WROUGHT IRON HAND TOOLS FROM THE UNDERWATER ARCHAEOLOGICAL EXCAVATIONS OF COLONIAL PORT ROYAL, JAMAICA, C. 1692

A Thesis

by

KATIE MICHELLE CUSTER

Submitted to the Office of Graduate Studies of Texas A&M University in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

May 2004

Major Subject: Anthropology
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Approved as to style and content by:

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Filipe Vieira de Castro      C. Wayne Smith
(Chair of Committee)         (Member)

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May 2004

Major Subject: Anthropology
ABSTRACT

Wrought Iron Hand Tools from the Underwater Archaeological Excavations of Colonial Port Royal, Jamaica, c. 1692. (May 2004)
Katie Michelle Custer, B.A., Eastern Washington University
Chair of Advisory Committee: Dr. Filipe Vieira de Castro

The written history of Port Royal starts with the European discovery of Jamaica on Columbus’ second voyage to the New World and has proven to be rich in shady characters and natural disasters. The English took possession of Jamaica from Spain in 1654 and the city of Port Royal was established soon after. Port Royal, located at the end of the Palisadoes sand spit, a natural barrier roughly six miles long, separates Kingston harbor and the Caribbean Sea. Originally functioning as a protective fortification of the harbor, it became an active harbor and the most economically important English colony in the New World from 1655-1692. Port Royal quickly earned the title of “Wickedest City on Earth” because of its reputation of officially sanctioned privateering and piratical expeditions, and the abundant supply of establishments of ill repute.

On Wednesday June 7, 1692 a devastating earthquake struck Port Royal and destroyed a major portion of the city. A total of 33 acres, or 66% of the city, including buildings and people, at the very end of the sand spit, literally sank into the shallow harbor.
It was not until the concentrated efforts of the Nautical Archaeology Program (under the direction of Dr. Donny L. Hamilton), the Institute of Nautical Archaeology, and the Jamaican government, started archaeological excavation from 1987-1993, that the real picture of this sunken city emerged. Through the excavation, mapping, collection, and conservation and analysis of artifacts a ghost image of this city was brought back to life and interpreted. A large collection of iron hand tools from this site was preserved. These conserved and replicated artifacts are now available for analysis.

This thesis is a continuation of the catalog of hand tools from the Port Royal excavations previously done by Ms. Marianne Franklin. It seeks to link the historical background of these artifacts to tool technology and the history of Port Royal and its tradesmen through the use of historical documents.
DEDICATION

To my family and friends whose love guides me
in my every adventure.

To James and Deborah Custer
my mother and father and my North Star.
ACKNOWLEDGEMENTS

The journey of my master’s degree and this thesis was not carried out alone. I have many people who helped and guided me along the way and I wish to extend my appreciation to them. My academic success and my greatest indebtedness lie with those who encouraged me at an early stage. This started with my parents and the incessant summer homework that no other kids in the neighborhood had to partake in. I hated it on the playground, but I appreciate it now as it sparked a passion for learning that I will carry with me throughout my life. Responsible as well were my undergraduate professors, who were a group of extraordinarily kind and nurturing people that took personal interest in my life and my education. I will never be able to repay them for this unexpected and unrecognized gift.

My graduate career has also been filled with another group of notable people whom I also would like to recognize. Firstly, my thesis committee; Dr. Filipe Vieira de Castro, Dr. C. Wayne Smith, and Dr. David Woodcock. They have allowed me a significant amount of academic freedom in pursuing my thesis topic and encouragement to produce and finish; all of which are rare qualities. I would also like to thank my professors in the Nautical Archaeology Program; Dr. Kevin Crisman, Dr. Cemal Pulak, and Dr. Jerome Hall for pushing me to exceed my own expectations and for sharing their incredible and extensive knowledge of our chosen field. I would especially like to extend my appreciation to Dr. Donny L. Hamilton, Head of the Nautical Archaeology Program, President of the Institute of Nautical Archaeology, and Project Director of the
Port Royal Project, for allowing me to take on this thesis, for not making me fill out an endless amount of paperwork, and for being there to answer my all of my questions about the wonderful world of Port Royal and hand tools. I also want to thank everyone with whom I have worked in the field. Each summer I have been lucky enough to work with talented and passionate archaeologists and volunteers. Through the time spent on various projects I have developed my own passion for this field and discovered that this is what I want to do more than anything else.

Lastly, I need to recognize my colleagues and my friends for without the laughs, the tears, the successes, the failures, and the late nights in the library, graduate school would have seemed a lot less interesting and a lot less personal. In particular, I would to thank Sara Hoskins for everything, for understanding me and for listening to my crazy idea that led to our project, Sara Brigadier for being a kindred soul, Margaret Choltco for her compassion and laughter, Grace Turner for getting me through the craziest summer I have ever experienced, Erika Lanella for endlessly defending me against jellyfish and other creatures of the sea, Starr Cox for her constant patience and understanding and all of the laughter, and Glenn Groecco whose lab has been a refuge in many moments of need, and finally, everyone who has been a friend for a reason, a season, or a lifetime.

My gratitude for my family friends can never fully be expressed. To truly love and appreciate your family and friends is a wonderful experience. They are there for me in my every endeavor and have supported me through my every decision. They rejoice with me in my successes and lift me up and hand me a margarita when I fail.
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CHAPTER I
METHODOLOGICAL INTRODUCTION

In 1992, a previous study by Ms. Marianne Franklin was done on the tools conserved to date. The work constituted her master's thesis and is quite extensive. This thesis is a continuation of that catalog. The format will intentionally be similar to provide consistency in the cataloging of this single artifact collection. The tools will be systematically described and analyzed while exploring the historical and social contexts influencing the use and production of iron hand tools in 17th-century Port Royal. The examination of tools, crafts, and craftsmen in the New World as evident in contemporary documents is a central theme to this study. The following questions will be addressed and are based upon the ones found in the Franklin thesis.

1. Do the types of tools present in the archaeological record reflect the variety available to the island?

2. Were the majority of tool types imported or locally forged?

3. Does the quality of crafted tools lend any information about the makers and users of the tools?

4. Does the collection accurately reflect the diversity of crafts and craftsmen in Port Royal?

5. Were tools, traditionally assigned to a particular craft, in fact used singularly

This thesis follows the style and format of the journal, *Historical Archaeology.*
by that craft, or were the tools utilized as multi-purpose instruments?

6. Does a cross over of tools result from a limited amount of imported tools or was it an adaptation to a colonial environment?

The introductory chapter will cover the historical background of Port Royal from the founding of the island to the earthquake, as well as the archaeology of the submerged city. This will be followed by a chapter on tools, trades, and tradesmen at Port Royal including a brief history of hand tools and trades and tradesmen of Port Royal as evident in contemporary documents (i.e., probate inventories, wills, and journal accounts).

Though few decisive conclusions could be drawn from the inventories regarding the individual trades and related tools, a condensed survey provides a glimpse of these utilitarian artisans. There is potential for further study of these tradesmen, especially in a comparative view with the tradesmen of Europe and the American colonies. Port Royal has been touted for its uniqueness and advantageous research possibilities, which is augmented by every artifact delivered from the water and conserved in the laboratory.

These artifacts, the background for which comes from the previous chapter, will be examined in a catalog in Chapter V. The tool collection will be delineated by tool type with a description and drawing of each artifact, provenience, and any association with other artifacts. The final chapter is the conclusion in which a short analysis of the collection, primarily concentrating on the research questions and artifact distribution by tool type and as an overall view.
CHAPTER II

INTRODUCTION TO COLONIAL PORT ROYAL

The written history of Port Royal begins with the European discovery of Jamaica (Figure 1) on Christopher Columbus’ second voyage to the New World, and has proven to be rich in shady characters and natural disasters. After seeing the beauty and economic potential of the New World on his first voyage, Columbus was eager to return and did so seven months later (Black, 1958:5). On this second voyage he heard of the island of Xaymaca, meaning a land of springs, and purported to be the source of “blessed gold” (Hurwitz, 1971:5). Columbus quickly set off from his position in Cuba in search of the gold, and once there he found an admirable sight, which he described as “the fairest island that eyes have beheld; mountainous and the land seemed to touch the sky...all full of valleys and fields and plains” (Gardner, 1971:2).

As Columbus and his crew approached this fair island, their eyes beheld a new scene: a fleet of several apparently hostile Arawack canoes coming towards the ships. Columbus made conciliatory gestures and was permitted to anchor in the harbor, which he named Santa Gloria “on account of the extreme beauty of its country” (Black, 1958:25). However, the anchorage was not sufficiently sheltered for the three ships, so they soon set off to explore the rest of the island. On the extremity they found favorable winds back to Cuba. Columbus left Xaymaca only to return years later during his fourth and last voyage (Gardner, 1971:3). On that last expedition, Columbus traveled along the eastern coast of Central America and the vicinity of Jamaica. There he realized that his two remaining ships, the Capitana and the Sanitago de Palos, were
Figure 1: Map of Jamaica  
(Franklin, 1992)
no longer seaworthy, and he made for a sheltered cove on Jamaica, today known as St. Ann's Bay. The two weakened and worm-eaten vessels were beached side-by-side and lashed together (Gardner, 1971:4). For shelter, the crew constructed a thatched structure on the decks of the two ships. Columbus and his crew would remain on the island for the next year, suffering the hardships of food shortages, mutinous crewmembers, and a governor with a personal vendetta (Carley, 1963:20).

Not long after being stranded, Columbus sent Diego Mendez, a loyal crewmember, off in a canoe with another Spaniard and a few Arawack guides in hopes of reaching Hispaniola and thus rescue. They had to face the dangerous waters of the Windward Passage, and none knew if they would ever reach the island. As time passed and no word came from Mendez, some of the crew became disillusioned with Columbus and mutinied. Soon after, the mutineers took leave of the settlement and began to pillage the natives for their survival and amusement.

After they left, mutiny was no longer an imminent issue, but hunger was. The shipwrecked crew had traded novelty items to the Arawacks for provisions until the natives no longer desired the objects and tired of supplying the Spaniards such a large amount of food. Columbus found himself in a difficult and potentially dangerous position with the rising Arawack hostility that he finally solved by a clever trick. He was familiar with astronomical charts and knew about a coming lunar eclipse. Columbus told the chief that his god was displeased with his people because they had stopped supplying his crew with food and, as a result, God would cover the face of the moon to demonstrate his anger. The natives became frightened as the eclipse began
and gave in to the wishes of Columbus who farcically went on to intercede on their behalf by praying as the eclipse passed (Carley, 1963:21).

Around the same time, crewmember Mendez reached Hispaniola, but the plight was not over. There he encountered the governor, who had delayed sending a ship to the island because of his dislike of Columbus, though he long knew of the situation and now refused any help (Gardner, 1971:4). Not until Mendez procured a vessel on his own accord was the crew rescued. Columbus then left Jamaica, never to return to the New World. The Spanish crown had lost faith in his ability to be a colonial administrator and kept him from an active role in the governing of Jamaica, although it was rightfully his as established by the original contract made with the Crown. He was also denied the rights and privileges befitting an Admiral and Viceroy, but allowed to keep his considerable fortune attained during the expeditions (Black, 1958:33).

SPANISH OCCUPATION

Jamaica remained a Spanish possession for the next century. It was kept as a supply base, occupied mainly to prevent anyone else from obtaining control of the island. In 1502, shortly after Columbus left, navigator Alonzo de Ojeda ran low on provisions while exploring the area. He sent a caravel to Jamaica for fresh supplies of food and water (Gardner, 1971:8). Ojeda’s first trip, like that of Columbus, was not to be his last. He was assigned to Jamaica by the court of Spain along with another man, Diego de Nicuesa. There was much dispute between the two men as to the delineation
of boundaries and territories on the island. These arguments, however, were
unnecessary because Diego Columbus, son of the explorer, went to court to assure his
hereditary right as viceroy of all the lands discovered by his father, and a tenth of any
gold or silver produced in the New World. In 1508 he was named governor of the
Indies and traveled to Hispaniola the following year to take office. To counteract
Nicuessa and Ojeda’s claim to the island Diego Columbus appointed Juan de Esquivel
as governor of Jamaica.

Esquivel, in company with seventy men, set off to take possession of Jamaica.
Ojeda was not pleased with this move and sent out a threat that if he found Esquivel on
the island he would have his head. The future relationship between Ojeda and Esquivel
would prove to be interesting. Esquivel took control of the island and managed to bring
the Arawack population under his authority without any bloodshed, a noteworthy
occurrence at this time. He was considered to be of noble character and the mildest of
all governors of the indigenous population to date (Gardner, 1971:8). Ironically, it is
with Ojeda that this character was most visibly seen. After Esquivel took the island,
Ojeda set out and, after many extraordinary adventures, found himself on the shores of
Cuba in great distress. By necessity, he was forced to send word to Esquivel of his
condition and request assistance. Esquivel promptly sent a ship to bring him back to
Jamaica and housed him in his own dwelling. After Ojeda recovered from his ordeal,
he was permitted to continue on to Hispaniola, and the two remained close friends from
that day forward (Gardner, 1971:8).
In 1511, Esquivel was instructed by King Ferdinand to actively search for gold on the island, but to allow the Arawacks to grow as much food as possible. Several fruits and plants such as sugar cane, indigo, bananas, and citrus were introduced, as well as cattle, horses, and pigs. Indigenous cotton was cultivated, and the first permanent settlement on Jamaica and the third Spanish settlement in the New World was constructed at New Seville (Sevilla Neuva), close to the original landing spot of Columbus. New Seville was unfortunately located near swamps, creating an unhealthy environment, which was attested to by a high mortality rate in children. It is suggested today that malarial conditions were the main cause (Carley, 1963:25). It is apparent from the writings of Sir Hans Sloane in 1623 that New Seville was intended to be a large town. Hans Sloane was a soldier turned abbot who became a member of the Council of the Indies, abbot of Seville in Jamaica, and Prior to the church in Grenada, Spain (Gardner, 1971:8). From his writings, it appears that had the town been completed according to the original design, it would have been quite large. He wrote that the foundations of houses spread out two miles from the church; wells were scattered about, and the remains of the graveyards indicated a large population. In addition, a tower or castle with battlements had been started; its walls were a few feet thick. There were also materials for constructing a large house. A stone bridge near the foundations of that house contained an engraved ducal coat of arms, suggesting that it would be for the use of Diego Columbus. It has been suggested that he and his wife frequently visited the island and considered establishing a powerful appendage to his other possessions (Gardner, 1971:9). However, history has shown that this never came
to be; the idea was most likely abandoned at an early stage. The settlement was moved in 1534 to the plains of the south, and Villa de la Vega (today’s Spanish Town) was founded. The southern coast was better suited for living and as a stopping place for transports going from Europe to Panama (Carley, 1963:25).

Juan de Esquivel died quietly and was buried in Seville; however, he left a legacy of beginnings. He founded two other settlements: Oristan on the southwestern coast of the island, and Old Harbor, known then as Puerto de Esquivella, where he established a shipbuilding yard. Sugar plantations were started, cotton was cultivated, vines were planted, and the introduced cattle flourished (Gardner, 1971:10). It was in 1515, however, under the administration of the new governor of Jamaica, Francisco de Garay, that the colony undertook its first period of prosperity through the exportation of goods. It was the start of an export economy that in later years under English rule would become the lifeline of the island (Hurwitz, 1971:6). In contrast to Esquivel, Garay was reported to be a cruel and vain man. He immediately established a system of slavery resulting in an extreme eradication of the native population. In 1518, Garay set forth on an expedition to the mainland of Mexico to establish a colony at Panula and to look for gold. On his arrival he found that Cortez had already taken this area, and a majority of the men, nearly 900 in the expedition, gave their allegiance to him. Garay died soon after; it was reported that he died of pleurisy, but the real cause was suspected to be poison. This event and the loss of men reduced the white population so drastically that a law was passed prohibiting any vessel from taking a man away from the island without leaving another in his place (Gardner, 1971:8).
In 1536, Don Luis Columbus, grandson of Christopher Columbus, was given Jamaica as a personal estate. He was to become the third admiral of his family, but he did not receive the title of Viceroy. Don Luis, like his father, went to court to resolve the issue and in the end agreed to give up his claims to Viceroy in exchange for the province of Veragua in Central America and for Jamaica. He and his successors never went to Jamaica to rule; rather it was established as a fief. They carried the titles of Duke of Veragua and Marquis de la Vega, referring to Villa de la Vega, until 1640 when the crown decided to take control of the island (Black, 1958:38).

Early on Villa de la Vega (later St. Jago de la Vega and then Spanish Town) became the seat of the island and prospered because of its location, whereas New Seville did not. It was conveniently situated far enough inland to avoid sea attacks, but was also close to two good harbors. In addition, Villa de la Vega was in a fertile country and close to fresh water, whereas New Seville was unhealthy due to its proximity to swamps. Missionary Antonio Vazquez de Espinoza provided accounts of the town in 1628. He wrote that it was “marvelously attractive...very well built and laid out” and later, in 1643, a compliment from a strange source further attested to its design. The English Captain William Jackson, a pirate in the eyes of the Spanish, plundered the town and held it ransom. However, it was reported that he thought it “a fair town, consisting of four to five hundred houses, five or six stately churches and chapels, and one monastery of Franciscan friars” (Black, 1958:39).

Jackson was not the first pirate to visit Jamaica and certainly was not the last. Piratical activity was not limited to the island; it was a condition found throughout the
entire Caribbean. The New World generated untold wealth for the Spanish Crown, who had a monopoly on it. When Columbus returned from his first voyage, Portugal contested his findings based on territorial clauses in the Treaty of Alcacovas. In response to this dispute Pope Clement, Spanish himself, created the Treaty of Tordesillas (1494), giving Spain control of the Caribbean. However, it was not long until other European powers began to challenge this hold. Francis I, the King of France, declared, “I should like to see the clause of Adam’s will that excludes me from a share of the world” and so began piracy (Black, 1958:42).

The sixteenth and seventeenth centuries in the Caribbean were a time of adventurers, pirates, and privateers. Pirates generally worked of their own accord while privateers were officially commissioned by nations. All plundered and raided, and some participated in smuggling and illegal trading with the colonists. The French were the first to send ships into the Caribbean, as early as the first decade of the sixteenth century, and were followed by the Dutch. England was the last to come, arriving late in the 16th century with the famous voyages of John Hawkins and Sir Francis Drake. The English then began to direct their efforts at demolishing Spanish control and were eventually joined by the Italians and the Portuguese, in addition to the French and the Dutch. All were content upon seizing wealth where it could be obtained and none was yet concerned with settling areas. At the end of the sixteenth century Spain still held onto its possessions, in spite of the efforts of these nations to challenge that hold and then to attempt to pry territories out of Spain's fist. Jamaica fared better than most islands, and in the first part of the seventeenth century it was virtually free from pirate
attacks; however, the pirates would eventually come to play an important role in the history of Jamaica.

During its 161-year Spanish occupation, Jamaica was used as a supply base for the Spanish military forces, especially in the early colonization period. Jamaica supplied them with men, horses, arms, and food during the expeditions to conquer Cuba and much of the American mainland. After this, however, the importance of the island diminished greatly as it was overshadowed by the wealth from the mainland, and nothing more was done to cultivate its natural resources. The colonists relied on trade with ships passing through on their route from Cartegena to Havanna. These ships, in return, would provide the settlers with fresh supplies of clothing, wine, oil, wheat flour, and some luxury items (Black, 1958:35). These colonists never really prospered in comparison to those on the mainland. People, on the whole, were poor; epidemics occasionally plagued the area, and some years brought earthquakes, hurricanes, and drought. Near the end of the Spanish occupation the colony was weakened by internal conflict and lack of strong leadership. The Dukes of Veragua (Columbus’ descendents) appointed governors to the island but never supported them, creating a quarrelsome situation (Black, 1958:42). In 1580, Portugal fell to the Spanish crown, and the Portuguese began to immigrate to the island. Conflicts arose between the Portuguese settlers and the Spanish population, and the few but effective attacks from pirates further weakened Jamaica.
ENGLISH OCCUPATION

Because there was only a small defensive force stationed on Jamaica, and its colonists weakened its defense due to a persistently conflicted state, the English easily took possession of the island from the Spanish in 1655 (Thornton, 1992:15). Oliver Cromwell had sent a naval fleet under the command of Admiral William Penn and soldiers under General Robert Venebles from England to overtake the island of Hispaniola (currently the Dominican Republic and Haiti). They first stopped in Barbados to pick up Gregory Butler and his colonial recruits. Together they numbered around eight thousand men on fifty-four ships. Once they reached Hispaniola, they landed forty miles west of Santo Domingo, instead of the proposed ten miles. This navigational error was to be the first of many mistakes. The fleet outnumbered the Spaniards three to one, but the English sent numerous unsuccessful expeditions to shore. They made two full-scale attempts to reach the city, but never succeeded. From the three weeks spent on Hispaniola came tales of quarrels, dysentery, disobeyed orders, mismanagement, and cowardice (Hamshere, 1972:68).

After giving up their plans of capturing the island, Venebles suggested they take Jamaica so they would have something to show for this misadventure. Even though the island was situated in the heart of the Spanish New World possessions, it was often overlooked in deference to Hispaniola and Cuba, and even those islands were seen as less desirable than the mainland colonies. The English fleet rounded point Caguaya, now Port Royal, and anchored off Passage Fort on the western end of what is now Kingston Harbor. They encountered so little resistance entering the harbor that no lives
were lost. The English started to advance on the town, but soon discovered that woods
stood in their way. They retreated for the night, and the troops were left to sleep on
land near the swamps while Venebles returned to the ship. The Spanish, now knowing
of their presence, spent the night removing valuables. The following day the English
marched to Villa de la Vega, found a white flag of truce, and negotiations began.
Venebles marched the troops back to the fort for the night and, returning the next day,
made clear their intent of occupying the island and demanded supplies for their support.
Though these supplies were granted, providing ample opportunity to take control, the
troops remained inactive for a week. The Spanish colonists were given the option of
becoming British subjects and retaining their possessions, or returning to Europe. The
colonists declared they had no other home than Jamaica and would not leave (Gardner,
1971:31). Meanwhile, the governor, under the guise of studying the terms of surrender,
spent the next few days evacuating the non-fighting colonists to the north side of the
island while the stouter men retreated to the nearby hills to organize guerilla resistance
(Craton and Walvin, 1970:14). They would remain on the north shore for the next five
years.

The English occupied Villa de la Vega and sent soldiers out to take control of
the rest of the island, again finding little resistance. They were far from feeling
victorious, however, as the realization set in that they would be poorly supplied from
England, they did not know how to process some local foods, and they were incapable
of catching cattle. Malnourished, they had little resistance to disease and began to die
off at a high rate. Penn left immediately for England with approximately two-thirds of
the remaining fleet, while Venebels remained, recovering from a bout of dysentery. Upon his and Venebels' later return to England, Cromwell put them both in the Tower for their ineptitude, only to be released a year later. Neither was allowed to return to active service. Eventually, the English force adapted to the local climate and conditions and the military adopted a policy of "plant or starve," so the men planted fields and made permanent residences as land grants were given primarily to the military and private individuals (Pawson and Buisseret, 1974:11). Merchant ships carrying supplies began to arrive more frequently, easing their strain.

The early English settlers and governors faced many daunting problems, the largest of which was defense. Though the population was comprised mainly of soldiers, their forces had been destabilized, and there was the more serious issue of planting food. The island was located in the heart of the Spanish holdings and was perfectly situated to wage maritime warfare upon the Spanish trade routes and colonies (Pawson and Buisseret, 1974:25). The English colonists were surrounded by their enemies, and without a naval force they were vulnerable to attack and could have been easily recaptured if the English maritime presence weakened. Cromwell found himself with financial difficulties, as did his successor Charles II, and reinforcements or even supplies to outfit the soldiers would not be sent. The fleet that originally captured the island had left, and the remaining ships quickly fell into disrepair and became virtually useless (Pawson and Buisseret, 1974:25). In spite of this, the English, using what little resources they had, undertook more expeditions in the Caribbean. During these
ventures an unlikely association was made with the buccaneers, who originally gave rise to what is referred to as pirating (Hamshire, 1972:74).

For four years the English held Tortuga (now the Cayman Islands) for four years, which the buccaneers inhabited at the time. The first buccaneers were the “cow-killers” who occupied the western part of Hispaniola. The term buccaneer comes from “boucan,” a French term referring to the frame used by the “cow-killers” to cure meat (Black, 1958:58). They were primarily hunters who illegally traded meat and hides for ammunition and provisions with passing ships. They were comprised of men from several nationalities (French, Dutch, and English), as well as from different backgrounds (runaways, castaways, escaped criminals, and political or religious refugees) (Black, 1958:58). However, they all had one thing in common: they had forsaken any national loyalty for the purpose of opposing the Spanish. Their mutual hatred of the Spanish came when the Spaniards tried to round up the buccaneers and then, after failing, attempted to starve them into surrender by killing off all the cattle. The buccaneers no longer had their peaceful occupations of hunting and trading and were driven by persecution to take to the seas and plunder Spanish towns and kill every Spaniard with whom they crossed paths. They banded together on the coast of Tortuga and created the “Confederacy of the Brethren of the Coast,” realizing that in unity lay their greatest strength. They captured Spanish ships first by using canoes and, as their possessions and recruits increased, they armed and fortified the island. They were skilled marksmen from years of hunting wild game and now knew the tactics of raiding
and capturing both ships and cities. Because of this, the buccaneers were eventually commissioned by different nations as privateers.

As early as 1657, the Governor of Jamaica, Nicolas D’Oyley, tried to lure the buccaneers to his island. Though the buccaneers had fortified Tortuga, it was still not as ideal as Port Royal in terms of a defensible harbor and a good market (Pawson and Buisseret, 1974:25). In 1659, they accompanied the British on a joint trip to capture Coro and Comina on the mainland (Hamshere, 1972:74). The trip yielded sizable booty, and the association of the buccaneers with Jamaica began. The English navy no longer had the resources to defend Jamaica. Fleets dwindled and the remaining ships, occupied in capturing Spanish possessions, were too far away to be of assistance in the event of an attack. D’Oyley realized they would have to ensure their own safety, and the buccaneers officially became the hired defenders of the island. The governor wanted to gain naval protection for the island as well as generate some revenue, so the buccaneers-turned-privateers were virtually free to go about their own ways of ransacking and looting (Pawson and Buisseret, 1974:25). Their coming gave rise to the city of Port Royal as they brought back looted items and spent their money, and as they gained more freedom of action they eventually developed into their known roles as pirates. The newly commissioned privateers were never called upon to defend against a Spanish attack, but by the end of D’Oyley’s term they were a considerable deterrent and had rid the island of Spaniards and supporters of the Spanish crown.

The restoration of Charles II in 1660 brought about significant changes in the policies dealing with Spain. In February of 1661, an armistice with Spain was made,
and with it came a proclamation for the cessation of pirating against Spanish possessions and a call for all vessels to return to Port Royal (Pawson and Buisseret, 1974:28). The proclamation was mainly ignored by the privateers and enraged the populace, so D'Oyley returned to England and his successor Lord Thomas Windsor was named. Windsor arrived in 1662 with the orders of negating all the policies previously set regarding the privateers and to “obtain and preserve good correspondence and free commerce with the plantations belonging to the king of Spain” and if need be, “to settle such trade by force” (Pawson and Buisseret, 1974:28).

