

WROUGHT IRON HAND TOOLS IN PORT ROYAL, JAMAICA:
A STUDY BASED UPON A COLLECTION OF THE TOOLS
RECOVERED FROM ARCHAEOLOGICAL EXCAVATIONS
AND ON TOOLS LISTED IN THE
PROBATE INVENTORIES
OF COLONIAL PORT ROYAL, c. 1692

A Thesis
by
MARIANNE FRANKLIN

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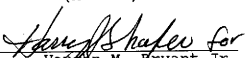
Approved as to style and content by:


Donny L. Hamilton
(Chair of Committee)


J. Richard Starry
(Member)


James Rosenheim
(Member)


David Carlson
(Member)


Vaughn M. Bryant Jr.
(Head of Department)

May 1992

ABSTRACT

Wrought Iron Hand Tools in Port Royal, Jamaica:
A Study Based Upon a Collection of the Tools Recovered from
Archaeological Excavations and on Tools Listed in the
Probate Inventories of Colonial Port Royal,
c. 1692. (May 1992)

Marianne Franklin, B.A., Eckerd College
Chair of Advisory Committee: Dr. D.L. Hamilton

This study is based upon the collection of wrought iron hand tools recovered from five archaeological excavations of the city of Port Royal, Jamaica (c.1692). The excavations took place between 1966 and 1990. Only the tools that are presently housed in the headquarters of the Jamaica National Heritage Trust in Port Royal, Jamaica or are currently being treated in the Conservation Research Laboratory at Texas A&M University in College Station, Texas are included in the collection.

The tool collection from Port Royal is unique for several reasons, a) since they were deposited by a catastrophic event there is a complete array of 17th century tools, b) many of the tools are in excellent condition, and c) even the tools that are completely corroded have their detail incredibly well preserved in molds inside calcareous encrustations that were formed due to their deposition in a marine environment. Epoxy cast replicas of tool molds show fine detail and may answer questions about the tool's use.

Over 100 tools have been recovered so far from the archaeological excavations of Port Royal. The collection's diversity spans a range from the finely shaped pincer of the shoemaker to the most crudely fashioned chisel. This study documents the tool

collection, and examines the collection with the added interpretation of transcribed probate inventories from the parish of Port Royal between 1686-1694 (Volume III) in order to better understand everyday life in a flourishing 17th-century Caribbean mercantile trade center. This study combines the analysis of the archaeological record and the probate inventories to answer questions about the variety of different types of tools available and in common use by the 17th century craftsman in the Caribbean. Though the excavation of the submerged city of Port Royal is by no means complete, it is hoped that this work will provide a significant data base for forthcoming comparative studies on tools of the late 17th century.

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INTRODUCTION

A tool is defined as a hand-worked instrument used to perform a task or necessary to practice a vocation. Tools have been described as "human benefactors of the most primary sort," since they "increase and vary human power; they economize human time; and they convert raw substances into valuable and useful products". Recognized as the instruments of human progress, tools can provide important artifactual insight when trying to understand the inner workings of any culture (Sloane 1964:6).

Many tool forms have stayed essentially the same since their creation in Roman times or before. However, there are some distinct tool-form style modifications and developments that can be attributed to specific periods and culture's of origin, influenced by requirements of usage and available materials for the tool's construction (Goodman 1964:8-11). Tools recovered from an archaeological site may yield important information about the society that used them.

Historical documents portray 17th-century Port Royal, Jamaica as the bustling colonial maritime trade center of the Caribbean. The town was situated on the tip of a sand spit which protected a large natural harbor. Once a haven for pirates, privateers and buccaneers, whose plunder of enemy ships in Caribbean waters was sanctioned in exchange for the protection of British interests, Port Royal was awarded the description of the "wickedest city on earth". Figure 1 shows the location of Port Royal, Jamaica.

This thesis utilizes Historical Archaeology as a model for style and format.

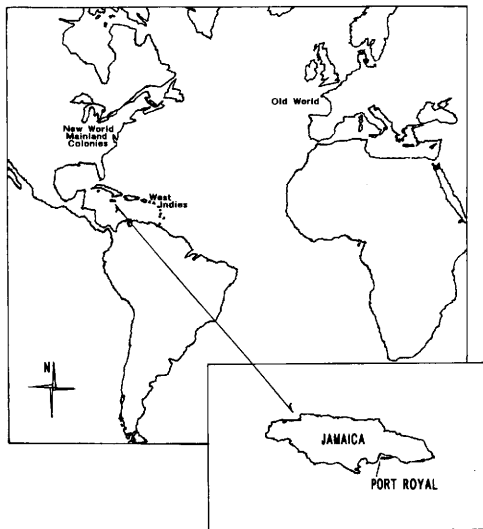


Figure 1. The Location of Port Royal, Jamaica

By the last decade of the 17th century, Jamaica was completing a switch from an economy established on small and diverse agricultural acreage to an increasingly larger plantation economy based mainly on sugar, slaves and the related products of molasses, muscovado and rum (Bridenbaugh 1972; Dunn 1972). Other Jamaican-grown goods exported included parcels of cocoa, cotton, ginger, and indigo. Dyewood was harvested along the Central American coast and brought to Jamaica for export. Imported trade goods arrived in Port Royal from both sides of the Atlantic. The slaves that fueled the plantation economy were brought from Africa. England and Ireland supplied such commodities as wine, fruit, beef, pork, cheese, butter, flour, fabric, clothing, ironwork, pitch, tar, and rope. New England merchants shipped foodstuffs, spars, barrel staves and hoops to the island (Taylor MS:505).

Port Royal was the only recognized port of entry for the island of Jamaica at this time; thus, all goods that were legally traded passed through the crowded wharves and warehouses of colonial Port Royal (Claypole 1972:95). Pivotal in a triangular trade route linking the Old World to the New, Port Royal had by the beginning of the 1690s achieved recognition for her role as a mercantile capital (Hamilton 1984; Steffy 1988:116).

The entire city of Port Royal was wedged onto the end of a spit of sand, flanked on three sides by protective forts, overlooking the entrance to Kingston harbor. The old town was crowded with the homes and storehouses of many merchants situated along the waterfront. Vying for space on the narrow streets and alleys were the markets that vended fresh fish, "fleash" and fruits, the townhouses of the island's planters, and the numerous taverns and guesthouses that catered to the

mariners in port. Many multi-story brick structures contained divers occupants, providing a large assortment of shops and storefronts manned by local tradesman, offering a variety of crafts and services (Taylor MS:491-507). It was a bustling town with population estimates that vary between 6,500 and 10,000. It is commonly accepted that Port Royal was the leading urban center in the English New World when struck by disaster on June 7, 1692 (Bridenbaugh 1972:316).

On that day, just before noon, an earthquake rocked the island of Jamaica. The quake and the violent seiche wave that followed flooded the harbor and disturbed the limestone cay that was the foundation of the sandspit. As a result almost 33 acres, which constituted almost two-thirds of the town, sank or slid into the harbour (Hamilton 1984:12). Most sources agree that approximately 2,000 people were killed by the earthquake itself, and the resulting aftermath brought the total number of deaths to almost 4,000 (Pawson & Buisseret 1975:121-122).

Looting and salvage of the underwater wreckage commenced immediately after the quake, and continued on through the centuries. The citizens of Port Royal attempted to rebuild, but beset by another earthquake, fire, and a number of hurricanes through the mid-18th century, the town never again regained the grandeur of her early days (Hamilton 1984:12). Through the remainder of the 18th and 19th centuries, up until 1905, Port Royal thrived only as a Royal Naval Station (Pawson & Buisseret 1975:124). Today Port Royal is most often described as a quiet fishing village but beneath her streets and just offshore the preserved remnants of the once thriving 17th-century mercantile center and buccaneer town remain.

Surviving written records can tell us much about the number and variety of tradesmen who lived and worked in colonial times. Manuscripts and encyclopedias exist that describe the "mechanicks", their methods, and the tools that they used. However, such trade manuals may describe the ideal tools rather than the actual ones used by the average craftsman. Also, texts written on the European continent may not reflect the number and variety of tradesmen practicing in colonial outposts.

Archival records may also provide pertinent information about colonial craftsmen. In the archives in Spanish Town, Jamaica are tax and real estate records that enumerate a number of occupations of tradesmen and mechanics who worked in Port Royal (Hamilton 1984:12). Probate inventories sometimes identify the occupation and list all of the possessions, often including tools, of anyone who died on the island.

The inventories from Port Royal at the time of the 17th-century earthquake have been transcribed and examined. Yet these documents can be biased by the original writer's level of knowledge. Many inventories list simply a "parcell of tools" rather than describe the individual tool types. Also, some inventories may have been incompletely recorded to avoid payment of debts and possible government interference. Furthermore, random process has obviously allowed some inventories to survive and others to go unrecorded or even be destroyed. Finally, since the inventories by definition only list the possessions of those who have died, they are of course a skewed sample of the whole population (Dunn 1972:264-265; St. George 1979:103; Wolf 1984:17-33), but it is always hoped that the inventories are a representative cross section of the populace that produced them.

While written sources can provide valuable insight to the tools and craftsmen of 17th-century Port Royal, nothing can supplant the information to be gleaned from an actual examination of the tools that were used. The collection of wrought iron hand tools recovered from the sunken city provides an enviable opportunity for archaeology to help round out the picture of life in everyday Port Royal at the time of the 1692 earthquake.

Five different terrestrial and underwater archaeological investigations have been conducted at Port Royal between 1966 through 1990. Excavations that were performed in Port Royal from 1966 through 1972 have yielded an interesting number and variety of tools. Many of these tools are nearly void of archaeological provenance, some because of excavation procedures used and others have lost their provenance numbers after decades of storage. Still, they constitute a valuable addition to the collection of tools recovered from the area. Over fifty of these tools are presently in Port Royal, stored in facilities run by the Jamaica National Heritage Trust. They have been drawn and measured and will be included in this catalogue for analysis.

From 1981-1990, Dr. D.L. Hamilton of Texas A&M University, in conjunction with the Institute of Nautical Archaeology and the Jamaica National Heritage Trust, conducted underwater archaeological excavations of the sunken city of Port Royal. The tools recovered from his excavations form the basis of comparison for the rest of the collection, since stratigraphic levels, provenance, and associations to architectural features and other artifacts have been recorded.

Due to illicit salvage and the vast area that still remains unexcavated, the collection of wrought iron tools recovered from Port Royal can by no means be considered

complete. Still, the collection is an important one for several reasons.

Wrought iron tools that are recovered from underwater or saturated sites may be better preserved than those recovered from land sites. In many cases, even though the tool itself has deteriorated beyond recognition, marine growths or encrustations tend to form a perfect mold of the original tool, so that an exact replica of the original may be cast. Furthermore, in many instances, the metal from a submerged object may leach into and preserve any nearby wood, so that many tools from Port Royal still show the remains of their handles. Many details are often preserved in tools recovered from a submerged site. Therefore, the examination of the tools recovered from the excavation of 17th-century Port Royal can answer a number of questions about their usage.

Since a good tool is rarely thrown away, most archaeological sites yield only broken or otherwise imperfect tools. Port Royal, however, was suddenly destroyed by a catastrophic event and a more complete array of working tools are found in an archaeological context. The tools recovered from the 17th-century strata during archaeological excavations of Port Royal are actual tools that were being used by local tradesmen at the time of the disaster. The collection of tools from Port Royal is representative of those used by a group of functioning 17th-century craftsman. The collection's diversity spans a range from the finely shaped pincer of the shoemaker to the most crudely fashioned chisel.

It is hoped that this work will provide a significant data base for forthcoming comparative studies on tools of the late 17th century. In addition, the

information supplied by the probate inventories about local inhabitants and the tools they possessed, when viewed in conjunction with the tools recovered as archaeological evidence, can provide answers to a number of research questions in order to better understand the tools and those who used them to keep Port Royal thriving.

The questions to be addressed are as follows:

1. How many types of tools were there? Does the variety of different types of tools available, such as the types and shapes of chisels, reflect the diversity of the tradesmen that written sources suggest populated the town?
2. Were the majority of the tools used in Jamaica being imported as historic documents suggest, or were some being forged by local craftsman in Jamaica?
3. Were the tools crudely or carefully crafted? What if anything may that tell us about the people who made and used the tools?
4. What can the presence, absence, size, or positioning of a tool's handle tell us about how that tool was used?
5. Were tools that were generally assigned to the kit of one tradesmen, such as the shoemaker's hammer, actually only used by the shoemaker or were there crossovers of tools to fit a variety of needs?
6. Do the types of tools listed and recovered reflect in anyway Jamaica's transition to a plantation economy?

An initial description of the background information provided by the written record, including the probate inventories, will be provided in the TOOLS IN DOCUMENTARY SOURCES section. The archaeological excavations that yielded the tools in the collection will be described in

the ARCHAEOLOGICAL METHODOLOGY section. The TOOLS RECOVERED FROM PORT ROYAL section will present each tool separately, in alphabetical order by tool category, such as Adzes, Axes, Hammers, etc., to make reference easier. The individual tool descriptions will contain dimensions, a 1/4 scale drawing, and any information on provenance and associations. The next two sections will view the tools recovered from the archaeological excavations as a group, in conjunction with the probate inventories, in order to analyze TOOLS USED IN PORT ROYAL and THE CRAFTSMAN IN PORT ROYAL. How the recovered information may be applied in attempts to answer the stated research questions will be discussed in the CONCLUSIONS. A selection of SUPPLEMENTAL REFERENCES on the history and development of tools will be appended to this study. Appendix A contains a brief description of the production of wrought iron and the use of steel in the 17th century. An illustrated glossary of tool part names is contained in Appendix B.

TOOLS IN DOCUMENTARY SOURCES

The wrought iron hand tools used in Port Royal during the late 17th century were studied using two categories of documentary material: narrative sources supplying background material and probate inventories from the parish of Port Royal 1686-1694.

Narrative Sources

The written sources used to study the tools from Port Royal fall into three categories: texts describing the history and development of tools; contemporary 17th-century manuscripts and records that mention tools and the tradesmen who used them; and historical descriptions of colonial Port Royal.

Texts on Tools

There are a number of valuable texts that present information on the shape, type and usage of tools. Some, like Moxon's Mechanick Exercises: or the Doctrine of Handy-works, Applied to the Arts of Smithing, Joinery, Carpentry, Turning, Bricklayery, were published in the 17th century. Since the book was actually written during the period under study, it can provide worthy insight into the Port Royal tool collection. Other volumes trace the uses and improvements of tools and tool types throughout history. Even modern hand-tool catalogues can be useful in identifying the special usages of some types of tools. While this work draws upon these sources for identification and dating purposes, it could in no way attempt to present the vast amount of information available on tool construction and usage. Instead, descriptions and illustrations relevant to the tool collection will be cited. Those who desire further

information on tools or an in depth look at their history are referred to the supplemental references, where an annotated description of these sources appears.

17th-Century Manuscripts and Records

There are several excellent primary sources available that mention the tradesmen of Port Royal. The Library of Jamaica located at the Institute of Jamaica in Kingston possesses several original maps and manuscripts that are available for study. John Taylor's Multum in Parvo or Taylor's Histori of his Life and Travels in America and other parts dated 1686-1688 is a three volume set. Volume II, Chapter VI contains an excellent description of Port Royal:

"it's situation, extant, Building, Forts, the manner of the inhabitants liveing; as to their eateing, drinking, Lodging, and Recreation; Also the manner of their tradeing; with an account of their vendable goods and commodities."

Although some sources question Taylor's accuracy on exact points of detail, his manuscript nevertheless provides a vivid depiction of Port Royal.

Also, port records of exports from Bristol, England to Port Royal for the year 1682 were studied by Carol A. Fiorillo. After London, Bristol was England's second largest port for shipping exports throughout the 17th century. Reflected in the port records is the massive amount of metal work shipped to Jamaica. The 1682 port records show that greatest percentage of English goods shipped from Bristol were food, drink, cloth and wrought iron (Fiorillo 1990:19). The iron wares exported were simply listed in mass by cubic weight, as "cwt wrought iron". These large shipments of worked iron would no doubt include various tools, but the tool types are not

individually listed.

Historical Descriptions

Three modern published volumes should be noted for their valuable contribution to the understanding of life in Port Royal at the end of the 17th century. They are Carl and Roberta Bridenbaugh's No Peace Beyond the Line, Richard S. Dunn's Sugar & Slaves, and Port Royal, Jamaica by Michael Pawson and David Buisseret. All three texts combine detailed examinations of primary manuscripts, correspondence, archival records and probate inventories to provide vivid descriptions and analyses of Port Royal, her occupants, and their place in the colonial era.

The Bridenbaugh's and Dunn give a good sense of Port Royal, Jamaica and her relationship to the rest of the Caribbean, the Americas, and the Old World.

Pawson and Buisseret detail the history of Port Royal from its first British occupation in 1655 through to 1905, when the Royal Naval Station was closed. The study skillfully describes Port Royal's early development as a pirate town, and subsequent success as a major commercial center. Pawson and Buisseret document the devastation of the earthquake, and its affect on the residents and merchants of Port Royal. They have collated a variety of archival records to provide an exceptional account of Port Royal and the types of craftsmen and tradesmen who populated the town at the time of the quake.

One unpublished manuscript, William A Claypole's doctoral thesis entitled "The Merchants of Port Royal 1655 to 1700", is on file at the University of the west Indies in Kingston, Jamaica. Claypole's work constitutes a valuable historical interpretation of the community of Port Royal at the end of the century.

Probate Inventories

Probate inventories which list individual possessions are stored at the Jamaica Archives in Spanish Town. Volume III, spanning the years 1686-1693/4, was microfilmed in 1988 and stored in College Station, Texas for study. It should be noted that the inventories currently stored in the archives were copied over by hand in 1888, introducing the possibility that some errors may have occurred during this initial transcription.

England switched from the Gregorian to the Julian calendar in 1752. At the end of the 17th century, the year began on March 25, but gradually January 1 began to be accepted as the new year long before the official change. The inventories are dated to reflect this switch, such as Feb. 11, 1687/8. The transcriptions from Volume III span the end of 1686/7 to the end of the old style 1693 or February 1693/4. All dates that appear when discussing the inventories in this thesis will be stated as they appear in the original documents.

Most inventories were performed by two or three contemporaries of the deceased. Some inventories are more explicit in description than others. The individual inventories are listed inside the volume by folio number. Volume III contains f.2 - f.610. Usually the first line of an inventory will declare the name, the parish of residence, and sometimes the occupation of the deceased, such as, "William Robinson Port Royall Merchant".

For the purpose of this study all of the inventories that came from the parish of Port Royal were transcribed and studied for comparative data. Of some 295 inventories in Volume III, 128 are listed as coming from Port Royal Parish. The parish of Port Royal encompassed more land than the city itself. Figure 2 shows the parishes of Jamaica as they were delineated in 1675.

The inventories were studied for the presence, quantity, type and description of any hand tools. Some 33 inventories mention the presence of tools, either by individual description, as a "parcell of tooles", or in gross lots to be traded or sold. When transcribed the inventories show some 40 different categories of tools, broken down into over 90 types by usage or descriptive terms (see Table 1).

The inventories were also examined to determine stated occupations of the deceased owners of the tools, possession of parcels of tools, and listings of new and old iron.

Also analyzed were the number of slaves per inventory and slave price averages per year; since some inventories list slaves with trades and tools, it was hoped that the comparative worth of some of the trades could be evaluated. Unfortunately the small number of inventories that list slaves with trades cannot be termed representative, but the information on slave trade values is included in THE CRAFTSMAN IN PORT ROYAL section.

No mention of specific values of the tools listed in the inventories will be included in this study. To truly understand the topic of value, one must first undertake a detailed study of the economy and relevant pricing of the time in which the inventories were written. Also, since many tools are often listed and priced as part of a group, determination of individual tool values is not always possible.

Although the probate inventories have limitations as a resource, the information derived from the study of the tools mentioned in the Volume III transcriptions can provide a valuable sample base on which to begin the study of the wrought iron hand tools recovered by the archaeological investigations of Port Royal.

TABLE 1
 TOOLS LISTED IN THE PROBATE INVENTORIES:
 PORT ROYAL, JAMAICA 1686-1694

ADZES	COMPASSES	PINCERS
carpenter's	CROWES	PITCH POTTS
cooper's	iron	PLANES
ANVILS	cooper's	carpenter's
bick	FILES	large
new	Dutch	PUNCHES
great	half round	RULES
old	large	carpenter's
small	old	SAW SETS
AUGERS	rasps	handsaw
large	small ordinary	SAWS
old	smoth	crosscut
AWLS	square	handsaw
alls &	FROES	iron handsaw
blades	small	iron whipsaw
AXES	GIMLETS	old
1/2	small	steel-3 ft.
broad	large	steel whipsaw
carpenter's	GOUGES	SCREWPLATES
lg. carpenter's	HAMMERS	SHEEPSHEARERS
cooper	large	SHOVELS
old cooper	small	spades
falling	HATCHETS	SLEDGES
joyner's	half joyner's	great
morticeing	joyner's	SLICES
old rusty	small	SNIP BILLS
pick	HOES	STAKES
BILLS	broad	for thimbles
backe bills	grubing	for nailles
indigoe hooks	narrow	bolt staves
BITTS	HOWELLS	SWAGES &
old	cooper's	FULLERS
shingling	IRONS	naille tooles
BOARERS	joyner's	bolt tooles
bung	marking	TONGS
sugar	planing	VICES
CALLIPERS	tow	cooper's
CARVING TOOLS	KNIVES	glasser
old	butcher	hand
CHISELS	carving	large
broad	curryer	old
dozen intch	rounding	WEDGES
heading		old & rusty
morticeing		splitting
old		

ARCHAEOLOGICAL METHODOLOGY

The tools to be discussed in this study were recovered from a variety of investigations conducted with differing degrees of complexity and levels of scientific intensity. It should be noted that one form of artifact retrieval, salvaging, began in 1692 and continued up until this century (Hamilton 1984:12). This has undoubtedly had a significant effect on the archaeological record.

The tools discussed here come from five excavations that took place between 1966 and 1990. The collection under study was limited to wrought iron hand tools that were recovered from old Port Royal and were available for examination either at the storage facility of the Jamaica National Heritage Trust in Port Royal, Jamaica or while under treatment at Texas A&M University's Conservation Research Laboratory which is directed by D.L. Hamilton in College Station, Texas.

The tools come from: the underwater excavations of Robert Marx in 1966-68; the underwater investigation of Fort Rupert by the Sub Aqua Club of Jamaica supervised by Philip Mayes in 1968; the land excavation of St. Peter's Church yard run by Anthony J. Priddy in 1971; the terrestrial New Street excavation which was also supervised by Anthony J. Priddy from 1971-72; and the underwater excavations of Port Royal from 1981-1990 directed by Dr. D.L. Hamilton sponsored by Texas A&M University, the Institute of Nautical Archaeology, and the Jamaican Heritage Trust. Figure 3 shows the outline of pre-earthquake Port Royal, the present coastline, and the locations of the five excavation areas.



EXCAVATIONS:

- A: MARX
- B: FT. RUPERT
- C: NEW STREET
- D: ST. PETER'S
- E: TAMU/INA

The Sites of the Excavations

Salvage and Its Impact on the Archaeological Record

It is known that salvage of the wreckage of Port Royal began immediately after the quake. A London account of the incident entitled "The truest and largest account of the late earthquake" was published in 1693; it described the situation as follows:

"your heart would abhor to hear of the depra-dations, robberies and violences that were in an instant committed upon the place by the viole-st and base-st of the people; no man could call any thing his own, for they that were the strongest and most wicked seized what they pleased..." (Pawson & Buisseret 1975:122).

Salvage and recovery was not limited to terrestrial wreckage either. Port Royal was home to a number of professional "wrackers" who made their living salvaging Caribbean shipwrecks. These men were experienced in techniques of grappling with hooks or buckets called "fishers", dredging with nets, free diving, and using diving bells to recover underwater items (Marx 1968:18-21).

Although professional looters were probably after higher priced items than wrought iron hand tools, it should be realized that the more common inhabitants of Port Royal may have used these same practices to recover what they could of their possessions. It is likely that the first items that a Port Royal tradesmen would try to salvage would be the tools by which he made his living (Willoughby 1987:23). This should be considered during the analysis of the archaeological evidence.

A second factor to be kept in mind while studying the tool collection is that several of the tools that were recovered from the archaeological sites may have been deposited on the site during the salvage attempts.

The Excavations of Robert Marx

From December of 1965 until March 1968 Mr. Robert F. Marx undertook the excavation of a considerable underwater area in the southwestern section of old Port Royal (see Figure 3). Although Marx endeavored to maintain archaeological controls, "the excavations, for a number of reasons, do not meet accepted archaeological standards" (Hamilton 1984:15).

No site report of the Marx excavations was ever published. There is no provenance for the tools recovered by Marx, save for an occasional mention in his field notes. Since no stratigraphic controls are associated with the Marx tools, these tools may be considered to span the time period from the 17th until the 19th century. Obviously modern tools were excluded from this study. The Marx tools will have to be dated by their appearance, characteristics, and comparison to other tools in the collection.

Nor do the tools in the collection represent all of the tools recovered by Marx; only those tools that were conserved and are currently stored in the Port Royal facilities of the Heritage Trust are included. Many of the ferrous items raised between 1966-68 were not conserved and have not survived.

