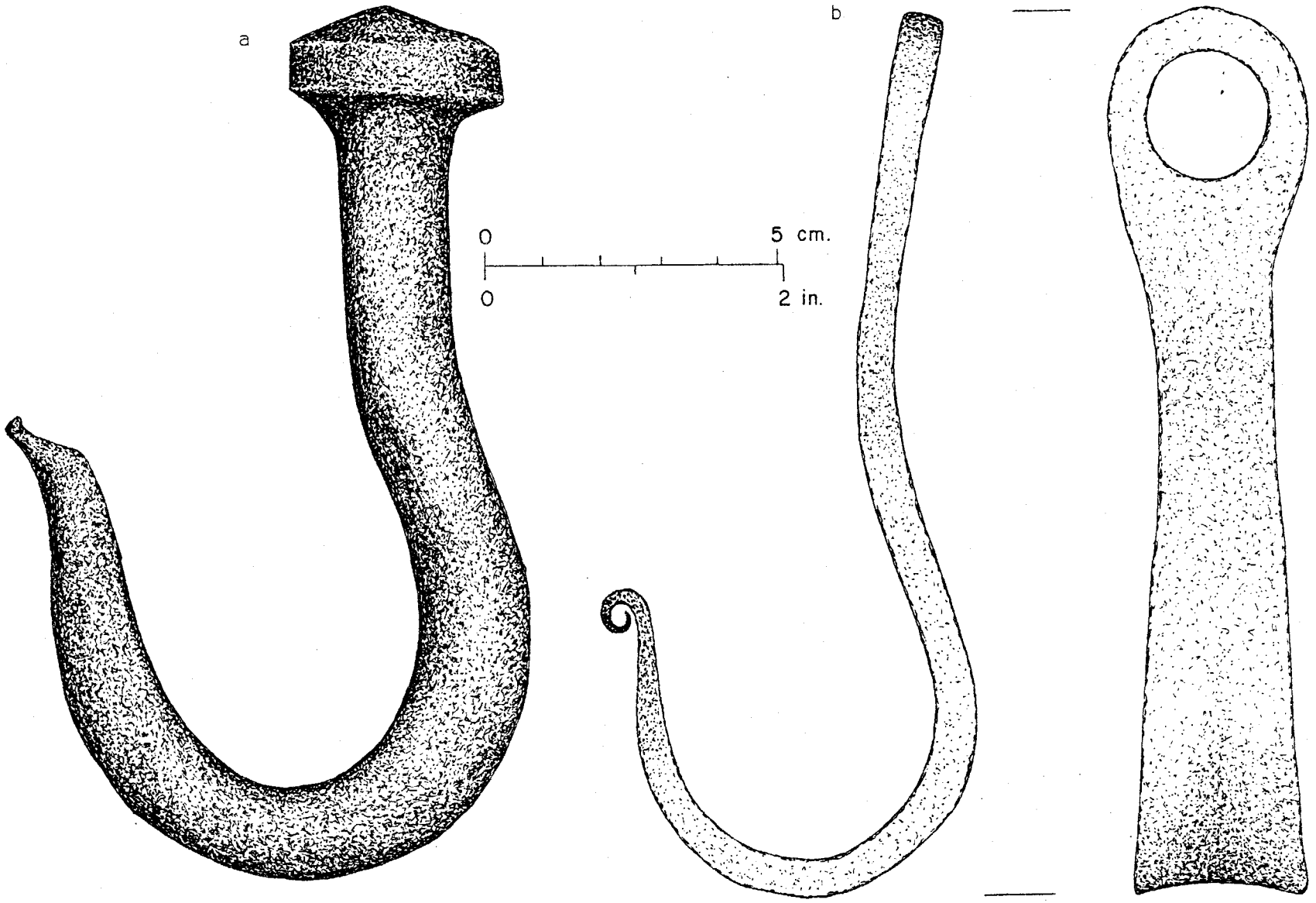


Fig. 149 -- Hooks from F523: a). hook (FOVA 28030) and b). hook (FOVA 27257).

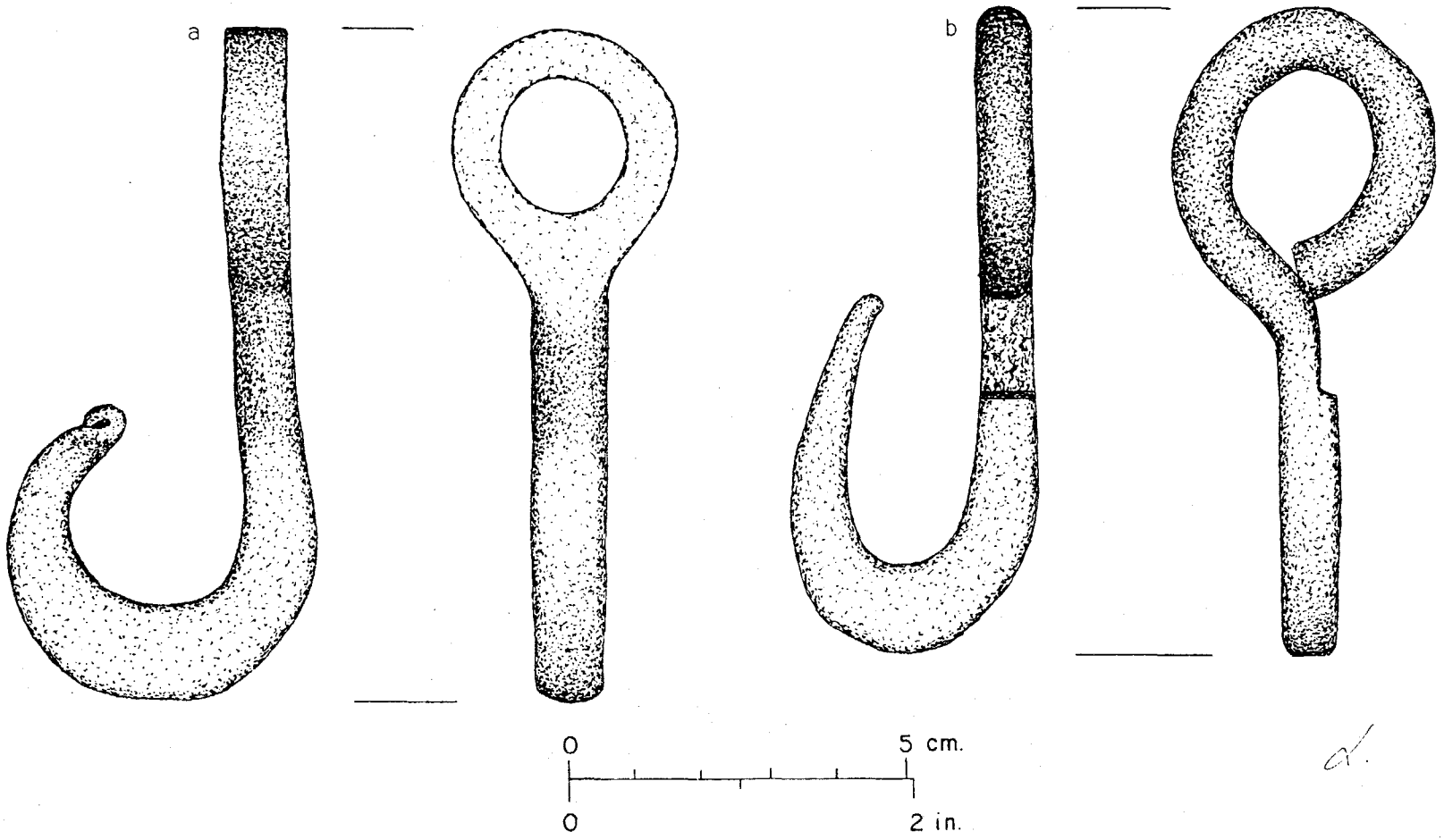


Fig. 150 -- Hooks from F523: a). hook (FOVA 28506) and b). hook (FOVA 27324).

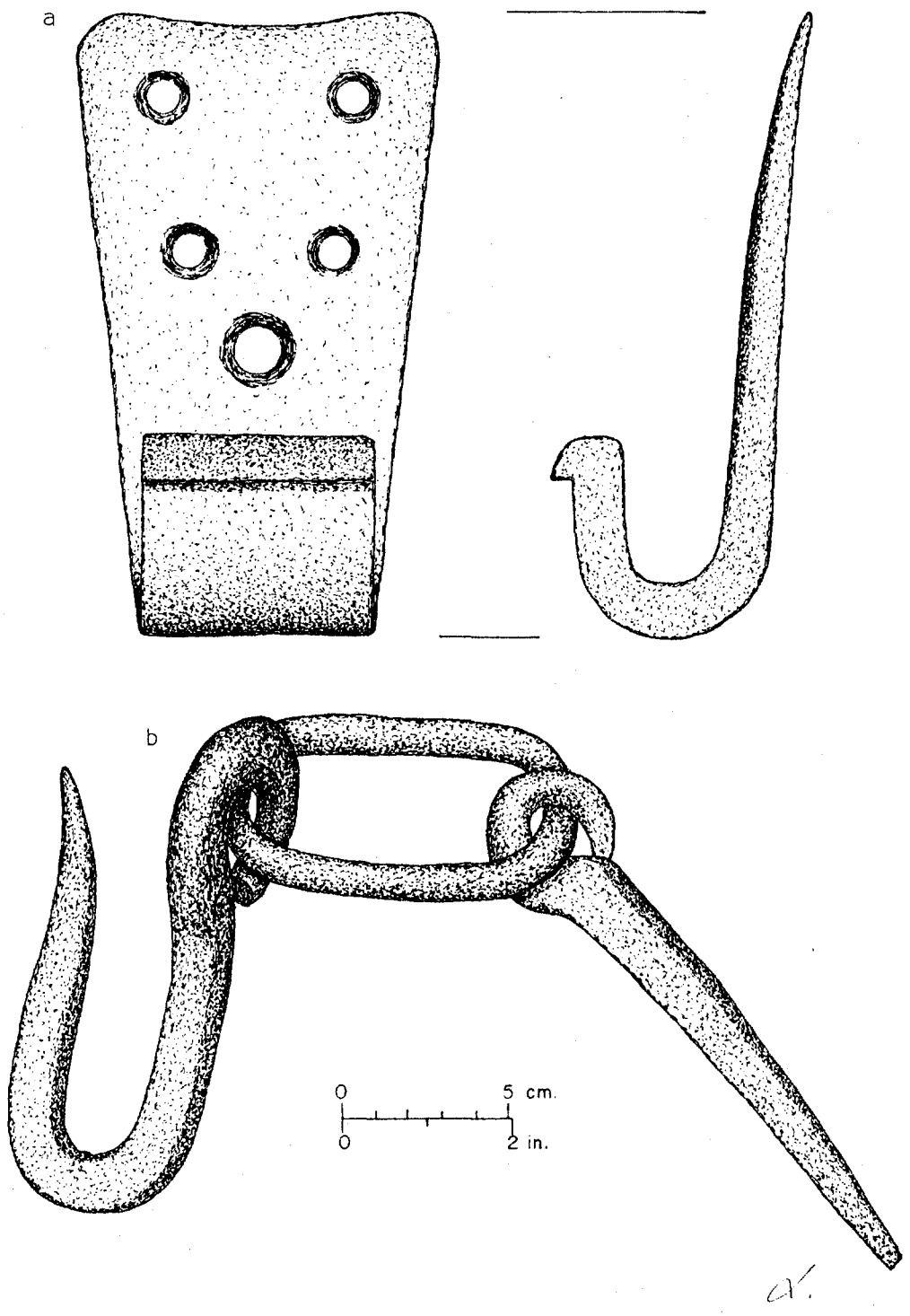


Fig. 151 -- Hooks from F523: a). hook (FOVA 27751) and b). hook, chain link and closed-eye nail (FOVA 27170).

Handles

One bracketed handle, possibly to a thumb latch, and a free swinging handle were recovered and are illustrated in Figs.152a-b respectively.

Crank Handle

One complete handle, possibly utilized with a winch or windlass, was recovered and has been illustrated in Fig. 153a.

Belaying Pin

One belaying pin was recovered with wood fragments adhering to the upper 3½" of the shank. It is illustrated in Fig. 153b.

Swivels

Three specimens similar to the swivel chain link reported from the Blacksmith Shop were recovered. A specimen complete with a fragmented swivel eye is illustrated in Fig.154a, and a swivel preform is illustrated in Fig. 154b.

Barbed Wedges

Five finished barbed wedges and 4 barbed wedge template preforms were recovered. The finished specimens were identical to specimens manufactured in the Blacksmith Shop and illustrated in Figs. 85a-g. The preforms represent the final stage of manufacture prior to removal of the wedge from the template.

Bundling Straps

Of the 72 specimens recovered, 9 were complete and are identical to strap type and bundle shapes reported from the Blacksmith Shop and illustrated in the variations recovered from the Iron Store (Figs. 174-175). As in the Blacksmith Shop, rectangular bands used to wrap bundles of 2, 3, 4, and 5 circular rods were absent.

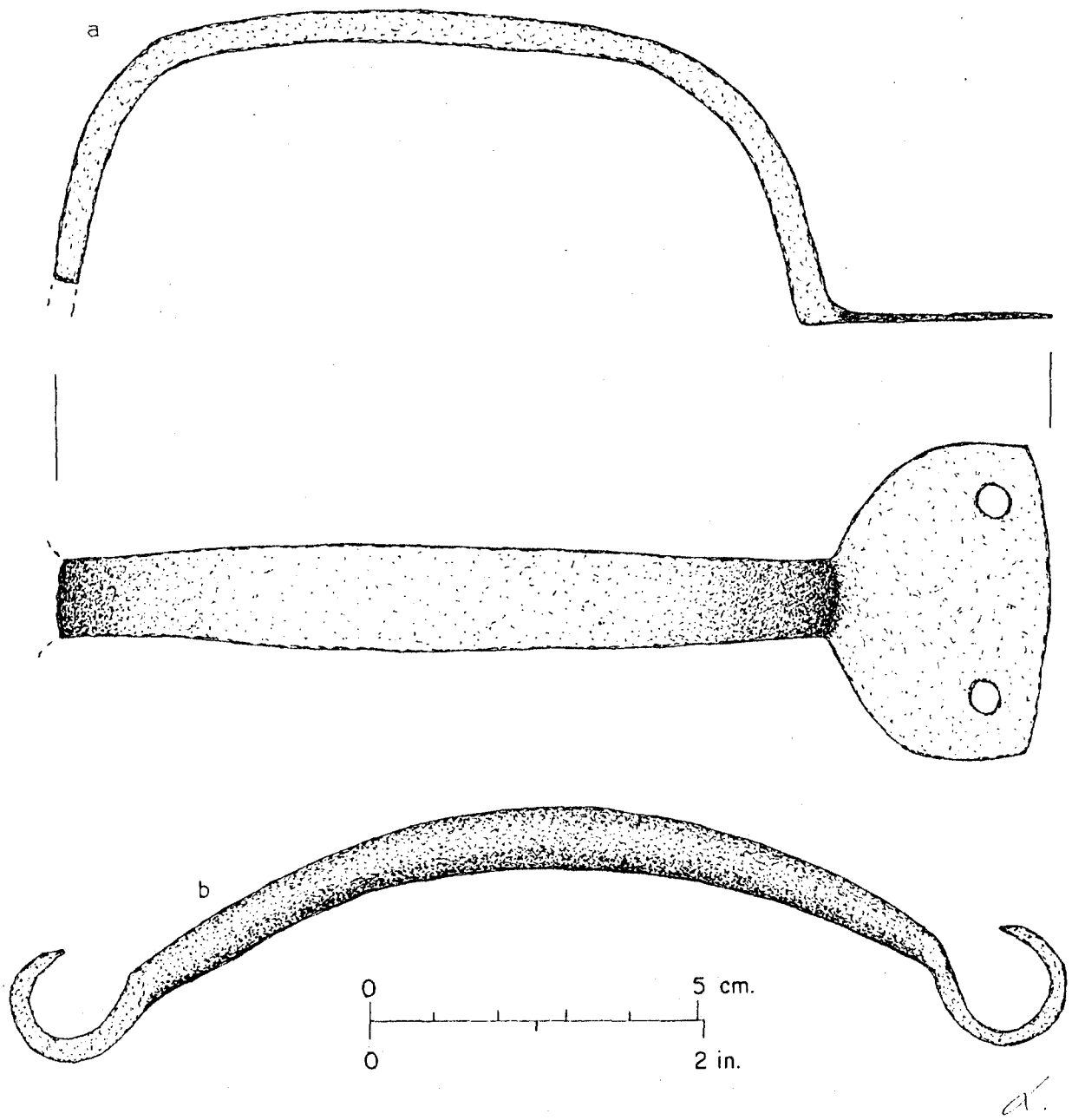


Fig. 152 -- Handles from F523: a). door handle (?) (FOVA 28265) and b). handle (FOVA 27925).

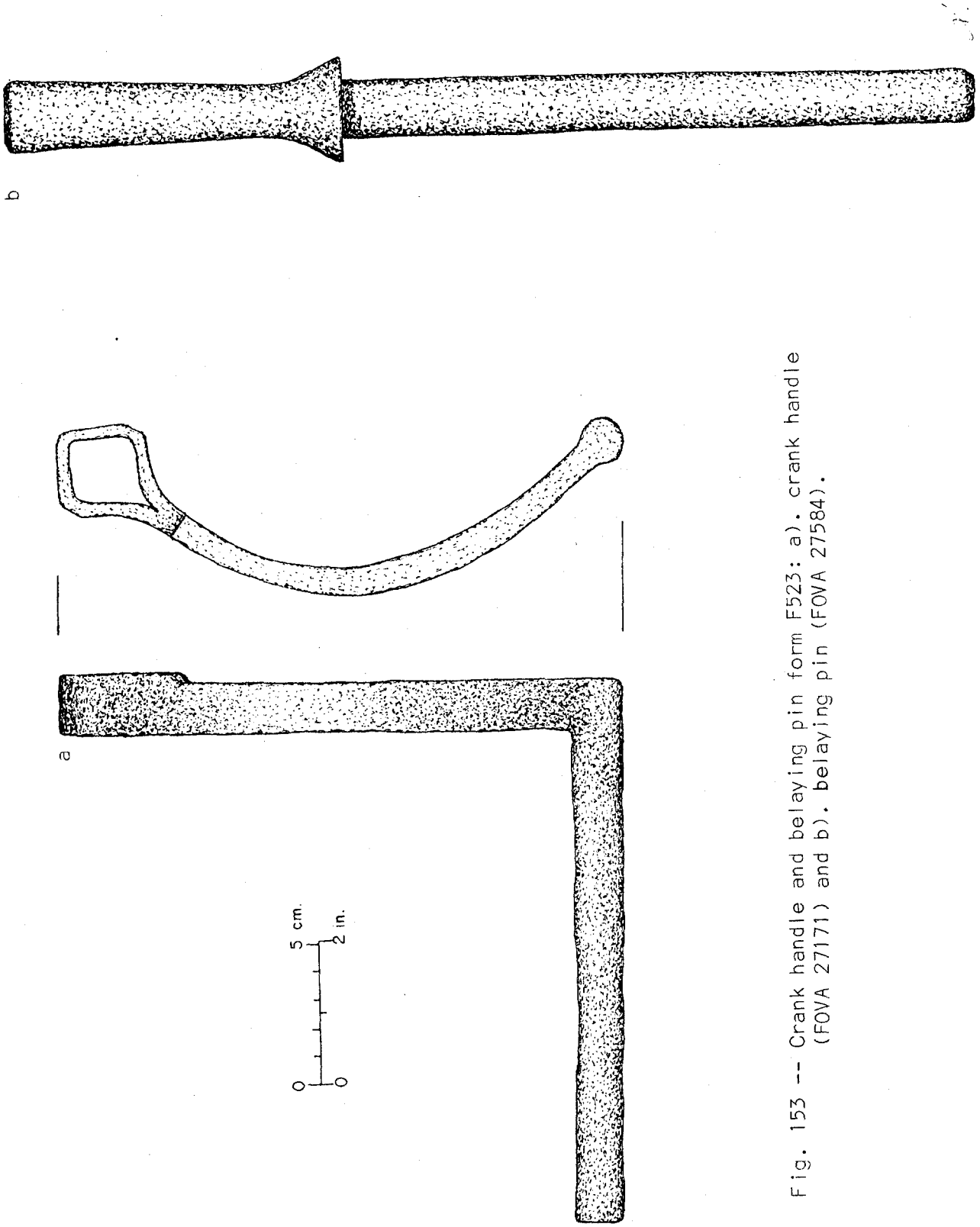


Fig. 153 -- Crank handle and belaying pin form F523: a). crank handle (FOVA 27171) and b). belaying pin (FOVA 27584).

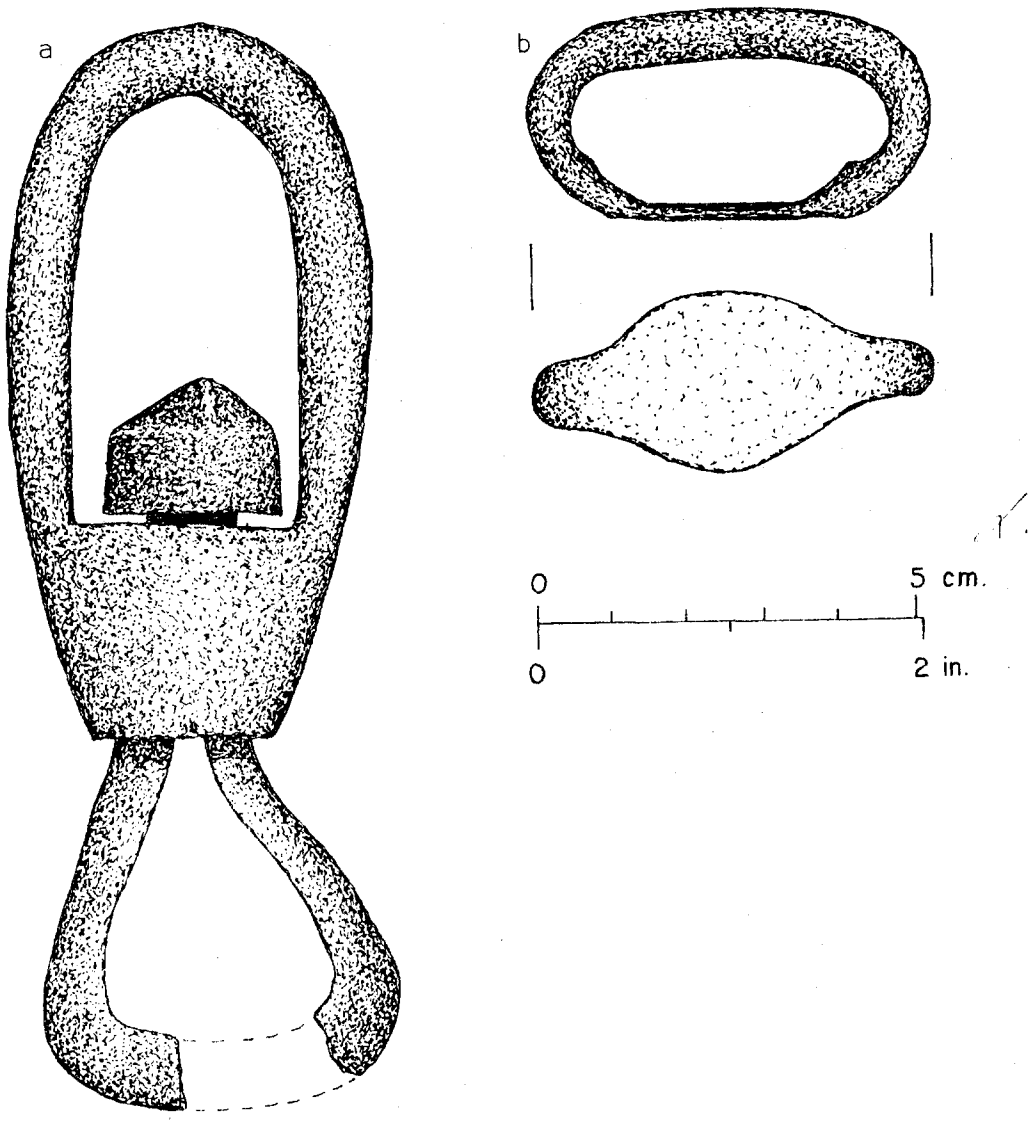


Fig. 154 -- Swivel and preform from F523: a). swivel link and eye (FOVA 27802) and b). swivel preform (FOVA 28137).

Barrel Bands

Of the 33 barrel bands recovered, one specimen was complete, being manufactured from 1" to 1/16" strap stock and fastened with a single barrel rivet. The diameter was approximately 20 inches.

Iron Bands

A total of 338 specimens were recovered including bands identical in shape to ones reported from the Iron Store and illustrated in Fig. 176. They were hypothesized as being utilized to band iron stock together. In addition a wide range of circular and square-rectangular shaped bands were recovered from F523, and the variations in shape have been illustrated in Figs. 155-158.

Miscellaneous Metal Preforms

In addition to the preforms previously discussed and listed in Table 28, 3 copper lug cutouts similar to specimens reported from the Blacksmith Shop were recovered. Also, 42 unidentified iron preforms were recovered including 4 specimens resembling axe preforms. These 4 specimens were manufactured from similar sized stock as axes, but they had a bevel edge at the stock midsection. Two representative specimens have been illustrated in Figs. 159a-b , and 3 other complete unidentified preforms are illustrated in Figs. 159c-160a-b.

Metal Personal & Household Items

Of the 64 items recovered (Table 28), those new or unique items not previously reported have been illustrated in Figs. 161-162.

Buttons

Of the 3 buttons recovered, 2 could be classified, and they represent styles not previously observed (Table 36 and Figs. 161a-b).

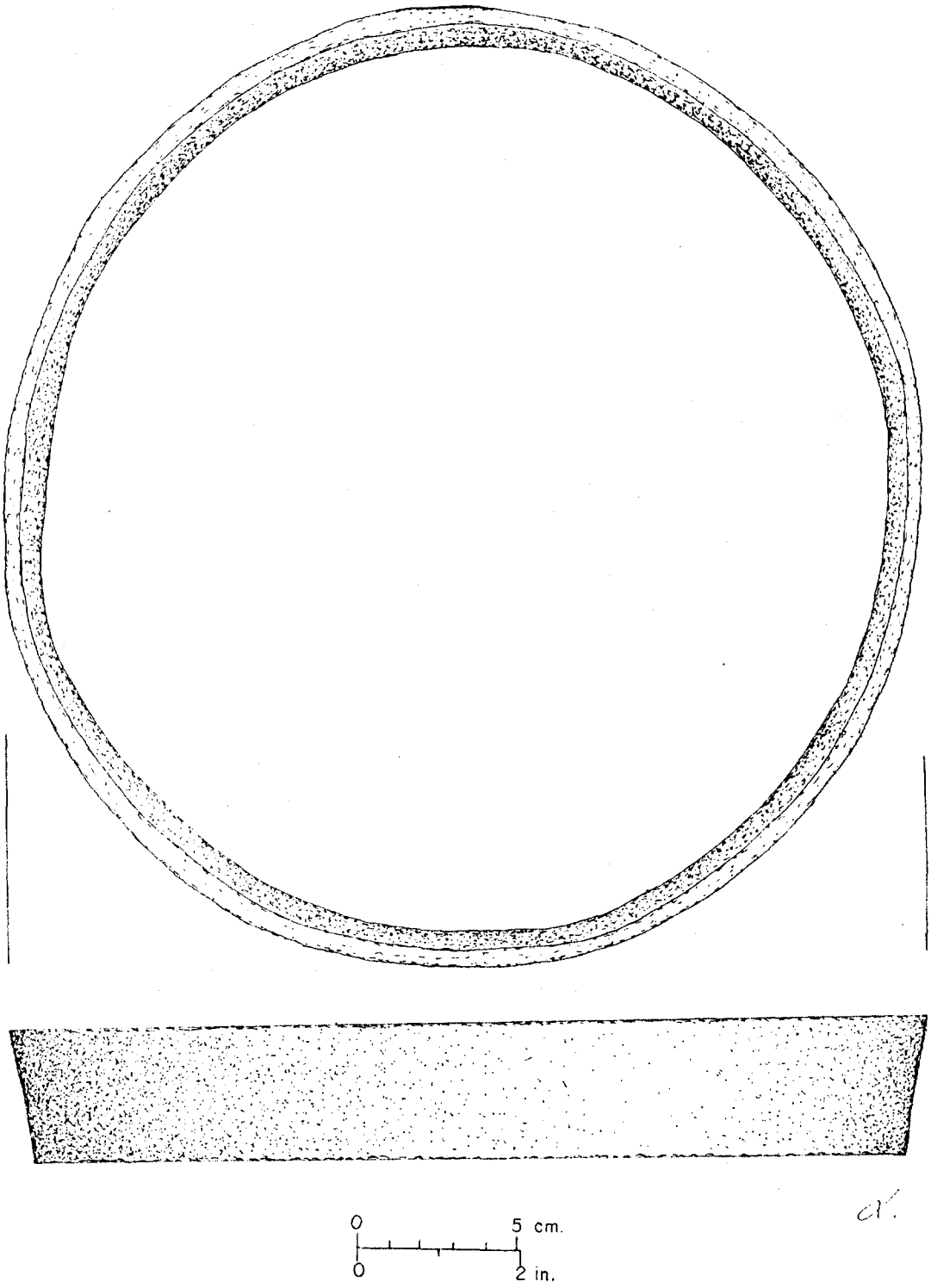


Fig. 155 -- Circular iron band (FOVA 27641) from F523.

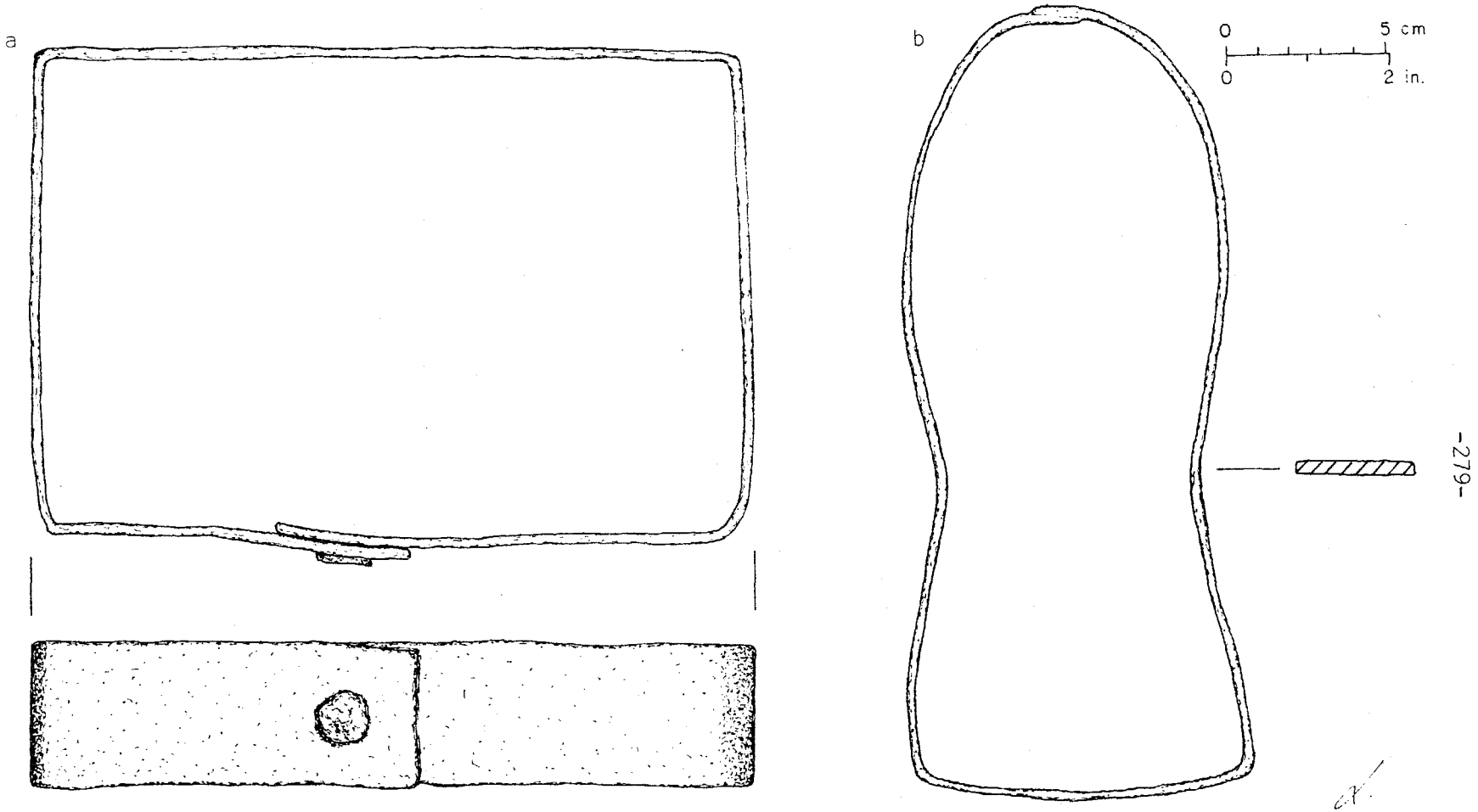


Fig. 156 -- Iron bands from F523: a). rectangular band (FOVA 27259) and b). irregular band (FOVA 27619).

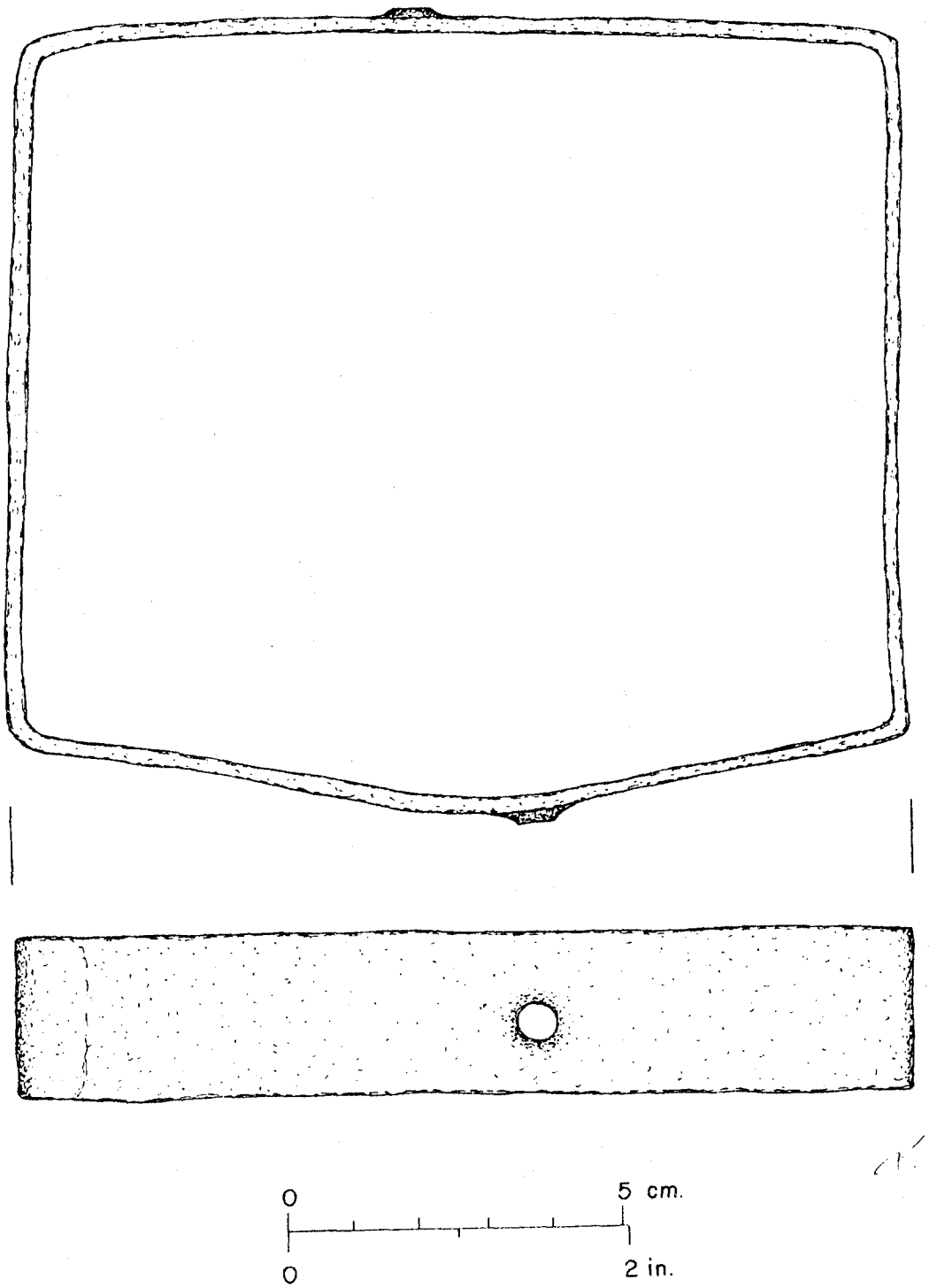


Fig. 157 -- Rectangular iron band (FOVA 27954) from F523.

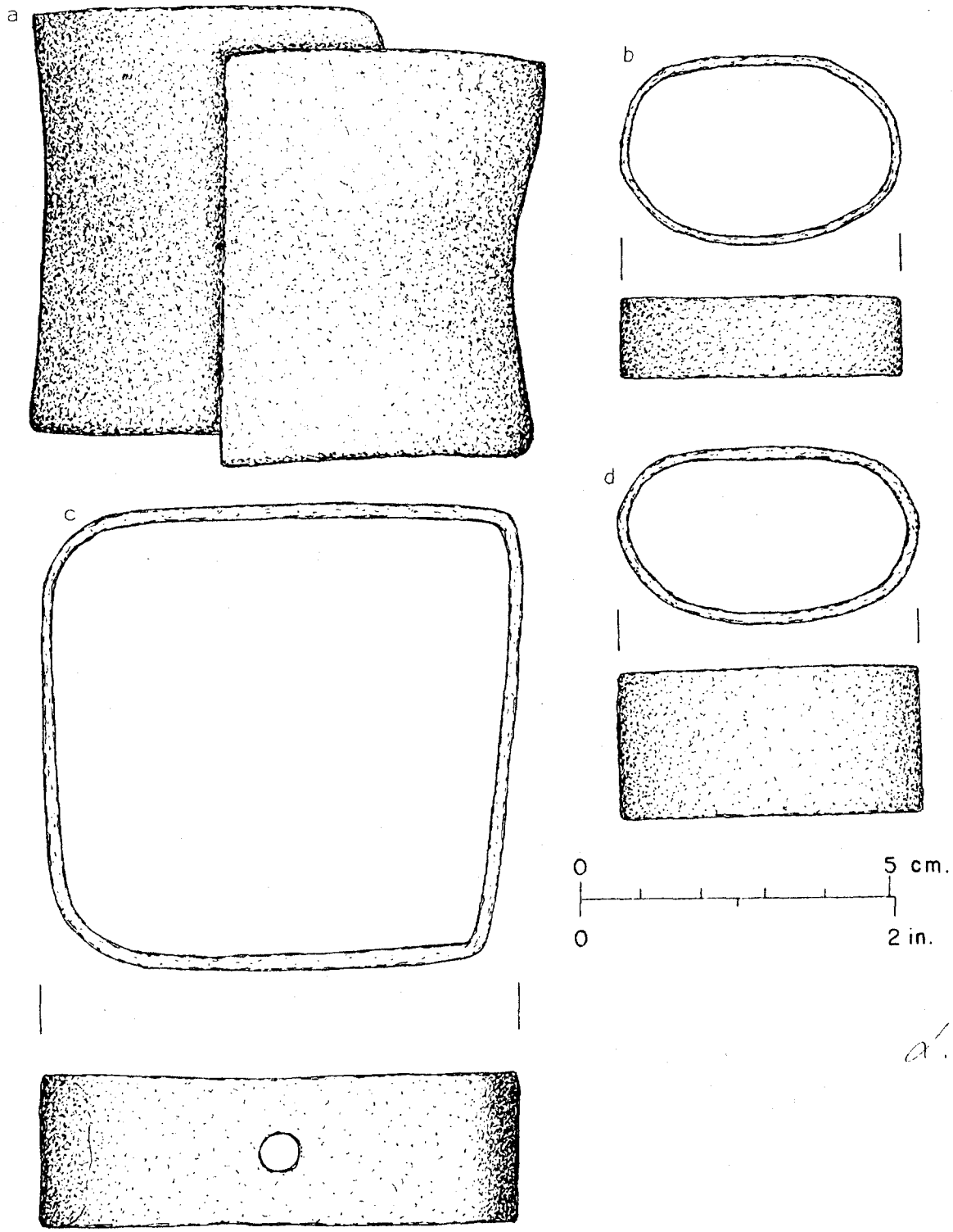


Fig. 158 -- Iron bands from F523: a). circular band securing tanged implement in wooden handle? (FOVA 28569); b). oval band (FOVA 27954); c). square band (FOVA 27326) and d). oval band (FOVA 27619).

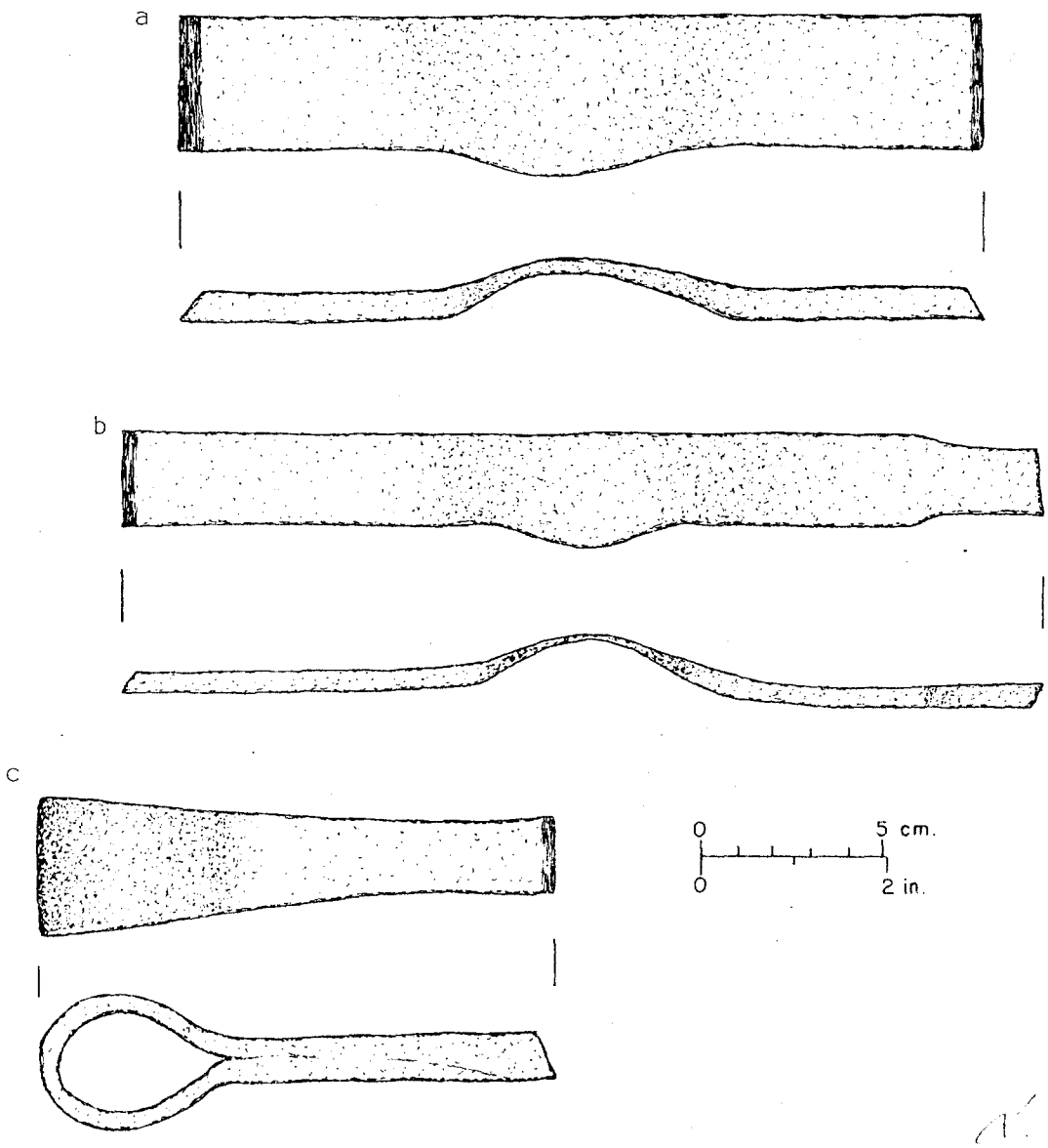


Fig. 159 -- Unidentified iron preforms: a). preform (FOVA 27617b); b). preform (FOVA 27336) and c). preform (FOVA 28357).

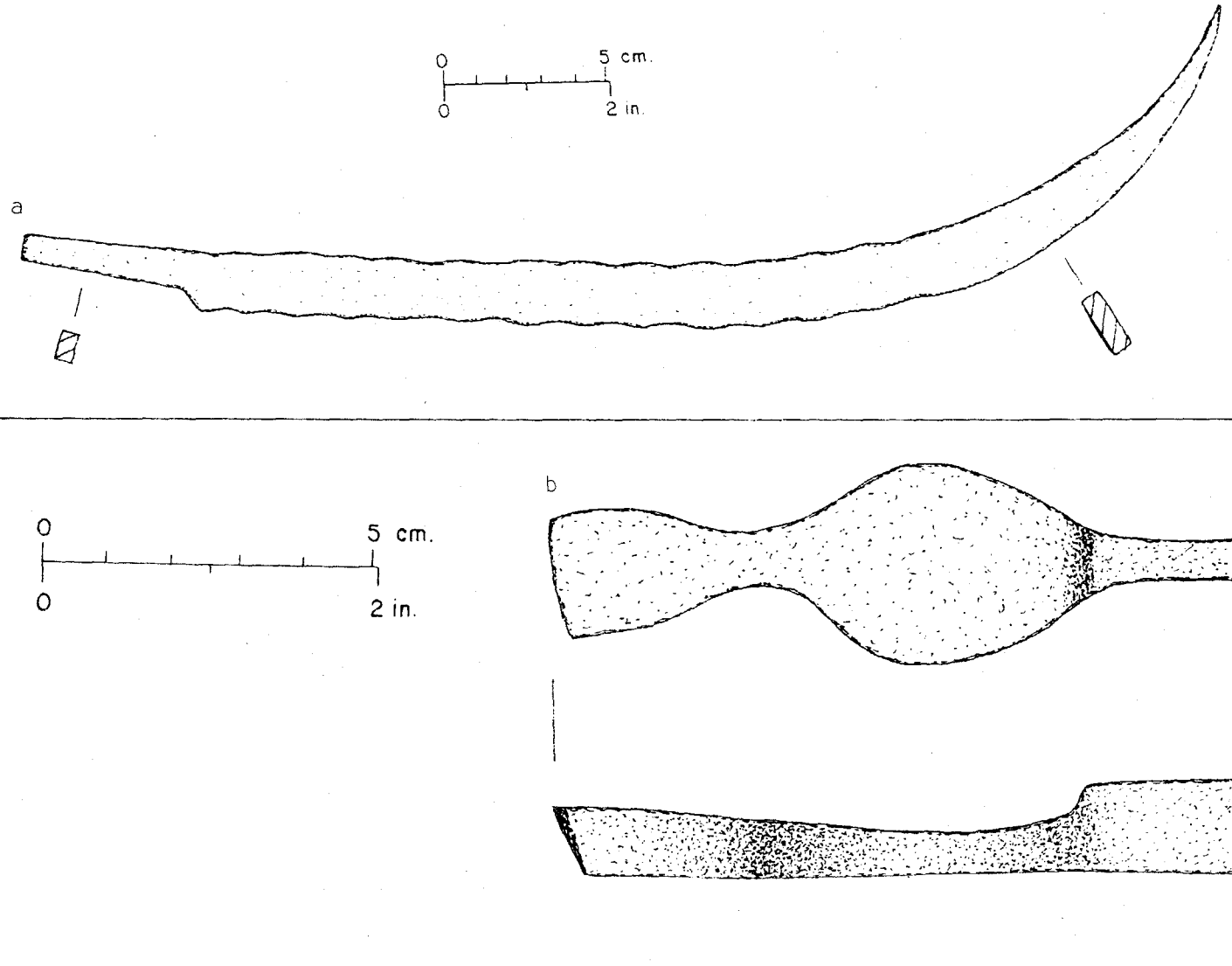


Fig. 160 -- Unidentified iron preforms: a). preform (FOVA 28266) and b). preform (FOVA 27791).

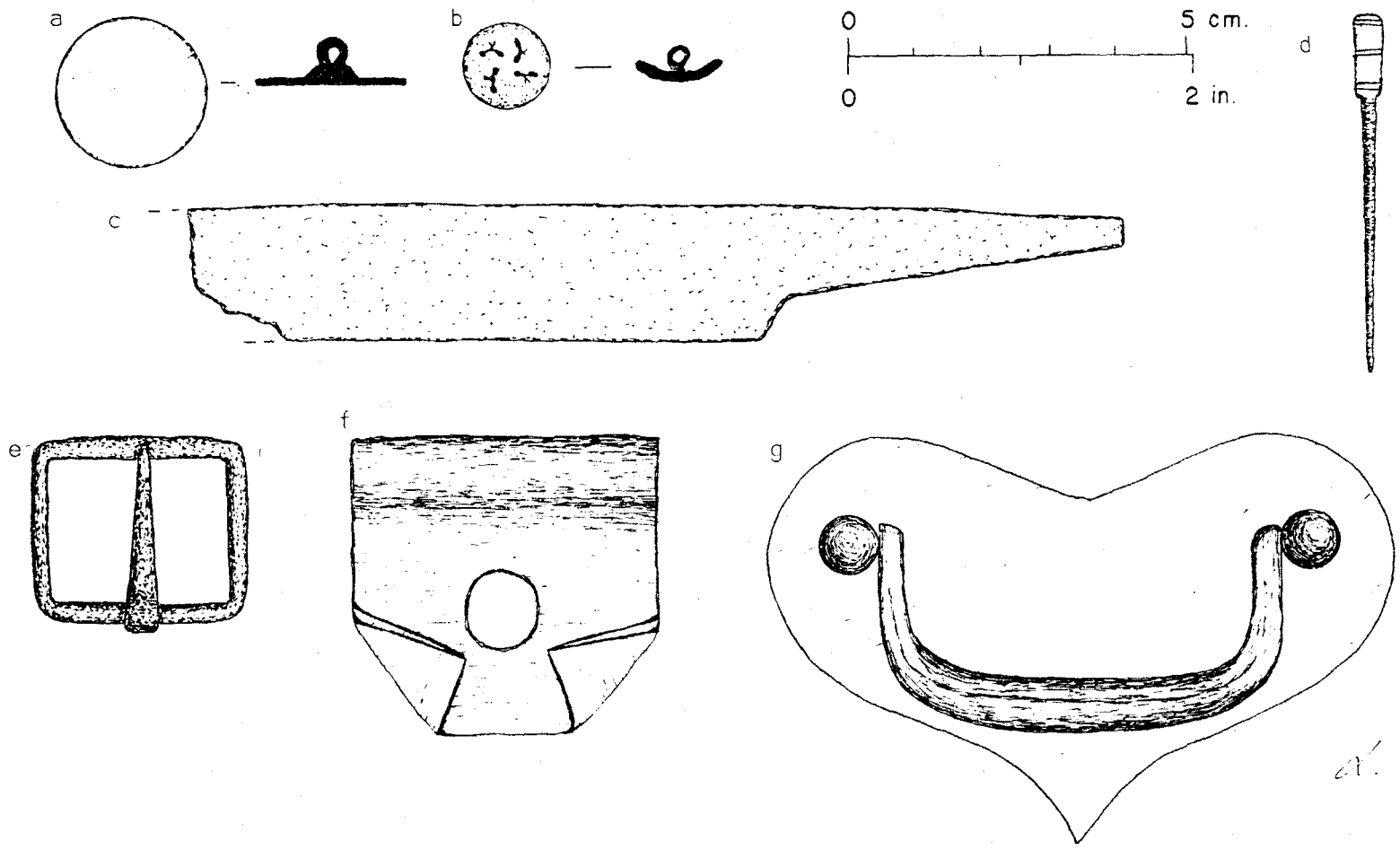


Fig. 161 -- Metal personal and household items from F523: a). button Type I BB (FOVA 28043); b). button Type I CC (FOVA 27644); c). knife blade (FOVA 28384); d). copper needle? (FOVA 27284); e). iron buckle (FOVA 27277) f). copper kettle lug (FOVA 27550) and g). cassette handle (FOVA 27354).

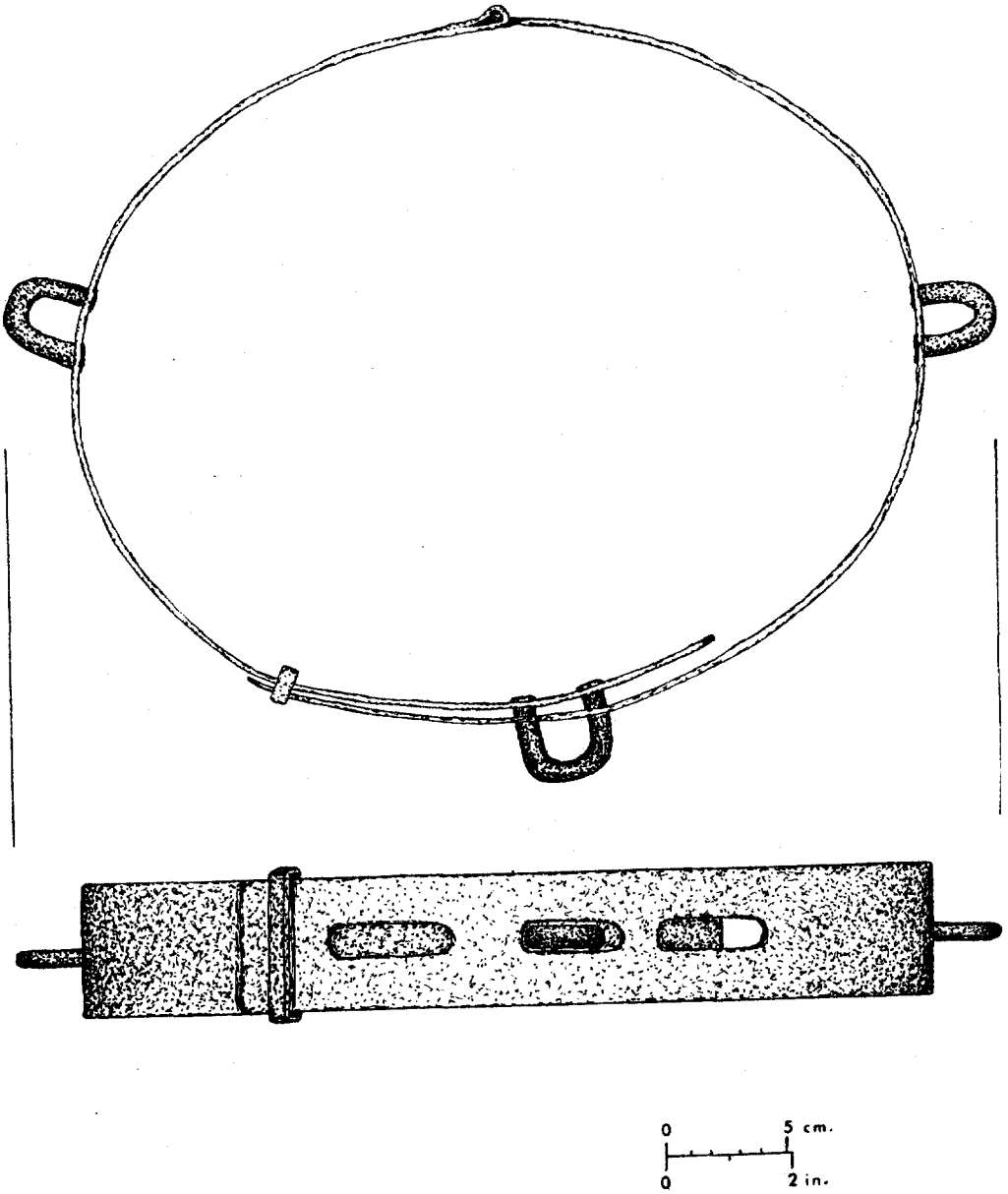


Fig. 162 -- Body shackle (FOVA 28267) from F523.