Windsor attempted to carry out his orders, but he was faced with opposition by the inhabitants of Port Royal and with hostile Spanish governors. Hostilities broke out again, resulting in raids on Santiago de Cuba and Campeche by the privateers, and the success of these raids only spurred on further ones, this time sanctioned by the Council of Jamaica. Spain was making complaints against the Jamaican raids, and in response to them Windsor was replaced by Sir Charles Lyttelton (Pawson and Buisseret, 1974:30). Lyttelton did little to stop them, most likely realizing the futility of trying to persuade the privateers to stop the activities that brought wealth to them and the island. He soon tired of the New World and requested to be sent back to England.

As mentioned before, soon after the English invasion, Port Royal was established and it developed mainly because of the arrival of the buccaneers in Jamaica (Thornton, 1992:15). The city is located at the end of the Palisadoes sand spit that is roughly six miles long and forms a natural barrier between Kingston Harbor and the Caribbean Sea (Pawson and Buisseret, 1974:1). The Spanish never occupied the site,
and the nearest settlement had been at Caguaya (Passage Fort) where the English first landed. The British anglicized the names of Caguaya to Cagway Harbor, for what is now Kingston Harbor, and Point Cagway to Port Royal (Hamshere, 1972:76). Originally Port Royal functioned as a protective fortification of the harbor, and a fort was started in 1661 with roughly 500 residents (Hamshere, 1972:76). However, due to its flat topography and deep waters close to the shoreline that could easily accommodate large vessels, it became an active harbor and rapidly expanded into the most economically important English colony in the New World from 1655-1692 (Hamilton, 1984:11). Port Royal (Figure 2) quickly earned the title of “Wickedest City on Earth” because of its reputation for officially-sanctioned privateering and piratical expeditions and the abundant supply of establishments of ill repute. The pirates would come back from expeditions with their pockets full of pieces of eight, and Port Royal gave them a ready market to spend their booty, as well as the facilities to repair and provision their ships. The money was quickly spent on drinking, gambling, and women; it was common for them to spend thousands of pieces of eight in one night. Business in Port Royal prospered, as there was a greater need for taverns, arms and ammunition, provisions, and skilled tradesmen to outfit ships. More ships began to come to Kingston harbor to get provisions and to trade with the colonists. The pirates protected Port Royal, making it safe for ships to come. As the economy in Port Royal flourished, there was a greater demand for luxury items from Europe and the East. The city itself grew, and multi-story buildings lined the streets. In all, the people of Port
Figure 2: John Taylor’s 1688 Map of Port Royal
(Port Royal Project Archives)
Royal were wealthy and safe from outside attack while they spent their money in an atmosphere of debauchery and disorder they had created. This atmosphere, however, did not suit the entire island. Many of the merchants invested in the agricultural development of the island, leading to a powerful planting interest (Pawson and Buisseret, 1974:39). This group became disillusioned with the privateers, claiming that it took too many men away from agricultural work. This sentiment was expressed in a letter of complaint by a local planter named John Styles. He wrote that:

The trade now (of Jamaica) consists principally in plate, money, jewels, and other things brought in by privateers...in colonel D'Oyley's time...there was a considerable army of young lusty men under command and pay, but now almost all are gone, or dead, or out for privateers (of which) about 800 are out on that employment. Questions if there need be of their help whether they could afford any, when they have none or so little interest upon land that they value it not; gold and gain is their only god they worship...the settlement of Jamaica will never be in a better condition without a speedy supply from England of Christian planters, not merchants (Pawson and Buisseret, 1974:40).

These complaints contradicted the very essence of policies regarding the privateers set by the new governor, Sir Thomas Modyford, and the merchants of Port Royal. All were incensed enough to fine Styles for his words and sentence him to time in prison. However, his views were shared by others.

This state of Jamaica was not to the liking of Charles II. He wanted to secure trade with the Spanish Indies and needed to keep the privateers under control. In 1664, Modyford was appointed governor of Jamaica, instructed to finally rid Port Royal of the privateers, and prohibited from granting letters of marque. He set out to swiftly cut the privateers off by calling a meeting of the Council of Jamaica and repealing any privateering commissions. Two weeks later, Modyford "thought it more prudent to do
by degrees and moderation what he had resolved to execute suddenly and severely, and hoped to gain them off more safely by fair means and reduce them to planting” (Pawson and Buisseret, 1974:31). Modyford continued to publicly oppose the evils of privateering and declare that he desired trade with Spain, but he never stopped Spanish prizes from being brought into town and had a six-year term in office that was notorious for promoting privateering. He acknowledged the commissions granted by the previous governors until the time they expired, after which the holders would be viewed as pirates.

In 1664 a situation occurred that proved worse for Jamaica than privateers and pirates: a second war had broken out between the English and the Dutch, and the Royal navy could not spare a fleet to be sent to the Caribbean. Jamaica found itself without protection for the second time. The defense would again rest with the buccaneers and Modyford set out to organize them into a controlled force, handing out letters of marque against the Dutch. This venture was to prove unsuccessful. The privateers continued to work under the conditions of “no prey, no pay” and looked for personal profit over any other allegiance.

Modyford and the privateers knew that there were little riches to be gained from the Dutch and in 1666, the Council of Jamaica passed a resolution containing no fewer than twelve reasons why they should grant letters of marque against the Spaniards while stating “the granting of the said commissions did extraordinarily conduce to the strengthening, preservation, enriching and advancing the settlement of this island” (Pawson and Buisseret, 1974:32). To gain support for this decision, Modyford
religiously reported any act of aggression by the Spaniards against English vessels and holdings. It was with Henry Morgan, the illustrious buccaneer that in 1668 Modyford found a leader for the lawless band of brethren. Morgan was strong enough to hold the motley group together and solidify their efforts. The group of privateers, now under Morgan, roamed around the islands and the mainland, making raids and having their fun. After several notable attacks, they returned to Port Royal with loot amounting to a reported quarter million pieces of eight, by far the largest prize ever taken. An enthusiastic crowd and a far less joyous governor greeted them. Until this point, the King had remained silent about the commissions that Modyford issued. Spain, however, made enough noise that the King became displeased over some of the raids, and Modyford was held accountable. The King reprimanded Modyford, who withdrew the commissions he had granted. He also advised the privateers to leave Port Royal for the time. These consequences were a blow to Morgan as he was fond of the noisy life of the sinful port, but he retired to his country property and settled for a life of farming (Black, 1958:65). Several of the brethren followed suite and became planters or merchants. Modyford was relieved to be able to report back to the King that the troublesome group had broken, and peace and quiet reigned.

In 1670, the Spanish began to attack English ships, and a raid was made on the Jamaican coast. The peaceful state was no more and invasion was again a possibility. The island council decided to commission Morgan as “admiral and commander in chief of all the ships of war that belong to this harbor” with the instructions to destroy Spanish vessels and “to land in the enemy’s country as many of his men as he shall
judge needful...and finally to do all manner of exploits which may tend to the
preservation and quiet of this island, being his Majesty’s chief interest in the Indies”
(Black, 1958:66). Morgan readily accepted and the way was open to capture Panama
City, for which he had long been hoping. This time, upon their return, they received a
formal letter of thanks from the council.

Later in the year, the second Treaty of Madrid was signed and peace was
declared between England and Spain. Before word reached Modyford, he sent Morgan
to the Isthmus of Panama. He purportedly tried to recall Morgan, though it is thought
that both were eager to deliver one last blow to the Spanish. A line had been crossed,
and both buccaneer and governor would feel the repercussions. Word soon reached
Europe and Sir Thomas Lynch came to Jamaica to replace Modyford as governor and
to send him back as a prisoner in the Tower of London. Morgan followed soon after to
answer for his part in breaking the treaty. He was received as a hero, and eventually
both were cleared of all charges. In 1674, Morgan was knighted and made Lieutenant
Governor of the island, and Modyford was appointed to the post of Chief Justice
(Black, 1958:69).

Lynch was not receptive to privateers, and he set out to finally remove them
from Jamaica by offering royal pardons to those who would denounce privateering.
Many privateers had chosen not to return to Jamaica when they originally heard of the
King’s displeasure, but the pardons were so successful that by 1671 there were only
three privateers left (Pawson and Buisseret, 1974:41). Those who declined the pardon
were declared pirates, and Lynch decided to expand his policy of extinguishing piracy
to the whole of the Caribbean. In spite of Lynch’s efforts, pirates furtively operated out of Port Royal for the next two decades with the unpublicized guidance of Henry Morgan. Morgan returned to Jamaica in 1675, just before the new governor, Lord Vaughan, was sent to replace Lynch. There was little love lost between Morgan and Vaughan. Vaughan continued Lynch’s crusade against the pirates, and his suspicion of Morgan was little disguised when he reported back that:

The only enemy of planting is privateering, which I have by all means possible endeavored to restrain and prevent...and had gone so far in reducing them that most of them were on the point of coming in and betaking themselves to another course of life, when the covetousness and unfaithfulness of some people obstructed my design (Pawson and Buisseret, 1974:42).

In 1676, Morgan was finally publicly accused by Vaughan when he brought charges against him before the Council of Jamaica. Vaughan’s attempt was unsuccessful, and the distrust between the two continued until he left the island in 1678, when the Earl of Carlisle succeeded him as governor. Carlisle was less concerned with the pirates, and he often allowed them to slip in and out of Port Royal with little notice or repercussions. Morgan replaced Carlisle in 1680, and ironically enough he set out to stop piracy by capturing and executing pirates. When Lynch returned to Jamaica to once again act as the governor, piracy was practically nonexistent. By that time, the island was becoming self-reliant with the export of sugar, and piracy was viewed as a detriment to trade.

Port Royal followed the trend of self-reliance by becoming the base for a powerful naval force and by heavily fortifying its harbor. The new economic foundations of Jamaica had been laid, and in the ensuing decades the island remained a
Figure 3: Picture of Port Royal During Earthquake.
(Port Royal Project Archives)
successful New World center for trade and commerce. However, without the protection and economic stimulus of the privateers and pirates, Port Royal would never have had the wealth it attained and most likely would have fallen to the Spanish.

On Wednesday, June 7, 1692 a devastating earthquake that destroyed a major portion of the city struck Port Royal at 11:30am (Figure 3). Palisadoes Spit is composed of unconsolidated materials that slope steeply on each side into relatively deep waters. Sand is known to liquefy from the seismic waves of earthquakes (Pawson and Buisseret, 1974:3). So, when the earthquake hit, a total of 33 acres, or 66% of the city, including buildings and people at the very end of the sand spit, literally sank into the shallow harbor (Hamilton, 1984:12). One witness later wrote:

The sand in the street rose like the waves of the sea, lifting up all persons that stood upon it, and immediately dropping down into pits; and at the same instant a flood of water rushed in, throwing down all who were in its way; some were seen catching hold of beams and rafters of houses, others were found in the sand that appeared when the water was drained away, with their legs and arms out (Pawson and Buisseret, 1974:165).

Not all of the structures toppled: rather some sank straight down. When archaeologists first came to excavate the city almost three hundred years later, some of the buildings still stood as they had on land; the walls had moved only centimeters to the sides. About 2,000 people died that day from the earthquake and tidal waves, and 3,000 more perished in the following days due to diseases from stagnant water and decaying corpses (Hamilton, 1984:12). Port Royal never recovered economically from the earthquake and was further ravaged by several hurricanes and more earthquakes.
ARCHAEOLOGY AT PORT ROYAL

Catastrophic events have been recorded throughout history, destroying cities and killing numerous people. These unfortunate events, however, leave a unique record of daily life within a given culture or time period. Most often there is no warning, as was the case of the Port Royal earthquake; it occurred within seconds. The people in the section of the city that was about to be submerged did not have time to collect their belongings and, for many, to seek shelter. They died in the midst of going about their daily routine. The archaeological remains of catastrophic events present a ghost image of this routine. Pots still sat in fireplaces, tools lay about where they were being used, and people were trapped in the rooms in which they were working.

Several excavations have been conducted on the submerged part of Port Royal, including the salvaging of materials from the time of the earthquake to the recent past. Immediately after the earthquake, “wrackers” began to salvage and loot the city. An account of this salvaging was published in London in 1693.

Your heart would abhor to hear of the depredations, robberies, and violences that were in an instant committed upon the place by the vilest [sic] and basest of people; no man could call any thing his own, for they that were the strongest and most wicked seized what they pleased (Pawson and Buisseret, 1974:122).

Salvage was not limited to only professional “wrackers” and the reported “vilest and basest of people” reported above; the inhabitants of the city, naturally, recovered items belonging to them as well as items belonging to others. Logically, the residents would have had much desire for domestic items that could be used in their daily routines. Local tradesmen, most likely, would attempt to salvage those items used in their trade,
including hand tools, which will become an important consideration in the analysis of
the artifact collection. It is very unlikely that high-priced items would have been
overlooked in deference to utilitarian items. However, there is still a marked contrast
between local salvaging and that of the professionals accustomed to recovering
“treasures” from shipwrecks.

Quasi-archaeological work on the sunken city began with Jeremiah D. Murphy
in 1859. Murphy, a Royal Navy helmet diver, made an air-supported dive on the
remains and consequently identified Fort James (Hamilton, 1984:12). In 1954, Mr. and
Mrs. Alexi DuPont, surveyed the site for a week, and on the last day they spotted an
arched doorway near Fort James. They probed into the nearby ground and recovered
some partially complete artifacts, consisting mainly of a few onion bottles. However,
on their return trip they were unable to relocate the site. Shortly after, in 1956, work
was initiated by Mr. Edward Link, archaeologically testing the King’s Warehouse and
Fort James in conjunction with the National Geographic Society and the Smithsonian
Institute. Link discovered and raised a cannon. He soon found out that his equipment
was not adequate to excavate and returned in 1959 with more powerful equipment
specifically designed for excavating. He worked on a number of sites near Fort James
and the King’s Warehouse, recovering a considerable amount of pewter, clay pipes, and
glass (Pawson and Buisseret, 1974:205). Link’s wife published an account of the
“excavation” in *National Geographic* in February of 1960. That same year Mr.
Norman Scott excavated the area of Fort Carlisle for a period of two weeks. They
found a wooden wheel, clay pipes, and bottles (Pawson and Buisseret, 1974:205).
Although the excavations by Link and Scott expeditions yielded some artifacts, both expeditions were short-lived and neither produced significant information.

Mr. Robert Marx conducted the next excavation, from 1965-1968, covering an extensive area of the southwest portion of the site between Lime Street and the former harbor. He recovered a considerable amount of artifacts including pewter, copper, brass, glassware, and mounds of bricks (Hamilton, 1984:15). Although Marx attempted to maintain archaeological controls, he fell short of meeting archaeological standards. Shortly thereafter, in 1969-1970, Phillip Mayes, appointed director of the Port Royal Project by the British government directed the first terrestrial archaeological project on Port Royal. The project exposed part of a major structure, a church, and examined the post-earthquake naval occupation. In addition to establishing the land excavations for the Jamaican government he was also to train the Jamaican staff in the discipline of archaeology.

However, it was not until 1981-1990 that the real picture of this sunken city emerged from the archaeological excavations established by the Nautical Archaeology Program (under the direction of Dr. Donny L. Hamilton), The Institute of Nautical Archaeology, and the Jamaican government (Figure 4). Ten yearly field schools were held, concentrating on the intersection of Queen Street and Lime Street (Figure 5). Through the excavation, mapping, collection, conservation, and analysis of artifacts, the ghost image of Port Royal was brought back to life and is being interpreted. Among the artifacts was a large collection of iron hand tools that were preserved because concretions were formed around them due to the interaction between the metal and salt
water, creating molds of the artifacts. These tools are conserved and available for analysis. Previous work was done by Ms. Marianne Franklin, comprising her master’s thesis. Her catalogue and its connection to the present thesis will be detailed more thoroughly in the Methodology section.
Figure 4: Map of Port Royal Shorelines  
(Port Royal Project Archives)
Figure 5: TAMU/INA/JNHT Excavation Site Plan
(Port Royal Project Archives)
CHAPTER III
TOOLS, TRADES, AND TRADESMEN

A CONCISE HISTORY OF HAND TOOLS

Benjamin Franklin's words "Man is a tool making animal" (Oakley in Singer, 1954:B) reminds us that though other animals are tool users and can minimally use existing objects as tools for their own benefit, man is the only animal to fashion tools from raw materials and to conceive their form and function prior to manufacture; thus he is a tool maker. Tools are roughly defined as devices used in manual work. They are further 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" (Franklin, 1992:1). They have been a defining attribute of human technological development, but have not changed much over time, and the persistence of their forms is a striking characteristic of hand tools. Their rudimentary forms and functions are efficient, and not until the onset of mechanical tools did a real difference in appearance take place. With machinery in the Industrial Age of the nineteenth century came complex and sophisticated designs that allowed for a multitude of applications with greater ease and less time (Hack, 1999:7). However, hand tools remain to date indispensable to everyday life.
Stone Age

Kenneth P. Oakley in *A History of Technology* delineates six levels of culture based upon the making and use of tools (Oakley in Singer, 1954:22). The first is the Eolithic of the *Australopithecus* and *Pliocene hominids* who occasionally made use of improvised tools and weapons. This is followed by the start of the Early or Lower Paleolithic and the earliest species of *Pithecanthropus* and of *Homo* who are defined by occasional tool making. The third level is in the Lower Paleolithic again with *Pithecanthropus* along with precursors to *Homo Sapiens* and is defined by regular tool making, but with little or no standardization. The fourth level is the Lower Paleolithic with early *Homo Sapiens*, who made tools on a regular basis and in this stage with marked standardization, but little specialization. The primary tools of the Lower Paleolithic were the hammerstone, the anvil used in flaking, the flake for cutting skins or scraping, and the crude chopping-tool for splitting bones or wood. All of these can be classified as multi-purpose tools in which a single tool was employed for a variety of purposes; an example of which is the pointed hand-axe used for piercing, cutting, and scraping. The fifth level is the manufacture of specialized tools and weapons with two categories: elementary and composite. The elementary group was composed of *Homo Neanderthalensis* and some early *Homo Sapiens* of the Middle Paleolithic while the composite contains *Homo Sapiens* of the Upper or Late Paleolithic. The Middle Paleolithic is defined by the onset of specialized tools, where each tool had a singular conspicuous purpose. The Middle Paleolithic gave way to the Upper or Late Paleolithic with a rapid advance in manufacturing techniques and specialization,
showing a keen mastery over materials. The last level of culture is defined by the use of mechanical principles and is a characteristic of modern *Homo Sapiens* of the Neolithic and metal ages.

Prehistorically, man used a rock of the right shape and size as a tool in and of itself: as an improvised tool. This also applies to wood and bone as sources for tools; the seeming dominance of stone over the latter two is due to its preservative qualities. Wood would preserve only under exceptional circumstances, and bone, including antler and ivory, is more apt to disintegrate than fossilize (Leakey in Singer, 1954:128). “Stone” can refer to numerous lithic material including flint, obsidian, quartzes, and granites, and the material used did not affect the techniques employed. For all intents and purposes from this point on the era can be referred to as the Stone Age. The assigned ages are more of a cultural definition than temporal; however, the focus of this work is Western tool technology, which primarily adheres to three time delineations: Stone Age, Bronze and Copper Age, and Iron Age.

When man moved from tool user to maker, he still manufactured only occasionally, as the improvisation of implements still adequately met their needs (Oakley in Singer, 1954:23). The first tools made by man are hardly recognizable; the nascent skill of modifying raw materials resembled natural alteration. It was sufficient, as well, to chip away existing flakes to fashion tools rather than to work a core. However, man eventually progressed to using stones to create other stone tools through the means of percussion (striking a stone core with a hammering stone or a piece of
bone), pressure flaking (splitting away flakes of stone with a pointed bone or stick), and grinding and polishing (Kebabian, 1978:20).

Several flaking techniques are described in detail by L.S.B. Leakey in *A History of Technology* (Leakey in Singer, 1954:129); a concise version of which will now be outlined. The hammerstone technique was the main form of percussion flaking, and the first method used. It consisted of taking a smooth pebble in one hand and using it as a hammer to knock off flakes from another stone in the other hand in order to shape it. As simple as this technique was, it is still essential to strike the stone at the correct angle in order to achieve the desired flaking. It took a considerable amount of time for man to acquire the necessary skills. When the blow strikes the stone, the fracture does not continue in the direction of the blow because of stresses that have built up beneath the surface upon contact. The stone will break around the periphery of the point of contact, and a crack spreads downwards and outwards. A strong vertical blow on a relatively flat stone creates a cone. One, then, eventually learned to strike the stone at 120 degrees from the desired direction of flaking as well as to choose a spot on the edge from where it was to be detached. Doing this produced a bulb of percussion, which was semi-conical as opposed to the cone otherwise produced. One major flaw to this method was that it was difficult to detach large flakes from the stone.

The anvil technique was invented next to counteract that flaw. The hammer was now a fixed block of stone, and the stone to be flaked was struck against the anvil. This technique was used when a large flake was desired. Again, the striking angle was vital to successful flaking, but the same fundamentals as the hammerstone method were
employed. The basic disadvantage of both techniques is that a deep negative bulb of percussion at the point of impact remains, resulting in an irregular-shaped tool with jagged edges.

At some point in the second half of the era, the cylinder-hammer technique was developed and was used as a finishing process in conjunction with the hammerstone and anvil methods. The cylinder-hammer technique consisted of knocking off very thin flakes that left shallow percussion bulbs, thereby resulting in a relatively flat and smooth surface. This was accomplished by means of a round-edge hammer and a softer material such as bone, wood, or weathered stone. It was necessary to strike at the very edge of the stone. The blow from the soft material meant that force from other points along the hammer was applied as well, and the percussion would travel in a flattened arc, producing a very flat flake. A series of this flaking gave a fairly straight cutting edge. About the same time, the prepared-core technique (also called tortoise-core), which was used to obtain flakes of a specialized shape, was discovered. This differed from the previous methods as it was used to flake off a functional tool from the core the shape of which was blocked off and then removed with one blow with little or no retouching, as opposed to trimming off flakes from the core to produce a final tool. The blade-flake technique came along later and produced long narrow flakes with roughly parallel sides. It was somewhat of a variant of the prepared-core method as it was necessary to prepare the core by preliminary trimming before the long flakes could be struck off. However, these long flakes were converted into knives, chisels, and end-scrapers by secondary trimming. The core was halved to obtain a suitable flat striking
surface, the block was then held on the knee with the striking platform facing upwards. Light tapping blows from the hammerstone were struck along the edge, and the platform was tilted backwards as a blow was struck, creating an effect of peeling, and then rotated with each successive blow. The flakes had a fluted center due to the negative flake scars.

This technique was a major advancement and was followed by another: pressure flaking. Pressure flaking was invented through numerous techniques grouped together for the sake of brevity. The transformation of the blade flakes into knives with sharp cutting edges and blunt backs upon which pressure can be exerted while cutting requires the removal of one side. It is believed that this was originally done with the use of a hammerstone, but there are disadvantages to this. A false blow is likely to break the blade before it is finished, and it was likely that fingers would be injured in the process. From this came the discovery of easier and more accurate pressure flaking. The pressure-fabricator, the tool that applied the pressure, was merely a flake, which had a thick rectangular edge. The fabricator was held in one hand and pressed against the edge of the blade that was to be blunted. When this was done, little flakes could rapidly be knocked off with minimal risk of a break occurring. Another form of pressure flaking, to remove very thin flat flakes from the surface of a blade for the purpose of creating a projectile point, was also invented. There are numerous modifications of this practice, but all retain the basic principles of pressure flaking.

Techniques involving polishing and grinding were eventually added to the percussion and pressure methods in the later part of the Stone Age, resulting in the
production of tools with cutting edges far stronger than could be achieved through flaking. However, the tools manufactured by this method were usually shaped by preliminary flaking. Various rocks, including sandstone and schist were used for the grinding and polishing and were either smaller portable pieces or an outcrop of the rock itself. Drilling employed the same principles, as well, and was perfected around the same time. There is little evidence of the techniques used for drilling, but holes were drilled from both sides, creating an hourglass or conical shape indicating one direction, while others are cylindrical. It is assumed this was accomplished with a hand or bow drill.

Knowledge of bone and wood tool manufacture is scarce, but fortunately not absent. There is little evidence of its use until the Upper Paleolithic, after which time it becomes widespread. The first modification of bone was the advantageous use of long bone splinters that were obtained after the bone had been broken open for the marrow. These were sharpened and polished on a stone, creating an awl. Antlers and horns were often slightly modified to create a variety of clubs, picks, and daggers (Daumas, 1962:29). Eventually, parallel grooves were cut in the bone, antler, and ivory with the aid of chisels. From these grooves material of a predetermined shape and size would be extracted and then shaped into tools or weapons. Larger bones, of animals such as an elephant or buffalo, were ground and polished to make axes and adzes. The evidence of wood is even scarcer than that of bone and is mostly indirect proof. There are a few wooden objects from the Lower and Middle Paleolithic, but more often it is concave stone scrapers, ideal for scraping wood, that are found. It is likely that wood was
extensively used throughout the Stone Age, but working bone and wood remained simplistic and never reached the cleverness of the stone techniques.

The diversification of tool modification increased the basic functions of the tools, leading to the development of adzes, axes, chisels, knives, and scrapers. Eventually the stone tools were hafted onto bone or wood to create a natural extension of the arm and hand (Hack, 1999:12). This significantly improved the effectiveness of the tool, increasing the mechanical power by producing a larger radius of the swing in a chopping motion, transmitting more force to the working head (Kebabian, 1978:22). The angle of the cutting edge was reduced as well, producing a sharper edge and more penetrating power. As man progressed from hunting and gathering to agriculture, and the need for permanent shelters arose, the tools became more sophisticated. This is reflected in the materials used, the hardness and strength of the tool, and the speed of tool manufacturing. As man moved from tool user to toolmaker, tools from this period evolved from rough hammer stones to precisely flaked obsidian tools. This process, however, took thousands of years, and the most significant technological advancement developed with the growing knowledge of metallurgy.

**Copper / Bronze Age**

It was the ability to smelt copper roughly 5,000 years ago, and then copper and tin into bronze 3,500 years ago, that first allowed man to develop more sophisticated tools (Hack, 1999:13). Copper was softer than stone, but it could be made into much thinner sections that were desirable for adz, ax, chisels, and saw blades, and the
shattering effect of the stone tools during use offset the disadvantage of the softness of copper. Copper is thought to have originated in western Asia in the area south of the Caspian Sea, and from there it followed migration to Mesopotamia, Greece, Crete, and Egypt. It was the first useful metal, and experimentations with raw sources led to fashioning by hammering for small ornamental pieces. It was discovered that hammering strengthened the metal, which could be made soft again by reheating. The metal was then processed by annealing, in which large pieces of copper were heated and cooled as they were worked and reworked. Annealing prevents cracking and fragmenting, while hammering doubles the hardness of the metal. However, the growing use of copper presupposed the mining of it. Deposits of copper were known and utilized though they were soon exhausted, and it was necessary to extract the metal from the ores (Derry and Williams, 1960:114). A vein of ore was followed horizontally into the rock and removed, originally with the use of stone tools, and later those of bronze. They worked by the pill-and-stall method in which they would leave strands of ore intact to support the roof of the passage (Derry and Williams, 1960:117). When they encountered obstructions of rock, they broke them up by heating and rapid cooling, which caused fracturing. Mining was not entirely new, as sources of flint and other lithic strands were mined prior to the use of metal.