The tools in this study from the Robert Marx excavations have been assigned simple numbers for identification purposes. All of the numbers for tools recovered by Marx begin with the letters RM, such as RM.Ax.1.

The Investigation of Fort Rupert

In 1968 Mr. Philip Mayes directed a terrestrial excavation of the old naval dockyard in Port Royal.

While that particular dig unearthed no tools, Mayes did supervise the Sub Aqua Club of Jamaica in an investigation of Fort Rupert (Richard McClure 1990: personal communication).

The fort was one of three destroyed, and after the quake, "there was now an expanse of water where once Fort Rupert had stood" (Pawson & Buisseret 1975:121). Eventually, new deposits of sand caused the coastline to build up around the area, and today Fort Rupert lies at the bottom of a shallow lagoon, encircled by mangroves, marked only by a small sign. Figure 3 shows the location of Ft. Rupert.

Two axe heads were recovered from this brief examination of Fort Rupert. No site report was published and the tools have been assigned no provenance. The tools in this collection from Fort Rupert have been assigned identification numbers that begin with the letters FR, such as FR.Ax.1.

The St. Peters Excavation

In 1971 Mr. Anthony Priddy supervised a terrestrial excavation beside the yard of the present St. Peter's Church, built to replace St. Paul's Church destroyed in the earthquake. The site backs up onto Morgan's Line, a defense battery built by Henry Morgan in 1679 (see Figure 3). Just below the existing street level the rubble of structures dating back to the 17th century were uncovered mapped and drawn (McClure 1990: personal communication). Figure 4 is a reproduction of a field drawing made at the time of the excavation.

Seven tools were recovered from this site. While no published report exists, we can still interpolate data to extract some archaeological associations for the tools. Tools from the St. Peter's excavation were numbered at

From a Rough Tracing of
 'Excavated Area,
 St. Peter's Church Site, Latest Phase'
 Undated, by M. Pessoa and A. Lawrence

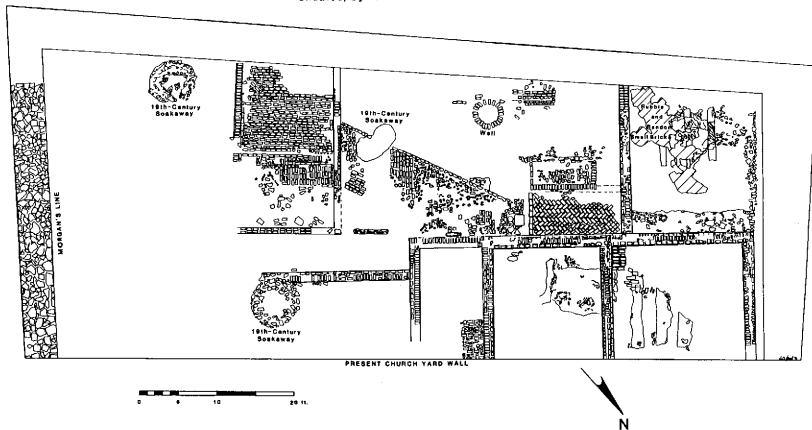


Figure 4. Field Drawing of the Excavation of St. Peter's Yard

the time of the excavation as follows: SP.1, for St. Peter's first excavation. Usually a number or letter and number follows, ie SP.1.S9, meaning association with structure 9. Some numbers include the fact that they were found in the well on the site. In this manner at least tools that were found in the same location may be identified. No stratigraphic information is presently available for the tools from the St. Peter's excavation.

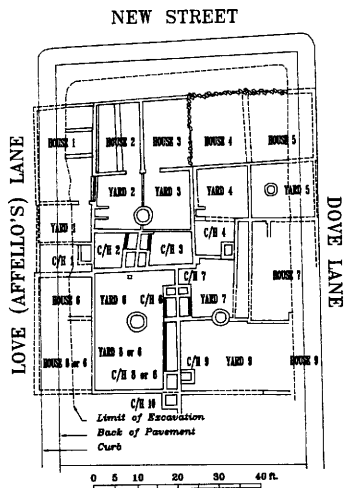
The New Street Excavation

In 1971 and 1972 Mr. Anthony Priddy supervised the excavation of what is now an empty grass lot in downtown Port Royal, bordered by New Street, Dove Lane, and Love Lane (as shown in Figure 3). Priddy identified a number of levels of occupation and reuse of the land over the centuries. Eventually a series of interconnected brick homes that had been destroyed in the quake in 1692 were uncovered (Priddy 1975:8-10).

No site report was ever published on the New Street area excavation, but some pieced-together field plans, photographs and a Jamaica Journal article can reveal some information about the excavation.

In 1986 architect Oliver Cox viewed photographs of the uncovered site and created a reconstruction of the area as it would have appeared in 1692. The fronts of the homes are missing, for when the streets were widened in Port Royal in 1951 these areas were paved over. It seems that the dwellings, believed to be at least two stories tall, shared courtyards containing hearths and wells of brackish water (Priddy 1975:8-10).

A rough tracing of Cox's reproduction was overlaid with an existing site map of the excavation to produce the plan shown in Figure 5. This map was used to assign some provenance to the tools recovered from New Street.



NEW STREET EXCAVATION (N.S.2)
1692 LEVEL BY A. PRIDDY

Figure 5. Site Plan of New Street Excavation

The tools recovered from the New Street excavation were numbered NS2 (the 2 denoting the second New Street excavation, the first was a test trench), followed by a square number, and then a layer number, such as NS2.A6a.1b. The layers were reportedly hard to distinguish. Layers 1a through 1f are post-quake to the 19th century, with 1a being the most recent. Layers 2a,2b and 3 were pre-earthquake (McClure 1990: personal communication). By examining other artifacts such as glass stemware and pipestems, many artifacts recovered from layer 1b may be dated to the 17th century (McClenaghan 1988:179, McClure 1990: personal communication).

In this manner we can at least relate the tools to the architecture, estimate their period of use, and find their associations to each other.

The Texas A&M University/
Institute of Nautical Archaeology Excavations

The excavations conducted by D. L. Hamilton were begun in 1981, as part of a field school project. Throughout its duration, the project was a cooperative venture sponsored by Texas A&M University (TAMU), the Institute of Nautical Archaeology (INA), and the Jamaica National Heritage Trust Commission (JNHTC). The initial goal of the team was to determine the condition of the sunken city and assess the feasibility of performing a controlled excavation of the area.

Under D.L. Hamilton, two excavation units were examined. Divers worked in less than 20 feet of water on air received from a surface supply or hookah system. Overburden was removed with a water dredge and line levels and surveyors fiberglass measuring tapes were used to maintain horizontal and vertical control. It was

determined that the area could be excavated with rigorous procedural controls maintained (Hamilton 1984:11-25).

Hamilton returned to Port Royal for a summer field school season of excavation again in 1982, and every year except 1988, through 1990. The season in 1988 was devoted to archival research and analyses. Although the operation expanded through the years, the basic methodology stayed the same: divers on hookah used dredges, trowels and hand fanning to uncover what to date has been identified as eight buildings containing a number of rooms and yards (see Figure 6).

Artifacts were carefully mapped in situ, and most ferrous artifacts were triangulated, pinpointing their exact location. Permanent datum were placed by the Jamaica Survey Department in 1982 and all excavations have been tied into these points and mapped by computer using the AutoCAD system. Each ten foot grid square excavated received designated Lot numbers.

A natural stratigraphy has been noted that makes vertical provenance rather simple. Layer 1 is usually covered with silt and eelgrass and any artifacts found are usually 19th or 20th century discards. Layer 2 consists of a thick tier of dead coral and seashells. Occasionally layer 2 may contain pipestems, onion bottle glass sherd and concretions. "In most areas, immediately under Layer 2 is the 1692 occupational level of Layer 3 which goes through brick wallfall and rubble and often ends with the brick floor of the room itself. If a brick floor is not present, Layer 3 ends when sterile sand is encountered" (Hamilton 1990a:2-3).

Every artifact number is prefaced by the initials PR (for Port Royal) followed by the year of the excavation, ie PR87. Artifact numbers after 1984 reflect their provenance by first stating the year of excavation,

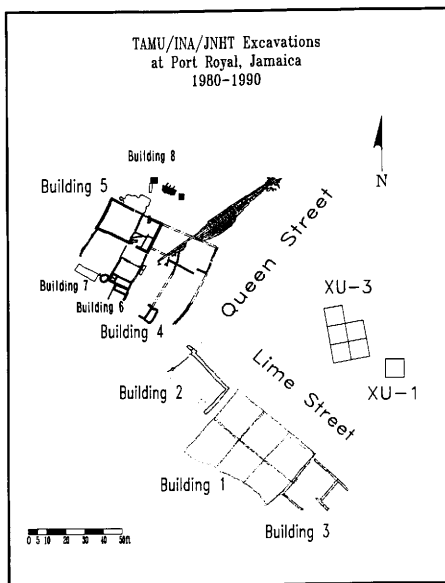


Figure 6. The TAMU/INA Excavations of Port Royal, Jamaica

and then citing the lot number, ie lot 500. Layer 1 artifacts end with the number 1 (ie 501). Layer 2 artifacts end with the number 2 (ie 502). Layer 3 artifact numbers denote the 5 ft. square quadrant of the grid they were found in (ie 503,504,505,506). Some artifacts are measured into an even smaller 2.5 square quadrant of the lot, such as 503-3. Important artifacts have been triangulated and the exact location of the artifact in situ can be plotted. Thus the complete artifact number of the last numbered artifact would be PR87 503-6 (Hamilton 1990a:2-3).

Some conservation did take place in the lab in Jamaica, but due to the extended amount of time ferrous materials require most tools were returned to the Conservation Research Laboratory in College Station, Texas for further treatment. After a tool has been x-rayed to estimate the condition of any remaining metal, the tool is either consolidated by electrolytic reduction or an epoxy replica is cast. In some rare instances tool parts that were too decayed to be restored were drawn and reconstructed on paper only. Upon completion of conservation treatments all artifacts including tools are returned to Port Royal to the JNHTC storage facilities.

Many of the tools recovered by the TAMU/INA excavations were conserved as projects of individual nautical archaeology students taught by D.L. Hamilton in classes at Texas A&M University. Student work in the field, in conservation classes, and as part of the term paper requirements for the historical archaeology course form the cornerstone on which this portion of the study is based. In particular, the paper written on the tools from Port Royal by Paul Willoughby (1987) was most helpful.

TOOLS RECOVERED FROM PORT ROYAL

This section presents the tools recovered from the archaeological excavations of Port Royal between 1966 and 1990. Tools are listed in alphabetical order by their basic tool name, followed by any identified breakdowns in type. The exception to this format is the segment on blacksmith's tools, which will be listed as such. Unidentified tools will be presented at the end of the section. Each tool will be described individually and illustrated to 1/4 scale. Additional information on identification and archaeological provenance and associations will be included in each individual tool description section. Appendix A contains a brief description on the use of wrought iron and the availability of steel in the 17th century. An illustrated glossary of tool part names appears in Appendix B. (See Figures 7-14).

Adzes

The adze is a tool used to shape wood. The narrow arched cutting blade is set at a right angle to the handle, with the bevel on the inside edge of the blade (closest to the handle), sometimes necessitating removal of the handle to resharpen the blade. The wrought iron adze form has stayed basically the same since the middle ages. The adze is most commonly used for intermediary finish work, between the axe and the plane. In his Mechanick Exercises, Moxon describes the purpose of the adze, as a tool used "to take thin chips off Timber or Boards, and to take off those Irregularities that the Ax by reason of its Form cannot well come at; and that a Plane (though rank set) will not make a riddance enough with" (Moxon 1677:119).

The size of the tool, blade shape, and the shape of

its face or poll differentiate the uses of the tool. The tool's head is usually made of wrought iron. In some cases a steel bit is welded to the blade end (see Appendix A). The introduction of a steel bit is a practice commonly used in the 17th century, when constructing cutting tools that require a well honed blade, since steel will hold an edge longer than plain wrought iron (Clay 1984:56). The steel bit is documented in many examples of the tools from Port Royal, especially the axes. A wooden handle is fitted into an oval or rectangular eye of the adze. The length and curve of the handle is often customized for the individual tool user. The blade shape may be flat or gouge-shaped. The cooper's adze is a small hand-held tool, its short handle is usually worked in careful, short, radial movements (because of its use in small confined spaces). The carpenter's and wheelwright's adzes are larger, with longer handles. The shipwright's adze is usually the largest, with a broad and flat blade, the tool is worked by the craftsman from a standing position. Early adzes usually had no poll. Some later adzes demonstrate additional usage capabilities by the shaping of the poll opposite the blade. Both the shipwright's and the carpenter's adze may have an octagonal poll to be used as a spur or nail punch (Sloane 1964:26,27; Hummel 1968:43,44).

Four examples of the adze were recovered from Port Royal. RM.AZ.1, RM.AZ.2, PR83 192-1, and PR87 343-7.

RM.AZ.1

RM.AZ.1 is an adze head that is 9 13/16 in. (25 cm) long. The curved blade measures 5 5/16 in. (13.5 cm) long by 2 3/8 in. (6.0 cm) wide. The blade tip is 3/16 in. (.5 cm) thick. Behind the oval eye, a heavy poll extends for some 3 in. (7.6 cm). The face of the poll is

worn away on its outer edges, but probably was once square, measuring 1 1/2 in. (3.82 cm) across. There is no evidence of a handle. There seems to be a steel plate welded to the tip of the adze blade. The blade end shows no sign of a sharpened bevel, probably since it is worn and deteriorated.

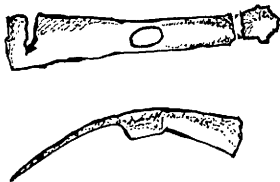


Figure 7. Adze RM.Az.1

Identification/Provenance

The size and shape of the adze head suggest that it may have been used by a carpenter or a joiner. Most sources agree that adzes were not made with polls until the 19th century. This adze head most closely resembles a tool Sloane describes as a carpenter's adze with a maul head poll, dating to the 1800s (Sloane 1964:27). The date of the tool's use cannot be firmly stated since it lacks archaeological provenance.

RM.Az.2

Rm.Az.2 is an adze head which was broken off at the eye, with only the blade end of the tool remaining. The preserved length of the tool is 8 11/16 in. (22 cm), and it is 2 1/16 in. (5.2 cm) wide at the blade tip. The blade is 7/16 in. (1.1 cm) thick near the tip. The eye appears to have been oval. The blade seems to show the

remnants of a steel blade bit.



Figure 8. Adze RM.Az.2

Identification/Provenance

Though the shape of the blade is very similar to RM.Az.1, the blade is almost twice the size. This adze may have been used by a carpenter or a shipwright. There is no archaeological provenance for the tool. It may have been broken and discarded, or may have been used for post-earthquake salvage; no dating is possible.

PR83 192-1

The blade side of this adze head was very deteriorated, but an epoxy mold was cast and joined to the original eye and poll to preserve the tool's detail. The adze head is some 6 in. (2.35 cm) long. The blade end is 2 in. (.8 cm) wide and 3/8 in (.8 cm) thick. The blade shows evidence of a steel bit welded to the top of the blade tip. There is a maker's mark on the under side of the blade. The eye is rectangular, and an iron residue found inside of the eye suggested to the conservator that the adze head had been hafted and wedged in place with an iron scrap or fastener. The poll is uniquely shaped, with a face that measures 2 in. (5 cm) long. The poll face seems to have been welded onto the original stock shape, and may have been used as a hammer.



Figure 9. Cooper's Adze PR83 192-1

Identification/Provenance

The tool's size suggests it was used one-handed, like a cooper's or a sculptor's adze. The tool looks most like a cooper's adze, used to even stave ends and cut the "chime bevel" around the inside edge of the barrel top. The cooper's adze poll usually has a face used to hammer the barrel hoops down (Arbor 1981:27).

This tool was recovered among the wall fall of the 1692 strata of Port Royal, in Building 1, Room 1, facing the original Lime Street. Nearby was found another tool, 193-4, a claw hammer that was broken and worn. The tool's conservator reports that the adze showed evidence of the blade being bent, worn and twisted before it sank, suggesting that the adze may have been discarded before the earthquake. There is also the possibility that the tool was used harshly in attempted salvage, and discarded later among the debris.

PR87 343-7

This tool has a wooden handle, wedged and intact. Though the tool was badly degraded, it was x-rayed in the field, and a subsequent tracing and rough sketch allow some identification. Because the tool's haft extends beyond the eye, there is a possibility that this may have been a hand pick, rather than an adze. Without the blade edge intact, there is no definite identification possible. For the purpose of this study, the tool will

be included with the adzes. The head is approximately 7 in. (18 cm) long. The blade portion is missing, but would have extended almost 2 1/2 in. (6.3 cm) beyond the rectangular eye. The poll appears small and non-functional, except for its weight. The handle is at least 9 in. (22.8 cm) long.

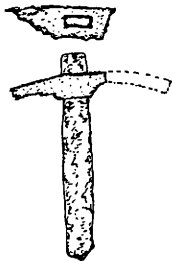


Figure 10. Adze PR87 343-7

Identification/Provenance

The adze is small, and judging by the length of the handle was probably hand-held. It may have been used by a cooper or other specialized woodworker whose attention to detail called for careful maneuvering, such as the cabinetmaker.

The tool was recovered from the 1692 layer of Port Royal. The adze was located just inside of the eastern wall of Building 2. The tool was recovered just across an alleyway separating Buildings 1 and 2, approximately 10 feet away from adze PR83 192-1.

Augers

The auger is a tool used for boring holes in wood. A long shank, fitted with a transverse handle at the top, is rotated to turn the cutting tip in a circular motion. The auger is used when holes of deeper size are needed than can be bored with lighter tools, such as the brace and bit or the gimlet (Hummel 1968:45). The two factors that help to identify the auger's use are its size, and the size and shape of its cutting bit. The bit may be spoon-shaped or spiral-shaped. Archaeological evidence shows that augers dated as early as the 13th century had been strengthened by welding a tempered steel strip to the iron spiral or spoon shape for the length of the bit (Goodman 1964:166-167).

The auger is used by carpenters, wheelwrights and shipwrights. The size of the tool can define its intended use: a tool held in a single hand indicates light work, while a longer, sturdier shank usually indicates that holes of greater depth needed boring. The basic auger form has been the same since medieval times. The shipwright's breast auger had evolved by the 11th century. The two-handed auger has been used for wheelmaking and general building until modern times (Goodman 1964:167).

Two augers were recovered from the excavations of Port Royal, NS2.A4.1b (20) and PR84 732. Two broken gouge or spoon bit ends were also recovered, numbered PR84 727-5 and PR87 533-31.

NS2.A4.1b (20)

This auger is some 20 1/2 in. (52 cm) long. The preserved surface of the socket eye measures 1 1/2 in. (3.8 cm) across and would have held a wooden handle insert of approximately 1 1/2 in. (3.8 cm) in diameter. The shank stock is square with rounded off edges,

tapering into a spoon or pod bit that is some 3 1/4 in. (8.25 cm) long. The gouge bit measures 1/2 inch in diameter.

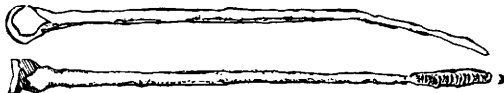


Figure 11. Auger NS2.A4.1b (20)

Identification/Provenance

This tool is similar in size and shape to a Dutch ship carpenter's auger recovered from the excavation of a 1596-1597 site (Goodman 1964:65,168). The auger may have been used by a shipwright or any woodworker.

The auger was recovered from the New Street excavations from a layer associated with the 17th century. The room from which the tool was recovered faced the front of 17th-century Dove Lane. Associated with the auger are several tools recovered from nearby, including two iron scribes, two axe heads, and two chisels. The tool appears to have been used, both the socket and the bit show signs of wear. Though the auger's shank is bent, the tool may have been damaged before, during, or after the earthquake.

PR84 732

PR84 732 is an epoxy cast of an auger handle and partial shank, with a preserved length of some 10 5/8 in (27 cm) long. The eye socket measures 1 3/4 in. (4.8 cm) across, and would have held a wooden handle of some 1 1/2 in. (3.8 cm). The auger shank is constructed in the same manner as NS2.A4.1b (20), square with rounded edges.

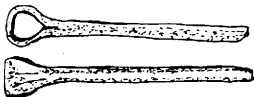


Figure 12. Auger Shank PR84 732

Identification/Provenance

The auger shank appears similar to the New Street auger. No further identification can be made other than the possibility that it was used by a shipwright or other wood worker.

The tool was recovered from layer 2 of the TAMU/INA excavations. This layer is typically assigned a post-earthquake date, though it sometimes contains 17th-century artifacts. One possible association should be considered; the auger handle was found within 10 feet of a layer 3, 17th-century gouge bit, PR 727-5. Though a middle section was not recovered, the two may have been part of the same tool. Both artifacts were recovered from Room 1 of Building 1. The auger may have been broken at the time of the earthquake, or later been used and broken in an attempted salvage operation. Other associated tools found nearby were a cooper's adze and a carpenter's claw hammer, both broken.

PR84 727-5

This epoxy replica of a gouge spoon bit measures some 5 in. (13 cm) long. The outer edge of the tip is 1 in. (2.75 cm) wide, and the inner diameter is 1/2 inch. The blade's tip appears worn. For information on Identification/Provenance, see the above reference in PR84 732.



Figure 13. Auger Gouge Spoon Bit PR84 727-5

PR87 533-31

PR87 533-1 is an epoxy cast replica of a broken shank and spoon gouge bit, some 13 in. (33 cm) long. It is probably broken from an auger, since the shank is square like an auger's, rather than socket shaped like other hand-held gouges viewed. The bit itself is 5 1/2 in. (14 cm.) long, and its outer edge is 3/4 of an inch (1.9 cm) across. The inner diameter of the bit measures 1/2 inch.



Figure 14. Auger Gouge Bit PR87 533-31

Identification/Provenance

The gouge bit is similar to the others recovered, and may have been used by a carpenter, shipwright or other woodworker. The artifact was recovered from layer 3, in a section of fallen wall outside of Building 5 on Queen Street. Other tools found within the 10 foot square grid include a claw hammer, and a socket-handled chisel, both carpenter's tools.

Axes

The axe has been used as a tool since the stone age. While the materials used to craft the axe progressed from stone, through copper and bronze, to iron; the tool's form has stayed basically the same since Roman times (Goodman 1964:8-23). The axe head is wedge-shaped, with different sized and shaped blades formed for different uses. The felling axe has a knife edge and is used to cut through wood, while the broad axe has a chisel edge and is for hewing or squaring wood (Sloane 1964:14). Some sources also denote a knife-edged broad axe, sharpened on both sides and used for basic carpentry (Mercer 1929:85).

Steel cutting bits began to be added to axes as early as the 17th century, as evidenced by axes recovered from Jamestown, Virginia (1607-1699) (Straub 1991: personal communication) and Port Royal. Earlier versions of axe heads were wider, larger and heavier, since they used momentum to force a blunt iron blade to cut. When the use of a steel bit became common, axe heads began to grow smaller (Heavrin 1982:46). Axe heads may be constructed by folding a pattern cut piece of iron, then inserting a steel wedge as a bit, and finally hammer welding the head into one piece around a stock metal handle pattern. Another variation seen in some 17th-century axe heads is basically the same except that the tool starts out as three pieces, the two sides of the axe are welded at the poll end, then the head is hammer welded with a steel insert at the blade end (Heavrin 1982:45). See Figure 15. Axes were constructed by individual craftsman in this manner until the 19th century, when advances in technology made mass-produced, cast steel axe heads widely available (Kauffman 1954:18).

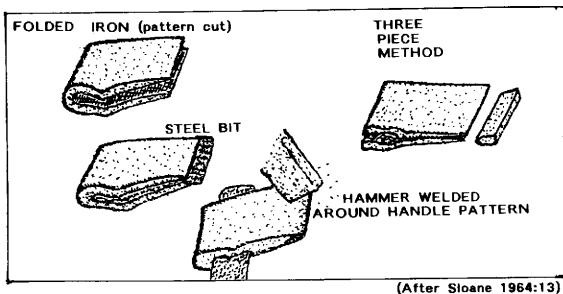


Figure 15. Two Methods for Crafting an Axe Head

American blacksmiths made one side of the axe head longer, to add strength to the weld when folded over to be lap-welded at the poll. The axe made in this manner was stronger and lasted longer. This extra fold of iron behind the eye may have been the beginning of the transition to the American axe with a large poll (Heavrin 1982:45).

Sloane states that a large poll is used to add weight for balance to the axe head so as to increase the efficiency of each swing. The enlarged poll is a development considered distinctly American and is not typically seen on Old World axes (Sloane 1964:14-15). The majority of axe heads recovered from Port Royal are poll-less, in the European manner. Due to the use of traditional patterns, the basic shape of the axe head can be seen to be distinctly different, based on the culture or nation of origin. Figure 16 shows the basic form difference between the American, the British, and the

German broad axe.