Table 36 -- Types of metal buttons found in F523.

Type	Dia. (mm.)	Frequency	Figure
I. Single-Piece Loop-Shank			
BB.	21.0	1	161a
CC.	12.5	1	161b
II. Composite Loop-Shank			
Unidentified Back		1	--
Total		3	

Metal Weaponry Items

Of the 16 items recovered (Table 28), those new or unique items not previously reported have been illustrated in Figs. 163-164.

Construction Material

Bricks

Of the 569 fragments of bricks recovered (Table 37), 42.4% were imported British firebrick (Variety #1001, illustrated in Hoffman and Ross 1973b: Figs. 39 a-b) and 57.1% were local Willamette Valley construction brick (Variety #1005, illustrated in Hoffman & Ross 1973b: Fig. 391). Many fragments were complete enough to be measured, and the dimensions observed have been recorded in Table 38.

In previous reports (Hussey 1972:48-49; Hoffman & Ross 1972:58-65, 1973a:47-49; 1973b:133-135, 163-164), it has been demonstrated that local Willamette Valley bricks were first imported to the Fort in 1844. Because of the stratified deposits within F523, and because of its initial date of ca. 1834/36, it was hypothesized that the earliest stratum would lack fragments of local bricks. When both local and imported brick fragments were plotted by stratum, it was observed that local bricks were present in the earliest stratum but at significantly lower frequencies than in later strata (Fig.165). Local brick frequencies and relative percentages increased through time, and this increase has been interpreted as supportive of the hypothesis that local bricks were not imported until 1844.

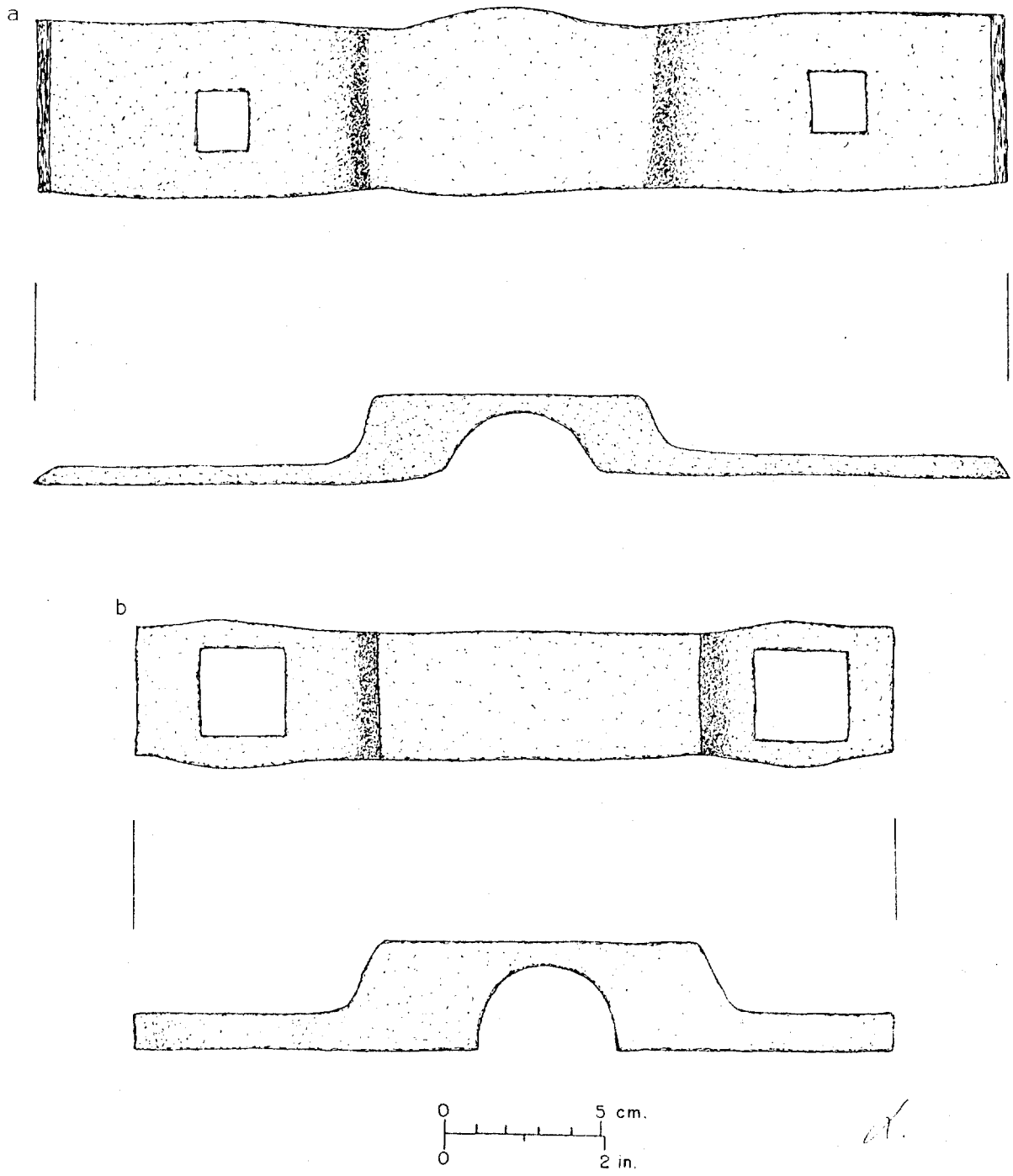


Fig. 163 -- Cannon trunnion plates from F523: a). plate (FOVA 27661) and b). plate (FOVA 28346).

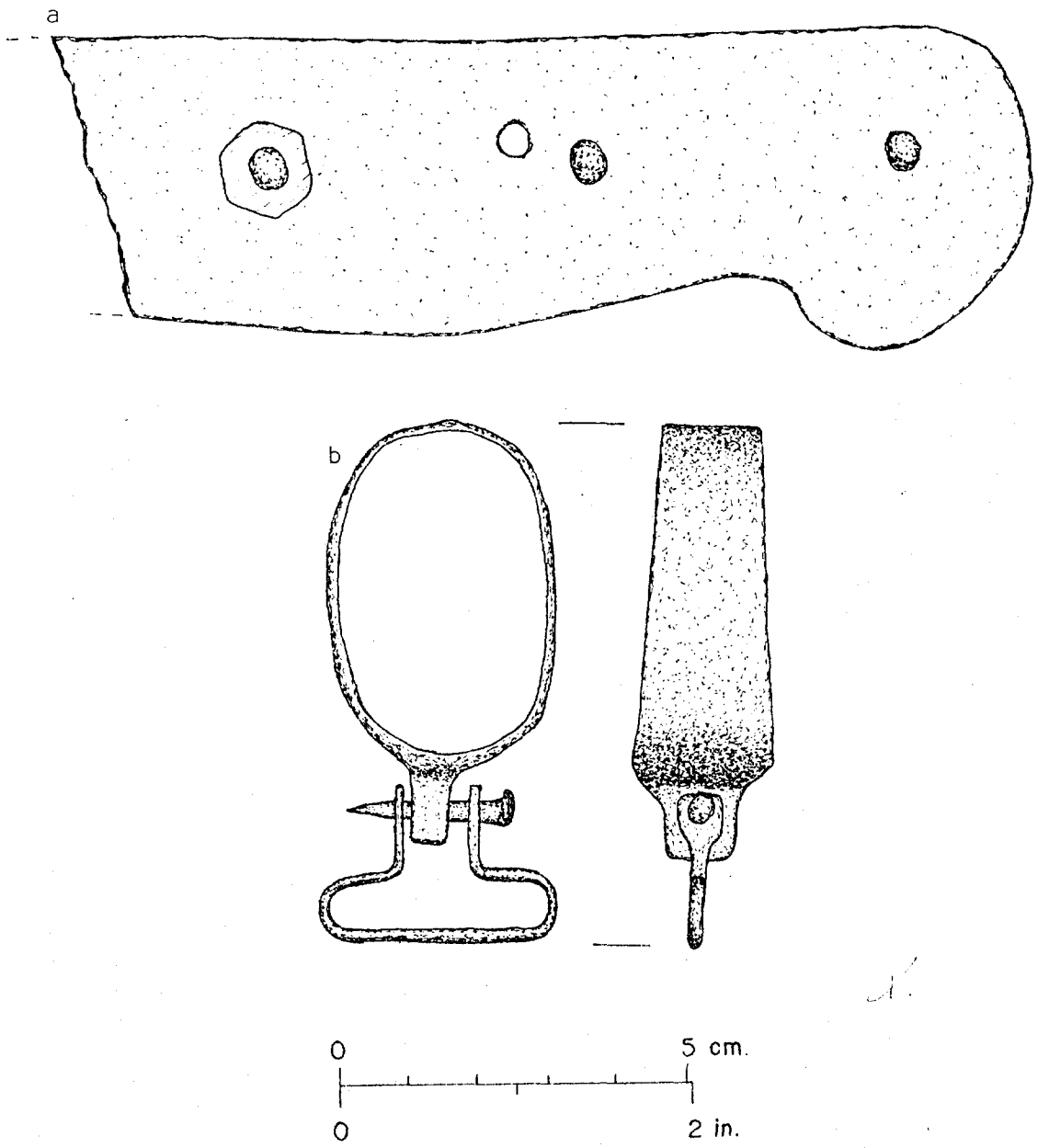


Fig. 164 -- Weaponry items from F523: a). flat iron sword handle with copper washers (FOVA 27274) and b). iron musket band with strap swivel (FOVA 27389).

Table 37 -- Identification of brick varieties on the basis of comparative composition for F523.

Attributes	Imported		Local			Unknown
	1001	1002	1003	1004	1005	1007
Texture						
Clay			×	×	×	
Silt	×	×	×	×	×	
Sand	×	×				
Gravel						×
Inclusions						
Gravel	×		×		×	
Charcoal	×					
Micro-silica Grains		×				
Clay Accretions				×		
Organic Matter			×			
Porosity						
Porous		×	×	×	×	
Non-porous	×					×
TOTAL	240	1	3	62	260	3

Table 38 -- Dimensions of brick varieties recovered from F523.

Brick Variety	Thickness		Width		Length	
	cm.	Inches	cm.	Inches	cm.	Inches
Imported						
#1001	6.5-7.2	2½-2 7/8	9.6-11.6	3 3/4-4½	23.5	9¼
#1002	6.0	2 3/8				
Local						
#1003	4.3	1 3/4				
#1004	4.2-6.0	1 5/8-2 3/8	9.9	3 7/8		
#1005	5.1-5.7	2-2¼	9.7-10.4	3 7/8-4 1/8	20.0	7 7/8
Unknown						
#1007	6.9-7.3	2 3/4-2 7/8	11.9	4 3/4		

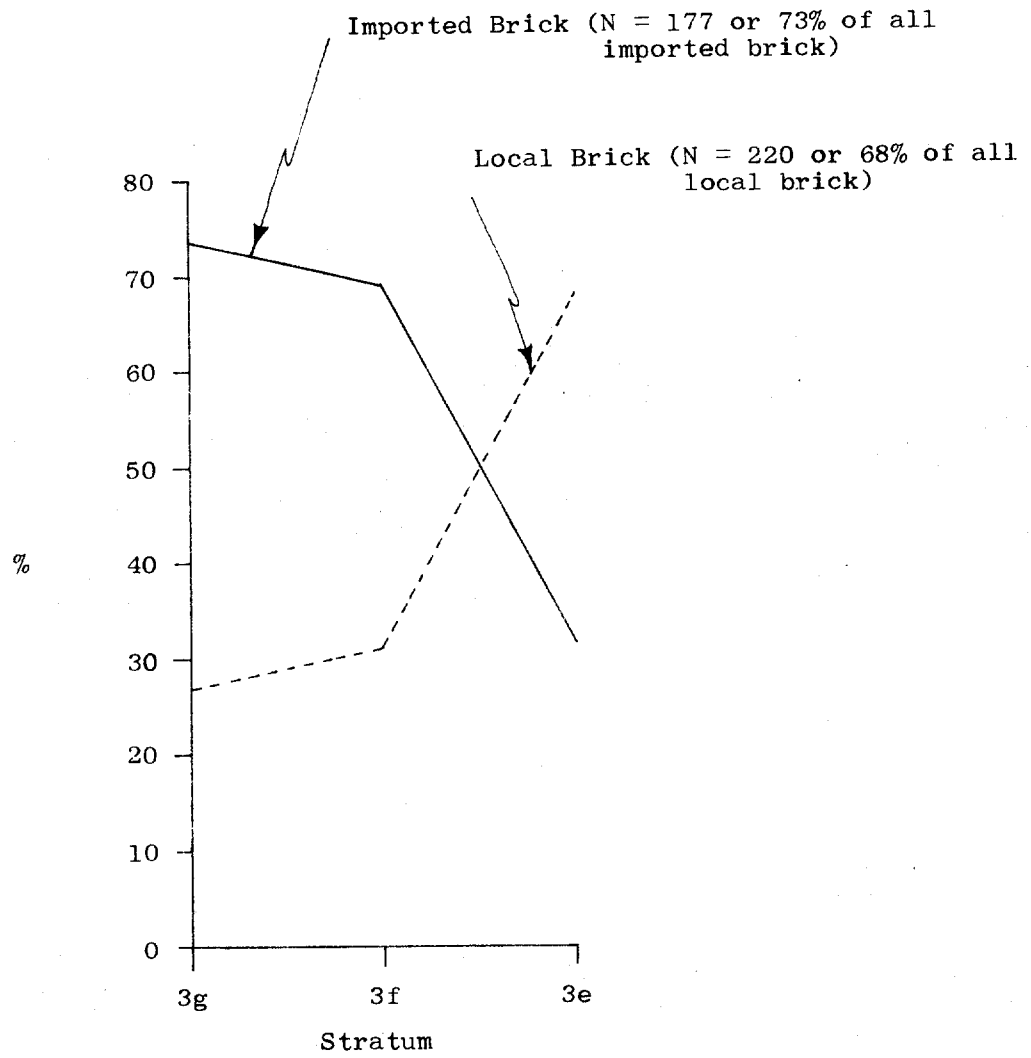


Fig. 165 -- Relative percentages by stratum of imported and local brick fragments in the ca. 1834/36 - 1860 Indian Trade Store Privy/Trash Pit.

IRON STORE AREA

A total of 11,188 material cultural items were recovered from the Iron Store area, including 8,160 artifact and 3,028 non-artifact fragments (Tables 39-40).

Ceramic Household and Container Fragments

There were 2,676 household and container fragments recovered, and 2 partially complete stoneware "crocks" were reconstructed. Following previous reports, ceramics were divided into 4 major categories and further subdivided into a variety of subcategories (Table 39). A discussion of each descriptive category is presented below.

Common Pottery

Of the 21 fragments of lustreware recovered, 19 were lustreware and 2 were yellow glazed redware. One unique lustreware fragment was observed to have a transfer printed red on blue design (too small for illustration). No ware styles could be identified and no manufacturing marks were observed.

Earthenware

Earthenware fragments which totaled 2,158, were classified into descriptive subcategories based upon fabric color, glaze color and method of decoration (Table 39).

Clear Glazed White Fabric Fragments

White earthenware fragments totaled 2,148 and were classified according to function (i.e. household articles or product containers) and method of decoration (Table 39).

Undecorated Household Fragments. No complete or partially complete articles were reconstructed from the 808 fragments recovered. Two unidentified fragments had a black transfer printed manufacturing mark with lion and unicorn astride a registration diamond (with "P,d,2,4") and the following text: "PRIZE MEDAL 1851, T. J. & J. MAYER, DALE HALL POTTERY, Longport, IMPROVED BERLIN IRONSTONE". These fragments were registered on September 2, 1851, and could have been manufactured from 1851-1854. One other unidentified fragment had an impressed mark with the words: "...mproved...slspar...". No identification was possible.

Table 39 -- Quantitative Distribution of artifacts by descriptive category from the Iron Store area.

Descriptive Category	Sub-total 3	Sub-total 2	Sub-total 1	Total
CERAMIC WARES & CONTAINERS				2676
Common Pottery Fragments			21	
Lustreware Household		19		
Yellow Glazed Redware		2		
Earthenware Fragments			2158	
Clear Glazed White Fabric		2148		
Undecorated Household	808			
Hand Painted Household	61			
Transfer Printed Household	1272			
Undecorated Container	7			
Clear Glazed Yellowish-buff Fabric		7		
Undecorated Container	7			
Brown Glazed Buff Fabric		3		
Undecorated	3			
Stoneware Fragments			470	
Greenish-gray Fabric		24		
"Canton" Wares	12			
"Chinese Ginger" Jars	9			
Red Painted Chinese Wares	3			
Brownish-gray Fabric		433		
"Read's Ale" Bottles	16			
Unidentified Saltglazed Containers	417			
Gray Fabric		12		
Blacking Bottles	12			
Red Fabric		1		
Undecorated	1			
Vitreous China Fragments			27	
Undecorated Household		6		
"Chinese Export" Household		20		
Brown Glazed		1		
CERAMIC OBJECTS				360
Earthenware Items			357	
White Clay Tobacco Pipe Fragments		354		
Decorative Tile Fragments		3		
Stoneware Item			1	
Unidentified Stoneware Fragment		1		
Vitreous China Item			1	
Mortar Fragment		1		
Porcelain Item			1	
"Prosser" Button		1		

Table 39 -- cont'd

Descriptive Category	Sub-total 3	Sub-total 2	Sub-total 1	Total
GLASS WARES & CONTAINERS				1475
Bottle Fragments			1118	
Melted Bottle Fragments			23	
Bottle Stopper			1	
Jar Fragments			175	
Tumbler Fragments			3	
Stemmed Glassware Fragments			9	
Unidentified Glassware Fragments			8	
Unidentified Curved Glass Fragments			138	
GLASS OBJECTS				265
Beads			48	
Tube		26		
Wire Wound		19		
Mandrel Pressed		1		
Unknown (crumbled in washing)		2		
Button			1	
Window Glass Fragments			173	
Mirror Glass Fragments			3	
Flat Green Glass Fragment			1	
Melted Glass Fragments			35	
Unidentified Glass Fragments			4	
METAL BUILDING HARDWARE				3
Hinging Devices			2	
Strap Hinge		1		
Mortise Hinge		1		
Latching Device			1	
Door Handle		1		
METAL FASTENERS				1378
Non-threaded Fasteners			1366	
Nails		1347		
Wrought Rod Nails	546			
Machine Cut Sheet Nails	174			
Cast Nails	5			
Machine Cut Wire Nails	482			
Unidentified Rod or Sheet Nails	140			
Wrought Rod Staples		2		
Machine Cut Wire Staples		9		
Rivets		6		
Unidentified Non-threaded Iron Fastener		1		
Unidentified Non-threaded Copper Fastener		1		

Table 39 -- cont'd

Descriptive Category	Sub-total 3	Sub-total 2	Sub-total 1	Total
METAL FASTENERS (cont.)				
Threaded Fasteners			12	
Screws		3		
Bolt Parts		8		
Bolt	1			
Bolts w/Nuts	2			
Nuts	3			
Washer	1			
Spring Washer	1			
Threaded Rod		1		
METAL TOOLS				11
Trap Springs			7	
Axe Blade			1	
Files			2	
Wrench			1	
MISCELLANEOUS METAL HARDWARE				888
Singletree Hardware			1	
Flat Chain Link			1	
Hooks			2	
Closed Eye			1	
Grommet			1	
Barbed Wedge			1	
Bundling Straps			695	
Barrel Bands			9	
Unidentified Iron Bands			129	
Iron Wire			47	
Copper Wire			1	
MISCELLANEOUS METAL PREFORMS				5
Barbed Wedge Template Preform			1	
Copper Lug Cutouts			2	
Unidentified Preforms			2	
METAL PERSONAL & HOUSEHOLD ITEMS				15
Buttons			10	
Strap Buckle			1	
Silver Buckle			1	
1918 U.S. Penny			1	
Brass Cock Fragment			1	
Container Handle Fragment			1	

Table 39 -- cont'd

Descriptive Category	Sub-total 2	Sub-total 1	Total
METAL WEAPONRY ITEMS			6
Cartridges		2	
.45 caliber Government	1		
Unidentified .45 caliber	1		
Lead Shot		1	
Musket Trigger		1	
.30 caliber Springfield Clip (USA)		1	
Friction Cannon Primer (USA)		1	
MISCELLANEOUS METAL			564
Cut Stock		41	
Square-Rectangular Iron	32		
Round Iron	9		
Castings		3	
Brass	2		
Lead	1		
Unidentified Objects		44	
Iron	36		
Iron Wire	2		
Non-ferrous	6		
Unidentified Fragments		476	
Iron	420		
Iron Sheeting	31		
Non-ferrous	25		
CONSTRUCTION MATERIAL			446
Brick		333	
Imported	38		
Local	289		
Unknown	6		
Roofing Tile		1	
Mortar		100	
Putty		1	
Ceramic Insulators		2	
Paint Chips		4	
Concrete		3	
Asphalt		2	
STONE ITEMS			18
Slate Pencil Fragments		2	
Slate Tablet Fragments		4	
Gunflints		3	
Argillite Pipe Fragments		2	
Carved Argillite Fragments		2	
Graphite Crucible Fragment		1	
Flaked Stone		1	
Detritus		3	

Table 39 -- cont'd

Descriptive Category	Sub-total 1	Total
MISCELLANEOUS ITEMS		50
Bone Disc	1	
Leather Shoe Fragment	1	
Unidentified Leather Fragments	3	
Unidentified Rubber Fragments	2	
Cigarette Filter	1	
Unidentified Material from Crock	21	
Unidentified Material	21	
GRAND TOTAL		8160

Table 40 -- Quantitative distribution of non-artifacts by descriptive category from the Iron Store area.

Descriptive Category	Sub-total	Total
Forge Debris		1690
Coal	1623	
Coke	4	
Clinkers	56	
Slag	7	
Bone		1049
Burned Clay		105
Charred Wood		23
Coral		96
Shell		52
Dentalia Shell		1
Wood		12
GRAND TOTAL		3028

Hand Painted Household Fragments. No complete or partially complete articles were reconstructed from the 61 fragments recovered, and no manufacturing marks were observed. None of the decorations were identified by pattern name, but the vast majority could best be described as multi-colored "cottage ware".

Transfer Printed Household Fragments. No complete or partially complete articles were reconstructed from the 1,272 fragments recovered. A number of pattern fragments were observed with identifiable manufacturing marks (Table 41), and no new patterns were observed.

Table 41 -- List of manufacturing marks with identified transfer printed patterns from the Iron Store area.

Catalog #	FOVA Variety # and Pattern Name	FOVA Manufacturing Code
IS 56	#7013; Camilla	CG-TP-6 w/CG-IM-3
IS 56	#7013; Camilla	C-TP-1
IS 39 & 46	#7010; British Flowers	CG-TP-6
IS 56	#7011; Broseley	CG-TP-5
IS 13	#7015; Chatsworth	CG-IM-3
IS 49	#7015; Chatsworth	C-TP-2
IS 54	#7015; Chatsworth	CG-TP-6
IS 46	#7016: Chinese Flowers	CG-TP-5
IS 38	#7026; Portland Vase	CG-TP-6
IS 48	#7027; Queen Mary	C-TP-2

Undecorated Container Fragments. From the 7 fragments recovered, no complete or partially complete container could be reconstructed, and no manufacturing marks were observed.

Clear Glazed Yellowish-Buff Fabric Fragments

The 7 undecorated container fragments recovered were portions of snuff bottles, presumably ones manufactured by "R. Currey & Co.".

Brown Glazed Buff Fabric Fragments

The 3 undecorated fragments were too small for ware identification, and no manufacturing marks were observed.

Stoneware

Stoneware fragments, which totaled 470, were classified into descriptive subcategories based upon fabric color, function and method of decoration (Table 39).

Greenish-Gray Fabric Fragments

All 34 fragments recovered were of Chinese manufacture, and included 12 fragments of blue hand painted "Canton ware", 9 fragments of blue hand painted "ginger" jars and 3 fragments of a red hand painted ware. No complete or partially complete articles were reconstructed, and no manufacturing marks were observed.

Brownish-Gray Fabric Fragments

"Read's Ale" Bottle Fragments. Of the 16 fragments recovered, none contained remnants of the impressed label, no complete or partially complete bottles could be reconstructed.

Unidentified Saltglazed Container Fragments. From the 417 fragments recovered, 2 partially complete "crocks" were reconstructed. Both "crocks" were identical in manufacturing style and size, and only one has been illustrated (Fig. 166). These "crocks" measured ca. 13 ins. in height, ca. 8½ ins. in diameter and had a ca. 4 in. inside rim diameter. Capacity for each "crock" was ca. 460 cu. in. (ca. 7500 ml.) and equaled 2 gallons (in both the Winchester Wine Gallon and American Liquid systems). Prior to the adoption of the Imperial system in 1824 by the British, one commonly used liquid measuring system was the Winchester Wine Gallon system based upon 231 cu. in. (3785.6 ml.) per gallon. After adoption of the Imperial system, the Winchester Wine Gallon system was still used, but primarily for imported alcoholic beverages. The American Liquid system was developed from the Winchester Wine Gallon system, and in 1830 the U.S. Senate fixed the capacity of a standard gallon at 231 cu. in., exactly copying the Winchester Wine Gallon. Thus, the 2-gallon "crocks" could have been either a British or American product. The fabric of one "crock" had been stained a blackish-gray, similar to the staining exhibited by blacking bottles, but the exact product could not be determined. Both "crocks" came from F687.

Gray Fabric Fragments

All 12 fragments came from blacking bottles, and one had a portion of the following impressed words: "...STONE...ED NOT T...". No manufacturer has been identified for this mark.

Red Fabric Fragment

This undecorated fragment was too small for accurate description.

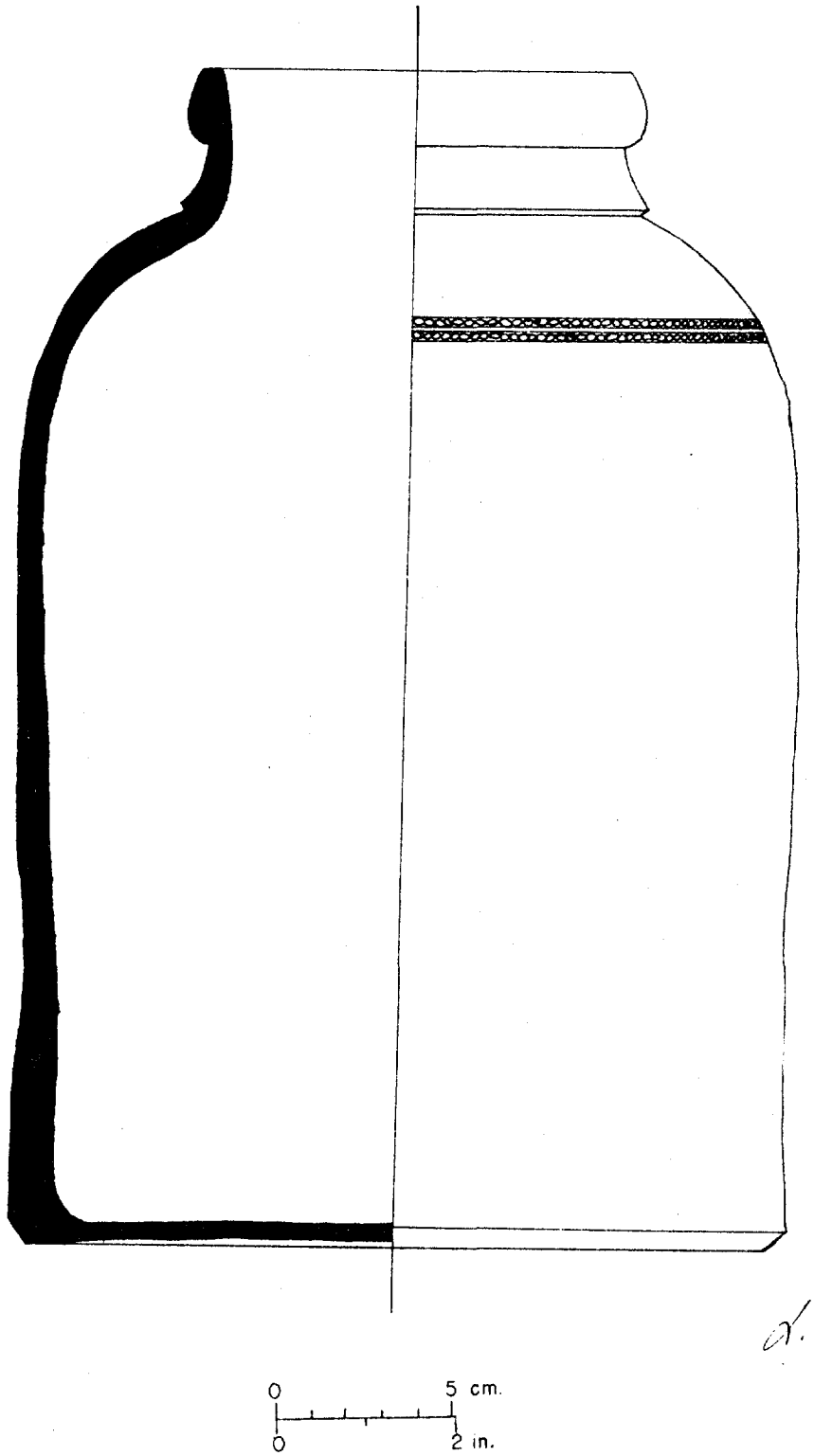


Fig. 166 -- Stoneware "crock" from the Iron Store area (FOVA IS 30).

Vitreous China

The 27 fragments of vitreous china consisted primarily of blue hand painted "Chinese export" wares. Six fragments of undecorated vitreous china were recovered, and one unidentified brown glazed fragment. All fragments were too small for accurate description, and no manufacturing marks were observed.

Ceramic Objects

Earthenware

White Clay Tobacco Pipe Fragments

Of the 357 pipe fragments recovered, no complete or partially complete pipes were reconstructed.

Bowls. Two styles of "FORD" pipes were observed (Figs. 167a-b). In addition, one unidentified bowl had a ship and banner molded on the side of the bowl, and another bowl fragment had a multi-colored hand painted floral design with a white glazed flaired rim (Fig. 167c). Neither bowl was identified.

Spurs. Only one style of spur mark was observed: "I/F" ("FORD" pipes).

Stem. One floral decorated stem was found with a stylized paint stem and flowers on each side. It probably represents a variety of "FORD" pipes.

Decorative Tile Fragments

Three very small fragments of a plain white tile were recovered, and may be related to later USA material. The tile fragments had a checkerboard rough bottom, presumably for better adherence to the mortar or adhesive.

Stoneware

Unidentified Stoneware Fragment

One brown glazed fragment was recovered, but it was too small for identification or accurate description.

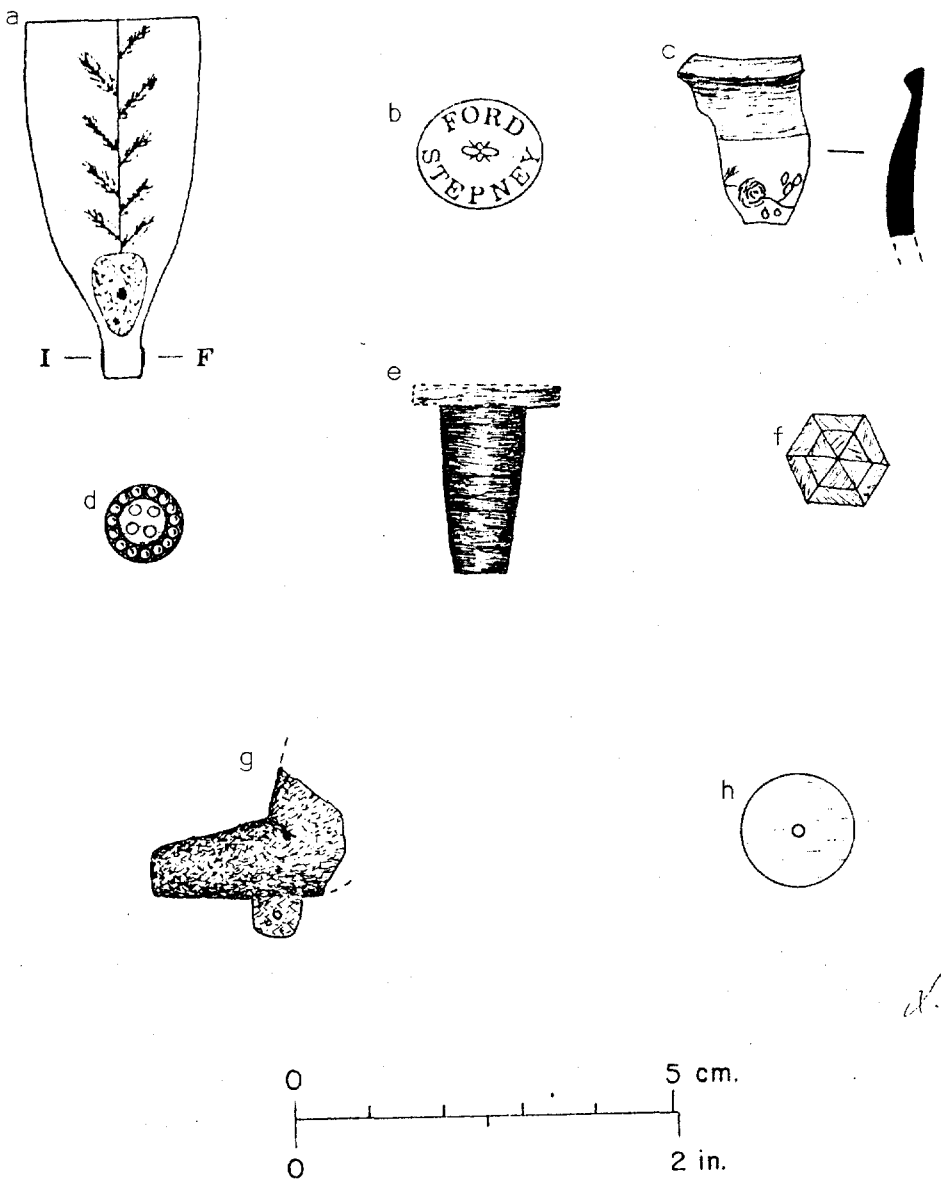


Fig. 167 -- Pipe fragments, glass stopper and buttons from the Iron Store area: a-b). "FORD" bowl marks; c). tin glaze pipe fragment (FOVA IS 47); d). "Prosser" button (FOVA IS 59); e). glass stopper (FOVA IS 37); f). molded-faceted glass button (FOVA IS 46); g). argillite pipe fragment (FOVA IS 56); and h). bone disc (FOVA IS 61).

Vitreous China

Mortar Fragment

One fragment of a mortar was recovered, but was too small for description or identification.

Porcelain

"Prosser" Button

One white, 4-hole "Prosser" button was recovered with an edge decoration consisting of 15 raised hemispheres (Fig. 167d).

Glass Wares and Containers

Bottles

Of the 1,118 bottle fragments recovered from the Iron Store area, no complete or partially complete bottles were reconstructed. The majority of rims and bases recovered from this area were suggestive of liquor bottles. Rum bottles were identified by bases and rims, and one wine bottle rim was identified. Size, shape and comparative analyses, indicated the presence of additional liquor bottles. Several medicine bottles were also identified by rim fragments.

Marked Bottle Fragments

The marked bottle fragments recovered have been illustrated in Figs. 169a-d . Though none were positively identified, the "written" rather than "printed" lettering on two fragments was suggestive of 20th Century containers. These fragments were recovered from an overburden stratum. One marked base fragment was also recovered (Fig. 169b).

Bottle Rims

Eleven rims were reconstructed and classified onto 7 different types on the basis of their manufacturing attributes and form (Table 42). Three new rim types were identified and are graphically illustrated in Figs. 168a-c . Of special note was Rim Type 47 which was similar in manufacturing and form attributes to those rims (Type 15) generally classified as liquor bottles with cork stoppers in other areas of the fort. The new rim type had an interior ground surface used in conjunction with a glass stopper rather than a cork stopper.

Table 42 -- Bottle Rim Types from the Iron Store area as defined by manufacturing attributes and form.

Attributes	Rim Type 3	6	8	15	46	47	48
Rim Manufacture							
Rim Shaped from Neck Glass							
Non-overlapping	×						
Overlapping			×		×		
Rim Shaped from Additional Glass							
Outside Application				×		×	
Inside Application							×
Wrapped		×		×		×	
Interior Ground						×	
Rim Form							
Single Lipped							
Straight from Mouth							×
Flared from Mouth			×				
Extended from Mouth	×						
Straight below Mouth		×					
Double Lipped							
Straight					L		
Flared				B		B	
Convex					U		
Color							
Dark Olive (Opaque)				×			
Olive Green		×					
Light Green			×	×	×	×	×
Colorless	×						
Frequency	1	1	1	5	1	1	1

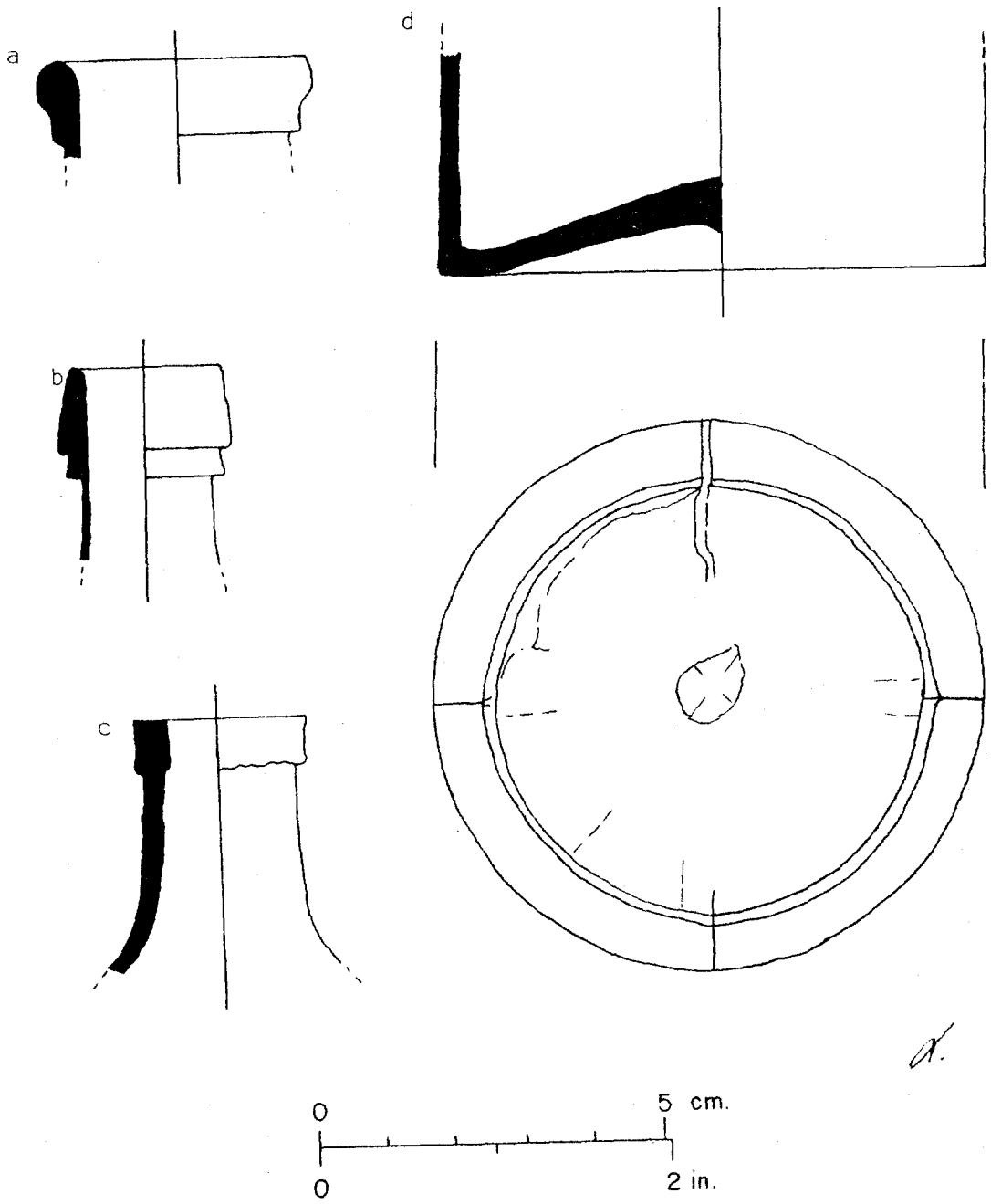


Fig. 168 -- Bottle rim and base types from the Iron Store area: a). rim Type 46 (FOVA IS 37); b). rim Type 47 (FOVA IS 37); c). rim Type 48 (FOVA IS 47) and d). base Type 39 (FOVA IS 29).

Bottle Bases

Five bases were reconstructed and classified into 3 types on the basis of their manufacturing attributes and form (Table 43). No new base types were identified, but Base Type 39 revealed some unusual characteristics not noted in other base types. The base alone appeared to have 5 mold lines on it (Fig. 168d). Four seams ran across the basal area dividing it into equal quadrants, and vaguely crossed the indent to the central nipple, but not through it. An additional seam line appeared on the outer edge of the base where it merged with the body of the bottle, giving a rippled affect. The size, color and shape of the base and its possible association with Rim Type 15, suggested that it may have belonged to a liquor bottle. This base was recovered from F687 within the Iron Store.

Containers: Jars

A total of 175 clear glass fragments classified as "jar" fragments were recovered and reconstructed into one complete "jar" (Fig.169e) and 5 additional "jar" bases. These small containers measured 2½ in. in width at the base, 3 in. in width at the rim and 3 in. in height. They were manufactured by the free blown method and the ground bases indicated the removal of a pontil mark. The flat lip was formed from the glass at the mouth by folding it outside.

These container fragments were classified as jars as opposed to tumblers or bottles on the basis of two attributes -- the absence of a shoulder area and the presence of a rim. The rim was indicative of a bottle or jar, while the basic form of the body was suggestive of a tumbler. The combination of attributes led to the identification of these objects as glass containers, specifically jars, for the storage of food stuffs. A large cork was probably used to close the container. All jar fragments were recovered from a single feature (F687) within the Iron Store. The feature appeared to be a small trash pit or cache of HBC artifacts, especially glass and stoneware.

Bottle Stopper

One small bluish green stopper fragment was recovered (Fig. 167e).

Table 43 -- Bottle Base Types from the Iron Store area as defined by manufacturing attributes and form.

Attributes	1	30	39
Basal Shape			
Round	×	×	×
Basal Cross Section (Excluding Indent)			
Conical (pushup)	×		
Concave		×	
Flat			×
Indent Shape			
Circular		×	×
Indent Cross Section			
Concave		×	×
Central Nipple		×	×
Pontil Type			
Sand	×		
Absent		×	×
Color			
Dark Olive (opaque)	×		
Light Green			×
Amber		×	
Frequency	3	1	1

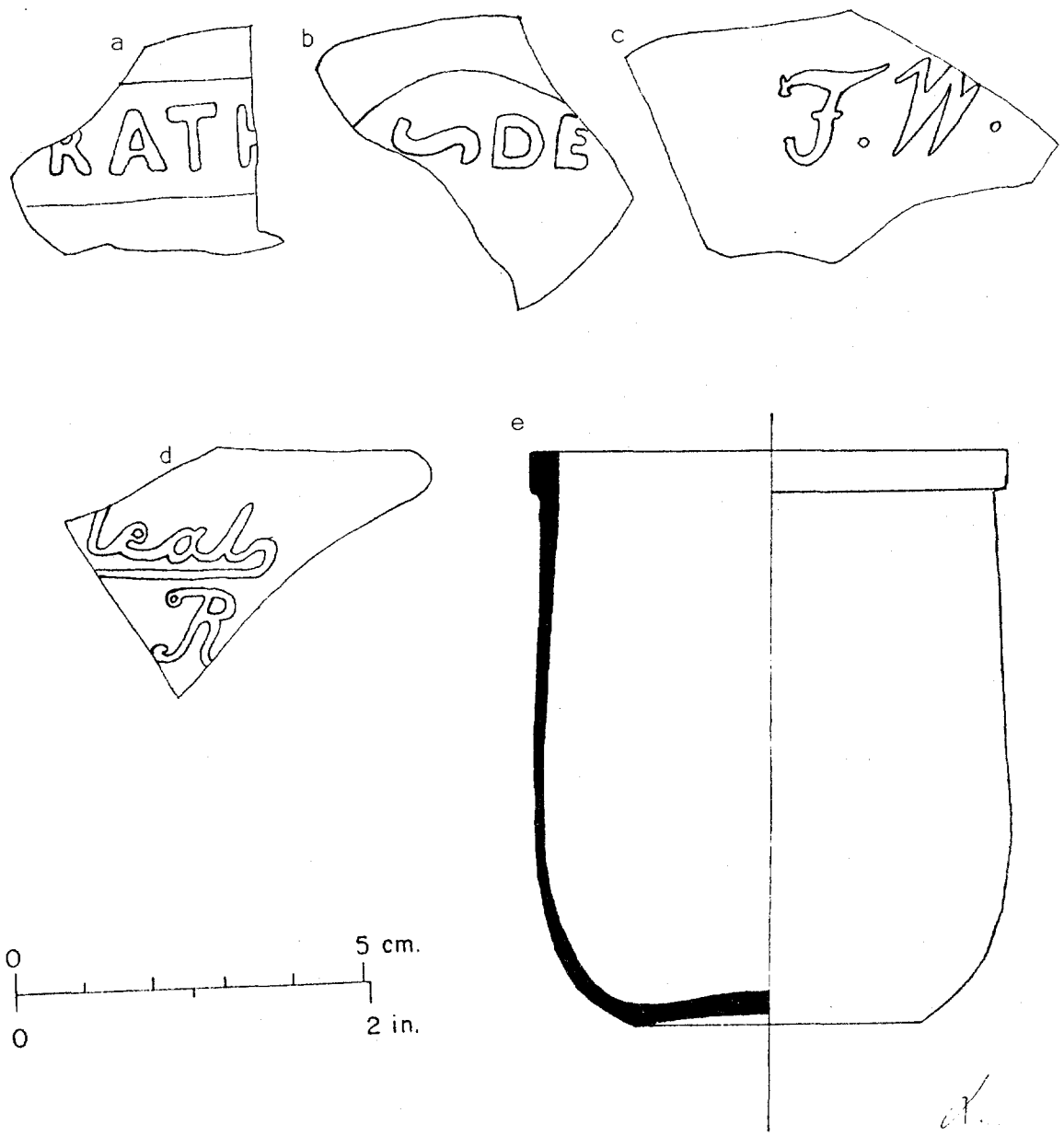


Fig. 169 -- Marked bottle fragments and jar from the Iron Store area: a). marked bottle fragment (FOVA IS 64); b). bottle fragment (FOVA IS 37); c). bottle base (FOVA IS 49); d). bottle fragment (FOVA IS 64); and e). "Jar" (FOVA IS 19-30).

Tumblers

Three fragments were recovered and could not be reconstructed to form complete or partially complete tumblers. The fragments were faceted and the bases showed evidence of grinding and polishing.

Stemmed Glassware

Of the 9 stemmed glassware fragments recovered, 2 partially complete wares were identified. One fragment, identified as FOVA Variety #1005, was free blown with 10 horizontally ground facets decorating the bowl. The stem consisted of a single bowl cushion with a single bladed knop at the midsection. Another fragment was identified as FOVA Variety #1007. The method of manufacture was a freeblown two piece bowl and stem with a laid-on base. The stem expanded to a cushioned, attached base with a single-bladed knop. The height was 4 in., basal diameter ca. 2½ in. and rim diameter 2 5/8 in.

Glass Objects

Beads

Of the 48 beads recovered, there were 26 tube, 19 wire wound, one mandrel pressed and 2 unidentifiable beads (Table 39). Following the classification scheme used in previous reports (Hoffman & Ross 1974b, 1975), all beads recovered were classified according to method of manufacture, stylistic variation, reflectance and color (Table 44).

Button

One6-sided faceted, molded glass button was recovered with an iron staple shank imbedded in its flat back (Fig.167f). The molded button blank probably originally consisted of a hemisphere, and the finished button was formed by grinding 6 sides and 12 top facets. Glass color was opaque black to translucent very dark reddish-purple.

Window Glass

Only 173 window glass fragments were recovered, and their thicknesses were not measured.

Table 44 -- Classification of glass beads from the Iron Store area.

Bead Type, Subtype, Class, Reflectance & Color (Variety#)	F5	F4	F3	F2	F1
TUBE BEADS					26
Hot Tumbled Beads				26	
Plain Single Layer Beads			23		
Translucent		16			
Grayish-Blue (#1063)	16				
Opaque		7			
White (#1003)	5				
Lt. Green (#1076)	1				
Dk. Bluish-Purple (#1056)	1				
Plain Double Layer Beads			3		
Transparent on Opaque		1			
Red on White (#1037)	1				
Opaque on Opaque		2			
White on White (#1040)	2				
WIRE WOUND BEADS					19
Plain Single Layer Beads				19	
Spherical			18		
Transparent		6			
Greenish-Blue (#2005)	5				
Purple (#2062)	1				
Opaque to Translucent		8			
Blue (#2018)	8				
Opaque		4			
Blue (@002)	4				
Ellipsoidal			1		
Opaque		1			
Blue (#2003)	1				
MANDREL PRESSED BEADS					1
Faceted Beads				1	
Spherical			1		
Opaque		1			
Lt. Greenish-Blue (#3002)	1				
UNKNOWN (Lost)					2
GRAND TOTAL					48

Mirror Glass

Only 3 mirror glass fragments were recovered, and their thicknesses were not measured.

Metal Building Hardware

Three items were recovered including a strap hinge fragment, one complete mortice hinge (Fig.170a), and the handle to a thumb latching system .

Metal Fasteners

Of the 1,378 metal fasteners recovered, 1,347 specimens were nails. Approximately 3 times as many wrought rod nails were recovered as machine cut sheet nails (Table 39), suggesting that the Iron Store structure underwent very little repair during the 1850's. Seventeen wrought rod nail varieties (Table 45), 4 machine cut sheet nail varieties (Table 46) and one cast nail variety (Table 47) have been defined and no new varieties were identified. Of the wrought rod nail varieties, 2 varieties appear to have been significant in the construction of the Iron Store--rosette sharps nails (Variety #1002) of 7d-12d size and rosette flat tip spikes (Variety #1010) of approximately 5" length (Table 45). The size range of the rosette sharps nails suggests use with boards of approximately 1-1½ inches thickness, probably roofing planks or interior shelving. Variety #1010 spikes have rarely been recovered from other Fort areas, although it was defined and illustrated in FOVA Report #4 (Hoffman & Ross 1973b: Fig. 24j). This type of spike may have been used to secure joists or strongbacks of 2-2½" thickness to the plates.

Metal Tools

Of the 11 tools recovered (Table 39), the majority were trap springs. The 7 finished trap springs were consistent in size and manufacture to those recovered from the Blacksmith Shop. One manufacturing mark appeared on the upper bow of the only complete spring recovered--a block impressed "GF" , probably for George Folster, a Fort Vancouver blacksmith during the period 1830-32 and 1835-47 (Hussey 1974: 330-336). The 6 fragmented specimens all appeared to have been accidently broken at the bend through use.

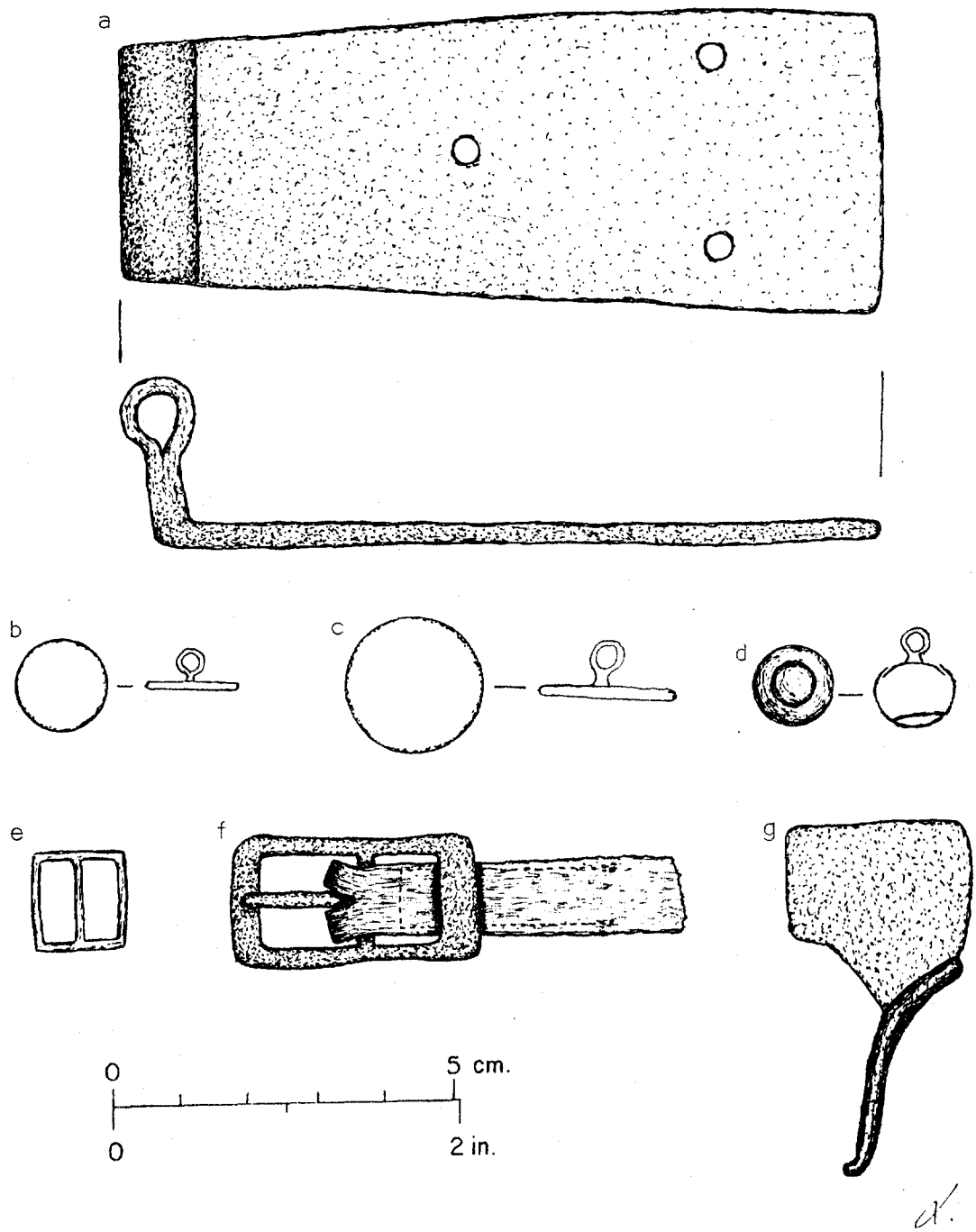


Fig. 170 -- Metal hardware, household, personal and weaponry items from the Iron Store area: a). mortice hinge (FOVA IS 56); b). metal buttons Type IW and IX (FOVA IS 61); c). metal button Type IY (FOVA IS 62); d). metal button Type IIR (FOVA IS 62); e). silver buckle (FOVA IS 9); f). buckle w/strap (FOVA IS 65) and g). trigger (FOVA IS 55).