There are two processes involved with the utilization of copper ores: the separation of metal from other elements, and the working of metal into useful objects (Derry and Williams, 1960:115). Metallic ores usually contain extraneous elements and it is necessary to replace these with another substance: carbon. Carbon, the source
of which at this time was charcoal, provided the alternate substance, as well as the heat required for extracting the copper from the ore, which involved a smelting process. There were very few sources of pure copper and because of this smelting rapidly developed around 4,000 B.C. (Kebabian, 1978:23). Copper ores, in the form of malachite and azurite, were reduced in furnaces, and the refined metal was separated from slag, ashes, and the other metals found in the original core. The onset of fully fired ceramics and the use of pottery kilns date to this same time, and there is a purported connection between the development of the pottery kilns and the annealing and smelting fires (Kebabian, 1978:22). The potential for casting liquid metal into molds for the manufacture of tools and weapons was quickly recognized by the Sumerians, and not long after, closed molds of baked clay and stone were produced. The previously annealed copper tools tended to resemble their stone predecessors, but with the casts came advancement in tool shapes and sizes (Kebabian, 1978:23).

Bronze was first used for tools around c.2,000 B.C. and was seen as a solution to some of the objections to copper. Bronze is a copper alloy comprised of approximately 90% copper and 10% tin and becomes fluid at a lower temperature than copper, thereby making it easier to cast. It is also significantly harder than copper, resulting in more efficient and durable tools that could cut, scrape, and bore much faster and with less sharpening. However, both metals were used for a considerable amount of time until the use of bronze eventually replaced that of copper. Bronze is thought to have been discovered through the accidental smelting of mixed ores of copper and tin. Not until much later could ores of differing proportions be identified. Nonetheless, it
was not long until copper and tin were being deliberately mixed in predetermined proportions. Pure tin is easy to extract from cassiterite, and the knowledge of how to extract copper that was 95% pure already existed (Derry and Williams, 1960:117). Bronze was easier to cast because of the lower melting point. The molten metal would be poured into molds of stone or clay, and the object would thereafter be worked through a series of hammerings interspersed by annealings when it became too hard. Two-part molds were also difficult to use with pure copper as it absorbed the gases, creating holes upon cooling. Many tools used today, including the heavy sledgehammer, the chopper axe, the cold chisel, and the carpenter’s rasp were started in the Bronze Age (Derry and Williams, 1960:118).

The foundations of the fundamental functions of hand tools, including most of the basic designs, developed through the Stone Age, and the physical motions necessary to impart force to striking, smoothing, abrading, and other functions were understood after working with stone tools. The Copper and Bronze Age tools were a significant technological leap from stone tools. By the end of the Bronze Age motion patterns and angles of cutting edges were known, and tool design incorporated this knowledge. The instruments were not necessarily sharper, but they were decidedly more durable and much less brittle.

Iron Age

Copper and bronze were the first attempts at metal, but the introduction of iron metallurgy in the Iron Age produced change in design and form, resulting in more
efficient tools that came to resemble modern hand tools. The Hittite people of central Asia were the first to produce iron by smelting indigenous sources of hematite. They were successful at iron metallurgy because they were able to produce the necessary conditions for smelting iron ore: charcoal fire in a stone furnace lined with clay, with a forced draft generating sufficient heat (1,535 degrees C., a temperature significantly higher than copper) to allow the iron to be released from the ore, producing a bloom. A bloom is a spongy mass of iron particles mixed with ashes and slag, which usually settled at the bottom of the furnace and was then reheated and hammered on an anvil, forcing the impurities out of the aggregate (Kebabian, 1978:23). It was with the fall of the Hittite Empire in 1200B.C. and the subsequent scattering of smiths that iron use became widespread. The late dawn of the Iron Age is attributed to the availability of meteoric iron sources and iron ore in the form of bog ore that would not encourage man to look underground for it. These sources were easily found on the surface, requiring no mining, and were plentiful enough to last quite a while. There was essentially no incentive for the experimentation of iron, which would have only been disheartening as it melted at a much higher temperature than they had worked with, and it would have produced a mass of slag with unmelted iron clumps in the ashes (Derry and Williams, 1960:121). Iron was decidedly more durable than bronze, and the strengthened edges were better suited for cutting, shaping, and manipulating (Hack, 1999:13). It was considered a precious commodity, and in the first centuries of its use it was priced five times higher than gold and forty times that of silver (Kebabian, 1978:24). Large-scale mining and smelting operations were in progress by 1,000B.C. in the region south of
the Caspian and Black Seas as well as in the Middle East. Iron was then transported through the trade routes to the Aegean and Mediterranean, and for the next millennium the technology spread quickly throughout Europe. Once the people of Europe discovered how to smelt iron ore, heat and hammer it into wrought iron, and then harden it in a delicate tempering process that yielded tough steel, it quickly replaced bronze and was used ubiquitously, as iron ores are common to many areas.

However, this process developed slowly throughout the Iron Age. To make the iron useful required frequent hammerings at red heat to beat most of the slag out of the bloom and even then the edges were never adequately sharp (Derry and Williams, 1960:121). Sharp edges were procured only with the use of steel, which is iron comprised of .15-1.5 % carbon and no left-over slag. Certain procedures had to be discovered to make steel: adding carbon and tempering. In 1400B.C. the Chalybes, subjects of the Hittite Empire, invented cementation, which is a process for steeling iron bars by repeated hammerings and heatings in direct contact with charcoal (Derry and Williams, 1960:122). The iron was carburized and hardened through the absorption of carbon in the charcoal fires, forming steel. In addition, as the blacksmiths would reheat the iron for forging tools, the outer layers of the iron would absorb carbon furthering the carbon percentage. This eventually led to the intentional carburizing of iron by the blacksmiths who would carburize thin strips of iron and weld them together as a bar of steel as stock for tool making (Kebabian, 1978:24).

About 1200B.C., the other necessary process, tempering, was rediscovered, as it had been in use with bronze for over a thousand years and was an improvement on
quench hardening. However, iron steel could not be tempered until it was quenched. A tool was then forged and tempered by reheating it to the temperature required for each tool. The precise temperatures differed to correctly bring each tool to a specific degree of hardness and durability, which was then afterwards quenched in water for a second time (Kebabian, 1978:24).

The blacksmiths gained by experience alone the ability to identify different temperatures through colors (light straw, dark straw, light purple, or blue), which produced qualities, required for specific tools. The importance of this is significant as insufficient hardness would produce a tool that was ineffectively dull or deformed, and excessive hardness would result in a brittle tool that would chip or fracture (Kebabian, 1978:24). As such it was not until the last millennia B.C. that the knowledge of iron metallurgy reached its apex, and even then the practice was less sophisticated than it would later become. A decline in metal working started after the fall of the Roman Empire and continued through the end of the Dark Ages, as the working of metallic sources other than iron was considered more important (Derry and Williams, 1960:131).

However, nothing could overshadow the need for tools and weapons. By the ninth century A.D. characteristics that would come to define medieval metallurgy started to occur: new mines and smelting sites were established outside of the old Roman boundaries, literature of mining and metallurgy was gradually created, coal was mined and gradually came to be used on a larger scale (only used for preliminary
operations at this point), and water power was gradually applied to metallurgy (Forbes in Singer, 1954:62).

The old practices of iron smelting continued, especially at hillside sites where a strong natural draft could be found. As the forging process was aided through the use of water-driven hammers, the industry tended to move away from the mining areas to the vicinity of fast-moving streams. By the fourteenth century there were water-driven stamping mills, and both of these factors led to less use of coal in forges (Derry and Williams, 1960:135). Coal was never used enough to rival charcoal, and as such the use of it lessened for the next couple of centuries, at which time the momentous association with coal partially shaped the Industrial Revolution. The innovation of casting of iron was established in the thirteen through the fifteenth centuries and was made possible by higher furnace temperatures and the production of iron with a high content of carbon (Derry and Williams, 1960:135). With the production of artillery the new commodity of cast iron quickly developed.

However, iron extraction processes were still inefficient; half of the iron was never removed from the ore. From the eighth century on, steel making was produced by cementation. Steel continued to be made in various small-scale processes. The smiths would produce their own steel for making farm tools by reducing ore in a hearth. Other smiths forged blooms of wrought iron carburized by dipping it into molten cast iron with high carbon content, and bars of wrought iron were cemented to give steel by firing with charcoal for a few days in a furnace made like a baker's oven. Steel was also produced in a crucible by heating the iron with charcoal. In 1614 a method was
discovered for converting bar iron into steel, although by that time a little coal was already mixed with charcoal for the forging of iron bar (Derry and Williams, 1960:147).

The essential differences between cast iron and wrought iron warrant attention. The true recognition of the role of carbon did not come about until the late eighteenth century, and prior to that time the distinction between wrought and cast iron was that of furnace operations (Smith and Forbes in Singer, 1954:33). Minor modifications of the smelting methods would produce differing percentages of carbon in the material. Sponge iron was obtained through a shallow fuel bed with lower temperatures, while cast iron was produced by blast furnaces, which held the reduced iron in contact with charcoal, resulting in a high carbon alloy with a low melting point (Smith and Forbes in Singer, 1954:33). Castings were made directly either from this alloy or after re-melting. Smiths produced steel for agricultural tools by direct reduction of the ore in a hearth, and better quality steel was made by the carbonization of soft iron as well as by the decarburization of cast iron (Smith and Forbes in Singer, 1954:34). Furnaces can be divided into those used for the reduction of ores and those for re-melting. Roasting ores to remove impurities before smelting was done in open piles or in open shaft furnaces (Smith and Forbes in Singer, 1954:34).

Higher productivity and economic use of fuel ensued with the development in the Middle Ages of the blast furnace. Until this furnace was developed there had been no way of producing molten iron for casting, and the most common furnace used was the Catalan (from Catalonia, Spain) into which air was driven by means of two bellows
working alternately to produce a constant blast (Forbes in Singer, 1954:56). It was used mainly for limonite (brown iron ore) and hematite. They were weathered and roasted in a large, wide furnace, and crushed pre-roasted ore was stacked onto one wall while charcoal was massed on the other wall. The crushed ore was more easily reduced and more readily absorbed by the slag, which would absorb the impurities (Forbes in Singer, 1954:73). This furnace, however, developed from the bloomery hearths and the Corsican forge. In the bloomery fires ore was mixed with charcoal covered with fuel and held in place by a circle of stones, and the bellows were directed towards the middle of the hearth. In general, given the extreme wastefulness of this process, it was used for fairly pure ores. The bloom was reheated on a similar hearth and the slag hammered out (Forbes in Singer, 1954:71). The Corsican furnace extracted iron through roasting with partial reduction followed by smelting, reduction, and carbonization. It was made up of two stonewalls at right angles that protected the bellows and the workers respectively, with the blast coming through in the center of the furnace (Forbes in Singer, 1954:71).

In the fifteenth century the blast furnace designs changed drastically, and hotter fires were obtained through the use of a “trompe,” which is an air aspirator producing a continuous flow of air replacing an air supply created by hand-or-foot operated bellows. Mechanical trip hammers replaced hand power in the refining process. The height of the furnace was raised, thereby increasing the force of the blast. In spite of these changes, the end product was still wrought iron. By the end of the seventeenth century the furnaces reached a height of 30 ft. and water-powered bellows were designed,
creating increased air pressure, which in turn raised the temperatures to in excess of 1,000 degrees centigrade. The overall effect was the production of liquid iron forged into bars called “pigs” and shipped out to be manufactured or cast into items (Kebabian, 1978:25). They could be fed at the top with supplies of ore and fuel and were kept in continuous use for an excess of 40 weeks. Although the blast furnace succeeded in reducing the number of impurities in the ore, the high temperatures caused both sulphur and phosphorous to be found in the final product (Derry and Williams, 1960:142). Therefore, the preferred way was to produce blooms by the old methods at lower temperatures.

The working and fashioning of metal flourished in the medieval period from 1200-1500 A.D. when a demand was created for metal fittings and embellishments for the construction of the great stone buildings. This particular use of metal led during the Renaissance period to more sophisticated and aesthetic tools from the previously plain and sparse design. The pride commonly found in craftsmanship was imparted onto the tools themselves. In the sixteenth and seventeenth centuries the rise of guilds, known for supporting the preservation of traditional ways, encouraged the creation of these ornate tools, as well as the specialization of craftsmen and their related tools. In spite of the rise of guilds there were no impressive discoveries or inventions that modified metallurgical techniques during the sixteenth and seventeenth centuries, but were noteworthy for the large-scale application of the known methods due to rising capitalism and mechanization (Smith and Forbes in Singer, 1954:27). During the sixteenth century, following a long period of little change in appreciation in the Middle
Ages, iron rapidly became expensive. The increase in wars created a demand for iron in the production of artillery-related items (Smith and Forbes in Singer, 1954:31). At the same time there was a significant rise in population as well as in the production of farm and domestic instruments and equipment. A limiting factor was the growing scarcity of wood, a primary source of charcoal, upon which metallurgy was still dependent (Smith and Forbes in Singer, 1954:31). In response the price of wood increased causing a shift back to coal.

Metallurgy improved through the use of waterpower as the primary mover, and the rising capitalism provided the money to build the large water-powered apparatuses (Smith and Forbes in Singer, 1954:30). Wrought iron was still produced the most though the utilization of cast iron was rising quickly and new methods of making steel were explored (Smith and Forbes in Singer, 1954:32). Soon a cementation process in which wrought iron rods were heated with charcoal or by immersing bars of wrought iron in a bath of molten pig iron so the carbon percentage was increased, converting them into steel manufactured steel. However, until the molecular structures of iron and steel were better understood these attempts were ineffective and were seriously limited because of the lack of proper temperature control (Smith and Forbes in Singer, 1954:33). In spite of the improvements there were no new processes added, and the old ones inherited from the classical period were preserved from the Middle Ages until the eighteenth century, which saw new inventions in every aspect of metallurgy with the onset of the Industrial Revolution (Smith and Forbes in Singer, 1954:33).
Through trial and error, tool manufacturing was revolutionized in the Iron Age. It began with the onset of metallurgy in the Copper and Bronze ages, but it was the sophistication of wrought iron production that firmly embedded techniques and designs that would prove to be prodigious, and the basic designs for modern tools were roughly worked out by the start of this era. New tools designed in the Iron Age include hinged tongs, anvils, wiredrawing dies, and frame saws, which are virtually identical to the modern hacksaw. All of the older tools were redesigned and improved as well, with the greater strength and sharpness of wrought iron and steel. These became the tools known to us today (Derry and Williams, 1960:122).

TRADES AND TRADESCMEN OF PORT ROYAL

Tools and trades go hand-in-hand; without one there is not the other. The vital question is how to tell which tools belonged to which trade, and vice versa. Historic records provide a fairly detailed idea of this question, and in general it is easy to assign one to the other throughout Europe in the seventeenth century. For several reasons, Port Royal, as one of the leading English New World colonies, lends an invaluable opportunity to connect the archaeological record with the people of the time period; i.e., the tools to the tradesmen. The first is the nature of the site: a catastrophic event, in which a “slice of daily life” was left for us, the researchers, to discover. Everything was left virtually in place, with no time for people to take their valuables and favored possessions. Because the town literally sank into the ocean there was minimized damage as well, that is not found on most catastrophic sites save that of the eruption of
Vesuvius, which encased daily life in an ash cocoon. The second reason is the existence of documentation of life and death in wills, estate inventories, and grantor records.

The probate inventories from Port Royal provide valuable historical insight into the use of hand tools in the seventeenth century. Inventories can also be of use in evaluating the archaeologist record. They show what tools were utilized by the population and, to some extent, by what specific trades. In essence it is a list by which the presence or absence of artifacts can be checked. However, cautions must be given before looking at them too closely. For example, the prevalence of overlapping tool use needs to be noted. Tools were rarely used for a single task or profession. Rather, they can most accurately be defined as multi-purpose and ubiquitous throughout trades, with the exception of specialized hand tools, which were few in number at this time.

Additionally, not every inventory lists an occupation and some list one but fail to mention others also apparent. More often than not, even when an occupation is listed, the tools of that trade are lumped together as "a parcel of coopers tools" or a "chest of old tools." This is probably due to the fact that it was time consuming for the executor of the estate to list individual tools that potentially were worth very little, or that the executors were not in the same trade and could not differentiate between tools. Whatever the reason, using inventories as an academic resource makes research more difficult. This is not to say that they are useless; in fact, it is just the opposite. Inventories provide a wealth of information for those willing to delve a little farther.
This section on trades and tradesmen will try to do just that. Each trade will be examined through the tradesmen of Port Royal who can be identified through their inventories. The tools listed in their inventories will be compared against what should be there according to the general European standard. Another area to be looked at is how the tradesmen obtained their tools. Support for the hypothesis that most tools were made by the local smiths, with a lesser degree of importation, will be looked for in the written records. Before surveying each trade it is important to take a closer look at the role of the merchant in Port Royal, as they accounted for an interesting dynamic in the community and are connected to the tradesmen. In addition, auxiliary aspects such as the plantation and the home will be briefly viewed to understand the use of tools in those specific areas.

Trade industries flourished in the rapidly expanding economy of Port Royal. As a result of this bloom, there was a large range of trades and tradesmen at Port Royal, many of which produced wares that could compete in quality with the best of imported crafts (Pawson and Buisseret, 1974:136). There was plenty of business and employment to sustain support occupations, and the wages could be three times those of England (Thornton, 1992:47).

Wheelwrights and blacksmiths were kept constantly busy as damaged wains were dragged in from some accident on the rutted roads. The carpenters stood ready to repair the wooden gutters along which the juice flowed from the mill-house to boiling house, or hammered out the staves which the coopers encircled with metal hoops to make hogsheads (Thornton, 1992:48).

Tradesmen can be considered merchant artisans as they not only manufactured their products but sold them as well. They were the most numerous group of
businessmen on the island and undoubtedly the most vital. They relied on local markets for the selling of their goods and accounted for almost all of the market with the exception of imported items. John Taylor, a visitor to the island in 1688, provides insight into the local artisans, particularly in the aspect of the wide range of tradesmen (Claypole, n.d.:106):

There are now settled here, on this port, all sort of Merchants and Tradesmen, as Smiths, Carpenters, Bricklayers, Joyners, Turners, Cabinetmakers, Tanners, Curriors, Shoemakers, Tailors, Hatters, Upholsterers, Ropemakers, Glassiers, Painters, Carvers, Armourors, and Comb Makers, and Watermen etc: all which live here very well, earning thrice the wages given in England, by which means they are enabled to maintain their families much better than in England.

One area Taylor did not touch on was the maritime trades, which reflect the nature of the town and the necessary demand for sailmakers, shipwrights, cordwainers, and coopers (Claypole, n.d.:207). Nearly every tradesman for whom one would expect to find in Europe in the seventeenth century is accounted for. The ones described in this chapter are the main trades for which inventories can be found, as previously noted. This is due to the importance of the inventories themselves and the intimate view into the tradesmen of the town. Also, the amount of space that would be required to cover each industry is not within the scope of this survey.

In spite of Taylor’s description of the tradesmen earning thrice the wages of the English equivalents, the inventories suggest that most enjoyed a lifestyle of moderate means. When the wealth of the tradesmen is compared to the contemporary merchants of Port Royal through the inventories it is seen that the stock and tools of the merchant artisans were greater than those of the merchants, but the areas of credit lending and other areas of investment were far more limited (Claypole, n.d.:208). However, some
were able to invest in outside resources. Around 1680 two Port Royal shoemakers, John Wilmont and Garrett Lynderson, owned in partnership two plantations: 300 acres in St. Andrew and 1,200 acres in St. Elizabeth (All references to landowning come from Claypole, n.d.:211). A goldsmith, James Pinquant owned a 105-acre plantation in Liguanea in 1669, and three years later he patented 45 acres in St. Andrew. In 1682, Walter Neale, a brass founder, purchased a plantation in St. Ann, and Simon Bening, pewterer, purchased 70 acres in St. Elizabeth. Lastly Robert Phillips, sailmaker, was one of the largest landowners in St. Thomas and St. Andrew. All of these merchant artisans also owned their shops and lots in Port Royal (Claypole, n.d.:211). However, as will be seen in subsequent sections, the tradesmen had far fewer investments and less capital on the whole than the merchants.

Table 1 provides the number and kinds of tradesmen in the inventory records. Appendix A shows a listing of tradesmen in the Port Royal inventories transcribed to date, and the total value of each estate. The average will be taken for each trade and listed in appendix B. To obtain a more accurate view of the worth, the largest and smallest value will be dropped (adjusted averages) for each category except for the trades in which three or fewer tradesmen are listed. This analysis will be further carried out to view the average worth of the tradesmen by time period, delineated by volume numbers, to show the height of trade occupations for Jamaica. Volume 1 corresponds to 1674 to 1678; volume 2 to 1679 to 1686; volume 3 to 1686 to 1694; volume 5 to 1699 to 1701; volume 6 to 1702-1705; volume 9 to 1709 to 1712; and finally volume 10 to 1712 to 1716; volume 4, from 1695 to 1698, and volumes 7 and 8, covering 1706
Table 1: Occupational trades identified in the probate inventories from Port Royal, 1674-1712.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Total Number of Inventories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blacksmith</td>
<td>4</td>
</tr>
<tr>
<td>Butcher</td>
<td>1</td>
</tr>
<tr>
<td>Cabinetmaker</td>
<td>1</td>
</tr>
<tr>
<td>Carpenter</td>
<td>28</td>
</tr>
<tr>
<td>Cooper</td>
<td>13</td>
</tr>
<tr>
<td>Cordwainer</td>
<td>4</td>
</tr>
<tr>
<td>Goldsmith</td>
<td>2</td>
</tr>
<tr>
<td>Gunsmith</td>
<td>2</td>
</tr>
<tr>
<td>Merchant</td>
<td>29</td>
</tr>
<tr>
<td>Pewterer</td>
<td>2</td>
</tr>
<tr>
<td>Planter</td>
<td>2</td>
</tr>
<tr>
<td>Sailmaker</td>
<td>3</td>
</tr>
<tr>
<td>Ship Carpenter</td>
<td>2</td>
</tr>
<tr>
<td>Shipwright</td>
<td>2</td>
</tr>
<tr>
<td>Tailor</td>
<td>3</td>
</tr>
<tr>
<td>Tanner</td>
<td>4</td>
</tr>
<tr>
<td>Wherry Builder</td>
<td>3</td>
</tr>
</tbody>
</table>
to 1709, are missing from the records. On the whole wages gained in the years prior to
the earthquake and peaked in the last few years, while the economic ruin is evident in
the lower wages in subsequent years. The averages for each trade are clearly defined in
appendix B providing a generalized view of tradesmen. Some trades have a significant
gap in either the years represented or the worth of the tradesmen. This can be explained
partly by the fact that not all inventories have been transcribed and that they are taken
at a person’s death, which does not always represent the worth of the person when he
worked in his profession. It is clear as well, that some inventories which listed a
profession, but show no tools of that trade and very little capital, were destitute at the
time of the inventory, while others were uncharacteristically wealthy for that
profession, most likely from outside investments, making it difficult to assign trends or
even average worth. Again, it is apparent that although they were purported to be
making thrice that of contemporary European tradesmen, they did in fact live by
modest means.

Merchants will be viewed as a separate entity from the merchant artisans
(tradesmen), as they have a unique role in the spectrum of tool use. The merchant
artisans will then be listed alphabetically in groupings of metal workers, woodworkers,
and others, and followed by auxiliary areas that utilized tools.

Merchants

Merchants of Port Royal prospered in the economic conditions of the city, many
of whom have already been covered in the introduction to Port Royal. If the adage that
location is the key to all successful businesses is correct, then Jamaica was bound to
profit from the beginning. Located with secure harbors in the heart of the Spanish New World, it was prime real estate. The protection of the privateers added to this strategic position created a very busy harbor. Ships came in and out of the port on the routes to and from Europe as well as to and from the New World colonies, trading in both legal and illegal cargoes. The privateers brought their illicit economic stimulus, and combined, Port Royal became the middleman of the New World. Merchants profited from this "get rich quick" combination of contraband and legitimate trade (Thornton, 1992:50) and soon took stock in shipping ventures. Ships from Port Royal were sent out to the various ports in the Caribbean to carry out their own trade. Re-exportation of goods quickly became a vital part of the economy of the city. One visitor to the Island, Francis Hanson, noted in his *Account of the island and government of Jamaica* (1683):

The town of Port Royal, being as it were the store-house or treasury of the West Indies, is always like a continual mart of fair, where all sorts of choise merchandise are daily imported, not only to furnish the islands, but vast quantities are thence again transported to supply the Spaniards, who in return exchange us bars and cakes of gold, and wedges of silver (Thornton, 1992:51).

Merchants made considerable amounts of money through re-exportation as well as through the redistribution of items through the island. It was common practice to mark up resale goods 40 – 150 percent (Zahedieh, 1986:588). One Port Royal merchant, Thomas Nutall, marked up goods imported from London 75%:

An invoice of sundry particulars which came from London in the Brigateen, Susanna Capt Duglas Comander amount to pounds 154/6/5 75 percent to be added to the Price, cost which we value at 270 10 3 ¼ (Thornton, 1992:51).

The role of merchants as shopkeepers also had a vital impact on not only the economy, but also the daily lives of the entire community. The merchant had the
responsibility of supplying the entire island with every item needed to survive and maintain a bearable existence. The shops opened in the mornings and again in the afternoon, providing basic household supplies and luxuries for every customer coming in with the means to purchase goods. John Taylor in his account of the island briefly describes those shops:

The merchants here commonly at twelve o'clock shut up their shops, and after dinner they divert themselves, either in ye taverns or else on their couches or hammocks. At about three o'clock... they open their shops and attend their business (Claypole, date unknown: 196).

Merchants had control of the cargoes of outside ships coming into the harbor, channeling them through their own warehouses. According to Nuala Zahedieh, researcher on the economic status of Port Royal, when the non-Jamaican ships arrived in Kingston Harbor en route to trade with the Spaniards, merchants (for a ten to fifteen percent commission) would arrange for local services: to adjust the cargoes, strengthen the crews, provide commercial information, and hire skilled supercargoes (or offer their services) to accompany the vessels to Spanish markets (Zahedieh, 1986: 582). For providing these services the merchants also expected to have complete autonomy in fixing prices and choosing goods for return.

Merchants also had outside interests that supplemented their primary businesses. John Phipps, a Port Royal merchant, involved himself in the logwood trade and in purchasing of hogshead staves and food stores from New England. It is also apparent that he ran a cooper's shop, owned the only coffee shop in Port Royal, and had a quarter share in the sloop *John and Thomas* and a plantation in Liguanea. In his
inventory he also has lists 16 pounds invested in a venture to Rio de la Hacha and 93 pounds invested in a parcel of tar and brass being shipped on the sloop *Pembroke* from London. Isaac Narvez was a “merchant draper” in Port Royal. His 1687 inventory shows a stock of linens, silks, ozemburgs, and painted handkerchiefs, totaling £313.2, and a considerable investment in credit advancements to people, which totaled £1,664.07 ½. In general it appears that the business stock accounted for the least amount of capital for the merchants, and that most had a considerable amount tied up in ancillary ventures such as credit advances and shares in shipping ventures (Claypole, date unknown:205). They also invested in plantation agriculture, with over half of the merchants buying and planting land (Zahedieh, 1986:221). The inventory of Port Royal merchant Andrew Orgile (Figure 6) illustrates capital gained by credit advances that account for 18% of his entire estate worth (8% more than the average business stock, as will be explained further on). The inventory of merchant William Robinson (Figure 7) lists a typical variety of goods carried by merchants. The inventory itself is a fairly low-value merchant’s estate with a smaller list of goods. However, its size and goods listed are adequate for this illustration, and a larger inventory would exceed the size limit adequate for this purpose. The tools are bolded throughout the inventory and other merchant’s inventories will be provided, but with only the tools they carried in stock.