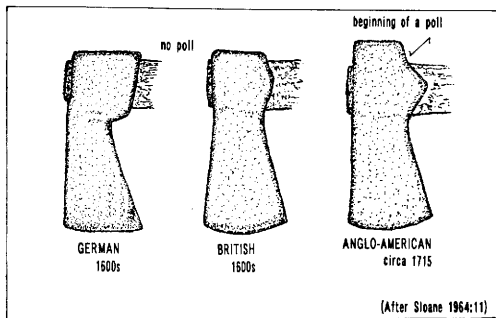


Figure 16. Distinctive Axe Shapes

The shape of the axe head changes to meet the specialized needs of different craftsman. Finish work requires smaller axe heads, with shorter handles that are easier to control. Smaller, hand-held axes are often called hatchets, after the French hache. These smaller tools are used like chisels with handles. Some hatchets have a hammerhead poll opposite the blade. The manner in which the tool is meant to be used can be determined by the placement and angle of the sharpened bevel, or basil of the blade. Woodworkers may use long, thin axes to cut mortises. The cooper's hatchet is typically wide-bladed and short-handled, used for shaping.

The shape of the eye that holds the axe handle is usually round in earlier tool versions, then triangular, later becoming oval or teardrop shaped (Kebabian 1978:34).

Like many tools, axe heads were typically shipped and sold without handles. Tool handles were usually specially shaped and fitted by the tool's owner for individualized use (Sloane 1964:2-6). The probate inventories suggest that most tool heads were shipped to Port Royal without handles. In some instances quantities of wrought iron tools were described by weight rather than count (Vol.3,folio 285). A blacksmith's inventory which was probated in Port Royal in 1689, lists "6 handles of sledges" among his possessions (Vol.3,folio 297). Twenty-four axe and hatchet heads are included in this study of tools from Port Royal. Only one of these tools was found with an intact handle, though others show evidence of having been fitted with handles.

Axe heads used in Port Royal may have been produced in Europe and shipped to the Jamaica for resale or been locally produced by resident blacksmiths. The probate inventory evidence documents both possibilities. The inventories show that axe heads were being shipped to the island in large quantities. But large quantities of iron bar stock and scrap wrought iron, presumably to be re-worked, were also listed in the inventories. Local blacksmiths and plantation worker mechanics were equipped with metal-working tools and forges at this time, able to make most simple tools they might need (Kebabian 1978:34). Many axe heads have a small maker's mark or insignia on one side of the blade. The presence of a mark may suggest that a tool was made for sale, rather than private use. Only four of the axe heads recovered from Port Royal show signs of a maker's mark.

The axe and hatchet heads recovered from Port Royal will be described in the following sections, grouped by their blade types, as Broad Axes, Felling Axes, and Specialized Axes. (Figures 17-40 follow).

Broad Axes

PR87 413-10.1

This axe head is one of the largest, almost 10 1/2 in. (26.7 cm) long and 6 3/4 in. (17 cm) wide at the blade. The axe head is still attached to a wooden handle that is 1 inch in diameter and almost 2 feet long. The wide blade shows evidence of steel insert at the bit. The blade is sharpened and beveled on one side, in the manner of a broad axe used for hewing. Two holes, approximately 1/4 in. (1.9 cm) in diameter appear to have been deliberately punched through the blade near the cutting edge. These holes may have been to hang the tool from when it was not in use. Similar axe heads with holes near the blades have been recovered from Jamestown, Va (J-88).

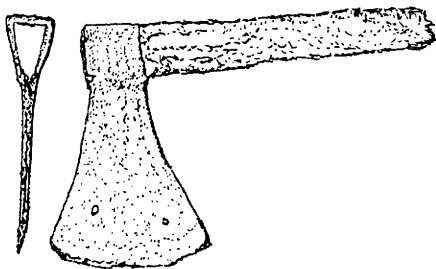


Figure 17. PR87 Broad Axe 413-10

Identification/Provenance

This tool was recovered from the 1692 level of Port Royal among brick rubble located inside a wall surrounding a yard behind Building 4. Recovered with the axe were a large number of broken red and white kaolin

clay pipe fragments. Two broad axe heads, PR 87 415-3 and PR87 423-9 were recovered from the same area. There is a possibility that these tools were used for butchering, hewing wood, or simply chopping wood. The area the tools were recovered from is a common yard that held at least two hearths.

PR87 415-3

This is a cast replica of an axe head, some 9 1/4 in. (23.5 cm) long and just over 6 in. (15.2 cm) wide at the blade end. No steel insert was noted, but the pattern of corrosion suggests that one may have been present since this area has deteriorated. This head is shaped like a broad axe, and the bevel appears to have been sharpened more on one side. The eye is oval shaped. There is no evidence of a handle. There does seem to be the beginning of a poll on this axe head.

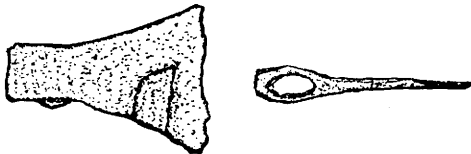


Figure 18. Broad Axe PR87 415-3

Identification/Provenance

Axe head PR87 415-3 was recovered from the 1692 layer of Port Royal. It was among the ruins of the courtyard behind Building 4, with two other axe heads (413-10 and 423-9) nearby. Also recovered from the same 5 foot grid quadrant was a pewter plate (415-5) that has been dated to 1679.

PR87 423-9

This axe head is 9 1/2 in. (24 cm) long and 5 in. (12.7 cm) wide at the blade. There is no apparent steel insert at the blade. The axe head is shaped like a broad axe, but the blade seems to be evenly bevelled on both sides. The axe head seems to have been constructed by folding, creating a triangular eye opening. There is no poll, and no evidence of a handle.



Figure 19. Broad Axe PR87 423-9

Identification/Provenance

This axe head was recovered from the 1692 layer of Port Royal. It was found among the ruins of the courtyard behind Building 4, along with two other axe heads (413-10 and 415-3).

FR-2

This axe head is 9 inches long (23 cm) and 6 1/2 in. (16.6 cm) wide at the blade end. Though the blade tip is deteriorated, there is a steel insert evident. This axe is shaped like a broad axe, one side seems flat and the other bevelled. There is a small poll on the axe head. The axe head seems to have been crafted from three pieces instead of folded, and is deteriorated where the weld

beside the poll probably was. There is no evidence of a handle remaining.

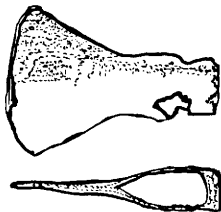


Figure 20. Broad Axe FR-2

Identification/Provenance

There is no provenance for this tool. It was recovered from the sunken site of Fort Rupert, and may date as early as the 17th century. Sloane identifies this shape as Anglo-American, dating to about 1715. This tool could be from the earthquake period or could later have been discarded when it weakened at the eye.

RM.Ax.6

This style axe head is commonly called "goosewing". It is 6 3/4 in. (17.1 cm) long and 6 1/4 in. (15.9 cm) wide at the blade end. The blade has been sharpened so that one side is truly bevelled, like a broad axe used for hewing wood. No steel bit insert is visible, though the bit end is deteriorated and the steel may be gone. The eye is triangular. There is no poll. There is some concreted wood from the handle remaining in the eye.

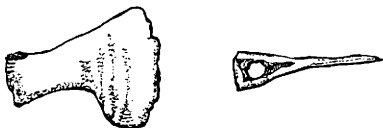


Figure 21. Broad Axe RM.Ax.6

Identification/Provenance

Axe head RM.Ax.6 has no provenance. Its "goosewing" pattern is typically called a shape of German or Dutch origin. The shape is seen as early as the 16th century and has been modified throughout time (Mercer 1929:85). The eye of RM.Ax.6 is broken at the corner, suggesting the axe may have been discarded or broken when used improperly.

SP.1.w/F5 (SP2)

This axe head measures 7 5/8 in. (19.5 cm) long and 3 7/8 (9.9 cm) wide at the blade. The axe was constructed by folding one piece of iron, the eye is triangular shaped. There is no steel insert bit visible. There is no poll on the tool. Though the eye is broken and bent, the axe head appears to have been flat on one side and sharpened on the other side, and may have been used as a broad axe.



Figure 22. Broad Axe SP.1 w/ F5 (SP2)

Identification/Provenance

This tool was recovered from the excavation of St. Peter's churchyard. No additional provenance information is available. Archaeological materials recovered from St. Peter's date up until the 19th century.

NS2.A4a.1 (3)

This broken axe head measures almost 7 in. (17 cm) long and 3 1/4 in. (8.2 cm) wide at the blade end. It is broken and only the blade end and part of the eye was recovered. There is no evidence of a steel bit end present. The blade appears to have been sharpened flat on one side, so the tool may have been used like a broad axe for hewing or squaring wood.

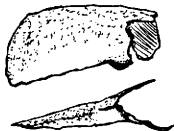


Figure 23. Broad Axe NS2.A4a.1 (3)

Identification/Provenance

This tool was recovered from a room in a two-story building that faced Dove Lane. Layer 1 is considered post-earthquake and fairly recent. Other tools recovered from this room include two chisels and another axe head, though they were apparently closer to the 17th-century strata (layer 1b).

Felling Axes

NS2.A7a.1d (2)

This iron axe head was broken, and only the blade and one side of the eye were recovered, a preserved length of $7 \frac{3}{4}$ in. (19.7 cm). The blade measures $2 \frac{3}{4}$ in. (7.0 cm) wide. The axe head was clearly folded and welded together. The axe head was constructed with a steel blade bit insert that has deteriorated. Though the tool appears slightly flatter on one side, it seems to have been bevelled on both sides, to create a knife edge used for felling or chopping.

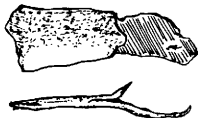


Figure 24. Felling Axe NS2.A7a.1d (2)

Identification/Provenance

Axe head NS2.A7a.1d (2) appears to have been used for chopping or rough wood work. It was recovered from the New St. Excavations, from a courtyard that held two hearths. It was recovered from a level below the one that has been identified as "close" to the 17th century, and may be considered the 1692 earthquake level. No other tools were recovered from this courtyard.

PR87 303-5

This partial tool has been identified as the blade from an axe head, broken just forward of the eye. The preserved length is $5 \frac{7}{8}$ in. (14.9 cm). The blade width is just over $3 \frac{1}{2}$ in. (8.9 cm). Since at its

thickest point the blade measures only 1/2 in., it is probably broken from an axe, rather than constructed as a wedge. Wedges are normally much thicker at the end opposite the blade, so that they may be struck and driven into the wood. The blade does show a weld line where a steel bit was inserted.

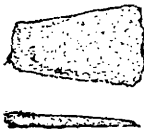


Figure 25. Felling Axe PR87 303-5

Identification/Provenance

This axe blade, PR87 303-5, was recovered from the 1692 layer inside of Building 2. It appears to have been sharpened to a knife edge and may have been used for felling, chopping or rough woodwork. No trace of the axe eye was recovered. The break at the blade's end is a clean one, and the tool shows no evidence of having been pounded on or reused as a wedge.

PR89 885-5.1

This axe head is 8 1/2 in. (21.6 cm) long and 3 1/4 in. (8.2 cm) wide at the blade end. There is no steel insert visible. One side of the blade is stamped with an undiscernible mark. The eye is tear drop shaped. There is no trace of a handle and the axe head does not appear very worn.



Figure 26. Felling Axe PR89 885-5.1

Identification/Provenance

Axe head PR89 885.1 appears to be double-edged, intended to be used for felling, chopping or rough wood work. The axe head shows no wear near the eye and may have never been helved. This tool was recovered from the 1692 layer of Port Royal, concreted together with another axe head PR89 885.2. The axe heads were recovered from between two adjacent yards located in the rear of Building 5. This area also contained two hearths and a cistern for brackish water. Wooden architectural feature were also noted in the yard.

PR89 885.2

This axe head is 8 1/4 in. (20.9 cm) long and 3 1/8 (7.9 cm) wide at the blade. The eye is triangular shaped. The axe head appears to have been constructed in the single fold manner. There is no steel insert bit visible due to a wax coating applied after conservation, but one may be present.



Figure 27. Felling Axe PR89 885-5.2

Identification/Provenance

Axe head PR 885.2 was sharpened like a felling axe, to be used for chopping or rough wood work. Though no trace of a handle was found, this axe head shows signs of use and wear both at the blade end and in the eye. The tool was recovered from the 1692 layer courtyard behind Building 5 along with PR 885.1, another axe head that does not appear to have been used.

RM.Ax.2

This axe head is 7 1/2 in. (19 cm) long and 3 5/8 in. (9.2 cm) wide at the blade end. The eye is triangular shaped. There is no poll on the axe head, the wrap around the eye is very thin. The blade does show a steel bit insert. Though there is no apparent bevel sharpened, the blade is worn very thin.



Figure 28. Felling Axe RM.Ax.2

Identification/Provenance

Axe Head RM.Ax.2 has no provenance. It is similar to several felling axe heads recovered from the 17th-century strata of Port Royal, and may have been used for chopping or rough woodwork. The axe head appears to have been crudely crafted and well used.

NS2.A4a.1b (1)

This axe head is broken at the eye and only the blade end was recovered. The preserved length of the tool is almost 6 in. (15.4 cm) and it is just over 3 1/4 in. (8.25 cm) wide at the blade end. The folded weld is clearly visible. There was no steel insert noted in the blade end. The eye was oval or teardrop shaped.



Figure 29. Felling Axe NS2.A4a.1b (1)

Identification/Provenance

Axe head NS2.A4a.1b (1) was recovered from the New St. excavations from a layer associated with the 17th century, from a room that fronted Dove lane. Other tools recovered from the room include one other axe head and two chisels. The small size of this axe head suggests that it may have been used as a hand tool for rough woodwork.

PR82 157-15

This axe head is 7 1/8 in. (18 cm) long and 2 1/2 in. (6.3 cm) wide at the blade end. It has a small oval eye and the beginning of a poll. The blade end is angled on both sides.

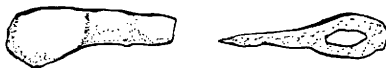


Figure 30. PR82 Felling Axe 157-15

Identification/Provenance

This tool was probably used for rough woodworking. Its small size suggests that it may have been used as a handtool. It appears to have been crudely crafted. There is no evidence of a steel blade insert. The axe head was recovered from Room 2 of Building 1 in either layer 2 or 3. Other tools recovered from this area include a reported adze head (157-16) that was unavailable for study, and a socket handled woodworking chisel (157-31).

RM.Ax.8

This axe head is 7 3/4 in. (19.7 cm) long and 2 1/2 in. (6.35 cm) wide at the blade end. There is the beginning of a poll behind the oval eye. There is no evidence of a steel bit insert.



Figure 31. Felling Axe RM.Ax.8

Identification/Provenance

This axe head has no provenance. In size and shape it is similar to PR82 157-15, a small hand-held woodworking tool. The axe head does show evidence of wear at the blade end, though the eye is in good shape.

RM.Ax.7

This axe head is 6 in. (15.2 cm) long and 2 3/4 in. (7 cm) wide at the blade end. The eye is teardrop shaped. There is a small lump of iron that has been welded to the inside of the eye where the original fold in the axe head's construction left too large a space,

presumably to make the eye smaller and the tool easier to haft. There is no evidence of a steel bit insert.



Figure 32. Felling Axe RM.Ax.7

Identification/Provenance

This tool has no provenance. It has been sharpened on both sides of the blade. Its small size suggest that this axe head was used as a handtool for rough woodworking. Both the eye and the blade show signs of wear and use.

FR-1

This axe head is 10 in. (25.4 cm) long and 2 3/8 in. (6 cm) wide at the blade end. The triangular eye is broken at one corner. There is a visible weld where the tool was folded over in construction. A steel bit blade end is visible in its entirety since one side of the blade has corroded away. The tool was evenly sharpened on both sides.



Figure 33. Felling Axe FR-1

Identification/Provenance

This tool has no specific provenance. It was recovered from the sunken site of Ft. Rupert in Port Royal. The long, narrow axe head was sharpened on both sides, placing it in the category of axes used for felling, chopping and rough woodwork. There is no sign of a handle, though there is wear in the eye. One other axe was recovered from Ft. Rupert, a broad axe (FR-2). FR-2 also shows signs of wear and its eye was also broken. Both axes may have been discarded after they were broken, may have been broken in salvage attempts, or may simply have corroded after their deposition in the areas where the metal was most stressed.

PR84 640

This axe head is 9 7/8 in. (25 cm) long and 3 1/2 in. (8.9 cm) wide at the blade end. It has a teardrop shaped eye. There is a maker's touchmark on one side of the blade. No steel bit was noted by the tool's conservator.



Figure 34. Felling Axe PR84 640

Provenance/Identification

This axe head fits the definitive shape of the 17th-century British felling axe (see Figure 16, Sloane 1964:11). The axe head was recovered from layer 2 in Building 1 during the TAMU/INA excavations. This layer sometimes contains 1692 artifacts but is commonly

considered to be a post-earthquake level. The conservator of this axe head notes that it appears to be new and unused. There is no sign that the axe head had ever been hafted. The tool was recovered from on top of Building 1, along with ballast stone and cannon shot. The conservator theorizes that this area was used as a ship dump and the axe may have accidentally fallen or been tossed overboard (Hocker 1985:3-8). It should be noted that this axe head is probably in the best preserved condition of the axe heads recovered from Port Royal, and is one of only four that was marked with a maker's touchmark. The absence of a steel bit is puzzling if this tool does post-date the earthquake, since steel bits were quite common by the 17th century and prevalent by the 18th century.

RM.Ax.4

This axe head is just over 10 in. (25.4 cm) long and 3 1/4 in. (8.25 cm) wide at the blade end. The eye is perfectly round. The folded edge weld can be clearly seen. A steel insert is visible for the last 3 in. (7.6 cm) of the blade. The blade is angled evenly on both sides, like a felling axe.

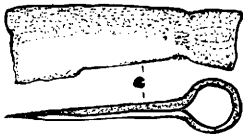


Figure 35. Felling Axe RM.Ax.4

Identification/Provenance

This tool was recovered from the excavations of Robert Marx, and no specific provenance has been

established for it. The axe's round eye suggest that the tool is either of an early date or has been simply crafted by a local technician or blacksmith with simple tools. There is a trace of a maker's mark visible on the tool. The axe head does not show much wear and there is no sign of the tool ever having been helved or used.

SP.1 (well) (SP1)

This axe head is some 9 in. (22.8 cm) long and 3 in. (7.6 cm) wide at the blade end. The teardrop shaped eye is broken on one side. There is no hint of a poll behind the eye. There is a small maker's touchmark stamped on one side of the axe blade. The blade end is deteriorated but the remains of a steel blade insert is discernible. The blade seems to be evenly bevelled on both sides.



Figure 36. Felling Axe SP.1 (well) (SP1)

Identification/Provenance

This tool was recovered from the inside of one of the brackish cisterns located in the structure beneath the present day yard of St. Peter's. No provenance information on the excavation levels is available. The shape of the tool is that of a 17th- or 18th-century felling axe. The tool may have been discarded when the eye broke.

RM.Ax.5

This axe head measures 9 in. (22.9 cm) long and 3 in. (7.6 cm) wide at the blade. The eye is teardrop

shaped. The weld fold of the axe blade's construction is clearly visible. A steel blade insert is partially visible at the blade tip. The blade is evenly angled on both sides.



Figure 37. Felling Axe RM.Ax.5

Identification/Provenance

There is no provenance for this tool. The size and shape of the tool is similar to other 17th- and 18th-century European felling axes.

RM.Ax.1

The blade end and part of the eye of this axe blade measure $7 \frac{3}{4}$ in. (19.6 cm) long and $2 \frac{1}{4}$ in. (5.7 cm) wide at the blade end. The blade has begun to split apart where it was welded together during construction. There is a steel insert bit visible. The axe blade's bevel has been sharpened on both sides.



Figure 38. Felling Axe RM.Ax.1

Identification/Provenance

There is no specific provenance for this tool. The blade was probably used for felling, chopping or rough woodworking.

Specialized Axe Types

RM.H.1

This tool is a lathing hatchet. The head measures 6 in. (15.2 cm) long. The octagonal striking face measures 1 1/2 in. in diameter. The hatchet blade is 1 3/4 inches wide. Two stirrups that would have attached the head to a wooden handle are 4 1/2 in. (11.4 cm) long. The rivet is approximately 1/4 in. square shanked with a flat head, and is 1 inch long. The small notch in the blade is approximately 1/4 in. wide and 3/4 of an inch long.

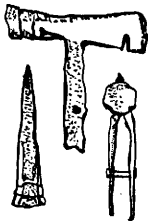


Figure 39. Lathing Hatchet RM.H.1

Identification/Provenance

There is no specific provenance for this tool. The hatchet head appears to be in excellent condition, only one corner of the striking face appears worn. There is

no trace of a wooden handle remaining. Tools of this type are used for attaching laths, or thin strips of wood that are nailed to joists and rafters as a preparatory surface for plaster or tiles. The flat top side is a diagnostic characteristic, it is shaped so that the tool can be used to strike nails near a ceiling without catching. The notch in the blade is for pulling nails. The tool was versatile and easy to use. The lathing hatchet is mentioned in inventories written as early as 1633 (Kebabian 1978:45). Moxon lists the tool as a lathing hammer in his section on bricklaying (Moxon 1677:248). The lathing hatchet was commonly seen by the 18th century. Sloane says it "became the favorite carpenter's tool to replace the awkward cooper's hatchet" for shaping wood (Sloane 1964:21). No date is available for this tool. The use of stirrups for attaching a hammerhead to the handle is usually seen on the earlier tools recovered from Port Royal, though in most cases the stirrups are separate pieces, not integral parts of the head as in this case.

SP.1.4.4-9 (4)

This lathing hatchet is 6 in. (15.2 cm) long. The hatchet blade is just over 1 1/2 in. wide. The striking surface is roughly octagonal, measuring 1 1/8 in. (2.6 cm) by 7/8 of an inch (2.2 cm). The tool has two "ears" on either side of where a wooden handle would have been fitted. The hatchet head is broken into two pieces.



Figure 40. Lathing Hatchet SP.1.4.4-9 (SP4)

Identification/Provenance

This lathing hatchet was recovered from the excavation of St. Peter's Church sideyard. No specific provenance information is available. The tool appears worn on both the blade and striking surface ends.

Blacksmith's Tools

The blacksmith was one of the most important craftsman in any colonial settlement or city. Wrought iron tools, implements and hardware are staples that were found in 17th-century homes, stores, shops and on plantations. Many tools were constructed and shipped from England to Jamaica. The Navigation Acts of 1651 and 1660 restricted legal trade of manufactured goods with any nation other than England by stating that such goods had to pass through England and be shipped on British vessels. A 1672 Act even required goods shipped between colonies to pass through England (Steffy 1988:116). The probate inventories list large-quantity parcels of hardware and tools in the possession of Port Royal merchants. These tool parcels could have either been traded or sold. The inventories also list parcels of scrap iron, new iron and wrought iron bar stock that were shipped in to the island to be locally crafted into new items and used for repairs. Pawson and Buisseret list four blacksmiths in downtown Port Royal before 1692 (Pawson & Buisseret 1975:178). The probate inventories filed between 1686 and 1694 list only two blacksmiths: John Philpott (Vol.3,folio 285) and William Davis (Vol.3,folio 297). Only John Philpott's inventory states that he is from Port Royal. Davis's inventory says that his administrator was a Port Royal merchant, so Davis' shop may have been in an outlying area of the parish. Most large plantations housed their own smith shops, complete with blacksmith, tools and forge. Some

inventories list a smith's shop and its contents among the possessions of merchants and planters.

While a certain standard kit of tools is usually associated with the blacksmith, his shop and forge could be well-stocked and complex or simple and crude. John Philpott's inventory lists over 1000 tools, including new and old iron and "18 dozen hammers". A smith's shop listed under the inventory of Port Royal merchant Daniel Hickes (Vol.3,folio 249) lists simply: "1 great anvill, 2 small ditto, 1 pr. of bellows, 4 nayle, 5 pr. of tongs, 2 great sledges, 4 hammers, 3 vises, 3 or 4 files, 1 handsaw, 1 whipp saw, 200 cwt of old iron, 5 old barrells of gunns & sundry other small things, 14 barrs of iron & 4 steele besides other small things".

The set of tools used by the blacksmith usually includes a basic number of items. Moxon's 1677 Doctrine of Handy-works describes the items necessary for smithing "in general" as: forge, bellows, straight-nosed tongs, crooked-nosed tongs, handhammer, up-hand sledge (small two-handed sledge), about sledge (larger, for battering or drawing out), rivetting hammer (small, used on cold iron), vise, flat nosed plyers, round-nosed plyers, drill, drill bow, screw-plate and taps. Moxon adds that "these are the most essential tools in the Black-Smith's Trade", but adds that "accidental work" will require more tools (Moxon 1677:1-7).

Other tools commonly assigned to the blacksmith are cold chisels, files, fullers, hardies and swages. The cold chisel is used for cutting iron. The fuller is used for drawing out or lengthening metal, the fuller has two halves and the metal is pounded between them. The hardie is a cutting tool, fitted into a hole in the anvil to be used. Swages round or shape metal, and can be used in a variety of sizes. The bottom half of a swage fits into an anvil hole, the metal is laid inside, and the top part

of the swage is held on the top and pounded to shape the metal in between (Arbor 1981:13). Figure 41 shows the basic kit of blacksmith's tools.