Table 45 -- Varieties and hypothesized populations for complete wrought rod nails from the Iron Store area.

Variety # (Population)	Penny Size or Inches	Length (cm)	Thickness (mm)	Number Measured	Total Frequency
1001	5d-20d	4.6-10.4	3.4-5.2	10	10
1002	4d-20d	4.0-10.3	2.8-6.7	136	136
(1)	7d-12d	5.8-8.2	4.0-5.9	(121)	
1004	4d	3.9	3.3	1	1
1009	4"-5½"	10.3-13.4	5.6-8.9	5	5
1010	4½"-5¼"	11.7-13.3	8.5-9.2	9	9
1014	5 3/4"	14.7	7.6	1	1
1021	5d	4.3	4.4	1	1
1022	4d-6d	3.9-4.8	5.1-5.7	2	2
1032	2¼"	5.5	4.2	1	1
1034	6"	14.9	15.5	1	1
1053	5d	4.5	5.1	1	1
1055	12d-20d	8.1-9.9	5.0-5.7	2	2
1060	8d	6.3	4.6	1	1
1071	6d-8d	5.1-6.7	4.2-4.6	5	5
1085	11"	27.7	15.9	1	1
1090	2 3/4"	7.1	9.8	1	1
1108	5½"	13.9	9.0	1	1
Unid.				4	367
TOTAL					546

Table 46 -- Varieties and hypothesized populations of complete machine cut sheet nails from the Iron Store area.

Variety #	Penny Size or Inches	Length (cm)	Thickness (mm)	Number Measured	Total Frequency
2001		3.8-11.0	2.3-4.3	13	14
2002		4.5-8.6	2.8-4.6	15	15
2004	4d	3.5-3.9	2.3-2.8	3	3
2005		6.5-7.8	2.6-3.4	3	3
Unid.	--	--	--	--	139
TOTAL					174

Table 47 -- Varieties of cast nails from the Iron Store area.

Variety #	Penny Size or Inches	Length (cm)	Thickness (mm)	Number Measured	Total Frequency
4007	1"	2.5	3.5-3.7	2	2
Unid.					3
TOTAL					5

Two files and a wrench were recovered but they probably relate to Blacksmith Shop activities rather than those of the Iron Store. The 2 file fragments consisted of a half-round bastard and a flat bastard file, and are comparable to specimens recovered from the Blacksmith Shop. The wrench was unique for previously recovered tools, and it has been illustrated in Fig. 171 . This wrench probably had wooden handle and the jaw size suggests that it was used on nuts of less than 1 3/4 in. diameter.

Miscellaneous Metal Hardware

A total of 888 items was recovered, predominately bundling strap. One hook fragment, possibly utilized in hoisting bundles of stock was also recovered.

Bundling Strap

Bundling strap was utilized to package metal stock, presumeably for easier handling in shipping and for inventory control (Fig. 172a). Although specimens have been recovered from other areas of the Fort, notably the blacksmithing areas, by far the highest frequency was recovered from the Iron Store. Of the 695 specimens recovered, 72 were complete, with shapes (indicating the stock bundle shape) ranging from rectangular to circular. Thin rectangular bands and square rods were principally utilized to bundle the stock with the rectangular rod being used exclusively with circular packages. The variation in types of strap and bundle shape has been illustrated in Figs. 172b-173c, and on the basis of strap distortion, bundles of circular stock containing 2-5 rods have been hypothesized and illustrated in Figs.

In addition to bundling strap, by which the bundle was tied with the strap, several solid wrought iron bands were recovered. It is hypothesized that they were used in a similar manner as bundling strap, except they were welded, possibly at the factory. Two specimens, varying in shape are illustrated in Figs. 176a-b.

Miscellaneous Metal Preforms

One specimen of barbed wedge preform in the template manufacturing stage and 2 waste cutouts from the hole punching of copper lugs were recovered. The specimens are similar to, and probably associated with, materials recovered from the Blacksmith Shop.

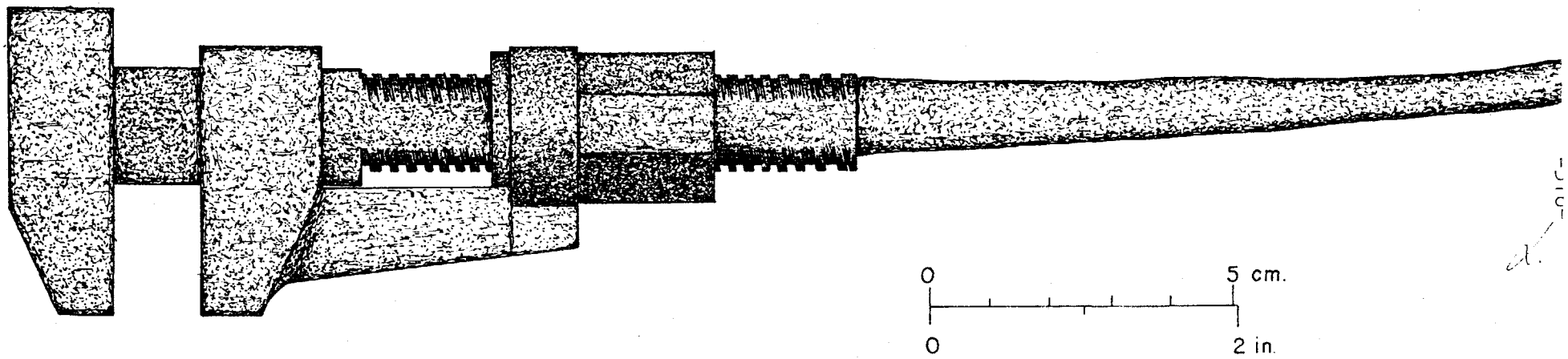


Fig. 171 -- Complete wrench from the Iron Store area (FOVA IS 56).

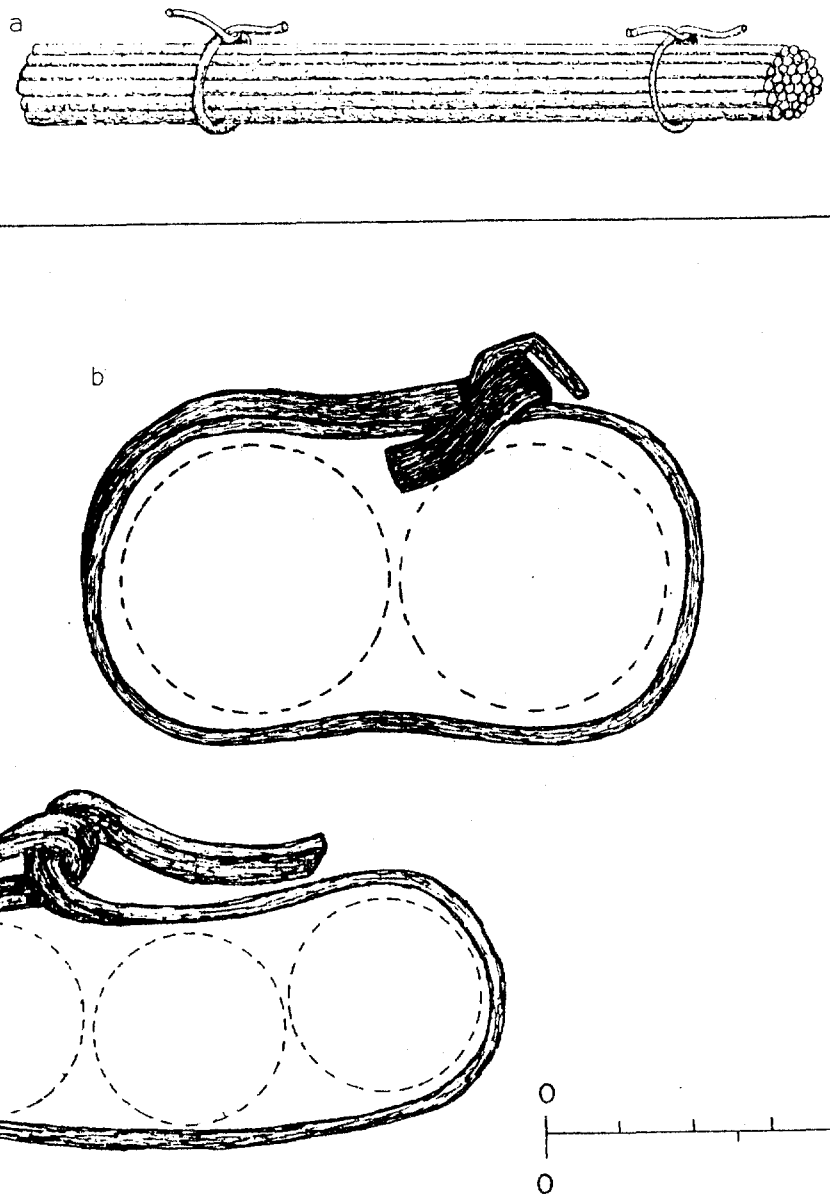


Fig. 172 -- Iron bundling strap from the Iron Store area: a). reconstructed iron bundling strap with iron stock; b). iron bundling strap(2/1¼" rods) (FOVA IS 60); and c). iron bundling strap (3/1" rods) (FOVA IS 66).

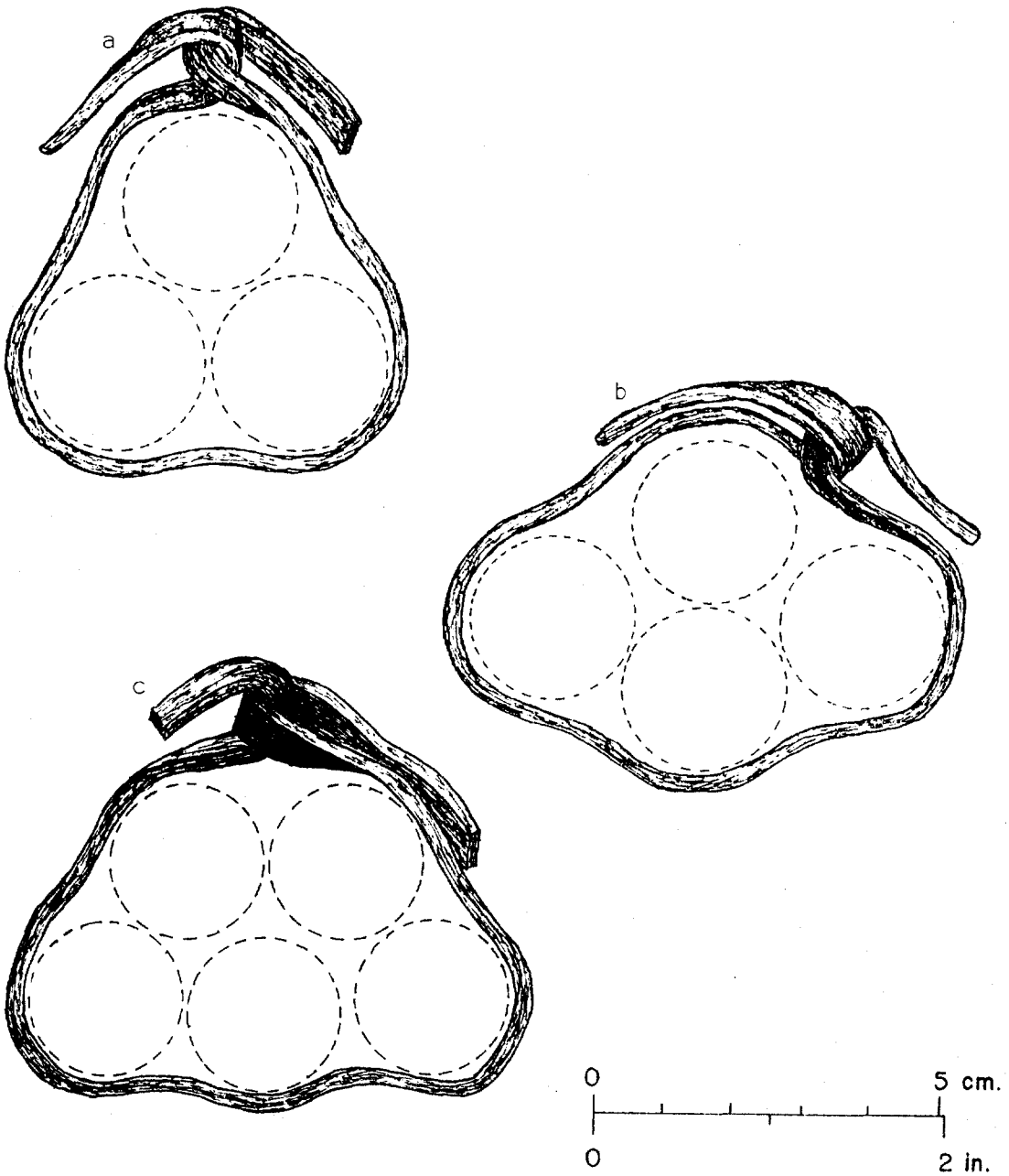


Fig. 173 -- Bundling straps from the Iron Store area: a). bundling strap for 3/1" rods (FOVA IS 66); b). bundling strap for 4/5/16" rods (FOVA IS 64) and c). bundling strap for 5/7/8" rods (FOVA IS 56).

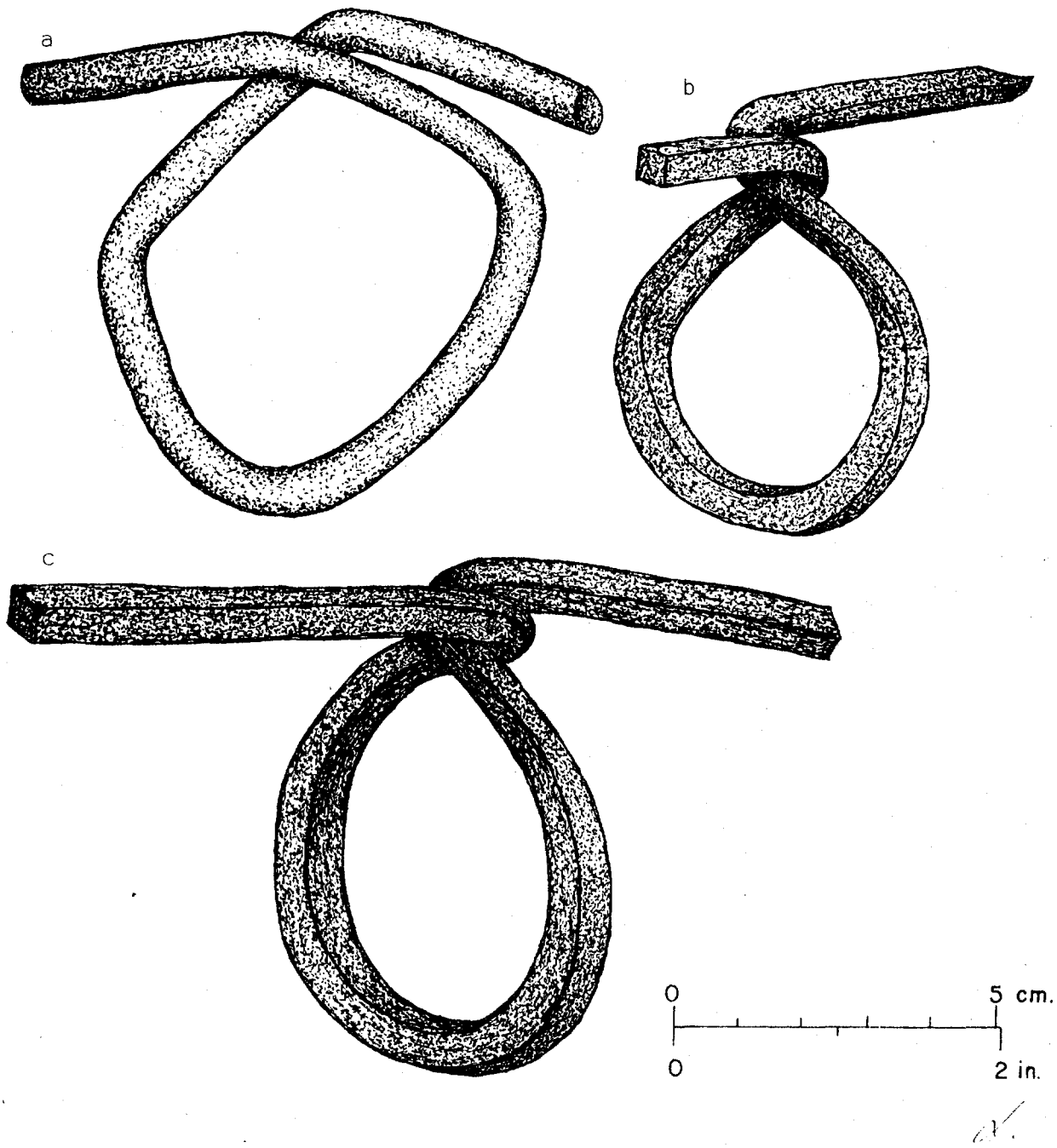


Fig. 174 -- Bundling straps from the Iron Store area: a). bundling strap (FOVA IS 37); b). bundling strap (FOVA IS 37) and c). bundling strap (FOVA IS 66).

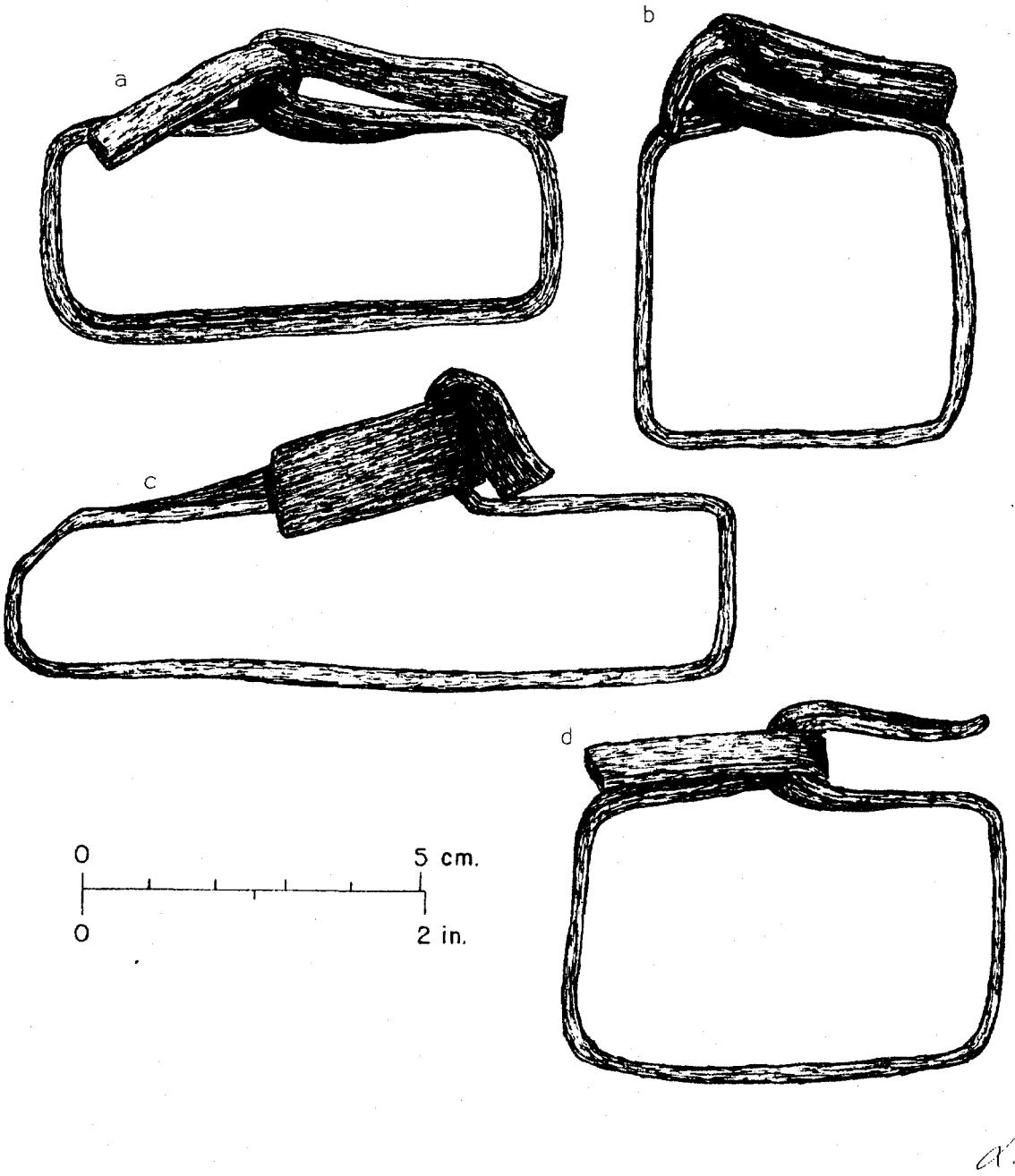


Fig. 175 -- Bundling straps from the Iron Store area: a). bundling strap (FOVA IS 44); b). bundling strap (FOVA IS 53); c). bundling strap (FOVA IS 46 and d). bundling strap (FOVA IS 54).

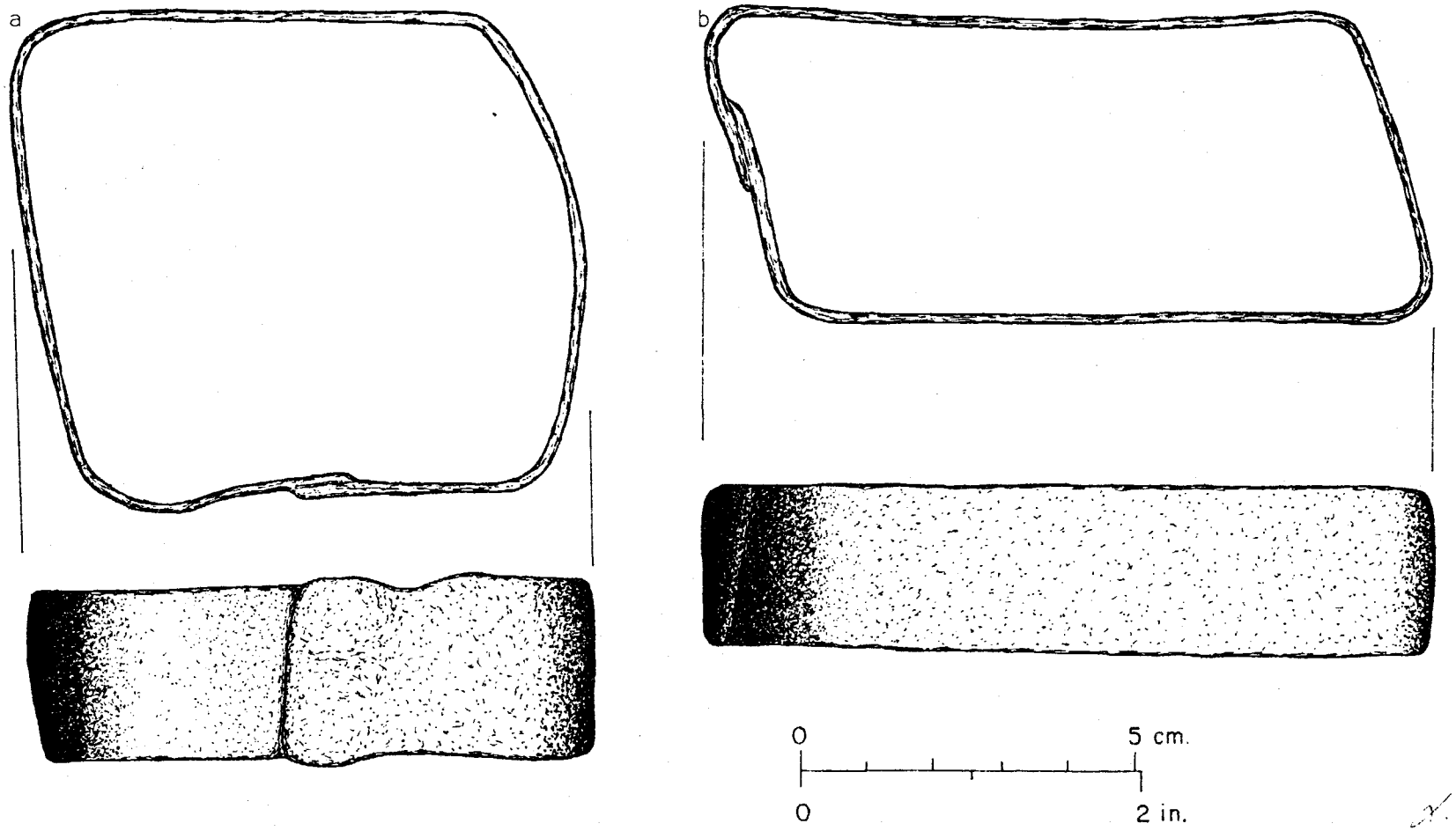


Fig. 176 -- Iron bands from the Iron Store area: a). iron band (FOVA IS 47) and b). iron band (FOVA IS 56).

Metal Personal and Household Items

Of the 15 items recovered (Table 39), new or unique items not previously reported have been illustrated in Figs. 170b-f.

Buttons

Of the 10 buttons recovered, 9 were complete and new types have been illustrated in Figs. 170b-d (Table 48).

Table 48 -- Types of metal buttons found in the Iron Store area.

Type	Dia. (mm.)	Frequency	Figure
I. Single-Piece Loop-Shank			
W. "Treble Gilt"	13.1	1	170b
X. "Treble Gilt, Stand D Colour"	13.4-13.6	5	170b
Y. "Treble Orange,St..."	19.7	1	170c
II. Composite Loop-Shank			
R. Brass Ball	12.3	1	170d
S. U.S.A.-General Service "...Philadelphia"	16.2	1	--
Unidentified Shank Fragment		1	--
TOTAL		10	

Metal Weaponry Items

Of the 6 items recovered, the only new specimen was the musket trigger (Fig. 170g).

Construction Material

Of the 446 fragments of construction material recovered (Table 39), 74.7% were bricks and 22.4% mortar.

Bricks

Of the 333 brick fragments recovered (Table 49), 11.4% were imported British firebrick (Variety #1001, illustrated in Hoffman & Ross 1973b: Figs. 39a-b) and 86.8% local Willamette Valley construction brick (Variety #1005, illustrated in Hoffman & Ross 1973b:Fig. 39l). A few fragments were complete enough for measurement, and their dimensions have been recorded in Table 50.

Table 49 -- Identification of brick varieties on the basis of comparative composition for the Iron Store area.

Attributes	Imported		Local		Unknown		
	1001	1014	1004	1005	1006	1007	Unid.
Texture							
Clay			×	×			
Silt	×	×	×	×	×		
Sand	×	×					
Gravel						×	
Inclusions							
Gravel	×	×		×	×		
Charcoal	×						
Clay Accretions			×				
Porosity							
Porous		×	×	×	×		
Non-porous	×					×	
TOTAL	36	2	2	287	1	4	1

Table 50 -- Dimensions of brick varieties from the Iron Store area.

Brick Variety	Thickness		Width	
	cm.	inches	cm.	inches
Imported				
#1001	6.6-6.8	2 5/8	10.7-11.0	4 1/4-4 3/8
Local				
#1004	5.2	2	9.7	3 7/8
#1005	4.9-6.0	1 7/8-2 3/8	9.2-9.9	3 5/8-3 7/8

Stone Items

The only new or unique item recovered which could be partially reconstructed was a carved black argillite pipe fragment (Fig.167g).

Miscellaneous Items

The only new or unique item recovered was a bone disc (Fig.167h).

SOUTHEAST BASTION AREA

A total of 6,860 material cultural items were recovered from the SE Bastion area, including 4,270 artifact and 2,590 non-artifact fragments (Tables 51-52).

Ceramic Household and Container Fragments

There were 937 ceramic household and container fragments recovered, and no complete or partially complete wares could be reconstructed. Following previous reports, ceramics were divided into a variety of subcategories (Table 51). A discussion of each descriptive category is presented below.

Common Pottery

The 9 fragments of common pottery recovered were all lustreware, and all were too small for classification.

Earthenware

Earthenware fragments, which totaled 729, were classified into descriptive subcategories based upon fabric color, glaze color and method of decoration (Table 51).

Clear Glazed White Fabric Fragments

White earthenware fragments totaled 717 and were classified according to function (i.e. household articles or product containers) and method of decoration (Table 51).

Undecorated Household Fragments. No complete or partially complete articles were reconstructed from the 276 fragments recovered. One fragment had the following transfer printed black letters: "...D Oct...". This fragment probably represents a portion of a "J. Wedgwood, ironstone china, pearl" household article which was registered October 8, 1847.

Table 51 -- Quantitative distribution of artifacts by descriptive category from the Southeast Bastion area.

Descriptive Category	Sub-total 3	Sub-total 2	Sub-total 1	Total
CERAMIC HOUSEHOLD & CONTAINER FRAGMENTS				937
Common Pottery Fragments			9	
Lustreware Household		9		
Earthenware Fragments			729	
Clear Glazed White Fabric		717		
Undecorated Household	276			
Hand Painted Household	16			
Transfer Printed Household	420			
Undecorated Container	3			
Transfer Printed Container	2			
Clear Glazed Yellowish-buff Fabric		12		
Undecorated	6			
Hand Painted Household	2			
"R. Currey & Co." Snuff Bottles	4			
Stoneware Fragments			194	
Greenish-gray Fabric		112		
"Canton" Household	105			
"Chinese Ginger" Jar	7			
Brownish-gray Fabric		79		
"Read's Ale" Bottles	8			
Unidentified Saltglazed Containers	71			
Gray Fabric		3		
Blacking Bottles	2			
Unidentified Saltglazed	1			
Vitreous China Fragments			5	
Undecorated Household		2		
"Chinese Export" Household		3		
CERAMIC OBJECTS				232
Earthenware Items			231	
White Clay Tobacco Pipe Fragments		231		
Stoneware Items			1	
Figurine Head		1		
GLASSWARES & CONTAINER FRAGMENTS				617
Bottle Fragments			567	
Tumbler Fragments			2	
Stemmed Glassware Fragments			6	
Unidentified Curved Glass Fragments			25	
Pressed Glass			14	
Unidentified Glass Fragments			3	

Table 51 -- cont'd

Descriptive Category	Sub-total 3	Sub-total 2	Sub-total 1	Total
GLASS OBJECTS				729
Beads			604	
Tube Beads		411		
Wire Wound Beads		191		
Mandrel Pressed Beads		2		
Window Glass Fragments			123	
Mirror Glass Fragments			2	
METAL BUILDING HARDWARE				8
Hinging Devices			2	
Strap Hinge		1		
Pintle		1		
Latching Devices			3	
Door Handle		2		
Gate Hook		1		
Locking Devices			3	
Stock or Case Lock Part		1		
Bolt Striker Plate		1		
Sliding Bolt Keeper		1		
METAL FASTENERS				697
Non-threaded Fasteners			695	
Nails		680		
Wrought Rod Nails	328			
Machine Cut Sheet Nails	117			
Machine Cut Wire Nails	100			
Cast Nails	7			
Closed Eye Nail w/Ring	1			
Unidentified Rod or Wrought Nails	135			
Wrought Rod Staple		1		
Rivets		4		
Unidentified Non-threaded Fastener		2		
Threaded Fasteners			2	
Bolt Parts		2		
Bolt	1			
Spring Washer	1			
METAL TOOLS				6
Blacksmith Tools			3	
Files		3		
Gimlet			1	
Adzes			2	

Table 51 -- cont'd

Descriptive Category	Sub-total 2	Sub-total 1	Total
METAL TRAP PARTS			3
Finished Parts		3	
Trap Springs	2		
Trap Pan	1		
MISCELLANEOUS METAL HARDWARE			426
Horseshoe		1	
O-Ring		1	
Closed Eye		1	
Bundling Straps		20	
Barrel Bands		16	
Unidentified Iron Bands		362	
Wire		20	
Lead Seals		2	
Zinc Sheeting		3	
METAL PERSONAL & HOUSEHOLD ITEMS			23
Buttons		10	
Buckle		1	
Waist-Belt Plate (USA)		1	
Brass Finger Ring		1	
Earring		1	
Thimble		1	
Straight Pins		2	
Harmonica Parts		2	
Jews Harp		1	
Container		1	
Foil Wrapper		1	
Stove Part		1	
METAL WEAPONRY ITEMS			22
Lead Shots		15	
Cartridges		4	
.22 caliber Rim Fired	1		
.30 caliber Krag Rimmed	1		
.30 caliber Springfield	1		
.45 caliber Government	1		
Unidentified Lead Rifle Bullet		1	
Percussion Cap		1	
Cannon Trunnion Plate		1	

Table 51 -- cont'd

Descriptive Category	Sub-total 2	Sub-total 1	Total
MISCELLANEOUS METAL			448
Cut Stock		6	
Square Iron Stock	5		
Round Iron Stock	1		
Castings		1	
Lead Casting	1		
Unidentified Objects		13	
Iron	12		
Non-ferrous	1		
Unidentified Fragments		428	
Iron	337		
Iron Sheeting	89		
Non-ferrous	2		
CONSTRUCTION MATERIALS			87
Bricks		72	
Imported	7		
Local	65		
Mortar		14	
Vitreous China Insulator w/Wire Nail		1	
STONE ITEMS			12
Gunflints		1	
Slate Tablets		3	
Slate Pencils		2	
Projectile Point		1	
Flaked Flint Cortex		2	
Detritus		3	
MISCELLANEOUS ITEMS			23
Leather w/Tacks		1	
Tortise Shell Hairpin Fragment		1	
Unidentified Material		20	
GRAND TOTAL			4270

Table 52 -- Quantitative distribution of non-artifacts by descriptive category from the Southeast Bastion area.

Descriptive Category	Sub-total	Total
Forge Debris		1571
Coal	1555	
Clinkers	15	
Slag	1	
Minerals		1019
Clay Sample	126	
Burned Clay	5	
Soil Samples	17	
Bone	357	
Charred Wood	73	
Coral	17	
Charred Corn Cobs	419	
Unidentified Nut Shell	1	
Wood Fragments	4	
GRAND TOTAL		2590

Hand Painted Household Fragments. No complete or partially complete articles were reconstructed from the 16 fragments recovered, and no manufacturing marks were observed. None of the decorations were identified by pattern name, but gereral decorative styles included: multi-colored floral "cottage ware", dark blue floral wares and brown-blue banded wares.

Transfer Printed Household Fragments. No complete or partially complete articles were reconstructed from the 420 fragments recovered. Only one identifiable pattern was observed with manufacturing marks. This was a fragment of "British Flowers" with a transfer printed "Copeland, Late Spode" (coded C-TP-2) with an impressed "COPELAND" (coded C-IM-1). No new patterns were observed.

Undecorated and Transfer Printed Container Fragments. Of the 5 fragments of containers recovered, none of the specimens were large enough for product identification or container reconstruction.

Clear Glazed Yellowish-Buff Fabric Fragments

Undecorated Fragments. These 6 fragments could either be undecorated specimens of hand painted articles or snuff bottles. No manufacturing marks were observed.

Hand Painted Household Fragments. The 2 fragments recovered were from a holloware article (possibly a bowl), and had a narrow blue band applied to the outside just below the rim. No reconstruction was possible, and no manufacturing marks were observed.

"R. Currey & Co." Snuff Bottle Fragments. All 4 fragments recovered had black transfer printed manufacturer marks identical to those observed on "R. Currey & Co." snuff bottles recovered elsewhere at Fort Vancouver.

Stoneware

Stoneware fragments, which totaled 194, were classified into descriptive subcategories based upon fabric color, function and method of decoration (Table 51).

Greenish-Gray Fabric Fragments

Of the 112 fragments recovered, all were of Chinese manufacture. Many fragments of slightly translucent household articles were recovered, but no reconstructions of partially complete wares were possible. Seven fragments of "Chinese ginger" jars were recovered.

Brownish-Gray Fabric Fragments

Of the 79 fragments recovered, 71 were from unidentified saltglazed "crocks". The remaining 8 fragments came from "Read's India Pale Ale" bottles, and one fragment was observed with a portion of the impressed label.

Gray Fabric Fragments

Two of the 3 fragments recovered came from what has previously been identified as blacking bottles. The remaining fragment came from an unidentified saltglazed "crock".

Vitreous China

Of the 5 fragments recovered, 3 were from "Chinese export" wares, while 2 were unidentified undecorated fragments.

Ceramic Objects

Earthenware

White Clay Tobacco Pipe Fragments

Of the 231 pipe fragments recovered, only one "complete" pipe could be reconstructed (Fig. 177a).

Bowls. Three styles of "FORD" pipes were observed (Figs. 177b-d).

Spurs. Two styles of spur marks were observed:

1. "I/F" ("FORD" pipes)
2. "W/C"

One "I/F" spur fragment had the "Ford" floral design on the bowl seams and the stem was ground to within a 1/2 in. of the spur (Fig. 177a).

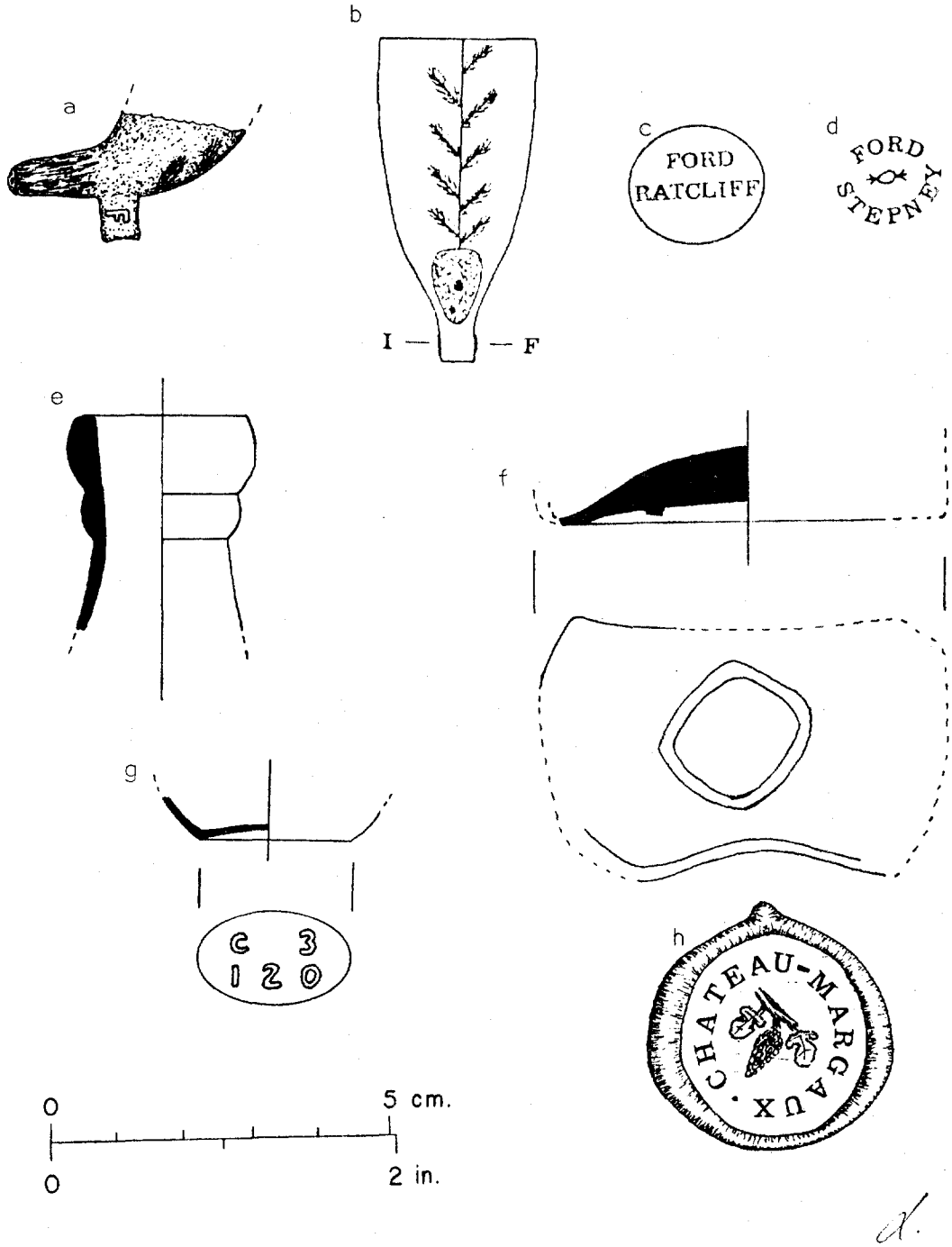


Fig. 177 -- Clay pipes and glass bottles from the SE Bastion area: a). pipe fragment (FOVA 25498); b-d). "FORD" bowl marks; e). bottle rim Type 45 (FOVA 26843); f). bottle base Type 70 (FOVA 26870); g). bottle base Type 71 (FOVA 26928) and h). wine seal (FOVA 25249).

Stoneware

Figurine Head

One dark blue glazed, greenish-gray fabric figurine head was recovered. Stylistically it appears to be a dog head, and is artistically considered to be of Chinese manufacture. Roughly 1/2 in. in size, its function remains unknown.

Glass Wares and Containers

Of the 567 bottle fragments recovered, no complete or partially complete bottles could be reconstructed. However, three marked bottle fragments were identified as belonging to wine, medicine and perfume bottles. Fragmented bases and rims revealed that the most numerous types of bottles present were liquor bottles.

Marked Bottle Fragments

One fragment recovered was an olive green glass, seal-marked "Chateau Margaux" claret bottle (Fig.177h). Claret was the British term for the red wines of Bordeaux. Attaching the shoulder seal to the bottle was done after the bottle was completed. A hot gob of glass was applied to the bottle, usually to the shoulder area, became fused, then was impressed with a stamp having the lettering and design debossed backwards on it (Munsey 1970:59).

Claret originated in the Bordeaux region of the Cironde Department in southwestern France. The principle grape varieties from this region included cabernet, malber, merlot and verdot, and most of the red wines produced from these varieties were acceptable within three to four years (Simon 1967:24-29).

Chateau Margaux was a Premier Crus classed wine produced and bottled in Chateau Margaux, 17 miles northwest of Bordeaux in the commune of Margaux and in the area known as Medoc, and beginning in 1855 the red wines of Medoc were classified according to their quality. The chateau itself was built in 1802 by the Marquis de la Colonille, and from his vineyards the "King of Medoc" wine was produced. Such wine has been described as possessing "...a distinctive and very attractive bouquet that...is somewhat reminiscent of what might be wild violets-cum-amber perfume" (Simon 1967: 32-34, 40).

One colorless marked fragment has been identified as belonging to a patent medicine bottle. The raised lettering read "...EN... ANTE...TO" (BY THE KINGS ROYAL PATENT GRANTED TO/ROB'T TURLINGTON FOR HIS INVENTED BALSAM OF LIFE/LONDON/JAN 26 1754).

Robert Turlington's Balsam of Life was patented in 1744. The balsam contained no less than 27 ingredients, and in his patent specifications, Turlington asserted that it would cure kidney and bladder stones, cholic, and inward weakness. He shortly issued a 46 page phamplet in which he greatly expanded the list. In this appeal to 18th Century sensibilities, Turlington asserted that the "Author of Nature has provided a remedy for every malady". To find them, "Men of Learning and Genius" have "ransacked" the "animal,mineral and vegetable world". His own search had led Turlington to the balsam, "a perfect Friend to Nature which it strengthens and corroborates when weak and declining, vivifies and enlivens the Spirits, mixes with the Juices and Fluids of the Body and gently infuses its kindly Influence into those Parts that are most in Disorder (Griffenhagen and Young 1959:160).

In 1836, under the supply heading of "Medicine", the Hudson's Bay Company of Fort Vancouver ordered "15 dozen (or 180) bottles of Balsam Turlington's" (Hussey 1974:158).

One fragment of a Price & Gosnell perfume bottle was recovered which read "...RICE... OSNEL...ERFUM..." (Price & Gosnell, Perfumers to her Majesty). Other cosmetics such as hair dressing sold by Gosnell have been recovered at Ft. Vancouver, and earthenware jar lids which have been recovered contained the following information: "Genuine Bears Grease imported by John Gosnell & Co., Successors to Price & Gosnell, 12 Three Kings Court, Lombard St., London (Hoffman and Ross 1974b:82). At some point in time between the manufacture of the perfume and the manufacture of the hair dressing, J. Gosnell became the sole owner of the London company.

Bottle Rims

Eleven reconstructed rims were classified into 5 different types on the basis of their manufacturing attributes and form (Table 53). One new rim (Type 45) was identified and has been graphically illustrated in Fig. 177e. One small,clear rim (Type 41) revealed an interior ground surface for use in conjunction with a ground stopper. Of special interest was the new rim (Type 45) which was the first example of a double tipped rim manufactured from the neck glass rather than from an additional application of glass.

Table 53 -- Bottle Rim Types from the Southeast Bastion area as defined by manufacturing attributes and form.

Attributes	Rim Type 4	12	15	30	45
Rim Manufacture					
Rim Shaped from Neck Glass					
Non-overlapping	×				
Overlapping					×
Rim Shaped from Additional Glass					
Outside Application		×	×	×	
Wrapped			×		
Interior Ground	×				
Rim Form					
Single Lipped					
Flared from Mouth		×			
Convex from Mouth				×	
Extended from Mouth	×				
Double Lipped					
Flared			B		B
Color					
Dark Olive			×		
Olive Green		×			×
Greenish Blue			×		
Blue		×			
Light Green			×	×	
Colorless	×				
Brown			×		
Frequency	1	2	6	1	1

Bottle Bases

Nine reconstructed bases were classified into 4 various types on the basis of their manufacturing attributes and form (Table 54). Two new base types were identified and have been illustrated in Figs. 177f-g . One small clear base (Type 71) had raised lettering and numbers in its central portion which read "C3/120".

Tumbler

Two tumbler fragments were recovered and could not be reconstructed to form complete or partially complete tumblers. Variety identification and manufacturing techniques could not be determined.

Stemmed Glassware

Of the 6 stemmed glassware fragments recovered, no wares could be reconstructed or identified as to style or manufacturing technique.

Pressed Glass

Of the 14 pressed glass fragments recovered, at least 4 separate patterns were observed. One pattern was identified as a pressed glass pattern known as "Peacock Eye" (Lee 1966:pl.109). Another pattern also had horizontally ground facets in addition to its molded design.

Glass Objects

Beads

Of the 604 beads recovered, there were 411 tube, 191 wire wound and 2 mandrel pressed beads (Table 51). Following the classification schemes used in previous reports (Hoffman & Ross 1974b, 1975), all beads recovered were classified according to method of manufacture, stylistic variation, reflectance and color (Table 55).

Table 54 -- Bottle Base Types from the Southeast Bastion area as defined by manufacturing attributes and form.

Attributes	Base Type			
	1	34	70	71
Basal Shape				
Round	×	×		
Rectangular			×	
Oval				×
Basal Cross Section (Excluding Indent)				
Conical (pushup)	×			
Concave			×	×
Flat		×		
With raised lettering in central portion				×
Indent Shape				
Circular		×		
Rectangular			×	
Indent Cross Section				
Concave		×	×	
Pontil Type				
Blowpipe			×	
Sand	×			
Absent		×		×
Color				
Dark Olive (Opaque)	×			
Greenish Blue			×	
Light Green		×		
Colorless				×
Frequency	6	1	1	1

Table 55 -- Classification of glass beads from the Southeast Bastion area.

Bead Type, Subtype, Class, Reflectance & Color (Variety #)	F5	F4	F3	F2	F1
TUBE BEADS					411
Cane Tube Beads				1	
Single Faceted, Single Layer, Extruded Beads			1		
Opaque to Translucent		1			
Black to Dk. Reddish-Purple (#1057)	1				
Hot Tumbled Tube Beads				410	
Plain Single Layer Beads			353		
Transparent		2			
Greenish-Blue (#1074)	2				
Translucent		94			
Yellowish-Green (#1061)	6				
Green (#1016)	1				
Bluish-Green (#1006)	1				
Grayish-Blue (#1063)	86				
Opaque		257			
White (#1003)	254				
Bluish-Purple (1055)	1				
Dk. Bluish-Purple (#1056)	2				
Plain Double Layer Beads			57		
Opaque on Opaque		57			
White on White (#1040)	57				
WIRE WOUND BEADS					191
Plain Single Layer Beads				191	
Cylindrical			3		
Opaque		3			
Greenish-Blue (#2014)	2				
Blue (#2001)	1				
Spherical			184		
Transparent		10			
Clear (#2025)	1				
Greenish-Blue (#2005)	5				
Dk. Blue (#2033)	4				
Translucent		1			
Purple (#2023)	1				
Opaque to Translucent		140			
Blue (#2018)	140				
Opaque		33			
Blue (#2002)	32				
Ellipsoidal			1		
Transparent		1			
Red (#2032)	1				
Oblate			1		
Opaque		1			
Black (#2030)	1				
Barrel			2		
Transparent		2			
Yellowish-Green (#2051)	1				
Bluish-Purple (#2052)	1				

Table 55 -- cont'd

Bead Type, Subtype, Class, Reflectance & Color (Variety#)	F5	F4	F3	F2	F1
MANDREL PRESSED BEADS					2
Faceted Beads				2	
Spherical			2		
Transparent		1			
Purple (#3011)	1				
Opaque		1			
Lt. Bluish-Purple (#3003)	1				
GRAND TOTAL					604

Window Glass

Only 123 fragments of window glass were recovered, and due to this relatively low frequency, their thicknesses were not measured.

Mirror Glass

Only 2 fragments of mirror glass were recovered, and their thicknesses were not measured.

Building Hardware

Of the 8 specimens of building hardware recovered, 3 previously unreported specimens were identified. These include a new variety of pintle (Fig. 178c), a lightweight brass lock striker plate (Fig. 178b) and a sliding bolt keeper (Fig. 178a). In addition, a stock lock mechanism with brass escutcheon and a pintle-hung strap hinge fragment were recovered.

Metal Fasteners

Nails

Of the 697 metal fasteners recovered, 688 specimens were nails. The ratio of wrought rod nails to machine cut sheet nails was approximately 2:1 with 328 wrought rod nails and 117 machine cut sheet nails recovered. This quantitative difference may be due to a lack of late (post-1850) repair activities in the area, and/or the presence of pre-ca. 1845 stockade structural activities. Two new wrought rod nail varieties were identified (Table 56) and are illustrated in Figs. 179a-b . In addition, a wrought eyelet nail with o-ring was recovered and has been illustrated in Fig. 181a. Two varieties of machine cut sheet nails (Table 57), and 2 varieties of cast nails (Table 58) were identified. One population of flathead, countersunk, cast nails (Variety #4007) of ca. $1\frac{1}{4}$-$1\frac{1}{2}$" length was defined (Table 58). They may have been used to fasten non-ferrous sheathing or flashing, in a similar fashion to the cast nails reported from the Powder Magazine (Hoffman & Ross 1974a). However, on the basis of the low frequencies of nails from the area, especially machine cut sheet nails, neither a late bastion or other late (post-1845) structural activities are indicated.

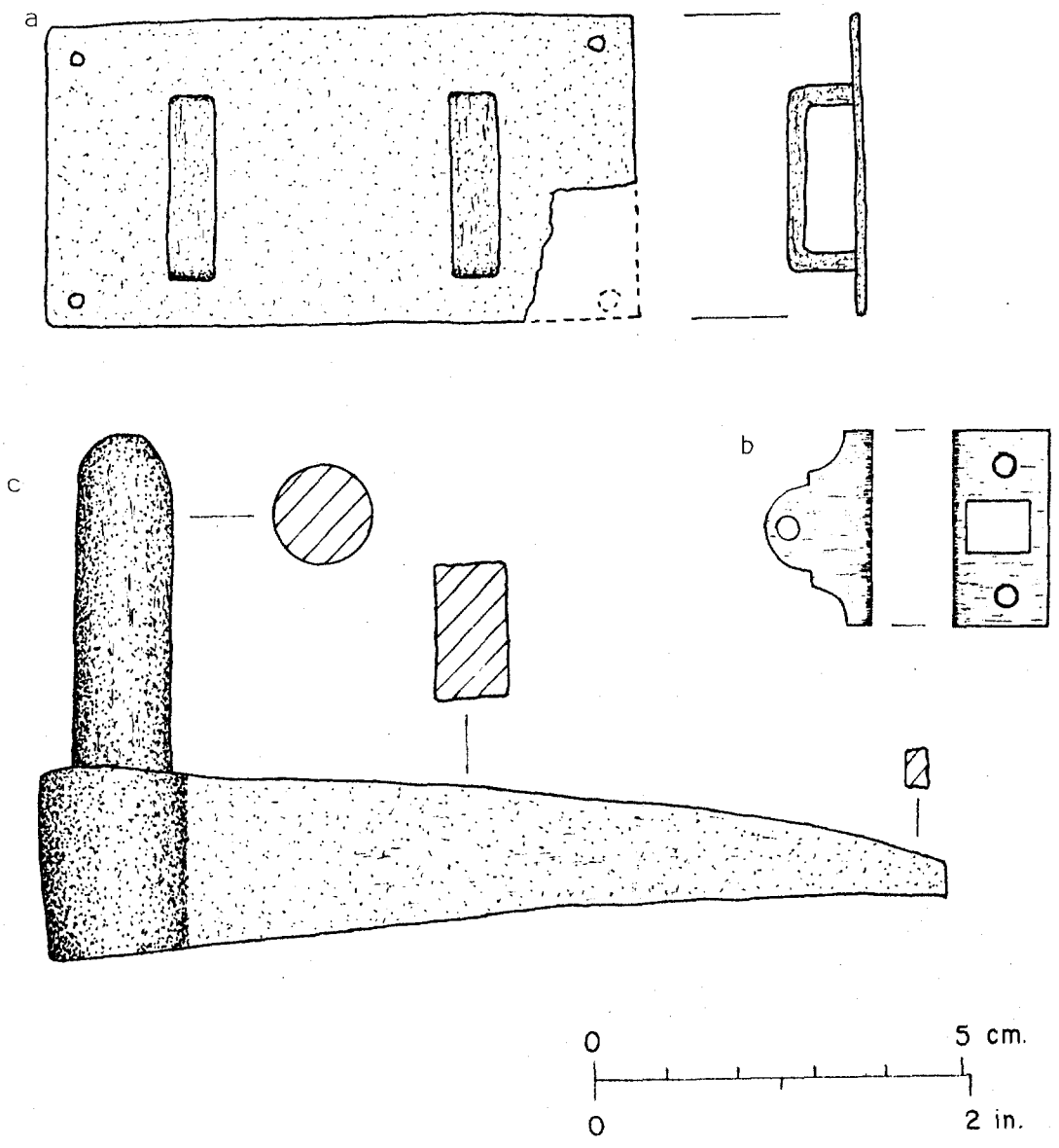


Fig. 178 -- Building hardware from the SE Bastion area: a). sliding bolt keeper (FOVA 15332); b). bolt striker plate (brass) (FOVA 15325); c). pintle (FOVA 25278).

Table 56 -- Varieties of complete wrought rod nails from the Southeast Bastion area.

FOVA Variety #	Penny Size or Inches	Length (cm)	Thickness (mm)	Number Measured	Total Frequency
1001	--	6.0	4.9	1	1
1002	--	5.0-10.0	4.0-6.4	20	20
1010	--	13.1	8.5	1	1
1055	--	6.5-10.6	4.5-6.6	2	2
1066	--	14.2	6.4	1	1
1071	--	5.0-5.8	3.4-3.9	3	3
1102	--	9.8	8.7	1	1
1128	--	18.8	11.6	1	1
1133	--	20.4	12.8	1	1
1134	--	16.9	11.4	1	1
Unid.		3.8-18.2	4.1-9.9	7	296
TOTAL					328

Table 57 -- Varieties of complete machine cut sheet nails from the Southeast Bastion area.