Inventories (Figures 8, 9, and 10) show only what tools merchants sold and for what percentage of total estate they account. For the sake of brevity, only a few of the numerous merchant inventories have been utilized in this illustration.
Vol. 2. Fol. 177-181
Andrew Orgill, Port Royal Merchant-Planter
Entered 1686
£1116 08 02

Debts then standing and due to his proper an as follos
Coll Wm Ivy 30 00 00
Sir. Charles Modyford 51 13 04
Nicholas Phillpott 06 00 00
John Wesly 06 09 04½
Soloman Gabay 08 08 00
Maximillian Mohine 00 06 00
John Wornell 02 10 00
William ______ e. 01 02 06
Thomas Hilliard 29 00 00
John White ____ [esquire] 40 00 00
William Robinson 23 00 00
John Wasbe 02 19 00
Plantation 04 10 00

Debts standing and due to him selfe & Sir Charles Modyford in Partnersipp
John Willmatt 21 01 09
Robert Caste 41 01 00
Theodore Cary 06 13 00
John Ellis 17 03 09
John Gauden 50 09 00
Henry Archbold 11 17 03

the total sumes ie pounds £202 05 09

Figure 6: Andrew Orgile Probate Inventory
(Port Royal Probate Inventories)
Vol. 3, Fol. 26-27
William Robinson, Port Royal Merchant
Signed/Sealed July 6, 1687

7 doz knives of sundry sorts, 1 Case Marble Jo (?), 1 Do Ivory, 16 pair rusty sizers, 6 doz and 4 pair spectacles at 4s per doz, 1 doz Sands boxes, 8 Pair childrens flanell shoes, 18 Black drolls and 12 frizened hoods, 13 Tiffany hoods caps at 3d, 2 Childrens Belts, 1 Friersing hooide, 3 Carpenters Rules, 4 Dos. needle hookes and pin Cushions, 2 large pin cushions, 12 Musling Cravats damaged, 8 Vizard masks, 15 looking glass, 34 fanns, 52 shoo brushes, 16: hat and cloth Do, 16:doz wash ______, 2 dos ½ axes, 1:dos dusscayles (?), 28 pr pantados damaged, 10 S white thred, 1 S 4 Ounces fine Do, 6:dos Skeyns finer Do, 1 S Blew and Colrd thred, 41 ps Colld ______, 18 ink cases, a percell of pins, 8 dozen and 8 horn combs, 7 dos and 11 ivory do, 13: Box combs, 15:Ps Tape, 73 gross of several sorts buttons, 6:Gross wt thred buttons, a:Parcell of pewter buttons, 8:Pair plain shooes, 19:pair men and women Gloves, 3:dos linnen socks, 219 10¾ thred, Laces and 6 Silk Do, 3:7 Silk of several sorts most Ordinary, 2:dos and 8 pairs mens and womens silk hose, a:percell of large and small fish hooks, awles Blades Tinn and Copper, Tobacco Boxes Cork Sizerrs needle and thimbles, a:percell silk purses and handbags and lead in string, 4 Ps Romalls, 3 Hanckerchiefs, 4: G ____ of stuff and crape, 3 Childrens stuff coats and petty Coats, 2 ps stript stuff, 1 ps Do damaged, 1 ps Crocas, 1 ps blew linned qt 37 yrd, 6 remnants stuff qt 68 yd, 31 ps printed fustion (?), 15 td do


The tools for this inventory total £6 11 12 out of £133 10 00, or roughly 4.6% of the estate.
Vol. 3. Fol. 321-322
John Tull, Port Royal Merchant
Entered 1689/90

4500 staves, 2000 heading, 1000 hoops, a parcel of coopers tooles.

The tools for this inventory total £50 25 00 out of £1106 06 07, or roughly 22% of the estate.

Figure 8: John Tull Probate Inventory
(Port Royal Probate Inventories)

Vol. 3. Fol. 72-77
William Wyatt, Port Royal Merchant
Signed/Sealed May 8, 1688

4 doz & 11 pr of horse sisars, 1 doz & 7 pr of ditto, 7 pr of large French ditto, 2 doz small ditto, 3½ doz halfe barbers, 23 pr of small round p__ ditto, 9 ps of large ditto, 21 pr of small ordinary rusty ditto, 4 doz & 5 pr of Tobacco tongs, 7 rusty penknifes, 2 doz & 9 small Chil__ rusty knives, 3 doz & 7 wooden haflfed rusty ditto, 8 doz & 9 horne haft dutch ditto, 12 doz rock ditto, 13 broad chisels, 23 gouges of sundry sorts, 4 plaining irons, 24 halfe round fills, 14 small ditto ordinary, 12 ditto square, 11 ditto large, 1 rasps, 6 sheapshares & 3 prs of pinchers, 3 doz & 9 ordenary snip bills, 4 doz of hasps & staples, 3 large Lugers, 13 ditto at 3s, 30 ditto at 15d, 17 ditto at 18d, 29 luger bores, 4½ doz small gimblets, 4 large ditto, 4 broad axes, 7 saw setts, 3 copper Howells, 2 ditto axes, 5 Poyners Hatchets, 11 cross Garnets, 6 pr. ditto larger, 2 doz. & 11 large hammers, 4 small ditto, 15 hatchets, 13 axes, 3 copper addses, 6 Carpenters ditto, 2 doz & 11 bills, 6 doz garnits, 13 cocking Irones, 2 pr of ordinary bellowes, 1 Irone hand sawe, 42 pr of flatt irons, 7 Carpenters plaines. 3 large ditto.

The tools for this inventory total £35 05 15 out of £2524 12 05, or roughly 1.4% of the estate.

Figure 9: William Wyatt Probate Inventory
(Port Royal Probate Inventories)
Vol. 5, Fol. 39
John Gale, Port Royal Merchant
June 18, 1700

39 Dozen and two hatchets, An Old Anvill, 1½ Dzn Coopers compasses Value, 1 Dzn Scotch Knives, 5 froes Value, 45 Crawnia Knives Value, thodd shovels, 8 Iron ditto, 13 Ordinary Steel Whipsaws, 13 Best ditto, 7 Gridirons, 38 Iron Spades, 19 Iron Fireshovells, 24 Dz & 10 Gimbetts sorted, 12 Tap boarers, 22 Pickaxes, 3 Doz & eight Coopers Axes bad, 9 Doz Small French Scissors, 5 pair large Taylors shears, 5 pair Small ditto, 2 Dzn Inch Engineers Augurs, 9 Inch and quarter Ditto, 165 heading and scribening Chissells, 1 Box smoothing Iron, a Damnified X cut Saw, 27 Dzn half round files, 6 Dzn half round and flat, 26 Dzn three square sorted, 1 Dzn and tenn Rasps, 7 Dzn and eight broad chissells, 1 Coopers Joynter fixed, 5 Dzn and two Pitching Axes, 1 Dzn and Ten broad Axes, 3 Dzn & 10 ordinary half inch Augurs, 7 Inch and a quarter ditto, 4 Inch and a ½ ditto, 9 three quarter ditto, 21 Coopers Adzes, 13 showells, 5 Iron Drifis, 2 Coopers Axes, 1 Jayners Hatchett, 2 Round shaves, 7 Dozen and Ten Saw setts, 2 Dzn Lathing hammers, 11 small claw hammers, 171 Canling Irons, 1 Brick axe, 6 Turning Tooles, 22 Marking Irons in Cases, 12 ordinary, 10 H brass wyre, 7 Dzn & 2 pr large ordinary Scissors, 32 horne scru penknives, 19 Ivory Ditto, 7 Ditto in Cases, 8 pr Pincers, 2½ groce hand saw scrues, 17 burning Irons, 5 pr Shoomakers nippers, 1 Groce Shoomakers Tacks sorted, 3 Shoomaker hammers, 2½ Dzn shoomaker rusty knives, 2 Dzn Awe hafts, 6 Pegging Awles, 8½ Dzn Carpenter’s Compasses, 6 small Rivetting hammers, 100 Plane Irons sorted, 7 Canling Mallets, 12 ordinary Iron saws, 4 Compass ditto, 32 best London handsaws, 35 brick Trowells, 17 Fire shovells and Tonges mixt, 2 box Irons with heaters, 2 sadd Irons, 12 large halfe rounds raspe, 12 large flatt rasps, 3 Iron two foot rules, 10 eighteen Inch ditto, 3 Shoomakers Cutting Knives, 3 Dzn and 4 grubbing Axes, 3 Round Shaves, 1 Doz brick Trowells, 1 Dzn Damnified plastering Trowells, 50 Carpenders Malletts, 2 Scythes and 1 adz

The tools for this inventory total £211 10 7½ out of £2086 03 03½, or roughly 0.2% of the estate.

Figure 10: John Gale Probate Inventory
(Port Royal Probate Inventories)
The total percentage of the monetary value of the tools for the four sample inventories above equals 4.6%, 22%, 1.4%, and 10.2%. These figures are intended only to provide a glimpse into the merchant tool trade. Although one could expect that on average a merchant would carry tools equaling about 10% of this stock, this being the average of the above numbers, with the lower and higher percentage values accounting for a normal variation. However, there is no predictability within this limited sample and to attain precise calculations all the merchant inventories would need to be taken into account, with a separation of personal items from occupational items.

For the purpose of this thesis it will be assumed that roughly 10% is the average for merchants. This value is a fair amount, and the question of who would have purchased these items from the merchants still remains. It can be postulated that some of the tools went to the tradesmen; some were intended for domestic households and/or plantations, while others were reshipped to other ports or sold to visitors. Before viewing what tools would have gone to the tradesmen, it will be necessary to study those items intended for domestic or farming use to determine how they differ or resemble those intended for trade industry. To ascertain this, sample inventories of plantation owners as well as general household inventories will be used. The sample inventories, as those with the merchants, are intended only to obtain a general idea and do not constitute a precise and accurate study. That would necessitate using every inventory, which is out of the scope of this thesis. With that note of caution, the inventories of Andrew Orgill and Sir Henry Morgan (Figures 11 and 12) were selected
Vol. 2. Fol. 177-181
Andrew Orgill, Port Royal Merchant-Planter
1686

Note: There are two inventories for Andrew Orgill included here. This one was taken in St. Mary's County in Jamaica; the first showing the debts owed was taken in Orgill’s Port Royal residence

*Two large Iron hoopes for a shaft, Six Coppers h____, Two Copper Two brasse Cooleres, Two T____ Copper Lumps, Severall peaces of new Copper and some Copper nailes at, a Smithy Vice an Iron Beck Iron, Two New & One old steel whip sawes, four sheete Cross Cutt Sawes, Two old Iron Cross Cutt Sawes, a pcell of carpenters tooles old and new, Three doz. of new falling Axes, Three doz. of new Bills, 36 axes & six Bills in use, an old Bench Vice and things belonging there unto, Three shovells & One Spade, a pcell of Revetts such as are used for making of whirlrys ye.*

Totaling £ 61 05 00 out of £1116 08 02 or 0.5%.

Figure 11: Andrew Orgill Probate Inventory
(Port Royal Probate Inventories)

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Vol. 3. Fol. 259-261
Sir Henry Morgan, Port Royal
Signed/Sealed February 19, 1689

*a parcell of old Carpenters tooles, a parcell of plantation tooles, Two Iron crowes and 6 splitting wedges, a parcell of old copper old iron tooles & severall other old things about the house & Sir Henry's Plantation.*

Totaling £19 10 00 out of £5263 01 03, or 0.4%.

Figure 12: Sir Henry Morgan Probate Inventory
(Port Royal Probate Inventories)
based on the tools they listed in both settings, while resembling what could be considered an average use and listing of the tools.

Both Andrew Orgile’s and Sir Henry Morgan’s plantation inventories were chosen because of their range of estate values, displaying what can be considered both ends of the spectrum: what the wealthy plantation owner who seemingly could afford to buy whatever is necessary for the farm would own, compared to a less wealthy plantation owner who would presumably have to minimize purchases and use tools as efficiently as possible. After reviewing these inventories it has been surmised that there is no relation between size of fortune or estate and the tools present. There is little difference between the two, but the Orgile estate lists nearly twice as many tools, including coopering items, several saws and axes, carpenters’ tools, and various miscellaneous items. Morgan’s inventory lists a set of plantation tools, carpenters’ tools, and old iron tools as well as crowes, wedges, and copper items. Since the exact extent of each plantation operation is unknown it is nearly impossible to distinguish this seeming anomaly. The inventory of Morgan, whose life and career extended well beyond the scope of a normal plantation owner, focused more on personal items than plantation related, while Orgile’s provides a view of a more general plantation. In both cases, the tools would suggest it would have been necessary to be fairly self-sufficient, given the distance and means of travel on the island. The plantation and carpenter’s tools were most likely used for everyday chores and for the repairing or building of small wood items. It seems probable that if something needed to be mended or fixed, or built around the plantation, the workers would be employed when possible, and
tradesmen called for or seen when necessary. Orgile’s listing of coopering and wherry items lends credence to some minor coopering operations at the plantations, as sugar was the main crop in Jamaica at the time, and that small repairs on wherrys would have been accomplished on-site. Another supposition is that plantations would have been more conservative in their tools. The presence of old iron tools suggests that used or slightly broken tools would have been kept for limited use in the future.

Household inventories in general list very few tools. However, through simple inference it can be acknowledged that items such as flat irons, knives, scissors, and possibly a few tools were kept in most households. In all, the tools used by plantations and in domestic settings are not distinct from those of the tradesmen. It is not possible to distinguish out tools that would go to those areas as opposed to a shop. What can be construed is that households contained very few tools, as opposed to modern households where most have a basic set of hand tools. Also, regarding the prior deductions made about tool use on plantations, they are listed by trades, such as “carpenters tools” and “coopers tools,” again suggesting that they are indeed no different from those of the tradesmen.

The difficulties of working with inventories can be viewed in this section. The plantation and household items are too general in the case of the plantations and those of households too sparse. No real distinction can be made between the tools going to non-trade industry use and those going to the tradesmen. This is mainly because the tools are grouped together in many instances, plantations would have a basic set of tools, and tools in domestic use are limited.
The products of the tradesmen, however, can more readily be viewed in the inventories, as there are numerous listings for guns and swords from the gunsmith, clothing from the tailors, plates and dishes from the pewterer, and a myriad of wooden objects from the woodworkers. If one approaches this from common sense alone, it would appear that in any given household the domestic tools would have been purchased from the merchants, and in the merchant’s lists the items’ proveniences came from a combination of imports and local manufacturing.

The area of produced items is too large to analyze separately and it is not possible to extract the required information without more research into the area. However, given those conditions, it can be speculated that some items made locally, such as metal objects, would most likely be sold by the local tradesmen, while high-profile items, such as clothing or china, would be imported and sold by the merchants.

The merchants seem to have supplied a small amount of tools in their shops. It would seem sound to suggest that the blacksmiths made most of the tools for the island, and prudent to point out that some tools were imported. In attempt to test this hypothesis, i.e., most tools were made locally, and only a few items were imported, it is necessary to look at contemporary shipping records (Fiorillo, 1990). The records sampled are part of the 1682 Customs Ledger and Port Records of Bristol, England from June through October, 1682, and provide a sample of cargoes (Figure 13) being exported to the Caribbean and American colonies at the time. Individual ships are listed along with their departure dates. The inventory of goods represents items shipped by numerous Bristol merchants and will be combined to avoid repetition. Only
<table>
<thead>
<tr>
<th>Date</th>
<th>Ship</th>
<th>Goods Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 26, 1682</td>
<td>William Minor &amp; Company</td>
<td>35 cwt (hundred weight) nails, 19 cwt wrought iron, 2 ½ doz. bellows</td>
</tr>
<tr>
<td>June 26, 1682</td>
<td>American Merchant</td>
<td>68½ cwt nails, 137¼ cwt wrought iron, 3 cwt brass manufacture, 20 brass (?) manufacture, 24½ cwt wrought pewter, 156 cwt leather manufacture, 4 doz. of bellows, 2 parcels of wood, 212 cwt shoes, 10 cwt of Irish wool stockings, 4 doz. of worsted stockings, 15 (?) silk manufacture, 260 yds. flaney, 3 doz. felt hats, 20 castor &amp; felt hats, 3 doz.½ felts and other Eng. Hats</td>
</tr>
<tr>
<td>September 25, 1682</td>
<td>Hopewell</td>
<td>16 cwt of nails, 10 cwt of wrought iron, 2 doz bellows, 51 yd flannel, 2 doz. wool, 7 doz. of worsted stockings</td>
</tr>
<tr>
<td>September 25, 1682</td>
<td>Lamb</td>
<td>59 cwt nails</td>
</tr>
</tbody>
</table>

Figure 13: 1682 Customs Ledger and Port Records of Bristol, England (Fiorillo, 1990)
47 cwt wrought iron
50 cwt wrought pewter
20 cwt leather manufacture
12 cwt shoes
10 doz. Felt hats
6 castor hats
100 yards of coarse linen
400 yd. flannel
80 lbs of English linen
309 lbs coarse linen

October, 1682
Nathaniell

4 cwt wrought iron
3 doz. shoemakers lasts
26 cwt shoes
13 doz. Felt hats
61 castor hats
3 doz. plain sheep skin gloves

October 11, 1682
Own's Endeavor

30 cwt nails
23 ¾ cwt wrought iron
6 cubic wt. of wrought iron
5 cwt wrought pewter
4 ½ cwt copper manufacture
210 cwt leather manufacture
9 cwt iron wares
1 pr. smiths bellows
80 cubic wt. shoes
112 cwt shoes
9 doz. worsted sto
4 doz. castor hats
9 doz. plain sheep skin gloves
120 cwt of silk manufacture
250 yds. Cottons

Figure 13: Continued
the goods pertaining to tradesmen will be included. The records demonstrate that metal, both raw and manufactured, was a considerable amount of the cargo shipped to the New World. Manufactured metal items appear to consist of wrought iron or pewter with a lesser amount of manufactured copper or brass items. There is mention of wrought iron manufactured objects, which could, in fact, contain tools. However, where no specific mention to tools is made it cannot be considered evidence of tool importation. Nails account for a large portion of the metal cargoes and there are a few bellows being brought in. Bellows are tools specific to smiths as they create a constant air supply for the furnaces.

The amount of unprocessed metal supplies are a very good indication those tools and other metal manufactures were indeed locally made, thereby supporting the original hypothesis that most tools were made in Port Royal. Several cwt (hundred weight) of wrought metal was sent to the new world in a matter of five months as opposed to the less than a hundred cwt of metal manufactures.

The imported raw materials also include cloth items. The records show that a significant amount of linen, flannel, and even leather were exported. Most of the specialized manufactured items are related to the tradesmen dealing in textiles and shoes. For Port Royal, this corresponds to the tailors and cordswainers. However, it is not known if these items went directly to the merchants or tradesmen. The merchants certainly list similar items of bulk cloth and clothing items, such as the gloves and hats, and it can be speculated that those would have gone to their stores. The tailor could have purchased cloth from the merchant or it could have been there for customers who
preferred to make their own clothing, as it is suspected that predominantly most people made their own clothing. The shoes, were the most unexpected items found in the records. It would seem logical that shoes would be made locally as permanent lasts (molds of foot size) were often created for each customer. The records seem to prove otherwise, the amount of shoes by weight exported nearly equals that of the bulk metal. These areas will be explored in greater detail when examining the individual tradesmen.

The shipping records have given further insight into the tradesmen and have given fairly conclusive support for the hypothesis stated at the beginning of this section, that tools were manufactured locally. However, this chapter is intended as a general survey of the tools, trades, and tradesmen of Port Royal, and a separate study of all of the questions posed in this chapter would be necessary to provide concrete answers, and as such, speculations and common sense will suffice.

**Metal Workers**

**Blacksmith**

The blacksmith can be viewed as the most integral artisan in any given community. He was the only tradesman to tame the four elements, earth, water, fire, and air, to produce iron wares. The blacksmith was responsible for making the tools of civilization and war, and without the iron implements they produced, technology would have little surpassed the Stone Age. All tradesmen could argue the importance of their own trades, but without the blacksmith making and repairing their tools, none would exist. The blacksmith was among the first to come to Port Royal and played an
imperative role in the growth of the city (Thornton, 1992:58). The tools of the trades
came from his shop, as did hardware for homes, iron fittings for ships, and even
implements of war for their protection.

Smiths in general produced varied wares according to their own specialties and
the local demands, and most worked in several different metals (Thornton, 1992:59).
Blacksmiths tended to be the generalized form of the smith and not limited to only iron,
as can be attested by the inventories. Some inventories have smithing listed as a
secondary interest or investment, or smithing as the primary with other trades taking
second. Among them is found Daniell Hicks, a merchant, who owned a Smyths Shopp
listed as containing:

1 great anvil, 2 small ditto, 1 pr of bellowes, 4 nayle 5 pr of tongs, 2 great
sledges, 4 hammers, 3 vises, 3 or 4 Files 1 hand saw, 1 whipp saw, 200 pounds
of old iron, 5 old barrells, 6 gunns & sundry other small things. 14 barrs of
iron & 4 steele besides other small things (Thornton, 1992:59).

His inventory, compared to the others shown below, is sparse enough to consider
blacksmithing as a very minor portion of his estate. The value of the smith’s shop
totals £29 00 00 out of £17,837 07 04 or .001%. It is possible that he rented out the
smith’s shop, or perhaps had slaves working it to produce wares for his merchant
business. Thomas Prigg, another Port Royal smith, also had woodworking and watch
repairing tools listed in his inventory (Figure 14). However, the fact that it lists many
smithing tools indicates that he was most likely primarily a smith. He was worth very
little money at the time of his death, and his entire inventory was minimal compared to
the inventories for John Philpott and William Davis (Figures 15 and 16), which exhibit
an extensive listing of tools and tool-related items. This prodigious amount of tools
indicates that the blacksmith was an integral part of the trades industry and solidifies the speculations previously made regarding the manufacturing and selling of tools. The majority of tools were probably acquired through the blacksmith’s shop. To emphasize the breadth of items produced and the importance of the blacksmith in Port Royal, they will be shown in their entirety. However, due to their length only two will be provided. Another blacksmith, Benjamin Ives, was working in St. Andrew at the same time as Philpott and Davis, but his total inventory value was only six pounds with no related items listed, and as such his inventory has been omitted.

Joseph Moxon in 1678 published *Mechanik Excercises or the Doctrine of Handy-Works*, the first English book to describe and illustrate the various tools of different trades, and even more important, to explain their use from the viewpoint of the practitioner (Moxon, 1703:front cover plate). According to Moxon, the blacksmith’s shop would include the following (Figure 17):

**Forge:** The heart of the smith’s operation is illustrated by Fig. 1. It was built of brick and composed of several parts including the *Hearth* or *Fireplace* (marked A), *Chimney* (B), a *Tewel* (C) into which the nose of the bellow is placed, the *Trough* (D), the bellows produced the steady air supply, a *Thong* (E) of leather or an iron chain which is fastened to the *Rocker* (F), and the *Center-pins* (G) upon which the rocker rests.

**Anvils:** Illustrated by Fig. 2, the anvil is an indispensable tool used for anything from rough forging to delicate blending. The working part of the anvil is the *Face*, marked as (A).
Impr: 1 paire of Bellowes, 1 Anvill, 2 Large and 4 Small vises, Sledge Tongs & 1 Birk Iron, New files and Haspe, old files, Nailes Revitts and Tacks, Grindstone, 2 Lathes, One 2 foote Rule, Sawes & Axes, a pcell of Carpenters Tooles, a pcell of hinges, 2 broken Pistolls and old Keys, a pcell of old Brass, Nailes and Spikes, a pcell of old Iron, a pcell of Watch tooles, Flints, Coales and on old Caske

Totaling £18 12 05, which accounts for his entire inventory.