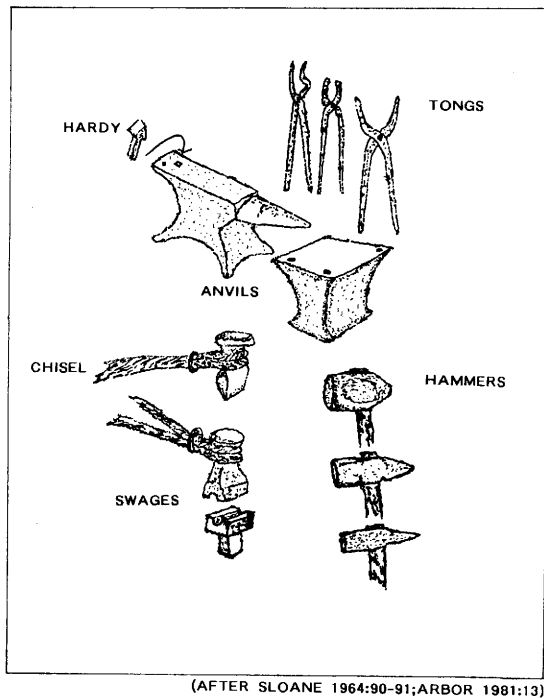


Figure 41. The Basic Kit of Blacksmith Tools

Four tools that can be specifically identified as metal-working tools used by the blacksmith have been recovered from the excavations of Port Royal. They are RM.BS.1, RM.BS.2, NS2.A2.1 (17) and PR (NP). The lack of recovery of any other smith's tools may be explained by one or two very simple reasons. Metalworking tools would probably have been one of the highest priority objects targeted for immediate salvage after the earthquake, since they would be necessary to rebuild the town and would not have been damaged by saltwater immersion. The other explanation is that no excavation has yet been undertaken in an area where a blacksmith was operating. (Figures 42-116 follow).

RM.BS.1

This tool is called a "set" (Blandford 1980:53). The set is helved like a hammer, and has a sharp edge for cutting metal. The tool is 7 5/8 in. (19.4 cm) long. The poll is rectangular, measuring 1 3/8 in. (3.5 cm) by 1 13/16 in. (4.6 cm). The cutting tool is chisel shaped and measures approximately 1 1/2 in. (3.6 cm) wide and 1/2 in. (1.3 cm) thick at its tip. The eye is oval shaped.

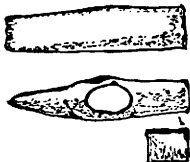


Figure 42. Blacksmith's Set RM.BS.1

Identification/Provenance

This tool has no specific provenance. It is identified as a blacksmith's set because of its straight peen cutting edge which is positioned opposite a rectangular poll. The thick width of the chisel suggests it was used for cutting cold iron. The tool shows evidence of wear on its poll, cutting surface, and inside of the eye. The poll face may have been used for pounding, like a sledge. The tool is designed small enough to be used one-handed by the smith.

RM.BS.2

This tool is some 5 7/8 in. (15 cm) long. A flat surface measuring almost 2 inches square, tapers for 4 in. (10.2 cm) to a round shank with a diameter of 3/8 of an inch.



Figure 43. Blacksmith's Flattie or Flatter RM.BS.2

Identification/Provenance

This tool has no specific provenance. It is identified as a blacksmith's "flattie" or "flatter", a smoothing tool. Later flatters had wooden handles, but some early tools were "rodded", with a withe handle wrapped around a grooved shank.

NS2.A2.1 (17)

This tool measures some 4 5/8 in. (12.2 cm) long. It has a round, grooved shank which is 11/16 in. in diameter. The square shaped cutting edge measures 3/4 in. by 11/16 inches.



Figure 44. Blacksmith's Drift or Punch NS2.A2.1 (17)

Identification/Provenance

This tool could be either a blacksmith's punch or a drift. A punch is used to make holes in iron. A drift is used to enlarge holes already punched. This tool was recovered from a recent, post-earthquake level of the New Street excavation inside of a courtyard. No other tools were recovered from this yard, from this level. A fragment of a knife blade and a peculiar T-shaped piece of iron were recovered from an earlier strata.

PR (NP)

The tool is an iron swage, some 5 1/4 in. (13.3 cm) long. An octagonal iron band that is just over an inch (2.54 cm) long is wrapped and welded around the center of the tool. The tool itself is square shanked above the band, measuring 1 inch by just under 1 inch. Below the band, the tool is round shanked and measures just under an inch in diameter. The tool's head is concave, used for rounding iron.



Figure 45. Blacksmith's Swage PR (NP)

Identification/Provenance

This tool was recovered from the TAMU/INA excavations but has lost its provenance. The tool is a swage. It was designed to be inserted into an anvil, and stopped by the band. The concave shape at the top of the tool was used for shaping and rounding iron. The tool is rather crudely made. The swage does show evidence of wear.

Caulking Irons

Even after earthquake and hurricanes put an end to Port Royal's prominence as a mercantile capital, the town's position at the entrance to the harbour made it the ideal location for a naval station and shipyard. Port Royal was home to the British Royal Navy until 1905. Ships continued to ply her waters and anchor just inside the sandspit's protection until this day. Several caulking irons have been recovered from the archaeological excavations of the site.

A caulking iron is used to drive hemp oakum between wooden plank seams to create a water tight seal. There are several types, shapes and sizes of caulking irons. A sharp iron is used for the first step of driving the oakum into a seam. A creasing iron is used to further "drive the oakum home." Specially shaped or bent irons are used for unwieldy butts or corner seams. Scrapers

are used to remove excess pitch from a seam (Dodds & Moore 1984:45).

Several of the tools recovered from Port Royal could be classified as either chisels or caulking irons, and undoubtedly there were some tools recycled and reused as both. For the purpose of this study, if a tool was solid shanked, and showed no sign of sharpened beveled edges on the sides of the blade, it was called a caulking iron. Several of the irons recovered have distinctive shapes that suggest the type of caulking they were used for, but in most cases the blade tip is deteriorated and the angle of the blades point cannot be determined. The caulking iron blades seem to be almost a standard 3/16 of an inch thick.

PR85 1012-6

This tool measures some 7 1/8 in. (17 cm) long. At its blade end the tool is just under 2 inches (4.9 cm) wide and approximately 1/8 of an inch thick. The tool is made of wrought iron.



Figure 46. Caulking Iron PR85 1012-6

Identification/Provenance

This tool has been identified as a caulking iron. It was drawn and recorded in the field, and because of its corroded condition was discarded. The tool was concreted and details were recovered from the calcareous mold formed around the deteriorated iron. The field recorder notes that the tool shows some signs of wear.

The head of the tool had been pounded on and was slightly mushroomed. The blade end was apparently in good shape. This tool was recovered from layer 2, above the 1692 level of Port Royal, from just outside of Building 3 on Lime Street.

PR84 804-1

This is an epoxy cast of a solid iron caulking iron. The tool is 6 9/16 in. (16.7 cm) long. The tools solid head is slightly mushroomed, and measures approximately 1 1/8 inches (3 cm) in diameter. The blade end measures 1 3/4 in. (4.6 cm) wide and 3/16 of an inch thick.



Figure 47. Caulking Iron PR84 804-1

Identification/Provenance

This is a caulking iron. The tool's relatively intact edge suggest that it was used as a sharp iron. The tool was recovered from layer 3 of the alleyway between Buildings 1 and 2 facing Lime Street.

PR83 201-2

This tool is approximately 6 3/16 in. (15.7 cm) long. It is made of solid wrought iron. The round head is slightly mushroomed and has been pounded on. The head is just about 1 1/8 in. in diameter. The blade end is corroded and deteriorated. The original blade width is approximately 1 3/4 in. (4.4 cm) wide and just under 3/16 of an inch thick.



Figure 48. PR83 201-2

Identification/Provenance

This tool is a caulking iron. The remaining blade tip suggests that it was used as a sharp iron. The tool was recovered from the 1692 layer, on top of bare floor inside of Room 2 of Building 1 which faces Lime Street. Artifacts associated with this tool include ballast stone and cast cannon or verso shot.

PR84 734-5

This is an epoxy replica of a caulking iron. The tool measures just under 6 inches (15 cm) long. The head is mushroomed and shows signs of wear. The diameter of the head is approximately 1 inch. The blade end is slightly deteriorated. The tool's original size would have been almost 1 3/4 in. (4.45 cm) wide and almost 3/16 of an inch thick.

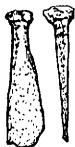


Figure 49. Caulking Iron PR84 734-5

Identification/Provenance

This tool is a caulking iron. The wear on the blade makes it difficult to tell whether the tool was used as a sharp iron or as a creasing iron. The tool was recovered from the 1692 level of the excavations, outside of Room 1 of Building 1 on Lime Street.

RM.C.5

This small solid iron tool measures approximately 3 7/8 in. (9.9 cm) long. It is shaped from a square piece of bar stock. The tool has a square head that is mushroomed from being pounded on. The head measures 1 inch by 9/16 of an inch. The blade end is just over 1 1/2 in. wide and 3/16 of an inch thick.



Figure 50. Caulking Iron RM.C.5

Identification/Provenance

This is a caulking iron. There is only a small bit of wear on the blade end. There is a small apparent bevel, suggesting that this tool may have been used as a sharp iron. This tool has no provenance information available.

RM.C.1

This tool is simply constructed of solid wrought iron. The tool is 6 1/4 in (16 cm) long. The tool's head is relatively square, measuring a little over an inch in each dimension. The blade end of the iron is

1 3/4 inches wide and approximately 3/16 of an inch thick. There seems to be a blade insert at the tip end of this blade, but it may simply be the tool was ground to a sharp edge and this increased corrosion at this point after the tool was submersed in saltwater.



Figure 51. Caulking Iron RM.C.1

Identification/Provenance

This tool is a caulking iron. The shape of the remaining blade suggests that it was probably used as a sharp iron. There is no provenance for this tool.

RM.C.2

This tool is broken just above where the blade shoulders narrow to form the shank. It is made of solid wrought iron. The preserved length of the tool is 5 11/16 in. (14.5 cm). The blade end measures 2 3/8 in. (6 cm) wide and approximately 3/16 of an inch thick. There appears to have been a steel blade point welded to the tip of this blade, which is bevelled on both sides.



Figure 52. Reaming Iron RM.C.2

Identification/Provenance

The shape of this tool suggests that it may been used as a reaming iron, for cleaning out old seams before caulking. The fact that this blade seems to have a steel point to keep it sharper for a longer time period may corroborate this identification. Unfortunately, this tool has no provenance. The broken tool shank suggests that the tool may have broken and been discarded, or may have been misused in an attempted salvage operation and broken.

RM.C.6

This tool is 4 11/16 in. (12 cm) long. The tool is made from one piece of tapering rectangular wrought iron bar stock. The tool has a rectangular head that has been pounded on that measures approximately 1 3/4 in. by just under 1 inch. The blade end measures almost 2 inches (5 cm) across and is 3/16 of an inch thick at its tip.



Figure 53. Caulking Iron RM.C.6

Identification/Provenance

This tool may actually be a chisel or a caulking iron. The tool is crudely and simply constructed. The tool's small length in relation to its wide blade makes it seem unwieldy as a wood chisel. The shape of this blade is similar to that of the other caulking irons. This tool has no provenance.

Chisels

There are several variety of chisels that have been used throughout time. The use of a chisel for specialized woodworking dates back to the Stone Age. Early bronze and copper chisels were cast, which often led to a finer appearance than the comparatively crude chisels created by forging wrought iron (Goodman 1964:195-196). The size, shape, angle of bevel of the blade, and type of handle arrangement, all help to determine which type of function a chisel is intended to perform. The wood chisel may be used by the cabinetmaker, carpenter, joiner, shipwright, turner, or wheelwright. Specialized chisels are also used by the bricklayer, filemaker, glazier, slater, and the stonecutter. The metalworking smiths also use a number of uniquely designed hot and cold chisels in practicing their crafts.

Of the eighteen tools identified here as chisels that have been recovered from the archaeological excavations of Port Royal, most seem to have been used as woodworking tools. As mentioned in the caulking iron section, in some instances it was difficult to tell if a tool was a caulking iron or a chisel, and because of reuse some tools may have been used as both.

Chisel handles have been tanged, socketed and solid since Roman times (Goodman 1964:196). In his 1677 manuscript Moxon states that:

those chissels joiners use have their wooden heads made hollow to receive the iron sprig above the shoulder of the shank (tang-fitted), carpenters have their shank made with a hollow socket at its top, to receive a strong wooden sprig made to fit into the socket, with a square shoulders above it, the thickness of the iron of the socket, or somewhat

more; which makes it much more strong, and able to endure the heavy blows of the mallet they lay upon the head of the chissel. And the shanks and blades are made stronger for carpenter's use than they are for joiners (Moxon 1677:120-121).

This distinction of the type of handle attachment used on a chisel varying for the type and delicacy of the work is still commonly made today. Interestingly, all of the chisels in the collection recovered from Port Royal are either socket-fitted or crafted of solid wrought iron. The other main distinguishing feature for presuming the intended method of use for a particular chisel is the size and bevel of the blade. Chisels generally are made to standard blade widths measured in inches. Chisel blades may be angled, bevelled or "bafil'd" on either one or three sides, depending on their intended use.

The chisels in the collection of tools from Port Royal will be discussed in the order of their handle type, beginning with the socket-fitted chisels and ending with those tools that are solid wrought iron. One hand held gouge bladed chisel was recovered and will be included in this section.

PR87 545-6

This chisel is the largest one in the Port Royal collection. The tool was recovered with an intact wooden handle. The wooden handle appears to have been carved rather than turned. The overall length of the tool is 15 5/8 in. (39.7 cm), with the blade measuring 7 3/4 in. (19.7 cm) long and the socket and handle measuring 7 7/8 in. (20 cm) long. The maximum width of the original blade is 2 1/2 in. (6.35 cm). The blade is approximately 1/4 inch thick. The blade tip is bevelled to angle of some 35 degrees.



Figure 54. Framing Chisel PR87 545.6

Identification/Provenance

This tool could be either a carpenter's firming or framing chisel. The width of its blade suggests that this was probably used as a framing chisel. Framing chisel blades begin at 2 1/2 inches and are as large as 4 1/2 inches wide. The framing chisel is commonly used to cut tenons to fit into mortise holes (Sloane 1964:52-53). This tool was recovered from the 1692 level of Port Royal. It was located outside of the entrance to Building 5, near the rubble of several wooden architectural features associated with Building 8. Additional tools recovered from the same area include an auger (533-1) and a carpenter's claw hammer (545-5).

RM.C.8

This socket-handled chisel is some 10 3/4 in. (27.5 cm) long. The blade itself is 5 1/2 in. (14 cm) long, 2 3/8 in. wide and 3/16 of an inch thick at its tip. The chisel is bevelled only at its tip, but due to deterioration the exact angle of the bevel cannot be stated. The socket for the tool's handle is 1 1/2 in. in diameter at its widest point. There is no trace of a wooden handle.



Figure 55. Former or Firming Chisel RM.C.8

Identification/Provenance

This tool fits descriptions for the former or firming chisel, a tool used to connect two auger holes to create a mortise in wooden timbers (Sloane 1964:52-53). Moxon calls the chisel a "former" since it is the first chisel used when removing excess wood. Later sources have changed the name to the "firmer" or "firming" chisel (Hummel 1968:68). Like a firming chisel, this tool has been sharpened on both sides of the blade. This tool has no provenance.

RM.C.4

This chisel is some 8 1/2 (21.5 cm) long. The tool's blade is 5 3/8 in. long. The blade is somewhat deteriorated. The blade's preserved width is close to 1 inch at its tip, but judging by the width of the shoulders, the original width of the blade was 1 1/4 inches. The chisel blade is just under 3/16 of an inch thick at its tip. The tool has an empty socket for a handle. There is no wooden handle remaining. The socket for the tool's handle measures just under 1 inch in diameter. This tool may have been bevelled on all three sides. Deterioration of the blade make determination of the angle of the bevel impossible.

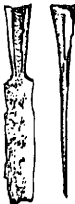


Figure 56. Firmer Chisel RM.C.4

Identification/Provenance

This tool fits the description of the firmer chisel. Some sources state that a firmer chisel is simply one that is struck with a mallet, and a paring chisel is one which is pushed by hand (Hummel 1968: 68). This tool has no provenance.

RM.C.3

This socket-fitted chisel is just over 6 in. (15.4 cm) long. The blade of the chisel measures 4 in. (10.2 cm) long and its preserved width is 1 inch. The blade tip is sharpened on both sides and measures 1/8 of an inch thick. The round socket for the handle is empty. The diameter of the socket is 3/4 of an inch.



Figure 57. Woodworking Chisel RM.C.3

Identification/Provenance

This tool is well made. There are some signs of wear visible that indicate that the tool has been used. The socket for the handle is slightly distorted and the blade tip has been sharpened and worn thin. This could be a firming chisel or a paring chisel. This tool has no provenance.

PR87 536-10

This is an epoxy replica cast of a six-sided socket-handled chisel. The tool's overall length is just over 9 in. (22.9 cm). The blade of the chisel is 5 1/2 inches long. The blade is 3/8 of an inch wide at the shoulders and gradually widens to 1 inch at the blade tip. The blade tip is 1/8 of an inch thick. The blade seems to have been sharpened on both sides. There is no sign of a

wooden handle in the tool socket. The socket itself measures 1 1/4 in. in diameter. The socket is slightly deteriorated and shows signs of wear.

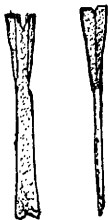


Figure 58. Woodworking "skew" Chisel PR87 536-10

Identification/Provenance

This is a woodworking chisel. The carefully crafted taper of the blade width fits descriptions of the "skew" chisel used for mortise work (Sloane 1964:55). This tool was recovered from the 1692 layer of Port Royal. The tool was encrusted in a calcareous concretion which also contained roofing tile and wooden fragments, as well as metal wire of the same type as that used to seal onion bottles. The chisel was recovered from outside the wall of Building 5, near wooden architectural debris. Associated tools recovered from the same area include a framing chisel (545-6), auger (533-31) and claw hammer (545-5).

SP.1.89 (6)

The remains of this tool suggest that it was a socket-handled chisel. The preserved length of the tool is some 5 3/4 in. (14.6 cm). The socket portion of the chisel is just over 4 in. long, before it squares off

into shoulders and the beginning of the blade. The preserved blade width is $\frac{3}{4}$ of an inch at its widest point. The preserved thickness of the blade is just over $\frac{3}{16}$ of an inch. The empty socket for the handle measures just under an inch in diameter.



Figure 59. Chisel SP.1.S9 (SP6)

Identification/Provenance

The squared shoulders of this tool suggest that it was a chisel rather than a knife blade. There is no exact provenance for this tool.

NS2.A9.1a (7)

The preserved length of this tool is just under 6 in. (15.0 cm). The remains are a portion of a round socket for a handle and a portion of a gouge blade. The socket measures $\frac{5}{8}$ of an inch in diameter. The preserved width of the gouge blade is $1 \frac{1}{8}$ in. across at its widest point. The inner dimension of the curve of the gouge blade is approximately 1 inch.



Figure 60. Gouge-tipped Chisel NS2.A9.1a (7)

Identification/Provenance

This is a hand held gouge for woodworking. The tool was recovered from the New Street excavations, in a room facing present day Love Lane. One other chisel (NS11) was recovered from this room, though from a different strata.

PR83 113-3

This is an epoxy cast replica of a chisel that has a preserved length of 6 3/8 in. (16 cm). A hexagonal socket appears to contain the remains of a wooden handle. The socket measures 7/8 of an inch wide. The tool was either constructed to be used with a dogleg between the handle and the blade, or was broken and concreted at this angle at the time of its submersion. The blade itself is 2 in. wide and 3/16 of an inch thick. The blade of the tool appears thicker in some places, but this is probably due to the casting. The tip of the blade is missing and there is no discernible bevel remaining.

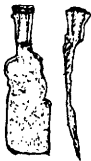


Figure 61. Chisel PR83 113-3

Identification/Provenance

This tool could be a dogleg chisel, meant to be used in awkward places, or it could simply have become bent and broken at the time of its loss. The tool was recovered from Layer 2 of the Port Royal excavations, which in most cases post dates the earthquake.

PR84 711

This is an epoxy cast replica of a solid wrought iron chisel. The tool is 8 1/2 in. (21.6 cm) long. The blade portion of the tool is bevelled on three sides. The blade itself is 5 in. long, 1 7/8 of an inch wide, and 1/8 of an inch thick at the tip. The end of the solid iron handle measures 7/8 of an inch square. The handle end shows wear, as if it were used as a striking surface. On the reverse side of the bevelled edges of the chisel there is a small hole which measures 1/8 of an inch in diameter.

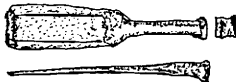


Figure 62. Chisel PR84 711

Identification/Provenance

This tool is a woodworking chisel. It may have been used as either a paring chisel, a firming chisel, or both. One interesting feature is the hole on the reverse side of the tool. There is a possibility that the hole is simply an air bubble in the epoxy cast. If the hole was crafted intentionally, it may have been used to fix the chisel to a workbench, so the tool may be used as a sort of fixed plane blade. The tool was recovered from Room 1 of Building 1 in the TAMU/INA excavations of Port Royal. This tool is from Layer 1-Layer 2, which is more recent than the 17th-century strata.

NS2.A6a.1b (15)

The preserved length of this tool is 5 3/8 in. (13.7 cm). There is no handle on this tool, only a square shank and part of a chisel blade remain. The blade is 1 inch wide at the shoulders, and gradually broadens to a preserved measurement of 1 3/8 of an inch. The original blade width was probably 1 1/2 inches. The blade end is bevelled on one side only, and is 1/8 of an inch thick.



Figure 63. Chisel NS2.A6a.1b (15)

Identification/Provenance

Only the blade end of this tool is preserved. The taper of this blade is similar to that of PR87 536-10, which may be a straight skew chisel for paring wood. This tool was recovered from the New Street excavations, close to the 17th-century layer. Other tools associated with this one are a shoemaker's hammer (NS5) and an iron crow pry bar (NS 21).

PR82 141-33

The broken blade end and shaft of this tool measure 7 1/2 in. (19 cm) overall. The broken shank is rounded, but six planes are visible. The shaft is just under 1 inch wide. The blade end measures 1 1/4 in. wide and 3/16 of an inch thick at the tip. The tip of the blade has been bevelled on both sides.

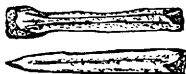


Figure 64. PR82 141-33

Identification/Provenance

This tool has been identified as a chisel because of its bevelled edge. The tool may also have been used as a caulking iron, or even a pry bar. The tool is solid wrought iron. This tool was recovered from Layer 2/Layer 3 of Room 3 in Building 1 of the TAMU/INA excavations. Because of this crossover between layers, the tool may or may not have been deposited at the time of the earthquake.

NS2.A5a.1c (14)

This solid wrought iron tool measures 7 in. (17.7 cm) long. The blade end of the chisel is some 3.5 in. long, 7/8 of an inch wide at its widest point, and 1/8 of an inch thick at the tip. The tool has been bevelled on both sides of the blade tip.



Figure 65. Chisel NS2.A5a.1c (14)

Identification/Provenance

This tool is small and thin. If not for the fact that the tool is bevelled on the blade end only, it would seem more like a knife. This chisel resembles several tools that are used by the turner when shaping wood. The tool was recovered from the New Street excavations, near the 1692 layer.

NS2.A5b.1d (12)

This tool is 6 1/2 in. (16.5 cm) long. A solid iron shank and handle are attached to the remains of a badly deteriorated chisel blade. The blade is 5/8 of an inch wide at the shoulders and widens to 1 1/4 inches at the blade tip. The blade measures 3/16 of an inch thick at the tip, which is bent and twisted. The solid handle is round but has five definite sides visible. The head of the tool measures 1 inch in diameter. The tool's head is worn and may have been struck with a mallet.



Figure 66. Chisel NS2.A5b.1d (12)

Identification/Provenance

This tool is probably another woodworking chisel. The tool was recovered from the New Street excavations, below the 17th-century layer. One other crude chisel (NS8) was recovered from the same room, at the same strata.

NS2.A4a.1b (13)

This tool is 6 in. (15.3 cm) long. The solid hexagonal handle is 3 in. (7.6 cm) long. The remaining blade has a preserved length of 3 inches. The blade width is 1 1/8 in. at its widest point. The bottom edge of the blade is 1/8 of an inch wide. The actual blade tip is missing and no information about the bevel can be determined. The head of the tool is rounded and appears worn. The head measures 1 inch in diameter.



Figure 67. Chisel NS2.A4a.1b (13)

Identification/Provenance

The deteriorated blade end of the tool makes it difficult to assign any specific identification to the tool. Only the fact that the head of the tool appears to have been used as a striking surface suggests that this tool is a chisel rather than some sort of knife. This tool is from the excavation of New Street, near the 17th-century layer. Other tools recovered from the same area include one wedge (NS9) and two axe heads (NS1 and NS3).

PR84 802-1

This is an epoxy replica of a wrought iron solid chisel shank and blade. The tool is broken at the shank. The preserved length of the tool is 6 1/4 in. (15.9 cm). The shank is square. The blade is 1 3/8 wide and 3/8 of an inch thick at the end. There are no bevels visible, yet the blade appears worn thin evenly on both sides.



Figure 68. Chisel PR84 802-1

Identification/Provenance

This tool appears to have been used as some sort of chisel. No further identification of this tool is possible due to its missing areas. This tool was recovered from the 17th-century layer of Port Royal, in the alleyway outside of Building 1.