FOVA Variety #	Penny Size or Inches	Length (cm)	Thickness (mm)	Number Measured	Total Frequency
2001	--	7.2-12.6	3.5-5.4	3	3
2002	--	4.7-8.5	2.7-4.3	9	9
Unid.					105
TOTAL					117

Table 58 -- Varieties of cast nails from the Southeast Bastion area.

FOVA Variety #	Penny Size or Inches	Length (cm)	Thickness (mm)	Number Measured	Total Frequency
4004	--	3.3	2.7	1	1
4007	--	3.3-3.8	2.2-2.5	6	6
TOTAL					7

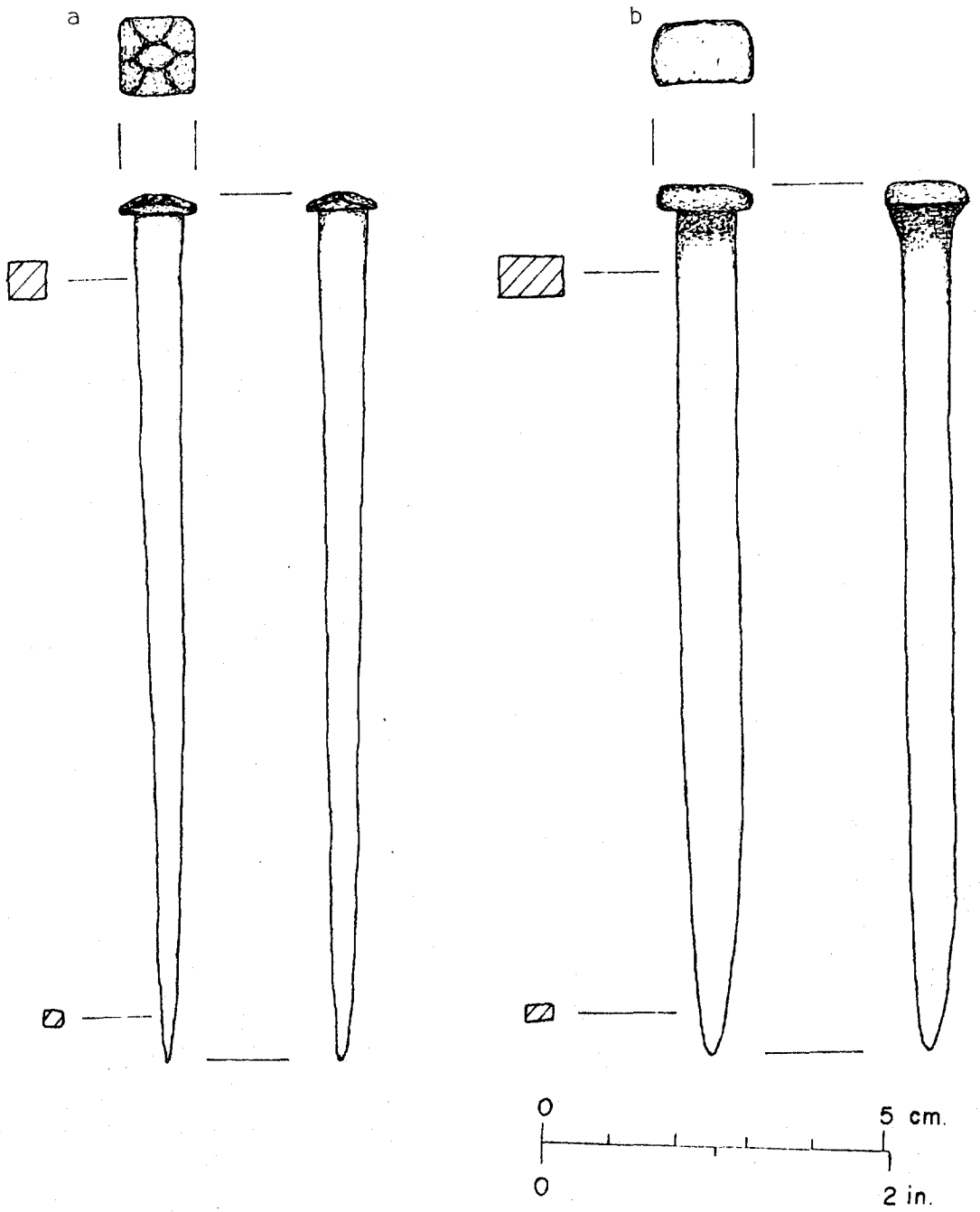


Fig. 179 -- Nails from the SE Bastion area: a). Variety #1133 -- L=10.9 cm. (FOVA 26825) and b). Variety #1134 -- L-17.0 cm. (FOVA 27017).

Metal Tools

Two adze blades were recovered and a complete specimen has been illustrated in Fig. 180. This complete adze had an impressed crown with the intials "SC" below, and along the side the intials "EBSCRA".

Metal Trap Parts

Two fragments of trap springs and one complete specimen of a finished trap pan with large rectangular pan face were recovered. The trap pan has been illustrated in Fig.181b.

Miscellaneous Metal Hardware

Of the 426 items recovered, 2 HBC lead packing seals and a complete mule shoe were identified. Both lead seals contained the HBC logo on one side and engraved or scratched packing marks on the reverse. A hypothetical sequence of the use of these seals has been illustrated in Fig 182 . In addition, bundling straps and metal bands were recovered in relatively high frequencies, probably associated with activities in the Iron Store.

Metal Personal & Household Items

Of the 23 items recovered, those new or unique items not previously reported have been illustrated in Figs. 183a-e.

Buttons

Of the 10 buttons recovered, all were complete and the 3 new types observed have been illustrated in Figs. 183c-e (Table 59).

Two Phoenix buttons were recovered, and following the classification system designed by Emory Strong (1960; 1968; and personal communication) both buttons were different (Table 60).

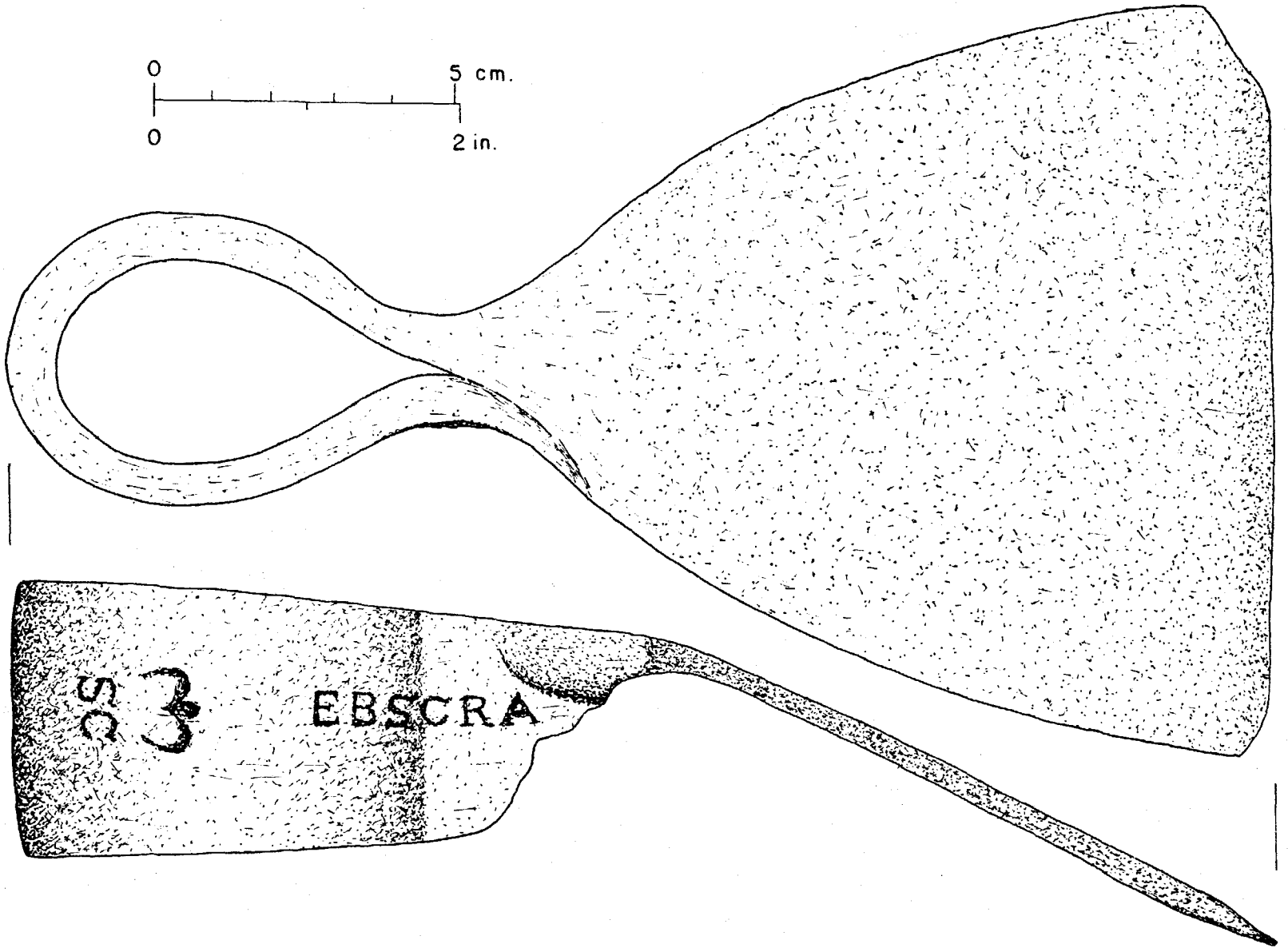


Fig. 180 -- Adze from the SE Bastion area (FOVA 27018).

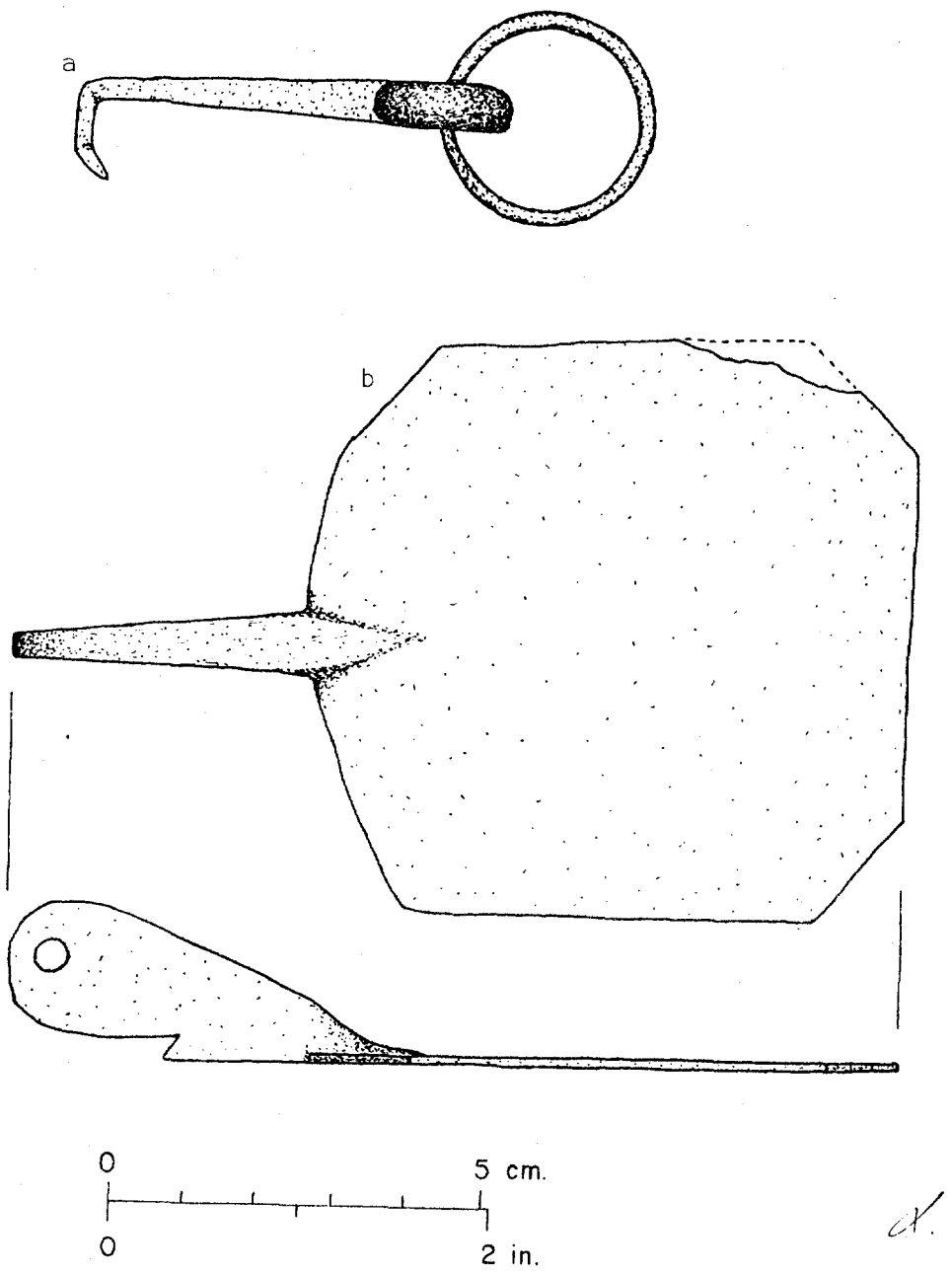


Fig. 181 -- Closed eye nail with o-ring and trap pan from SE Bastion area: a). closed eye nail with o-ring (FOVA 26829) and b). trap pan (FOVA 25288).

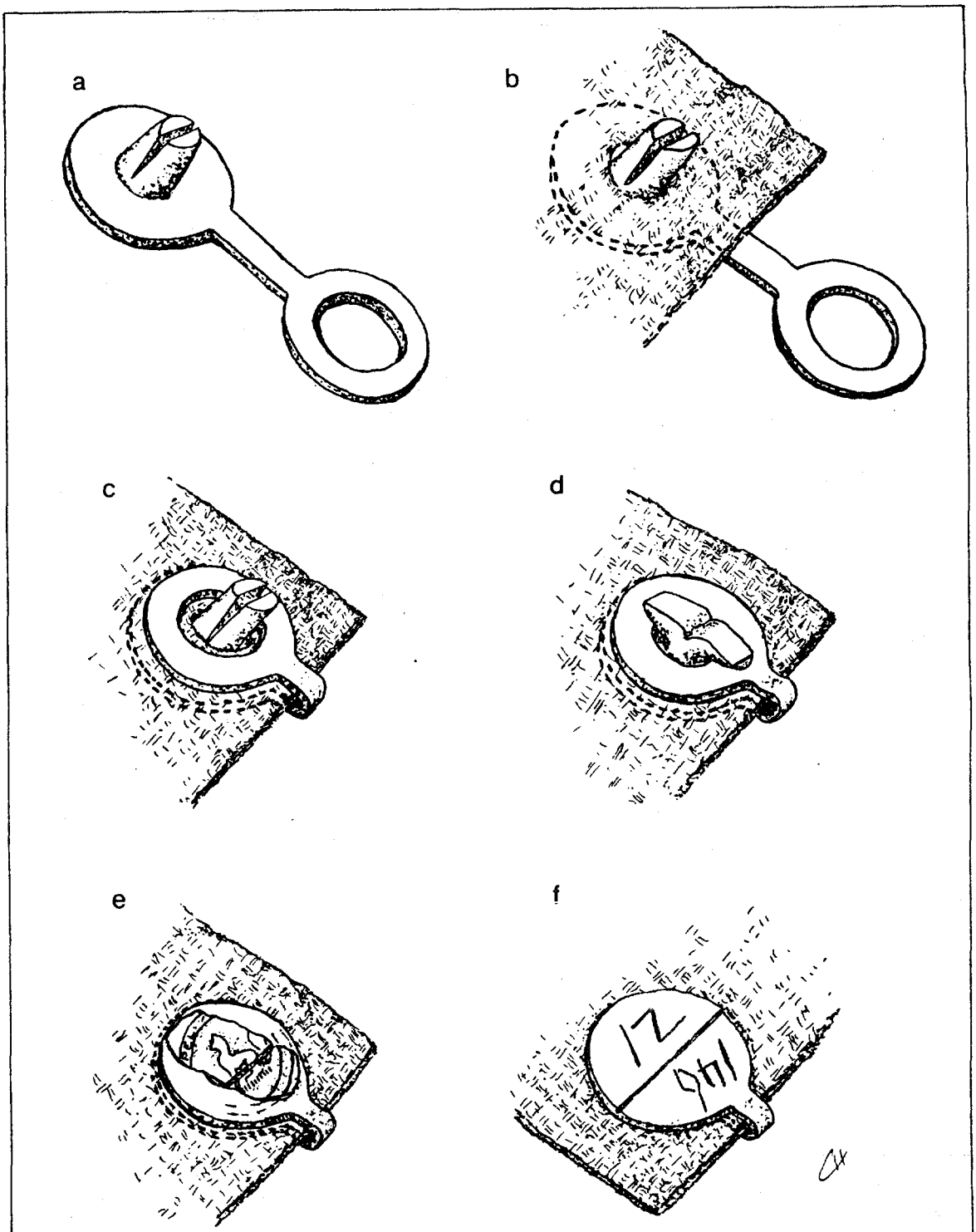


Fig. 182 Hudson's Bay Company lead seal -- hypothetical sequence for utilization: a. new seal; b-d. seal applied to fabric; e. obverse, HBC emblem impressed; f. reverse, numbers incised.

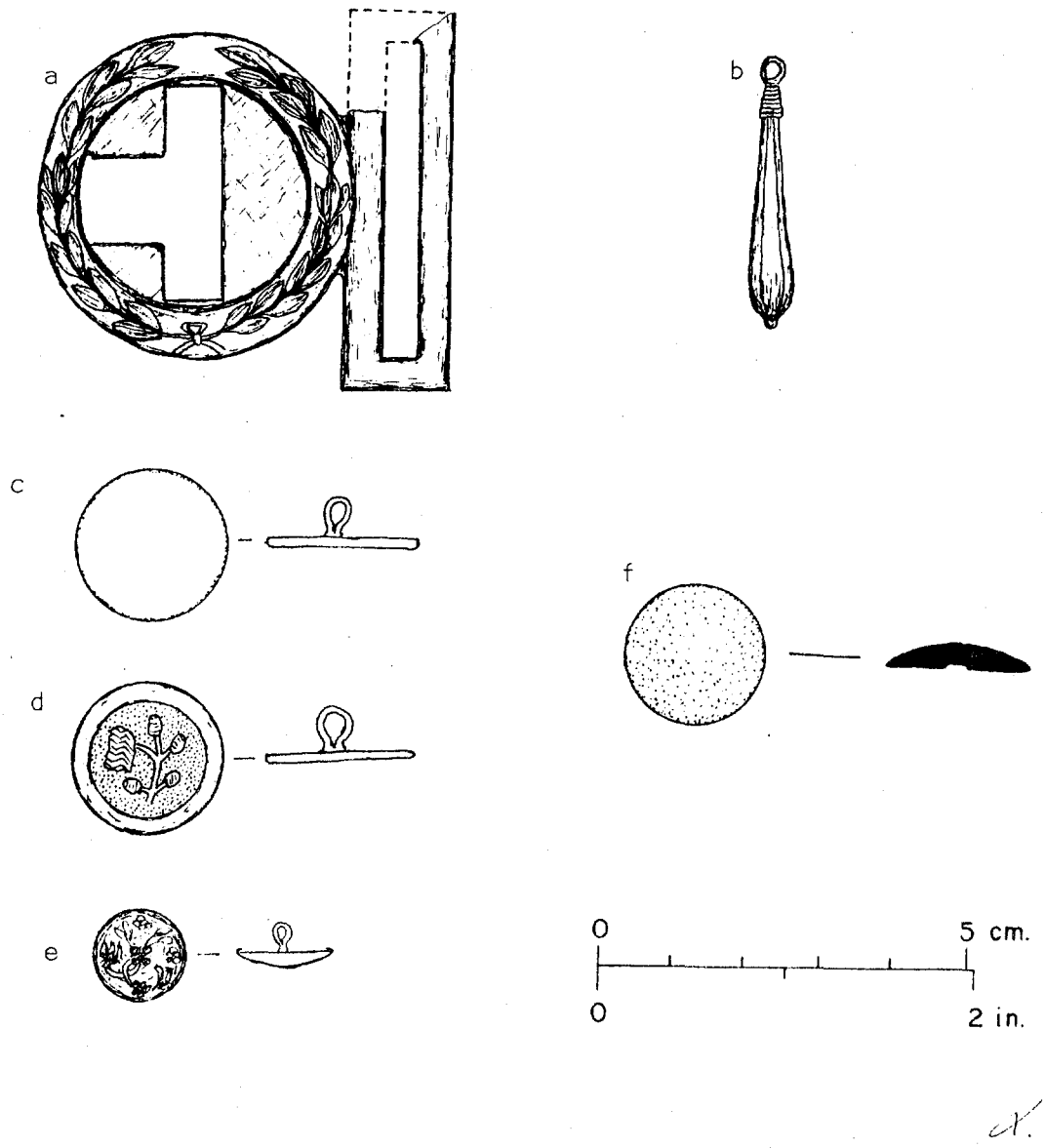


Fig. 183 -- Metal personal items and buttons from the SE Bastion area: a). waist belt plate (FOVA 26832); b). earring (FOVA 25512); c). button Type IZ (FOVA 26991); d). button Type IAA (FOVA 25360); e). button Type IIT (FOVA 25595); and f). bone button (FOVA 25314).

Table 59 -- Types of metal buttons found in the Southeast Bastion area.

Type	Dia. (mm.)	Frequency	Figure
I. Single-Piece Loop-Shank			
F. (2 sizes)	15.6-15.9	2	-
	17.1-17.3	2	-
P. Phoenix Buttons *	15.7-15.8	2	-
Z. "Treble Gilt, Stand[d] Colour"	20.1	1	133c
AA. "Warranted, Best Plated"	19.8	1	133d
II. Composit Loop-Shank			
G. Ball	9.8	1	-
T. "...Gilt"	12.3	1	183e
TOTAL		10	

* See text

Table 60 -- Phoenix buttons found in the Southeast Bastion area.

Strong's Type #	Strong's Style #	Regiment #	Size
I	1	4	Small
I	1	14	Small

Metal Weaponry Items

Of the 22 items recovered (Table 51), the only unique specimen was a cannon trunnion plate (Fig. 184).

Cartridges

.30 caliber Springfield

The only Springfield cartridge recovered had the following headstamp: "U.M.C. 2-06".

.45 caliber Government

The only Government cartridge recovered had the following headstamp: "C F 4 86".

Construction Material

Of the 72 brick fragments recovered, 10% were imported and 90% local (Table 61). A few fragments were complete enough to be measured, and their dimensions have been recorded in Table 62. Many of the local brick fragments might have been lumps of naturally burned clay, but they were similar enough to brick fragments to make positive identification difficult.

Miscellaneous Items

The only new or unique item recovered was a bone button (Fig. 183f).

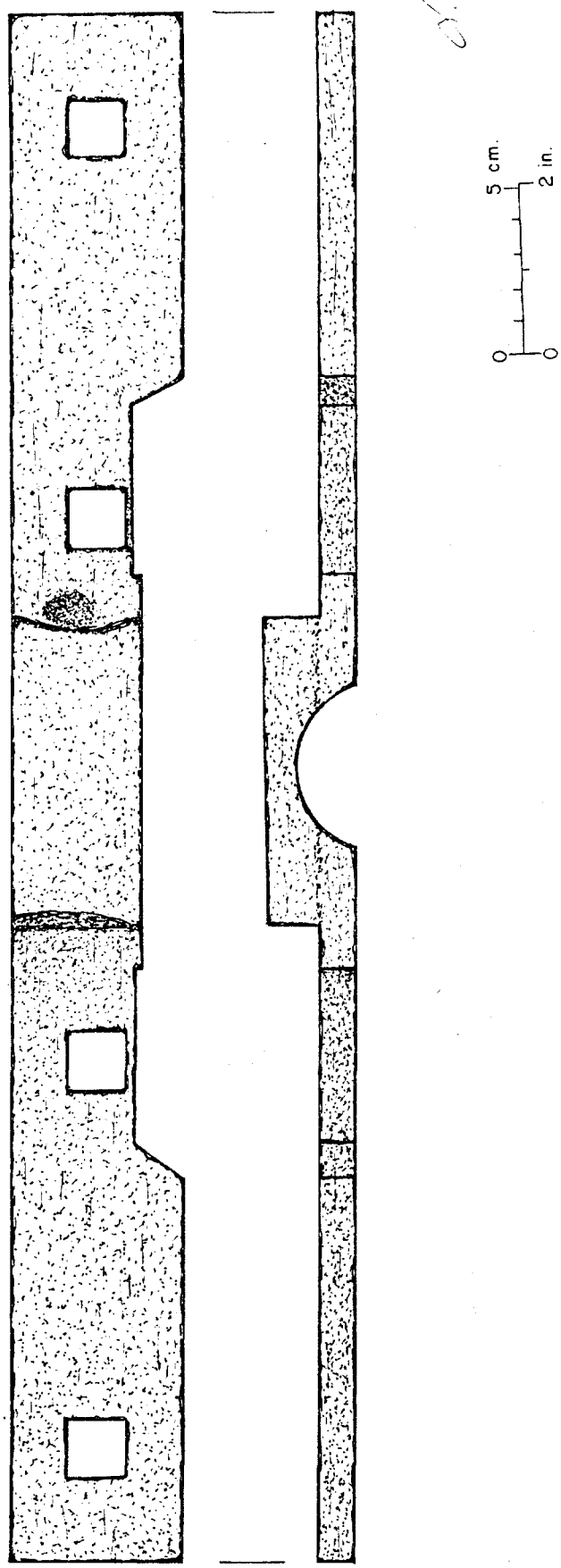


Fig. 184 -- Cannon carriage cap square from the SE Bastion area (FOVA 26891).

Table 61 -- Identification of brick varieties on the basis of comparative composition from the Southeast Bastion area.

Attributes	Imported	Local	
	1001	1004	1005
Texture			
Clay		×	×
Silt	×	×	×
Sand	×		
Inclusions			
Gravel	×		×
Charcoal	×		
Clay Accretions		×	
Porosity			
Porous		×	×
Non-porous	×		
TOTAL	7	32	33

Table 62 -- Dimensions of brick varieties from the Southeast Bastion area.

Brick Variety	Thickness		Width	
	cm.	inches	cm.	inches
Imported #1001	6.6	2 5/8		
Local				
#1004	5.2	2		
#1005	5.8-6.8	2 1/4-2 5/8	9.5	3 3/4

IV - MATERIAL CULTURAL DISTRIBUTIONS

The distribution of material cultural items, together with the multiplicity of HBC cultural components and structures, has made the southeastern Fort area the most complex yet interpreted under the current project. Time did not allow for the individual distributions to be prepared for each HBC component and structure. Rather, a single distribution map for each class of items had been prepared for the entire area, excluding the Indian Trade Store Privy/Trash Pit (this feature will be examined by its assemblages per strata in the following chapter). As an aid for interpretations, the distributions of material cultural items has been grouped under 4 headings--structural remains; industrial products and debris; domestic remains and miscellaneous items.

Before proceeding into these distributions, one comment regarding a previous USA disturbance must be restated. During the archaeological excavations between 1947-1952, Caywood recorded the Blacksmith Shop had reportedly "...been repeatedly scraped as part of the airport runway, and many iron fragments were hauled away by the city maintenance crew and redeposited in another area to the southeast as fill for an extension of the lower runway"(Caywood 1955:18). From the recent excavations, it has become apparent that the area which had been scraped was probably the Iron Store, rather than the Blacksmith Shop. Strata in the Blacksmith Shop did not appear truncated, whereas those in the Iron Store were almost entirely removed. Thus, the following distributions will reflect this stripping activity, and the HBC frequencies for the Iron Store area are extremely low.

Most distribution maps record the frequency per square foot (f/ft^2) of each class of items recovered from the HBC strata, and these frequencies can be directly compared to the adjacent Indian Trade Store frequencies (Hoffman & Ross 1975).

Structural Remains

Building Hardware

One large concentration of building hardware was located in the Blacksmith Shop (Fig. 185). This concentration presumably represented both hardware used for the Shop as well as repaired or manufactured items worked on by the HBC blacksmiths.

Two items were recovered from the Southeast Bastion area, and they may have been part of that structure.

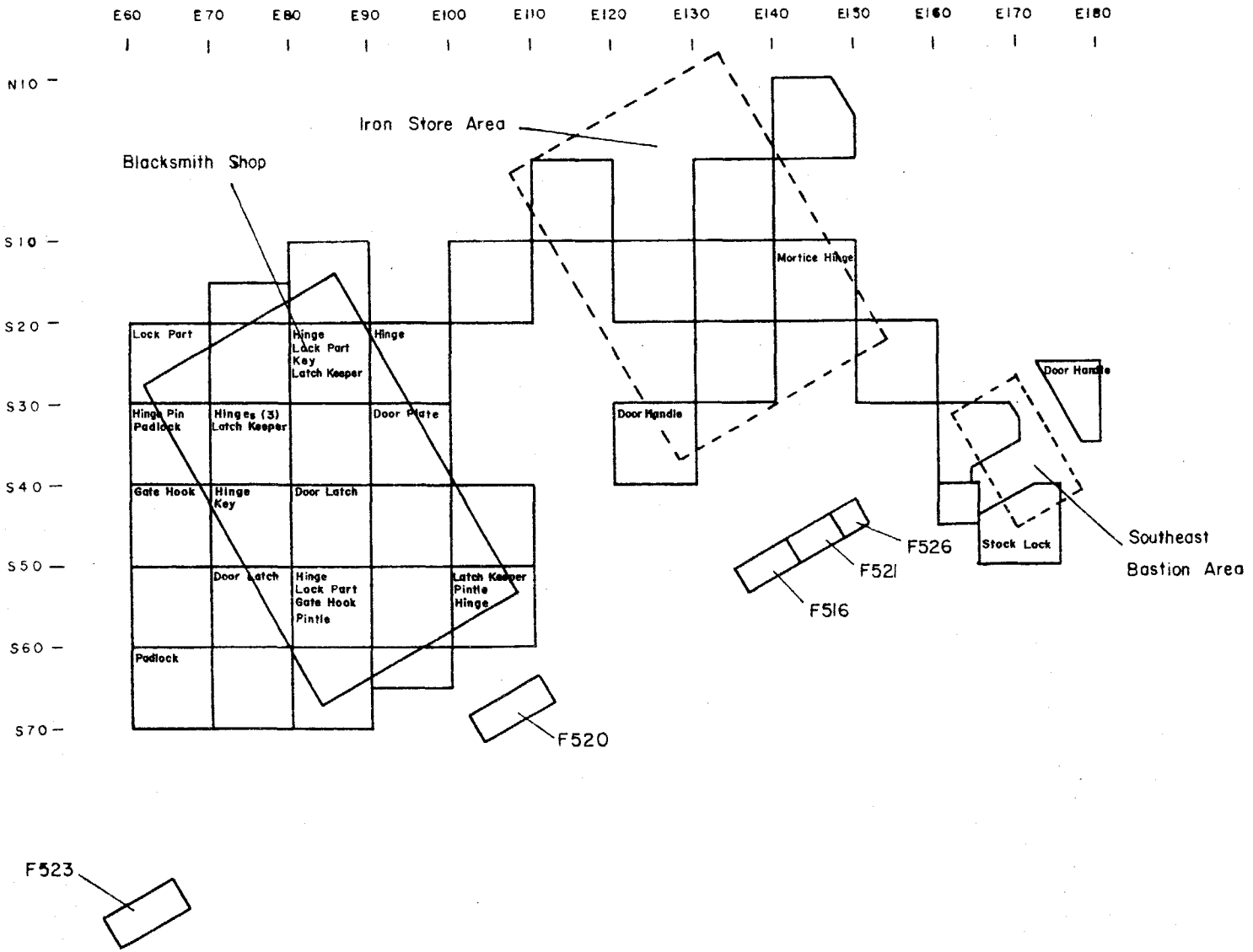


Fig. 185 -- Distribution of metal building hardware for the southeastern Fort area.

Window Glass

One major concentration of window glass was observed along the west wall of the Blacksmith Shop (Fig. 186), and this confirmed the hypothesis that only the west wall had windows. A second concentration was observed both inside and outside the 1841-1860 east stockade. Presumably, this concentration originated in the Cooper's Shed which has been historically recognized as lying outside the eastern stockade (Hussey 1957:197; 1974:659-676).

Nails

Wrought Rod Nails

A number of wrought rod nail varieties appear to have been utilized for structural purposes, and 3 groups have been mapped (Figs. 187-189). Variety #1001 nails may have been used for window molding and cabinetry, and their distribution along the west wall of the Blacksmith Shop (Fig.187) reinforces the hypothesis that windows were present only along this one wall. Variety #1002 nails were interpreted as being utilized for roof planking, and they tended to concentrate around building sites (Fig. 188). Finally, the "Dog" nails, which were used to attach metal hardware to wood, clustered at the west central portion of the Blacksmith Shop (Fig. 189), and might indicate a work area rather than building construction.

Machine Cut Sheet Nails

Three varieties of machine cut sheet nails were recovered in sufficient quantity to allow distributional mapping (Figs. 190-192). Two varieties (#2001 and #2002) were found in multiple sizes, indicating their probable function as a general structural nail. Both varieties were found clustered about the west central and northeastern portions of the Blacksmith Shop (Figs.190-191), and this might reflect their use for blacksmith repair and manufacturing activities. Variety #2004 nails were primarily shingling nails and since they were the only shingling nail recovered from the Blacksmith Shop, their relatively low frequencies (Fig. 192) may indicate that the Shop was not entirely shingled. Rather, they might reflect periodic repair of a leaky plank roof through sporadic shingling.

Cast Nails

Two concentrations of cast nails were observed (Fig. 193)--the Blacksmith Shop and Southeast Bastion. Cast nails within the Shop probably reflects the industrial activities of the blacksmith, whereas the nails within the Bastion area may indicate the use of zinc or copper sheeting as a fire retardant.

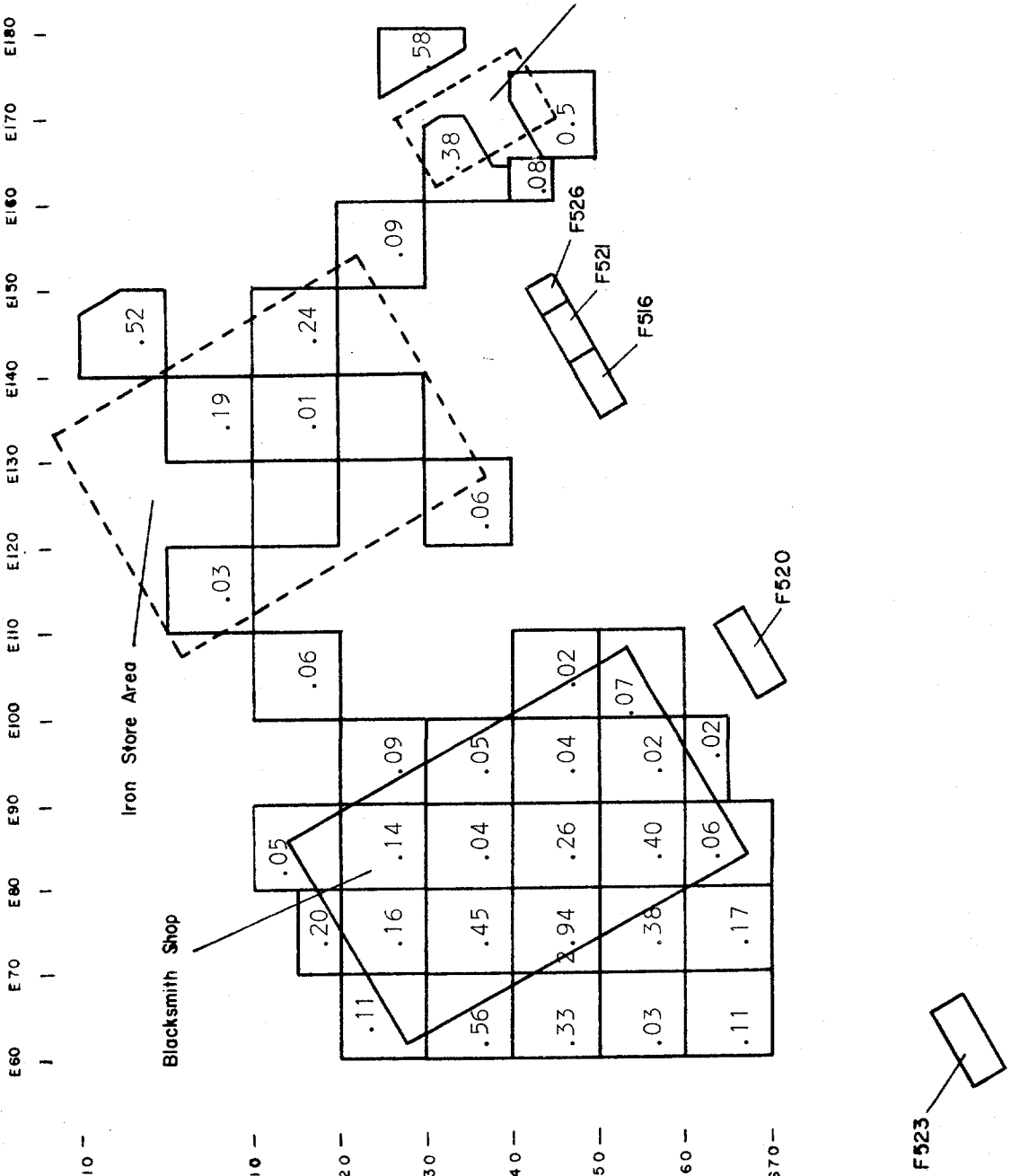


Fig. 186 -- Distribution of window glass in the southeastern Fort area (f/ft^2).

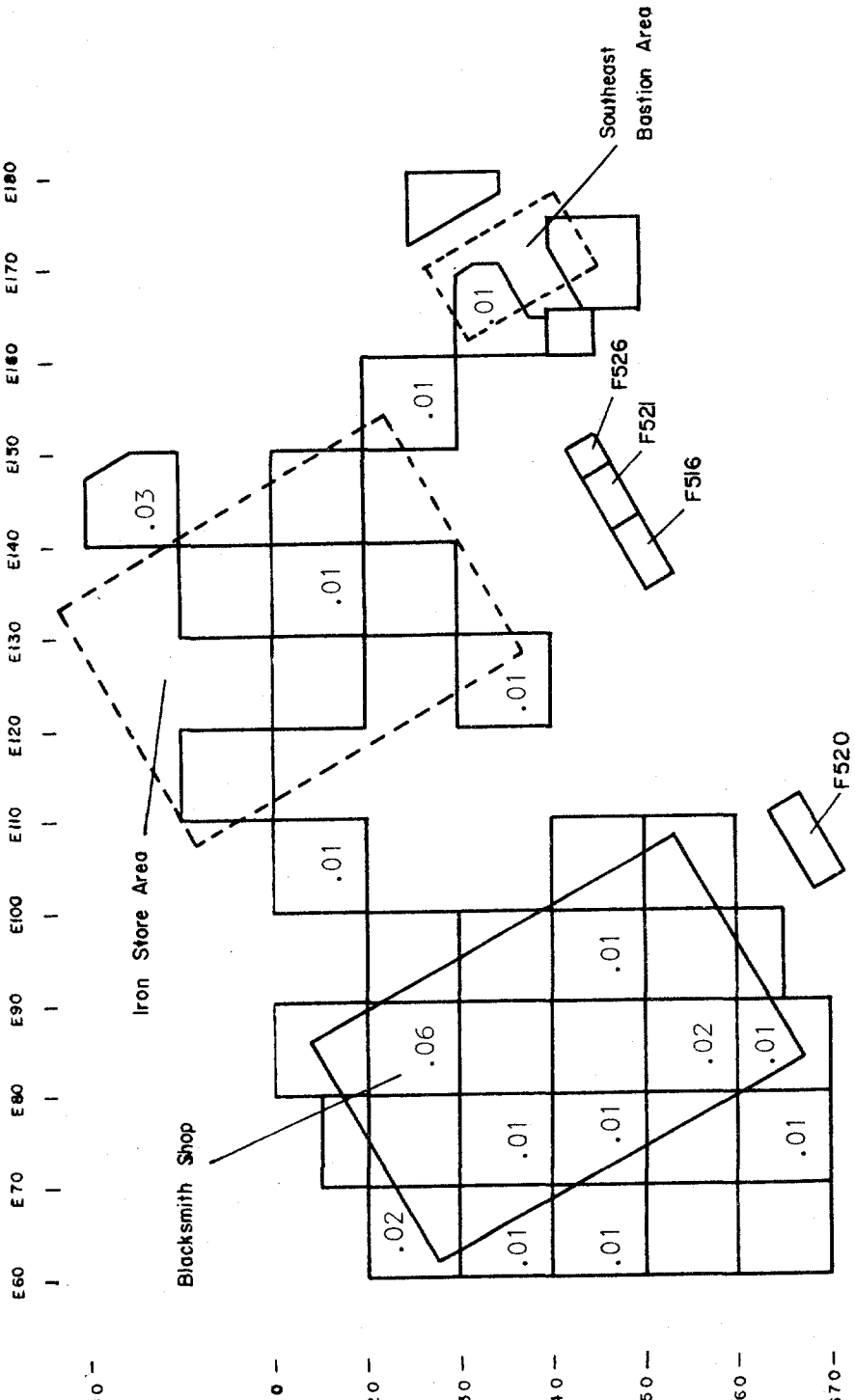


Fig.187 -- Distribution of Variety #1001 nails for the southeastern Fort area (f/ft^2).

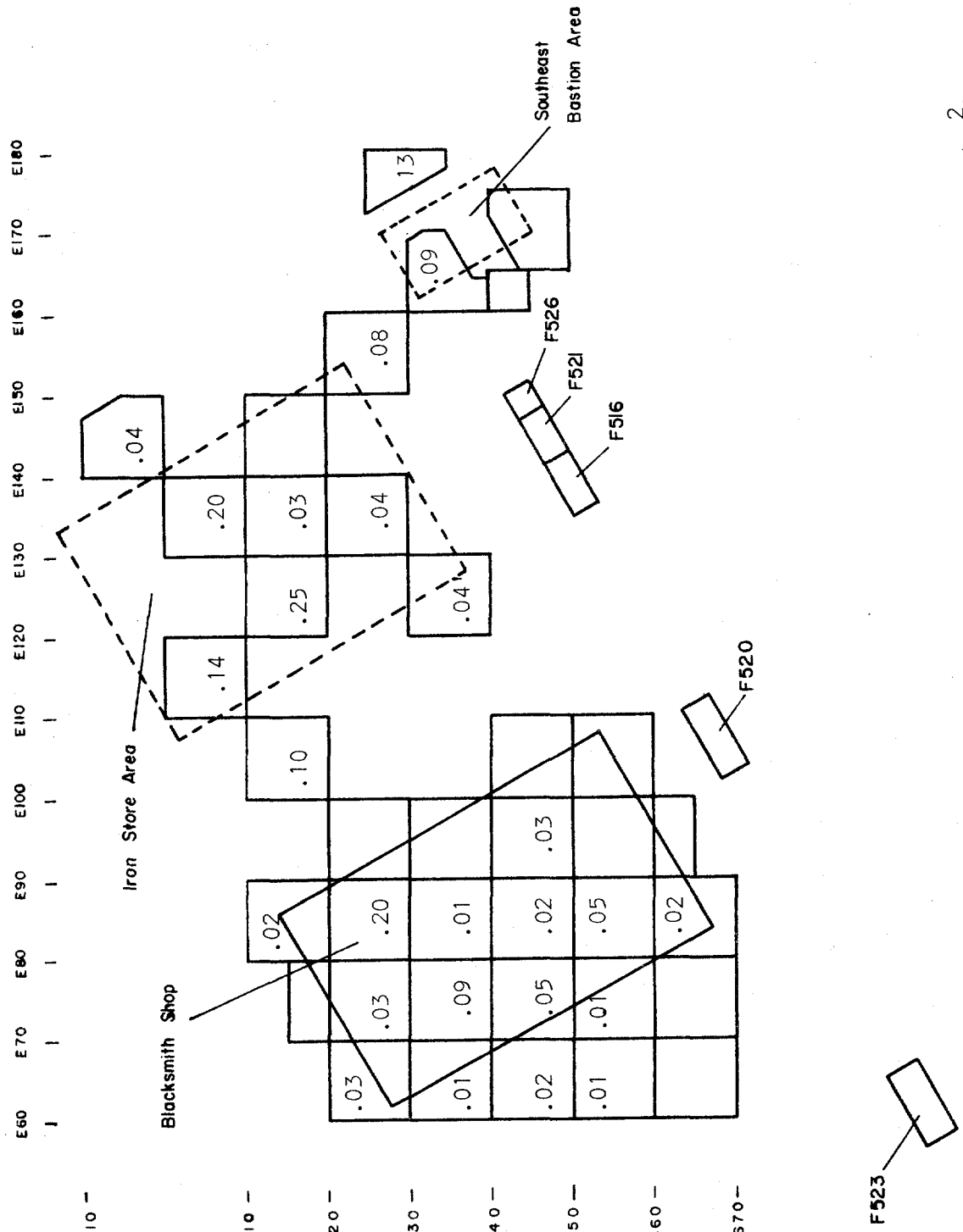


Fig. 188-- Distribution of Variety #1002 nails for the southeastern Fort area (f/ft^2).

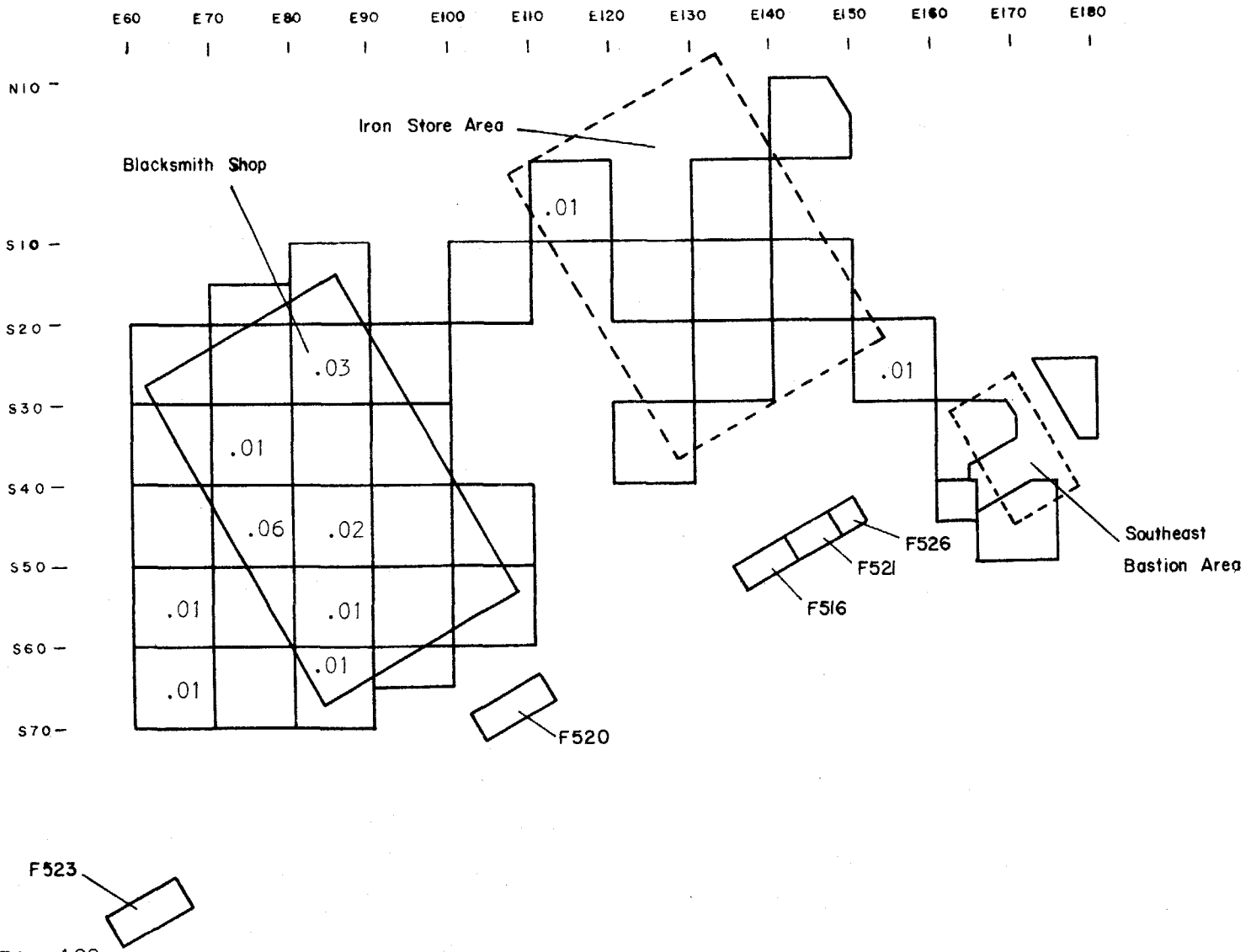


Fig. 189 -- Distribution of "Dog" nails (Varieties # 1021, 1022, 1025, 1090 & 1126) for the southeastern Fort area (f/ft^2).

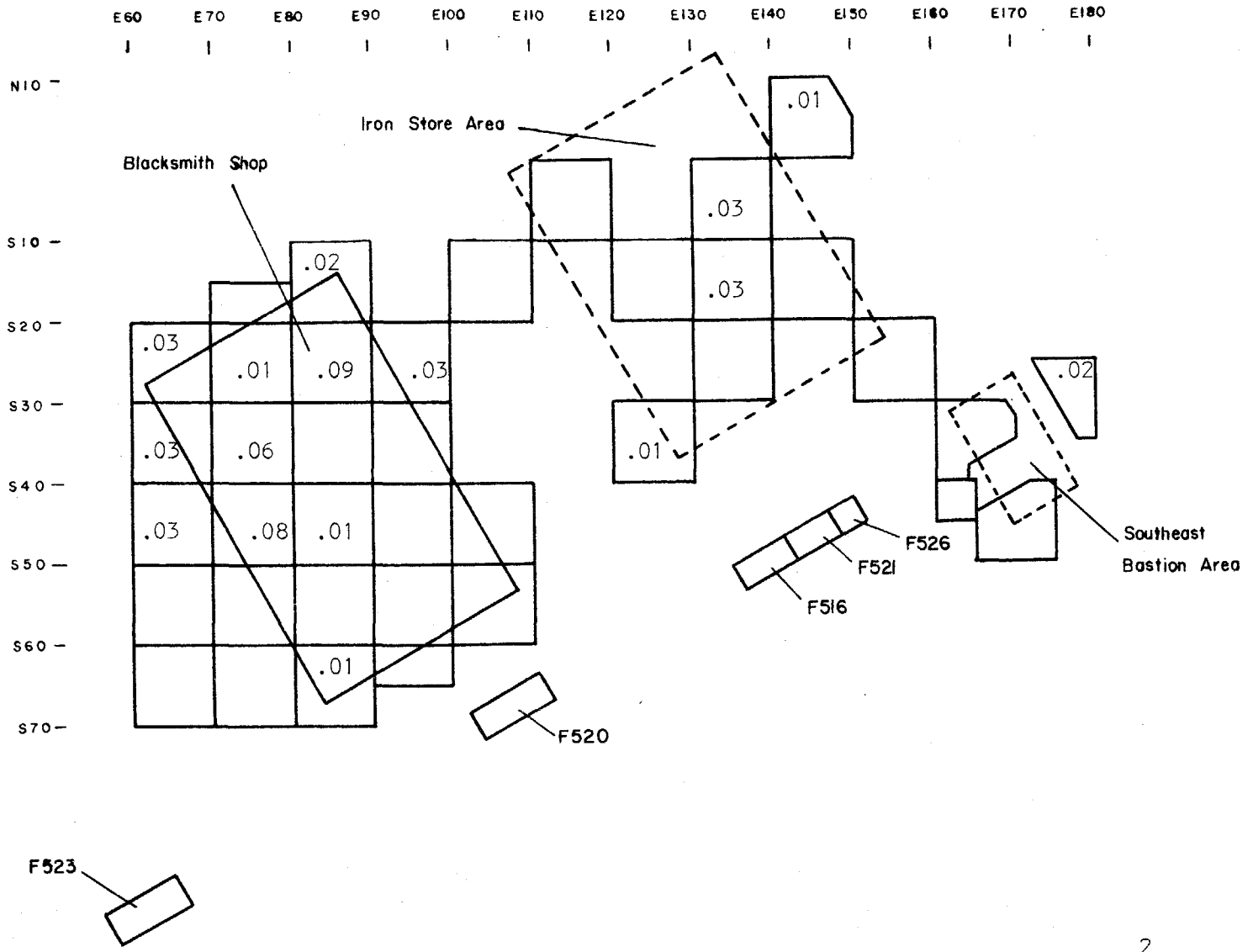


Fig.190 -- Distribution of Variety #2001 nails for the southeastern Fort area (f/ft^2).

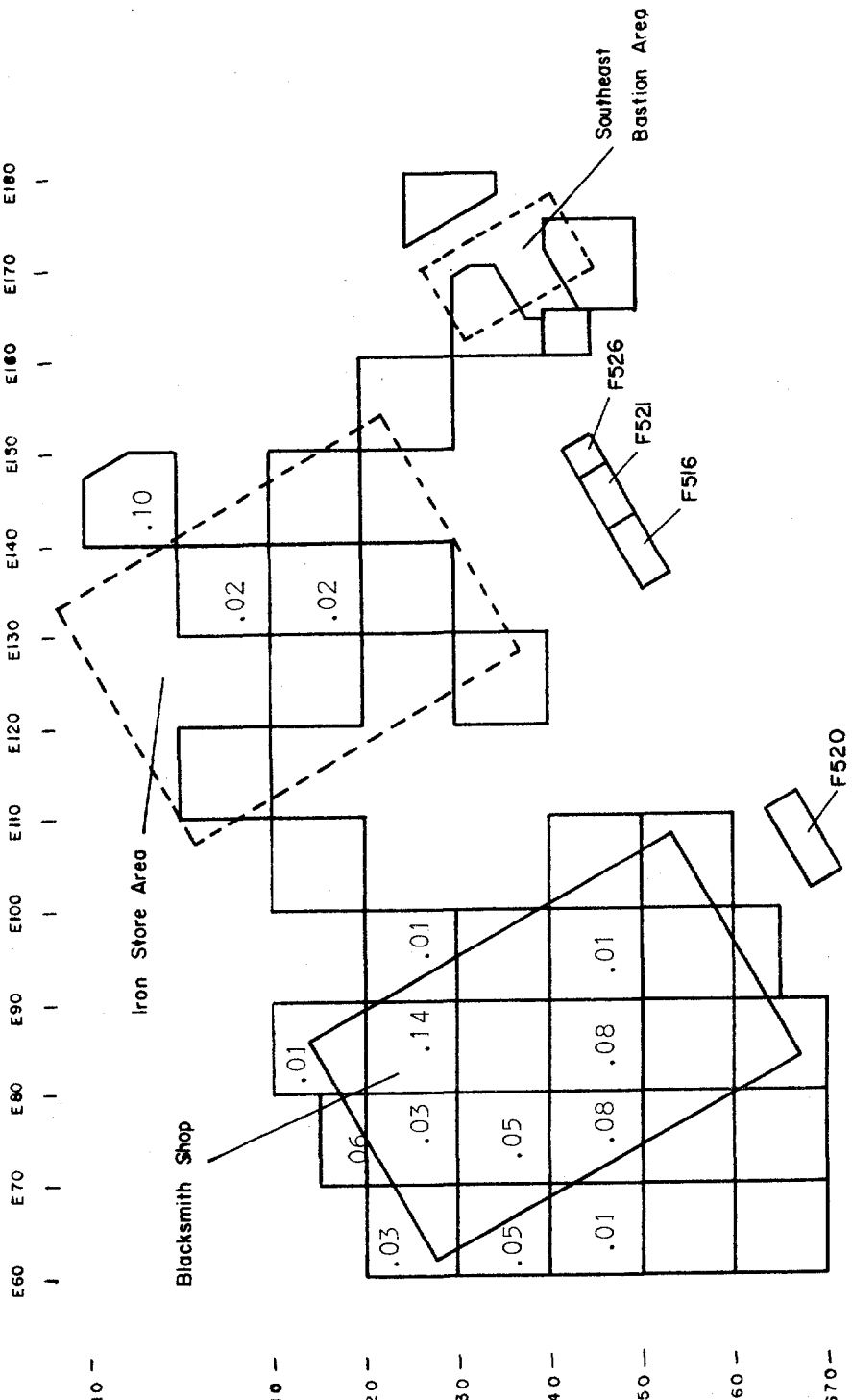


Fig. 191 -- Distribution of Variety #2002 nails for the southeastern Fort area (f/ft^2).