Figure 14: Thomas Prigg Probate Inventory
(Port Royal Probate Inventories)
Vol. 3, Fol. 285-290
John Philpott
September 1, 1689
£1271 12 11½

5 doz & ½ of Bambury Stock Locks, 10 Stock & Spring Locks 4s a piece, 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 [cull ?], 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 3s6d p, 3 Iron Rim Locks in a shute, 6 Double Spring Locks, 38 Rusty Single Spring Locks, 18 pr of old Rusty spurs, 1 old Rim Lock 3 Spring Latches, 11 Plate Boultis, 2 pr of spurs, 12 pr of tobacco tongs oulde and Rusty, 11 pr of Tinn Snuffers, 86 Rusty Marking Irons, 6 Outside Chest Locks, 4 gros & 21 Doz of women cotton squares, 3 grosse of childrens squares, 11 Round Chalke Line, 2 Doz & ½ vof Barbers Sizzers, 16 pr whole Barbers Sizzers, 11 pr Ord. whole Barbers Sizzers, 3 small boultis & staplers, 36 hones Broken & Crackt, 25 Flaskis, 36 Horne Combs, 8 small Ivory Combs, 4 Doz: ½ 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 Knifes, 3 Cases Ivory Haft Forks, 3 Large Knifes, 15 Doz Old Knifes, a Pound Knitting Needles, a prcell of Old Razor & Pen Knife Cases, 20 _ _ 3d Bradds 15d p, 12 _ _ of 4d Brad 21 p, 5 _ _ of 6d Brad 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 piece, 16 Flatt Gun Locks 10s p lock, 22 Old Gun & Pistoll Locks that wants fitting, 32 Smooth Files, Fish Hooks, 9 Doz: Round and Splinter Locks, a prcell of old Round Locks, a prcell of small Files in a Drawer,

Figure 15: John Philpott Probate Inventory
(Port Royal Probate Inventories)
7 _ Tind Tacks, 1 Doz Glister Pipes, 59 Cheese Tasters, a pcoll of old trade in a drawer, a pcoll 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 pcoll of Drops, 18 Dozen Hamers at, 7 Boults & 16 Latches, 7 Sugar Drawers, 8 pr of Tumblers, 19 Doz Dutch Files, 464 Files of Several Sorts 3s p ds, a pcoll of Rubbers qt 124, 6 Steele Sawes 3 feett long, 2 x cutt sawes, 2 Ditto, 4 Row Busk Symiters, 2 Symiters, 1 Silver Hilted Rapiere, 1 Ordinary Ditto, 2 Silver handled Rapiers, 2 Ord. Smitters, 2 Grose of Pensils, a pcoll of Old Duff taile hinges, 8 Doz Carving Tooles, 6 Morticeing Chisells, 9 Doz & 4 Gudges, 8 Doz & 10 headings Chizells, 2 Eakro:w Norkiall Dyalls, 8 Doz London Knife Blades, a pcoll of Rusty Knife Blades, 19 Sugar Boarers, 4 Whimble Bitts, a pcoll of Pewter Bitts, 1 Doz. of Iron Compasses, a pcoll of heading chizells, a pcoll of old plaine Irone, a pcoll of old Carving tooles & Chisells, 4 Doz. Rules, 6 Scales, 200 Broad Chizells, 2 Broad Axes 2s6 a pceee, a pcoll of old Chizells, 4 Doz. Intch Chizells, 5 Doz ¼ Joyners Hatchets, 21 Doz narrow howes, 19 Doz & 7 Broade howes, 26 addzes, a pcoll sledges q 459 li, a pcoll of Bick Irons 180, a parcell of Bullits q 622, a pcoll of swan shott q 200, 26 Doz old Augers, 13 old whipsawes, 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 & ½ of Bitts, 10 old Rusty Bitts, 11 pr Sheep shearers, 3 Beames, 8 small frowes 3 of them old ones, 9 small hatchets, 6 morticeing axes, 1 plaine, 23 old hand sawes broken & whole, a pcoll of Buckells for Belts, 17 Joyners Axes, 4 Joyner hatchets, 2 Joynter Irons, 4 Screw Plates, 8 pound & ½ brass wyer, 1 curyers knifes, a Parcell of Emory, 72 Caine Joynts, 5 Stickes & some bamboos 18d a pceee, 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, 1 buff belt with a silver buckle, 5 brass potts, 2 Patterooansos (?) qt 320 li, 5 Morticening axes, 1 Coase for a Butcher, 4 Large Augers, 2 Crowse Iron, 2 Bick Irons, 1 Screw (?) Plate, 1 Grid Iron, 4 compasses & a small compass, 36 Large & small catt guts, 8 Bells, 3 Butchers stooles, a Parcell of old trade hanging up in the shop, a Parcell of old trade in the windows, a pcoll of hooks and hinges 328 li, a pcoll of Flints, a pcoll of Ragg stones, 6 Shoovells, a pcoll of Jew Ivory & wedges that are old and rusty 2 li ¾, 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

Figure 15: Continued
of old iron & rubbish, a parcell of scines (?), 2 skillitts qt 38 li 3d p li, 3 Baggonets, a pcoll of old horse whips, 1 Doz & ½ of Baskswords, 58 old swords, 6 Doz Ordinary penknifes, 13 Better penknifes, 24 Doz of scissors, 8 pr of old Bullitt moulds, 7 Clock Lines, 43 Spring knives, 17 Flemis for horses, 44 knives, 8 Doz & 3 razors, 3 turtle shell razors, a pcoll of scissors & hilt, 57 old swords, 3 basket hilted swords, 3 Childrens swords, 38 __ 2 naiiles, 34 __ tacks, 17 pr taylers sheares, 300 wtt of sheathing naiiles, 200 wtt of 40d naiiles, 18 __ of 10d naiiles, 10 __ of 20d naiiles, 20 __ of 4d naiiles, 6 __ of 6d naiiles, 80 __ of 8d naiiles, 20 __ of 4d naiiles, 6 __ of 20d naiiles, 4 __ of 6d naiiles, 2000 sheathing naiiles, 20 m. tacks, 13 Doz ½ pad locks, 2 m. ½ truss hoops naiiles, 200 wtt of naiiles, 28 __ of scupper naiiles, 200 wtt of naiiles, 24 __ 6d naiiles, 30 __ 6 naiiles, 52 __ 4d naiiles, 21 __ 8d naiiles, 10 __ 20d, naiiles 4 p. 14 __ 12 bradds, 10 __ 20d ditto, 300 wtt of 40d naiiles, 100 __ 2 naiiles, 32 __ 6d naiiles, 60 __ 4d naiiles, 300 wtt of 30d naiiles, 30 __ Flemish naiiles, 216 li wtt of 2d naiiles, 52 __ of 3d naiiles, 16 __ of 10d naiiles, 45 __ of 4d naiiles, 45 __ of ditto, 80 __ of ditto, 10 old swords, 2 Rowles Tobacco, 3 x cutt sawes, 10 steel whip sawes plates, a pcoll of old things in the back portion of the shop, 75 old guns & Blunderbusses, 10 old gun Barrels, 1 Spring Clock, Ordinary Clock & 1 watch & Larum, 1 Clock, 26 old sword handles, a pr of pistolis & trade in a box, 13 ounces silver wyer 69 p, 11 Doz. glasses for watches, watch strings, 43 old Lancets, a Pound of Puttie, 14 Doz penknife blades, 11 Musskeats, a parcell of trade thats old about his working board, 16 __ 10d at 5s p, 22 pr old pistols, 1 Doz of old chaires & a table, a Bason & spice box & other things, 1 Lead S__tern, 372 sword blades at 1s6d p, 12 doz scabbards, 4 Doz & 4 sword blades 2 6 a peese, a pcoll of Chirurgions Instruments, a pcoll of old tin, 16 guns, 2 Doz. of Plate, Dyalls, 2 Ring Dyalls, a parcell of Surveyors Instruments, 2 old Glasser Vises, a parcell of old trade in the garret, a parcell of Scales, 100 wtt of brass weights, 122 li of pewter Dishes & plates, 1 old copper qt 30 li, a parcell of old brass potts & a kettle, a Jack & two spits, a morter & other old trade, a parcell of wood & trade in the yard, a new anvil, 5 old vises, 4 pr of bellowes, 13 old sawes, a parcell of old Glassers & Grinstones, a Grind Stone, 5 li ½ of old lead, 5 old anvils, 798 li of old chaines & grapnels, 1078 li of iron cap squares, 2 old Anchors qt 400 li, 2008 li of Old Iron, 984 pound Good Iron, 119 pound of Oliphants Tooth, a parcell of old Iron & working tools in the shop, 2 pr of scales, 154 li old cast brass

Figure 15: Continued
Vol. 3. Fol. 297
William Davis
November 21, 1689
£151 11

One old anvil, Another old anvil, One beame with scales & 2li 2 qt in weight, one grinde stone & handle, One pr of walking bellowes, A smaller pr of bellowes, Nineteen pr of tongs & a pr of pincers, 2 slices & 2. hearth staves, 11 old ffiles worn out, A large haft ffile, 13 hammers 6. sledges, 26 naile tooles & bolt tooles 112, a pc of Vick Iron, 37 chisells & punches, A Wooden Crane, 2 old vices, A pr of calipers, a parcell of other small tools, A copper ladle & woden shovel, 3 old decayed Jacks, Another decayed Jack & weight, An old Pick Axe, Coales 2. Chaldron ½ att. 47 __ Chaldron, 2 New Maiks (?) 37 li at 9dj p, A pr of compasses, 2 new iron pitch pott, A stake for thimbles & a stake for nailes, An old axe, 6 Anvill blocks, A Horse for cloathes, A Wheele Barrow, A trough Staples, rings, forelockes thimbles small bolts & 3 graplins, weight nailes at Tackle hookes Marle speeks, heads & strapps of pump speares spindles of vanes & pump bolts pott racks, hooks & hinges Cross garnetts Chest Gimalls, Bolt staves, New unwrought iron, A new anchor not finished, An old iron tiller, Old Iron A boome iron canoa irons small hooks hold fasts hasps & other small things, 3 pr of graines at 3d each, 7 harpoones at, A pr of small brass scales & weights, Two small pr of scales & weights for money, Gimlets 20, A small parcell of tooles & lockes, 6 Handles of sledges, 37 __ of brass at 9d

Figure 16: William Davis Probate Inventory
(Port Royal Probate Inventories)
Figure 17: Smith’s Tools
(Moxon, 1703:A.)
Tongs: Figs. 3 and 4 show the two types of tongs used: Straight-Nosed Tongs and Crooked-Nosed Tongs. They are used to hold hot metal as it is being worked and are comprised of three parts: the Chaps (A), the Joint (B), and the Handles (C).

Hammers and Sledges: There were several types of hammers utilized by the blacksmith, a few of which, described by Moxon, include the Hand-Hammer which is bigger and of the correct weight to wield with one hand at the anvil, the Up-Hand Sledge used by the under-workmen to help draw out the iron, the About Sledge which is the largest hammer that is swung above the head and is also used by the under-workmen for drawing out the largest of works, and the smallest, the Rivetting-Hammer. Fig. 5 shows the Face (A), the Pen (B), the Eye (C), and the Handle (D) of the hammer.

Vice and Hand Vice: Vices, Fig. 6, are either used in conjunction with the work-bench (vice) or held in the hand (hand-vice) to firmly hold items while working. The vice is composed of several working parts: the Face (AA), the Chaps (B), the Screw-Pin (C), the Screw-Box (D), Spring (E), and the Foot (F). There are two sorts of hand vices, the Broad Chapt Hand-Vice and the Square Nosed Hand-Vice, although the square nosed vice was seldom used.

Pliers: Two types were used by the smith: the Flat Nosed and the Round Nosed Plyers. They are shown between Figs. 5 and 7 and have the following parts: the Nose (A), the Chaps (B), the Joint (C), and the Handles (DD).

Screw-Plate and Tap: The screw-plate, Fig. 7, is a plate of steel with several grooved holes to fit a matching tapered tap, and together they are considered by Moxon
to be the most, essential tools used by a blacksmith as they are used to make screws of pre-determined size, which is essential for most hardware.

**Drill and Drill-Bow**: Drills, Fig. 8, are used to make holes that cannot be conveniently done with a punch, which will alter the malleable metal. The different parts are: the *Point* (A), the *Shank* (AB), and the *Drill-Barrel* (C).

As expected of the primary maker of tools, there are references to most of the tools used by the blacksmith: anvils, bellows, hammers, sledges, files, tongs, vices, and pincers. It is interesting to note that most of the specific tools are listed under William Davis and Thomas Prigg, while John Philpott with a prodigious inventory lists mainly produced items and tools, but not those he himself would have used. Tools utilized by all tradesmen accounted for in the Port Royal inventories, as well as hardware, arms, and household items are found in these two inventories. However, to list representative items from each trade or area of use would be repetitive and quite lengthy.

**Goldsmith**

Gold and silver grew in demand as wealth was accumulated, and popular items such as rings, silver cutlery, silver tobacco and snuff boxes, buttons, and shoe buckles were listed throughout the inventories of the residents (Thornton, 1992:64). There are two goldsmiths found to date in the inventories: John Hickes and William Addang (Figures 18 and 19). Both worked in Port Royal and, although there are no dates listed for the inventories, the volume numbers are far enough apart that most likely there was little overlap in the years they worked. John Hicke’s inventory lists bellows, anvils, and
Vol. 3, Fol. 230
John Hickes
November 9, 1688

To a pr of bellows & anvill & other tooles, To sundry Plindars (?) of Gold & Silver, To 42 £ of Pewter, To Iron Ware

Totaling £66 17 12 out of £150 01 03.

Figure 18: John Hickes Probate Inventory
(Port Royal Probate Inventories)

Vol. 10 Folio 252
William Addang

3 chryssall stone rings, 1 Gold ring unfinished, 1 ounce and half of silver, 1 Silver
+ Spooone, 1 Silver Instrument case, 3 Silver boxes GW 20 each, 3 gold seals
a 25/each, 1 metall (?) box @ 15, 1 Silver tooth pick case, 1 Pair of old silver
buckles and a Tea Spooone, 6 pair of false stones & ear rings, 2 false Stone
rings, 1 Cross, Silver Seals and one pair of buttons, 2 Silver Chains 15 ½ Curatt
- @ 1Lpr, 1 Silver Scale at 5 / and 3 bottels at 7/6, 1 ounce 3 penny weight
Silver 5/7 ½ a Silver Dyall 10, 3 Dozn of Coat and 5 doz of breast Gold buttons

Totaling £37 00 02 ½ out of £259 00 00.

Figure 19: William Addang Probate Inventory
(Port Royal Probate Inventories)
tools with some pewter, gold and silver, and iron wares. William Addang’s inventory
does not list any tools, but it does detail raw materials used and shows more silver listed
than gold. It seems likely that both of these goldsmiths did not work only in gold, as
was traditional. The frequent listing of gold and silver jewelry indicates that perhaps
they worked primarily as jewelers while also making buttons, boxes, and other odd
items from gold and silver.

The tools of the goldsmith are basically those of the smith, which can be viewed
under Blacksmith. One would expect to find more than “of bellows & anvill & other
toolest” listed for these tradesmen, but the quantity of gold and silver items was
considered more important than the tools to the total value of the estate.

**Gunsmith**

Port Royal had its beginnings as a military post, and even after the transition to
a prosperous port the defensive mindset never quite left. The island, though notable for
its economically suitable position, was still surrounded by on-again and off-again
enemies. Military personnel and civilians were apt to arm themselves for both the
defensive and offensive. Considering the population of privateers and pirates, ships
armed against the unknown, as well as the only too-well-known-known dangers, and a
prolifically armed community was sure to arise. Gunsmiths in Port Royal were not
without jobs. Thomas Moore and Thomas Pocock, two of the gunsmiths on the island,
appear to have worked during the same time period, as their inventories (Figures 20 and
21) were entered within days of each other, and they had estates of similar worth.
Vol. 3. Fol. 299-300
Thomas Moore
December 4, 1689
£121 09 03½

Liguanea Shop: Five hundred pound weight of new Iron, Two Hundred weight of old iron, fffourty weight wrought iron, One anvil, One ditto old, Two Bickirons a sledg and small Towles, One Pair of Old Bellowes, Two Vices, Ffourteen pound of lead, One hogshead and three quarters Coales, One grindstone, Five pound of steele.

Port Royal Shop: One pr of bellwes & one Anvill, Three vises a Stake Old ffiles & other small working tooles, Two old Trivetts, Three setts stops & Capooses not finished, Two pair of fencing foyles, A prcell of old guns & pistols, Three pistols serviceable, A small beame brass scales & small weights, One hundred pound lead, One new gridiron, Two bitts for stocking of guns, An Iron railed to hold a gunn, thirty seaven pound of new iron unwrought, 200 li old iron, An old crowe of iron, four and thirty new and old ffiles, four new fuzee locks, twenty sword blades, A pcell of coles, Old lumber, One grindstone.

Figure 20: Thomas Moore Probate Inventory
(Port Royal Probate Inventories)

Vol. 3. Fol. 304
Thomas Pocock
December 12, 1689
£190 00 04½

2 new guns, one old ditto, Leaden fifty Sixes & 1 Iron ditto & ¼ of _ Iron, 1 pr of scales & beam & 2 pr small old ditto & weights, 3 iron bound Butts & 1 wood bound ditto & Sug:r hogs:d all old, 126 li of old pewter at 7½ p, 3 old Vices, old anvils, a prcell of old smiths tooles all well wore, a prcell Old gunn barrels, a pcell of old iron, ¾ & 3 li of steele at 6d, 30 li of wrought Iron Trivetts, 8 gun Locks, 37 li old brass at 7½ p, 16½ ounces plate att 6d p

Figure 21: Thomas Pocock Probate Inventory
(Port Royal Probate Inventories)
Moore had two gunsmith shops: one at Port Royal and the other at Liguanea (Thornton, 1992:63). From the inventories it is obvious that both kept their shops well supplied with tools and raw materials. However, other tradesmen such as the blacksmiths and the merchants would have also dealt in arms: blacksmiths in the manufacturing and repairing, and merchants in supplying new arms. One of the largest blacksmiths, Philpott, lists a variety of guns and swords.

**Guns**: Old Pockett Pistolls, Gun Locks, Flatt Gun Locks, Old Gun & Pistoll Locks that wants fitting, Bullits, swan shott, Flints, old Bullitt moulds, old guns & Blunderbusses, old gun Barrels, a pr of pistols & trade in a box, Musskeats, pr old pistols.

**Swords**: Silver Hilted Rapier, Ordinary Rapier, Silver handled Rapiers, Baskswords, old swords, swords, basket hilted swords, Childrens swords, old sword handles, old swords, sword blades, scabbards.

Moore also had sword blades and fencing foils, listed emphasizing the multifaceted nature of the crafts and craftsmen of Port Royal as has been portrayed in the use of tools. In 1660, Charles II brought back some of the finest gun makers to Europe, virtually transforming the gun maker’s trade (Thornton, 1992:63). These new developments presumably would have made it to the colonies through traded manufactured items as well as technology and design. This could have accounted for the presence of only two gunsmiths. The population was wealthy enough to want the newness of the European guns coming to the island through trade, and most likely would have bought new and used the gunsmith or blacksmith for repairs, while the poorer citizens had theirs made locally. Speculation, however, is just that, without any further proof.
The tools listed are only a portion of what in reality would have been used. Moore and Pocock have collectively listed by name: four anvils, two bickirons, a sledge, a small tewels, five vices, old files, a parcel of smiths' tools, and then other small tools. Unfortunately, the majority of hand tools is not listed out separately because of their monetary value. For the sake of an inventory it is easier to list a group of items worth more money. However, the tools used can be found through the examination of other written sources. A variety of woodworking tools was used to make guns, rasps, files, planes, saws, and vices; and most used the tools of the smiths, including anvils, bellows, forges, screwplates, hammers and sledges, pincers, pliers, wrenches, and screwdrivers (Whisker, 1992:180). A few specialized tools were used as well, such as the long-handled borers, reamers, and some cutting tools used to finish and “rifle” barrels by cutting grooves inside (Arbor, 1981:47). Although there are few tools listed, as noted earlier, it can be surmised that within the listing of “other small tools,” were, in fact, most of the tools needed.

**Pewterer**

In the sixteenth century pewter replaced domestic items of tableware and utensils heretofore made from wood, bone, leather, horn, stone, and coarse pottery (Gotelipe-Miller, 1990:10). At the onset of this change only the rich could afford pewter, but gradually its use became so widespread that in the seventeenth century it was found in nearly every household as it moved from luxury item to a necessity (Gotelipe-Miller, 1990:10). At this time, pewterers from England were reputed to
manufacture the finest pewter, and their ware was shipped to a ready market in the New World (Gotelipe-Miller, 1990:18). In spite of this there were at least two pewterers in Port Royal. Their presence can readily be explained. Pewter exports from England were controlled by the local pewterer’s guild, the Worshipal Company of Pewters of London, which regulated the quality of manufacture as well as the percentage of alloys used in the metal, resulting in well-made and hence more expensive pewter. Colonial pewterers were not subject to this guild and often their wares were of lower quality, making them cheaper in cost and thereby providing incentive for local pewterers to set up shop. In addition, old pewter could be recast and retreated sensibly, calling for pewterers.

One of Port Royal’s pewterers, Simon Benning, has been studied extensively, combining documentary sources with archaeological data, offering a valuable insight into the craftsman and his life at Port Royal. The investigation of Benning started during the Port Royal excavations when 34 pewter plates were found bearing a distinctive maker’s mark of a pineapple surrounded by an oval braid with the initials S to the left and B to the right (Thornton, 1992:65). It is learned through his will that his shop was located on High Street and that he owned three other properties in Port Royal. In his inventory (Figure 22) he lists six molds, three of which are represented by excavated plates (Hamilton, 1984:50) and tools: two anvils, 12 hammers, a wheel and spindle (lathe), and a grindstone (Thornton, 1992:66). The shop also contained several thousand pounds of various qualities of pewter and brass, and 250 unfinished pewter plates in stock (Thornton, 1992:66). Another indication of his successes is that his
inventory was valued at 376 pounds, and the average English provincial pewterers were making about 100-400 pounds (Hamilton, 1992:49).

William Whitney was a pewterer and a braizer, and although his inventory (Figure 23) does not state a profession, it is fairly obvious through the material found. His inventory was worth 1,399 pounds, which is noticeably higher than Benning’s, but contains similar types and amounts of raw material, though with more copper. There were no molds listed for the pewter spoons, porringer, and plates to account for what was listed in the inventory, and this may be because they were intended for recasting. However, it appears that he produced distilling equipment, which was made of copper and lead.

Pewter is considered an ideal metal for casting as it has a low melting point, 200-300 degrees Celsius, and good flow properties that allow the reproduction of fine details (Gotelipe-Miller, 1990:11). In the seventeenth century pewter was cast in bronze molds, which were expensive to manufacture, or in temporary molds made of wood, clay, sandstone, or plaster. Unfinished items straight from casting were considered “rough cast” and would then either be stock-piled or finished by hammering in concentric circles to give the pewter strength and shape (Gotelipe-Miller, 1990:13). The tools used by the pewterer, as by the goldsmith, are the basic tools seen in the section on blacksmithing tools. What is interesting is that neither of the pewterers’ inventories lists any tools at all. This does not preclude them from owning tools; instead, it indicates the value and importance placed on the raw materials themselves.
Vol. 3, Fol. 64
Simon Benning
February 19, 1687/8

To 17 li mould weighed 150 at 1s p li, To 14 li mould 115 at 1s p li, To 14 li Duep 117 at 1s p li, To 1 mide plater mould at 1l 112 p li, To 1 bason and 1 Plate mould at 1l 117 p li, To 1 Plate mould at 1l:35 p li, To 74 pound of Iron working tooles, To 14 pound of old mettel at, To 50 pound Scruflat pewter, To 2 anvils & 12 hammers at, To 1 wheele and Spindle, To Blocks & old things in the workhouse, To 250 of cast Rufe plates at 8d p li, To 60 pound of old brass at, To 3 hundred of old pewter Lay at 6d p li, To 190ct 28li at Seven pence half penny p li, To 113 of alloy at 4d half penny p li, To 20 pound of old pewter at 7d½ p, To 3 pound of new pewter at 12d p li, To 1 case of glass bottls at, To 1 cestern of pewter, To 2 pair of old Scales & weight, To 26ct:45li pound of pewter at 1s p li, To old Copper & brass 121ll: at 7p½ p li, To course brass 21li at 4p½ p li

Totaling £203 02 05 out of £376 11 10.

Figure 22: Simon Benning Probate Inventory
(Port Royal Probate Inventories)

Vol. 3 Fol. 427
William Whitney
January 20, 1693

23 dozen and 4 damaged ptr plates, one large still and worme, two worms, 43 dozen of pewter spoons, five dozen of damaged porringer, 461 li of unwrought coper, 308 li of unwrought copper, 4 lamps and 1 pr of scales, 194 pott and 4 Gilt at, 4864 li of Midling Copper (243 04 00), 1399: of old coper (352 09 00), 235 li of coper nailes at 15 p li, 511 li of old brass at 6 p li, 1076 of old pewter at 7½ p li, 67 li of lead at 3 p li, 400 ct of cast brass at 4 p li, 3 worm molds at, the tooles

Totaling £881 14 09 out of £1,399 12 04.

Figure 23: William Whitney Probate Inventory
(Port Royal Probate Inventories)
Wood Workers

Carpenters

The woodworkers covered in this section are comprised of carpenters and joiners. Traditionally, carpenters work on the main structure of a building while joiners concentrate on the internal construction of stairs, doors, windows, and internal fittings. A third woodworker, not listed here, is the cabinetmaker, specializing in cabinets and movable furniture. There was one cabinetmaker in Jamaica during this time period, Abraham Oorshott. His tools would have been very similar to those of the carpenter and joiner; there is in fact little difference among the three. Woodworking was one of the few trades in which wares could not be imported. The men of this trade would have used indigenous wood, and the tools and hardware probably came from the blacksmith. This complete reliance on local tradesmen is verified by the abundant amount of woodworkers on the island during this time. However, for the sake of brevity only the inventories listing tools (Figures 24-31) were included here.

According to Moxon, the carpenter’s shop would include the following: (Sub-figures will be referred to throughout the description and correspond to the figures listed within Moxon’s illustration (Figure 32). They will be italicized to distinguish them from the main figures.)

Ax (A): The carpenter’s ax is heavily made for squaring and beveling timber.

Adz (B): The adz has a thin blade that is parallel to its handle and it is used to hew off irregularities of wood.
Vol. 2, Fol. 89
William Petty
St. Mary
March 14, 1684

Six broad (rest cut off), one Xez Txxx Squares One Plaine one Cold Chisell

Totaling £00 03 01 ½ out of £111 02 11.

Figure 24: William Petty Probate Inventory
(Port Royal Probate Inventories)

Vol. 2 Fol. 148
Thomas Finch
St. Mary
1685

42 small plaines, & 13 spare irons, five joyntors, & two squares, Two Jack plaines, & Smoothing plaine, One Rule & 7 augurs, Two broad axes & Twenty four chizells, three hand sawes, One Cross cutt sawe, nine Flemish Tooles, five hammers

Totaling £06 17 06 out of £55 10 00.

Figure 25: Thomas Finch Probate Inventory
(Port Royal Probate Inventories)
Vol. 6 Fol. 128
William Newman
St, Elizabeth
June 6, 1703

To 29 old plaine Irons, 7 Rabatting Irons, 10 old inch Augurs, 3 inch and halfe ditto, 13 quarter ditto, 7 pareing Chissells, 18 other Chissells, 15 small Mortising Chissells, 6 firmers, Plaines: 4 small smoothing plaines, 2 Jack plaines, 2 Large plaines, 1 spring ditto, 1 bemolding, 5 Cornishing plaines, 11 halfe round plaines, 15 other small plaines, 1 other plow & smoothing plaine, 27 Flemish Goudges, 16 small ditto, 2 handsaws, 1 fine Tennant saw, 1 Compafs saw, 1 bow saw, 2old brofseutt saws, 2 old broad axes, 2 adds, 1 old file, 3 plows, 1 small ditto, 3 hammers, 4 hollowers, 20 Rounds, 15 OGS, 23 rounds more, 2 old jointers, 1 joyneter Mow, 2 squares, 2 Woodens squares, 1 Gimblett 1 brafs route 1 old rule and 1 p.cel of Compafses

Totaling £16 12 6½ out of £179 12 7½.

Figure 26: William Newman Probate Inventory
(Port Royal Probate Inventories)

Vol. 9 Fol. 107
John Ellis
St. George
April 4, 1716

Three old adzes and broadax, one old auger and gimblett

Totaling £00 12 06 out of £32 03 09.

Figure 27: John Ellis Probate Inventory
(Port Royal Probate Inventories)
Vol. 9 Fol. 117
James Bradley
St. Anne
April 7, 1712

Forty and two old small plains, 5 ditto large and two broad axes, 4 adzes and 4 handsaws, 70 small chiefsels and plain irons, 20 old chifsells, 5 harars and 5 saws, 11 turning tools, 7 old squares sawsets, 2 cornish plains, and one grindstone

Totaling £12 00 03 ½ out of £24 10 7 ½.

Figure 28: James Bradley Probate Inventory
(Port Royal Probate Inventories)

Vol. 10 Fol. 15
Daniel Hriffin
Port Royal
December 22, 1712

432 foot of Mohognie board, 140 foot of plank, One Prefs, One dozen of wooden chaires, to one Toole chest, o a parcel of Joyners Tooles, To a small Parcell of old pieces of Boards

Totaling £33 15 00 out of £147 05 08.

Figure 29: Daniel Hriffin Probate Inventory
(Port Royal Probate Inventories)
Vol. 10 Fol. 48  
John King  
St. Iago de la Vega  
April 20, 1713

12 moulding plains, 2 long plains and 2 fore plains, 1 hoe, and 3 bitts, 6 plain irons, 3 plough Irons, An adds, A parcel of chisels, 2 augers, A saw, A Two foot Rule, A pair of Compasses Pincers and Hammer, A rub stone and an Iron square

Totaling £03 09 00 ½ out of £05 17 06.  
(The other belongings include a gun, a chest, and 2 old work benches.)