NS2.A5b.1d (8)

This solid wrought iron tool measures 7 1/4 in. (18.4 cm) long. The tool's square shank and striking surface taper to a chisel or wedge point. The striking surface measures just over 1 1/2 in. wide. The blade end measures just over an inch wide and is 3/16 of an inch thick at its tip.



Figure 69. Chisel NS2.A5b.1d (8)

Identification/Provenance

This tool may have been used as either a crude chisel or a wedge. The tool was recovered from the 17th-century layer of the New Street excavations. One other chisel (NS12) was recovered from this area.

NS2.A1.1 (10)

This solid wrought iron tool measures 5 $\frac{11}{16}$ in. (14.4 cm) long. The octagonal shank forms a solid head that has been pounded on. The diameter of the head is approximately 1 inch. The blade end is 1 inch wide and $\frac{3}{16}$ of an inch thick. The blade has been sharpened on both sides.



Figure 70. Chisel NS2.A1.1 (10)

Identification/Provenance

This tool seems to be a chisel or a wedge. The tool was recovered from layer 1 of the New Street excavations, the most recent post-earthquake strata. The metal is in good shape, and this tool seems to be relatively modern.

NS2.A9.3 (11)

This solid wrought iron tool measures 5 in. (12.7 cm) long. It is constructed of 1 piece of wrought iron that is octagonal in shape. The head measures just under an inch in diameter. The blade end is $\frac{7}{8}$ of an inch wide and $\frac{3}{16}$ of an inch thick.



Figure 71. Chisel NS2.A9.3 (11)

Identification/Provenance

This tool seems to be some sort of crudely made chisel. The tool was recovered from the excavation of New Street, from a layer said to pre-date the 1692 earthquake. One other gouge (NS7) was recovered from the same room, but from a much more recent layer.

RM.C.7

This tool is 7 1/8 in. (18 cm) long. The tool is constructed of two pieces of wrought iron. An octagonal head has been wrapped and welded onto a shank that is rounded though it has 4 sides. The head is just under 2 in. wide. The shank is just under 1 and 1/4 in. wide and tapers to a point that is 3/16 of an inch wide at the blade tip.



Figure 72. Chisel RM.C.7

Identification/Provenance

This tool seems to be a crude sort of chisel. The reason a head has been welded to the upper end may be to increase the striking surface. This tool has no provenance.

Cleavers

Fresh meat was apparently not difficult to obtain in colonial Port Royal. Taylor mentions that the town housed markets for fresh fish and "fleash", not to mention the easily procured meat from sea turtles stored

in the crawls (Taylor:494). The Volume III probate inventories list at least one man's profession as a butcher. Several inventories mention the possession of livestock. Presumably, the use of a cleaver to dress meat would be a fairly commonplace activity in old Port Royal.

Three tools that can be classified as cleavers have been recovered from the archaeological excavations of Port Royal. Two of the tools are made all of iron, while the third small cleaver is tanged and fitted with a wooden handle and iron ferrule.

RM.Cl.1

This solid wrought iron cleaver is almost 26 in. (66 cm) long. The blade portion of the tool is 12 in. (30.5

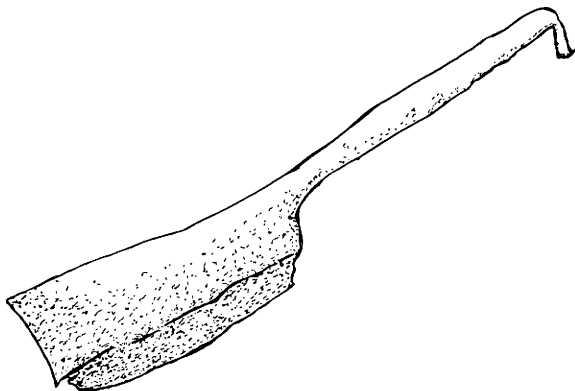


Figure 73. Cleaver RM.Cl.1

cm) long and has a maximum width of 6 in. (15.2 cm). The blade itself is $\frac{3}{16}$ of an inch thick at its sharp edge and as thick as $\frac{1}{4}$ of an inch at its top edge. The blade of the tool has been sharpened on both sides. The handle portion of the tool is 14 in. (35.5 cm) long. The handle is $1\frac{3}{8}$ of an inch at its widest point. The end of the handle is bent around to form a sharp point ($1\frac{3}{8}$ in. by $\frac{3}{8}$ in.).

Identification/Provenance

This tool is a cleaver. The blade has been sharpened on both sides and is worn. The point at the end of the handle is a common feature on butchering tools, and may be used to hang the tool or to bleed the animal. This tool has no provenance.

PR87 576-9

This tool is some $24\frac{1}{2}$ in. (61 cm) long. The blade portion of the tool is just over 12 in. (30 cm)

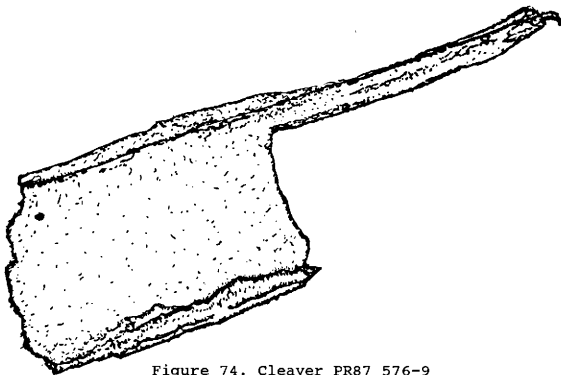


Figure 74. Cleaver PR87 576-9

long. The blade has a maximum width of 8 1/2 inches. The blade is worn through near its sharpened edge. There is a small hole in the upper distal portion of the blade that measures almost 1/4 of an inch in diameter. The handle of the tool is square, and is approximately 1 1/4 in. wide. There is a small curved iron point on the end of the handle that is 3/4 of an inch long.

Identification/Provenance

This tool is a cleaver. The cleaver weighs over 10 pounds and could easily slice through meat and bone. The tool was recovered from the 1692 layer of Port Royal. The tool was inside Room 1 of Building 5.

PR87 434-7

This epoxy replica of a cleaver is just under 13 in. (33 cm) long. The bladed portion of the tool is 7 3/4 in. (19.7 cm) long. The blade has a maximum width of 4 3/8 inches. The blade is 1/4 of an inch thick at its upper edge and 1/8 of an inch thick at its sharpened edge. A metal tang that is 2 11/16 in. long is fitted into a wooden handle that is 4 7/8 of an inch long and has a diameter of 1 1/4 inches. An iron band or ferrule that is 1/4 of an inch wide holds the tang inside of the handle.

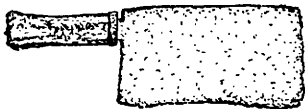


Figure 75. PR87 434-7

Identification/Provenance

This is a smaller cleaver, more likely used to prepare meat for serving than for butchering whole animals. The cleaver was recovered from the 1692 level of Port Royal. The tool was found inside of the yard of Building 4. Two broad axe blades (423-9 and 413-10.1) were recovered from within the same yard. These tools may have been associated with a cook house in the yard. From the same area as the cleaver, several cooking pots, utensils and charred bricks were also recorded. There is a large concentration of bone that was also recovered from this area (Willoughby 1987:21).

Compass (Dividers)

Two pairs of compasses or dividers have been recovered from Port Royal. Only one compass is made of iron, the other one is made of brass. An iron compass is commonly recognized as a measuring tool that is part of the carpenter's tool kit. In his 1677 publication, Moxon states that the carpenter's compass is used "to describe circles, and set off distances from their rule, or any other measure, to their work" (Moxon 1677:104).

PR86 254-6

This tool is an epoxy replica of a compass that is 4 1/4 in. (11 cm) long overall. The compass was originally constructed as two separate pieces, joined with a hinge at the top. The preserved width of each of the two legs is approximately 1/4 of an inch. The legs are 3/16 of an inch thick. The points at the bottom of the legs do not seem to be sharp. The hinge at the top of the compass is 1/2 inch wide.



Figure 76. Compass PR86 254-6

Identification/Provenance

This tool is a compass. Typically, iron compasses are used by carpenters for measuring, and brass compass for navigation or drafting. Of course, there is no way to state for certain that this tool was being used by a carpenter. The compass was recovered from the 1692 level of Port Royal. The compass was found beyond the wall fall of Building 5, near the intersection of Queen Street and Lime Street, on the surface of the paving.

Crow

The iron crow is described by Moxon as a tool consisting of shank, claws and pike end used by the house carpenter "as a lever to lift up the ends of great heavy Timber" (Moxon 1677:125). The iron crow is also often included in the kit of tools assigned to the shipwright (Dodds & Moore 1984:42). One iron crow has been recovered from the Port Royal excavations.

NS2.A6a.1b (21)

This tool is 18 7/8 in. (48 cm) long overall. One end is simply a continuation of the round shank, while the other end is flattened to be used for prying. The flat end is 1 1/8 in. wide and 1/4 in. thick. The round shank has a diameter of approximately 3/4 of an inch.



Figure 77. Crow NS2.A6a.1b (21)

Identification/Provenance

This crow bar was recovered from the New Street excavations, close to the 17th-century layer. Other tools recovered from this area include a shoemaker's hammer (NS5) and a chisel (NS15). The tool could have been used in an attempt at salvage, or could have been one of the tools that was being used in the house at the time of the earthquake.

Files

Files may be used for smoothing or shaping both wood and metal. A file blank is a piece of iron or steel shaped into the final shape of the file, that is then cut with chisels and punches to create grooves. A single-cut file has parallel grooves cut at an oblique angle across its surface. A double-cut file has two courses of grooves cut at right angles to each other. A single-cut or float file is generally used on soft wood. A double-cut or flat file may be used on either hard wood or metal. A rasp has rows of individual teeth made with a punch (Hummel 1968:78; Arbor 1981:39).

The probate inventories mention Dutch, half round, rasp, "smoth" (smooth), and square files. Three files have been recovered from the archaeological excavations of Port Royal, PR86 236-4, PR85 1035-9 and PR83 312-60. Files are most commonly made from steel. These three

files are all epoxy replicas cast from concreted molds. These tool may have been iron, or may in fact have been case hardened into steel.

PR86 236-4

This tool is 8 in. (20.3 cm) long. The tool was broken before it was concreted. The original length of the blade would have been just over 6 in. (15.2 cm). The blade face tapers from 7/8 of an inch to 1 inch wide. The blade is 3/8 of an inch thick. The shape of the blade is rectangular. The tool shows no trace of having had grooves cut on it.

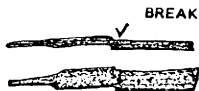


Figure 78. File Blank PR86 236-4

Identification/Provenance

This tool is a file blank. No groove courses have been cut onto the blade face. The tool was recovered from the 1692 level of Port Royal, near a fallen wall to the west of the Building 2 buttress. Wood was found concreted near the tang end of the tool. There is a possibility that the file was deliberately crafted with a dogleg in the blade to facilitate a special usage. It seems more likely that the file was simply broken at the time of its deposition and the concretion formed around its two adjoining halves.

PR85 1035-9

This tool is 8 3/8 in. (21.2 cm) long. This is an epoxy replica, and in some places the blade is missing. The missing sections may be due to the casting process, or the tool itself may have been worn out. The tool has a rectangular shape and a small tang on one end. The maximum width of the file is 9/16 of an inch. The tool is 1/4 in. thick. There is a double-cut pattern etched on one side of the tool face. There are punch marks like on a rasp made on the opposite side of the tool face. Double-cut marks are visible on the edges of the tool.



Figure 79. Double-cut Flat File PR85 1035-9

Identification/Provenance

Both courses of cuts on this file are faint and fade to plain part way down the tool's face. The epoxy cast shows good detail, and the fading of the grooves is probably due to the fact that the tool was worn from use when it was deposited and then concreted. This file was recovered from the 1692 level of Port Royal. The tool was found inside the walls of Building 3.

PR83 312-60

This epoxy replica of a rasp is just under 13 in. (33 cm) long. The tool is round in cross section, and tapers in diameter from 3/4 of an inch down to 1/4 of an inch. At the narrow end of the tool, four distinct sides can be seen. A punch has been used to mark individual round holes along the surface of the tool.



Figure 80. Rasp PR83 312-60

Identification/Provenance

This tool is a rasp. Small bits of brick were found in the encrustation of this tool. The missing areas of punch marks on the surface seem to be from wear and usage. This tool was recovered from an area designated as Layer 1/Layer 2, which post dates the earthquake. The rasp came from the inside of Building 1.

Hammers

The basic hammer is a tool that has stayed essentially the same since the Stone Age. The development of a perforated hammerhead originated early in the Iron Age, and by Roman times the hammer looked much the same as it does today (Goodman 1964:202). Different requirements of usage have allowed hammers to develop a number of specialized features that identify certain hammers with certain trades. The carpenter's hammer has a claw for nail pulling. The shoemaker's or cobbler's hammer (used also by the cabinetmaker), has a solid poll opposite the face that is used for drawer corners (Sloane 1964:23; Blackburn 1974:113). Several specialized hammer types are named for their intended use or user, including the blacksmith's hammer, brad hammer, brick hammer, coachmaker's hammer, cooper's driver, farrier's hammer, framing hammer, tack hammer, tinner's hammer, trimmer's hammer, and the upholsterer's hammer.

During the late 17th century hammers were made of wrought iron, since cast iron is far too brittle for tool construction, and an economically viable process for casting steel had not yet been perfected. Some hammers from this period had steel plates welded onto their faces to increase the tools strength and durability.

Like axes, hammerheads were shipped and sold without handles, and the tool's owner generally fitted the head with his own handle. Not until 1840 did the method of hammer to handle attachment used today, known as the "adze-eye" because of its elongated sleeve or socket similar to the method used on the adze, become common for attaching the hammerhead to the handle (Bealer 1976:58). In the 17th century the handle was simply inserted into the eye and wedged into place. In medieval and post-medieval examples of this method of attachment, iron straps that act like stirrups run through the tool's eye and along the wooden handle and are rivetted into place (Goodman 1964:202). Moxon's 1677 manuscript pictures the stirrup method of attachment in his plate of tools of the carpenter (Moxon 1677:118).

Fifteen hammers in all are included in the collection of tools recovered from Port Royal. Five of the hammers in the collection have a wooden handle intact or partially remaining in the head. Eleven of the hammers are basic carpenter's claw hammers.

PR87 545-7

This tool is an epoxy cast replica of a carpenter's claw hammer. An intact wooden handle and iron stirrup straps attach the head to the handle. The overall length of the tool is 13 1/2 in. (34.3 cm). The head itself is 5 3/8 in. (13.6 cm) long. The head is approximately 1 inch wide. The face is octagonal, measuring roughly 1 1/8 in. across. The handle portion of the tool is 12 3/8

in. (31.4 cm) long and 1 3/8 wide. The iron straps are 6 9/16 in. long, 1 in. wide, and 1/8 in. thick. Two holes for attaching the straps to the handle measure 3/16 in. in diameter.

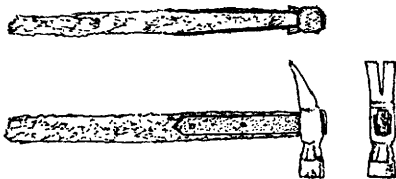


Figure 81. Carpenter's Claw Hammer PR87 545-7

Identification/Provenance

This tool is a claw hammer commonly used in woodworking. The tool is finely crafted. The method of handle attachment is an excellent example of the stirrup method. The face of the tool appears somewhat worn but this may be because a steel plate had been welded to its surface at one time. Other than this the tool appears to be relatively unused, almost new. This tool was recovered from the 1692 layer of Port Royal. The tool was found outside of Building 5, near wooden architectural debris associated with Building 8. Recovered from this area also were a claw hammer (533-9), framing chisel (545-6), and auger (533-31).

PR87 533-9

This tool is a cast epoxy replica of a hammer that is 29 5/16 in. (23.6 cm) long overall. The head itself is claw toothed with an octagonal face. The head is 5

3/8 in. (13.8 cm) long and 1 13/16 in. wide. The face measures approximately 1 3/16 in. across. The protruding section of the handle measures 8 3/16 in. (20.7 cm) long and is just over an inch in diameter. There are two holes in the handle where iron straps at one time attached the hammerhead to the handle. The straps are visible in x-rays taken of the concretion, but were not cast.

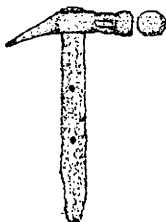


Figure 82. Carpenter's Claw Hammer PR87 533-9

Identification/Provenance

This is another example of a fine woodworking hammer. There is some wear on the face and there may have been a steel plate welded onto the face at one time. The claws are not distorted. The tool appears to be very similar to PR87 545-9. The tool was recovered from the 1692 layer of Port Royal. Found inside the concretion near the handle were two brass straight pins. The hammer was found outside of Building 5, near wooden debris associated with Building 8. A claw hammer (545-7), two chisels (545-6 and 536-10) and an auger (533-31) were also recovered from this area.

PR86 254-5

This is an epoxy cast replica of a claw hammer. The overall length of the tool is some 7 1/2 in. (19 cm). The head itself is 4 1/2 in (11.4 cm) long and just over an inch wide. The rectangular handle is attached through a rectangular eye that measures 1/2 in. by 1 inch. The face is deteriorated, but was once octagonal. The face measures approximately 1 in. across. The handle extends only 6 3/8 in. below the head, and appears to be complete.

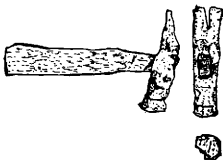


Figure 83. Claw Hammer PR86 254-5

Identification/Provenance

This tool is a woodworking claw hammer. The tool is not so finely crafted as hammers 545-7 and 533-9. The handle on this hammer is much shorter than the previously mentioned hammers, and the angle of attachment between hammer and handle is much steeper. This may be because this tool was intended to be used in smaller spaces, for work requiring shorter strokes. The wear on the face, body, and claws of this hammer all suggest that this tool was well used. The hammer was recovered from the 1692 level of Port Royal. The tool was encrusted in calcareous matter along with brick, plaster and wood fragments. The tool was found outside of the walls

between Buildings 2 and 5, where Queen and Lime Street intersect. Other artifacts recovered from this area include the iron compass (254-6), an onion bottle, and some nails.

PR84 193-4

This tool is a partial epoxy cast of a claw hammer. The iron in the tool is badly degraded, and the detail of the tool is deteriorating. The overall remaining length of this hammer is 5 1/2 in. (14 cm). The head itself is 4 1/4 in. (10.8 cm) long (preserved) and 1 1/8 in. wide where the handle is attached. One claw is missing from the head. The eye is rectangular, and the handle shows no sign of having been wedged. The eye measures 1/2 in. by 7/8 of an inch. The hammerhead is too badly degraded to discern any detail about the face of the tool, although an early sketch suggests it was octagonal. The handle extends 4 5/8 in. (11.8 cm) below the head before the wood shows a break.



Figure 84. Claw Hammer PR84 193-4

Identification/Provenance

This tool is a carpenter's claw hammer. The tool was recovered just outside of the wall of Room 1 of

Building 1 on Lime Street at the 1692 level. Other tools recovered from the same vicinity include an adze (192-1) and an auger shank and gouge bit (732, 727-5).

PR82 152-3

This is an epoxy cast replica of a claw hammer head with some remains of a handle evident in the tool's eye. The hammerhead measures just over 4 1/2 in. (11.4 cm) long. The head is 1 1/8 in. wide at the eye, 1 1/4 in. wide at the claw end, and 1 1/16 in. wide at the face. The face is octagonal and measures 1 1/16 in. wide. The eye is rectangular and measures 1/2 in. by 3/16 of an inch. The wooden handle was wedged into place. The wooden handle extends 1 1/4 in. below the head before it is broken off. The hammer is in good condition. One of the claws of the tool is bent out and slightly worn, this may be due to the casting process or due to wear on the tool.



Figure 85. Claw Hammer PR82 152-3

Identification/Provenance

This tool is a small woodworking claw hammer. The tool appears to have been only slightly worn and used. The tool was recovered from a trench running along the northeast side of the wall between Room 1 and Room 2 of Building 1 facing Lime Street. No exact layer of provenance is given for the tool.

PR84 230-1

This is an epoxy cast replica of a claw hammerhead with a small amount of wooden handle remaining in the tool's eye. The head itself is some 3 1/2 in. (8.9 cm) long and 7/8 of an inch wide. The face is octagonal and measures 11/16 in. across. A rectangular eye measures 3/16 in. by 1/2 inch. The claws are slightly bent. The face is octagonal and measures 13/16 in. across. The handle extends 1/2 inch below the head before it is broken off.

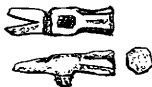


Figure 86. Claw Hammer PR84 230-1

Identification/Provenance

This tool is a small woodworking claw hammer. The tool is rather crudely crafted, and shows some signs of usage. The hammerhead was recovered from Layer 1 of the TAMU/INA excavations above Building 1, which means that this tool post-dates the 1692 earthquake and may be associated with debris in the harbour from passing ships or the British Naval Hospital.

NS2.A6a.1c (4)

This small iron claw hammerhead measures approximately 4 in. (10 cm) long and 1 inch across. The eye is more oval than rectangular, and measures 7/8 in. long and 5/16 in. wide. The face is octagonal and measures 7/8 of an inch across on its preserved surface.



Figure 87. Claw Hammerhead NS2.A6a.1c (4)

Identification/Provenance

This is a small woodworking hammerhead. The tool was recovered from the New Street excavations, near the 17th-century layer. One other tool was recovered from the same room and same level, (NS5) a cobbler's hammer. Both hammers are reportedly from close to the 17th-century layer. Interestingly, all of the hammers recovered from the New Street excavations seem to have oval rather than rectangular eyes.

PR90 968-7

This is an iron claw hammerhead that measures 4 1/2 in. (11.4 cm) overall. The head is 1 1/4 in. wide at the eye and the claws, and 1 1/8 in. wide at the face. The octagonal face measures 1 1/4 in. at its widest point. The eye is rectangular and measures 1/2 in. by 7/8 of an inch. The face and the claws show some signs of wear.

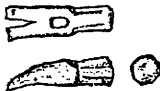


Figure 88. Claw Hammerhead PR90 968-7

Identification/Provenance

This is a clawed woodworking hammer. The tool shows moderate signs of use. There is no trace of a remaining handle. The tool was recovered from excavations of the 1692 level of Port Royal, lying on the bricks of the courtyard behind Building 5. Two axe heads (885-5.1 and 885-5.2) were recovered from this same yard, near a cistern.

PR86 146-7

This tool is a small iron hammerhead that measures $3\frac{7}{16}$ in. (8.7 cm) long and $\frac{6}{8}$ in. wide. There is concreted wood in an oval eye that measures $\frac{13}{16}$ in. by $\frac{3}{8}$ of an inch. The face is rounded, though bevels do appear on the poll. The claws and the face show some signs of wear.



Figure 89. Claw Hammerhead PR86 146-7

Identification/Provenance

This tool is a small wrought iron hammerhead. It is the basic shape of a carpenter's claw hammer, but its size and weight (under 6 oz.) suggest that it was meant to be used only on small nails or tacks. The tool's conservator draws a parallel between this tool and a coach trimmer's hammer, and concludes that this hammer may have been used by a cabinetmaker or other finish craftsman (Hocker 1985:4). The tool was recovered from the 1692 level of the Port Royal excavations, in XU-3, to the south of a possible door assemblage, not directly associated with any other artifacts.

PR86 1124-7

This is an epoxy cast replica of the claws of a hammer. The remains have a preserved length of approximately 2 in. (5 cm). The maximum preserved width of the tool fragment is 1 1/4 in. (3.2 cm).



Figure 90. PR86 1124-7

Identification/Provenance

These are the remains of a claw hammerhead. The tool appears to have been broken and concreted before or at the time of deposition. The remains were recovered from the 1692 level inside of Building 3. A second hammer claw fragment was recovered from within this same building (1135-4).

PR86 1135-4

This tool fragment appears to be the remains of a claw hammer. The concreted mold was cleaned out and the dimensions of the fragment were recorded to produce a sketch of the tool remains. The claw was 1 1/2 (3.8 cm) long and 5/8 in. (1.5 cm) wide.



Figure 91. Claw Hammerhead Fragment PR86 1135-4

Identification/Provenance

This tool fragment was recovered from the 1692 occupation level of Port Royal. The fragment was found inside of Building 3, within 10 feet of claw hammerhead fragment 1124-7.

SP (NP) (3)

This iron claw hammerhead measures 7 9/16 in. (19.2 cm) long and 2 in. (5 cm) wide. The oval eye measures 1 in. by 1 7/8 inches. The face measures 1 3/4 in. by 1 7/8 inches.

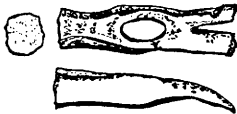


Figure 92. Framing Hammer SP (NP) (SP3)

Identification/Provenance

This tool is identified by its large size and shape as a carpenter's framing hammer. The claws are usually straighter on a framing hammer than on a nail hammer, since it is used for ripping (Blackburn 1974:110). This tool was recovered from the excavation of St. Peter's churchyard. There is no additional information available on the provenance of this hammer.