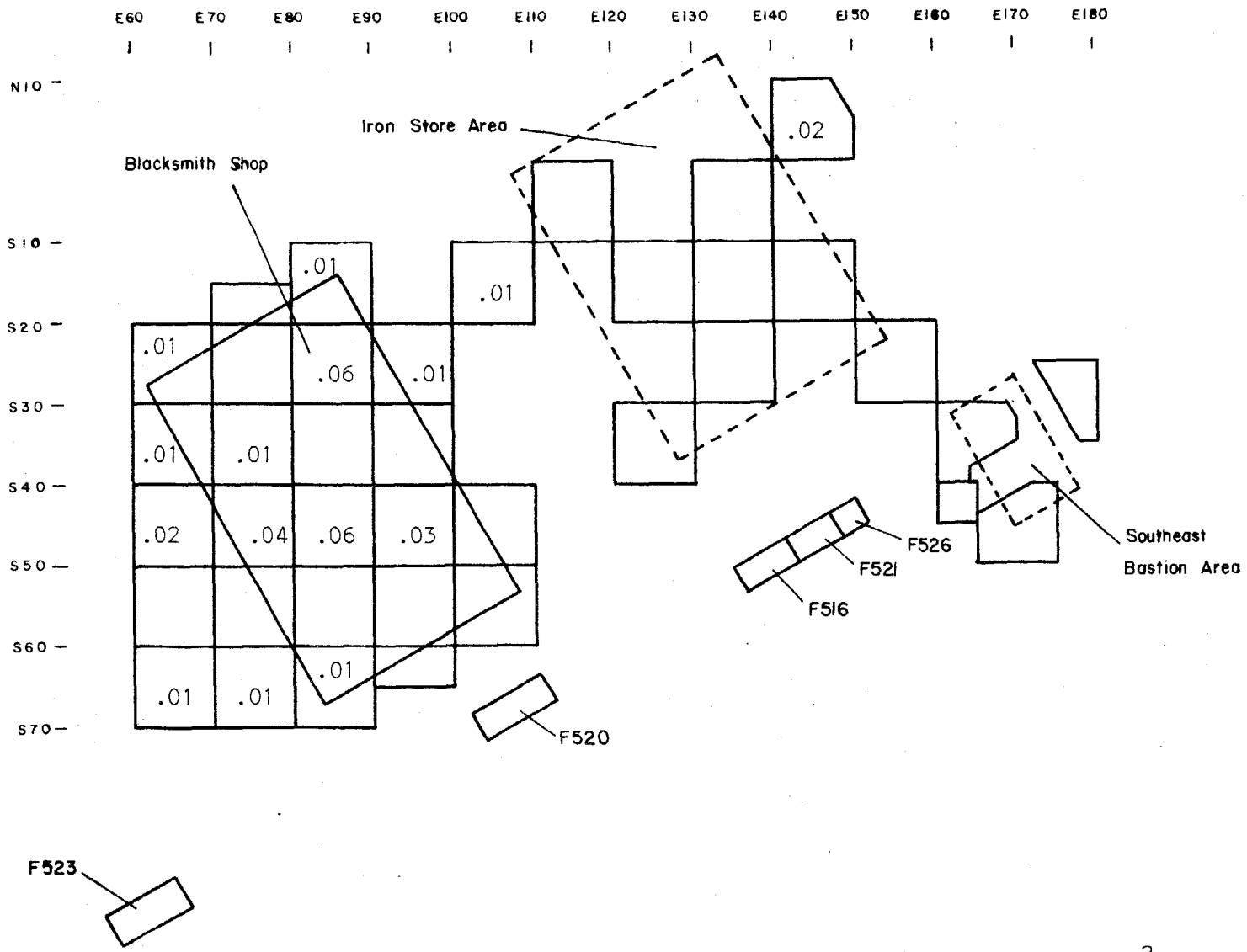


Fig.192 -- Distribution of Variety # 2004 nails for the southeastern Fort area (f/ft^2).

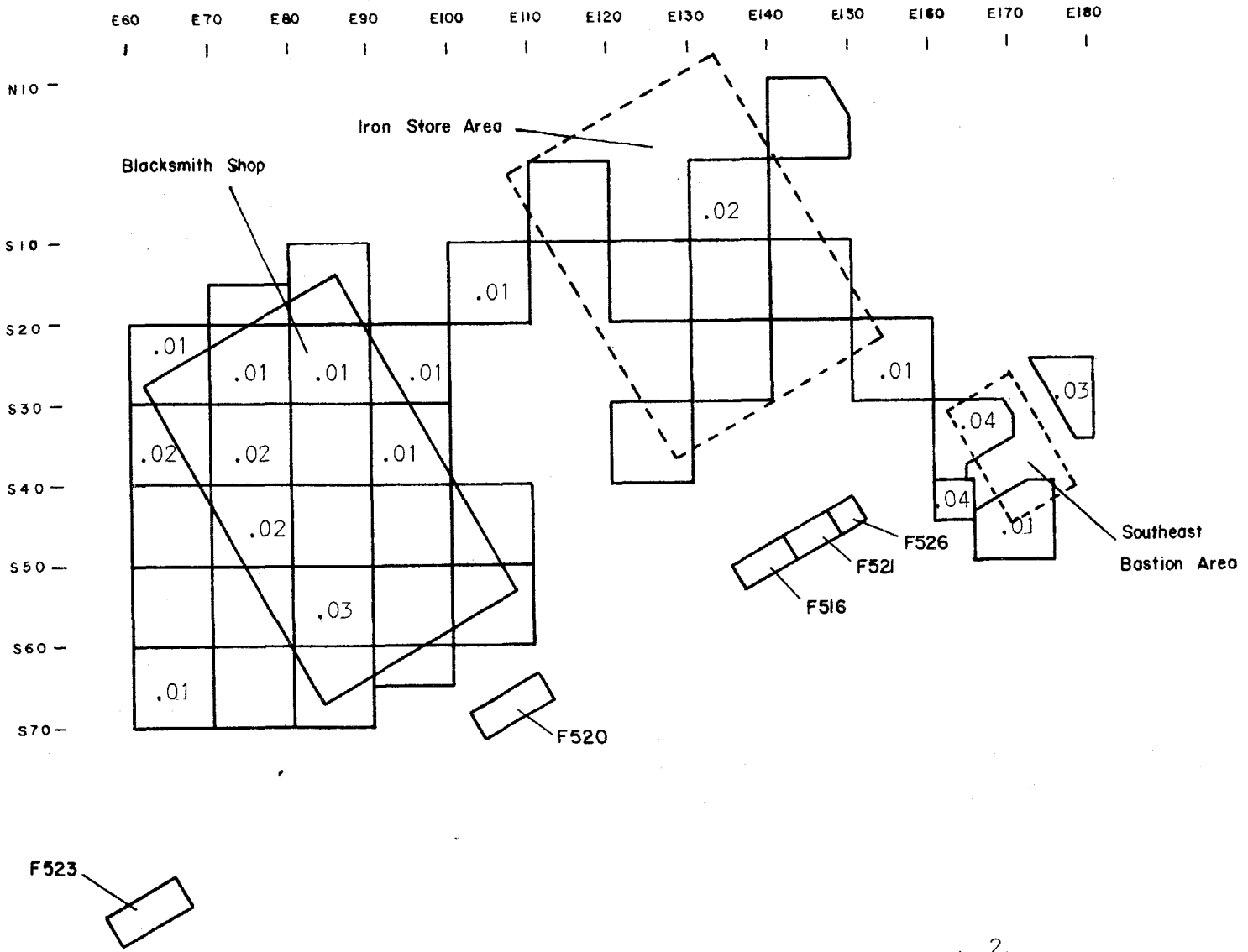


Fig.193 -- Distribution of cast nails in the southeastern Fort area (f/ft^2).

Brick

Imported Brick

One concentration of imported firebrick was found along the north wall of the Blacksmith Shop (Fig. 194). Firebrick undoubtedly was used in the construction of the hearth and fire box of the forge, and this concentration probably denotes the location of at least one forge.

Local Brick

Local brick being of a porous nature, was probably used for chimneys and forge foundations. Only one concentration was observed in the Blacksmith Shop (Fig. 195), and may indicate post-Shop demolition rather than *in situ* forge or chimney locations.

Mortar and Coral

Three mortar concentrations were observed in the Blacksmith Shop area (Fig. 196). Two interior concentrations were observed at opposite ends of the Shop, and probably indicate the relative positions of forges. The concentration to the west of the Shop came from a mortar spill which probably represents the liming pit used to prepare the mortar for forge construction. Since mortar at Fort Vancouver was manufactured from coral, the coral concentration outside the northeastern corner of the Shop may have represented a stockpile of raw material (Fig.197).

Industrial Products and Debris

Tools (excluding traps and axes)

The distribution of tools (Figs.198-199) reflects both usage and repair, but primarily usage. In the Blacksmith Shop metal and wood working tools were predominent, and they were very common along the west central portion of the Shop. A second assemblage was observed in the Southeast Bastion area which documented the use of this area as a cooperage.

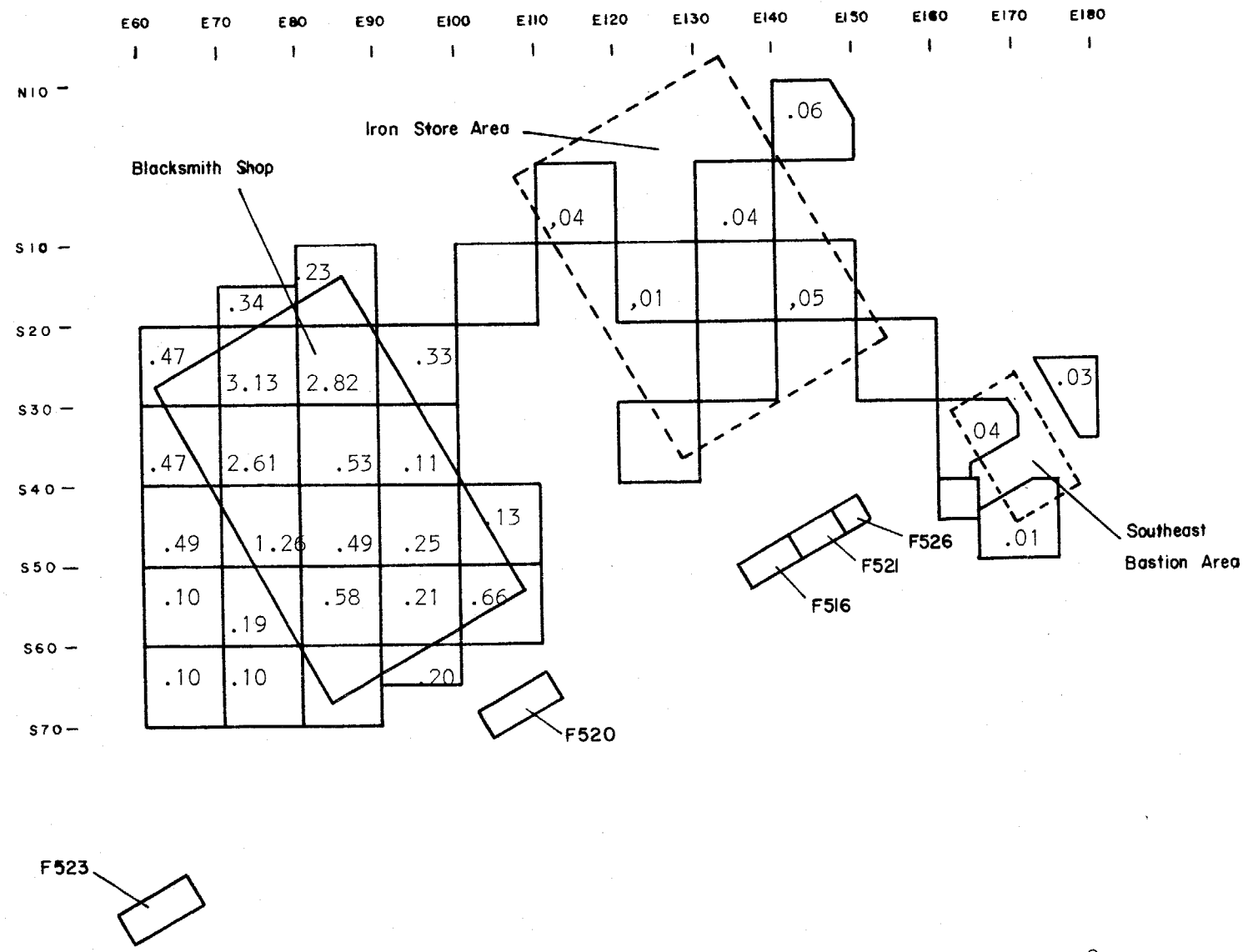


Fig. 194 -- Distribution of imported firebrick in the southeastern Fort area (f/ft^2).

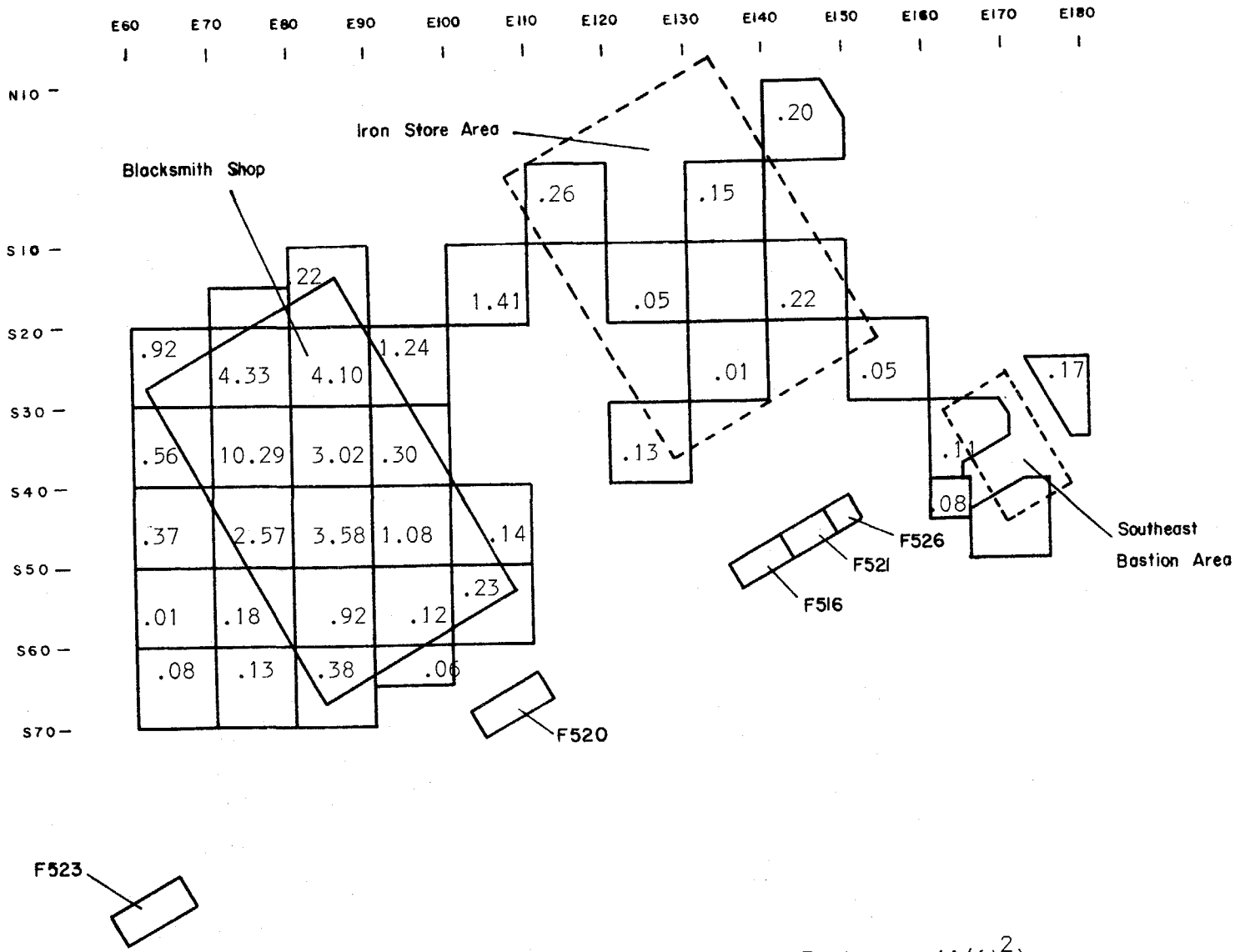


Fig. 195-- Distribution of local brick in the southeastern Fort area (f/ft^2).

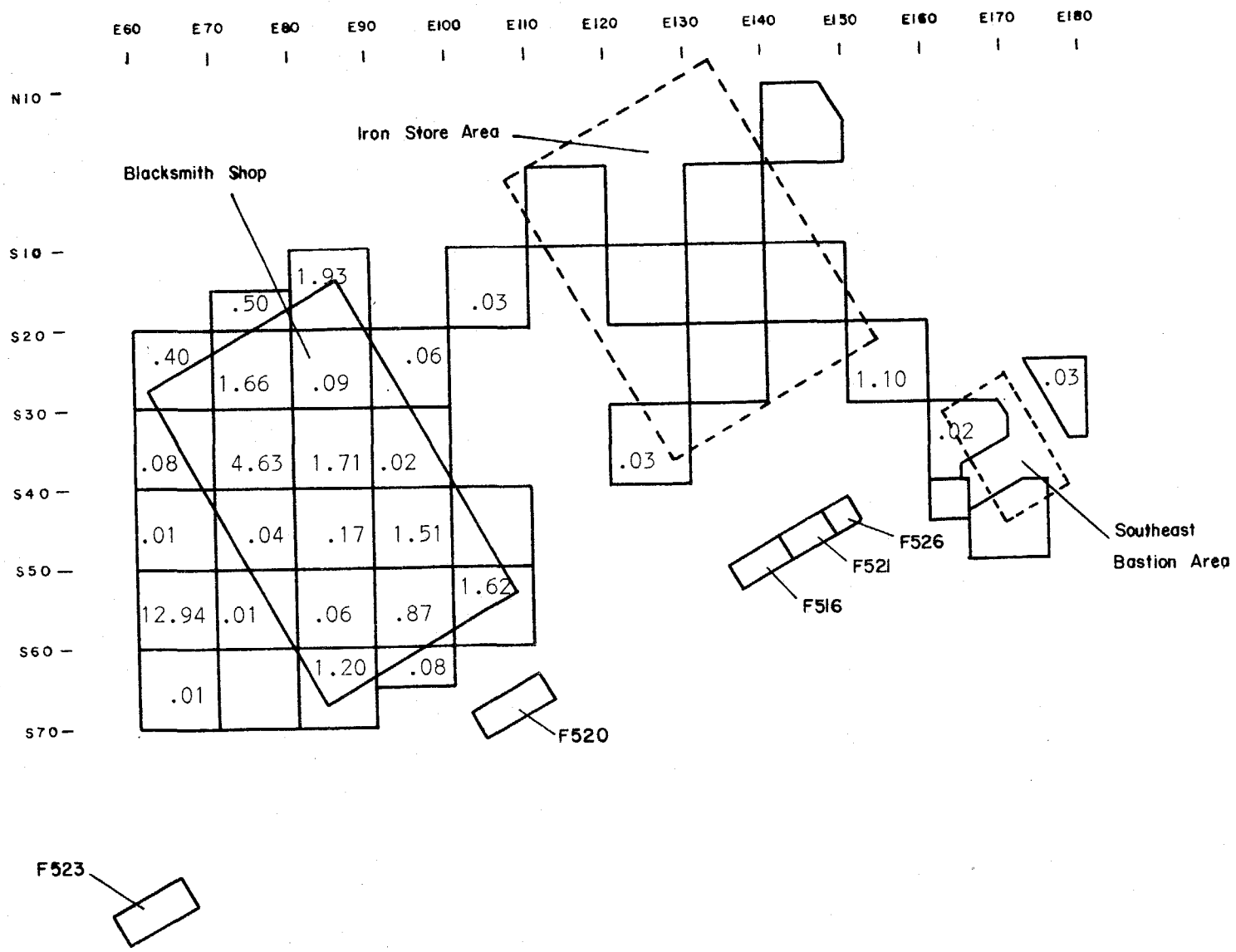


Fig.196 -- Distribution of mortar in the southeastern Fort area (f/ft^2).

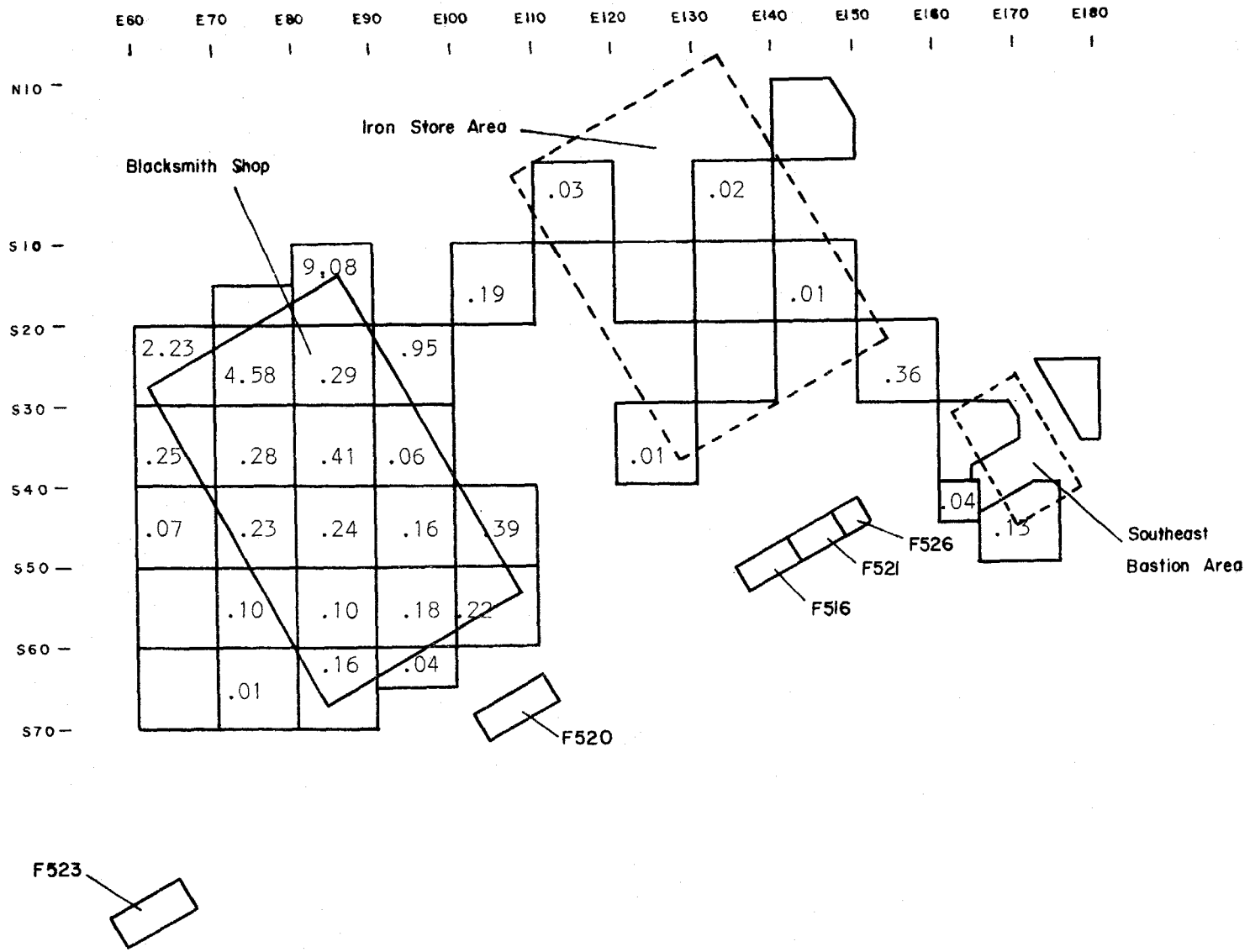


Fig. 197-- Distribution of coral in the southeastern Fort area (f/ft^2).

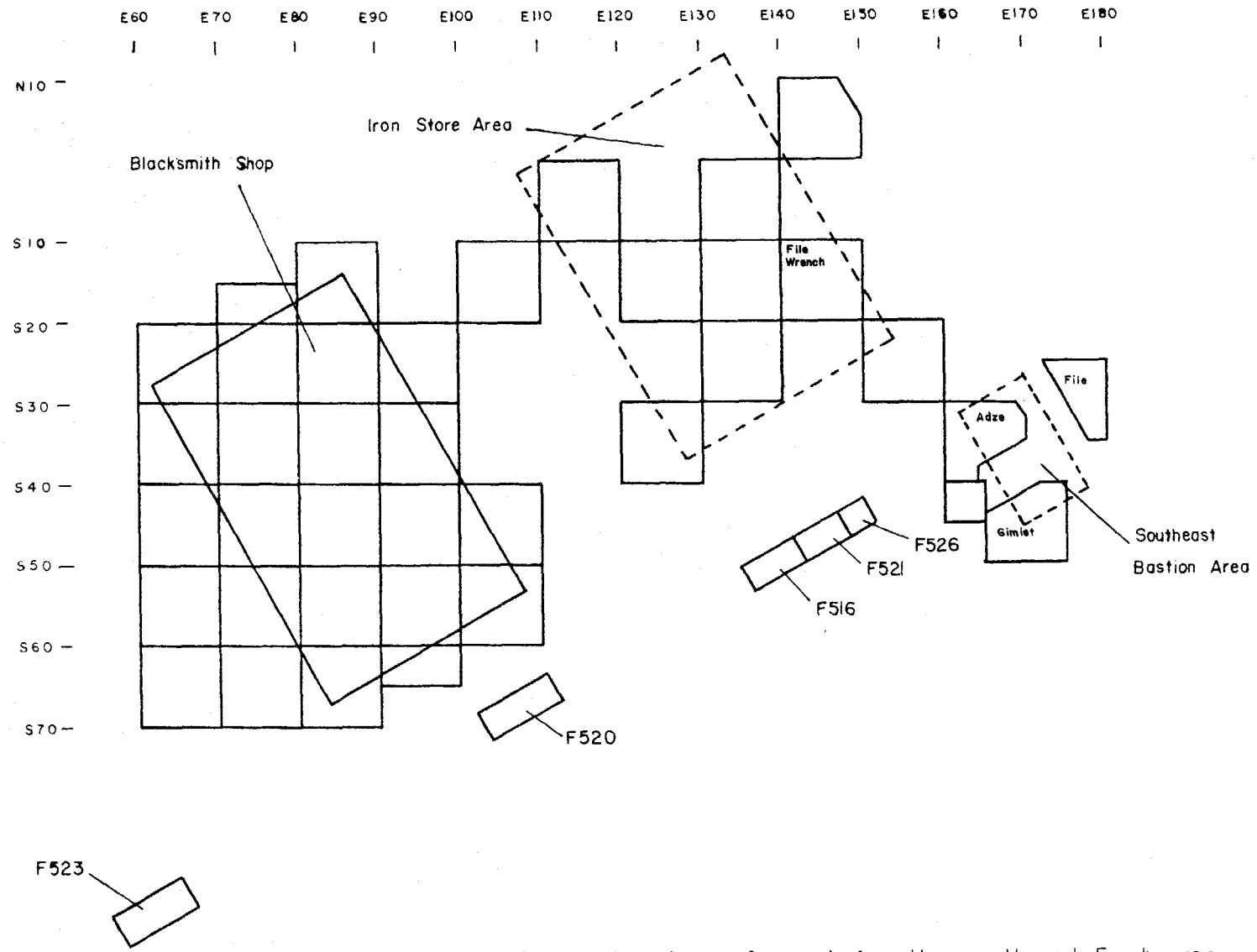


Fig. 198 -- Distribution of metal tools (excluding traps & axes) for the southeast Fort area (see next Figure for tool distribution in the Blacksmith Shop area).

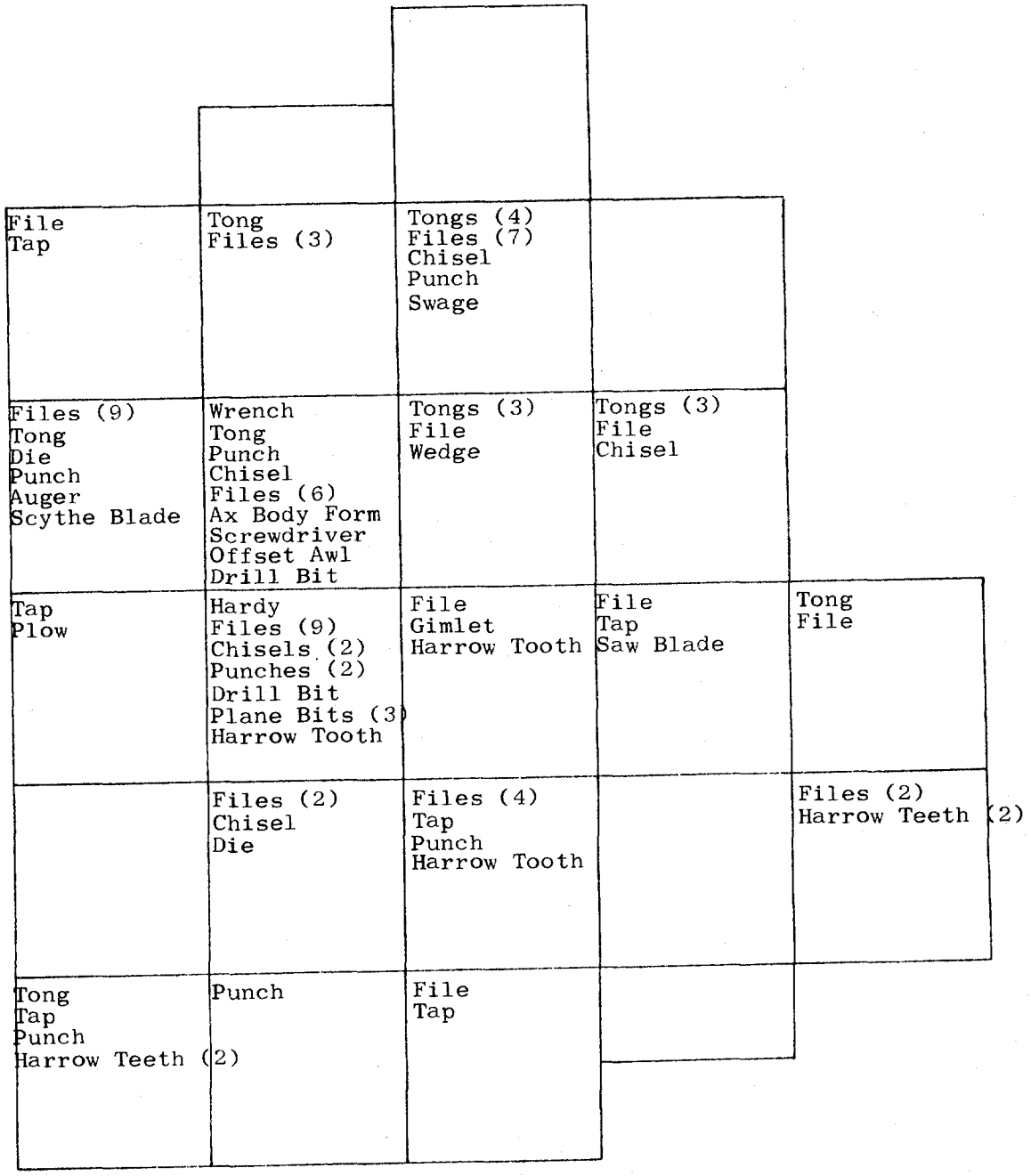


Fig. 199 -- Distribution of metal tools (excluding traps & axes) for the Blacksmith Shop area.

Metal Weaponry Items

Concentrations of metal weaponry items were observed in the Blacksmith Shop and Southeast Bastion (Fig. 200). The Shop concentration reflected the repair of firearms by blacksmiths, whereas the Bastion assemblage probably reflects the functional aspect of the Bastion as a weapon storage and usage structure.

Bolt Parts and Nut Preforms

Bolts, washers and nuts were manufactured in the Blacksmith Shop, with the highest concentration found along the central portion of the west wall (Figs. 201-202).

Rivets

Rivets were manufactured in the Blacksmith Shop, with the highest frequency found in the west central portion of the Shop (Fig. 203).

Barrel Rivets and Bands

Barrels may have been repaired in the Blacksmith Shop, but the highest concentration of barrel bands denotes the area associated with Cooper's Shed outside the southeastern stockade area (Figs. 204-205).

Sheet Metal Containers

Both copper and iron sheet metal containers were manufactured and/or repaired in the Blacksmith Shop, and from the distribution of copper and iron fragments (Figs. 206-209) there appear to be 2 work areas. Copper kettle lug cutouts together with fragments of copper sheeting (Figs. 203-209) were common along the west wall of the shop, whereas iron container and sheeting fragments (Figs. 206-207) were concentrated within the central portion of the Shop.

Singletree Hardware

Agricultural hardware for singletrees were concentrated along the west wall of the Blacksmith Shop (Fig. 210). These items probably represent repairs rather than manufactures.

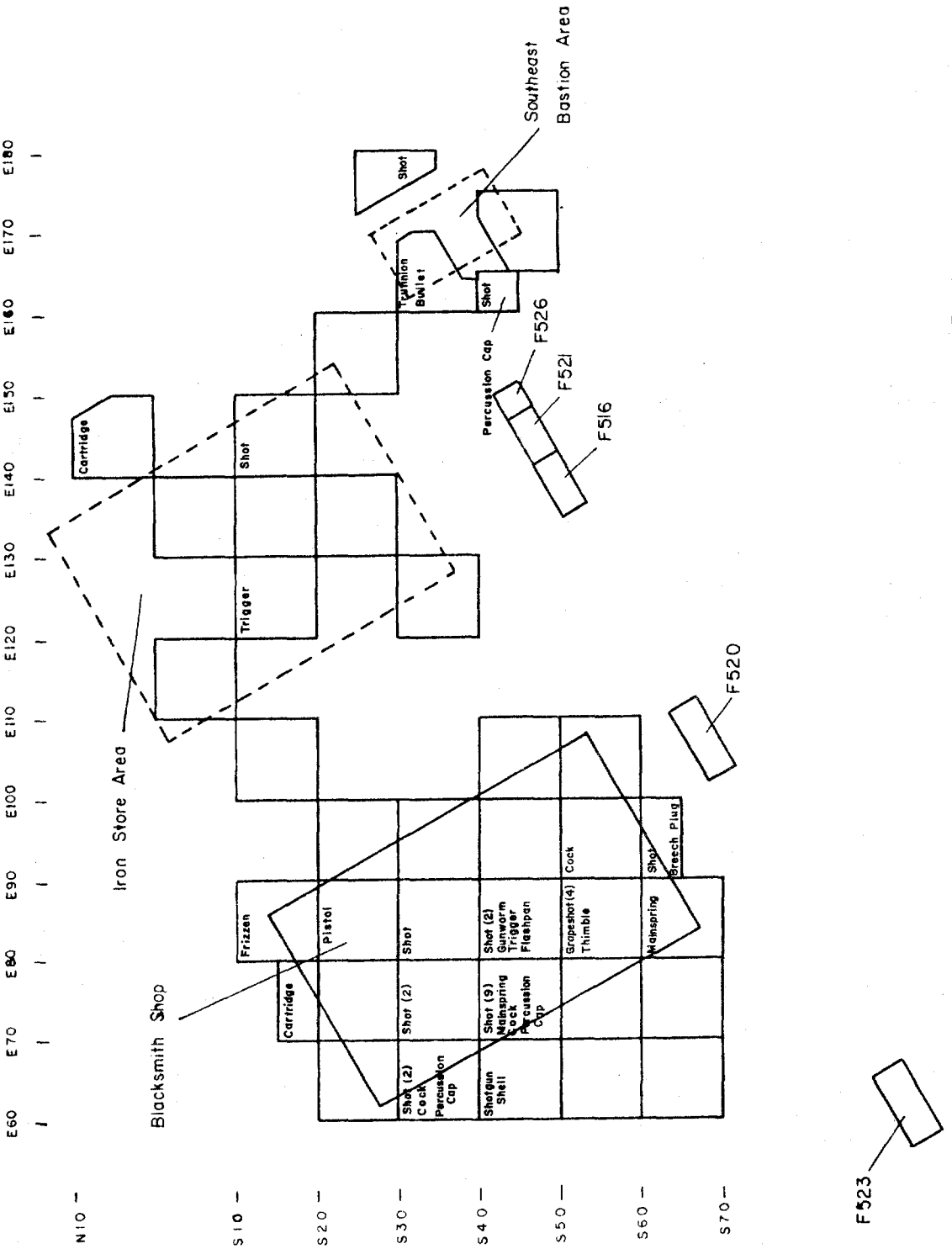


Fig. 200-- Distribution of metal weaponry items for the southeastern Fort area.

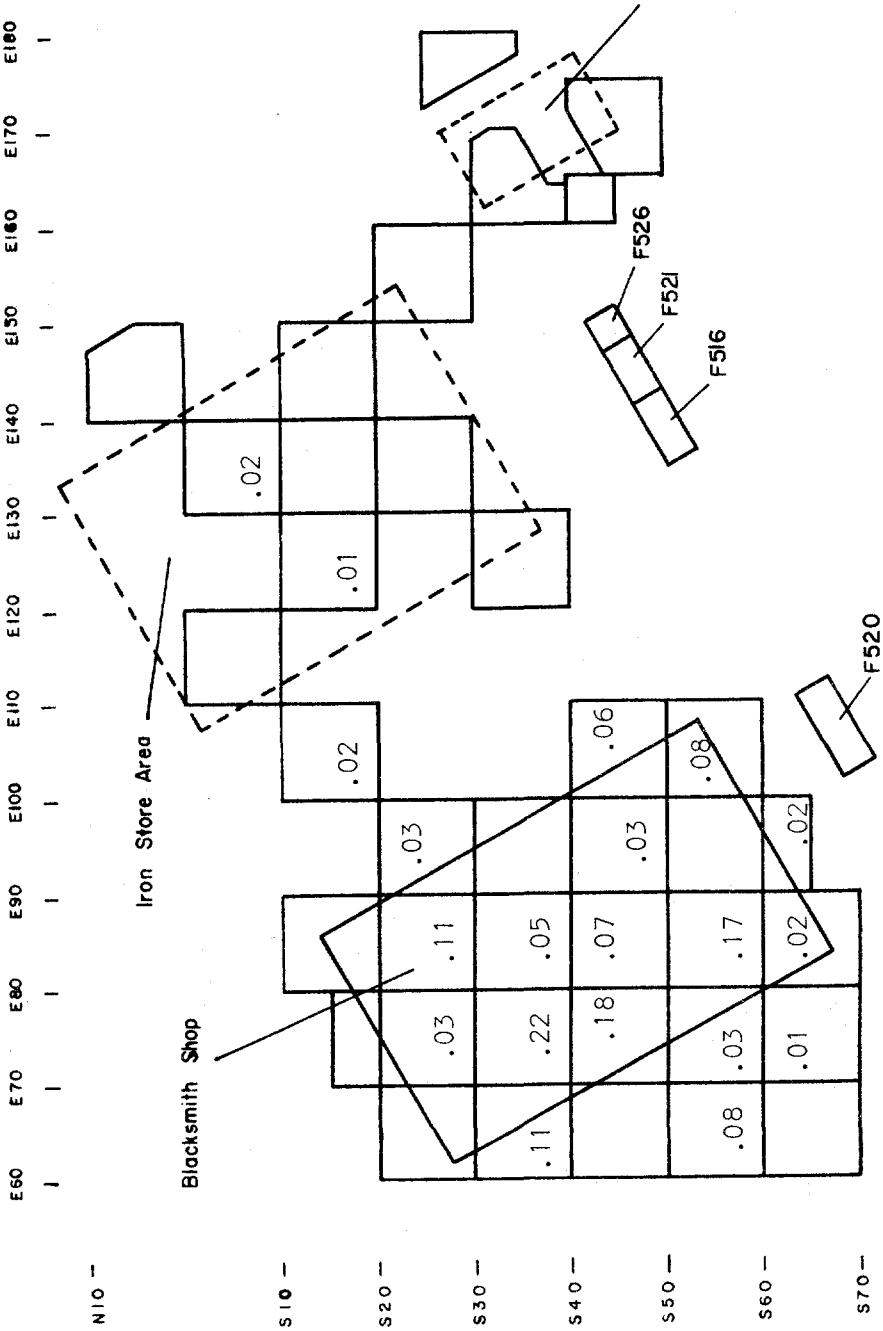


Fig.201 -- Distribution of bolt parts in the southeastern Fort area (f/ft^2).

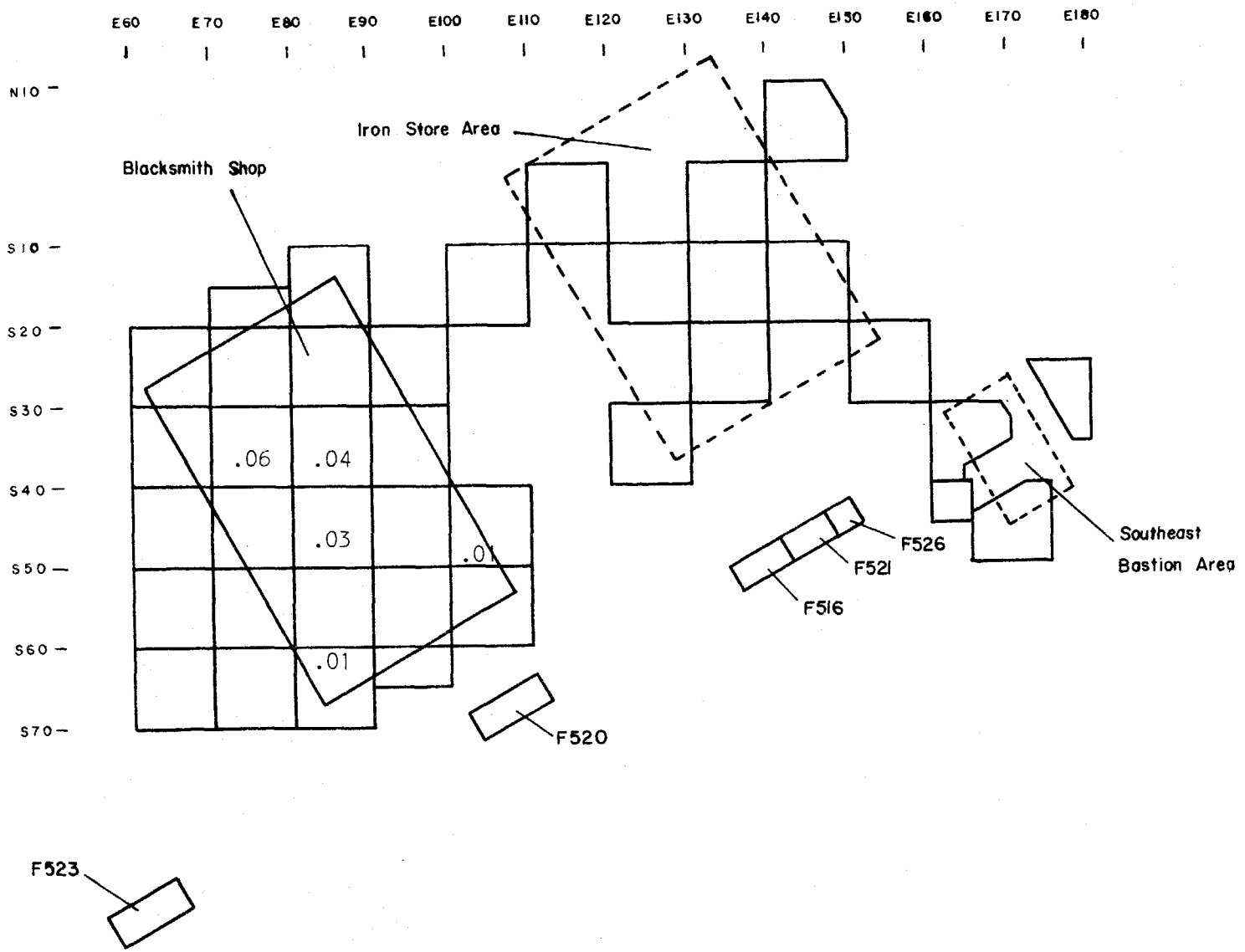


Fig.20. -- Distribution of nut preforms in the southeastern Fort area (f/ft^2).

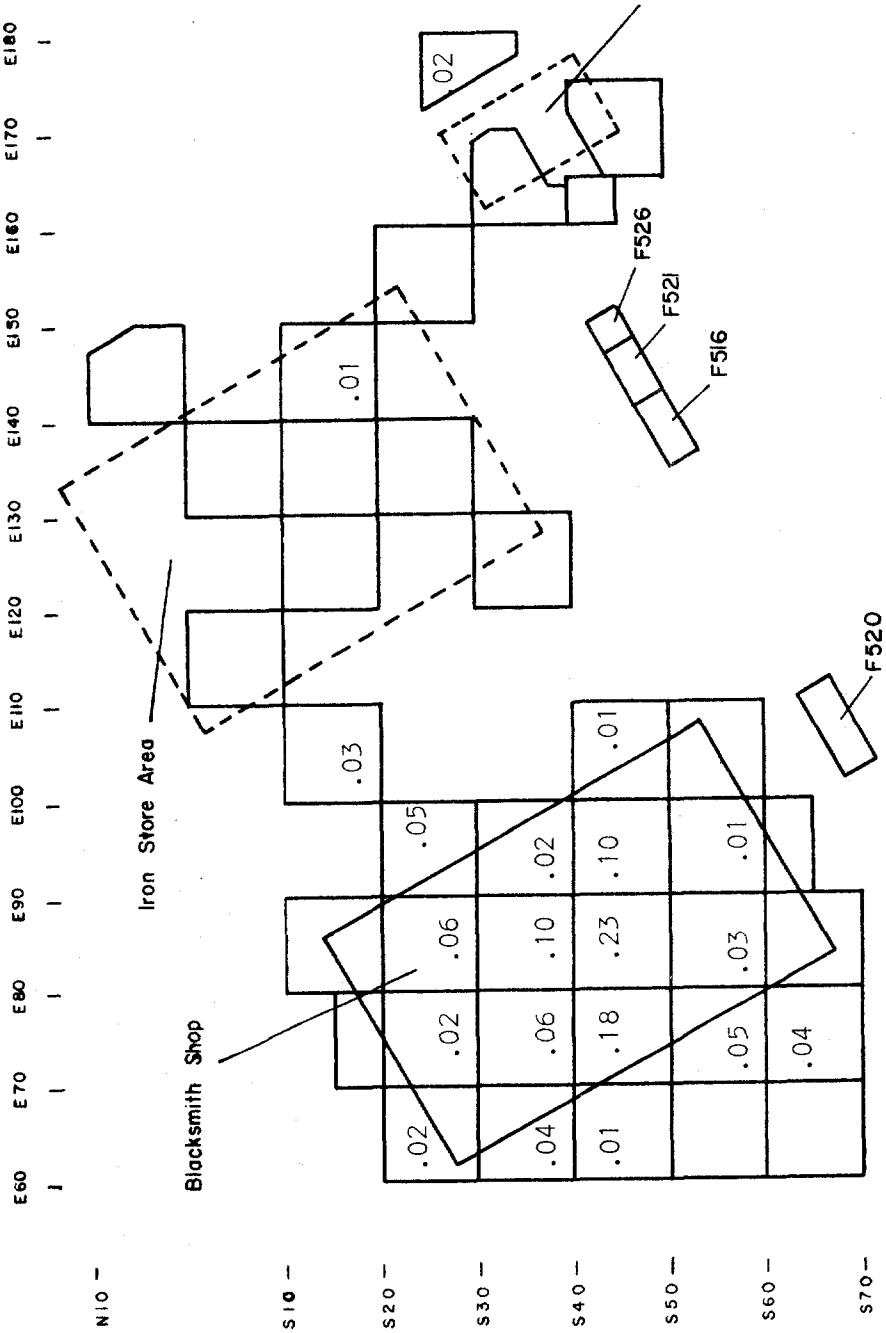


Fig.203 -- Distribution of rivets in the southeastern Fort area (f/ft^2).

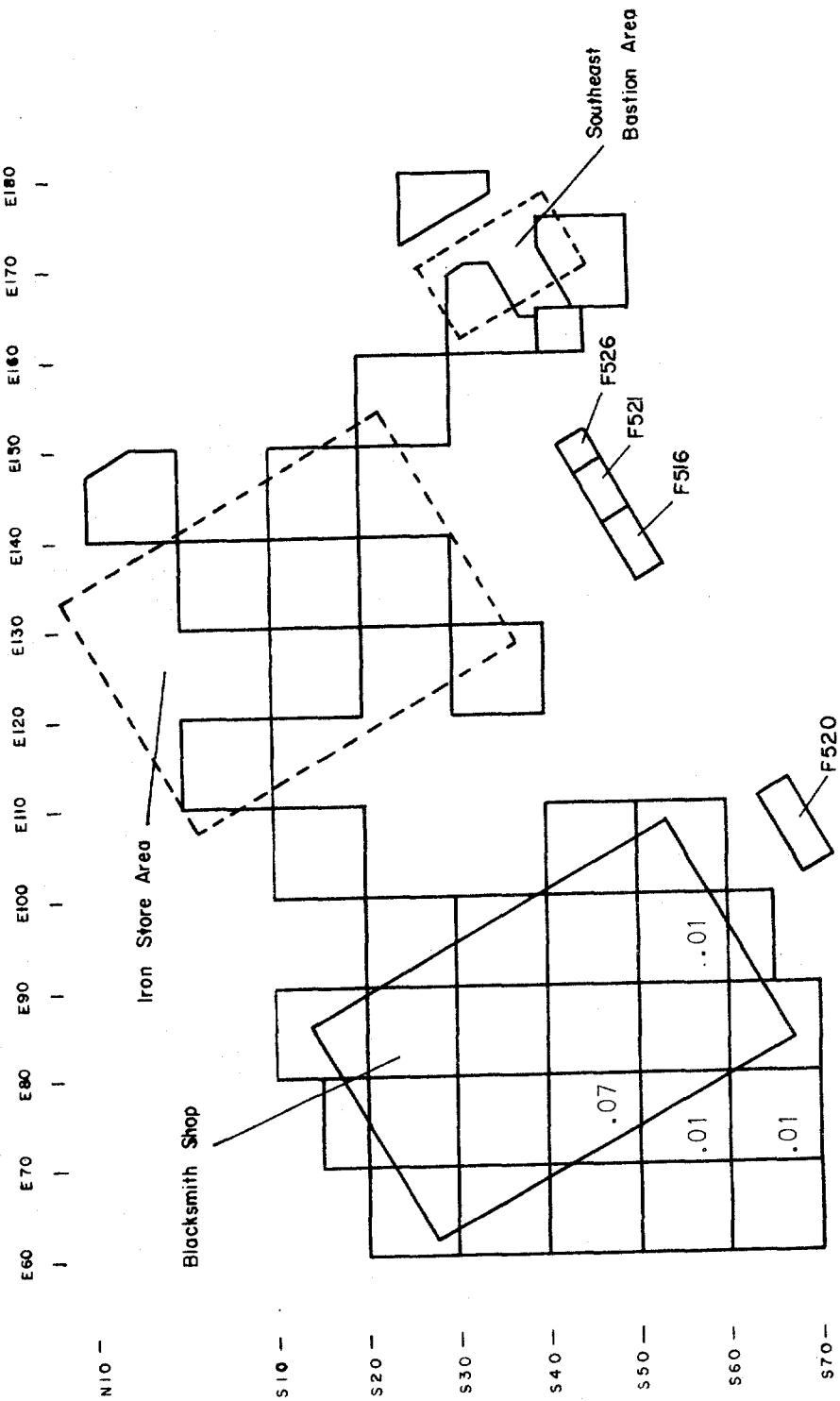


Fig.204 -- Distribution of barrel rivets in the southeastern Fort area (f/ft^2).

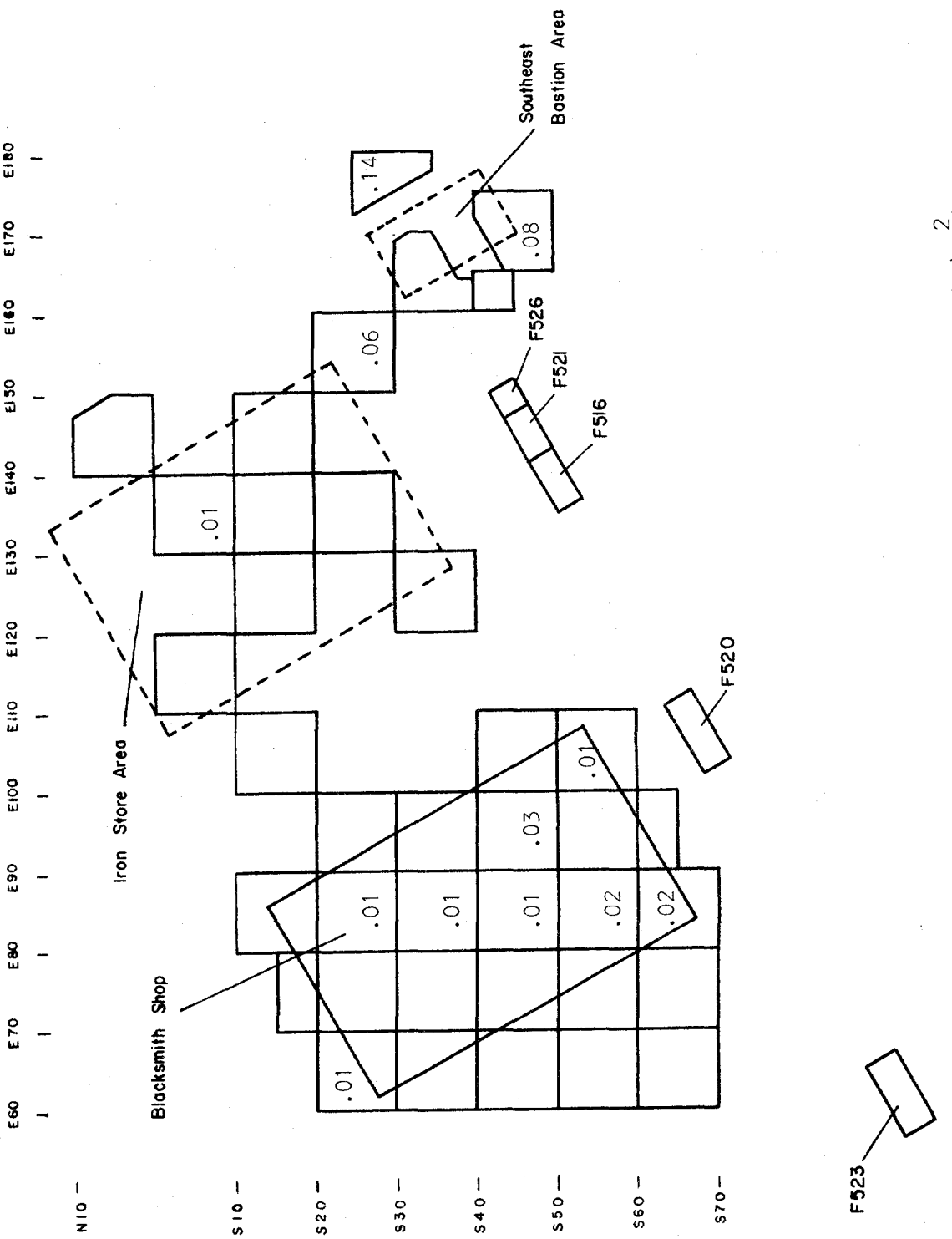


Fig. 205 -- Distribution of barrel bands in the southeastern Fort area (f/ft^2).