Figure 30: John King Probate Inventory  
(Port Royal Probate Inventories)

Vol. 10 Fol. 214  
John Shellet  
Vere  
April 6, 1716

To 48 Joyners plaines of Severall sorts att 18 X, to 1 Jack plaine, To 1 Cros cutt saw, 1 hand Saw, 1 Broad ax, 1 adze, 1 achitt, 2 augers. 1 hammer, 9 chisels, 1 Square, 1 Sett Saw and one Compos Saw all worne, To sundry Carpenters Tooles very much worne

Totaling £05 13 10 out of £32 13 10.

Figure 31: John Shellet Probate Inventory  
(Port Royal Probate Inventories)
Figure 32: Carpenter's Tools
(Moxon, 1703:118)
Chisels: Carpenters' chisels are the same as those of the joiners. The carpenter's chisels are socketed to receive a wooden handle. The Ripping Chisel (D) is more accurately a wedge as opposed to a chisel. It does not cut wood as a regular chisel does; instead, it tears or rips two pieces of wood fastened together.

DrawKnife (E): The drawknife is used to smooth out work and also to create rounded parts such as ladder rungs.

Hook Pins (F): The hook pin is used to pin the frame of a floor or roof during the framing process and is comprised of: the Pin (a), the Hook (b), and the Head (c).

Level (G) and Plumb-line (H): The level is not pictured in this illustration but ranges in length from two to ten feet and is used in conjunction with the plumb-line.

Others: Hammer (I), the Commander (K), a wooden mallet, and the Crow (L).

The carpenters’ inventories provide a list of the tools, some of which are those that Moxon provided, but also include several others. The complete listing of tools named as follows: squares; jointers; planes - moulding, smoothing, jack, cornishing, spring, small, large, and plow; chisels - pareing, mortising, firmer, cold; rule; auger – 10 inch, 3 ½ inch, and quarter; saws - hand, cross-cut, tenant, compass, bow, and brosseutt; hammers; irons - plain and rabbetting; gauges – flemish; broad axes; adzes; files; hatchet; turning tools; gimblett; brass rule; compasses; grind stone; and pincers.

Joiner

Moxon in his *Mechanik Exercises; or the Doctrine of Handy-Works* describes joinery as: *an Art-Manual, whereby several pieces of wood are so fitted and joined*
together by Straight-Line, Squares, Miters, or any Bevel, that they shall seem one entire piece. The tools of the joiner differ from those of the carpenter in the amount and variety of planes used, which were essential for the finishing process of the wood. Also, whereas the external structure, specialty of the carpenter, consisted of long boards fitted together to create a structure, the joiner was more concerned with fine details and delicate lines. Again, of the several inventories of joiners (Figures 33-39) only the ones listing tools are shown here.

According to Moxon, the joiner’s shop would include the following tools (Figure 40):

**Work-bench (A):** The *Hook* (b), to lay boards flat; the *Bench-Screw* (c), to screw the boards in while the edges are being planed; the *Hold-fast* (d), to keep work fast upon the bench while sawing or mortising; the *Mallett* (e).

**Planes (B):** there are several *planes* (b1) listed by Moxon that are not shown in the illustration: the *Fore Plain*, the *Tote*, the *Mouth*, the *Wedge*, the *Sole*, the *Fore-end*, and the *Britch*. The *Joynter* (b2) is used to shoot an edge that is to be joined. It is longer than and to be used after the *Fore Plain*. The *Strike-Block* (b3) is shorter than the *Joynter* and used for shooting a short joint and for framing and fitting the joints of miters and bevels. The *Smoothing Plane* (b4) is used to smooth out the irregularities caused by the *fore plain*. The *Rabbet-Plane* (b5) is used for rabbeting boards together. The *Plow* (b6) is a narrow rabbet plane with two additional staves, and is used to cut a narrow square groove into a board.
Vol. 1 Fol. 152
John Blackman
St. David
October 7, 1676

*One Xxx of Joyners toolbes*

Totaling £01 08 00 out of an unknown worth.

Figure 33: John Blackman Probate Inventory
(Port Royal Probate Inventories)

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Vol. 2 Fol. 119
Thomas Rousoe
St. David
September 8, 1685

*A Small parcel of Joyners toolbes*

Totaling £01 05 00 out of £177 11 03 ½.

Figure 34: Thomas Rousoe Probate Inventory
(Port Royal Probate Inventories)
Vol. 2 Fol. 195  
Lawerence Yates  
Port Royal  
June 14, 1685

A X working tooles, 5 worke Benches & a Lathe, 2 Slate Tables, 9 Stooles, 4 boxes, 1 Do. Halfe made, A x boarde, A X of tun'd worke

Totaling £15 07 06 out of £118 15 09.

Figure 35: Lawerence Yates Probate Inventory  
(Port Royal Probate Inventories)

Vol. 3 Fol. 221  
John Briggs  
Vere  
August 10, 1688

One parcel Plaines and Auguers, One Vize and a Cronse, One parcel Joyners Tooles, 7 Sawes, One parcel Punch Bowles and Morters, One Large punch Bowles, One parcel of Table frames and X Cases, Apx of stilliyards, A X parcel Timber, A Grindings Stone and Breaker

Totaling £11 10 00 out of £90 17 09.

Figure 36: John Biggs Probate Inventory  
(Port Royal Probate Inventories)
Vol. 3 Fol. 369
William Astropp
St. Catherine
October 22, 1690

To a Chest of Old Tooles

Totaling £05 00 00 out of £16 10 00.

Figure 37: William Astropp Probate Inventory
(Port Royal Probate Inventories)

Vol. 10 Fol. 112
John Davis
St. Mary
April 13, 1714

Sundry Joiners & Carpenters tools disposed of

Totaling £07 00 00 out of £332 02 06.

Figure 38: John Davis Probate Inventory
(Port Royal Probate Inventories)

Vol. 10 Fol. 159
Peter Beaumont
St. Catherine
May 3, 1715

Sundry parcels of Iron Ware, boards, Timber & working Tooles

Totaling £457 09 04 out of £8,384 00 7½.

Figure 39: Peter Beaumont Probate Inventory
(Port Royal Probate Inventories)
Figure 40: Joiners’s Tools
(Moxon, 1703:69)
Chisels (C): Former Chisels (c1, c3) are of several sizes and are used before the
Paring Chisel (c2), which has a very fine and smooth edge and is used to pare off any
irregularities made by the former chisel. The Skew Former (c4) is used only to clean
acute angles into which other chisels will not fit. The Mortise Chisel (c5) is a narrow
chisel but its blade is much thicker and stronger, and it is used to cut mortises. The
Gauge (c6) is a chisel with a round edge, used for cutting wood that is to be rounded or
hollowed.

Squares (D, E, & F): The square is made of two pieces of wood: the first about
1 inch thick, and the other about a quarter of an inch thick. It is made of the following
parts: the Handle (a), the Tongue (b), the Outer Square (c), and the Inner Square (d).
The Miter Square (E) is a square set at a 45-degree angle, while the Bevel (F) can be set
to strike any angle. The miter square is marked as E in Moxon’s illustration, but it is
clearly a mistake as E shows a knife.

Gauge (G): The Oval (b) is fitted stiff upon the Staff (c) so it can be set at any
distance from the Tooth (a), and is used to set a line parallel to any straight side.

Piercer (H): A piercer is used to pierce a starting hole into the wood and has the
following pieces: the Head (a), the Pad (b), the Stock (c), and the Bitt (d).

Gimblet (I): A gimblet is used in place of a piercer when a smaller size is
needed.

Auger (K): An Auger is used to make large holes and has a Handle (a) and a
Bitt (b).
Others: The other tools include the *Hatchet* (L), the *Hand Saw* (unmarked), the *Pit Saw* (M), the *Whip Saw* (N), the *Bow Saw* (O), and the *Whetting block* (P).

As with the coopers there are more groupings (i.e., "joiners tooles" and "working tools") of tools listed than not. However, there are a few individual tools named: lathe, saws, planes, augers, and a grinding stone. It is expected that the chisels, gauges, piercers, gimletts, hatchet, and squares were included in the groupings as they were vital to the trade, and joiners could not have worked without them.

**Maritime Trades**

The maritime tradesmen were of incredible importance in Jamaica. Ships sailing from Europe to the New World in the seventeenth century had few ports to choose from, and Port Royal was the most active. As such, it is not surprising to find these tradesmen, rather, it astonishes that there are not more of them. This, of course, can easily be answered. Shipwrights were not in high demand as there were no shipyards on the island and the existence of a few is sufficient enough. Shipwrights built ships and there was little demand for them as the shipyards of Europe were well-established.

As for ship’s carpenters, most ships carried their own. In the English Navy, for instance, the ship’s carpenter stayed with the ship “till he or she perished” (Mcdermott, 2000:14). However, carpenters did perish or become incapacitated, and sometimes there were just too many projects; in both cases having ship’s carpenters in port was advantageous. Ships at sea are constantly subjected to wear and tear caused by the
various stresses and strains of everyday sailing and are compounded after rough weather. The duties of a ship’s carpenter did not vary much from ship to ship; he was to maintain the vessel while at sea or at port. From the 1766 edition of the King’s Regulations and Admiralty Instruction of the Royal Navy comes a specific listing of the ship’s carpenter’s position. The most relevant are the first two articles, shown here:

Article I
The carpenter is to take upon himself the care and preservations of the ships hull, masts, yards, bulkheads, and cabins, &c. and to receive into his charge the sea-stores committed to him by indenture from the Surveyor of the Navy.

Article II
At Sea, he is to visit daily all the parts of the ship, and see if the parts are well secured, and decks and sides be well caulked, and whether any thing gives way; and if the pumps are in order; and from time to time inspect into the condition of the masts and yards, and to make a report of every thing to the captain (McDermott, 2000:28).

Documentary evidence indicates that most ships were supplied with tools; however, it is commonly believed that the ship’s carpenter would bring along a few favored tools (McDermott, 2000:79). The tools used by the shipwrights and ship’s carpenter would have been more similar than dissimilar to those of any woodworker as attested to in their inventories (Figures 41-50). The one notable tool is the caulking iron. It was crucial that the ship did not leak or take on water, and it was the caulking that provided a water-tight seal.

Wherry builders and sailmakers were also part of the Jamaican maritime tradesmen. Wherrys were small boats locally used for transportation of people and cargoes. There is little mention of them save for John Taylor’s account of Port Royal (refer to chapter one) in which he mentions a Wherry Bridge. It is assumed that the
tools of the wherry builders are the same as those of the shipwright and ship carpenters. The sailmaker designed and made sails and canvas covers and had a few specific tools: eye punches, irons, and needles (Horsley, 1978:158). He most likely would have been employed for repairing and replacing the sails of ships that came into Port Royal.

The tools of the maritime tradesmen are (Figure 51):

**Adzes:** Shipwright’s peg-poll adze, shipwright’s spike-poll adze, and the scarphing adze.

**Augers:** Gouge or quill bit, pod or lip bit, spoon or duck-bill, nose bit, shell bit, French bit.

**Awls:** Boatbuilder’s piercing awl.

**Axes:** Shipwright’s axe, Ship axe, Mast Axe, Blocking axe, Double-checked mast axe, Side axe, Pole axe.

**Caulking Irons:** Treenail iron, spike iron, sharp iron, caulking iron, bent iron, making iron, single crease iron, double irons, bent caulking iron, bent sharp iron, straight jerry iron, bent jerry iron, horse iron, raming iron, square raming iron, long-arm horsing iron.

**Chisels:** Boatbuilder’s chisel, shipwright’s or ship’s chisel, mortice chisel, hand chisel, ship’s slice or slick.

**Gimlet:** Ship gimlet.

**Gouge:** Boatbuilder’s gouge, wood-handled gouge, socketed slicing gouge, tanged slicing gouge.
Vol. 3 Fol. 235
Lawerence Grant (Shipwright)
Port Royal
February 14, 1689
£156 01 09

No tools listed

Figure 41: Lawerence Grant Probate Inventory
(Port Royal Probate Inventories)

Vol. 5 Fol. 97
Tadwin Dunscombe (Ship Carpenter)
Port Royal
January 28, 1700

Items to the said deceased’s Tooles

Totaling £00 10 00 out of £17 07 06.

Figure 42: Tadwin Dunscombe Probate Inventory
(Port Royal Probate Inventories)
Vol. 5 Fol. 125
Thomas Martin (Wherry Builder)
Vere
September 19, 1701

*Some Old Carpenters Tooles, 1 Wherry not finished*

Totaling £09 00 00 out of £162 13.

Figure 43: Thomas Martin Probate Inventory
(Port Royal Probate Inventories)

Vol. 5 Fol. 128
John Wade (Wherry Builder)
Kingston
September, 8 1701

*Half a Wherry*

Totaling £9 00 00 out of £14 02 06.

Figure 44: John Wade Probate Inventory
(Port Royal Probate Inventories)
Vol. 6 Fol. 142
Robert Abbotts (Ship Carpenter)
St. Elizabeth
April 3, 1702

To a parcel of Ship Carpenters tools one gun & one cartouch box

Totaling £03 15 00 out of £124 15 00.

Figure 45: Robert Abbotts Probate Inventory
(Port Royal Probate Inventories)

Vol. 6 Fol. 159
Benjamin Wilkinson (Wherry builder)
Kingston
August 22, 1705

A parcel of Carpenters old tooles, Three pl. Timber for Wherry Keels, A parcel of Waest boards and Lumber, Twenty five Cedar boards

Totaling £16 17 06 out of £275 06 09.

Figure 46: Benjamin Wilkinson Probate Inventory
(Port Royal Probate Inventories)
Vol. 9 Fol. 171
George Grandy (Wherry Builder)
Kingston
February 2, 1712

*Working tools, Wherry Timbers*

Totaling £03 00 00 out of £142 00 00.

Figure 47: George Grandy Probate Inventory
(Port Royal Probate Inventories)

Vol. 10 Fol. 58
John Lawerence (Shipwright)
St. Catherine
November 10, 1713

*One Wherry*

Totaling £10 00 00 out of £666 16 10.

Figure 48: John Lawerence Probate Inventory
(Port Royal Probate Inventories)
Vol. 10 Fol. 253
John David (Sailmaker)
Port Royal
September 12, 1715
£528 16 06

No tools listed

Figure 49: John David Probate Inventory
(Port Royal Probate Inventories)

Vol. 10 Fol. 259
Nathias Hanson (Sailmaker)
Kingston
November 2, 1716
£539 10 11

2 pairs of smoothing irons

Figure 50: Nathias Hanson Probate Inventory
(Port Royal Probate Inventories)
Figure 51: Tools of the Maritime Trades  
(After Horsley, 1978)
**Hammers**: Ship Carpenter's claw hammer, Sheathing hammer, Boatbuilder's hammer, Clench hammer.

**Maul**: Shipwright's or Ship maul, Pin mauls.

**Plane**: try plane, adjustable hollowing plane, spar & oar plane, thumb plane, jack plane, and keel & stem rabbet plane.

As can be seen, there are very few tools listed for the maritime tradesmen in the inventories. The answer is obvious for the ship carpenter: his tools were supplied with the ship. A similar view might be taken for the shipwright. It is most likely that all the tools are encompassed in the generic grouping of tools that is seen through most trades.

**Other**

**Cooper**

Coopers built barrels and in a maritime connection these barrels held the ships' supply of water, making them in high demand. This also extended to sugar produced locally on plantations and exported on ships. With the extreme rise of sugar plantations and the importance of the island as a producer, the cooperers were employed making hogsheads to hold rum, molasses, and wet muscavado sugar (Claypole, date unknown:211). The overall demand for these tradesmen cannot be overstated; however near the end of the seventeenth century slaves were being trained as cooperers (Claypole, date unknown:207). There are three basic types of cooperers: the wet cooper, the dry cooper, and the white cooper. The wet cooper made watertight containers for liquid products such as wine, beer, molasses, tar, or vinegar, and the dry cooper used fewer
extracting techniques to build barrels designed for shipping non-liquid items such as food stuffs, china, or hardware. The white cooper was the all-around maker of containers such as pails, tubs, butterchurns, and vats (Arbor, 1981:26). Presumably, wet coopers were more practical on the island given the before-stated need for water and sugar containers, both requiring watertight barrels.

There are several coopers listed in the inventories (Figures 52-64), most of which show tools as well as raw materials. One inventory that is not accounted for on the list of coopers, that of Captain John Phipps, has been added. Phipps was not a cooper by profession, yet his inventory indicates a cooper’s shop that is well-supplied. No cooper’s tools were listed in his inventory, and he may have owned the cooper’s shops as an investment (Thornton, 1992:67).

The tools used by the cooper are (Figure 65) (Arbor, 1981:27):

**Froes:** Used to cut the rough barrel stave from a block of wood.

**Froe Maul:** Used to drive the froe through the wood.

**Drawknives:** Used to trim and shape barrel staves and heads.

**Jointer:** A large upturned plane used to edge plane barrel stave, providing a close fit.

**Adze:** Used to even rough stave ends.

**Sun Plane:** A curved plane used to give a final smooth surface once the barrel is assembled.

**Howell:** A tool with a sharp blade embedded in a wooden stock used to cut the “howell channel” inside the barrel.
Vol. 3. Fol. 600
Capt. John Phipps
Port Royal
January 26, 1693/4

In the Yard & Coopers Shopp: 3 Tons & - of Logwood, 3 weather beaten Tables & 1 forme, ½ barrel ½ full of New England tarr, 3 old water casks, Some caske and a pcell of lumber, 2000 honed staves (Thornton, 1992:67).

-listed among household items: cooper's nails, some old iron.
In the seller & storehouse: extra barrel hoops and oakum.

Totaling £72 12 02 out of £2,357 01 02.

Figure 52: Capt. John Phipps Probate Inventory
(Port Royal Probate Inventories)

Vol. 1 Fol. 238
John Goodbrand
St. Iago de la Vega
March 1, 1679
To one Coopers Joynture with 3 or 4 Small Iron Tooles

Totaling £00 10 00 out of £09 10 00.

Figure 53: John Goodbrand Probate Inventory
(Port Royal Probate Inventories)
Vol. 2 Fol. 25
Walter White
Claredon
Aprill 11, 1684

In table board, In 82 hh readie made at 30 X Tunn, In 45 hundred of hoopes at 5 X m, In 6 hundred of Jointed Staves at 6:10 X m, 22 hundred of hewed heading at 9:10 X m, In all & Tooles belonging to & Coopers Trade

Totaling £1074 12 06 out of £1364 07 07.
(The hoopes worth £1022 10 00)

Figure 54: Walter White Probate Inventory
(Port Royal Probate Inventories)

Vol. 2 Fol. 150
William Haynes
Port Royal

5000 of New England hh staves, 5000 of Rxxxxd ditto, 1300 of hh heading, 12 bundles of Britt truss hoopes, 5 bundles of Small ditto, 600 of Pipe hoopes, 300 of hh hoopes, 200 of Barrell ditto, 3 Tunne of hh not finished, A parcel of old Coopers Tooles of all sorts, A parcel of old Casks

Totaling £249 12 03 out of £1028 08 3 ½
(New England staves worth 200 pounds)

Figure 55: William Haynes Probate Inventory
(Port Royal Probate Inventories)
Vol. 3. Fol. 309
Nathaniel Mason
January 6, 1689/90

One hundred twenty seaven pound of old pewter and, Brass at 9d p pound,
Nineteen Sugar hhds unhooopt, Eight Malassas hhds, Eleaven ___ cask three
unhooopt, 1500 hhds staves, 2000 heading howed (?) [hewed ?], 500 hoops, A
parcell of short refuge staves & pieces

Totaling £46 10 03 out of £191 02 09.

Figure 56: Nathaniel Mason Probate Inventory
(Port Royal Probate Inventories)

Vol. 3. Fol. 329-330
William Neal
January 24, 1689/90

A Kettle & Iron Crock, A prcII of old pewter, Lead and Brass weights, Seaven
water casks unfinished, foure Iron halfe hundreds, Twenty six Runletts at 2s6d
p, An old iron beame & Scales & a brass paire of schales with a beame, foure
old rum cask, a bound wooden funnel, Two water casks & three old tubs,
fourteen ounces and ¼ of plate at 5s, Coopers tooles very olde

Totaling £25 07 00 out of £707 07 09.

Figure 57: William Neal Probate Inventory
(Port Royal Probate Inventories)
Vol. 3. Fol. 380
Adam Weenan/Woosnom
October 11, 1690

£139 04 00¾

1 Tunn old sugar hogsheads, 2000 of hogshead 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 pcoll of Coopers tooles, a pcoll of
truss hoops, a pr of old styliards

(This inventory does not list specific monetary values, only a final estate total.
However, it can be assumed that as coopering items comprise nearly a quarter
of the listed items, and given the high values placed on coopering raw materials,
they account for a significant portion of the estate.)

Figure 58: Adam Weenan/Woosnom Probate Inventory
(Port Royal Probate Inventories)

Vol. 3. Fol. 413
Thomas Gunn
1692/3

1900 iron hoops, 9300 wood hoops, 13000 staves

Totaling £121 10 00 out of £353 12 00.

(Thomas Gunn perished in the earthquake and seems to have lost everything as
only some bulk wares and two slaves are listed in his inventory.)

Figure 59: Thomas Gunn Probate Inventory
(Port Royal Probate Inventories)
Vol. 3 Fol. 490
George Johns
St. Andrew
May 29, 1693

260 peeres of heding, 1085 staves, 2 Curry Combs 2 Smoothing Irons Choping Knife, A X of old Coopers Tool, To a X of old Iron hoops, To a X of ½ inch board, To a X of Wooden hoops, 5 horn combs 15 Chock Lines

Totaling £12 04 12 out of £98 03 07.

Figure 60: George Johns Probate Inventory
(Port Royal Probate Inventories)

Vol. 3 Fol. 610
Adam Weenan
Port Royal
11 Sept. 1698

£139 04 00¼

1 Tunn old sugar hogsheads, 2000 of hogsheads staves, 30 small caskes, 4 garcias 3 iron bound punchoons, a prroll new England hoopes, old water casks and a prroll of Lumber in the yard, a pcoll of Coopers tooles, a pcoll of truss hoops.

(This inventory is likely identical to the Adam Weenan/Woosnom inventory listed above. It was listed twice in the probate records under these numbers for unknown reasons.)

Figure 61: Adam Weenan Probate Inventory
(Port Royal Probate Inventories)
Vol. 9 Fol. 39
Henry Cordroy
March 22, 1711

A 1000 of new England Staves, 4000 of heading, A parcel of worene Coopers Tools, 23 bundles of hh hoopes is 1000 and 3 bundles, 20 new hh sxd the Stuf and Labour onely sallard, A parcel of Iron Hopps, 10 new hh, A parcel of old Lumber int eh Coopers ship and yard, 7 new Cafs sold for, A Parcell of Coopers nails, 13 new Irone bxxxxrd puncheons, 7 mallafses Puncheons about halfe done

Totaling £87 08 05 out of £473 02 14.

Figure 62: Henry Cordroy Probate Inventory
(Port Royal Probate Inventories)

Vol. 10 Fol. 197
James Kyle
Kingston
January 24, 1715

A parcel of old Casques

Totaling £01 05 00 out of £159 13 09.

Figure 63: James Kyle Probate Inventory
(Port Royal Probate Inventories)
Vol. 10 Fol. 265
John Harris
Kingston
October 12, 1716

To a Parcell of Coopers ware

Totaling £05 00 00 out of £36 15 06.

Figure 64: John Harris Probate Inventory
(Port Royal Probate Inventories)
Figure 65: Cooper’s Tools
(Diderot, 1978:2466)
Croze: Used to cut a narrow groove in the “howell channel” into which the barrelhead is forced for a watertight seal.

Scorper: A sharp and rounded blade used to shave the inside of the barrel smooth.

Heading Swift: A shave used on the barrelhead before it is inserted in the barrel.

Bung Auger: a boring tool used to drill the “bung hole” which was used for filling, draining, and inspecting the liquid contents of the barrel.

When looking at the tools listed within the cooper inventories, one would expect to find some tools individually listed and named, or some general tools such as axes, hammers, chisels, etc., but this was not to be the case. The following is a list of references to cooper’s tools found in the inventories: “Small iron tooles,” “tools belonging to & Coopers trade,” “A parcel of old Coopers tooles of all sorts,” “Coopers tooles very old,” “a pcoll of Coopers tooles,” “a xxx of old Coopers Tool,” “2 smoothing irons,” and a “A chock line”. It is obvious that raw materials, worth significantly more, took far more precedence over the cooper’s tools, and it is assumed that these groupings encompass the full set of tools used by the cooper.

Cordwainers

Cordwainers are the makers of shoes. A distinction needs to be made between cordwainers and cobblers. Cordwainers work only with new leather, while cobblers repair old leather. Both existed in Jamaica and most likely used similar tools although,
the relationship between the two is similar to that of the merchant and peddler. The cobbler would have gone door-to-door peddling his services, while the cordwainer is the tradesmen in the traditional sense of the word. A considerably amount of shoes were exported from Europe, as can be seen in the shipping records. However, it was beneficial to the customer to have the shoes made locally, as a permanent wooden mold was made and future shoes fashioned from it.

When looking at the cordwainer inventories (Figures 66-69) it is apparent that raw materials, worth significantly more, took far more precedence over the tools. No tools are listed within the inventories, however, this does not indicate their absence from the workshop.

The tools used by the cordwainer are (Figure 70) (Arbor, 1981:77):

**Shoe Last:** Hand-carved wooden model upon which the shoe was manufactured.

**Drawknives:** Sharp-bladed tool used to carve the last from wood.

**Knife:** Used to cut leather.

**Awl:** Used to punch holes in the leather.

**Lasting Pincers:** Curved Pliers.

**Hammer:** Used to pound the leather making it supple.
Vol. 3, Fol. 610
John Willmot, Port Royal Cordswainer
Entered March 29, 1694

£1,139 00 00

37 hoggs young & old, a pcoll of leather, a parcell of cotton in store, 31 £ of Indico, a pcoll of working tooles

Figure 66: John Willmot Probate Inventory
(Port Royal Probate Inventories)

Vol. 10 Folio 240
John Worthenton
Port Royal
11, July 1716

A parcel of ___, 2 doz Calfe Skins, 7 seats to work on, halfe a doz of small skins, A parcell of pieces of leather, 2 doz of hels, for a Whit Servant Man, One pairs of hoggs shears

Totaling £27 19 00 out of £136 15 00.

Figure 67: John Worthenton Probate Inventory
(Port Royal Probate Inventories)
Vol. 2 Folio 115-116
John Gannell
Port Royal

*Gold and Silver Buckles, 3 hides of Sole Leather, 3 Skins*

Totaling £5 04 00 out of £364 07 01 5.

Figure 68: John Gannell Probate Inventory
(Port Royal Probate Inventories)

Vol. 2 Folio 128-129
Henry Bignall
Port Royal

*In Goode use 8½ dozen Calve Skinns, 4 doz Turkey Skinns, 3 doz. Houghs ditto, 2 Noete Leather hides soaps, 3 doz. 4 paire Spurrs, 9 ¼ of thread, One halfe doz. Turkey Skinns, 16 paire of Shoes, 3 paire of boots and one paire boot tongue, Some pieces of Sole Leather*

Totaling £152 17 06 out of £374 08 05.