NS2.A6a.1b (5)

This wrought iron hammerhead measures 4 15/16 in. (12.5 cm) long and 1 5/16 in. (3.3 cm) wide at its claw end. The face is octagonal and measures 1 3/8 in. across. The eye is oval and measures 1 in. by 5/8 inches. The claw end of this hammerhead is one solid piece, not two individual claws.



Figure 93. Cobbler's Hammer NS2.A6a.1b (5)

Identification/Provenance

This tool is identified as a shoemaker's or cobbler's hammer. The solid claw end is used for pulling drawers. The tool is commonly used by the cabinetmaker as well as the cobbler (Sloane 1964:23). This tool was recovered from the excavations of New Street, close to the 17th-century level. Other tools recovered from the same area of the excavation include a chisel (NS15), and an iron crow (NS21). In an adjacent room at the same level, claw hammer (NS4) was recovered.

NS2.A7-8.2a (6)

This iron hammerhead measures 4 1/2 in. (11.4 cm) long and 1 7/8 in. (4.8 cm) at its widest point. There is a hammerhead face and a poll on this tool on either side of an oval eye. The face measures 1 1/4 in. by 7/8 of an inch. The poll measures 3/4 of an inch square. The difference between the face end and the poll end of the tool can be easily determined by simply hefting the tool, one way is well balanced, while the other is extremely awkward. The oval eye measures 1 1/2 in. by 1 in., and shows signs of wear and erosion on one side.



Figure 94. Stonemason's Hammer NS2.A7-8.2a (6)

Identification/Provenance

This tool fits pictured descriptions of the stonemason's hammer. It should be noted however that a similar tool form is also seen at several earlier archaeological sites and is simply known as a basic hammer form as far back as Roman times. This is probably due to the fact that this hammer is simply constructed of one piece of iron, with an eye punched through the center, rather than made with the complex facets and bevels that are seen on some of the more ornate carpenter's claw hammers made by blacksmith's with swages. The tool was recovered from the excavations of New Street, from a level said to pre-date the 1692 earthquake.

PR89 682-8

This epoxy cast replica of a small hammerhead and handle was originally made all of wrought iron. The tool is 4 in. (10.1 cm) long overall. The head portion of the tool is made of one piece, and is slightly bent. The head is 3 1/4 in. (8.2 cm) long and 3/4 of an inch at its widest point. The eye is rectangular and measures 1/2 in. by 3/8 of an inch. The handle was apparently welded onto the head. The handle was made of twisted wrought iron, and has a maximum thickness of 3/8 of an inch.



Figure 95. Small Hammer PR89 682-8

Identification/Provenance

This tool has been called a tack hammer because of its small dimensions. Some of the detail of the hammerhead may have been lost in the casting process. One other possible identification for this tool may be that it was used in working one of the finer metals. Yet this tool was recovered from layer 2 of Port Royal, inside of Building 5. Layer 2 post-dates the earthquake in most instances. The tool was recovered in association with a number of metal fasteners (682-7).

Knives

Several sizes, shapes and types of knives would have been present in 17th-century Port Royal. The probate inventories (Vol.3,folio 3) list "butcher, carving, curryer" and "rounding" knives. One source states that while scissors, shears, fine knives and swords were made by the cutler in Europe, in America these tools would typically have been made by the blacksmith (Bealer 1969:275). No one is listed in the Volume III inventories as a cutler, though one man seems to have been a swordmaker (John Guepin, Vol.3,folio 242). The knives listed in the inventories were for the most part in small quantities, except for one listing for a gross (144) of butcher knives possessed by a merchant.

The knives recovered from the excavations of Port Royal include a carpenter's drawknife, several tang-fitted blade fragments, and two larger knives similar to machetes.

NS2 (NP) (19)

This tool is a knife blade fitted with a tang to be inserted into a wooden handle on either side of the blade. The overall length of the tool is 17 7/8 in.

(45.5 cm). The blade portion of the tool is $10 \frac{9}{16}$ (27 cm) long. The blade is $\frac{5}{16}$ of an inch thick at its top edge and $\frac{1}{8}$ of an inch thick at its blade edge. The tang handles taper from a width of $\frac{5}{16}$ of an in. to $\frac{1}{4}$ of an inch. One tang handle is presently bent up at an odd angle.



Figure 96. Carpenter's Drawknife NS2 (NP) (19)

Identification/Provenance

This tool is a drawknife. Wooden handles would have been fitted to the tang handles. The sharpened blade would be held with both hands and drawn across a wooden surface, towards the body of the tool's user, to rough trim and rough size wooden surfaces (Sloane 1964:38). The drawknife may be used by the cabinetmaker, carpenter, coachmaker, cooper and the wheelwright. The size of this drawknife blade, just under 11 in., is a size commonly used by the carpenter (Hummel 1968:87). This tool was recovered from the excavation of New Street, but has no further provenance.

NS2.A1.1.F2 (18)

This is a tang and the beginning of a knife blade that is $4 \frac{11}{16}$ in. (12 cm) long overall. The blade length is $2 \frac{7}{8}$ in. (7.3 cm). The blade is squared off

on its top edge ($3/16$ in. thick) which is even with the tang, the blades sharp edge is parallel to the tang, and is $1/4$ in. thick. The tang itself is square and tapers from $1/4$ in. thick to $3/16$ of an inch at its tip.

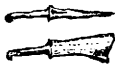


Figure 97. Knife Blade and Tang NS2.A1.1.F2 (18)

Identification/Provenance

This tool is a knife blade fragment. Due to the missing portion of the blade, no specific statements can be made about the intended method of use for this tool. This tool was recovered from a room facing Dove Lane in the New Street excavations, from the most recent provenance level. One other tool, chisel (NS10) was recovered from this same room and level.

PR (NP)

This is a complete knife blade with a tang fitting for handle attachment that is $10 \frac{9}{16}$ in. (27 cm) long. The blade portion of the knife is $8 \frac{1}{4}$ in. (21 cm) long. The blade is an even thickness of $3/16$ of an inch, with no sharpened edge apparent. The bottom edge of the knife is deteriorated, and a sharpened edge may have corroded first. The tang is square and measures $3/16$ of an inch.



Figure 98. Knife PR (NP)

Identification/Provenance

This is a knife that could have been used for any number of purposes. Knives similar in size and shape appear in illustrations of the tool kits of both the saddler and the shoemaker (Tomlinson 1972:45,83). This tool has no provenance.

PR83 429-14

This is a wrought iron tang and blade fragment that is 5 3/16 in. (13.2 cm) long. The tang is just under 4 in. (10.1 cm) long and 3/8 in. wide. The remaining blade section is 1/8 in. thick.

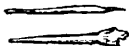


Figure 99. Tanged Knife Blade Fragment PR83 429-14

Identification/Provenance

This tool is the remains of a knife blade. The tool is too deteriorated for further identification. The knife fragment. The tool was recovered from inside of the Building 1 excavations, and no further provenance is available.

PR85 1064-3

This wrought iron knife is partially reconstructed from the encrustation mold cavity. The original length of the tool is 14 3/16 in. (36 cm) long. The blade portion of the tool is 10 9/16 in. (27 cm) long and 1 7/8 in. (5 cm) wide. The upper thickness of the blade is 1/4 in. (.75 cm). The handle is socket shaped, though made

of solid metal. The handle measures $1 \frac{3}{16}$ in. at its widest point.



Figure 100. Knife PR85 1064-3

Identification/Provenance

This tool seems to be a simple knife that could have been used for any number of purposes. The solid construction of the knife make it seem similar to a modern machete. The solid socket should enable the blade to cut through dense material. This may have been one of the "butcher's knives" mentioned in the probate inventories. The tool was recovered from the 1692 occupation level of Port Royal inside of Building 3. Flat File (1035-9) was recovered from within 10 feet of this tool.

PR87 353-15.1

This is an epoxy replica of a socket-handled knife blade, similar style (not size) to PR85 1064-3. The preserved length of this tool is just under 8 in. (20.3 cm). The blade portion of the knife is $6 \frac{1}{2}$ in. (16.5 cm) long and $1 \frac{5}{8}$ in. wide. The blade is $\frac{1}{4}$ of an in. thick. Only one half of the socket handle remains. The handle measures 1 inch in diameter.

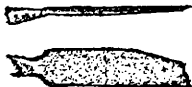


Figure 101. Knife PR87 353-15.1

Identification/Provenance

This is a knife blade similar in shape and style to PR85 1064-3, though smaller in size. The knife could have served any number of purposes. The tool was recovered from the 1692 level of Port Royal, outside the yard of Building 4, near the intersection of Queen and Lime Street. Other tools recovered from the same area include the iron compass (254-6) and a claw hammer (254-5).

Pincers

A pair of pincers is similar in design to a pair of modern day pliers. The tool is used to hold onto an object between jaws that pinch, and may be used to cut through wire or nails. The common pincer is usually used by the woodworker to remove small nails or tacks (Blackburn 1974:150). Usually pincers made with a flat head and straight jaws are assigned to the carpenter. A pair of pincers with a claw at the end of one arm plus a bevelled gripping surface may also be found in the tool kit of the farrier to remove nails from the hoof (Hummel 1968:100). A tool similar in design to the farrier's pincer, with flat jaws and a flat gripping surface, is called a lasting pincer, used by the shoemaker to grip the leather when pulling it to shape around a wooden mold or last (Arbor 1981:77). Two pair of pincers have been recovered from the archaeological excavations of Port Royal.

PR84 736-5

This is an epoxy cast replica of a pair of pincers. The overall length of the tool is 5 7/8 in. (15 cm). The pincer jaws are flat and rectangular in shape, measuring 1 1/8 in wide and 1/4 in. thick. The legs of

the pincers are rounded and measure 1/2 in. in diameter. One leg of the tool is broken off.



Figure 102. Pincer PR84 736-5

Identification/Provenance

This tool is a pair of pincers. The tool's relatively small size and flat jaws suggest that it may have been used for tack pulling. This pair of pincers was recovered from the 1692 level of old Port Royal, just outside of Room 1 of Building 1 on Lime Street. A carpenter's claw hammer (192-3) and a second pair of pincers (945-5) were recovered from the same area.

PR85 945-5

This is a partial epoxy cast replica of a pair of pincers, some of the original iron remains. The overall length of the tool is 5 7/8 in. (15 cm). The jaw section of the pincers are crafted in rectangular form, measuring 1 in. wide and 3/8 in. thick. The jaws are flat. There is a raised rectangular area on the outer edge of one arm of the pincers that measures 15/16 in. by 15/16 of an inch. The pincer legs are rectangular in shape and measure 3/8 in. by 7/8 of an inch. One leg of the pincers is shorter than the other.



Figure 103. Lasting Pincer PR85 945-5

Identification/Provenance

This pair of pincers fits pictured descriptions for the shoemaker's lasting pincers, used when working with shoe leather. The square section on one arm would be used to aid in leverage when gripping and pulling the leather around the wooden last. These pincers are similar in overall size to PR84 736-5. This tool was recovered from the 1692 occupation level of Port Royal. The lasting pincers were found in front of Room 1 of Building 1, on Lime Street. The pincers were close to pincers 736-5 and claw hammer 192-3.

Scraper

SP.1.3 (5)

This tool is made from one piece of iron that was cut and folded to form a scraping edge. The overall length of the tool is approximately 3 1/2 in. (9 cm). The "scraping" edge has deteriorated on one side, but the preserved dimensions are almost 2 inches square. The shank tapers to a tip that is 3/16 of an inch wide.



Figure 104. Scraper SP.1.3 (SP5)

Identification/Provenance

This tool fits pictured descriptions of a caulker's scraper used to remove excess pitch from seams (Dodds & Moore 1984:45). This tool however, is tanged rather than socketed. This tool comes from the excavations of the present day St. Peter's churchyard. The only other tool it is associated with is an axe head. The tool may have been a caulking scraper that was reused in another capacity, or may have been designed as another type of scraper in the same simple fashion as the caulking scraper. No additional information on the tool's provenance is available.

Sledges

The iron sledge is a tool that has been used in the same basic form for centuries. Four sledge hammers are included in the collection from Port Royal. All four sledges have been recovered from the excavations of Robert Marx 1966-1968, and thus have no specific provenance. The tools are included here, but no means for accurate dating is available. The sledges may be associated with 17th-century Port Royal or could conceivably be associated with ship traffic in the harbor up until the 20th century. The only possible dating cutoff that could be assumed is that since the sledges are all made of wrought iron, their construction pre-

dates the common use of cast steel for tool construction, yet even this assumption is suspect since the tools could have been crudely crafted to serve a purpose by a blacksmith aboard ship or at the naval yard. All four sledges fit descriptions of "peen maul" hammers still used today in shipyards and for wharf building. Each of the four sledges will be described and pictured individually, but there will be no further information presented on identification or provenance.

RM.S.1

This sledge is 7 5/8 in. (19.5 cm) and at its widest point measures 2 1/8 in (5.5 cm). The tool has a rectangular face that measures roughly 2 in. across. The sledge has an oval eye that measures 1 1/4 in. by 1 1/2 inches. There is a small stump of a wooden handle remaining inside the eye of the tool.



Figure 105. Sledge RM.S.1

RM.S.2

This tool is 4 1/4 in. (10.7 cm) long and measures 2 1/4 in. (5.7 cm) across at its widest point. The face is rounded though it has four distinct sides. The face measures 1 7/8 in. across. The face of the tool has been worn convex due to the tool's use. The eye of the sledge

is round and slightly worn. The eye measures $1 \frac{1}{8}$ in. in diameter. There is a small portion of wooden handle remaining in the eye and protruding for $\frac{1}{4}$ of an inch on either side of the sledge head.

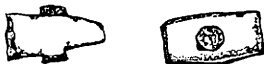


Figure 106. Sledge RM.S.2

RM.S.3

This sledge measures $7 \frac{7}{16}$ in. (19 cm) long and $2 \frac{3}{8}$ in. (6 cm) at its widest point. The face of the sledge is round and measures $2 \frac{1}{2}$ in. in diameter. The eye is roughly oval and measures $1 \frac{1}{2}$ by $1 \frac{3}{4}$ inches. There is no trace of a handle remaining in the eye. The eye itself is cracked and worn. This tool looks well used.



Figure 107. Sledge RM.S.3

RM.S.4

This sledge is $8 \frac{7}{16}$ in. long and $2 \frac{3}{4}$ in. (7 cm) at its widest point. The face of the tool is round and measures $1 \frac{1}{2}$ in. in diameter. The eye of the tool is

rectangular and measures $1 \frac{1}{4}$ in. by $1 \frac{1}{2}$ inches. There is no trace of a handle remaining. There is a small impression just behind the eye on the sledge head that may be a maker's mark.



Figure 108. Sledge RM.S.4

Trowel

PR82 176-1

This is an epoxy cast replica of an iron trowel that measures 11 in. (28 cm) long overall. The tool's flat surface is $6 \frac{3}{4}$ in. (17 cm) long by $3 \frac{1}{2}$ in. (8.9 cm) wide by $\frac{3}{16}$ of an inch thick. A tang-like iron handle rises up away from the flat surface of the tool for a distance of $1 \frac{7}{8}$ in. (4.7 cm), and then extends away from the tool for another $4 \frac{3}{4}$ in. (12 cm). The tang is square, and tapers from being almost $\frac{1}{2}$ inch thick near the flat surface to $\frac{3}{16}$ of an inch at its tip.



Figure 109. Trowel PR82 176-1

Identification/Provenance

This tool is a trowel. Though the probate inventories mention spades and shovels (Vol.3, folios 6 & 249), there is no mention of any trowels. Moxon pictures a tang-fitted trowel in his plate of the tools of the bricklayer and describes the trowel as a plasterer's tool (Moxon 1677:237,249). This tool was recovered from the 1692 level of Port Royal. The trowel was recovered from inside of Room 2 of Building 1, facing Lime Street. One other tool, chisel (201-2) was recovered from the same section of the room.

Wedges

A wedge is a tool that tapers to a point and is used to split wood or rock. The probate inventories have two mentions of wedges, simply "old & rusty" (Vol.3, folio 285) and "splitting wedges (Vol.3, folio 253). Two tools that have been identified as wedges have been recovered from Port Royal, though one may actually be a leftover piece of wrought iron bar stock (531-6).

NS2.A4a.1b (9)

This piece of wrought iron is 6 3/16 in. (15.8 cm) long. At its upper surface the wedge measures 1 7/8 in. by 7/8 of an inch. The wedge tapers to a point that is 1/4 of an inch thick. The upper surface of the wedge has mushroomed and chipped from being pounded on.



Figure 110. Wedge NS2.A4a.1b (9)

Identification/Provenance

This wedge was recovered from the excavation of New Street close to the 17th-century layer. One other chisel (NS13) and one axe-head (NS1) were recovered from the same room and same level.

PR83 531-6

This piece of iron is 3 1/8 in. (7.9 cm) long. One end is rectangular and measures 1 1/2 in. by 1 1/8 inches. The iron tapers to a point that measures 1 1/4 in. wide by 1/8 of an inch thick.



Figure 111. Wedge-like Iron Scrap PR83 531-6

Identification/Provenance

This piece of iron has been identified as a wedge or a possible chisel point in the past. Actually, this seems to be a struck-off piece of iron bar stock, left over when the smith was trimming a piece of iron work. The flat rectangular surface of the tool seems never to have been pounded. It is of note that this iron was recovered, since it indicates that either a smith was working nearby or someone was keeping the iron scrap for reuse. The wedge-like piece of iron was recovered from the 1692 level inside of Building 3. Artifacts associated with this iron scrap include several onion bottle and pipe stem sherds as well as a knife (1064-3) and a flat file (1035-9).

Unidentified Implements

Five iron objects were recovered from the excavations at New Street that have no positive identification. Though the implements are crudely crafted, and do not look like standard tool forms, when hefted these implements seem to suggest that they once functioned as tools. The following section will describe these five iron objects and attempt to identify possible uses for these tools.

NS2.A3a.1a (24)

This is a solid round, wrought iron implement that is 8 11/16 in. (22.2 cm) long. The tool's maximum diameter is 7/8 of an inch, tapering to a point that measures 1/8 of an inch.



Figure 112. Possible Scribe NS2.A3a.1a (24)

Identification/Provenance

This implement seems to have been made as a scribe, a tool for making marks. There is another possibility that the tool was used by the wood turner for etching. The tool appears crudely made, but when held in the hand is extremely comfortable and balanced to hold. The tool was recovered from the New St. excavations, at a level close to but more recent than the 17th century. One other iron object was recovered from this room, a square of iron with a hole cut in the center. This suggests the possibility that this tool may have been used for punching holes into something, possibly leather hides.

NS2.A9b.1b (25)

This is a solid wrought iron implement that is 7 1/2 in. (19 cm) long. The shank is rounded at the top end (3/4 in. diameter) and becomes square midway down the shank before tapering to a point that measures 1/16 of an inch.



Figure 113. Possible Scribe NS2.A9b.1b (25)

Identification/Provenance

This tool is similar to the one described above (NS24) and may have been used as a scribe, for etching wood, or to punch holes. This tool is also well-balanced and easy to hold. This implement was recovered from the excavations at New Street, close to the 17th-century layer. This was the only tool recovered from this particular room, which is on the corner of New Street and Love Lane.

NS2.A4.1b (26)

This is a solid wrought iron implement that measures 8 in. (20.3 cm) long. The top end of the shank is round (3/4 in. in diameter) and becomes square approximately 1/5 of the way down the shank, and then tapers to a point that measures 1/8 of an inch.



Figure 114. Possible Scribe NS2.A4.1b (26)

Identification/Provenance

This tool is similar to NS24 and NS25 in size, form and probable function. Like the other tools, though crude to look at this implement is well-balanced and easy to hold. The tool may be a scribe, used to mark or etch wood, or a punch used for making holes. The implement was recovered from the New Street excavation close to the 17th-century level. Gouge-bitted auger NS20 was recovered from the same area and same level as this tool.

NS2.A4a.1 (22)

This is a T-shaped wrought iron implement made of two pieces welded together. A solid round tool "head" measures $8 \frac{7}{16}$ in. (21.5 cm) long and $\frac{3}{4}$ in. in diameter at its widest point. A square shanked "handle" piece that is $4 \frac{11}{16}$ in. (12 cm) long and $\frac{7}{16}$ in. thick is welded onto the "head" and is slightly arched.

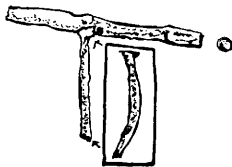


Figure 115. T-shaped Iron Tool NS2.A4a.1 (22)

Identification/Provenance

Though unidentified, this is another implement that when actually held in the hand suggests a method in which it may have been used, by the way it seems to balance. If this is a tool it may have been a small pounding

hammer. This object was recovered from the excavations at New Street from the most recent post-earthquake level. Other artifacts associated with this implement include axe head NS3 on the same level, and at an earlier level axe head NS1, chisel NS13, and wedge NS9.

NS2.A2.1e (23)

This T-shaped iron implement measures 7 1/2 in. (19.8 cm) long overall. A round "head" has a maximum diameter of 5/8 of an inch. One end of the head tapers to a point that is 1/8 of an inch thick. Midway along the round "head" a second piece of wrought iron has been welded. This second piece of the implement measures 1 1/2 in. (3.8 cm) long and is rectangular in profile, measuring 3/8 of an inch by 3/16 of an inch in the center, before mushrooming out to a width of 11/16 of an inch at its end.



Figure 116. T-shaped Iron Object NS2.A2.1e (23)

Identification/Provenance

No immediate identification is apparent for this iron object. Though the object does taper like the "scribers", this may be due to deterioration of the metal. The tang-like protrusion arches away from the body of the tool, like on NS22, but the "tang" is not

broken and therefore seem too short to have been used as a handle or a tang-fitting for a handle. The object is held most comfortably like a pencil, with fingers wrapped on either side of the "tang". This object was recovered from a courtyard in the excavations of New Street. The object was at a 17th-century or earlier level. Other associated iron artifacts recovered from this yard are an iron socket with no tool remaining and at a more recent level a blacksmiths drift or punch (NS17).

TOOLS USED IN PORT ROYAL

This section will discuss the tools used in 17th-century Port Royal using two sources of information: the mention of tools in the probate inventories and the actual tools recovered from the archaeological excavations of Port Royal. The listing of the types of tools found in the probate inventories appears in Table 1. When addressing the archaeological evidence, only the New Street and the TAMU/INA tool locations will be plotted, due to the lack of available provenance and association information for the tools recovered from the Marx, St. Peters's and Ft. Rupert expeditions.

Probate Inventories

There seem to be four categories of individuals with tools that are mentioned in the probate inventories: 1) individuals who are not listed as craftsman, who possess a small amount of tools, 2) the craftsman who possesses a simple kit of tools, 3) the established craftsmen (who often have slave and indentured servant apprentices) with large quantities, varieties, and types of tools, and 4) merchants with large quantities of the same tool in stock for sale.

These trends may be best documented by providing a sample transcription of representative types of the probate inventories.

An individual with some tools listed in his inventory follows:

v.3, f.52 John Jennings Port Royall Mariner

3 negro men
3 negro women & one little child
2 Horses
2 sowes a bore & 4 piggs

1 gunn
 2 old crosscut sawes and a handsaw
 10 bills
 a parcellle of old tooles
 2 pales & a piggon
 2 iron potts
 2 tables one bench
 baking stone
 1 ladder
 A ginn
 A parcell of Rubbish Corn
 A frow and Hammer

11th February 1687/8
 Harks Garbrand
 Thom Warren

The inventory of John Jennings is rather uncomplicated, typical of the first category of tool use mentioned. Mr. Jennings, though listed as a mariner, seems also to have been engaged in some sort of small scale agriculture and animal husbandry. The bills listed are probably bill hooks, tools used for cutting or pruning sugarcane (Bridenbaugh 1972:318). The mention of the crosscut saws and the "frow" (a froe is a wood splitting tool) may also indicate that Jennings was involved in the common practice of harvesting logwood from Honduras or Campeachy on the Central American coast (Bridenbaugh 1972:340).

The second category of tools mentioned in the probate inventories is that of the typical craftsman. Adam Weenan is listed in the inventories as a cooper.

v. 3 f.380 Adam Weenan Port Royall Cooper

One long cedar Table One Side board Table & two old
 Bermudas Chaires
 12 Leather Chaires
 One long cedar table with a Drawer and an old Carpet
 Small side board Table
 an Old Sattle
 a Deale Forme
 a Sea Chest and an old small box and chaire

a Glass Case and looking glass
 an Old Halberd
 a back sword and belt
 gun and cartouche box and flaske
 a pair of pistols
 two old Sables and a pair of holsters
 pr of boots and spurrs and a pr of Pumps
 curry comb and brush
 hat and hatband
 Serge coat and breeches black hair buttons
 Old staffe coat and breeches
 Old stuff coat breeches and fustian jackett
 Old worsted Camblet Coat
 11 Old case knives
 bed bedstead and Callico furniture quilt bolstor 3
 pillows and old torn sheets
 a Caine Elbow Chaire
 a small looking glass and a small dressing box broke
 Old chest of drawers
 Small table with a drawer and an old dressing box
 Old Span Chest a Close stool and pan
 2 hamackes
 2 chests curtains and vallins old
 5 old coarse sheets
 7 pillow bors
 3 pr thred and 1 pr silke old stockings
 3 shirts
 3 round robins
 2 fustian Jacketts 2 neck clothes and a cravate
 an old Bedsted old sheets 2 very old small beds and
 a quilt
 an old trunke
 a Spice Box
 a Lignum Vite Tumbler and a s---ing spice box
 a poll of very old Printed books
 a proll old lynnon
 1 Tunn old sugar hoggsheads
 2000 of hoggshead staves at
 30 small caskes and -undlotts and 4 partes
 4 garicas 3 iron bound punchoons
 a proll new England hoopes
 old water casks and a proll of Lumber in the yard
 One hundred pound and halfe of old pewter
 brass and copper
 a wrack a frying pan two trivetts a grid iron and
 other lumber in the cook room
 an old Jack a spitt an Iron Pott
 a pcoll of Coopers tooles
 a pcoll of truss hoopes
 a pr of old stylliards
 a negroe boy Christmass

a negroe boy named Darby and a negroe woman named Hannah
 a Tankard a Salt seller and 2 spoones at 42 ounces of silver
 2 doz 1/2 of Old napkins and towells and two coarse table cloths
 one deske
 3 Negroes Viz Congo Jack and Daphne

5 May 1690

Thomas King
 John Crosskeys

This inventory is typical of most craftsman inventories, especially since the tools of the trade are listed simply as a parcell.