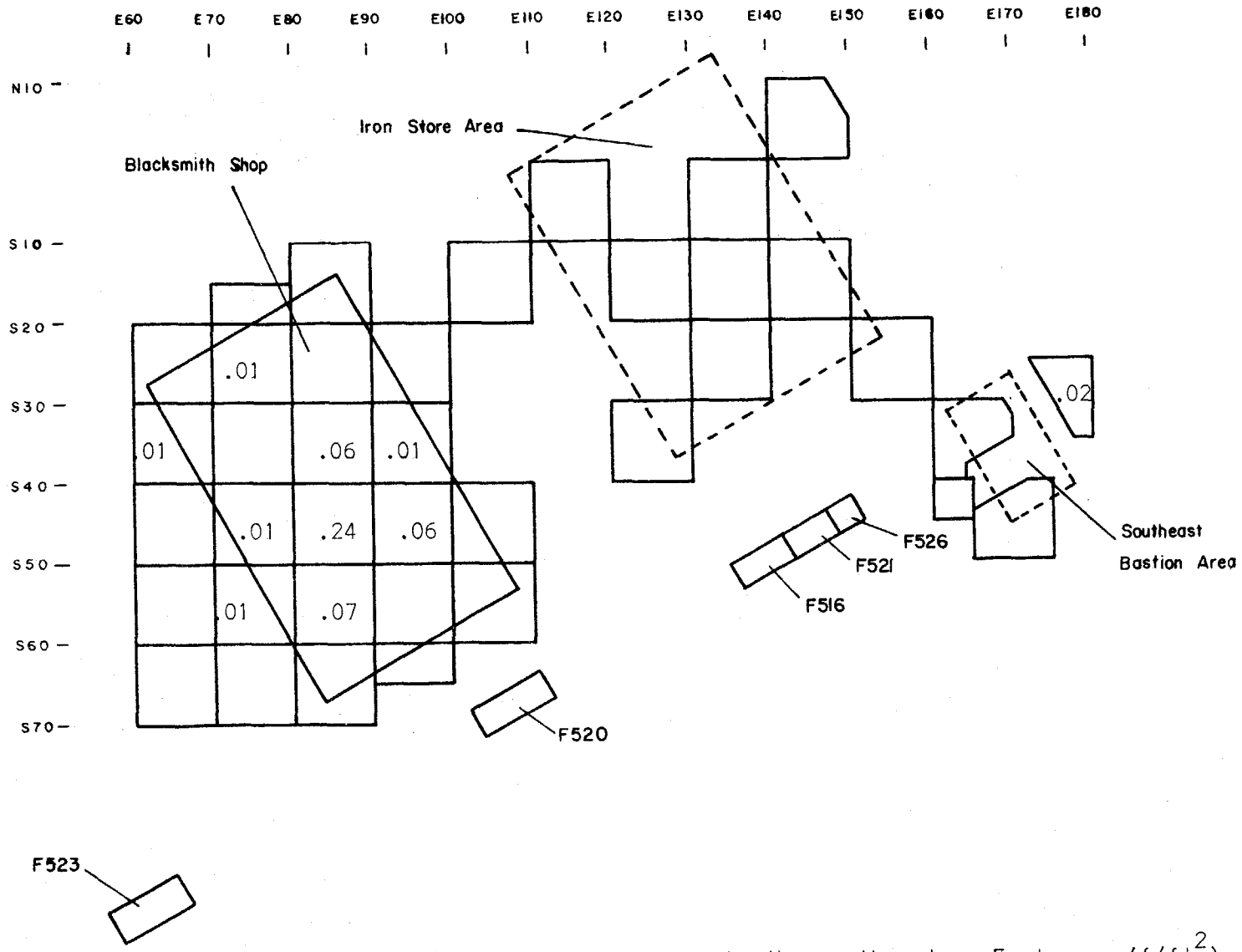


Fig.206 -- Distribution of metal container fragments in the southeastern Fort area (f/ft^2).

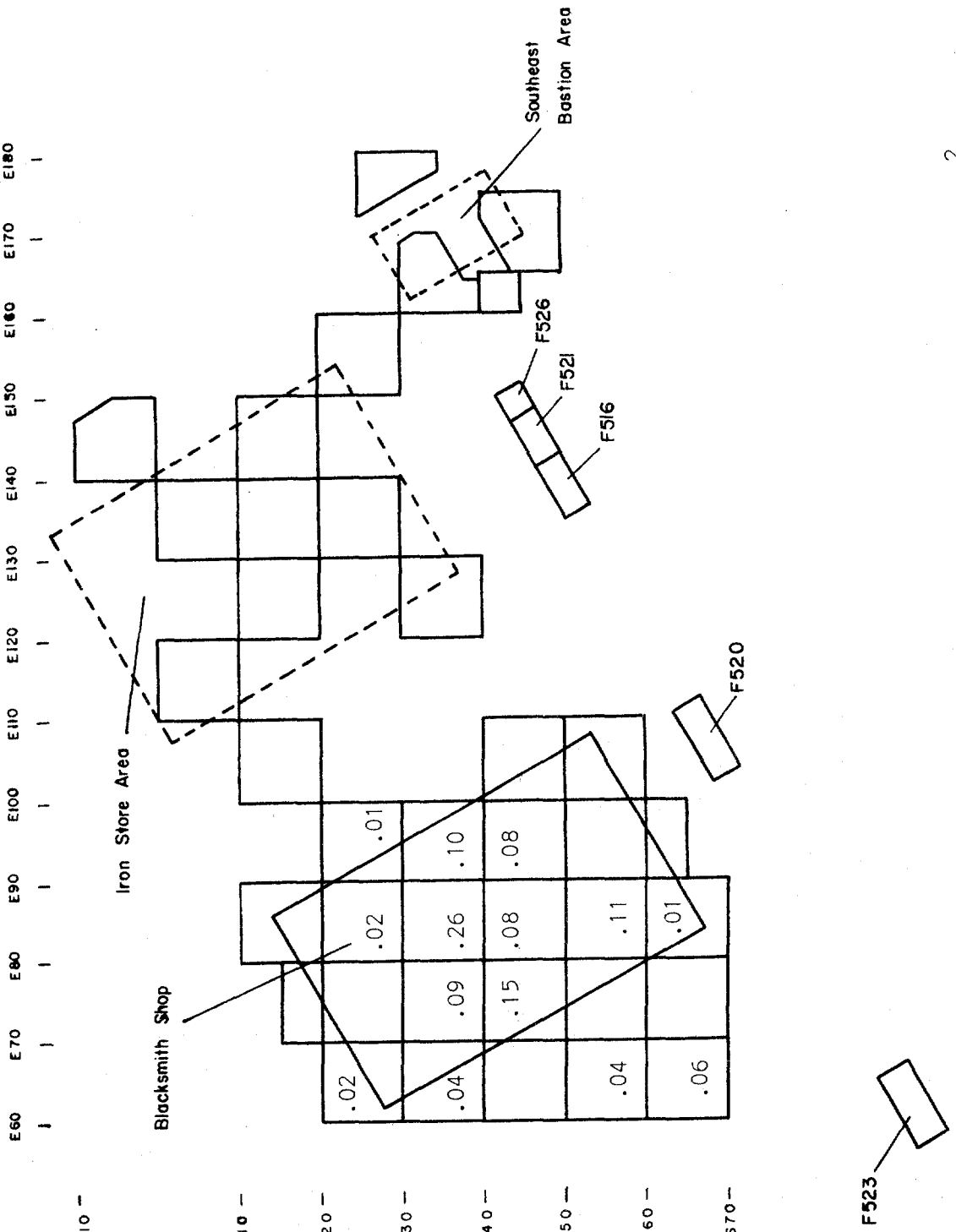


Fig.207 -- Distribution of cut iron sheeting in the southeastern Fort area (f/ft^2).

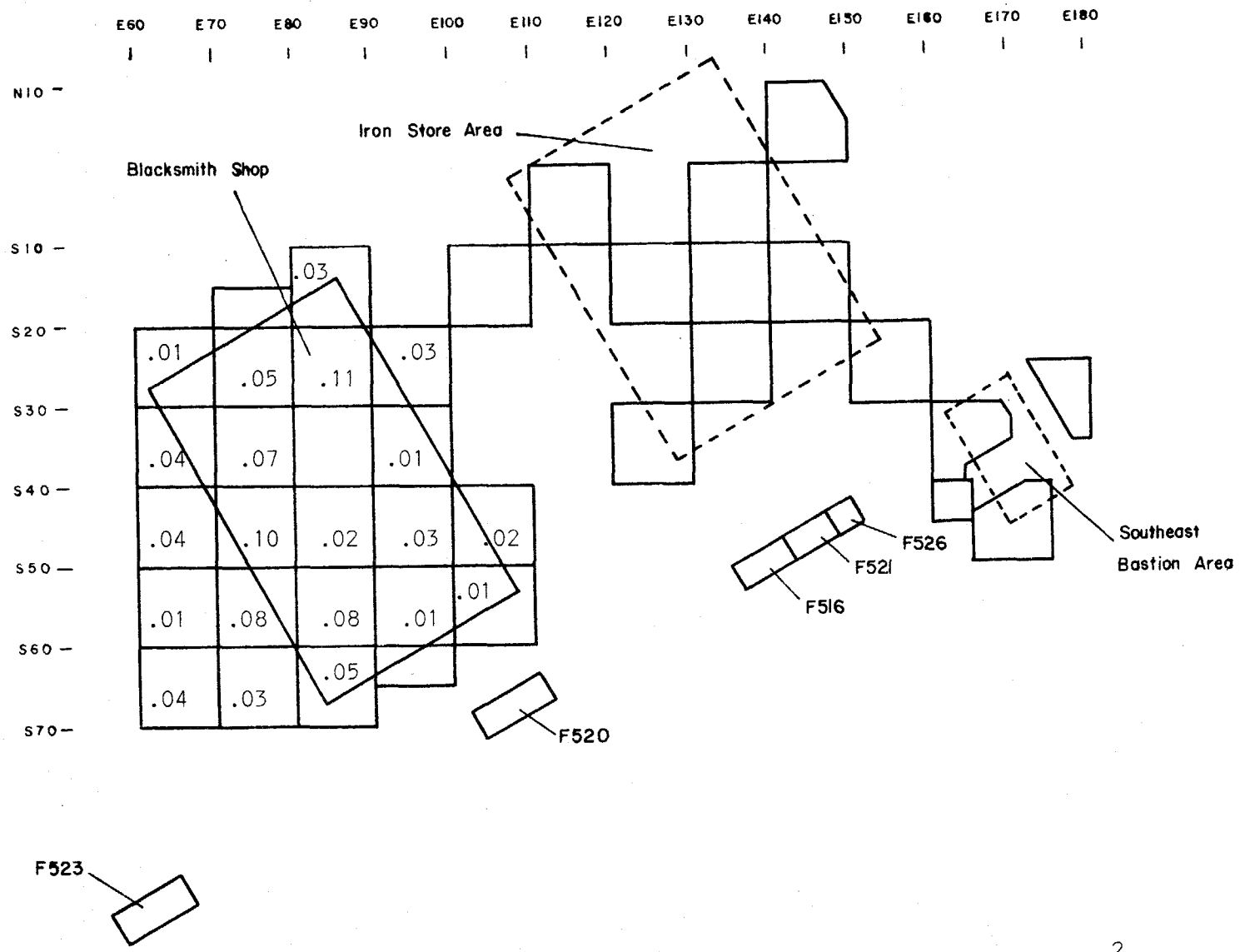


Fig.208 -- Distribution of cut copper sheeting in the southeastern Fort area (f/ft^2).

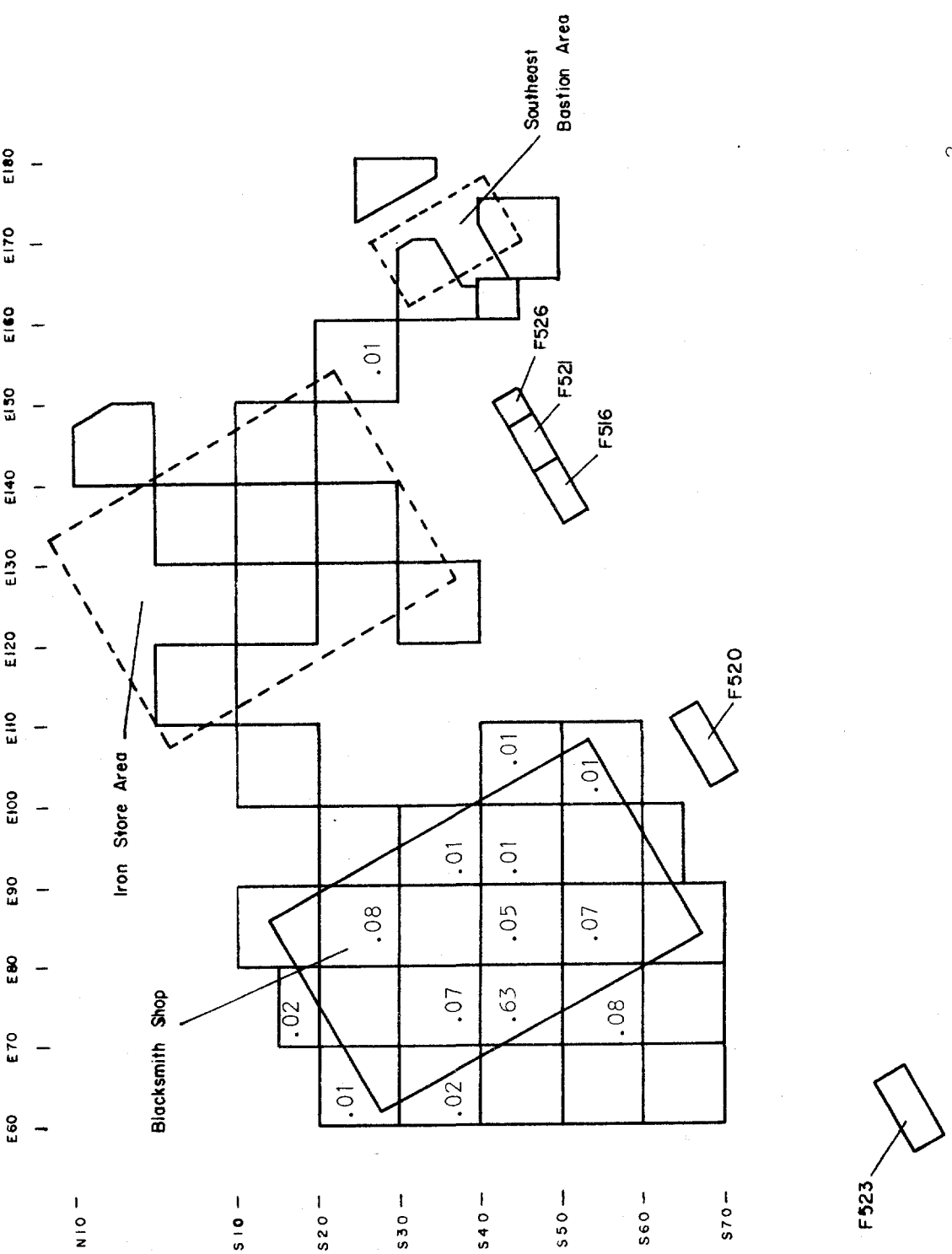


Fig. 209 -- Distribution of copper lug cutouts in the southeastern Fort area (f/ft^2).

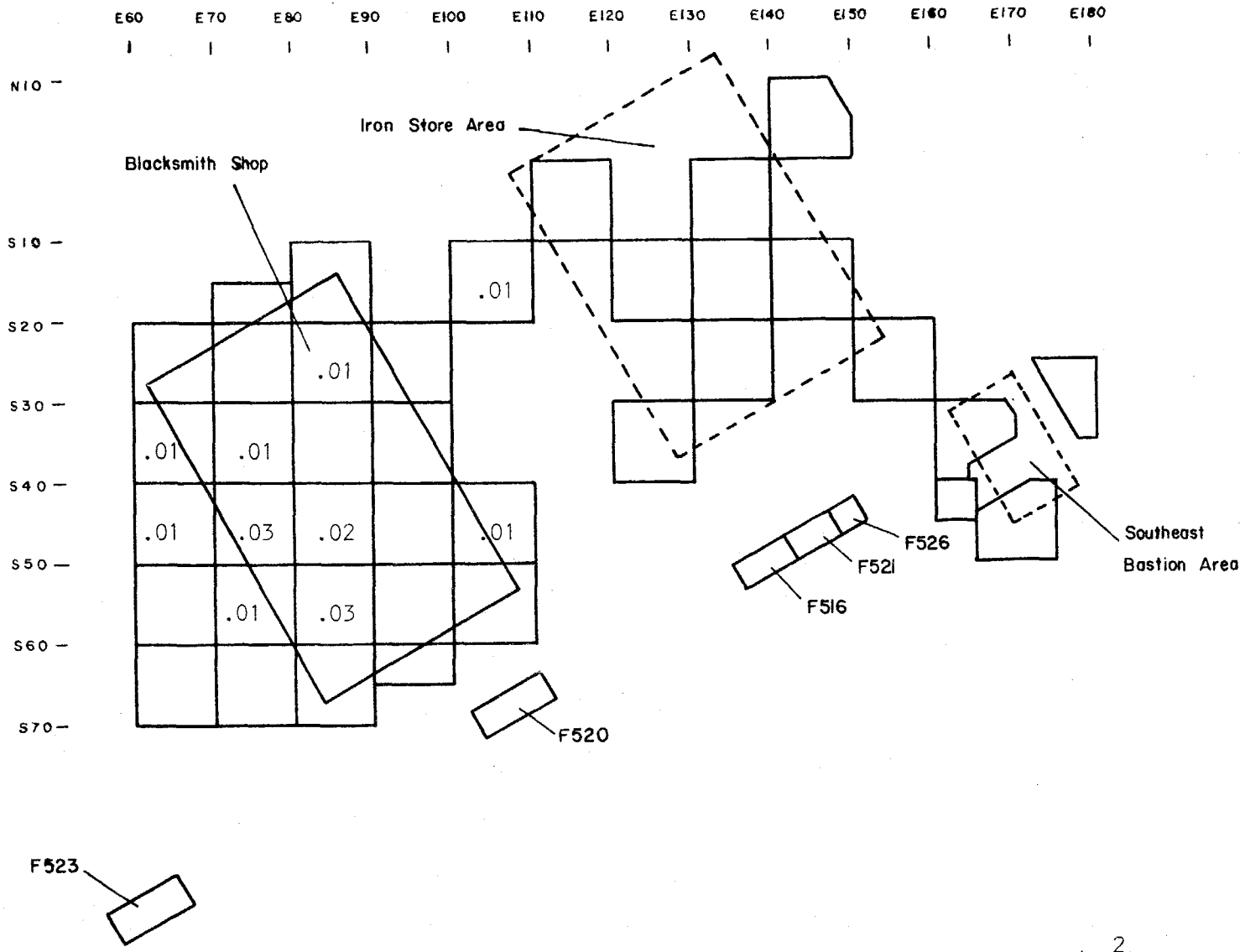


Fig.210 -- Distribution of singletree hardware in the southeastern Fort area (f/ft^2).

Chain and Link Preforms

Chains were repaired and links manufactured in the Blacksmith Shop, and their distribution within the Shop was generally within the central area (Figs. 211-212).

Axe Parts and Preforms

Axes were manufactured in the Blacksmith Shop, and the only concentration of axe parts observed was in the southeastern corner of the Shop (Figs. 213-214).

Trap Parts, Preform and Cut Waste

Traps were manufactured and assembled in the Blacksmith Shop, and the major concentration of trap parts was along the west wall of the Shop (Figs. 215-217).

Horseshoes and Shoeing Nails

Horses were apparently shoed at the Blacksmith Shop, and both the shoes and nails may have been manufactured in the Shop. Shoes were found in the southern half of the shop (Fig. 218) while the nails were found along the central portion of the west wall (Fig. 219).

Metal Stock and Bundling Straps

Cut metal stock was concentrated in the central portion of the Blacksmith Shop (Figs. 220-222) while the straps used to bundle stock were found within the Iron Store area (Fig.223). Bundling straps were also recovered in the central portion of the Shop, but not in as high a concentration as within the Iron Store.

Metal Castings

Both lead and brass/copper castings were found in the Blacksmith Shop clustering around the central portions of the west and north walls (Figs. 224-225). The west concentration of lead was in a work area, whereas the brass/copper casting came from a forge area.

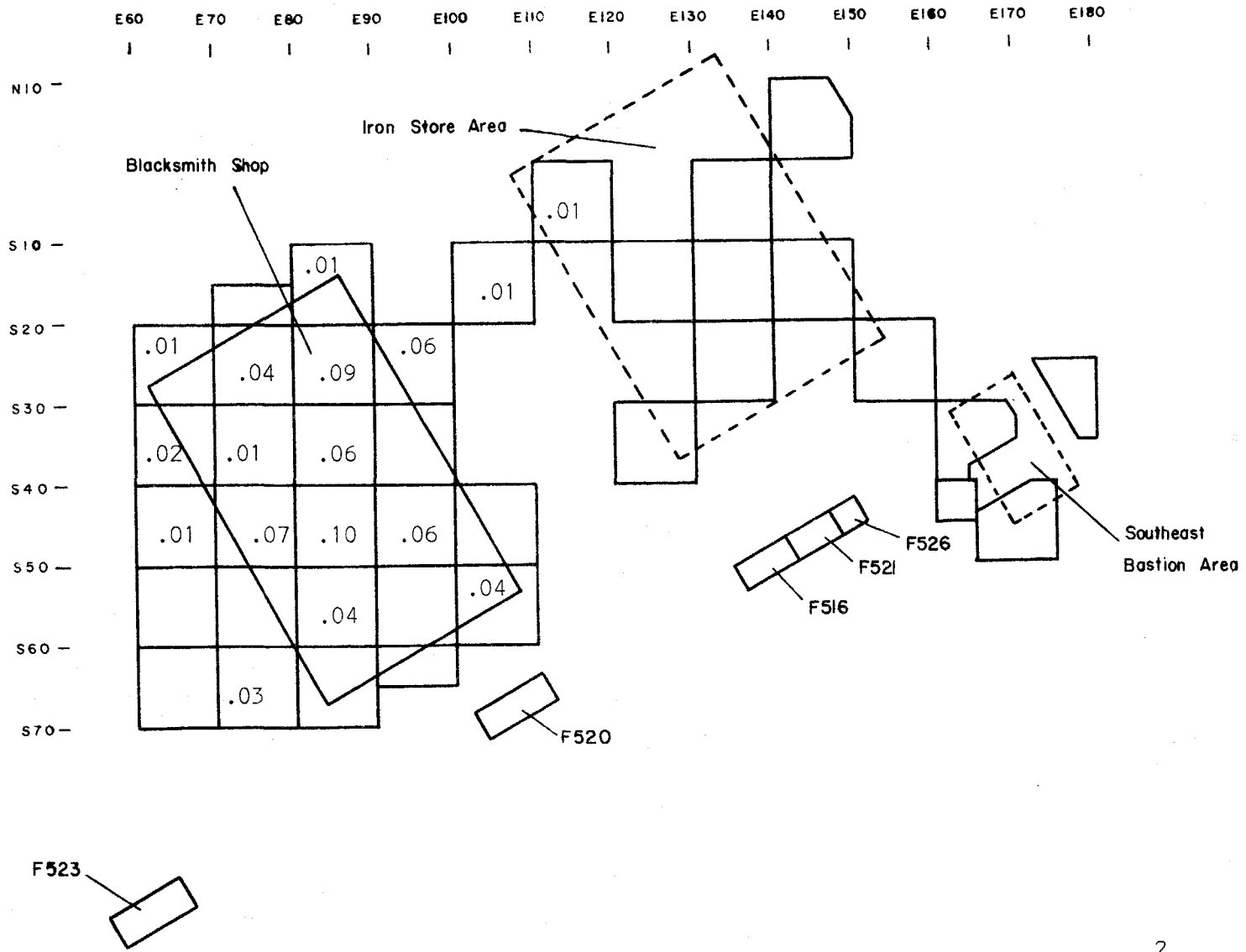


Fig. 211-- Distribution of chains and chain links in the southeastern Fort area (f/ft^2).

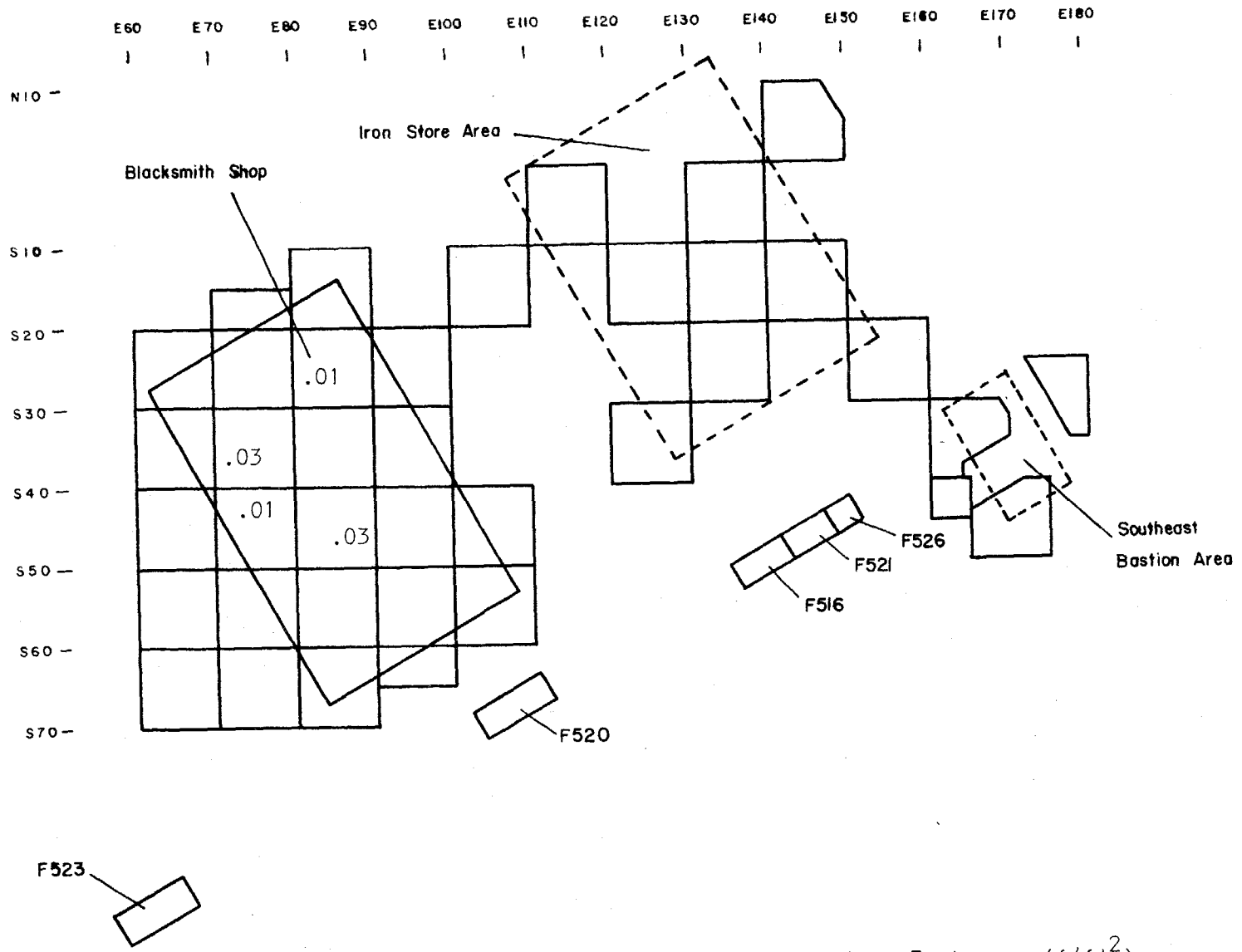


Fig. 212-- Distribution of chain link preforms in the southeastern Fort area (f/ft^2).

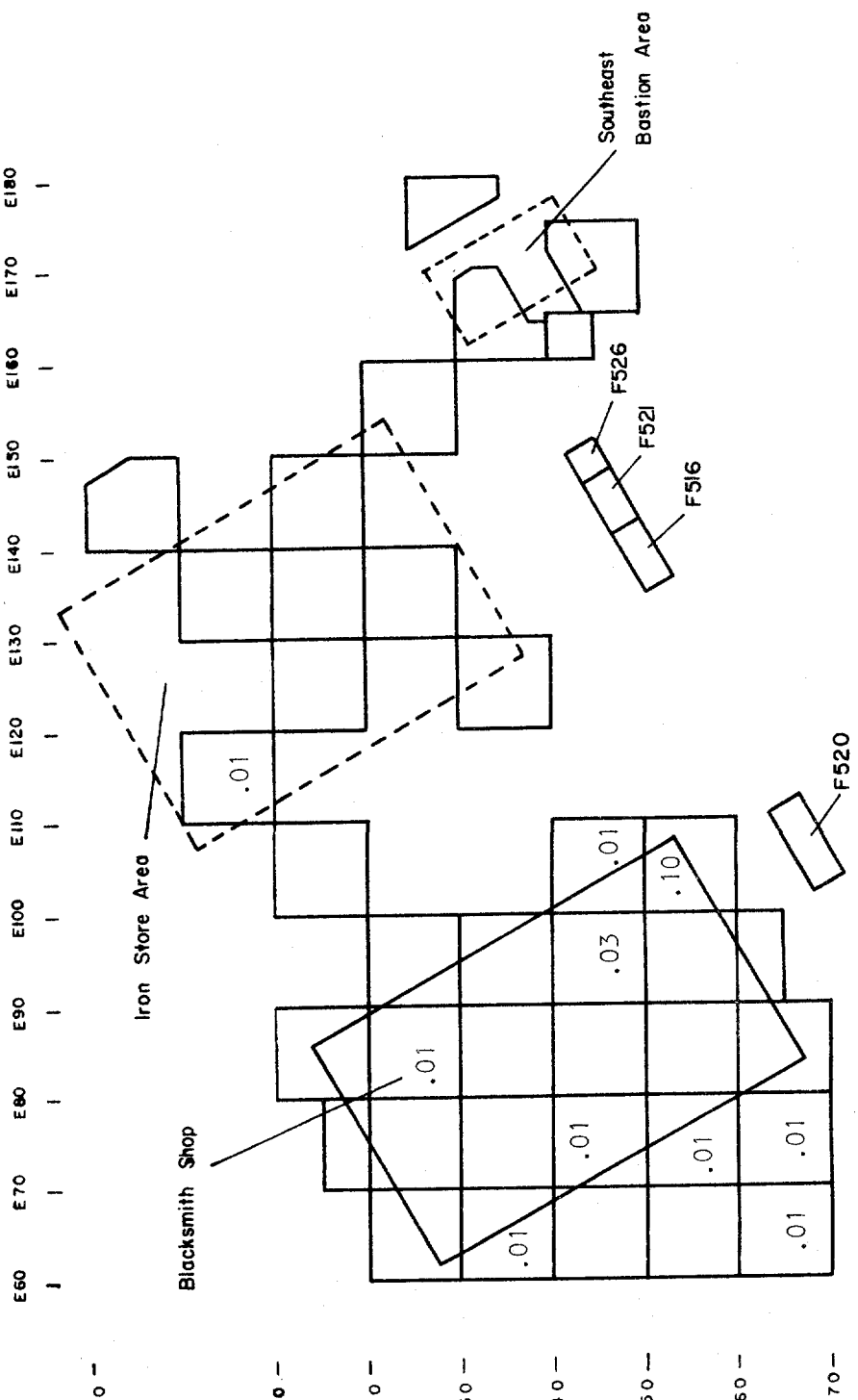


Fig.213 -- Distribution of finished axe parts in the southeastern Fort area (f/ft^2).

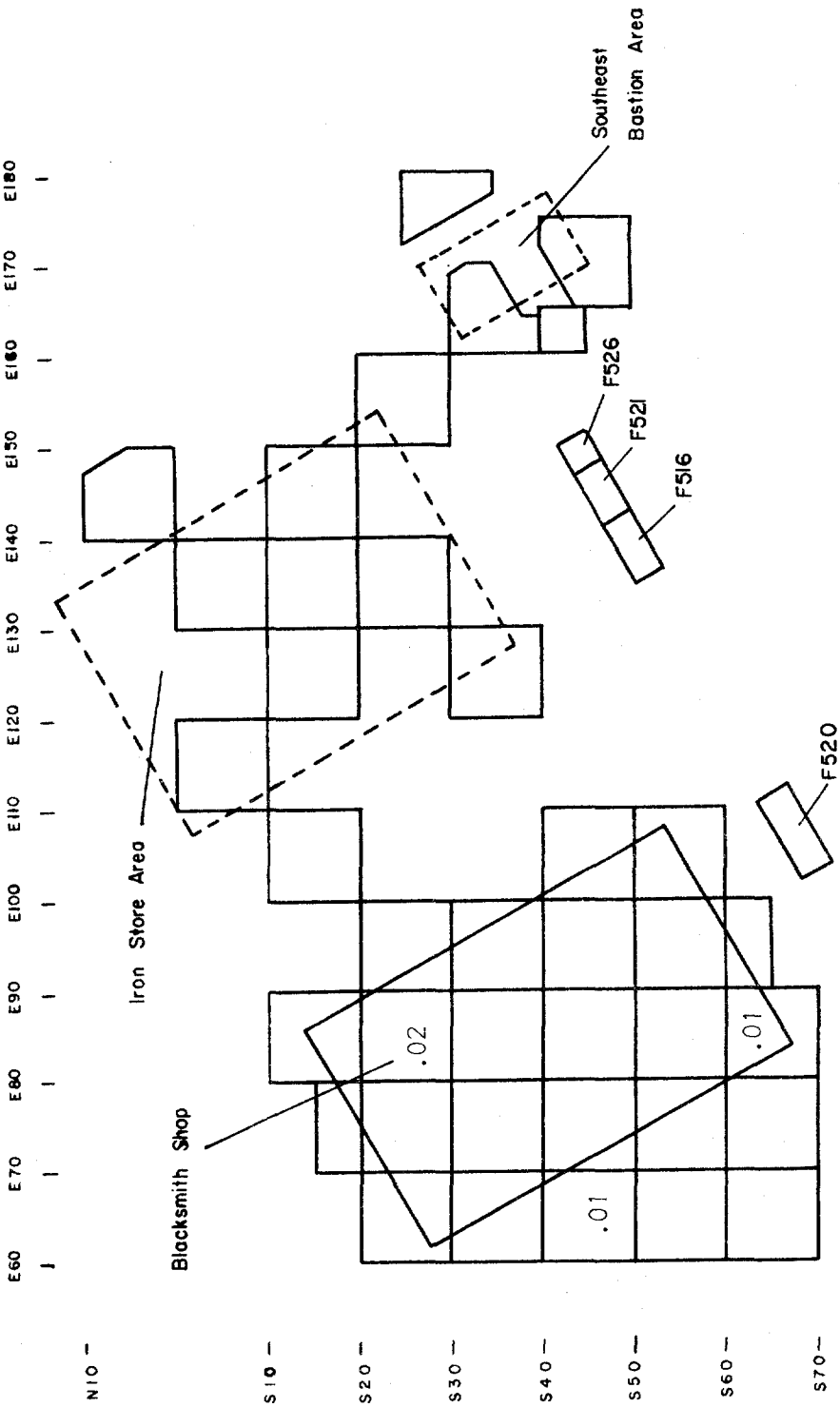


Fig.214 -- Distribution of preform axe parts in the southeastern Fort area (f/ft^2).

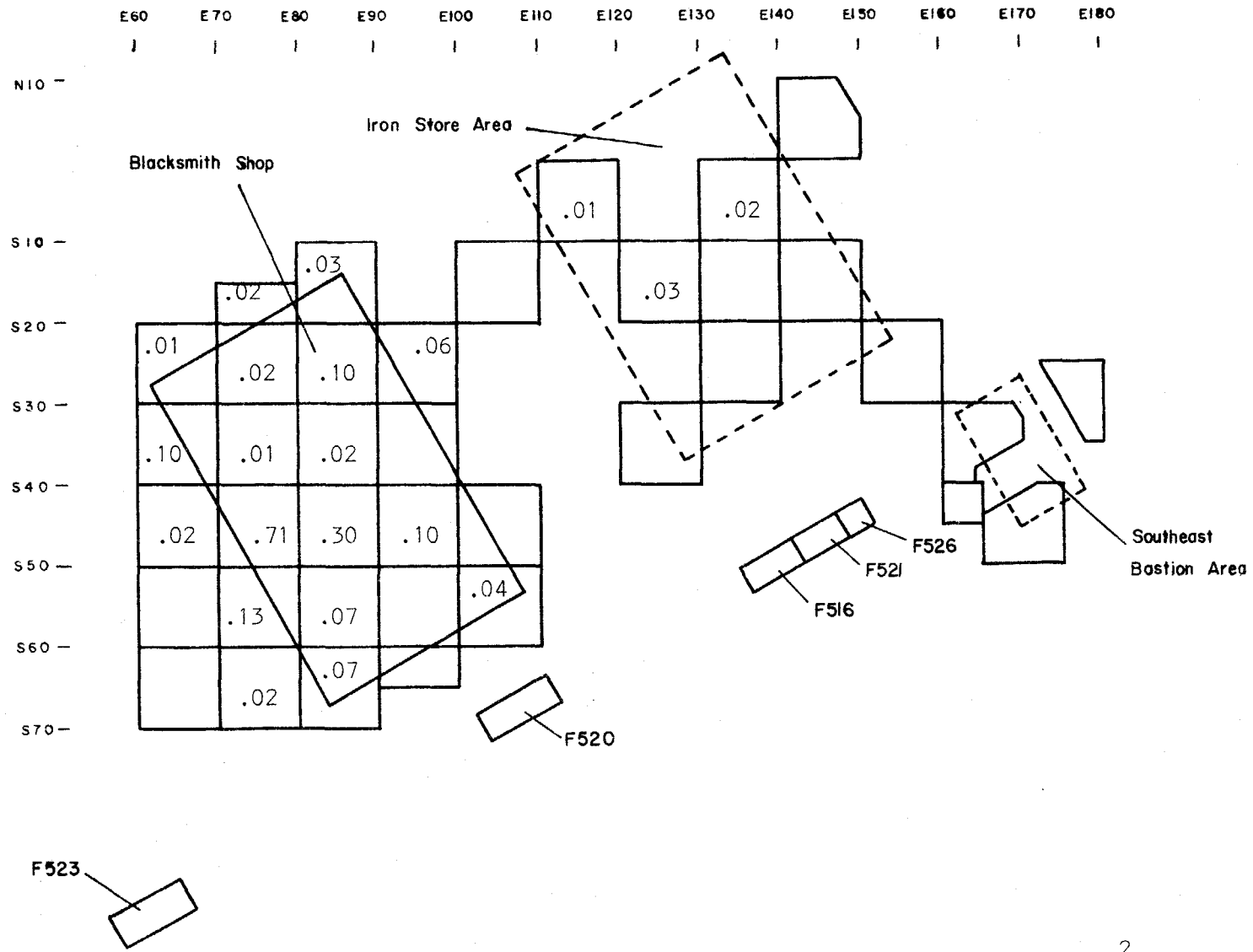


Fig. 215-- Distribution of finished trap parts in the southeastern Fort area (f/ft^2).

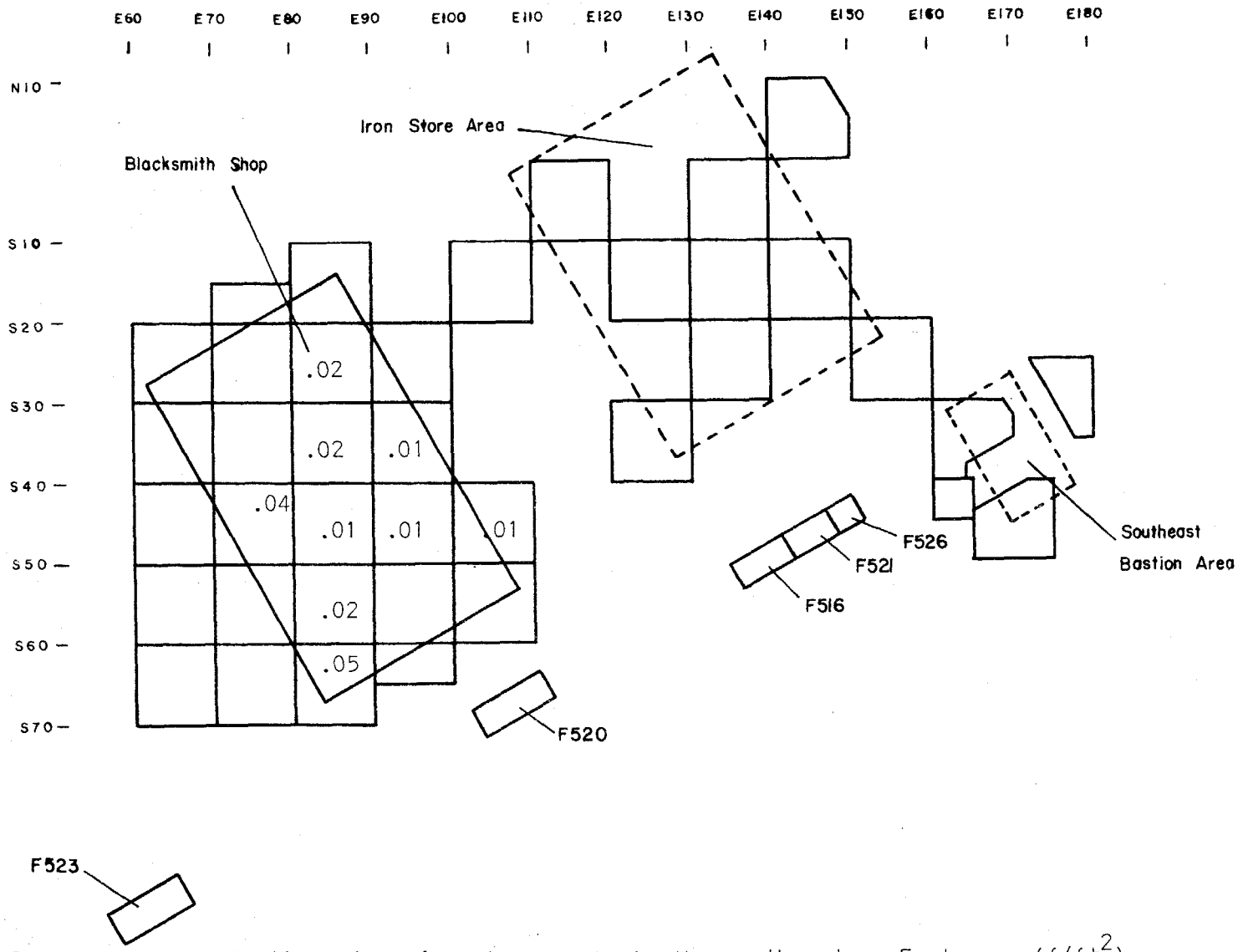


Fig. 216 -- Distribution of preform trap parts in the southeastern Fort area (f/ft^2).

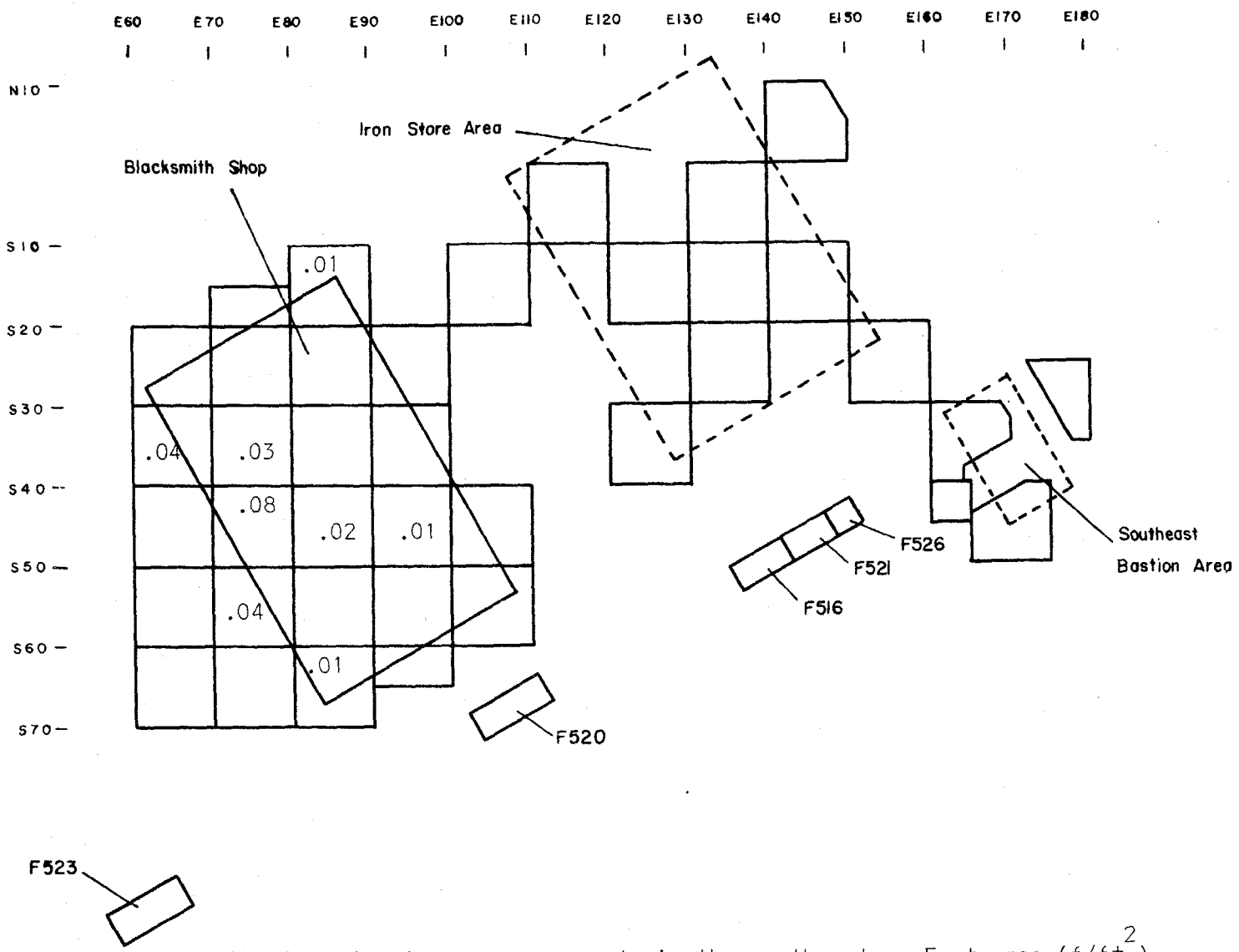


Fig. 217-- Distribution of cut waste trap parts in the southeastern Fort area (f/ft^2).

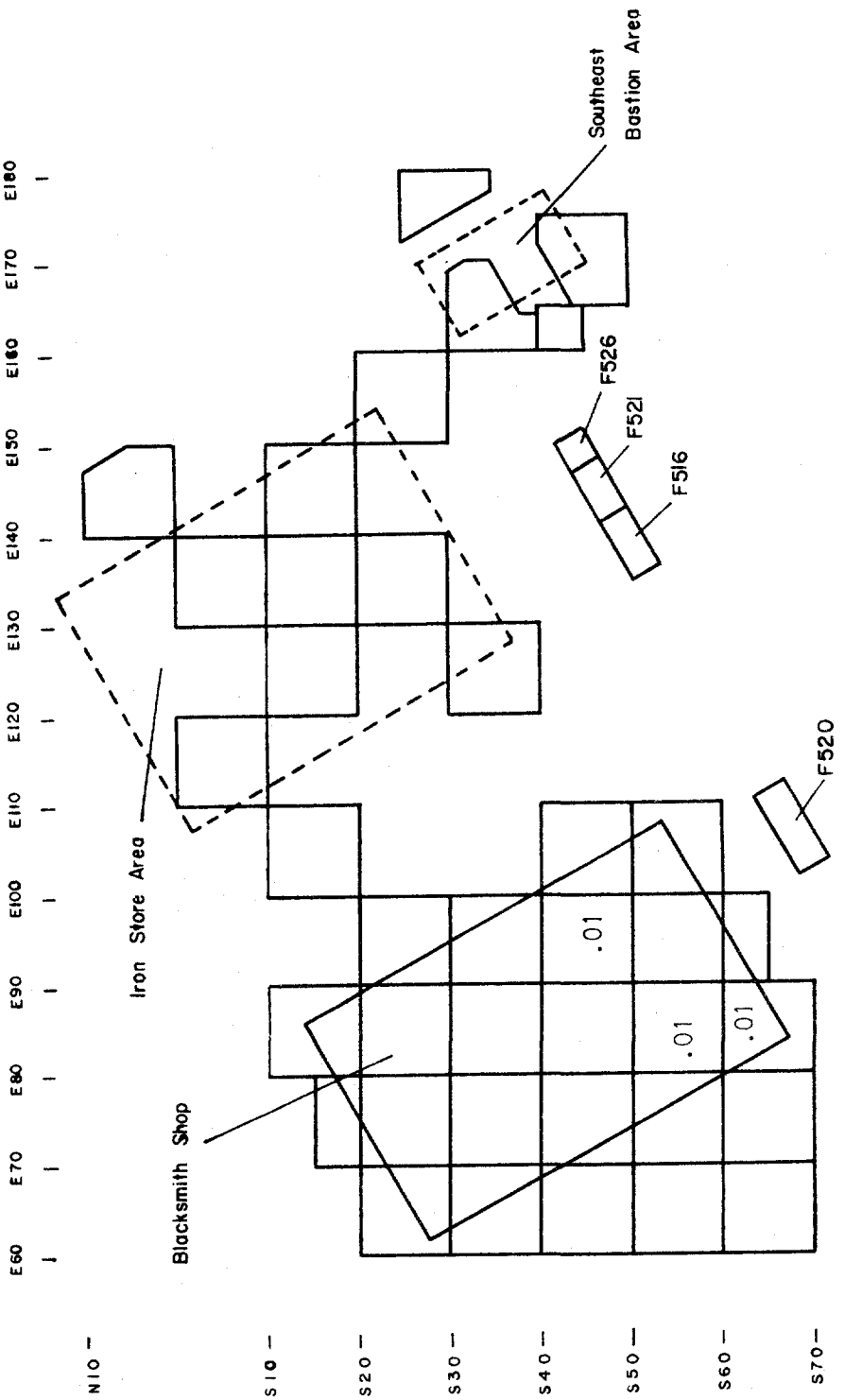


Fig.218 -- Distribution of horseshoes in the southeastern Fort area (f/ft^2).

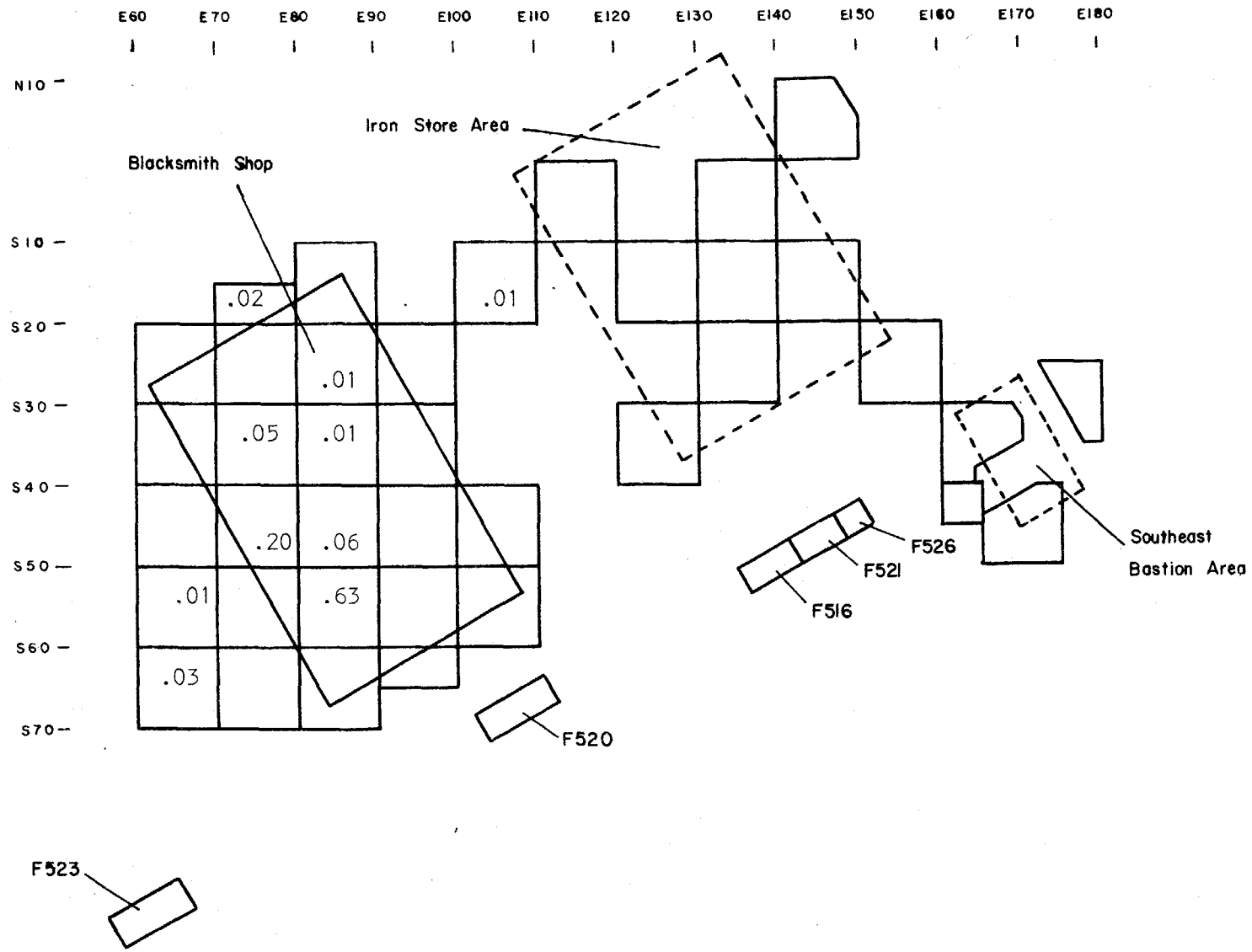


Fig. 219-- Distribution of "shoeing" nails (Varieties #1032 & 1104) for the southeastern Fort area (f/ft^2).