Figure 69: Henry Bignall Probate Inventory
(Port Royal Probate Inventories)
Figure 70: Cordwainer's Tools
(From Diderot, pg. 632.)
Tailor

Tailors would have been constantly employed in Jamaica. Nearly all of the cloth items and clothing were custom-made by the local tailor or someone within the household, with the exception of accessory items such as gloves, hats, and stockings (Thornton, 1992:123). In the seventeenth century the tailor made his own patterns, and the cloth, linings, buttons, and trimmings were supplied by the customer and usually cost more than the tailor’s fee (Thornton, 1992:123). The inventories of the tailors in Jamaica list fabrics of several types, suggesting that a customer could buy directly from the tailor or pay a fee for the entire item of clothing. However, it must be noted that most are remnants or of small quantity, and could be leftover materials. The merchants would have been the main suppliers of fabric, and the business was profitable enough that some dealt solely in textiles. In addition to the merchants, there were also pedlars, hawkers, and street vendors who sold small items such as pins and ribbons, and even second-hand clothing (Thornton, 1992:125).

The economic rise of the island created a new class, and with that came the growing desire for fashionable items. This class of “nouveaux riche” wanted to emulate the aristocracy of Europe, and clothing was one of the status symbols used in that quest. A visitor to Port Royal in 1687, Francis Crow, observed, “a cooper’s wife shall go forth in the best flowered silks and richest silver and gold lace that England can afford” (Thornton, 1992 128). By the end of the seventeenth century ready-made clothing became popular in England. However, this new trend took longer to travel to
Vol. 3. Fol. 312
William Jaymes, Port Royal Tailor
Entered January 24, 1689/90

A parcoll of Collerd threads, 4 1/3 of stockng & sewing silk, a remnant of burkum, a looking glass, a scarlett Searge Coat, 1 remnant of Searge, 1 ps of white calicoe, 1 ps of yallow ditto, 1 remnt of oringe colrd do, 3 yards of searge, A remnt of browne ozenbriggs, A yard of blew sattin breeshes, 1 Beaver hatt, A remnt of black Perpetuary,
A remnt of blew paragon, A remnt of stuffe, A remnt of do, a remnt of do, a remnt of gold colr, a rement of blew perpetuary, a rement of black calico, a rement of ozenbriggs, a remnt of fushan, a remnt of sad collrd searge, a bundle of remnant stuff & silk, 1 greate coate, a pr of old _____ breeches with belt, a pr of old black breeches, a coat lined with black, A Bundle of remnts & stuffes, small pcoll of silver thread loop la_____ &c, 9 Remnts of Ferretts, old wooden ware & 2 old smoothing irons

Totaling £09 17 15 out of £30 06 08 ½.

Figure 71: William Jaymes Probate Inventory
(Port Royal Probate Inventories)

Vol. 10 Fol. 106
Francis Codrington
Kingston
July 12, 1714

16 yards of French canvas, 18 yards of silk, 4 ½ yards, of silk __, 1 pr of __, 4 yd Coll Linnen, 12 yards Persian, 3 yd Catickes + 3 yd brown Persian, 4 yd ¾ of Persian, A broadcloth jacket + breeches unfinished, a pr coarse buys of which rotten, a parcel of thread + a pair of shoes, a parcel of silver + gold buttons, 55 doz coat + brass buttons, a goose a pair of sheers a thimble a remnant of buttons

Totaling £20 10 06 out of £206 19 03.

Figure 72: Francis Codrington Probate Inventory
(Port Royal Probate Inventories)
Figure 73: Tailor's Tools
(From Diderot, pg. 2192.)
Jamaica as is evident from the inventories of the merchants, as they carried only items such as: hose, gloves, socks, purses, handkerchiefs, belts, coats, hats, and shoes (Thornton, 1992:129). This could be due to the wealth of the colony and lavish behavior that has been shown in other areas as well.

The inventories of the tailors (Figures 71 and 72) list several types and quantities of fabric along with some specialty items such as gold buttons. There are few tools listed (Figure 73): shears, thimble, and smoothing irons. This is not unusual, however, as there would have been few tools used by the tailor as compared to other tradesmen. The only tool missing is needles.

Tanner

Tanning is the working of skins and hides of oxen, cows, and other animals into leather; doing this prevents their destruction by putrefaction (Arbor, 1981:88). There are steps that have to be taken prior to the actual tanning: curing the hides, cleaning the skins, removing the hair, cleaning and removing the fleshy side, and washing thoroughly. The tanning methods most likely used in Port Royal were those of vegetable tanning, in which the tannic acid is leached out of barks, leaves, and wood; mineral tanning, which uses aluminum salts; and oil tanning, which is the application of fish oils (Coke, 2001:8). Through the tanning process the hide undergoes chemical changes that render it imputrescible and water-resistant while preserving the fibrous structure, which provides strength and flexibility (Coke, 2001:8). The final step of washing and drying the hide finishes the tanning process. The most common tanning
practice used in Jamaica appears to be vegetable tanning with mangrove and olive tree bark, as both are listed in John Waller’s inventory (Figure 74). None of the other inventories (Figures 75-77) list hides by tanning method, and it is probable that mineral and oil methods were used as well. Without more comparative data, though, the information points to vegetable tanning. The tanners had access to local supply of hides that most likely came through the butcher, with the finished products going mostly to the cordswainer.

Tools of the tanner include (Figure 78) (Arbor, 1981:89):

**Bark Spud:** Used to remove split wood in slabs, which were dried and used in the tanning solution.

**Deharing Knife:** Used to remove hair and excess flesh from the hide

**Carving Knife:** Used to equalize the thickness of the leather.

**Marking Tools:** A wheeled tool used to mark stitching points in a line.

**Cutting tools:** Used to cut and thin leather to shape and size before sewing together.

**Punches:** Used to punch holes and for making ornamental designs.

**Sewing Tools:** Used to make holes for sewing and to sew the edges and pieces of leather together.

**Clamp:** Also referred to as a pair of clams. Held between the knees to hold two pieces of leather together firmly while being sewn.

**Mallet:** Used for pounding.
Vol. 1. Fol. 43-44
John Waller, Port Royal Tanner
June 9, 1675

One box of shoemakers thred Cont: about 20 (?), ffoure & twenty pr of french fall shoes nine pr plain shoes & 2 pr slippers, Seaven Calve skins, Three yearling skins, one Olive leather hide, Nine green sole leather hides fower dry sole leather hides three hides of mangrove upper leather, Thirty five mangrove hides, ffour Olive leather hides, Seaventy goat & sheep skins, One old Connoa, ffour old tan fattis, Severall old lyme Tubbs, Two ram Goates nineteen Ewe Goates & Six Kids.

Totaling £30 17 00 out of £157 16 10.

Figure 74: John Waller Probate Inventory
(Port Royal Probate Inventories)

Vol. 3. Fol. 66-69
Josia Warner, Port Royal
Signed/Sealed April 6, 1688

115 Hides sole leather at 12s p Hide, 18 & ½ dama Ditto at 4s p Hide, 127 sheep skins at 2s6p, 19 uper leather hides at 10s p Hide, 24 goats and kids, 1 scorr of hides att L12, 29 sheep skins at 4d p ps, 31 calves skins at 3 l, 56 sides upper leather at 4s p, 9 sides sole leather at 4s p, 22 calve skins at 2s p, Tann House and lease, 6 calve skins, Debts on the Taning Trade good & bad

Totaling £511 16 01 out of £2,637 00 00.

(The tann house and lease and the debts owed equal 390 pounds.)

Figure 75: Josia Warner Probate Inventory
(Port Royal Probate Inventories)
Vol. 3. Fol. 488
Thomas Buckley, Port Royal
Entered November 22, 1693

A pcell of shoemakers thred & tooles, A prol small tacks, 33 sheep skins, 6 calve skins,
36 ½ hides of tand leather, 6 doz of beefe and 7 Last, 100 sheep skins, 12 sheep skins, 3 old bunchines for Tanning, Work done to ten hides and 2 calve skins for Daniell Williams, 10 hides nott tand, 40 hides fitt to Draw of at 8 9 p, 8 ½ hides fitt to draw of ditto, working &c of tenn hides 2 calve skins of Thom. Stout, worke done to thirty hides at 2 6 p p, 4 hides of THo. Buchley, 26 hides wrought in at 2 6 p, Carving Knife

Totaling £88 09 11 out of £171 19 10

Figure 76: Thomas Buckley Probate Inventory
(Port Royal Probate Inventories)

Vol. 1. Fol. 190
Thomas Piper, Port Royal
Entered November 20, 1677

15 hides newly in ye fat & 19½ hides tand is 34½ hides at 11s. pr, 49 sheeps skins at 12d. pr, 4 calves skins & goates skin at, Leather of other peoples in ye tan fatts 77½ hides newly into, ye fats at 2s. pr, 46 hides tand & almost tand a 6s. pr, A pcell of refuge leather of J. Wilmott in ye fats being abo.; 18 hides & pc at 2s. pr, A pcell of tan fatts at

Totaling £48 05 06 out of £540 06 00.

Figure 77: Thomas Piper Probate Inventory
(Port Royal Probate Inventories)
Figure 78: Tanner’s Tools
(Diderot, 1978:2215.)
John Waller and Thomas Buckley both list shoemaker tools in, which could indicate that they had small cordwaining practices as a side business. The only other tool listed is a carving knife. It is speculated as to whether the tools were simply not considered as important as the hides, which were significantly higher in value (as is suspected), or that the tanners were minimalist in their tools.
CHAPTER IV

CATALOG OF HAND TOOLS

The iron hand tools presented in this catalog come from the 1987, 1989, and 1990 field excavations of Port Royal by the Institute of Nautical Archaeology and the Nautical Archaeology Program under Dr. Donny L. Hamilton. In 1992, a study by Ms. Marianne Franklin was done on the tools conserved to date. The work constituted her master’s thesis and is quite extensive. This thesis is a continuation of that catalog. The format will intentionally be similar to provide consistency in the cataloging of this single artifact collection. The tools will be systematically described and analyzed while exploring the historical and social contexts influencing the use and production of iron hand tools in 17th-century Port Royal. The examination of tools, crafts, and craftsmen in the New World as evident in contemporary documents is a central theme to this study.

Ms. Franklin’s master’s thesis covered all the iron hand tools prior to and including the 1987 field season and a list of which can be viewed in Table 2. The overlap in years is due to the conservation process and the order in which artifacts are treated, hence the inclusion of some 1987 artifacts in this catalog. This endeavor deals solely with artifacts that could be located either in the Conservation Research Laboratory at Texas A&M University, or could be reproduced from the conservation reports housed in the same location. Tools that did not meet those two criteria were not included at this time.
TABLE 2
Tools listed in Franklin's thesis.

<table>
<thead>
<tr>
<th>Category</th>
<th>Quantity</th>
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<td><strong>Adzes</strong></td>
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<tr>
<td>Head</td>
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<tr>
<td>Head and Handle</td>
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<td><strong>Augers</strong></td>
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<tr>
<td>Shipwright's</td>
<td>2</td>
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<tr>
<td>Gouge Spoon Bit</td>
<td>1</td>
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<td><strong>Axes</strong></td>
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<td>Broad</td>
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<tr>
<td>Lathing Hatchet</td>
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The artifacts are listed alphabetically by type and then sequentially, first by year and then by lot number. In some cases a subdivision of types will be added to a category. Every artifact is given the site designation of Port Royal, which is reflected by the abbreviation PR (Donny Hamilton, 2003, pers.comm.). This is followed by the year (87, 89, or 90) and then the excavation lot number; for example, 500. Layer specification, (layer 1, 2, or 3) is listed next at the end of the lot number for the first two layers; for example, 501 or 502. Layer 3 artifacts signify the 5 ft.-square quadrant of the grid in which they were found (503, 504, 505, etc.), and are sometimes measured into a smaller 2.5 ft.-square of each quadrant, which is reflected with a hyphen; for example, 503-1. The layers function as a time indicator: layer 1 corresponds to nineteenth and twentieth century discards primarily from the local population and the nearby naval hospital, layer 2 is the intermediate zone, and the start of layer 3 is the 1692 occupational level, which explains the triangulation of artifacts within this zone. The provenience of each artifact and the association of other items will be noted in the description of each tool wherever possible or applicable. Artifacts without a provenience are indicated by the abbreviation of NP at the end of the number sequence.

AUGER

Augers are the simplest boring tools and range in size from large shipwrights’ augers to tiny gimlets used to make pilot holes for nails (Hack, 1999:142). An auger’s function can usually be identified by its size, and the size and shape of its cutting bit
(Franklin, 1992:35). Boring, a seemingly simple task, can be rather complicated. Augers are not fast cutters and were considered difficult and frustrating to use. Nonetheless, they were powerful enough for carpenters, shipwrights, and wheelwrights to drill relatively massive holes, because they use the weight of the human body and the strength of both arms (Bealer, 1980:125).

A small hole can easily be accomplished with something as diminutive as a blunt nail. Drilling larger holes, however, requires more power to remove a greater volume of wood. The problem was designing an auger bit that could cut accurately, quickly, and effectively. The ability to drill straight, smooth, and consistent holes is today taken for granted, but for centuries simply devising the bits that could do this was a challenge (Hack, 1999:10). Fortunately, creating turning power was never problematic for boring tools and was easily facilitated by attaching a wooden T-handle to the auger bit. Tangentially, sophisticated bow drills, which utilize a string tied to each end and wrapped around the bit to enhance the drilling motion, have been used since antiquity.

**Spoon Bit Auger**

**PR 90 8610.5 B**

This artifact (Figure 79) was identified as a spoon bit auger, due to its rounded end and high sides that create a deep gauge. The auger is an epoxy replica made from the original iron artifact and is 15.5 cm from the end of the bit to the start of the hilt, and has a maximum width of 3.8 cm. The walls of the bit are roughly 1 cm in height,
and the handle is 4.3 cm long and 1.8 cm wide. It is a fairly large and robust auger most likely used in carpentry work.

Figure 79: PR 90 8610.5 B

Provenience: The auger was found near building 4 concreted with a knife PR 8610.5A. The remainder of the handle was in a broken-off part of the encrustation, but was damaged during the conservation process and subsequently discarded.

AWL

Awls are sharp metal points typically used for creating holes in wood, leather, and other soft materials. They penetrate by squeezing the material apart rather than by a drilling action, common to augers and gimlets (Salaman, 1977:44). They are
generally small and thin, with a handle suitably contoured for a hand to grasp. The brad awl is the most common awl and is used by carpenters for making pilot holes in wood for brads or broad-headed nails (Bealer, 1980:123).

**Brad Awl**

**PR 90 756 – 5**

The awl (Figure 80) is an epoxy replica made from the original iron artifact is an. It is 8.5 cm long including the handle, and the blade is 0.5 cm wide.

![Diagram of PR 90 756 - 5](image)

Figure 80: PR 90 756 – 5

**Provenience:** The awl was found in Yard 4a of Building 4 near the bow of the ship.
AXES

The ax developed in the Stone Age second only to the hammer and was made by chipping a cutting edge onto a rough stone. It was later improved by lashing it to a split wooden or antler handle (Hack, 1999:62). For an ax to work properly the head must be heavy; however, the weight stresses the connection with the handle (Hack, 1999:62). Over time this problem was dealt with in different ways. In the Bronze Age the head was cast with an open end perpendicular rather than parallel, as is common today, to the blade edge, creating an L-shaped tool. This design strengthened the connection, but the overall durability depended upon the handle, causing additional issues (Hack, 1999:62).

It was in the Iron Age that a recognizable form of the modern ax emerged. It was forged with sockets and strengthened with strips of iron onto the handle. At first, it copied copying the Bronze Ages axes, but by the Roman period the head had taken its modern appearance, and in the seventeenth century reinforcement steel bits began to be added (Salaman, 1977:47). Specialized axes for different trades, including cooper’s and shipwrights’ axes, as well as felling and broad side axes, developed during the Middle Ages (Salaman, 1977:47). However, specialization did not preclude the ax from being and remaining a general-purpose tool. It is considered the most basic woodworking tool and performs several functions, from splitting wood to sizing and joinery (Hack, 1999:63).
Broad Axes

PR 90 8810 – 14.2

This artifact (Figure 81) is identified as broad ax head and is the original iron. It is 17 cm long and 8.2 cm wide, given its relative width and similarity to ones in the Franklin thesis (NS2 A4a.1 pg. 48). In comparison, the preserved dimensions of this artifact are as follows: length of 14.7 cm, width of 8.3 cm, and thickness of 3.2 cm at the juncture of the handle, tapering towards the end of the blade. The end of the ax is deteriorated to a point that precludes the addition of section drawings.

![Image of Broad Ax](image)

**Figure 81: PR 90 8810 – 14.2**

**Provenience:** The ax was found in Yard 7 just outside of the walls of Hearth 7 in association with ax PR 90 8810-15, bar shot, and a small piece of glass.
PR 90 947-15

This artifact (Figure 82) is the head of a broad ax, which was determined from its general size and its resemblance in shape to others in the Port Royal collection (FR-20, Franklin thesis pg. 46) and is the original iron. It is 19.5 cm long, 11.4 cm wide at the blade, and 4.3 cm wide at the handle joint.

Figure 82: PR 90 947-15

Provenience: The ax was found just below a metate in Yard 5 near the entrance of Room 3 of Building 5.
Felling Axes

PR 89 897 – 10.7

This artifact (Figure 83) is identified as a felling ax head, given its relatively long and narrow blade and is the original iron. It has an overall length of 20.4 cm. The length of the blade from the eye to the end is 12.4 cm with an average blade thickness of 1.5 cm. The eye has a length of 7.7 cm and a width of 3.6 cm and is not complete, but missing the connection to the blade on one side.

Figure 83: PR 89 897 – 10.7

Provenience: The ax was found in Yard 4a of Building 4 near the walls of Hearths 5 of Building 5.
PR 90 948 – 10

This artifact (Figure 84) is identified as a side-mounted felling ax head, given its relatively long and narrow blade and is the original iron. It has an overall length of 20.8 cm. The length of the blade from the eye to the end is 15.6 cm, and the blade thickness tapers from 2.1 cm to 1 cm. Only a portion of the eye remains and has an estimated width of 2.5 cm and a length of 6.1 cm.

Figure 84: PR 90 948 – 10

Provenience: The ax was found in Yard 5 of Building 5.

PR 90 8810-15

There were only two small non-diagnostic iron pieces (the poll and part of the head) remaining of this ax head (Figure 85), and as such it is difficult to determine what
type of ax this tool would have been. A possible explanation for this is that early hand
tools were wrought in pieces, and this may be the cause of the fragmentary nature of the
artifact (Miller, 1980). An additional possibility is that it may have been fashioned as a
half poll and head, an example of which can be found in Blandford’s *Old Farm Tools
and Machinery*. The size of the artifact, however, can provide clues to its purpose. It is
small enough to discount its being a felling or broad ax and was most likely utilized in a
domestic setting for light work, such as cutting kindling or making shingles.

![Figure 85: PR 90 8810-15](image)

**Provenience:** The ax was found in Yard 7 just outside of the walls of Hearth 7 in
association with ax PR 90 8810-14.2, pewter (8810-8), a lead sheet (8810-9), a bone
fragment (8810-10), and a pipe stem (8810-11).
CAULKING IRONS

Caulking tools were used onboard ships to force hemp oakum into the wooden planking and decking seams, making them watertight (Franklin, 1992:68). Caulking irons closely resemble chisels, but with a more flared handle and blades, and their purpose was solely to drive the material into the seams by means of a mallet (Salaman, 1977:116). They have been in their present form since the medieval period and come in many varieties, depending upon wood type and thickness (Salaman, 1977:118).

Shipwright’s Caulking Irons

PR 89 612 NP 1A

This artifact (Figure 86) is determined to be a caulking iron based on the flared head and blade and is the original iron. It has an overall length of 18.2 cm, a head diameter of 2.9 cm, a blade width of 3.8 cm, and a blade thickness of 0.3 cm.
Provenience: This artifact has no provenience.

PR 90 928 – 13

This artifact (Figure 87) is identified as a caulking iron based upon its broad flared blade and solid metal manufacture and is the original iron. It has an overall length of 16 cm and is 3.6 cm at its widest. The handle has an average width of 1.5 cm, and the diameter of the head is 2.4 cm.
Provenience: The caulking iron was found in Yard 6 just behind Building 5.

PR 90 897 – 9.52

This artifact (Figure 88) is most likely a caulking iron due to its mushroomed head and association with two other caulking irons. The blade has deteriorated to a point of not being diagnostic. This is one of the more ambiguous tools and could possibly be a chisel. It has an overall length of 14.7 cm and a maximum blade width of 3 cm and is the original iron. The head is 28 cm in diameter.
Figure 88: PR 90 897 – 9.52

**Provenience:** The caulking iron was found in Yard 4a of Building 4 directly outside of the walls of Hearth 7 in association with caulking irons 897-9.56 and 897-9.62.

**PR 90 897 – 9.56**

This artifact (Figure 89) is a caulking iron, determined by its flared blade. It has an overall length of 17.9 cm, and the blade width tapers from 4.5 cm at the distal end to 1.8 cm at the handle connection and is the original iron. The average width of the handle is 1 cm, and the head has a diameter of 2 cm.
Provenience: The caulking iron was found in Yard 4a of Building 4 directly outside of the walls of Hearth 7 in association with caulking irons 897-9.52 and 897-9.62.

PR 90 897 – 9.62

This artifact (Figure 90) is a caulking iron, given its mushroom-shaped rounded blade edge. It has an overall length of 14.8 cm and a head diameter of 2.9 cm and is the original iron. The width tapers from 3.5 cm at the end of the blade to an average of 2 cm at the handle.
Provenience: The caulking iron was found in Yard 4a of Building 4 directly outside of the walls of Hearth 7 in association with caulking irons 897-9.52 and 897-9.56.

CHISELS

A chisel is an all-purpose cutting tool, basically a rectangular steel blade sharpened to beveled edges and connected to a handle (Hack, 1999:8). It is primarily a carving tool used for chopping mortises and tenons, cutting recesses for hinges, and woodworking joinery, but can also be used for creating moldings, cooper joints, or small details (Hack, 1999:80). The rudimentary form of a chisel can be seen in most tools. A plane is a sophisticated chisel design, an auger is a chisel turning around a
center point, the teeth of a saw is a series of chisel edges, and axes and adzes are chisels attached to long handles.

There are several characteristics that determine the function of the chisel: size, shape, angle of bevel and blade, and handle type. Many different craftsmen including carpenters, cabinetmakers, joiners, shipwrights, turners, and wheelwrights used chisels, and looking at the defining characteristics of the chisel aids in determining in which craft it was used (Franklin, 1992:75).

There are three basic types of woodworking chisels: firmer, mortise, and paring. Firmer or forming chisels have long blades, a beveled or flat-top face, and a thick enough cross section to withstand blows from a mallet by which they cut into the wood (Bealer, 1980:88). Mortise chisels, being the most robust, are more stout and deeper in cross section than their width. The thick cross section is to compensate for the heavy work of cutting mortises. In contrast, the paring chisels are the longest and lightest, and the hand alone pushes them (Hack, 1999:80). They have sharp knife-like edges and were used primarily as a finishing tool to smooth over a rough cut made by the forming chisel (Bealer, 1980:88).

A strong connection between the chisel blade and handle is imperative to the overall strength and quality of the chisel. The simplest connection is a blade forged with a tapering tang that is driven into a wooden handle; a brass or steel ferrule around it prevents splintering. This is almost always found on the paring chisel, as it does not need as much reinforcing strength (Hack, 1999:82). However, some chisels, including
the forming and mortise chisels, have a forged conical socket into which the handles are inserted (Bealer, 1976:88).

Cold Chisel

PR 90 867 – 90

This artifact (Figure 91) is what would today be called a cold chisel, intended for cutting metal or stone. At Port Royal it was probably used as a general-purpose chisel. It does not appear to have had a handle. It is 21 cm long, and the shaft has a diameter of 1.7 cm. This artifact was discarded during the conservation process. Sectional views cannot be provided, as there are no physical remains of this artifact and only one drawing.

Figure 91: PR 90 867 – 90
**Provenience:** The chisel was found in Yard 4A of Building 4 in associations with a pipe bowl PR 90 869-90.1.

**Gauge Chisels**

**PR 90 889 - 17.10**

This artifact (Figure 92) most resembles a gauge chisel, which was used to cut wood intended to be round or hollow. It is 16 cm in length, 2 cm in diameter at the cutting end, and 0.7 cm in diameter at the handle end. However, the degradation of the artifact was fairly severe, resulting in a relatively ambiguous shape. This artifact was discarded during the conservation process. Sectional views cannot be provided, as there are no physical remains of this artifact and only one drawing.

![Diagram of PR 90 889 - 17.10](image)

Figure 92: PR 90 889 - 17.10
Provenience: The chisel was found in Yard 7 near the walls of Hearth 7 behind Building 5.

**PR 90 897 – 9.41**

This artifact (Figure 93) has been identified as a gauge chisel; it is 18.5 cm long. No additional information is available for this artifact. This artifact was discarded during the conservation process. Sectional views cannot be provided, as there are no physical remains of this artifact and only one drawing.

![Figure 93: PR 90 897 – 9.41](image)

Provenience: The chisel was found in Yard 7 near the walls of Hearth 7 behind Building 5.
Forming Chisels

PR 89 737 – 12

This chisel (Figure 94) has been identified as a large forming chisel with beveled edges and a hollow and six-sided handle. It is 17 cm long and 5.69 cm wide at the blade and is the original iron. The end of the handle is flared, but this is most likely from overuse, and not an indicator of a caulking iron. This is known, because of the hollow handle and chisel-like shape.

Figure 94: PR 89 737 – 12

Provenience: The chisel was found in Room 3 of Building 5 near the doorway into Room 2.
PR 89 835 – 12

Given the degradation of the artifact (Figure 95), it is difficult to determine which type of chisel it would have been, but is most likely a forming chisel. The slight nature of the artifact indicates that it was likely used for light work. It is 10 cm in length, 2 cm wide, and 1.5 cm thick and is the original iron. The end is socketed with a hollow cavity approximately 1.5 cm in diameter and 2 cm long, and was probably six sided.

![Diagram of PR 89 835 - 12](image)

Figure 95: PR 89 835 – 12

**Provenience:** The chisel was found in Yard 4B of Building 4 near the collapsed wall of Room 4B in association with other two other woodworking chisels, a felling ax (PR 885-5.2), and a caulking iron (PR 84 80-1).
PR 90 897 – 9.50

This artifact (Figure 96) is a firming or forming chisel, given its hollow six-sided handle and relative robustness. The blade is 11.7 cm long and 2.4 cm wide, and the handle has a maximum diameter of 2.6 cm, an inner diameter of 0.8 cm, and a remaining length of 5.2 cm and is the original iron.

![Figure 96: PR 90 897 – 9.50](image)

**Provenience:** The chisel was found in Yard 7 near the walls of Hearth 7 behind Building 5.

PR 90 8810 – 16.80

This artifact (Figure 97) is a medium-sized forming chisel with a makers mark (B) on the surface of the blade. It is 14.5 cm long, 0.7 cm thick, and 1.9 cm wide at the
blade and is the original iron. The handle is six-sided and has a maximum diameter of 2 cm, a minimum diameter of 1.2 cm, and a hollow shaft that is roughly 6.5 cm long. Given its slighter manufacture, this chisel was most likely used for light woodworking.

Figure 97: PR 90 8810 – 16.80

Provenience: The chisel was found in Yard 7 near the walls of Hearth 7 behind Building 5.