The third category of tools mentioned in the inventories is that of the established craftsman with a variety of types of tools generally assigned to one trade. The following inventory, while not typical of every craftsman, is included because it is the most informative example of the long and involved inventory of the established craftsman. The inventory calls John Philpott a Port Royal blacksmith. It is of note that Pawson and Buisseret (1975:180) have a John Philpott listed as a practicing gunsmith in 1680. Judging by the quantity and variety of materials included in his probate inventory, Philpott was an established metalworker who employed the skills of both slaves and apprentices. It also seems that Philpott sold not only metalwork, but a wide variety of related goods, in his shop.

f.3 V. 285 John Philpott Port Royall Blacksmith

5 doz & 1/2 of Bambury Stock Locks
 10 Stock & Spring Locks 4s a peece
 6 Plate Stock Locks
 15 Stock Locks at 12s p
 21 Bastard Bambury Locks 8sp

12 Small Ord. Stock Locks
 12 Inside small x Chest Locks
 20 Middle Ditto
 11 Box Locks
 12 Inside Small x Chest Locks
 40 x Keyed till & Chest Locks 5sp
 11 swallow Bowed x Chest Locks 10sp
 13 Large Chest Locks at 8sp
 5 Sea Chest Locks
 10 Doz x Keyed & plaine Cubbard Locks
 21 x Keyed Till Locks
 11 Double x Cubbard Locks
 1 Doz. Middle x Chest Locks
 1 Doz x Cubbard Locks to Cutt
 16 Pew Locks & Keyes
 1 Doz x Keyed Chest Locks
 5 Sea Chest Locks
 7 x Cubbard Locks
 3 Doz & 5 x Keyd outside Chest Locks
 10 Outside x Chest Locks
 30 Iron Rim Locks Brass Knobbs
 3 Iron Rim Locks in a shute
 6 Double Spring Locks
 38 Rusty Single Spring Locks
 18 pr of old Rusty spurrs
 1 old Rim Lock
 3 Spring Latches
 11 Plate Boults
 2 pr of spurrs
 12 pr of tobacco tongs ould and Rusty
 11 pr of Tinn Snuffers
 86 Rusty Marking Irons
 6 Outside Chest Locks
 4 grose & 21 Doz of women cotton squares 3 grose of
 childrens squares
 11 Round Chalke Line
 2 Doz & $\frac{1}{2}$ vof Barbers Sizzers
 16 pr whole Barbers Sizzers
 11 pr Ord. whole Barbers Sizzers
 3 small boults & staplers
36 hones Broken & Crackt
 25 Flasks
 36 Horne Combs
 8 small Ivory Combs
 4 Doz: $\frac{1}{2}$ cases for Lancotts
 10 Brass Morters & Pestills
 3 Doz Brass Chaalke line Rowles
 29 Setts of Looking Glass Screws
 18 — Brass Buttons
 23 Brass Corks Smallest Sort
 2 Barbers Cases

1 Doz Large Case Knives
 6 Buckshound haft Knives
 3 Cases Ivory Haft Forks
 3 Large Knives
 15 Doz Old Knives
 a Pound Knitting Needles
 a prcell of Old Razor & Pen Knife Cases
 20 — of 3d Bradds 15d p
 12 — of 4d Brads 21 p
 5 — of 6d Brads 2s8d p
 5 Doz & 8 Curry Combs
 a Tepott & Copper Tinder Box an Old Brass Plate & heater
 15 Scritore Locks and a prcell of old Locks without keys
 a prcell of stell Blades & Tacks
 8 Doz & 9 Shipp Bolts 6 p
 5 Old Pockett Pistolls
 2 Grosse Brass Buttons
 3 — Tacks
 2 Doz. Gun Locks 5s a peece
 16 Flatt Gun Locks 10s p lock
 22 Old Gun & Pistoll Locks that wants fitting
 32 Smoth Files
 Fish Hooks
 9 Doz: Round and Splenter Locks
 a prcell of old Round Locks
 a prcell of small Files in a Drawer
 7 — Tind Tacks
 1 Doz Glisten Pipes
 59 Cheese Tasters
 a pcell of old trade in a drawer
 a pcell old brass hooks in a drawer
 250 Tind Tacks
 5 — Tacks
 7 Cork Screws
 2 Grosse Park Needles
 a few old Cheese Tasters
 4 Grind Stones
 a pcell of Drops
 18 Dozen Hamers
 7 Boults & 16 Latches
 7 Sugar Drawers
 8 pr of Tumblers
 19 Doz Dutch Files
 464 Files of Severall Sorts
 a prcell of Rubbers
 6 Steele Sawes 3 feett long
 2 x cutt sawes
 2 Ditto
 4 Row Busk Symiters

2 Symiters
 1 Silver Hilted Rapier
 1 Ordinary Ditto
 2 Silver handled Rapiers
 2 Ord. Smiters
 2 Grose of Pensills
 a pcell of Old Duff taile hinges
 8 Doz Carving Tooles att 2s p doz
 6 Morticeing Chisells
 9 Doz & 4 Gudges
 8 Doz & 10 headings Chizells
 2 Eakro:d Norkiall Dyalls
 8 Doz London Knife Blades 2 6 p doz
 a pcell of Rusty Knife Blades
 19 Sugar Boarers
 4 Whimble Bitts
 a pcell of Pewter Bitts
 1 Doz. of Iron Compasses
 a pcell of heading chizells
 a pcell of old plaine Irone
 a pcell of old Carving tooles & Chisellls
 4 Doz. Rules
 6 Scales
 200 Broad Chizells
 2 Broad Axes
 a pcell of old Chizells
 4 Doz. Intch Chizells
 5 Doz $\frac{1}{2}$ Joyners Hatchetts
 21 Doz narrow howes
 19 Doz & 7 Broade howes
 26 adzdes
 a pcell sledges
 a pcell of Bick Irons
 a parcell of Bullits
 a pcell of swan shott
 26 Doz old Augers
 13 old whipsaws
 a Marking Iron
 32 Coopers adzes & howells
 4 old Coopers axes
 2 Doz & 3 old Rusty Axes
 4 Rounding Knifes
 23 Joyners Axes
 1 Bung Boarer
 2 Doz & 5 Sugar Boarers
 2 Doz & 5 old Bitts
 2 pr Coopers compasses
 5 Coopers adzes
 2 Doz & $\frac{1}{2}$ of Bitts
 10 old Rusty Bitts
 11 pr Sheep shearers

3 Beames
 8 small frowes 3 of them old ones
 9 small hatchetts
 6 morticeing axes
 1 plaine
 23 old hand sawes broken & whole
 a pcell of Buckells for Belts
 17 Joyners Axes
 4 Joyners hatchetts
 2 Joynter Irons
 4 Screw Plates
 8 pound & $\frac{1}{2}$ brass wyer
 1 curryers knife
 a Parcell of Emory
 72 Caine Joynts 4s a peese
 5 Stickes & some bamboos
 1 Silver headed cane
 7 Doz Buff Belts at 40s p doz
 6 knead Leather belts
 1 Doz sticht belts
 26 Black belts
 6 Sticht belts
 10 Sticht belts silver buckles
 9 sticht belts silver buckles
 3 Embroadered belts at 30s a peese
 1 buff belt with a silver buckle
 5 brass potts
 2 Patteroanoos?
 5 Morticening axes
 1 Coase for a Butcher
 4 Large Augers
 2 Crowse Irons
 2 Bick Irons
 1 Screw Plate
 1 Grid Iron
 4 compasses & a small compass
 36 Large & small catt gutts
 8 Bells
 3 Butchers stooles
 a Parcell of old trade hanging up in the shop
 a Parcell of old trade in the windows
 a pcell of hooks and hinges
 a pcell of Flints
 a pcell of Ragg stones
 6 Shovells
 a pcell of Jew Ivory & wedges that are old and rusty
 3 Doz cassle stones
 200 li & 34 of old Wedges at 3d p
 9 tin sawse pans
 6 grubing hoes
 78 pound of pick axes & frowes qt 4d p li

a parcell of old iron & rubbish
 a parcell of scines?
 2 skillitts qt 38 li 3d p li
 3 Baggonetts
 a pcoll of old horse whips
 1 Doz & $\frac{1}{2}$ of Baskwords
 58 old swords
 6 Doz Ordinary penknives
 13 Better penknives
 24 Doz of sciszers
 8 pr of old Bullitt moulds
 7 Clock Lines
43 Spring knives
7 Flems for horses
44 knives at 10 p doz
 8 Doz & 3 razors at 12 s p doz
 3 turtle shell razors
 a pcoll of sciszers & hiltz
 57 old swords 3s a peese
 3 basket hilted swords
 3 Childrens swords
 38 — 2 nailes 15d p
 34 — tacks 15d p
 17 pr taylers sheares
 300 wtt of sheathing nailes
 200 wtt of 40d nailes at 4d p f
 18 — of 10d nailes 5d p
 10 — of 20d nailes att 7 6 p
 20 — of 4d nailes at 2 6
 6 — of 6d nailes 3 p
 80 — of 8d nailes
 20 — of 4d nailes
 6 — of 20d nailes 7 6 p
 4 — of 6d nailes
 2000 sheathing nailes
 20 m. tacks
 13 Doz $\frac{1}{2}$ pad locks 6s p doz
 2 m. $\frac{1}{2}$ truss hoops nailes 15s p
 200 wtt of nailes
 28 — of scupper nailes
 200 wtt of nailes
 24 — 6d nailes 3s p
 30 — 6 nailes 3 p
 52 — 4d nailes
 21 — 8d nailes 2 6 p
 10 — 20d nailes 4 p
 14 — 12 bradds 6 3 p
 10 — 20d ditto 7 6 p
 300 wtt of 40d nailes 30s p li
 100 — 2 nailes 15d p
 32 — 6d nailes 3s p

60 — 4d nailes
 300 wtt of 30d nailes 2 6
 30 — Flemish nailes 3
 216 li wtt of 2d nailes
 52 — of 3d nailes 18d p
 16 — of 10d nailes 5s p
 45 — of 4d nailes 2 6
 45 — of ditto
 80 — of ditto 2 6
 10 old swords
 2 Rowles Tobacco
 3 x cutt sawes
 10 steel whipp sawes plates
 a pcoll of old things in the back portion of the
 shopp
 75 old gunns & Blunderbusses
 10 old gun Barreils
 1 Spring Clock
 Ordinary Clock & 1 watch & Larum
 1 Clock
 26 old sword handles
 a pr of pistolls & trade in a box
 13 ounces silver wyer 69 p
 11 Doz. glasses for watches
 watch strings
 43 old Lancetts
 a Pound of Puttey
 14 Doz penknife blades
 11 Muskeats
 a parcell of trade thats old about his working board
 22 pr old pistolls
 1 Doz of old chaires & a table
 a Bason & spice box & other things
 1 Lead S_ztern?
 13 old cane chaires & a cott
 1 Table & a pr of standers
 1 Chest & press
 1 Chest of Drawers & a glass case
 1 Looking Glass
 1 Bed & furniture
 Wareing cloaths
 1 Little bed & Close stoole
 176 ouz of Plate 5s p ouz
 1 Old Hamack
 372 sword blades at 1s6d p
 12 doz scabbards
 3 Doz course napkins & 4 table cloaths
 4 Doz & 4 sword blades 2 6 a peese
 a pcoll of Chirurgions Instruments
 a pcoll of old tin
 a pcoll of old pillowbeers & towells

4 pr of sheets
 3 Doz florrells for Camies
 6 old low chaires
 16 guns
 1 old chest of drawers a bed & chest
 a parcell of brass chaines for cotts
 3 old clocks
 1 Doz of hogg skinns
 2 Doz. of Plate Dyalls
 2 Ring Dyalls
 a parcell of Surveyors Instruments
 a parcell of Books and Paper
 1 Bed
 2 old Glasser Vises
 a parcell of old trade in the garrett
 a parcell of Scales
 an old Chest & Box
 100 wtt of brass weights
 122 li of pewter Dishes & plates
 1 old copper
 a parcell of old brass potts & a kettle
 a Jack & two spitts
 a mortar & other old trade
 a parcell of wood & trade in the yard
 a new anvill
 5 old vises
 4 pr of bellows
 13 old saves
 a parcell of old Glassers & Grinstones
 a Grind Stone
 5 li $\frac{1}{2}$ of old lead 10s p li
 5 old anvills
 798 li of old chaines & grapnells
 1078 li of iron cap squares
 2 old Anchors
 2008 li of Old Iron
 984 pound Good Iron
 119 pound of Oliphants Tooth
 In ready money
 1 iron gun
 a parcell of old Iron & working tools in the shop
 One negroe by name Essex
 1 negroe woman Maria
 1 Negroe woman Venus
 1 Negroe girle Dide
 3 Pickaninos
 Rich:d Williamson,
 having two months and a halfe to serve
 John Rand one year to serve
 John Walton one year to serve
 John Halley 3 years to serve

to a pcoll of coates
 1 old copper kettle
 2 pr of scales
 154 li old cast brass
 A lease of those houses now to come 19 years

Peter Norman
 John Osmond

First day of September one Thousand Six Hundred and
 Eighty Nine

Philpott's inventory proves to be an excellent source for visualizing the diverse range and the tremendous quantities of tools that were being sold and used in Port Royal before the 1692 earthquake. Perhaps the best way to look at this inventory in perspective is to look at a quote from a tool historian, who states that the average blacksmith can produce two or three axes or hammers in a typical day's work (Bealer 1969:24). The amount of new and old scrap iron to be worked, as well as the possession of anvils, bellows and other smith tools, seem to suggest that Philpott was crafting some items in Port Royal. Other items were obviously being shipped in, as suggested by the listing of "London knife blades", as well as the tremendous quantities of some items, such as "18 Dozen hammers" or "464 files". It is also interesting to note that items such as sledges are sold by weight, verifying the practice of selling tool heads without handles.

The fourth category of tools mentioned in the probate inventories are those tools which are listed as goods owned by the merchant. As with the craftsmen, there are merchants who possessed a tremendous volume of goods for sale, and merchants with small and simple inventories. In Port Royal at this time, anyone who bartered, sold, or traded goods, either on his own behalf (a resident merchant) or acting as an agent for someone in England, was called a merchant Claypole 1972:246:248).

The following excerpts are from an inventory that is representative of a typical merchant's inventory:

v.3 f. 60 John Kent (will left in Port Royall)

Invoice and appraisement of severall goods found in the hands of Mr. John Kent at his decease and by his last will left in the hands of Wm Hall of Port Royall

For the acctt. of Mr. Henry Chapman
 5 blew linnen entries
 5 ozenbrigs entries
 2 ps browne
 8 gunns
 2 pair pistols
 2 pair moulds to cutt the Bullett
 his part of the chest
 charges on board
 2 gunns more at

For acctt. of Mr. Xtopher Smith
 ribbon, ditto ,ditto, ditto
 12 one suite knotts
 13 one ditto
 15:one single knotts
 3 more
 21 ribbon entries
 One Booke The Lovers Watch
 One Rochesters poems
 Ovid's Epistles
 One double cuckold
 2 Gallants Confidents
 6 Playes
 charge on board
 suites, hood, etc.
 french fringe for a bed

For acctt. of Mr. Henry Chapman
 deceased John Kent

One barrel of Iron worke contain:

18 falling axes
 12 narrow howes
 18 broad
 2: carpenters axes
 2: Do larger (ditto)
 1: dozen backe bills
 6: stocke locke
 6: ditto

6: ditto
 6: ditto
 6: pair sad irons
 4: m:nailes
 10:m Flatt
 6: padlocks
 6: ditto
 6: plate stock lockes
 12: box handle marking irons
 one groce sail needles
 1 groce bolt rope needles
 12: boxe horse locke
 caske
 in a firkin N:2
 10: groce of nails
 13; groce 6
 caske
 charges on board
 four 1/2 barrels of powder
 the barrells

for the sole acctt. of deceased
 8 dozen men's thread hose
 2 dozen womens
 4 dozen mens cotton
 one dozen womens
 freight and other charges
 3 -- twine
 freight & customs
 for Paper quills & penknives
 5 -- nuttmegg
 threads,tapes 4 entries
 fabrics, bone lace freight & customs (20 entries)
 1:18 ordinary quoifes
 3 dittos
 dresses, fabrics, (20 more entries)
 drapes, knotts, hoods etc. cont.
 16 dozen white kidd gloves
 freight & customs
 8 gunns
 one pair mould to cutt bulletts
 cleansing one pair pistolls
 cleansing one pair pocket pistolls
 cleansing one pair d
 one chest for the guns
 winding plate
 freight & customs
 2000 needles
 2 1/2 barrells mum
 his wearing apparell and linnen
 3 pistolls

Sea Instruments
 One prospective glass
 books
 one spoon & cup & scale
 one hat & perriwig
 one empty case
 one hamock
 14 1/2 new pewter
 20: of old pewter

5th January 1687/8
 John Niclaes
 Richard Morse

John Kent's inventory is a good example of the type and variety of tools available for sale in Port Royal. Since Mr. Kent seems to be dealing with goods shipped in to Port Royal for sale by absentee owners, it can probably be assumed that the tools mentioned on the account of Mr. Henry Chapman have been crafted in England.

These four examples of the probate inventories provide an adequate background for further examination of the tools recovered from Port Royal. The following section discusses the tools recovered, and will be followed by a short analysis of the combined information on the tools mentioned in the probate inventories and how they relate to the archaeological record.

Archaeological Evidence

Before examining the tools recovered from the archaeological excavations of Port Royal, two points should be re-emphasized. First, it is well known that salvage in Port Royal has impacted the archaeological record from 1692 up until the present. Secondly, it should be recognized that the areas that have been excavated in Port Royal represent only a small part of the city that once encompassed over fifty acres before the 1692 earthquake. For this reason no sweeping

generalizations about tool use in Port Royal can be made. What can be accomplished here is an examination of the types and in situ placement of the tools recovered in an attempt to understand their use. As stated before, only the tools recovered from the New Street and the TAMU/INA excavations have documented provenance.

One hundred and seven tools or fragments of tools are included in this collection. The tool breakdown by major type is as follows in Table 2.

TABLE 2
TOOLS RECOVERED FROM PORT ROYAL BY TYPE

<u>Tool Name</u>	<u>Amount</u>
Adzes	4
Augers	4
Axes	23
(2 Hatchets)	
Blacksmith Tools	4
Caulking Irons	8
Chisels	20
(1 gouge)	
Cleavers	3
Compass	1
Crow	1
Files	3
Hammers	15
Knives	6
(1 Drawknife)	
Pincers	2
Scraper	1
Sledges	4
Trowel	1
Wedges	2
(1 may be scrap)	
Unidentified	5
Total	<hr/> 107

Of these 107 tools, 72 tools are either complete or are complete epoxy cast replicas. Some 71 of these tools have some provenance. Fifty-one tools can be associated with the 1692 level of Port Royal, 15 tools from the New

Street lot (layers 1b-1f) and 36 tools from the TAMU/INA excavations (layer 3) to date. It should be reiterated that there will be many more tools to be examined from the TAMU/INA excavations in the future. Hundreds of encrustations from the 1987, 1989 and 1990 field seasons have not yet been conserved. New tools are being discovered within the calcareous concretions on a weekly basis. In the future the information gleaned from the new tools will supplement the data from this thesis, but it is in no way believed it will substantially change any overall conclusions.

The following two sections will examine the in situ recovery of the tools from New Street and the TAMU/INA excavations.

The New Street Excavation

Twenty-five iron implements that were recovered from the New Street excavations are included in this collection. The New Street tools breakdown by type as follows:

TABLE 3
TOOLS RECOVERED FROM NEW STREET BY TYPE

<u>Tool Name</u>	<u>Amount</u>
Auger	1
Axe	3
Blacksmith Tools	1
Chisels	8
(1 gouge)	
Crow	1
Hammers	3
Knives	2
(1 drawknife)	
Wedges	1
Unidentified	5
(3 possible scribers)	
Total	25

The method for assigning provenance to the tools recovered from the New Street excavations is discussed in the Archaeological Methodology section. It should be reiterated that these provenance locations have been assigned to the lot numbers of the yards and the rooms within the building excavated on New Street by transposing old site maps. The exact location of the tools within the rooms and the yards is not known.

Figure 117 shows the outline of the building excavated on New Street, and places the tools that were recovered within the basic areas that have been assigned lot numbers.

The building on New Street contains nine individual houses, enclosing nine yards. Most of the yards share a cistern. Each of the yards contains a cooking hearth. All of the architectural features seen in the site map were destroyed in the 1692 earthquake (Priddy 1975:7-10).

Of the 25 tools recovered from New Street, all but one tool may be considered a woodworking tool. Only NS17 is a metalworking tool, and it was recovered from the most recent level of the excavation. Fourteen of the tools recovered date "close" to or are included in a layer near the 1692 earthquake level. No definite patterns concerning the practice of specific crafts may be discerned from the New Street tool distribution. The axes that were retrieved from three different levels, were all recovered from yards containing hearths. Felling axe NS2(1) was associated with a wedge and a chisel at the 17th-century strata in the yard of house number 9. A chisel NS2 (15) was inside of yard number 6, along with an iron crow bar at the 17th-century level. In a later strata, the same yard contains three more chisels and a cobbler's hammer NS2 (5). The cobbler's hammer is also used by the cabinetmaker. The tool

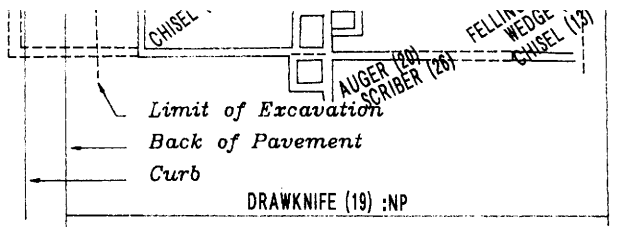


Figure 117. Tools Recovered From New Street Excavation

described as a stone mason's hammer, NS2 (6), was also recovered from a yard, yet this tool comes from a layer said to pre-date the earthquake. The only hammer found inside of a house is NS2 (4), a claw hammer from a 17th-century strata. The only other tools from the 17th-century strata found inside of the houses are NS25 a possible scribe, NS20 an auger and NS26 another possible scribe. Most of the other tools from the earthquake era seem to have been concentrated in the yards.

The TAMU/INA Excavations

Forty-six tools are included in this collection that were recovered from the TAMU/INA excavations of Port Royal. Table 4 shows the breakdown by type of the tools that were recovered from all levels of the excavation, separated by the tool's level of provenance. As stated in the ARCHAEOLOGICAL METHODOLOGY section, only layer 3 is directly associated with the 1692 earthquake.

TABLE 4
TOOLS RECOVERED FROM THE TAMU/INA EXCAVATIONS BY TYPE

<u>Tool Name</u>	<u>Amount</u> (layer 1)	<u>Amount</u> (layer 2)	<u>Amount</u> (layer 3)	<u>NP</u>
Adzes			2	
Augers			3	
Axes		2	6	
Blacksmith				1
Caulking Irons		1	3	
Chisels		2	4	
Cleavers			2	
Compass			1	
Files		1	2	
Hammers	1	1	7	1
Knives			2	
Pincers			2	
Trowel			1	
Wedge (scrap)			1	
Totals	1	7	36	2

This section will only focus on the physical distribution of the tools recovered from layer 3 or the 1692 level of the TAMU/INA excavations. Figure 118 shows the tool distribution in relation to the five buildings that are shown on the site map. It has been determined that these structures represent seven individual structures with brick-paved courtyards to date (Hamilton 1990b:14). An eighth building has since been identified to the north of Building 5.

Like the construction seen on New Street, the houses are made of brick and some may have been multi-storied. In some cases the houses share outer walls, courtyards, and hearths. The outer walls of Buildings 1, 2, 3 and Building 4 are perpendicular to each other at the intersection of 1692 Queen Street and Lime Street. Behind Building 4/5 there are yards containing hearths and a shared cistern that belongs to additional buildings fronting onto 1692 Fisher's Row (Hamilton 1990b:14). The remains of a shipwreck thought to date to the 1692 level rests partway inside of two rooms within Building 4 (Clifford 1992).