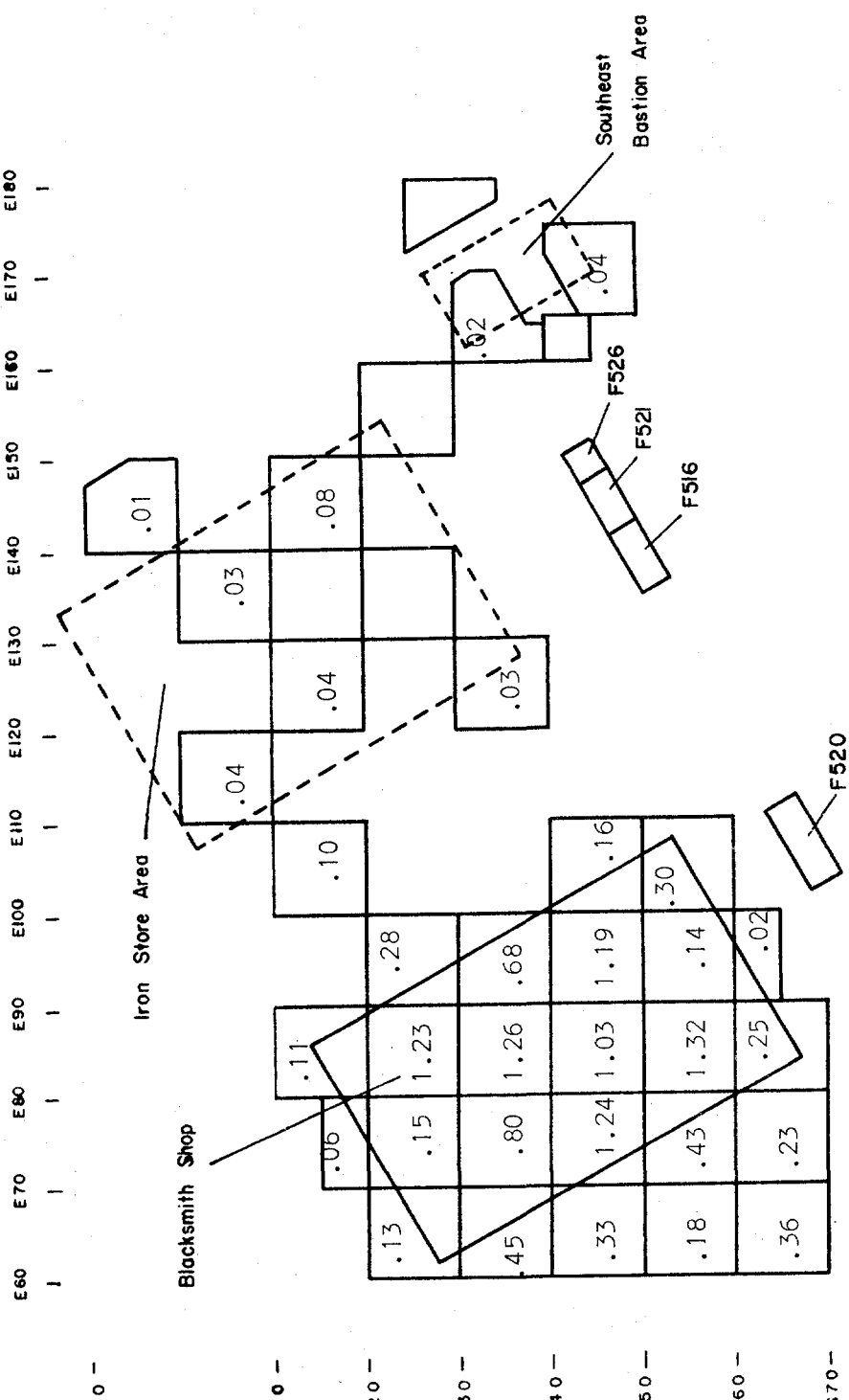


Fig. 220 -- Distribution of cut stock in the southeastern Fort area (f/ft^2).

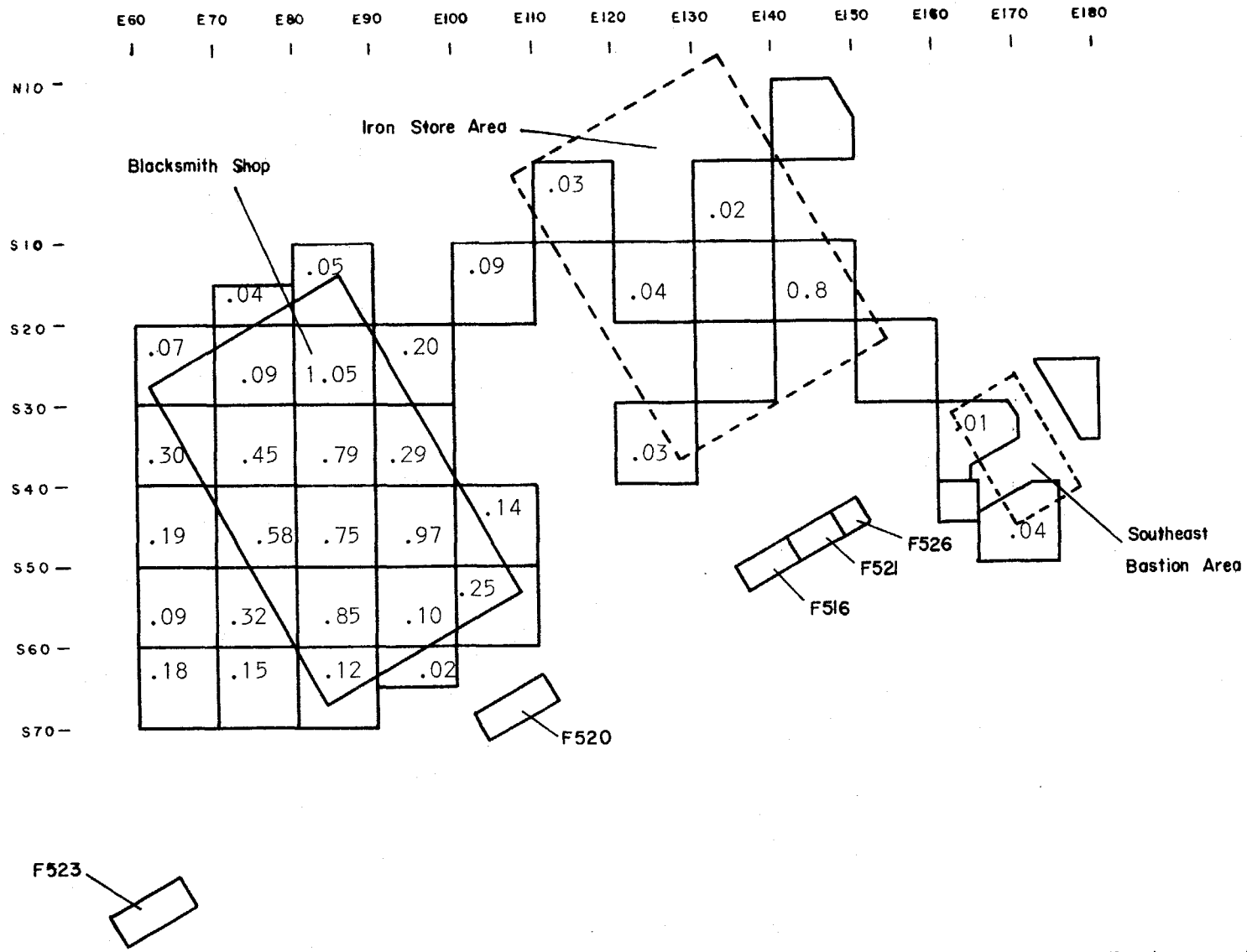


Fig. 221 -- Distribution of square rectangular iron cut stock in the southeastern Fort area (f/ft^2).

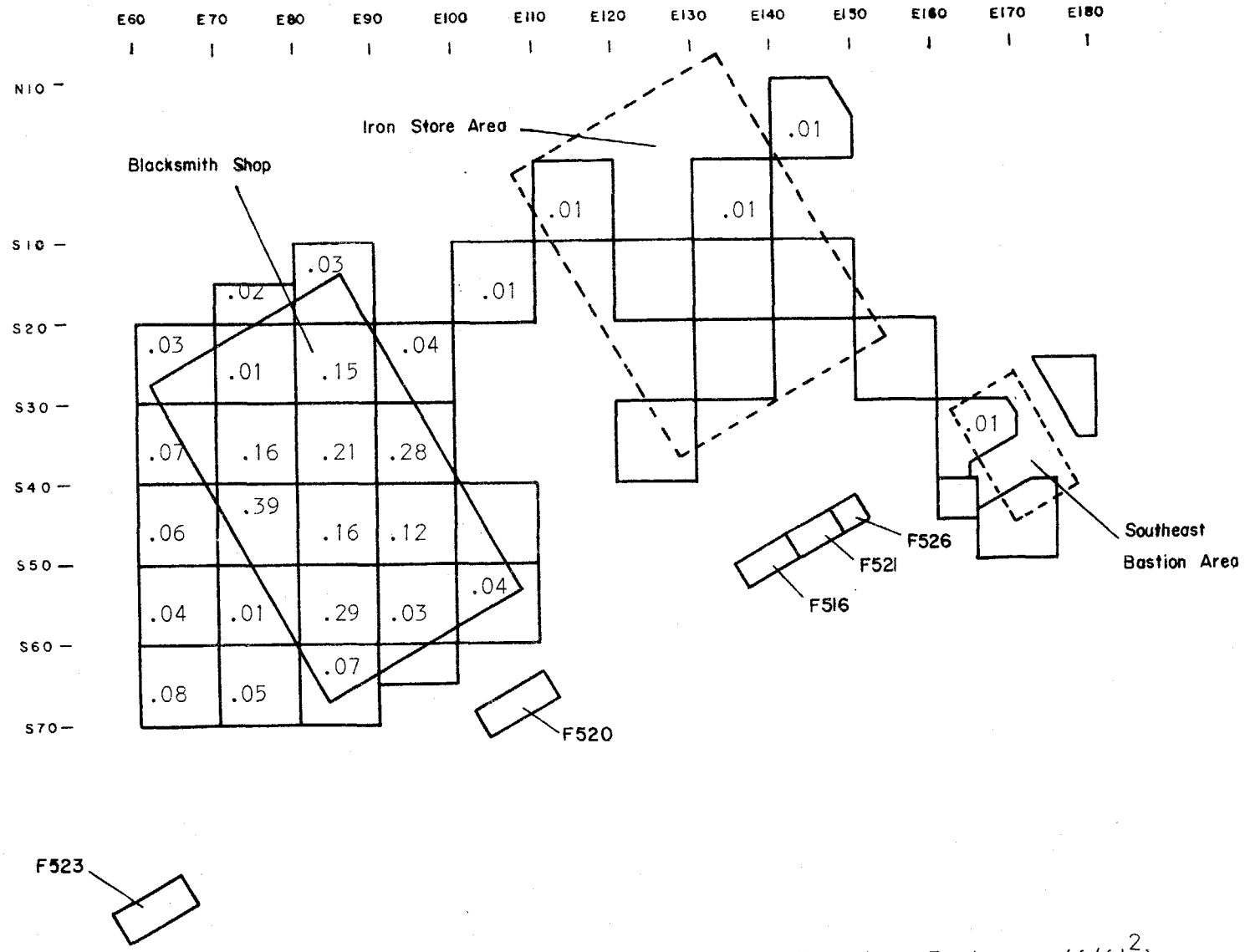


Fig.222 -- Distribution of round iron cut stock in the southeastern Fort area (f/ft^2).

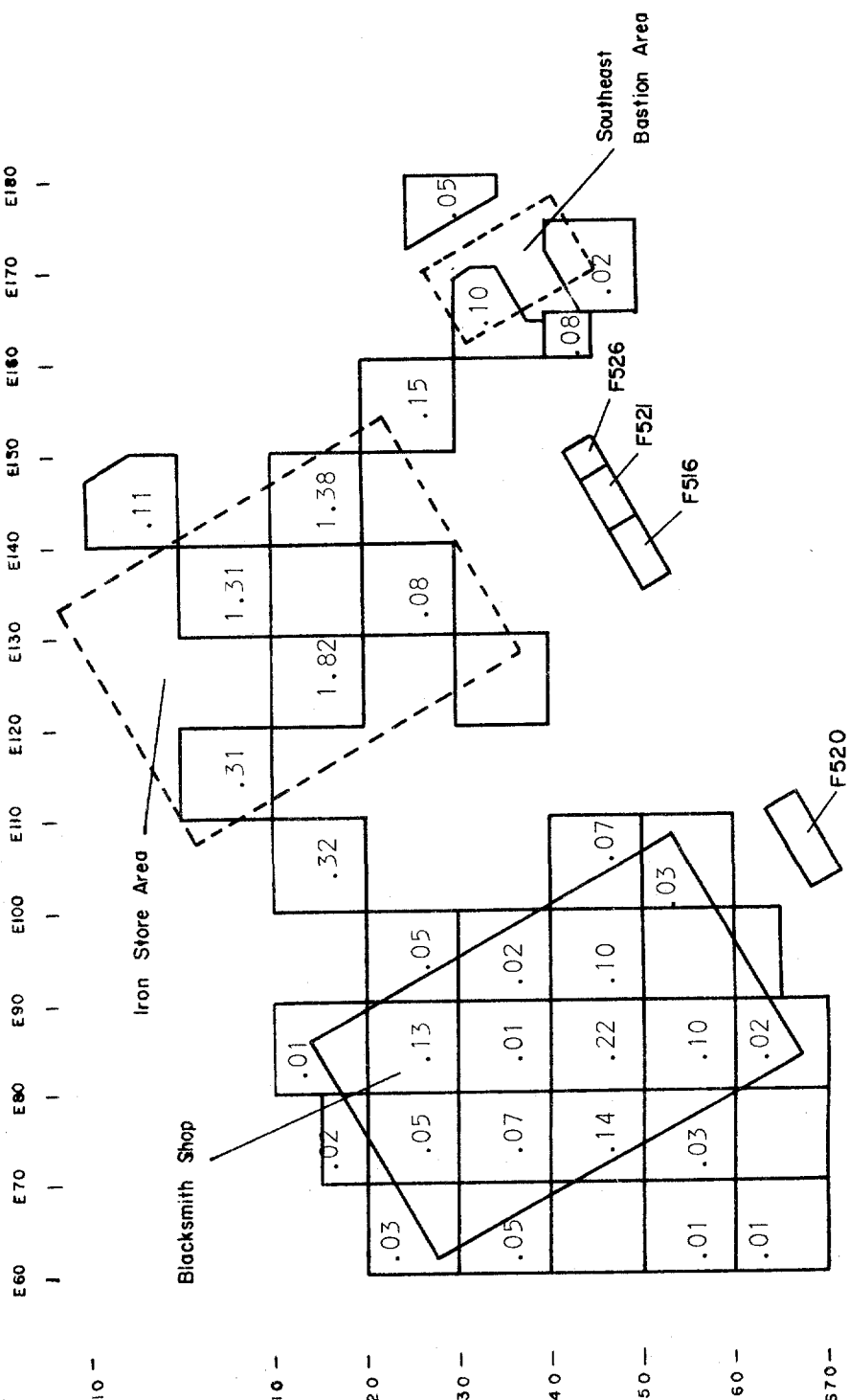


Fig.223 -- Distribution of bundling straps in the southeastern Fort area (f/ft^2).

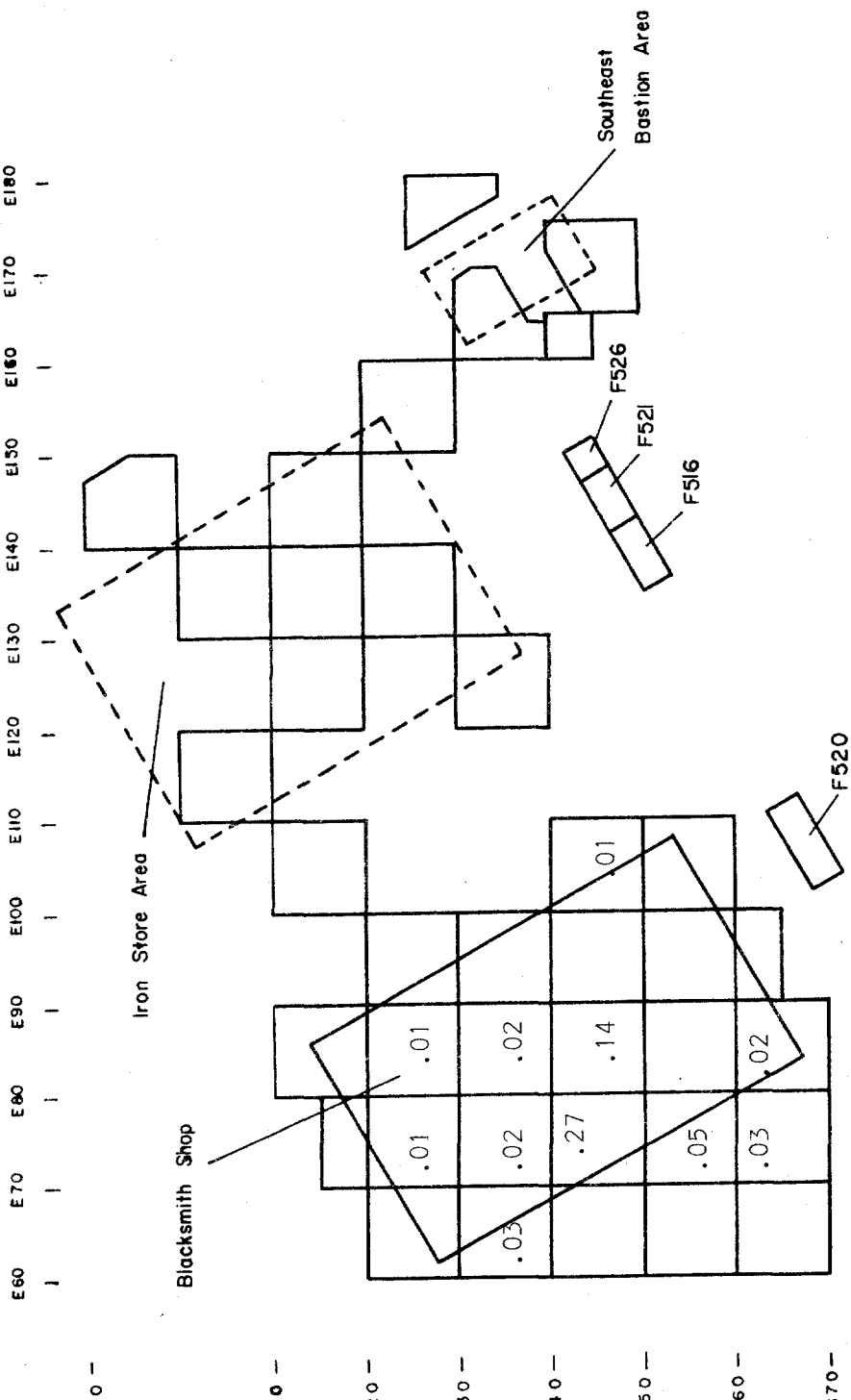


Fig.224 -- Distribution of lead casting in the southeastern Fort area (f/ft^2).

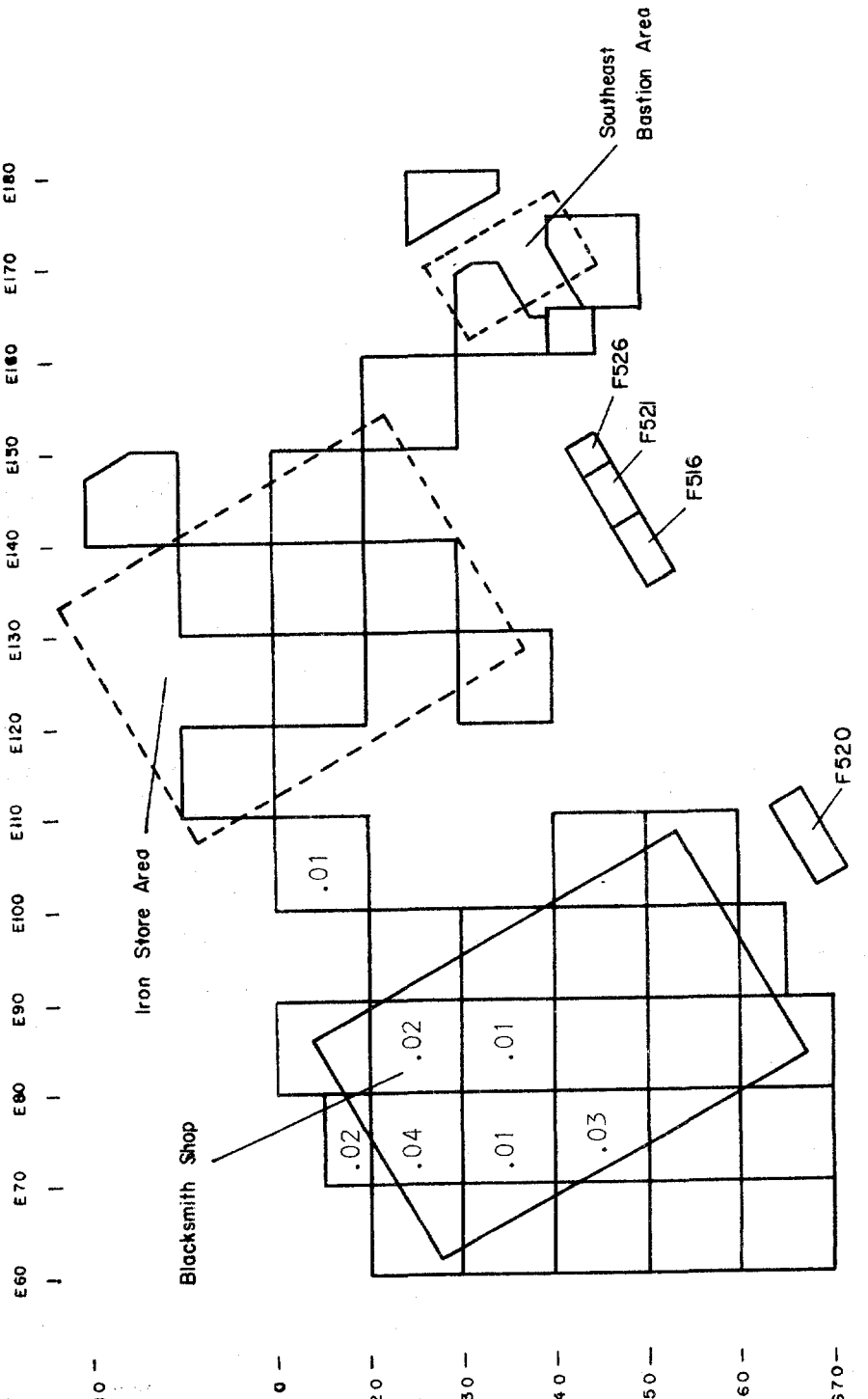


Fig.225 -- Distribution of brass-copper castings in the southeastern Fort area (f/ft^2).

Ground Sandstone

A concentration of ground sandstone fragments was observed in the southwestern corner of the Blacksmith Shop (Fig. 226), and may indicate a metal grinding area.

Vitreous China Mortar

Fragments of a mortar were found in the northeastern corner of the Blacksmith Shop (Fig. 227).

Forge Debris

Coal

Two large concentrations of coal were observed outside the Blacksmith Shop (Fig. 228), and they probably indicate position of coal storage. A third concentration was observed in the Southeast Bastion area, but its presence cannot be explained.

Coke

The coke concentration within the Blacksmith Shop (Fig. 229) probably indicates a front storage area for forge fuel.

Clinkers and Slag

The exhausted fuel from the forge was found in the north-central portion of the Blacksmith Shop (Figs. 230-231), and probably indicates the front of the forge.

Domestic Remains

Distributions of miscellaneous personal and household items (Fig. 232) show 2 concentrations--the Blacksmith Shop and Southeast Bastion area. The deposits in the Blacksmith Shop demonstrate that the building may have been used as a dwelling as well as a Shop. The second concentration in the Southeast Bastion area probably reflects the use of the Cooper's Shed also as a dwelling.

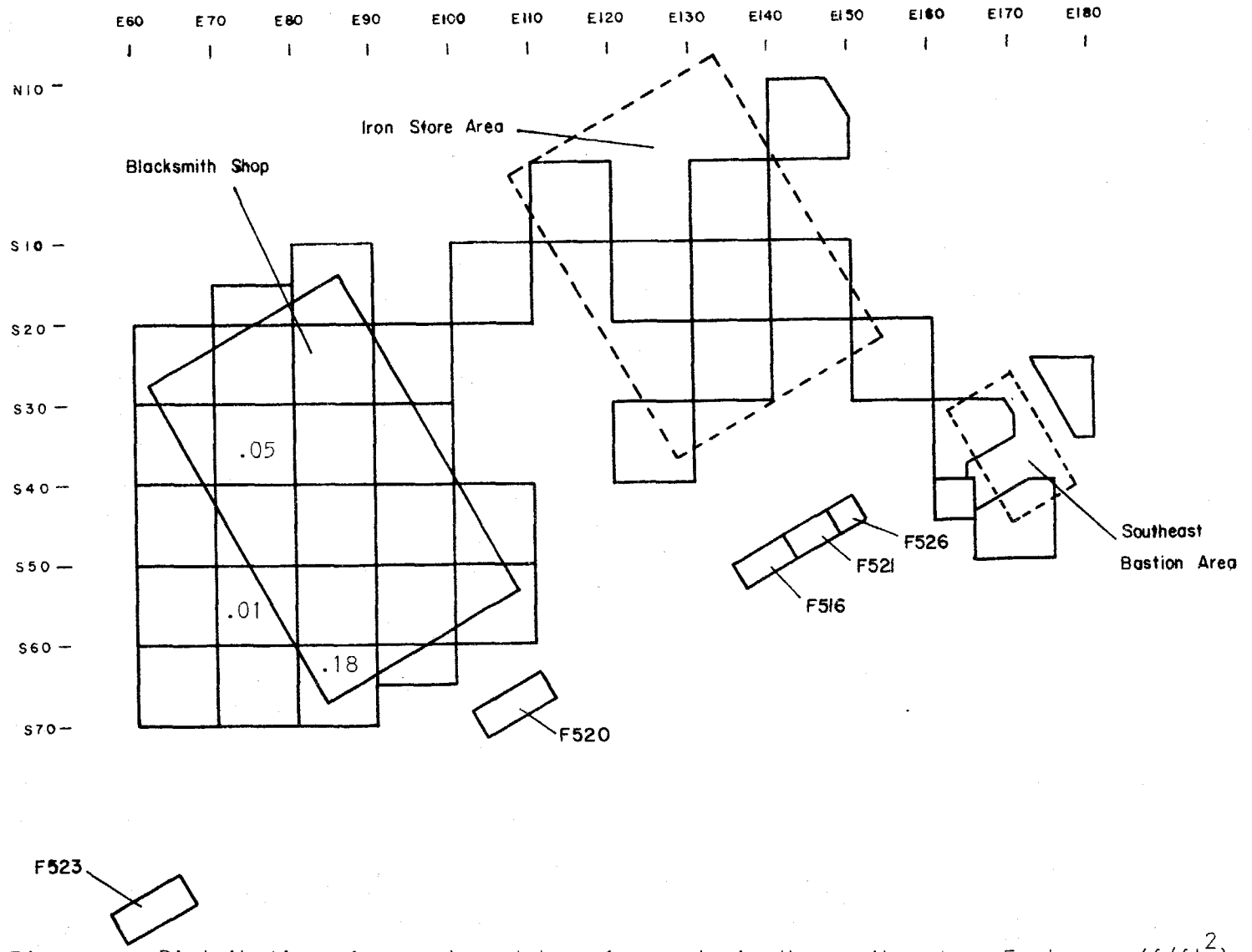


Fig.226 -- Distribution of ground sandstone fragments in the southeastern Fort area (f/ft^2).

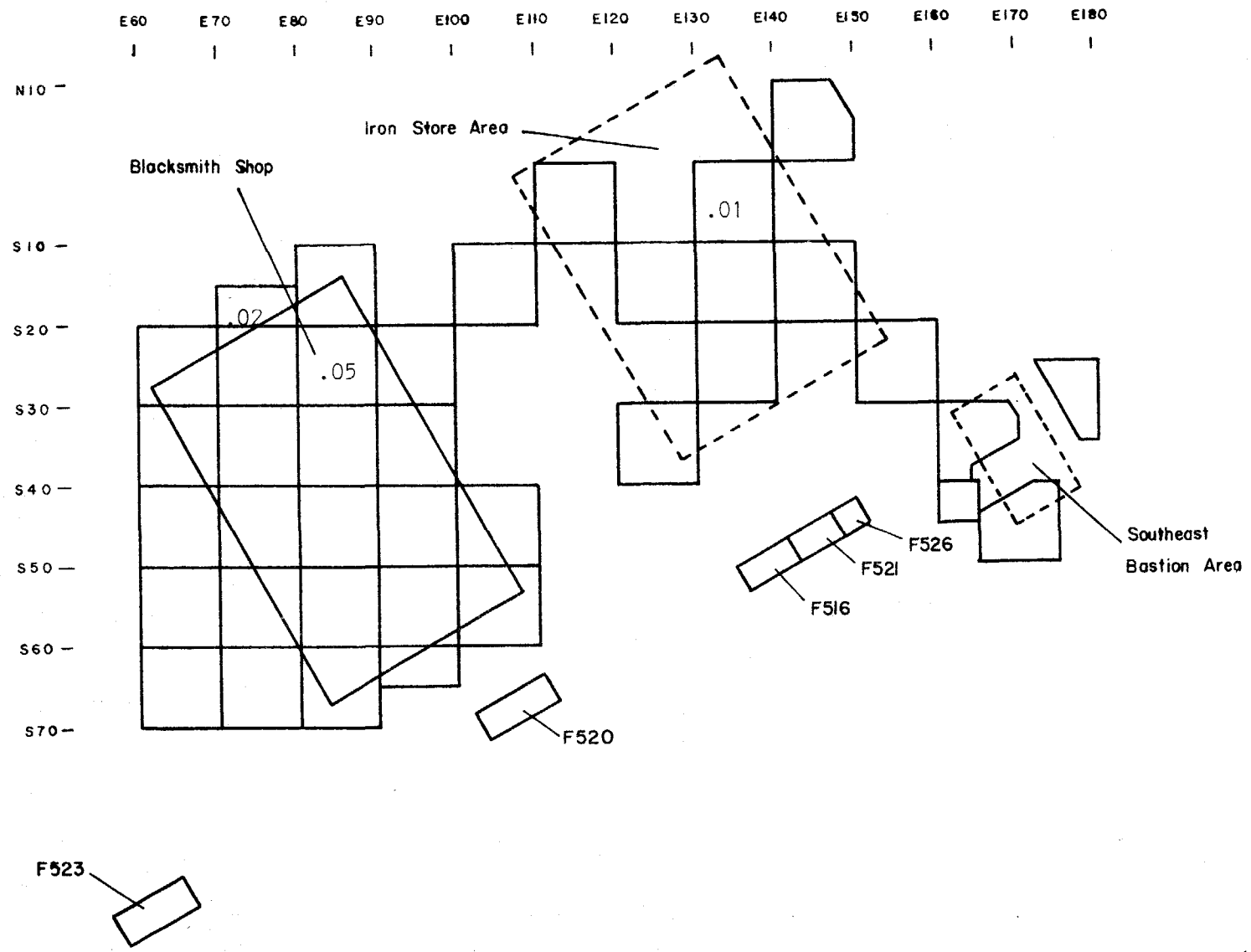


Fig.227 -- Distribution of vitreous china mortar fragments in the southeastern Fort area (f/ft^2).

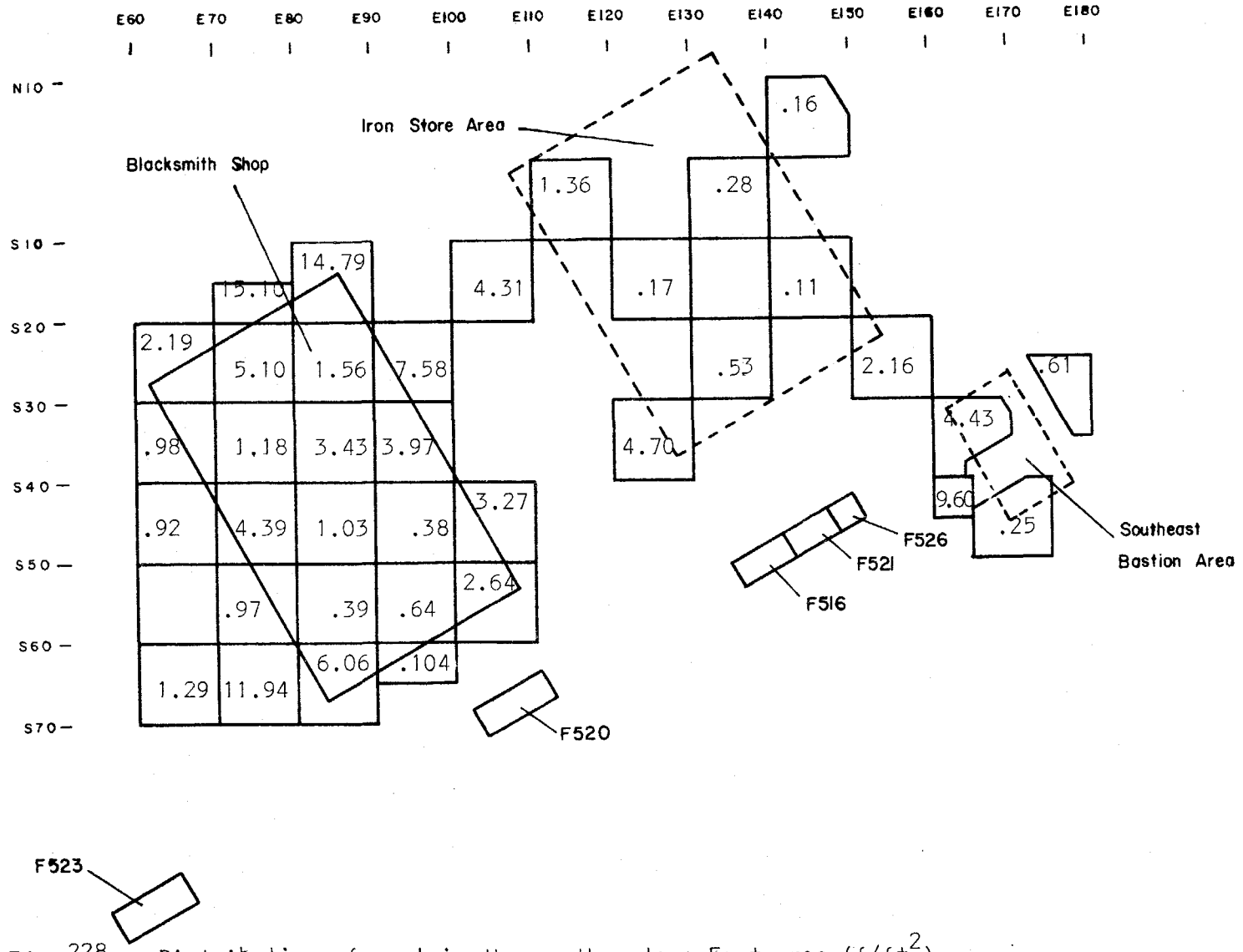


Fig. 228 -- Distribution of coal in the southeastern Fort area (f/ft^2).

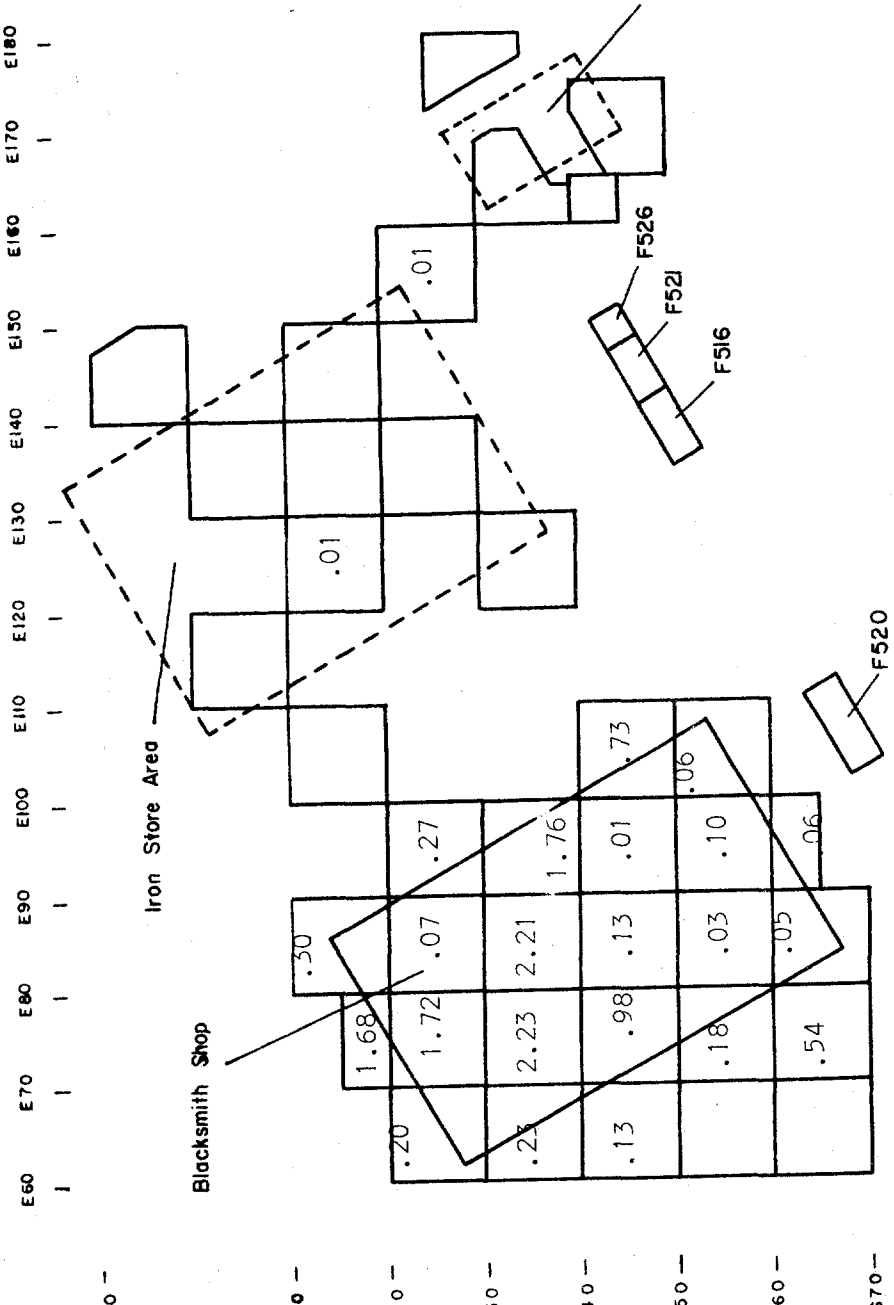


Fig.229 -- Distribution of coke in the southeastern Fort area (f/ft^2).

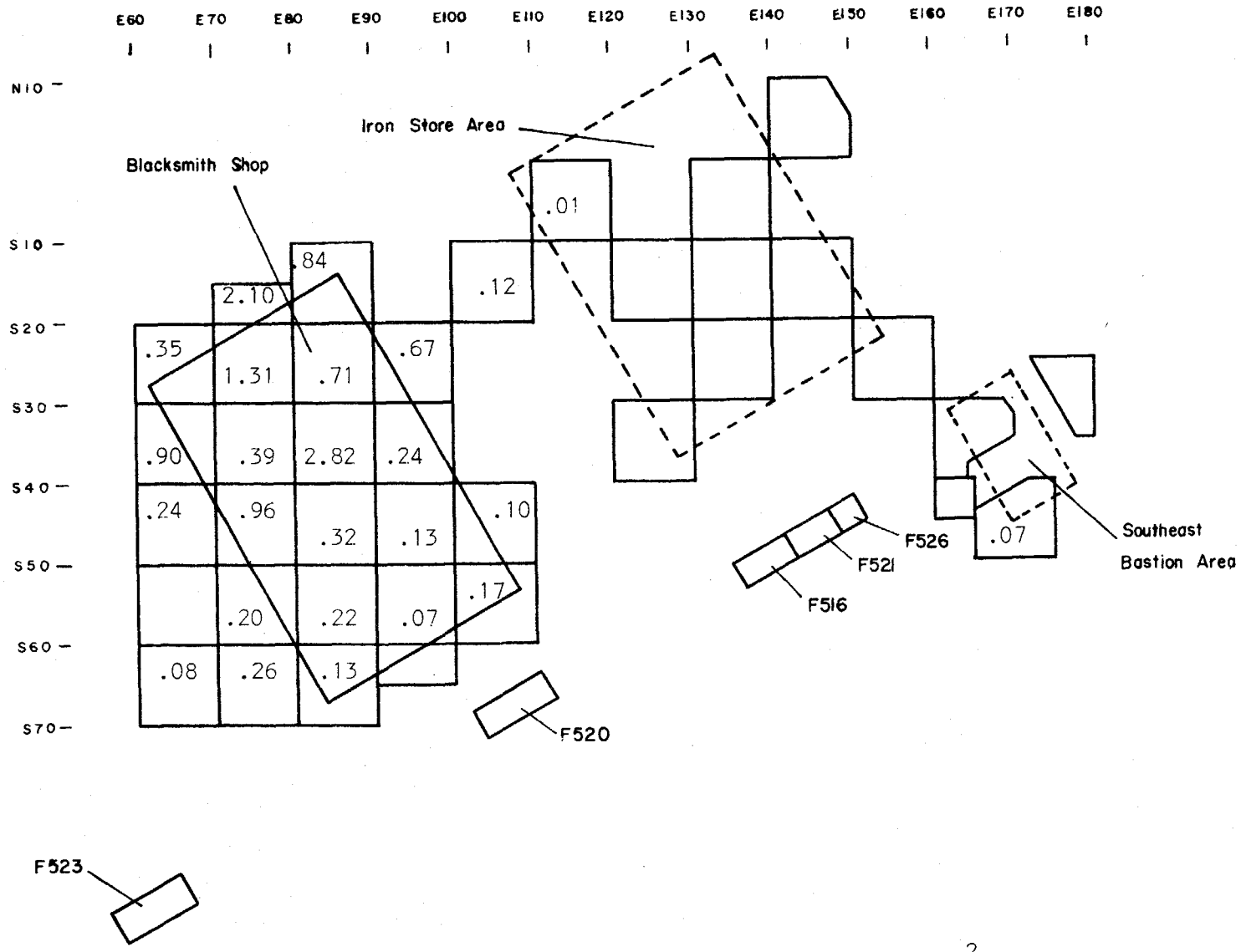


Fig.230 -- Distribution of clinkers in the southeastern Fort area (f/ft^2).

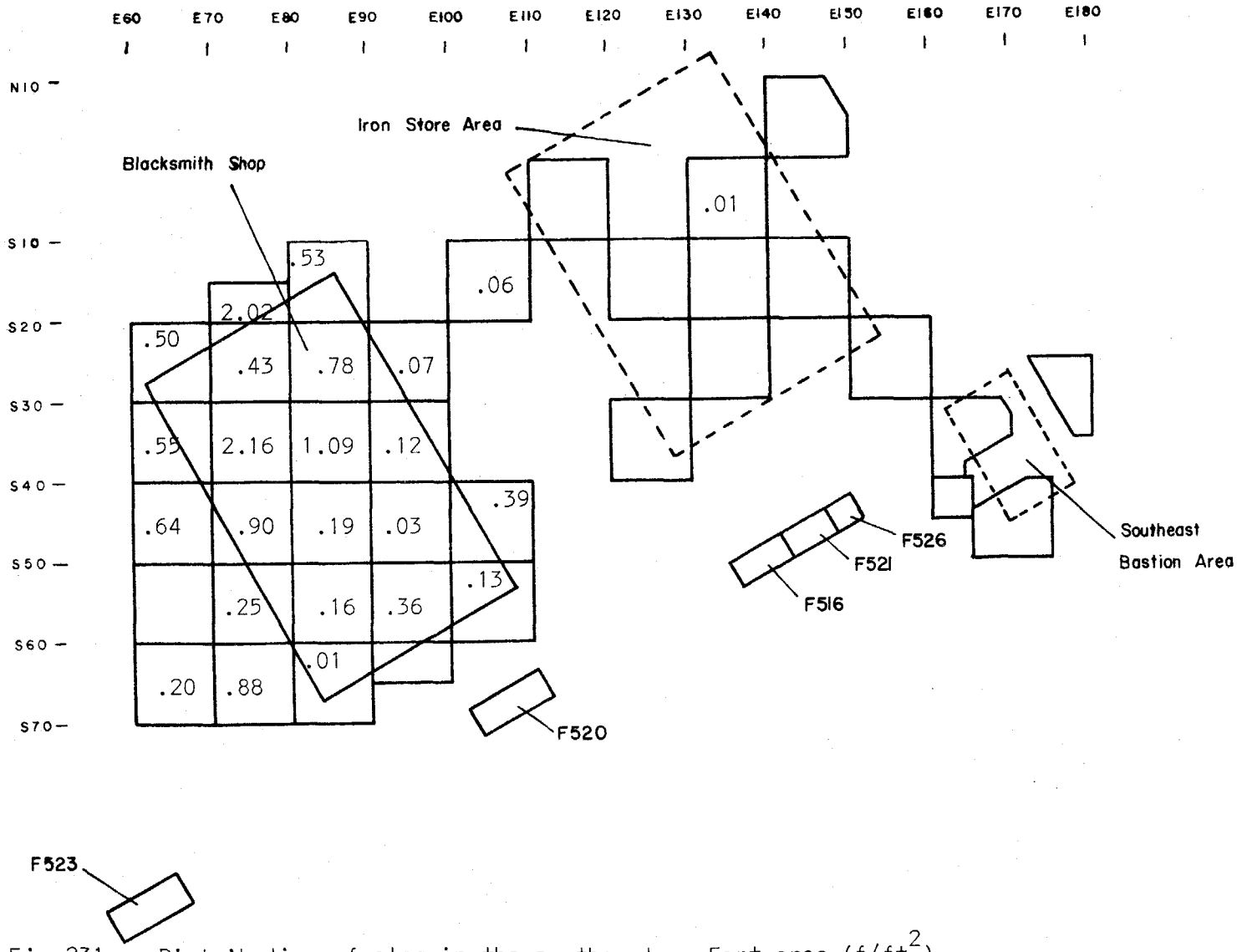


Fig.231 -- Distribution of slag in the southeastern Fort area (f/ft^2).

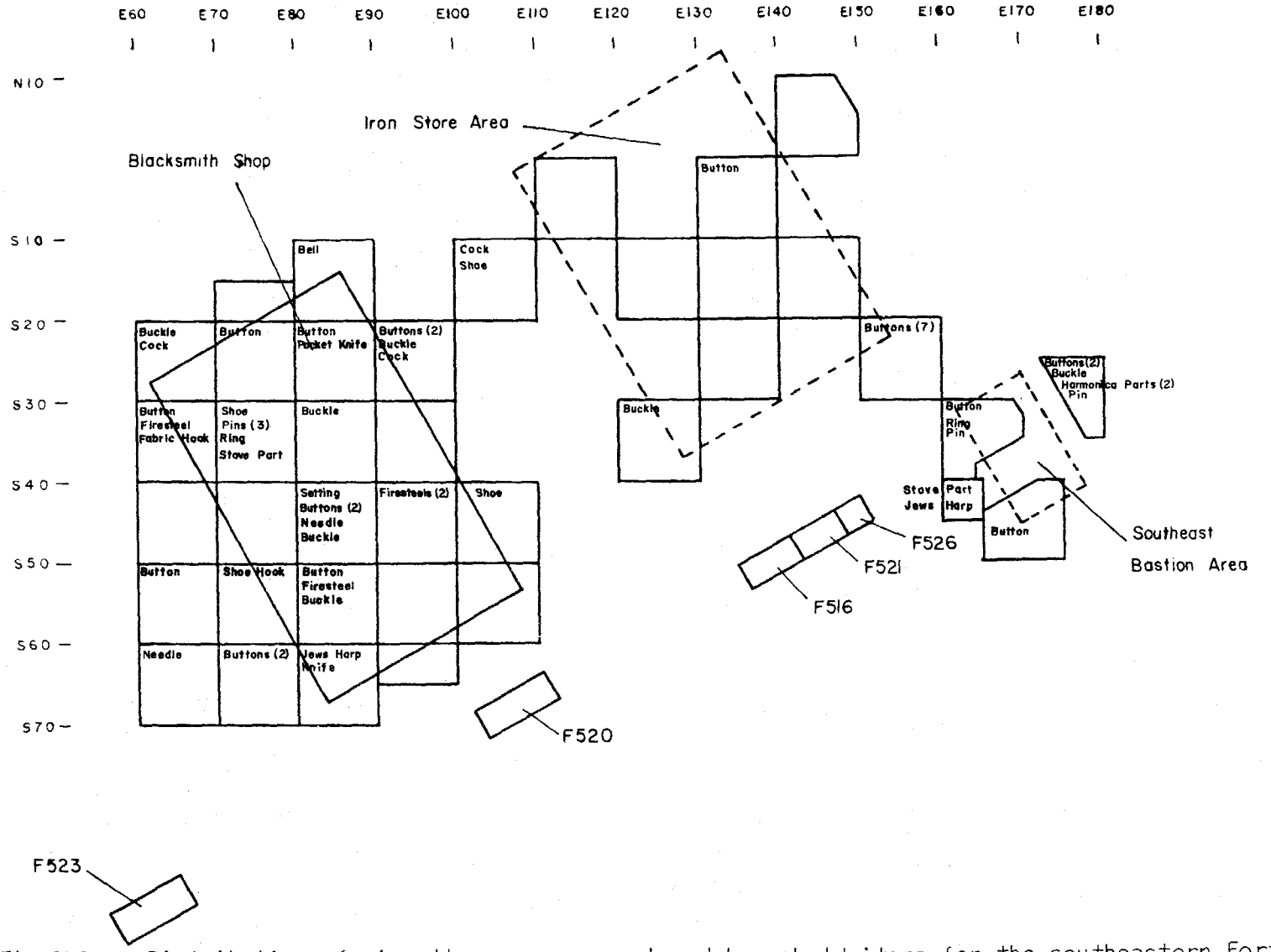


Fig.232 -- Distribution of miscellaneous personal and household items for the southeastern Fort area.

White Clay Tobacco Pipes

Based upon the distribution of pipe fragments (Fig. 233), at least 4 areas qualify as smoking areas--northern and southern outdoor areas of the Blacksmith Shop; the west wall work area within the Shop; and the Southeast Bastion area.

Glass Beads

One large concentration of glass beads was observed in the Southeast Bastion area (Fig. 234), but its presence cannot be interpreted.

Ceramic Household Wares and Containers

Ceramic wares were concentrated in 3 areas (Fig. 235)--the Blacksmith Shop, eastern Iron Store and Southeast Bastion areas. The Shop and Bastion area represent domestic trash deposits associated with residential usage of the Blacksmith Shop and Cooper's Shed. The concentration in the eastern Iron Store area represents the domestic trash associated with an unidentified domicile (pre-1841?).

Bottle, Jar and Glassware

Like ceramics, bottles indicated the domestic use of the Blacksmith Shop, Cooper's Shed and an unidentified pre-1841(?) domicile (Fig. 236). The jars came from a cache associated with the unidentified domicile (Fig. 237), and the glassware tended to cluster about the Blacksmith Shop (Fig. 238).

Bone and Shell

Distributions of bone and shell tended to duplicate the distributions of other domestic trash (Figs. 239-240), with the single exception that no shell was associated with the Cooper's Shed area. Perhaps, the cooper did not appreciate the taste of river mussel.

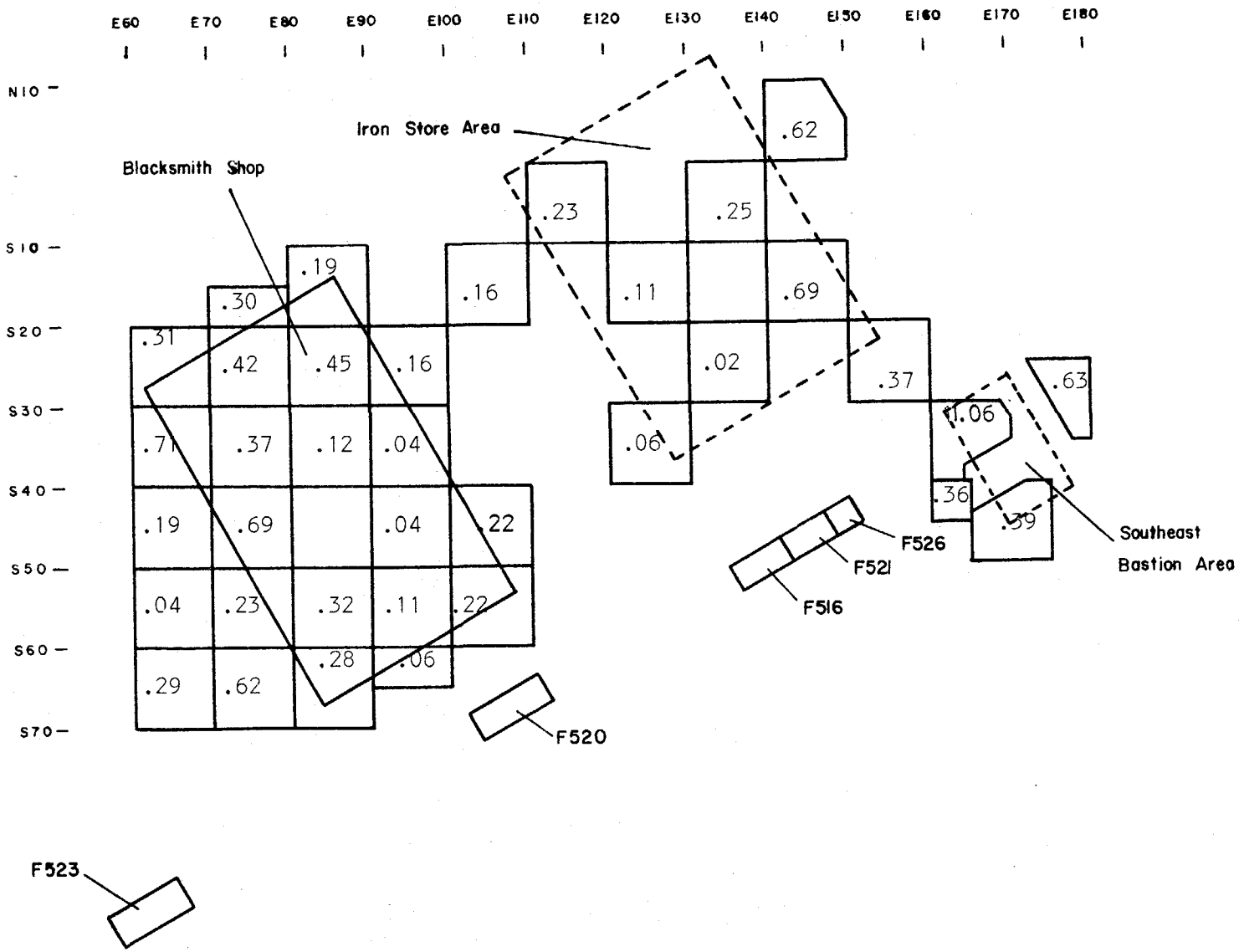


Fig.233 -- Distribution of white clay tobacco pipe fragments in the southeastern Fort area (f/ft^2).

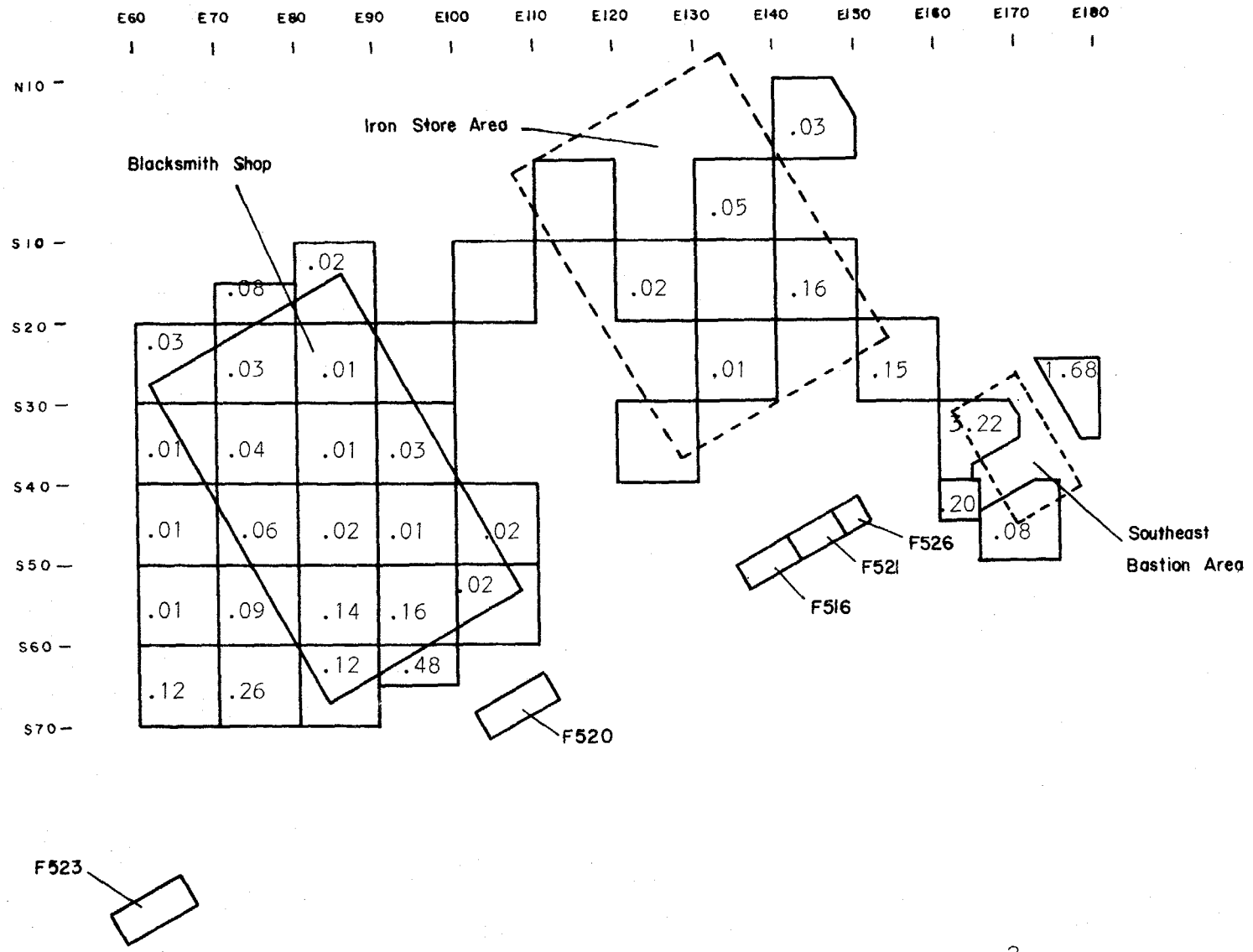


Fig.234 -- Distribution of glass beads in the southeastern Fort area (f/ft^2).

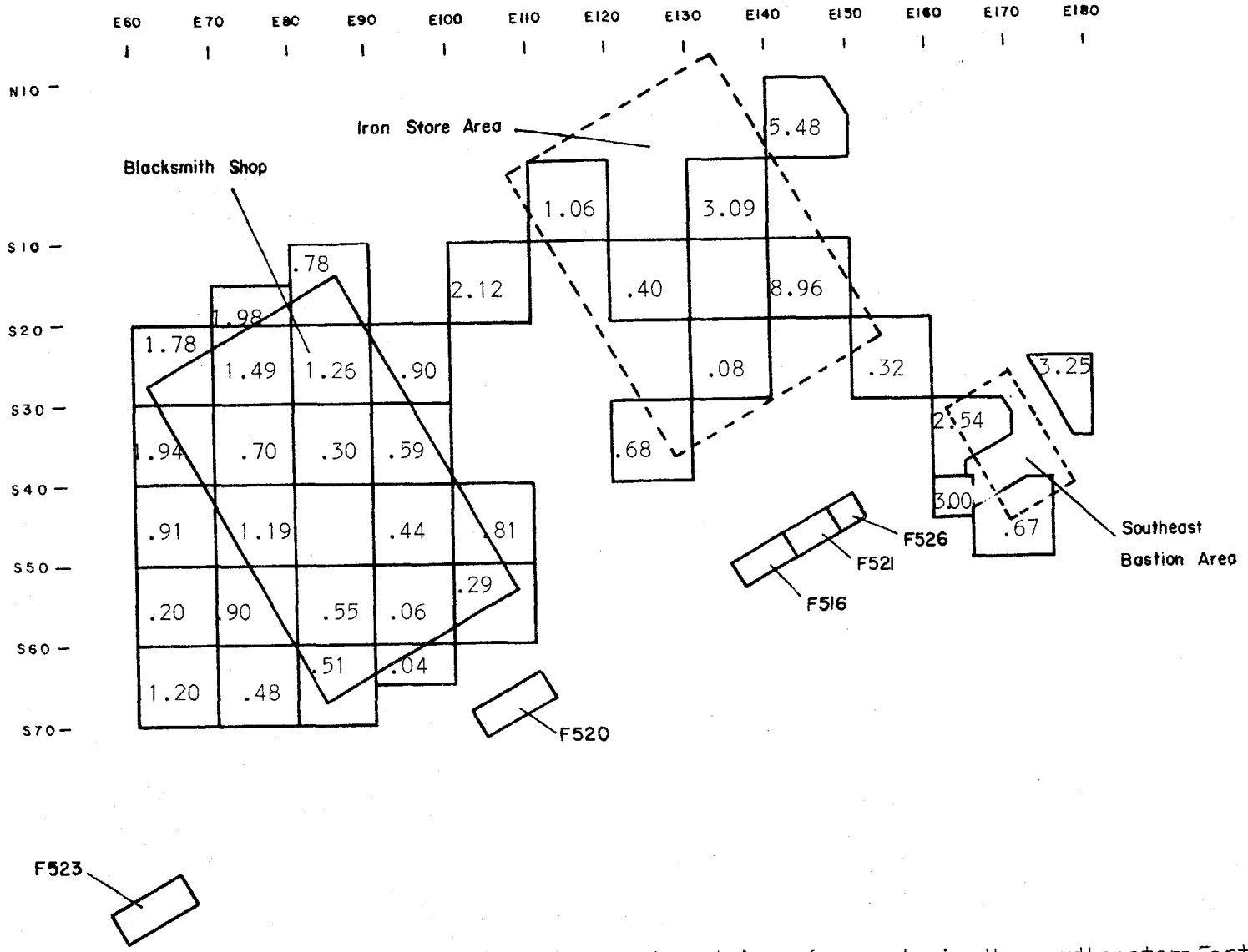


Fig.235 -- Distribution of ceramic household and container fragments in the southeastern Fort area (f/ft^2)

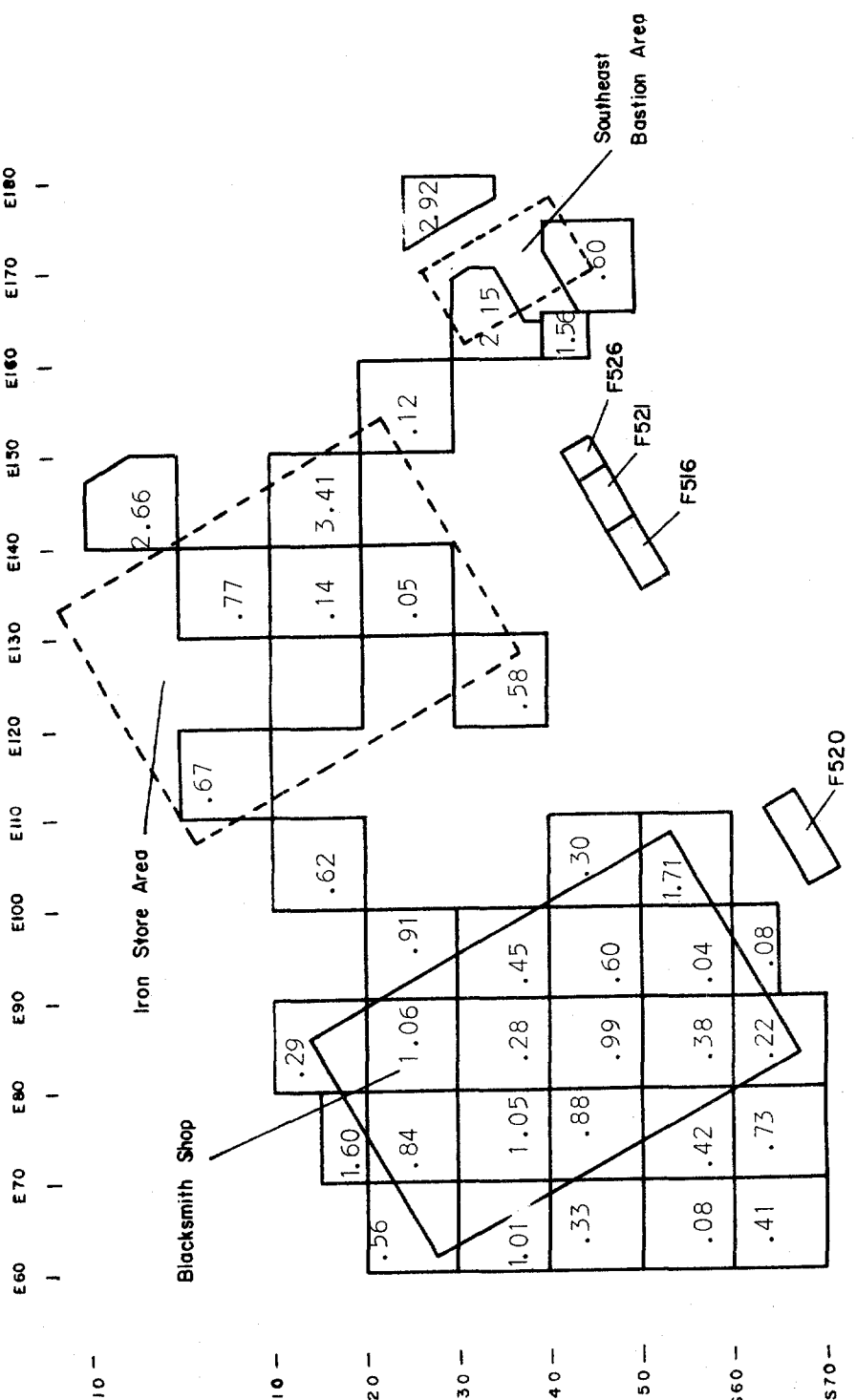


Fig.236 -- Distribution of bottle fragments in the southeastern Fort area (f/ft^2).

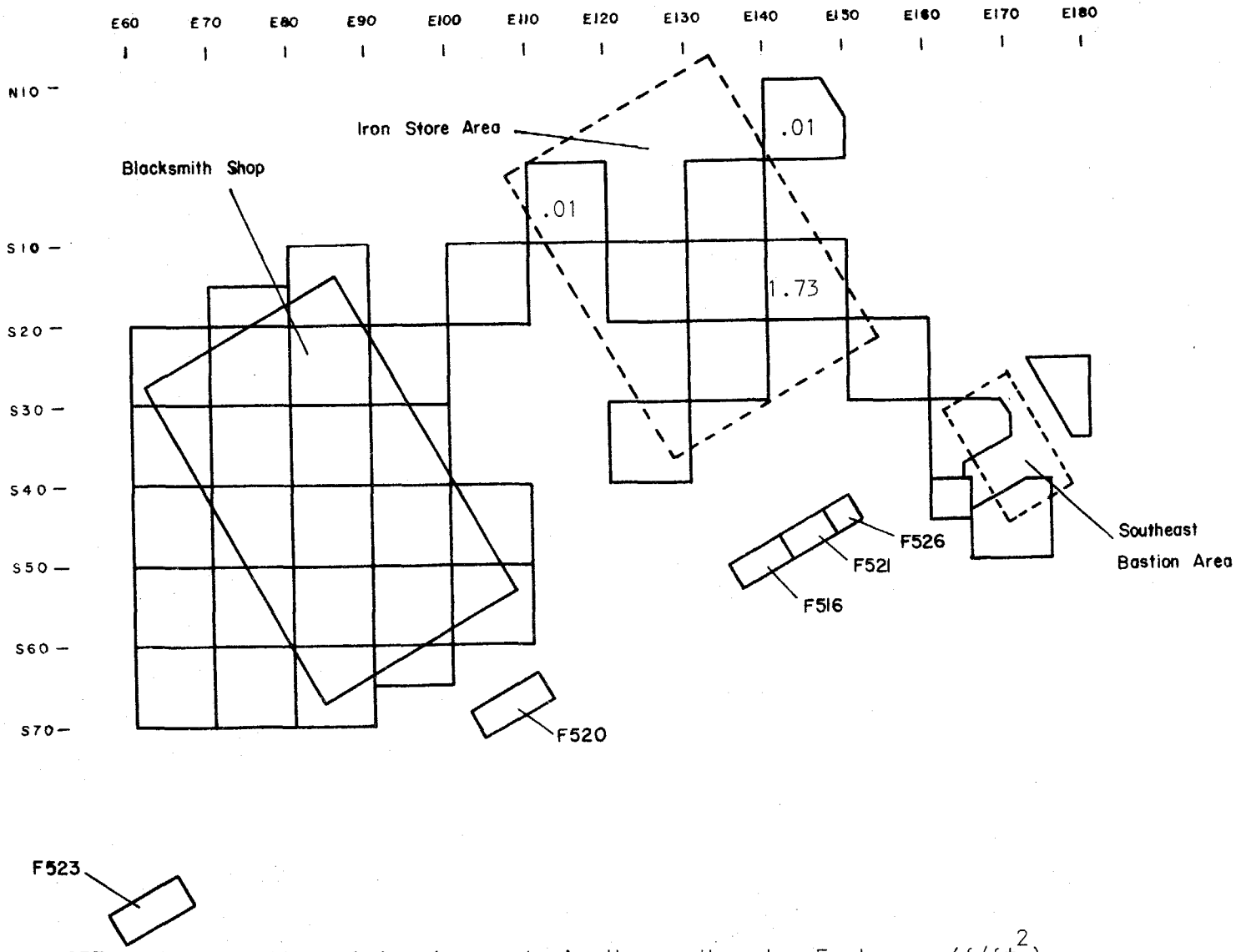


Fig.237 -- Distribution of jar fragments in the southeastern Fort area (f/ft^2).

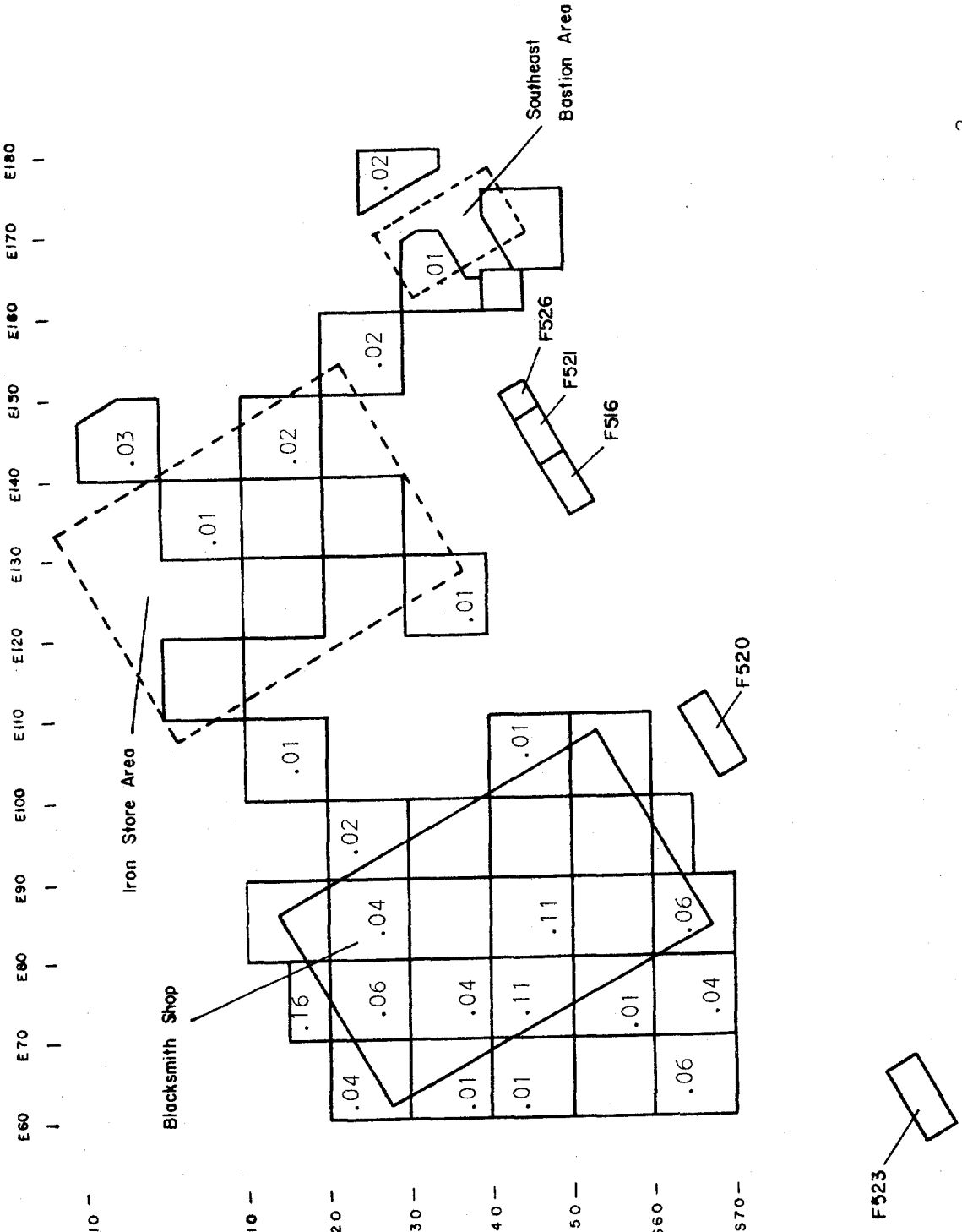


Fig. 238 -- Distribution of glassware fragments in the southeastern Fort area (f/ft^2).

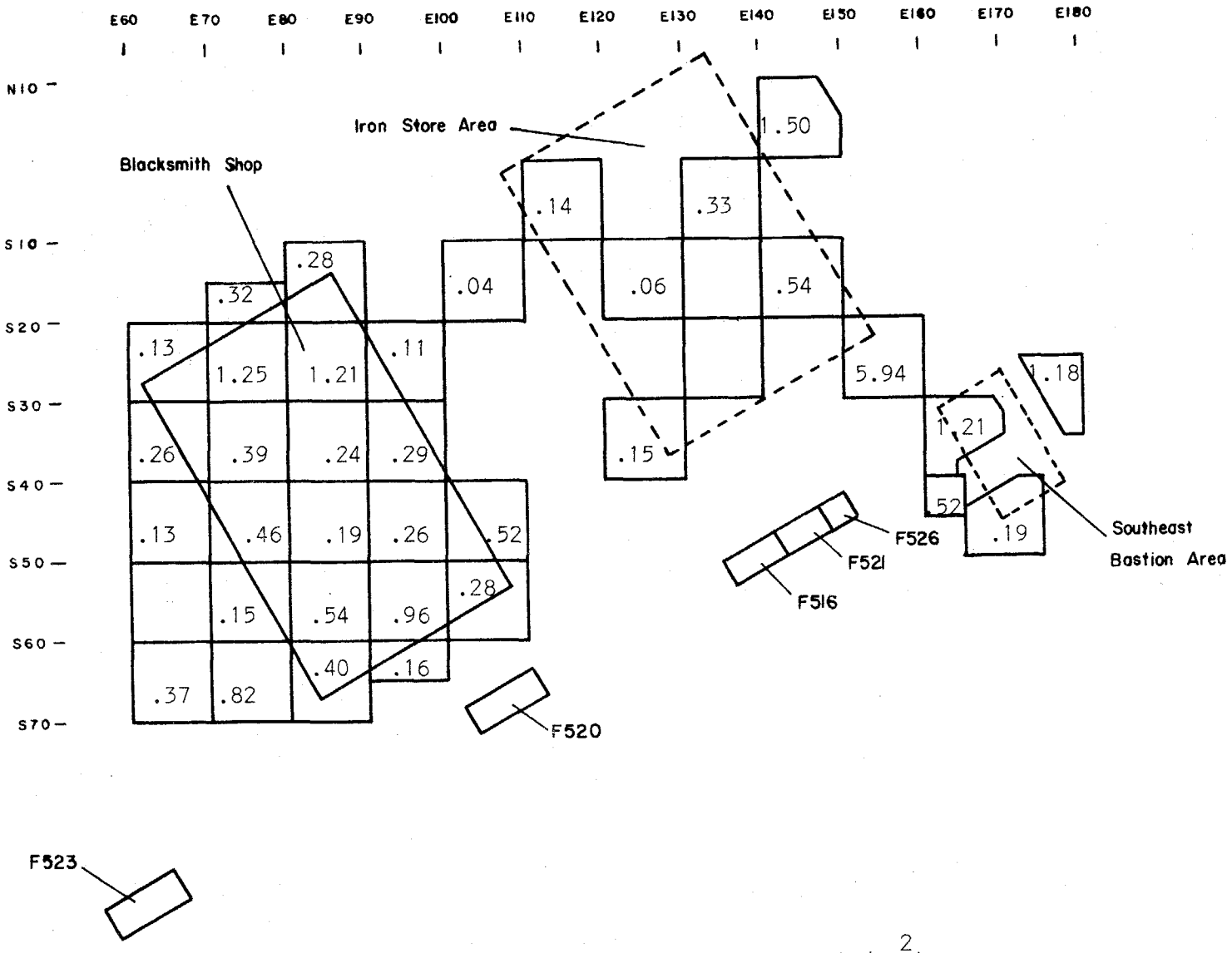


Fig.239 -- Distribution of bone in the southeastern Fort area (f/ft^2).

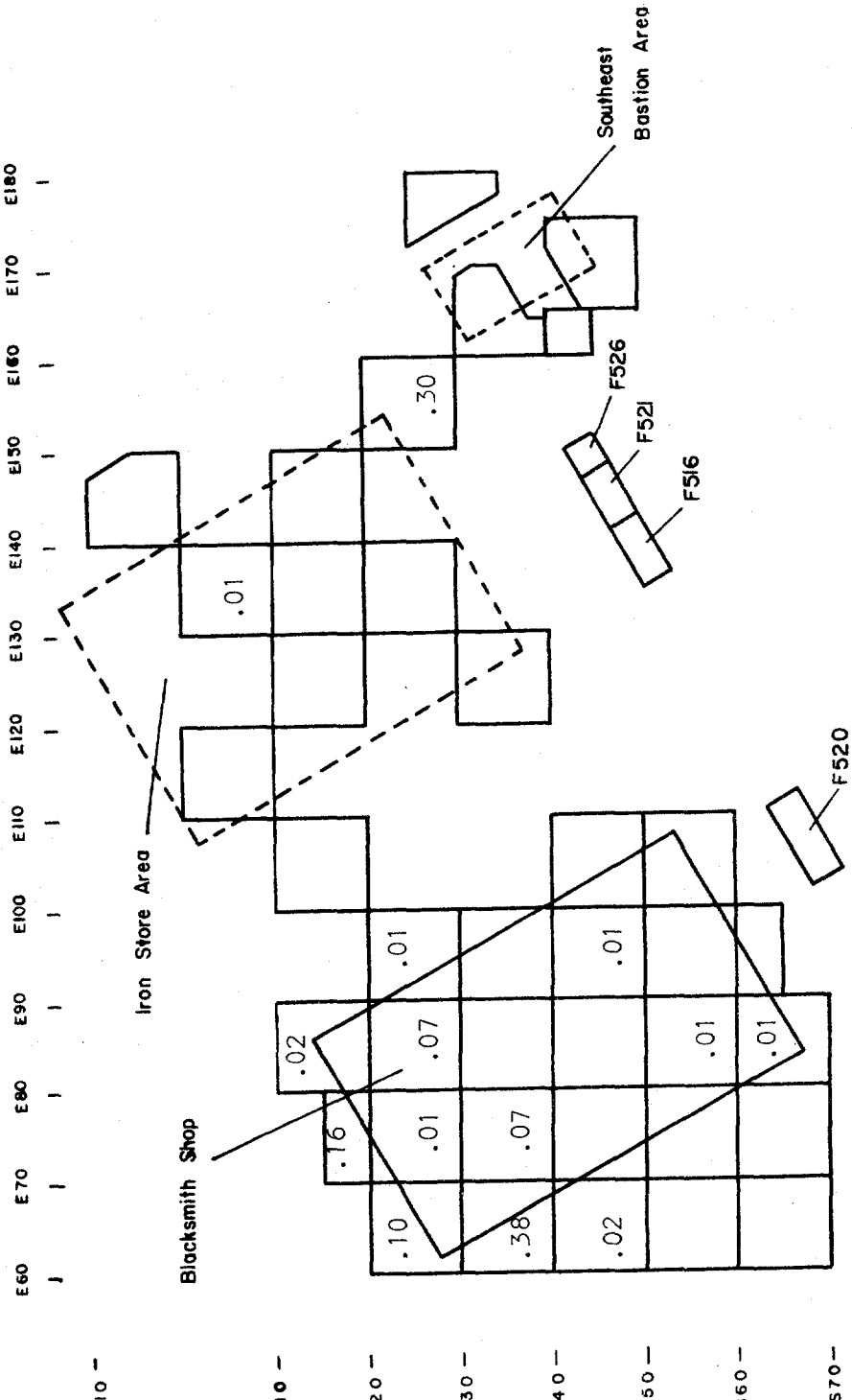


Fig.240 -- Distribution of shell in the southeastern Fort area (f/ft^2).

V - INTERPRETATIONS

Based upon the analyses of both *in situ* and *ex situ* cultural material together with the known historical interpretations, 5 HBC structures and 3 temporal HBC components have been identified (Table 63).

Table 63 -- HBC structures and components recognized in the southeast Fort area.

	Hudson's Bay Company	
Temporal Range	Structure	Component
1848-?	Southeast Bastion	
ca. 1841-1860	Iron Store	
ca. 1841-1860	Cooper's Shed	
ca. 1834/36-1860	Blacksmith Shop	
ca. 1834/36-1860	Indian Trade Store	
	Privy/Trash Pit	
ca. 1834/36-1841		Columbia River Flood
ca. 1829-1841		Unidentified Domestic
1829-1834/36		"Smudge Pit"

1848 Southeast Bastion

Remains of the 1848 Southeast Bastion were sparse; but both a historical and archaeological arguement can be presented for its existence. Historical accounts clearly showed that a bastion was built at the front of the Fort in 1848, and from later accounts, this bastion was located at the southeastern corner of the existing stockade.

Archaeologically, 2 posts and a few possible planks from the Bastion may have been uncovered; and from the *ex situ* remains, a few weaponry items consisting of a cannon trunnion plate, shot and a percussion cap were observed. These remains *may* have come from the 1848 Bastion, but because of mixing with the cultural debris associated with a nearby Cooper's Shed outside the stockade, no substantive reconstruction of the Bastion can be offered.

ca. 1841-1860 Iron Store

Like the Southeast Bastion, remains of the Iron Store were sparse. Historically, the structure could have been built as early as 1841, and it survived through the 1850's.

Archaeologically, in situ remains were nil, except for the "sole" and "hard-packed area" reported by Caywood. The area occupied by the Iron Store was heavily damaged by USA activities, and the in situ remains of the Store had been totally removed by these activities. The only ex situ remains of the store were the large quantities of metal bundling straps and 8-12d construction nails. On the basis of the nails, it can be argued that a building once occupied this area; and on the basis of the high frequency of bundling straps, the building was used to store iron stock. Further, on the basis of a paucity of window glass, bricks and domestic trash, it can be stated that the building lacked windows, did not have a chimney or forge, and was not inhabited as a domicile. Further interpretations could not be fully supported, and structural reconstruction could not be hypothesized. Such a reconstruction would have to be made on the basis of the 1841 Eld and Agate sketches in comparison with other known Fort Vancouver construction techniques.

ca. 1841-1860 Cooper's Shed

Sometime after the ca. 1841-1844 final eastward expansion of the Fort stockade, a Cooper's Shed was built outside the southeastern stockade corner (Hussey 1974: 663-667). From the excavations of the 1848 Southeast Bastion area, a number of ex situ remains were recovered which undoubtedly originated from the nearby Cooper's Shed (e.g., barrel bands, files, gimlet and adzes). Thus, the existence of Cooper's Shed can be supported on the basis of archaeological remains, but additional structural or cultural interpretations can not be offered.

ca. 1834/36-1860 Blacksmith Shop

After the 1834/36 East Stockade was constructed, the Blacksmith Shop was erected in the southeastern corner of the enlarged fort. Included within this building were the forges of one of the Company's Blacksmiths Shops, with at least one additional Shop located 5 miles upstream of the fort at the Sawmill, and perhaps one other Shop in the wharf area at the mouth of the Kanaka Village pond. In 1841, the Blacksmith Shop within the Fort was identified as having 4 forges; and based upon various historical accounts, the blacksmiths at the Fort were variously engaged in the production of traps, axes and agricultural equipment. Based upon the archaeological remains of the Shop, 3 types of cultural interpretations can be made--structural, industrial and domestic.

Structural Interpretations

Building Reconstruction

The Blacksmith Shop was at least a single story structure which may have had a second story loft utilized as a dwelling for the blacksmiths and their families. The building measured 43 (N-S) x 27.5 (E-W) ft. in size, was constructed by the post-in-sill construction technique, had 3 windows and one door along its west wall, and did not have a wooden floor (Figs. 241-243). Based upon comparisons with other HBC structures within the Fort, the Blacksmith Shop was a relatively simple structure. Even so, it was well built, and the only repairs which have been observed were the single repair footing for a sagging west wall sill and the possible repair shingling undertaken to correct defects in a plank roof. Relatively few shingling nails were recovered from the Shop area, and if they were indeed used for shingling, the number of shingles could not have been very great.

The foundation sills were approximately one foot square and rested upon subsurface wooden footings. Most footings were approximately one foot wide by 1.5-2.0 ft. long, with the corner footings between 2.0-3.5 ft. long. Sills overlapped one another at the building corners, but the exact method for joining could not be determined.

Chimneys have been included with the reconstructed view, and their placement was based upon the reconstructed interior arrangement of the forges and blacksmithing furniture (Fig. 243).

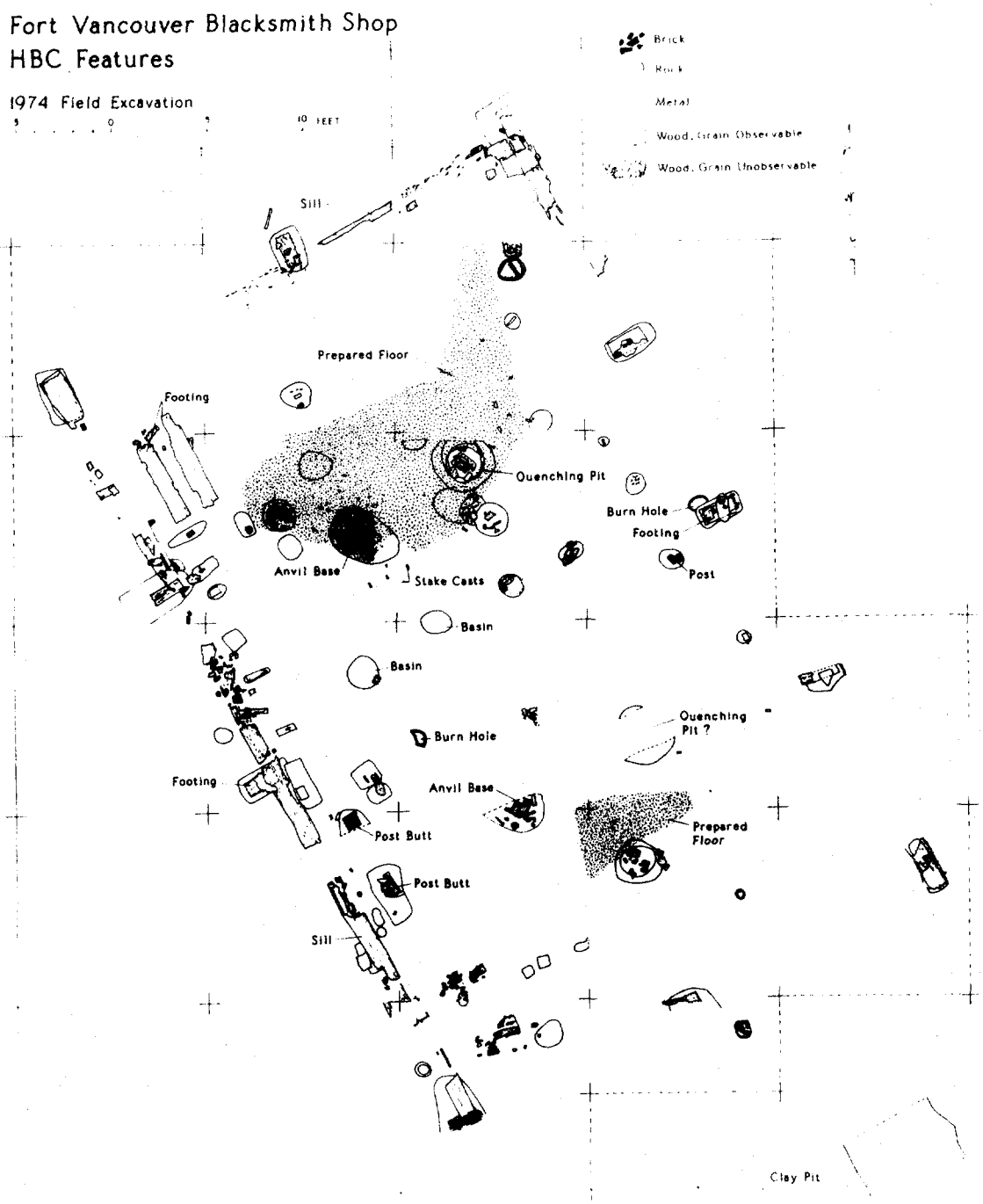


Fig. 241 -- Locations and identification of in situ HBC features for the Blacksmith Shop.

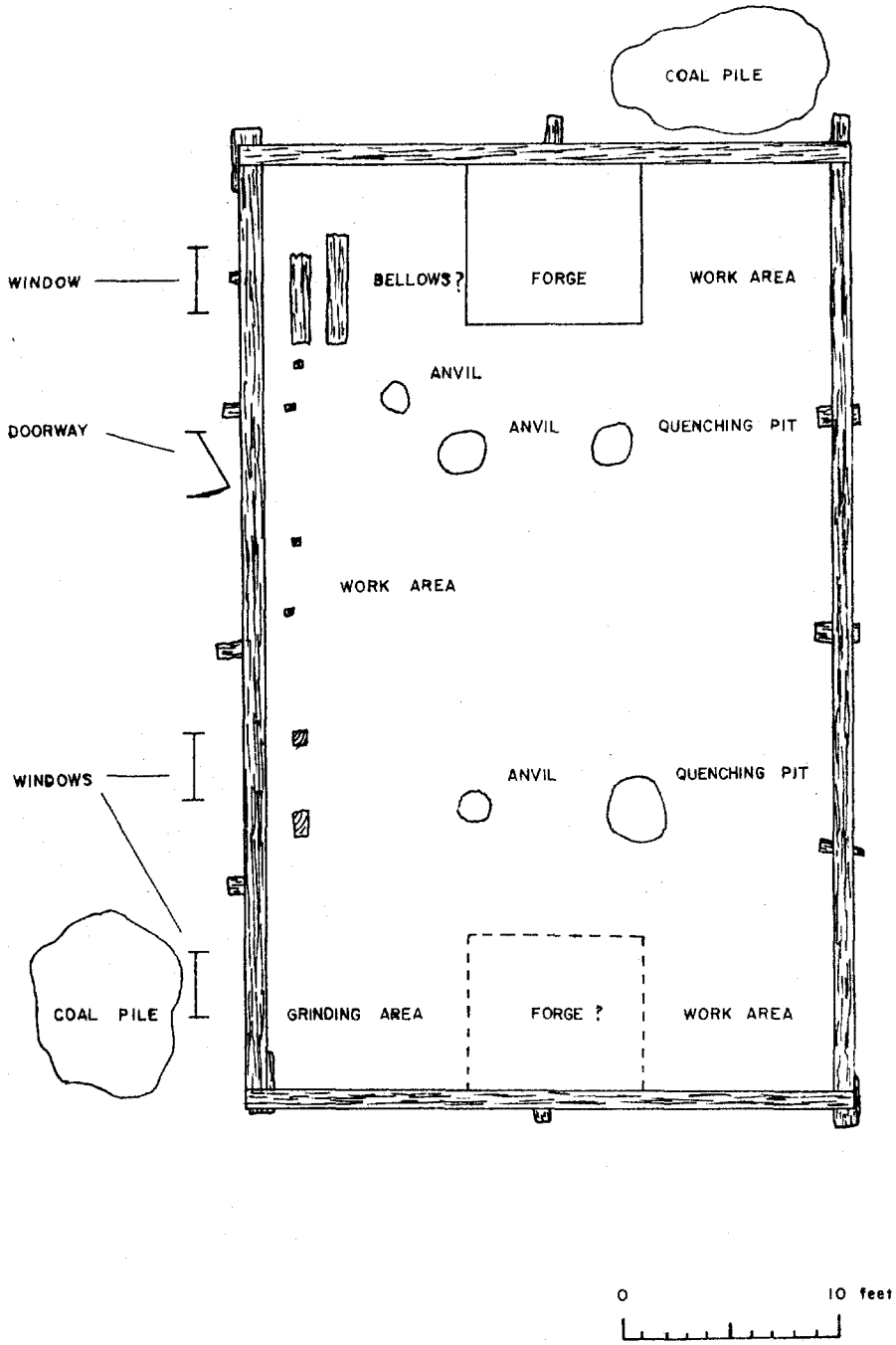


Fig. 242 -- Interpretive floor plan of the <u>in situ</u> HBC Features for the Blacksmith Shop.

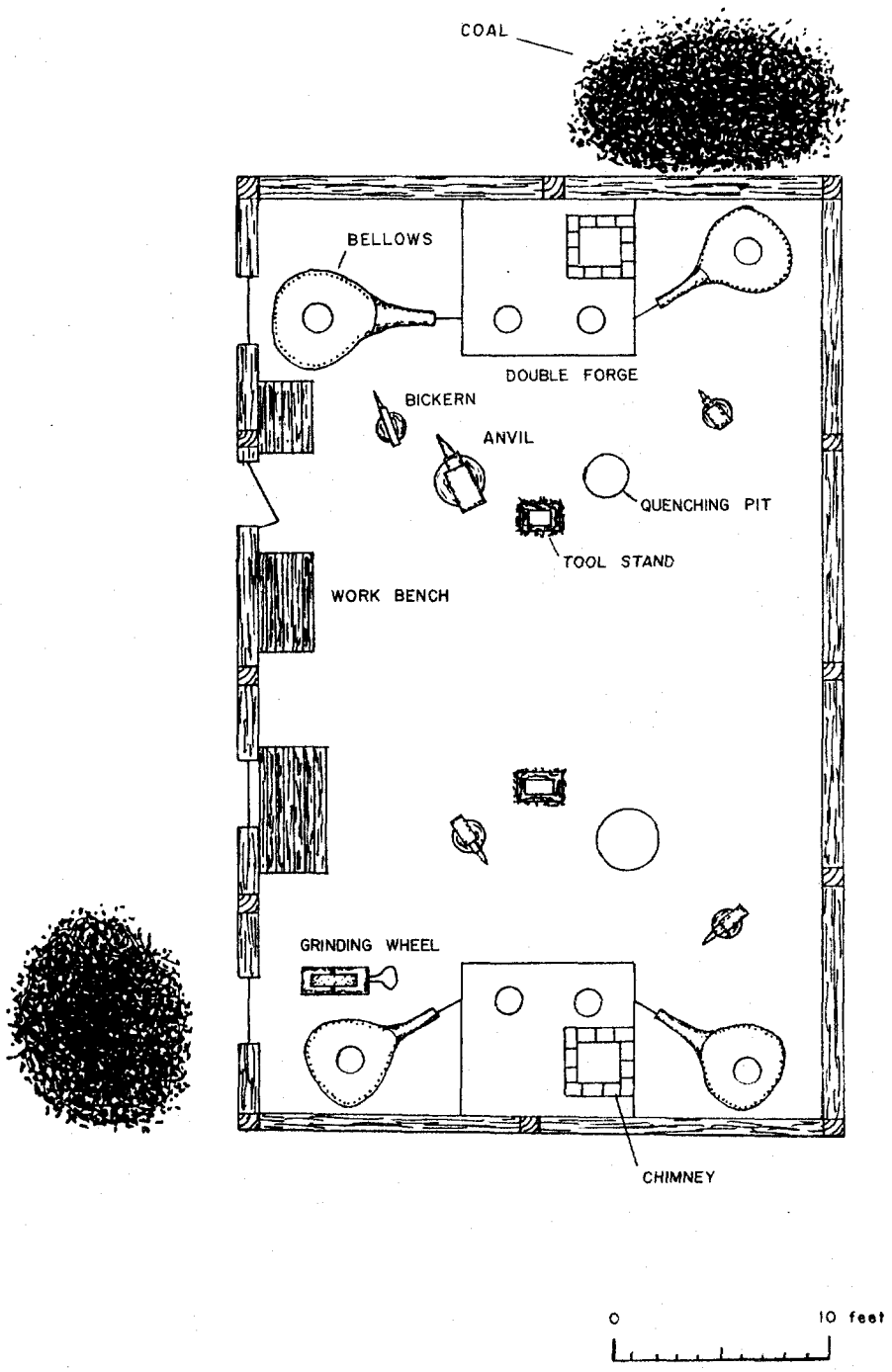


Fig. 243 -- Hypothetical reconstructed floor plan for the Blacksmith Shop (based upon currently available historical accounts together with in situ archaeological remains).

Interior Arrangement

Reconstruction of the interior arrangement for the Blacksmith Shop has been a difficult and complex task. From historical evidence, it was known that the Shop had 4 forges, 4 bellows and at least 4 anvils; but on the basis of the archaeological evidence, only one forge location could be positively determined, only 3 anvil positions could be identified, and not one positive bellows location could be found. Those in situ HBC features associated with the Shop which were uncovered by archaeological excavations have been illustrated in Fig. 241.

Through comparisons of the in situ remains with the ex situ material cultural distributions, positive interpretations could be made for locating many furnishings and activity areas (Fig. 242). This interpretive illustration accurately portrays the archeological data, but does not provide solutions to a number of specific historical and technological problems (e.g. where were the 4 forges, where were the bellows, how was smoke from the forges removed, etc.?). In order to solve these questions, various hypothetical Shop arrangements were matched against the known archaeological evidence. The results of this endeavor resulted in the preparation of a hypothetical Shop arrangement which attempts to explain the known historical facts without conflicting with the archaeological remains (Fig. 243).

In the reconstructed Shop arrangement, the forges are shown as double forges, and 2 additional anvils were located within working distance of the forges and quenching pits. The bellows locations are pure speculation, but they had to be adjacent to the forges, yet out of the corner work areas. The bellows in the northwestern corner of the Shop may have been the largest and thus may have occupied the large paired footings in that location. Chimneys were hypothesized for the 2 paired forges, and they are shown in a position which would allow them to exist through the eastern or downwind portion of the roof. The major forging area was at the northern forges, and the major work area was along the west wall.

Industrial Interpretations

General Blacksmithing

One of the major activities within the Shop was general blacksmithing which consisted of repair and on-call manufacturing. Generally speaking, the blacksmiths who worked in this Shop were also skilled in carpentry, tinsmithing, coopering, horseshoeing, wheelwrighting and gunsmithing; and a list of their repaired and/or replacement manufactures appears as Table 64.

Table 64 -- Metal items repaired and/or manufactured as replacement items in the Blacksmith Shop.

Items
Hinges
Pintles
Door latches and hooks
Door locks and keys
Padlocks and keys
Wrought rod nails
Wrought rod staples
Bateau bolts and roves
Barrel bands and rivets
Cotter bolts, pins and keys
Bolts, nuts and washers
Blacksmith tools
Carpenter tools (?)
Agricultural implements and equipment
Traps
Axes
Harness hardware and horseshoes
Chains
Hooks
Cranks
Handles
Kettles
Tinwares
Muskets

Building hardware, agricultural items and weaponry ranked high for general repair work, but any metal item which needed repairing could have been expected (except for extremely large items such as a ship anchor). General repair work, however, was not the major industrial purpose for which the HBC operated this Shop. From both historical accounts and frequencies of archaeological remains, it is apparent that the primary purpose of the Shop was the wholesale industrial manufacture of tools for the Company fur and agricultural industries.

Industrial Manufacturing

According to the inventories of "country-made" metal manufactures produced by the HBC, the following items were probably consistently manufactured by HBC blacksmiths: axes; traps; adzes; knives; household ironware, tinware and copperwares; wrought iron and steel, agricultural tools; horseshoes; and fish spears (Hussey 1974:230-231; 290-292). Within the ca. 1834/36-1860 Blacksmith Shop, many of these items were manufactured.

Axe Manufacturing. Axes at Fort Vancouver came in 2 styles (round and square headed) and 3 sizes (small, middling or half, and large). From the pre-1834/36 Blacksmith Shop (Hoffman & Ross 1974b: 150-160), small and middling square headed and small round headed axes were presumably manufactured. From the archaeological evidence in the ca. 1834/36-1860 Shop, only small and middling square headed axes were manufactured. Along with the axes, axe wedges were also manufactured.

Trap Manufactures. Traps at Fort Vancouver were both imported and "country-made". Archaeological remains of imported traps have been extremely rare, whereas the remains of "country-made" traps were quite common. From the ca. 1834/36-1860 Blacksmith Shop, "country-made" trap parts were manufactured in many styles and 2 sizes. Stylistic variability cannot be accounted for either functionally or as differences among blacksmiths. The 2 sizes presumably reflect a need for different sized traps for larger vs. small mammals, but no historic evidence has been found for traps of various sizes. Thus, the 2 sizes observed may reflect the work of 2 different blacksmiths.

From the blacksmith marks observed on trap parts from the Shop, only 2 smiths appear to have been engaged in the industrial activity of trap manufacture. These smiths were George Folster and Joseph Ovide Beauchamp, and their respective marks were "GF" and "JB". Both blacksmiths left the employ of the Company at Fort Vancouver in 1847, and this date may mark the cessation of industrial trap manufacturing at Fort Vancouver.

Tin Manufactures. From various HBC inventories, the following iron and tin wares have been identified as being of HBC manufacture (Hussey 1972: 230-231, 190-292):

Large round tin pans
Boat pans
Porringers
Hook pots 1½ qts.
Tin milk strainers
Tin milk tureens
Tin boxes 1 lb.
Tin candlesticks
Tin canisters ½, 1 and 2 lb.
Tin cups & saucers
Tin funnels
Tin kettles 4 and 8 gals.
Tin cream kettles 4 gals.
Tin soup ladle
Tin measures ½pt., 1 qt., ½ gal.
Tin plates
Tin quart pots
Tin coffee pots, small and large
Hollow bottom tin kettles, 5 and 7 gals.

Many fragments of cut sheet metal were recovered from the Shop, and any of the above items could probably have been manufactured.

Agricultural Manufactures. From various HBC inventories, the following agricultural items have been identified as being of local manufacture (Hussey 1972: 230-231, 290-292): garden hoes, "swingle" tree irons and horseshoes. From the remains associated with the Shop, only singletree irons and horseshoes were found archaeologically and no proof was found to suggest that they were manufactured in vast quantities.

The agricultural items found within this Shop were generally repair items, and undoubtedly new products were manufactured for specific purposes. Quoting Hussey (1974:304-305): "A visitor during the early 1840's found that the farming implements available at Fort Vancouver were 'very reasonable' and that the 'best Cary ploughs can be had to order from an excellent blacksmith at the place at 31¼ cents per pound'". Thus, the blacksmiths might produce anything ordered, presumably as long as it did not exhaust their store of iron stock.

Domestic Interpretations

From the distribution of ex situ domestic trash within the Blacksmith Shop area, it must be assumed that someone, at sometime, was living within the Shop. Presumably, enough room could have been available for a sleeping loft, but living conditions would have been extremely crowded. It is also a possibility that after the Blacksmith Shop fell into disuse, it was utilized as a dwelling. Such a practice is not beyond possibility, but it is doubtful that such reuse would have gone unnoticed among the in situ remains of the Shop.

ca. 1834/36-1860 Indian Trade Store Privy/Trash Pit

Sometime after the 1834/36 expansion of the Fort, the building known as the Indian Trade Store was built. Its existence was documented in 1841 by Emmons (Hussey 1974:72), and it may have been in use as early as 1837 (Whitman 1838). During its first few years, it was used for "Missionary storage", and possibly as a temporary dwelling for visitors. For what ever reason, a privy pit was excavated 5 ft. south of the southeastern corner of the building; and the first deposit in the pit was the silt from a ca. 1834/36-1841 Columbia River flood (Stratum 3i).

After flooding, the first cultural assemblage to be deposited was a relatively non-descript layer of random trash (Stratum 3g) with a few outstanding concentrations of bottles, cut window glass and finished trap springs. The cut window glass represents the waste from window glazing, and may indicate a period when windows were placed in the Indian Trade Store. The only datable items from this Stratum were trap springs (Table 65) which could have been manufactured as early as 1828 or as late as 1847. Immediately above this Stratum, were 2 strata filled with blacksmithing and domestic trash.

Strata 3e and 3f were 2 very similar trash deposits containing large concentrations of discarded metal items, and separated by a relatively thin layer of wood which may represent the remains of the above ground privy structure. Most of the building hardware from this pit came from Strata 3e and 3f, and consisted of hinging, latching and locking items. These items may have belonged to the privy structure; and, for this reason, they are listed below as possible privy hardware:

Strap Hinges	Non-ferrous Hinge	Stock Lock Parts
Butt Hinges	Door Latch Bar	Padlock Parts
Strap Pintle	Door Thumb Latch	

Without a doubt, the trash deposits in these 2 strata represented the debris of blacksmiths. Their broken tools and the products of their skills were the major items recovered. If the wooden remains separating Strata 3e and 3f were indeed the abandonded privy structure, then these iron deposits must represent subsequent trash disposal. Datable items from Strata 3e and 3f (Table 65) indicate that these cultural layers were probably deposited during the 1840's.

Questions still remain concerning the practical function of this cultural feature; and perhaps the most significant is why was this pit used by the blacksmiths? The Blacksmith Shop was located some 30 ft. northeast of the pit, and if they needed a privy, then why was one not located near the Shop? Perhaps the "Missionary Store" was also the dwelling for blacksmiths. Later, during the 1844-1853 period when the Store became the Indian Trade Store and Hospital, the privy was probably sealed as no recognizable trading or dispensary deposits were observed.

ca. 1834/36-1841 Columbia River Flood

Presently, no historic accounts of a flood reaching the Fort area have been found, but on the basis of the stratigraphic and distributional evidence of its silt load, the ca. 1834/36-1841 flood reached a height which easily entered the southeastern stockaded area of the Fort. Because the flood silt was the initial deposit in the Indian Trade Store Privy, it is suggested that the flood probably occurred shortly after the 1834/36 stockade expansion and "Missionary Store" construction.

ca. 1829-1841 Unidentified Domestic Component

One truncated HBC storage pit (F687) was uncovered in the eastern Iron Store area; and based upon its stratigraphic location, it probably represents a pre-Iron Store domestic feature. The assemblage of material from this pit included the remains of one glass liquor bottle, 5 glass "jars" and 2 two-gallon stoneware "crocks". The pit and its contents represent a semi-subterranean storage pit which would not be inconsistent with a cold-storage pit beneath the floor of a dwelling, but no such dwelling has been historically documented, so its existence remains questionable. However, based upon the distribution of domestic trash in the immediate vicinity of the storage pit, the hypothesis must be made that such a dwelling existed.

Table 65.-- Dateable artifacts from the stratigraphic levels of the Indian Trade Store Privy/Trash Pit.

Level	Item	Manufacturer Mark	Hypothesized Manufacturer	Date
1	Earthenware	COPELAND	W. T. Copeland	Post-1847
3e	Trap Springs	GF	George Folster, FOVA blacksmith	1830-47
	Trap Spring	TS	Thomas Scott, FOVA blacksmith	1844-46
	Trap Cross	JB	Joseph Beauchamp, FOVA blacksmith	1843-47
	Tongs	"	" " " "	"
	Axes	AL	Andrew Louttit, FOVA blacksmith	1840-44
	Blacksmith Flatter	AM	Allen Morrison, FOVA blacksmith	1838-41
	Padlock Parts	WR PATENT	Unknown (during William IV's reign)	1830-37
3f	Tongs	L	Andre Lachapelle, FOVA blacksmith	1828-40
	Trap Springs	G or C	William Cannon(?), FOVA blacksmith	1828-36
	Ceramic Button		"Prosser" Process	Post-1840
3g	Trap Springs	GF	George Folster	1830-47
		G or C	William Cannon(?)	1828-36
3i	Trap Spring	GF	George Folster	1830-47

1829-1834/36 "Smudge Pit" Component

During the excavation of the Indian Trade Store area, a number of small pits filled with charred corn cobs were uncovered, and they were interpreted as possibly representing smudge pits for the smoking of hides (Hoffman & Ross 1975). During excavations of the southeastern Fort area, many more of these pits were uncovered, as well as a number of larger pits with charred material. All these pits occupied the same stratigraphic position below a ca. 1834/36-1841 flood deposit, and without a doubt they represent an 1829-1834/36 HBC cultural activity.

As with the small pits in the Indian Trade Store area, the small pits in the southeastern Fort area contained charred corncobs, charred wood and occasionally a fragment of an artifact. Without a doubt the charred material was the primary (if not the only) fill. In the larger pits (i.e., F565, F585, F516, F520 and F521) the charred material appeared to be the primary fill, but many artifacts were also recovered.

The artifacts from these larger pits appeared to be general trash consisting of numberous small items with occasional broken ceramic or bottle sherds. The majority of the artifacts recovered consisted of small personal items including beads, buttons and pipes; and the main non-artifact was bone. These charred remains apparently represent general personal trash which was disposed of by burning.

The smudge pits and burned trash pits were contemporaneous for the period 1829-1834/36, but whether or not they represent mutually occurring events cannot yet be determined.

APPENDIX I

Particle size analysis of the ca. 1834/36-1841 Columbia River flood silt loam from F516 (based upon mechanical sieve and hydrometer analyses conducted by Bill Alderman, U.S. Dept. of Agriculture, Soil Conservation Service).

Particle Size	Sub-%	%
Gravel		1.0%
5.0-190 mm.	1.0%	
Sand		6.5%
>0.85 mm.	1.0%	
0.26-0.85 mm.	1.0%	
0.15-0.26 mm.	0.5%	
0.075-0.15 mm.	4.0%	
Silt		71.5%
0.02-0.075 mm.	36.0%	
0.005-0.02 mm.	29.5%	
0.002-0.005 mm.	6.0%	
Clay		
< 0.002	21.0%	
TOTAL		100.0%

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