Two patterns of tool distribution may be seen in the TAMU/INA site plot. Tools seem to be either a) clustered in small groups of the same tool type in the yards behind the buildings or b) single types of a tool loosely associated with another type of a tool inside a particular room of a building.

The tools found in yards, like on New Street, seem to be mostly axes and hammerheads. Groups of two or more axe heads may be seen in the yard behind (SW) Building 5 (Yard 7) and in the yard behind (SW) Building 4 (Yard 4b). Groups of two or more hammerheads may be seen just east of Building 3 and outside (NE) of Building 5. This second set of hammerheads is also associated with a large

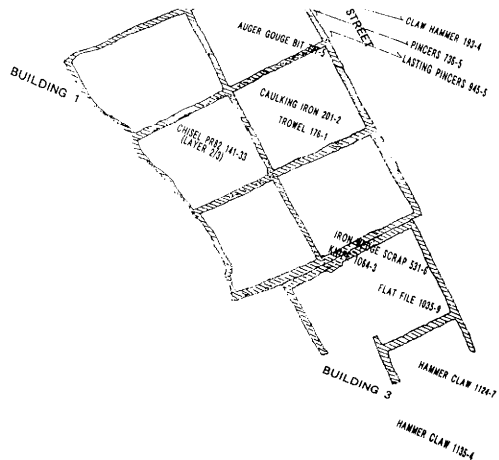


Figure 118. Tools Recovered From the TAMU/INA Excavations

framing chisel, an auger and a second chisel. This cluster of tools may be related to the ship remains. Two pair of pincers were recovered from just to the front of Building 1. Groups of two or more chisels and/or caulking irons were found located between Buildings 1 and 2, and to the northeast outside of Building 5.

The grouping of two tools of a type may be because a certain activity using a particular tool type was being practiced, or because while one tool was being used a second tool was kept as a replacement. Two other possibilities may account for the fact of like tools being grouped together in situ. Tools that were being used in salvage attempts, such as the groupings of chisels/caulking irons, axes, and hammers, may have been easily lost when free diving and rummaging amid the brick rubble. There is the final possibility that if the site was exposed for any length of time, similarly sized and weighted objects may have clustered together when moved through the water column by current flow.

The sets of individual tools that were being used inside of a building may suggest a broad activity, such as woodworking, but no specific crafts may be identified from the tools alone. When viewing the tools in conjunction with associated artifacts, patterns of activity may be diagnosed.

In many cases it is believed that individual craftsman operated in the same building, each in his own set of rooms. In Building 1, it is stated that the rooms held a cobbler, a butcher and a shop that sold wine and white kaolin smoking pipes (Hamilton 1984; Steffy 1988:119). These assumptions are based on diagnostic artifacts recovered from these rooms, such as leather scraps, animal bones, and bottle and pipe remains (Willoughby 1987:18). The tools recovered from Building

1 support the use of the building by a cobbler, since two sets of pincers and 1 hammer were recovered in a cluster (just outside of Building 1). No other set of tools recovered can truly be in anyway positively identified with a specific trade. Two cleavers were recovered from the TAMU/INA site, but neither was from Building 1. One large butchering cleaver was found inside of a room (576-9) at the front door of Building 5, while a smaller cleaver (434-7) that was probably used for food preparation was recovered from a yard near three axes. There is a possibility that the tools that were used for butchering inside of Building 1 may have been removed by post-earthquake salvagers (Willoughby 1987:18).

Analysis

The tools recovered from the archaeological excavations of Port Royal may give clues to their use, but consideration must be given to the likelihood of immediate salvage of valued tools after the quake, and the relatively small area of old Port Royal uncovered and recorded must be recognized. Nevertheless, some analyses of tool use may be made from the archaeological record.

The inventories suggest that large quantities of a variety of tool types were available in Port Royal, yet this is relatively unsupported when viewing the tools from the excavations alone. Instead, what becomes clear is that easily accessible tools were probably salvaged. No true "parcels" or groups of tools of a craftsman have yet been recovered from any of the archaeological excavations. The group of tools in a box or stored together in one place may well have been the target of immediate recovery by the craftsman (Willoughby 1987:24). Another interesting point that the study of the tools and the documents together brings up is the fact that certain

types of tools appear not to have survived in an underwater environment. Thin bladed tools, such as iron blades for planes and saws are fairly common listings in the probate inventories. No saws or planes have been recovered from the archaeological excavations of Port Royal. This suggests the possibility that the thicker or heftier a tool is, such as an axe or hammerhead, the better the chance the tool has of surviving underwater, especially until it is either covered with protective sediment or until a calcareous mold growth has time to form. The chisels and knife blade fragments that have been recovered usually have a preserved blade surface that is adjacent to a more solid concentration of iron, such as a socket or tang handle fitting. The fact that no saws or planes were recovered from either of the two terrestrial digs of Port Royal may simply indicate that the thin iron blades corroded on land also, especially since all of the sediment on Port Royal is virtually saturated with saltwater.

Neither the probate inventories nor the archaeological evidence alone can provide a complete picture of tool use in 17th-century Port Royal. Together the inventories and the tools recovered thus far from the archaeological excavations can help to provide a broader base for understanding the tools sold and used on the island of Jamaica before the 1692 earthquake.

THE CRAFTSMAN IN PORT ROYAL

The probate inventories and the tools recovered from the archaeological excavations of Port Royal may provide evidence pertaining to the types and variety of craftsmen that were found in 17th-century Port Royal before the quake.

Probate Inventories

There are three ways in which the inventories may supply information about the craftsman in Port Royal. First, the inventories often state the occupation of the individuals whose goods are being probated. Secondly, the tools named in the inventories are often described by the craftsman who typically used them. Finally, by studying the value of slaves with assigned trades in the probate inventories, a rough idea of the value of the various trades may be realized. Due to the infrequent mention of these slaves with trades, only estimates of these values may be made.

The Volume III probate inventories mention 24 types of occupational differentiations when identifying the individuals who have died. When studying the probate inventories it should be recognized that trades are not always identified in the text. In addition, a man may sometimes be identified in documents of this period as John Doe, cooper, even if he hasn't practiced that particular trade for some number of years. Finally, it should of course be realized that these inventories are in no way representative of the whole population, but only a representative sample of the random portion of the populace that died in Port Royal and had their goods probated in the parish between 1686-1694. If identifications such as widow, or Captain are discounted,

19 types of crafts or trades may be distinguished in the Volume III inventories. Table 5 outlines the trades identified as well as the frequency of their mention.

TABLE 5
OCCUPATIONAL TRADES IDENTIFIED IN THE PROBATE INVENTORIES
FROM PORT ROYAL Volume III, 1686-1694

<u>Occupation</u>	<u>Total Number of Mentions</u>
Blacksmith	2
Butcher	1
Carpenter	1
Cooper	2
Cordwainer	1
Fisherman	1
Goldsmith	1
Gunsmith	2
Mariner	10
Merchant	28
Pewterer	1
Planter	2
Porter	1
Shipwright	1
Surgeon	2
Swordmaker	1
Tailor	1
Tanner	1
Vintner	3

The wording used when describing tools in the probate inventories only outlines four different trades, the butcher, the carpenter, the cooper and the joiner. Historical documents continually recognize trained

craftsman as valuable additions to any society. The probate inventories only mention seven slaves in all who practice a trade in an inventory probated in the parish of Port Royal. Often apprenticed or indentured servants are mentioned in the inventories, but the prices assigned and the amount of time to serve remaining are so varied that no real conclusions may be drawn. The slave prices for the inventory years have been averaged together to provide a base figure for a male slave for each year. By looking at the average value, in relation to the value of a slave with a trade, some insight may be gained into the value placed on the craft. The only three trades mentioned by name in relation to the slaves in the inventories are those of the carpenter, the cooper and the sailmaker. Table 6 outlines the listings of the slaves with trades, and shows their comparative value in relation to the yearly average male slave price.

While no major conclusions can be made about the value of slaves with trades in Port Royal from this sampling, the figures do show that a skilled man is more valuable than an unskilled one. Except for the prices in the first example, the values are much higher for those slaves who practice a trade. It should be noted that while the average price for male slaves hovers between 22 pounds and 25 pounds in the inventories for the periods transcribed, the price of slaves with skills in Port Royal seem to rise dramatically after the 1692 earthquake.

TABLE 6
SLAVES WITH TRADES MENTIONED IN THE PROBATE INVENTORIES
FROM PORT ROYAL VOLUME III, 1686-1694

<u>Folio:</u>	<u>Occupation/ Description:</u>	<u>Price</u> (in pounds)	vs. <u>Yearly Average Price</u> (in pounds)
			1689/90/91
328	"Chelmsford, a cooper"	25 00 00	24 10 00
328	"Essex, ditto"	32 00 00	24 10 00
328	"Cufoo, ditto"	35 00 00	24 10 00
			1692/93
489	"one negroe man a sailemaker"	35 00 00	24 00 00
			1693/94
600	"Min a negroe cooper w/ his tooles"	50 00 00	22 10 00
600	"Tom, ditto"	50 00 00	22 10 00
600	"Mars, a carpenter"	40 00 00	22 10 00

One other bit of information that may help to put this issue in perspective is a look at the rates of pay in the British navy in 1689. On a 1st rate ship, where the master was paid (monthly) 7 pounds, the ship's carpenter was paid 4 pounds and his mate 2 pounds. The ship's gunsmith and the armourer were each paid 1 1/4

pound, and the cooper was paid 1 1/5 pound. An ordinary seaman on the ship was paid 19 shillings or just under 1 pound (Archibald 1968:131).

Pawson and Buisseret (1975:178-184) have listed over 35 types of craftsmen and tradesmen living in Port Royal before 1692. In comparison, by totalling the trades mentioned in the three methods named above for determining trades from the probate inventories only results in the mention of 20 trades in all (only the sailmaker is an additional trade mentioned to those in Table 5). Of course many more types of trades practiced in Port Royal may be interpolated by studying the materials that an individual possesses, yet that method can only be speculation. Nevertheless, the twenty trade listings appearing in the inventories can provide some insight into the types of craftsman who populated Port Royal at the time of the 1692 earthquake.

Archaeological Evidence

The tools recovered from the archaeological excavations provide only the broadest clues to the trades that were practiced in Port Royal. Usually, the tools must be studied in connection with their in situ provenance relevant to architectural features and associated artifacts to begin to determine what if any trade was being practiced with a given tool.

Tools such as the lasting pincers found near Building 1, in connection with the high volume of scrap leather shoe soles and heels found in the building, strongly suggest the presence of a shoemaker. Yet a shoemaker's hammer was found in the building on New Street, where no other evidence was available to support the idea that this trade was being practiced there. (Of course, there was little organic preservation on the

terrestrial site.) Tools such as the trowel recovered from Building 1 may indicate the presence of a bricklayer, but without corroborating archaeological evidence it has to be understood that the tool may have been left by a salvage attempt, may have been lost or discarded where it lay by a bricklayer passing through the area, or may have been used by an individual for some purpose totally foreign to the trade of the bricklayer. Unless a complete and totally definitive tool kit of a particular trade is recovered, no positive identification of a particular trade being practiced may be made.

Analysis

The information obtained by studying the primary source documents or the archaeological record alone may suggest identifications of the trades being practiced. Yet it seems that only when the tools and the historical records are viewed together may the truest picture be presented of the life of the craftsman in 17th-century Port Royal.

The best example of this practice is to undertake the study of the career of Simon Benning, pewterer. Though no excavation to date has been undertaken of Benning's shop, its probable location has been identified using 17th-century plat records. Simon Benning's work was first recovered from Room 1 of Building 5 by the TAMU/INA excavation. His name had been included in Pawson and Buisseret's (1975:183) listing of the craftsman of Port Royal, as a pewterer operating in 1667. Maker's markings on the plate allowed the TAMU/INA team to theorize that Benning may have been the pewterer who fashioned the plate. Benning's work has since been found in other dwellings in Port Royal. Simon Benning probate inventory is on file (Vol.3,folio 63) dated February 17

1687. Listed in the inventory are 6 plate moulds and 74 pound of working tooles, as well as 2 anvils and 12 hammers (Hamilton 1992:46-49). All of this information when viewed separately, is certainly interesting. Yet when the archaeological record is connected with the historical record, a stronger sense of the life of one craftsman who was operating in Port Royal at the time of the earthquake is obtained.

CONCLUSIONS

One hundred and seven tools are included in this collection of wrought iron hand tools recovered from Port Royal, Jamaica. When broken down by basic type, the archaeological record has yielded only 17 distinct tool types, which may then be further classified by size and shape. More tools will be located as the conservation of the remaining encrusted material progresses.

The Volume III probate inventories, when transcribed for the mention of tools, may be broken down into over forty basic tool types. The quantity of tools mentioned in the inventories is well into the thousands.

The disparity between the archaeological record and the listings in the probate inventories may be explained by several factors. It should also be recognized that it is highly probable that tools as practically valued objects were a high priority among salvaging survivors of the 1692 earthquake. In addition, only a relatively small portion (eight separate structures) of a reported 33 acres of the city that sank have been completely excavated. This is a relatively small portion or percentage of the sunken city, and may not be truly representative of the tools to be recovered in the rest of the town. Finally, many of the tools mentioned in the probate inventories are part of large quantities or lots owned by various merchants.

The tools listed as property of the merchants most likely entered Jamaica through the port of Port Royal and were then re-transported to other parts of the island or elsewhere in the New World. These large lots of tools may not have actually been stored in Port Royal proper for any length of time.

Though the inventories mention a number of lots of

bills, indigo hooks, hoes, shovels and other agricultural tools reflecting Jamaica's rise as a plantation outpost, no agricultural tools have been recovered from the archaeological excavations. This may be because even though the tools were "owned" by the merchants, they were actually immediately traded out to the plantations on other parts of the island.

Instead of agricultural tools, the archaeological excavations have yielded, for the most part smaller wrought iron tools that often have short handles. The smaller a tool's handle is the more detailed the work the tool is intended for. Since areas excavated to date in Port Royal are truly urban in nature, this may explain the presence of many smaller tools of the "finish" craftsman. The only real exception to this statement is the large number of axes recovered from the excavations. When the locations of the axes recovery in situ are plotted in relation to the architecture, most of the axes seem to have been used in the yards behind the Port Royal townhouses. Since the yards usually contained the home's cooking hearth, these axes may have been used to chop wood or to butcher meat for food preparation.

The mention in the probate inventories of tools crafted in London, as well as the large numbers of certain tool types that some merchants possessed, certainly verifies the fact that tools were being crafted in the Old World and shipped into Port Royal for re-sale. The tools recovered from the archaeological excavations can not support or dispute this fact.

While the documents confirm that there were large-scale blacksmith shops operating in Jamaica at the time of the earthquake, this could not be determined if the archaeological record were the sole source of information. What can be interpreted is that due to the

fact that some tools are crudely crafted (such as chisel NS13) and some are very finely crafted (such as carpenter's claw hammer PR87 533-9), there do seem to be tools being used in the town that were both pre-fabricated tools shaped by skilled toolmakers, and crudely-crafted tools hastily constructed to suit a need by a local craftsman. This is the same situation one could expect in any urban setting, or even on a farmstead. Thus, the situation at Port Royal is not unusual.

The final question to be addressed is whether or not the tools of a certain craftsman's kit may positively identify that a specific trade was being practiced. The answer is no. Tools seem to have been used and re-used where and when needed, as common a practice three hundred years ago as today.

Tools recovered from the archaeological record need to be provenanced to other artifacts and architectural features, and studied within their documented historical context to truly determine their method of use.

It is hoped that this tool collection may provide a valuable catalogue of tools used in the 17th century. This thesis will be supplemented with forthcoming studies describing the tools recovered from Port Royal that are still encrusted and have not yet been conserved. Most importantly, it is hoped that more material will be published describing the tools recovered from other archaeological sites. Too often tools are not included in archaeological studies, thought to be so common throughout time that they are ignored. When studied within the framework of their historical circumstance, tools can provide unique insights into any culture.

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Based on the tools in the collection of the Mercer Museum, the text is divided into sections with brief descriptions of the basic trades of the early Americas and illustrated parcels of the tools needed to practice them; good for basic identifications and simple use descriptions.

Bealer, Alex W.

- 1969 The Art of Blacksmithing. Funk & Wagnalls, New York.

A beginner's book for the blacksmith with information on the background of the art and simple sketches of the tools used.

- 1976 The Tools that Built America. Barre Publishing, Barre, Massachusetts.
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A history on the background and development of the tools used in the colonial era, with many helpful dates of new developments and good plain sketches of the tools discussed.

Blackburn, Graham

- 1974 The Illustrated Encyclopedia of Woodworking Handtools, Instruments, & Devices. Simon and Schuster, New York.

Over five hundred line drawings supplemented with simple text descriptions allow for the basic identification of a wide variety of tools.

Diderot

- 1978 Diderot Encyclopedia: The Complete Illustrations. 1762-1777. Harry N. Abrams, Inc., New York.

Chapters on the trades practiced in the 18th century offer good illustrations of both the tools in use and the variety of individual tool types; good for more specific identifications.

Dodds, James and James Moore

1984

Building the Wooden Fighting Ship. Facts on File Publications, New York and Bicester, England.

Focused on all stages necessary towards the completion of a mid-18th century British ship-of-the-line, the text includes good descriptions and tool illustrations in sections on caulkers, smiths, sawyers and shipwrights.

Early American Industries Association, Inc.

The Chronicle of Early American Industries, Assoc. Inc. EAIA Publishing Committee, 60 Harvest Lane, Levittown, New York 11756.

The Chronicle is more than a newsletter, with articles tracing historical tools, identification of obscure tool types, discussions on old craftsman and techniques, and probate inventories and correspondence published that list old tools. Sometimes tools found in old houses or from historical sites are pictured and readers write in to identify them. A good index makes researching a particular tool type easy.

Goodman, W.L.

1964

The History of Woodworking Tools. Bell & Hyman, London.

Tracing the advent of woodworking tools from the stone age to the present, Goodman's verbal history is excellent. Sketches, photos, drawings and reproductions of works of art illustrate and can be helpful. Goodman does use tools from archaeological sites in his discussions, mostly old world, from the medieval ages or earlier.

Horsley, John E.

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Tools of the Maritime Trades. International Marine Publishing Company, Camden, Maine.

Contains excellent illustrations of the many types of tools discussed.

Hummel, Charles F.

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Based on the Dominy collection of clockmaking and woodworking tools now housed in the Winterthur Museum in Delaware (1760-1840); the book contains photographs and descriptions of the tools presented in a manner very useful for identification.

Kebabian, Paul B.

1978 American Woodworking Tools. New York Graphic Society, Boston.

A simple historical overview and descriptions of basic tools is supplemented with chapters on the carpenter and sawyer, the joiner and cabinetmaker, the shipwright, the wheelwright and carriagemaker, the cooper, and measuring tools. Excellent photographs by Dudley Witney provide tool illustrations that are good for identification purposes.

Mercer, Henry C.

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Similar to Goodman, tools are traced throughout history and reproduced for a variety of more specific individual tool type identifications.

Moxon, Joseph

1677 Mechanick Exercises: or the Doctrine of Handy-works. Applied to the Art of Smithing, Joinery, Carpentry, Turning and Bricklavery. London.

With at least three revised editions published between 1677 and 1703, Moxon is an excellent primary source of identification for the tools and techniques used in his time. Many copies available are microfiches of the original and Moxon's sketchy illustrations tend to lose their clarity.

Salaman, R.A.

1975 Dictionary of Tools Used in Woodworking and Allied Trades, c. 1700-1970. George Allen & Unwind Ltd., London.

A good source for the historical development and identification of tools used, with good illustrations.

- 1986 Dictionary of Leather-working Tools, c. 1700-1950 and the tools of allied trades.
Macmillan Publishing Company, New York.

The simple historical development of the tools and the varied craftsman who used them are described and illustrated nicely with clear line drawings. The text covers the shoemaker, furrier, glovemaker, saddler and a variety of others seldom seen in most volumes.

- Sloane, Eric
1964 A Museum of Early American Tools. Ballantine Books, New York.

An excellent source for beginning research. Sloane uses simple drawings and covers a wide array of tools and tool types used by a variety of craftsman. Though the text is short and simple, the book frequently mentions what Sloane feels are the major developments in tool style and usage, citing the time periods and the culture that originated the change.

- Smith, H.R. Bradley
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Although most of the tools are more modern, the book does include descriptions of tools back to the 17th century, with photographs. The book covers more information than a simple description of the blacksmith's work, with some interesting information on the development of metalwork and tools through the ages.

- Tomlinson, Charles
1972 Illustration of Trades. Early American Industries Association, Levittown, New York.

Originally published in 1860 and reprinted by the EAIA, this is a short and simple text with good wood-engraved illustrations and descriptive text on the techniques and the tools used in a variety of trades, from the brickmakers through to the shipwright.

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A good simple text on the beginning
tradesmen, that sometimes includes
enlightening facts and helpful illustrations
on the development of certain tools and tool
types.

APPENDIX A

WROUGHT IRON AND STEEL

In his 1677 treatise Mechanical Exercises: or, the Doctrine of Handy-works Joseph Moxon describes smithing as an "Art-manual, by which an irregular lump (or several lumps) of iron, is wrought into an intended shape" (Moxon 1677:A).

Iron is the second most abundant metal on the planet. Iron ore that is suitable for smelting with simple techniques was simply obtained by scraping surface deposits without necessitating complex mining technology. Traditionally, since the ore was heated below the melting point of pure iron, the resulting material produced was a mushy composite of iron and slag. The raw material was consolidated further by hammering. Hammering pressed out the slag and compacted the iron particles, producing a mass of wrought iron. By the 17th century water power had been harnessed to fuel both the blast furnace which heated the ore, and the mechanized hammers that were used to forge raw iron into bars (Clay 1984:52). Iron bars may be worked and reshaped by the smith at his forge to create any manner of tool or implement. Wrought iron is perfectly suited for tool construction since it is strong, malleable and weldable. (Cast iron, formed by pouring molten metal into molds, is very brittle).

Since wrought iron cannot hold a sharp edge, tools such as adzes, axes and chisels that require an edge often had a steel bit (cutting edge) welded onto the tool's iron surface. Steel is simply iron that contains carbon as a key component. True steel as we know it today was not common in the 17th century. "Mild" steel is iron processed to contain a small amount of carbon. Iron with a carbon content of 2% or higher is classified as high carbon or tool steel (Blandford 1980:22-23).

Most steel used in the 17th century was imported, often from Germany. Only during the latter part of the century did a number of small steel works begin to operate in England (Clay 1984:56). Since steel was relatively scarce and expensive, and wrought iron and steel may be easily joined by heating the metals to welding heat, the addition of a steel cutting edge or bit was a logical solution when crafting cutting tools. When the steel cutting edge wore out, it could easily be replaced with a new strip of steel welded into place. This process was called "laying" or "steeling." Moxon describes the three intensities of heat used by the smith when working with iron as "blood-red heat", "white flame heat", and "sparkling or welding heat". Welding heat was the hottest process and was used to join metals (Moxon 1677:8). Moxon describes the varieties of steel in use among smiths, and states that "the manner of forging steel, either for edge-tools, punches, springs, etc. is (the several shapes considered) the same with forging iron. Only this general rule observe, from an old English verse us'd among smiths when they forge edge-tools,

He that will a good edge win,

Must forge thick and grind thin" (Moxon 1677:62).

APPENDIX B

ILLUSTRATED GLOSSARY OF TOOL PART NAMES

- Bit - The cutting edge on an axe. Also, loosely used to describe the pointed end of any cutting or striking tool.
- Eye - The slot in a tool's head where the handle is inserted.
- Face - The broad side of an axe bit; the striking surface on a hammerhead.

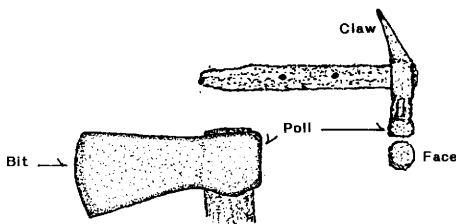


Figure 119. Tool Part Names

- Ferrule- A binding around the working end of a tool handle, usually made of metal.
- Helve- A tool handle.
- Poll - The end opposite the cutting edge on an axe. The side of the striking head on a hammer.

VITA

Marianne Franklin

Mailing Address:

P.O. Box 13512
Pensacola, Florida 32591
USA

Educational Background:

B.A. 1985 Eckerd College, St. Petersburg,
Florida.
Major field: Anthropology

Professional Experience:

February-November 1991:

Underwater Archaeologist, Florida Division of
Historic Resources, Bureau of Archaeological
Research, The Pensacola Shipwreck Survey.

October-December 1990, July 1991:

Field Archaeologist, Institute of Nautical
Archaeology (INA) and the Jamaica National
Heritage Trust, The Columbus Caravels Project

Summer 1990:

Archaeological Diver, Texas A&M University
(TAMU), INA, and the Jamaica National Heritage
Trust, The Port Royal Project, The Port Royal
Shipwreck

Summer 1989:

Conservation Laboratory Supervisor, Florida
Bureau of Archaeological Research, the
University of West Florida, and the City of Gulf
Breeze, Florida, The Excavation of the Deadman's
Island Shipwreck

January-July 1988:

Laboratory Assistant, TAMU, INA, The Molasses
Reef Wreck Project

Summer 1987:

Archaeological Diver, TAMU, INA, and the Jamaica
National Heritage Trust, The Port Royal Project