DIVIDERS

Rules, squares, compasses, dividers, levels, marking gauges, and chalklines are the tools a woodworker uses to lay out cuts or joints. As construction proceeds they are used for checking dimensions, aligning parts, or squaring up a frame or opening (Hack,
A subset of marking and measuring tools is compasses, dividers, and calipers. All these tools have one thing in common: they have two adjustable legs and a method to hold them at their setting, which is a stiff hinge, a spring with threaded rod and nut, or an arm between the legs that can be locked into position with a thumbscrew (Hack, 1999:52). Unlike a compass, which has one leg with a sharp point and a pencil acting as the other leg, dividers have sharp points on the distal end of the legs. Although dividers can do the same work as compasses, they are primarily designed to accurately transfer dimensions (Miller, 1980:78).

Calipers

PR 89 869 – 11.8

This artifact (Figure 98) is a pair of calipers that are an epoxy replica made from the original iron artifact. They are 11.9 cm long from the top of the hinge to the end of the longest leg, which is 0.9 cm thick. They are hinged at the proximal end, much like dividers. They were used in a variety of professions and settings and are closely related to and often used in conjunction with dividers.
Figure 98: PR 89 869 – 11.8

Provenience: This caliper was found in Yard 4A of Building 4 near the walls of Hearth 7.

Carpenter’s Dividers

PR 90 959.8

This artifact (Figure 99) is a medium-sized pair of carpenter’s dividers. The ball head and multi-leaf construction is typical of the time period (Hambly, 1988). The dividers are an epoxy replica made from the original iron artifact. They have a remaining overall length of 10.1 cm. The legs are 1.1 cm wide and 0.6 thick. The proximal end is 4.6 cm long from tip to end of juncture, and grows in width from 1.5 cm to 2.4 cm.
Provenience: The pair of dividers was found in Yard 5 of Building 5 near the cistern.

General Dividers

PR 89 897 – 9.86

This artifact (Figure 100) is a complete pair of dividers, which could have been used in a variety of professions. They have an overall length of 22.6 cm, the legs are 15.4 cm from joint to end, and they taper in width from 1.1 cm at the joint to 0.5 cm at the distal end and are the original iron. They are hinged at the proximal end, and this joint is 2.2 cm wide and 1 cm thick, and 6.1 cm long. The distal ends are not complete, making it therefore impossible to determine whether the tips were pointed or round.
Sectional views cannot be provided, as there are no physical remains of this artifact and only one drawing.

![Figure 100: PR 89 897 – 9.86](image)

**Provenience:** The pair of dividers was found in Yard 7 near the walls of Hearth 7 behind Building 5.

**PR 90 897 – 9.86**

This artifact (Figure 101) is an almost complete pair of dividers. The dividers are an epoxy replica made from the original iron artifact. They have an overall length of 21.7 cm, and the legs have a maximum length of 15.6 cm. They are hinged at the proximal end, and this joint is 6.1 cm long, growing from 1.9 cm to 2.4 cm. They are typical of the dividers found in the Port Royal collection.
Provenience: The pair of dividers was found in Yard 7 near the walls of Hearth 7 behind Building 5.

DRAWKNIFE

The drawknife is usually a curved or flat chisel-like blade that is beveled in front, with tapering tangs jointed into a handle on either end. Most have long, wide blades; however, the design has been changed to meet the needs of different craftsmen and it can be shorter and narrower, or with a curved blade (Hack, 1999:96). Drawknives are used for different trades and were very common in coopers’, chairmakers’, shinglemakers’, wheelwrights’, and other woodworkers’ trades (Salaman, 1977:174). They were used to remove excess wood and for rounding objects very
common in, but not for, finishing work. Instead, they were more likely to be used to rough out handles, chair legs, and curved feet of beds (Bealer, 1980:157).

Woodworker’s Drawknife

PR 87 412 – 11

This artifact (Figure 102) is a drawknife and is a 45 cm-long blade that ends in two handles. It has a width of 6 cm in the center that tapers down to 2-3 cm at the ends. This artifact was discarded during the conservation process. Sectional views cannot be provided, as there are no physical remains of this artifact and only one drawing.

![Figure 102: PR 87 412 – 11](image)

Provenience: The drawknife was found outside the exterior wall of Hearth 4B of Building 4.
FILES

Files are metal bars with a cutting surface of sharp edges or teeth, which are formed by chisels before the metal hardens. They have been known since the Bronze Age and are mainly utilized by metal and woodworkers for smoothing, fitting, or saw blade and bit sharpening (Salaman, 1977:194). There is a wide range of teeth patterns and grades, as well as shapes and sizes. Finer-tooth patterns have a slower cut and produce a smoother surface, while the converse is true coarser teeth. The form of a file is dictated by the function it performs (Hack, 1999:136). The most common shapes are flat with square sides, tapered towards the tip (today used for lumber mill saws), triangular for sharpening saws, and half-round and round for sharpening curves (Hack, 1999:135).

Woodworker’s File

PR 90 884 – 7

This artifact (Figure 103) is a metal file that is 11.6 cm long and 0.93 cm wide. There was no presence of any type of teeth or an edge on the surface, and it was identified based on overall shape and size, greatly resembling an average flat file. The file was most likely used for woodworking as it was found in an area with several probable ship items. This artifact was discarded during the conservation process. Sectional views cannot be provided, as there are no physical remains of this artifact and only one drawing.
Provenience: The pair of dividers was found in Yard 7 near Hearth 7 behind Building 5

FLAT IRONS

Metal hand irons can be classified as a domestic hand tool, commonly found in the household as opposed to a workshop. However, some craftsmen, such as tailors, used them to press cloth, and the local blacksmiths usually made them. Two types of irons were in use in the seventeenth century: box irons, and flat or sad irons. The box variety had a cavity into which an iron heating element called a “heater” or “lug” would be inserted. A flat iron was solid and obtained heat by placing it in or near a fire.
There was usually a makers mark on the base near the bottom of the handle, and the toe was either pointed or rounded. Information on the irons comes from the conservation reports.

Flat Irons

PR 87 423-10

This artifact (Figure 104) is a flat iron due to the presence of handles, a solid metal base, and a subsequent lack of cavity associated with box irons. The base is square at the heel and round at the toe, and there is a copper plate running from the toe roughly halfway back. The handle is broken, but the plate is still fully there and runs parallel to the base. The iron was most likely used for ironing clothes. There were pieces of wood found around the iron that were probably the wooden handle that fit over the metal handle piece. The overall length is 12.2 cm and has a maximum width of 7.6 cm and height of 4.2 cm. This artifact was discarded during the conservation process. An end sectional view cannot be provided, as there are no physical remains of this artifact and only one drawing.
Provenience: The flat iron was found outside of Building 4 in the intersection of Queen and Lime streets in association with wooden pieces (handle described above) and two iron nails.

PR 89 656 – 9

This artifact (Figure 105) is a flat iron, based on the presence of handle attachments. It is approximately 11 cm long, 7.5 cm wide, and 1.5 cm thick and is a flat, solid piece of iron with square heels and a blunt, rounded toe. The handle was not preserved; however, there are raised lugs of metal on the top of the iron where it would have been attached. Unlike most flat irons this one does not have a visible makers mark; however, this can easily be attributed to degradation. This artifact was discarded.
during the conservation process. An end sectional view cannot be provided, as there are no physical remains of this artifact and only one drawing.

Figure 105: PR 89 656 – 9

**Provenience:** The flat iron was found in Yard 5 near the wall of Room 1 of Building 5 in associations with bone (655-5, 656-13), delft lid (656-7) and bowl (656-13), and a pewter plate (656-12).

PR 90 988 – 15.04

This artifact (Figure 106) is a flat iron due to its solid metal base and lack of cavity associated with box irons. It is 10.6 cm long, 6.5 cm wide at the heel, and 3.4 cm wide at the toe, with an average thickness of 1.8 cm and is the original iron. The
toe appears to have been pointed, which is more clearly seen when compared to the rounded toes of PR 89 656-9, and if there was a makers mark, it did not survive.

![Figure 106: PR 90 988 – 15.04](image)

**Provenience:** The flat iron was found in Yard 7 near the wall of Hearth 7 behind Building 5.

**HAMMERS**

The first tools created by man were basically hammers, and they have changed little since the first rock instruments. Their basic function remains to pound, but now because of subtle changes they are also designed to lever and to pull. Each trade favors hammers of slightly different form, and often the name reflects its function. For
example, the use of the following hammers is quite apparent: shoemaker’s or cobbler’s hammer, blacksmith’s hammer, brick hammer, cooper’s driver, framing hammer, and tack hammer (Franklin, 1992:100). Some have claws for effectively pulling nails; others have two faces of different shapes for driving nails and light riveting.

The claw hammer is the most commonly used. It was given its name because on the opposite side of the head there is a curved or straight bifurcated claw that is designed specifically for pulling out nails (Bealer, 1976:59). A curved claw is more efficient due to the increased leverage, but the straight claw has the advantage of prying actions. From the Roman period to the nineteenth century claw hammers were made of a round or square bar of iron pierced in the middle to form an eye, with claws at one end. This design gave minimal support and it took little to loosen or crack the handle while pulling nails. The most common solution to this was created in the Middle Ages: forging two iron long straps to the head and riveting them to the handle (Hack, 1999:72). At the end of the seventeenth century hammers were made with wrought iron, as cast iron was too brittle and casting steel was not yet an economically viable option (Franklin, 1992:101). It was not until the middle of the nineteenth century that the handle and head were made in one forging (Hack, 1999:72).

Claw Hammers

PR 89 622 – 10

This artifact (Figure 107) is a medium-sized claw hammer head. It was in poor condition, and the claw was partially reconstructed. The handle portion is 6.2 cm long
and an average of 2.3 cm wide. The head is 11.5 cm long, and the claws are 5.4 cm long from the haft and 2.4 cm wide. The butt end of the head has a diameter of 2.4 cm and is 3.2 cm long from the haft. This artifact was discarded during the conservation process.

Figure 107: PR 89 622 – 10

Provenience: The hammer was found in Room 1 of Building 5.

PR 89 748 – 6

This artifact (Figure 108) is a small, delicate claw hammer. It has an overall length of 9.15 cm and a diameter of 1.8 at the center, and was most likely used for upholstery work or in fine carpentry applications where small nails or tacks would be used. This artifact was discarded during the conservation process.
**Provenience:** The hammer was found in Yard 4A of Building 4 near the walls of Room 3 of Building 5.

**PR 89 839 – 8**

This artifact (Figure 109) is a hammer and part of a wooden handle. The handle has an overall length of 18.4 cm and an average width of 3.1 cm. The head is 13.1 cm long and is complete to the place at which the claw end would bifurcate. The remaining portion of the claw end is 4 cm long from the haft and 4.1 cm wide at the center. The butt end is 4.8 cm long from the haft and has a diameter of 4.8 cm. The opening of the haft is 2.4 cm wide and 3.2 long. The outer dimensions are 5.3 cm in length and 4.1 cm in width. The hammer is one of the larger ones of the collection, and the head is very robust, which indicates that this artifact was used for heavier work,
probably in a workshop as opposed to a domestic setting. This artifact was discarded during the conservation process.

![Image of hammer head](image)

Figure 109: PR 89 839 - 8

**Provenience:** The hammer was found outside of Building 4 on Queen Street in associations with a small saw blade.

**PR 90 897 - 9.4**

This artifact (Figure 110) is a medium-sized claw hammer head. It is the original iron and has an overall length of 15 cm and is complete halfway through the claw end. The remaining portion of the claw end is 6.7 cm on the longest claw from the haft, and 3.6 cm at its widest where the bifurcation begins. The butt end is 4.5 cm long from the haft and has a diameter of 3.5 cm. The outer dimensions of the shaft are
4 cm long and 3.3 cm wide, while the inner opening is 2 cm long and 1.2 cm wide. The hammer is of standard size and shape and could have been used in a variety of professions and settings.

Figure 110: PR 90 897 - 9.4

**Provenience:** The hammer was found in Yard 7 near the walls of Hearth 7 behind Building 5.

**PR 90 918 – 11**

This artifact (Figure 111) is a very small claw hammer with a section of the handle. It is the original iron and has an overall length of 8 cm and is complete to the beginning of the bifurcation of the claws. The claw end is 2 cm long from the haft and has a maximum width of 2 cm at the end of the remaining portion corresponding with
the separation. The butt end is 2.3 cm long from the haft and has a diameter of 1.3 cm. The haft’s outer and inner dimensions are 2.5 cm by 2 cm and 1.8 cm by 1 cm, respectively. Due to its size it was most likely used for upholstery work or in fine carpentry applications where small nails or tacks would be used. An end view of the head cannot be provided, as there are no physical remains of this artifact and only one drawing.

![Figure 111: PR 90 918 – 11](image)

**Provenience:** The hammer was found in Yard 5 of Building 5.

**PR 90 957 – 8**

This artifact (Figure 112) is a medium-sized claw hammer head with part of a wooden handle. It has an overall length of 13.3 cm and is basically complete, with the
exception of a missing tip on one caw. The claw end is 4.6 cm long from the hat and 3.9 cm at its widest. The butt end is 4 cm long from the haft and has a 3.5 cm head diameter. With the wooden handle it is 8.95 cm tall. This is a standard and commonly used claw hammer. This artifact was discarded during the conservation process. An end view of the head cannot be provided, as there are no physical remains of this artifact and only one drawing.

Figure 112: PR 90 957 – 8

Provenience: The hammer was found in Yard 5 of Building 5.
KNIVES

Many different knives would have been in use in the seventeenth century. They were ubiquitous and as diverse as imaginably possible. Inventories from Port Royal list butcher, carving, currier, and rounding knives, and most were likely made by the local blacksmith (Franklin, 1992:114).

General Knives

PR 89 834 – 9

This artifact (Figure 113) is a knife blade and partial handle. The handle is 6.2 cm long and has a diameter that tapers from 2.6 to 1.9 cm. The blade is an epoxy replica of the original iron artifact and is 14.2 cm long, has an average width of 2.6 cm, and is 0.4 cm thick while the handle is wood.

Figure 113: PR 89 834 – 9
Provenience: The knife was found in Room 2 of Building 4.

PR 89 897 – 12.1

This artifact is a knife blade that is 17.8 cm long, 12.7 cm wide, and less than 6.3 cm thick. The knife was discarded during the conservation process and no picture or drawing of this artifact remains.

Provenience: The knife was found in Yard 7 near the walls of Hearth 7 behind Building 5 in association with (PR 89 897-12.2), iron spikes (PR 89 897-12.3), tang of knife (PR 89 897-12.4), knife blade (PR 89 897-12.5), circular wood ring (PR 89 897-12.6), red clay brick (PR 89 897-12.7), small earthenware shard (PR 89 897-12.8), faunal bone fragment (PR 89 897-12.9.), and a circular iron rod (PR 89 897-12.10).

PR 89 897-12.4 and PR 89 897-12.5

Artifact 897-12.4 is the tang of the knife, and 897-12.5 is the blade. They were assigned different artifacts under the assumption that they were two separate items encrusted together. The tang is 84 cm long and 6.3 cm wide, while the blade is 13.2 cm in length. The knife was discarded during the conservation process and no picture or drawing of this artifact remains.

Provenience: The knife was found in Yard 7 near the walls of Hearth 7 behind Building 5 in association with knife, (PR 89 897-12.1), pipe stem (PR 89 897-12.2),
iron spikes (PR 89 897-12.3), circular wood ring (PR 89 897-12.6), red clay brick (PR 89 897-12.7), small earthenware shard (PR 89 897-12.8), faunal bone fragment (PR 89 897-12.9.), and a circular iron rod (PR 89 897-12.10).

**PR 90 8610.5 A**

This artifact (Figure 114) is a knife blade and part of the tang. It is an epoxy replica of the original iron artifact and has an overall length of 23.8 cm, a blade length of 15.3 cm, and a hilt length of 8.5 cm. The average width of the blade is 5 cm and 2.8 for the hilt, and a thickness of 0.6 in the blade and 0.8 in the hilt. The blade curves up slightly towards the end of the blade; however, this does not provide enough information to identify it as a specific type of knife and was likely a multi-purpose knife.

![Figure 114: PR 90 8610.5 A](image-url)
**Provenience:** The knife was found in Yard 4A of Building 4 near the walls of Room 3 of Building 5 in association with a spoon bit auger (90 8619-5b). The rest of the hilt was in an adjoining encrustation, but was damaged during the conservation process and subsequently discarded.

**PINCERS AND PLIERS**

Pincers are used primarily for pulling nails, and most have one knob and one claw end to the grips. The head of the pincers is composed of jaws for grabbing and holding onto an object. Pliers are similar to pincers in both form and utility. However, they have a more diversified list of functions in addition to holding objects, including bending wire or thin metal, and turning nuts. Both pliers and pincers vary in shape and size depending upon the use. Pliers differ from pincers in that the grips do not perform a separate function from the jaws and they are generally curved in to achieve a better grip. The jaws tend to be flatter and often fit together forming a flush seam, whereas the jaws of pincers are more robust and significantly more curved, meeting at the tip.

**Pincers**

**PR 89 794 – 9**

This artifact (Figure 115) is an almost complete pair of lasting pincers. The pincers are an epoxy replica of the original iron artifact. They are 19.4 cm long, and the handles have a width ranging from 1.28 cm near the junction to 0.91 at the distal ends.
Each side of the jaws is roughly 1.35 cm wide, and there is a thin, flat piece of metal attached to the side of the head, presumably for extra leverage or hammering. These types of pincers were used for upholstering and for shoemaking.

![Figure 115: PR 89 794 – 9](image)

Provenience: The pair of pincers was found on the ship.

**Pliers**

**PR 89 794 – 5 and PR 89 794 – 6**

These two artifacts form a pair of pliers that are 16.5 cm long and 0.5 cm in width. They are determined to be pliers based upon the handles and the jaws, which are fairly straight, are of lighter manufacture, and lack the curve of pincers. The pliers
were discarded during the conservation process and no picture or drawing of this artifact remains.

**Provenience:** The pair of pliers was found on the ship.

**PR 89 796 – 6**

This artifact (Figure 116) was originally identified as a pair of dividers. Upon further study they were determined to be a pair of pliers due to the presence of a small portion of the jaws. They are an epoxy replica of the original iron artifact and are 16 cm in length, the handle tapers in width from 1.9 near the joint to 0.7 at the distal end, and the joint is 2.4 cm in width. The handles are straight as is more commonly seen in the pliers, and although the jaws are mostly missing, they still appear to be smaller than what is found on pincers. This artifact is very similar to PR 90 993-9.1. Sectional views of the jaws are not provided given the state of deterioration.
Provenience: The pair of pliers was found in Room 4A of Building 4 near the bow of the ship.

PR 90 993 – 9.1

This artifact (Figure 117) is a pair of pliers and is very similar to PR 89 796-6. They are an epoxy replica of the original iron artifact and are roughly 19 cm long and 2.1 cm wide at the joint, and the handle tapers in width from 1.8 cm near the joint to 0.6 cm at the distal end. The jaw is almost complete on one side to the point at which it would curve and form the gripping edge. It has a length of 1.9 cm and a width of 1.6 cm. The handles are straight and lighter in manufacture than those of pincers. An sectional view of the jaws are not provided given the state of deterioration.
Figure 117: PR 90 993 – 9.1

Provenience: The pliers were found in Yard 4A of Building 4 in association with an iron spike and two pipe stem fragments.

SCISSORS

The term "scissors" and "shears" are nearly always used synonymously, although "scissors" generally indicates a larger size (Benton, 1967:24). For the purpose of this catalog, "scissors" will be used as a generic term unless specifying the size of an artifact. Historical information regarding scissors is scant, and it is even harder to find references to utilitarian pairs. They derive from two basic designs: spring scissors, which connect the blades with a C-shaped spring, and pivoted scissors that use a screw or rivet between the handles to make a junction (Benton, 1967:24). The spring type
dates to the Bronze Age and was used through to the Middle Ages, while pivoted ones were known to the ancient Romans and were in common use until the seventeenth century (Benton, 1967:24). In order to cut well the blades must make contact in two places only: at the junction, and at one spot along the cutting edges. They are designed to curve into each other and lay flush when closed. There was some specialization in scissors determined by the function they performed, whether for cutting fabric or for use in surgery. However, scissors were general-purpose tools and were just as likely to be found in a domestic setting, as in a workshop.

**General Scissors**

**PR 90 100 NP**

This artifact (Figure 118) was originally identified as a pair of dividers; upon further study it has been recognized as a pair of shears or scissors. The identification was based on the placing of the extraneous handle. Once placed on the body, they were clearly scissors. However, the handles appear to be different in shape. The curved-up distal end of the handle is the end, and as such they do not form circles that are commonly associated with scissors handles. Instead, they more closely resemble the handles of pincers with the wide curve into each other, with the exception of the reverse curve at the end of this pair.

They are an epoxy replica of the original iron artifact. The body has an overall length of 10.3 cm and is 2 cm wide at the hinge. The blades are 6.1 cm long from the
hinge, and taper in width from 1.7 cm to 1.2 cm. The remaining handle is 6.6 cm long.

The body is hinged, and the blades are shown as lying flush and closed.

Figure 118: PR 90 100 NP

**Provenience:** This artifact has no provenience.

**PR 90 957 – 6**

This artifact (Figure 119) is a standard pair of small scissors. They have an overall length of 9.4 cm and are complete with the exception of the blades, which only partially remain. The blade length is 3.8 cm from the hinge, and the width is roughly 1 cm. The handles are 5.6 cm long from the hinge and have a maximum width of 4.4 cm. The diameter of the handles is 1.4 cm. This artifact was discarded during the conservation process.
Provenience: The pair of scissors was found in Yard 5 of Building 5.

TWILBIL

A twibil is a small two-headed deep cutting tool that was a cross between an ax and a chisel (Mercer, 1960:174). Its handle was socketed at right angles to the double-ended blade. It had one end parallel to the axis of the handle, much like that of an ax, and the other sharpened perpendicular to the handle, like an adze (Bealer, 1976:91). They could be either swung or struck by a mallet and were used for chopping and removing wood debris in mortises (Hack, 1999:66).
Woodworker's Twilbil

PR 89 863 - 20

This artifact (Figure 120) is a nearly complete twilbil that is 35 cm long from the end of the handle to the junction of the head. The handle is 2 cm at its widest, and the double-ended head is 12 cm long from end to end. This artifact was discarded during the conservation process. Sectional views cannot be provided, as there are no physical remains of this artifact and only one drawing.

Figure 120: PR 89 863 - 20

Provenience: The twilbil was found in Room 4 of Building 5 in association with yabba ware (PR 89 863-21), encrustation (PR 89 863-19), and pipe stems (5/64, 6/64, and 7/64).
WEDGES

Large iron wedges were most often used for tree felling and wood splitting, and some had a socket to accommodate a short wooden butt. Tree fellers used them to place in a saw cut in order to lift the trunk off the saw blade, preventing damage and creating a slight lean in the direction of the fall (Salaman, 1977:503). Wood-splitting wedges differ slightly in that they do not have a wooden butt and are fluted down the center to relieve the pressure of air, which builds up while driving into sappy wood (Salaman, 1977:503).

General Wedges

PR 89 599

This artifact (Figure 121) has an iron wedge shape that is roughly 9 cm long and 6 cm wide and is the original iron. Its ambiguous shape could indicate that it is a piece of scrap iron in use by a blacksmith.
Provenience: This artifact has no provenience.

PR 89 712 – 7

This artifact (Figure 122) has no identifiable function, but also has an iron wedge shape. It is an epoxy replica of the original iron artifact and is 9 cm long, 2.5 cm wide at the butt end, and 1.4 cm wide at the tip.
Provenience: The wedge was found in Room 4A of Building 4.

ARTIFACT DISTRIBUTION

The tools in this catalog can be associated to architectural features within the site due to the meticulously taken coordinates. The following maps illustrate artifact distribution by building, as well as by tool types. A map of the lot numbers and their positions within the site are provided in figure 123, and are included within this chapter for reference only. Tools without provenience are not incorporated into the maps. The overall tool distribution map, Figure 124, shows that all of the artifacts are located in and near buildings 4 and 5, which corresponds to the areas excavated from 1987 to 1990, the years from which the artifacts in this catalog come. Artifact numbers
are not provided on the overall tool distribution map due to the limited space and the maps of Buildings 4 and 5 list the artifacts by tools type and not their numbers. This is to provide a view of tool distribution without having to reference their numbers.

The complex of buildings 4 and 5, roughly 65 ft wide by 40 ft long, consists of at least six rooms, three backyards, and three hearths and potentially represents up to three different house or combinations of house and shop. Building 5 was built facing an alley extending from Lime Street and was ascertained to be constructed first based upon the analysis of the architectural features. It was two stories, see Figure 125 for a possible reconstruction, and comprised four rooms, two yards, and two hearths. The separate areas have been studied both through the architecture and the artifacts and it is speculated that Room 1 was used as an eating establishment while Room 2 may have been used as an entrance, an area in which to sell the storage for the restaurant’s plates, and/or access to the upstairs portion of the building. Rooms 3 and 4, thought to be the kitchen area, contain open hearths (Hearth 5 and 7). This is supported by the discovery of related artifacts in the adjacent Yard 5, which is connected to Yard 6 and 7 by a communal cistern (DeWolfe, 1998:117). The architectural details of both buildings can be viewed in Figure 126.

Building 4, located directly to the east, faced the Lime Street alley and bordered another alley that serves as an extension of Queen Street on to Fisher’s Row. Both the front and back walls were constructed abutting those of Building 5. It appears to have been two tenements with two yards, and two hearths and could have been built as an addition of Building 5 (Dewolf, 1998:121). During the earthquake, a ship that was
Figure 123: Site Map Showing Lot Numbers
(After Port Royal Archives)
Figure 124: Distribution Map of All Tools
(Map after Port Royal Archives)
Figure 125: Reconstruction of Buildings 1, 2, 3, 4, 5, and 8
(After Port Royal Archives)
Figure 126: Site map of Buildings 4 and 5  
(After Port Royal Archives)
moored in Kingston harbor was thrust into Building 4 damaging most of the structure. As a result of this damage it is difficult to ascribe any specific use of these rooms; the artifacts indicate it was residential.

The artifact distribution of these two buildings can be viewed in Figures 127 and 128 as well as the distribution of individual tool types in Figures 129 through 143. The tool names have been abbreviated due to space limitation, but are as follows: Ag for augers, Aw for awls, Ax for axes, Ci for caulking irons, Ch for chisels, Di, for dividers, Dk for drawknife, Fi for files, FL for flat irons, Ha for hammers, Kn for knives, Pi for both pincers and pliers, Sc for scissors, Tw for twilbils, and Wd for wedges. Building 5 had noticeably less associated artifacts, which will be provenienced by room. Room 1 contained a hammer, Room 3 a chisel, and Room 4 a twilbil, which are the only artifact found in the interior. There is a caulking iron in Yard 6 and Yard 5 contains: two axes, two hammers, a file, a pair of scissors, and a pair of dividers. Most of the artifacts can be explained by the existence of household tools for general purposes and their locations do not lend any information as to who owned them or why they were there. However, the existence of the twilbil in the kitchen and the dividers in the yard are anomalous, as they do not fit the household set of tools. The logical and practical explanation for this, however, is that they most likely spilled out from the ship when it wrecked. This will come to play in the explanations of many of the artifacts in Building 4. Rooms 1 and 2 of Building 4 respectively, contained a wedge and a pair of pincers, and a knife while three pairs of pincers or pliers are found on the ship and a hammer is located just outside the east wall. Yards 4a and 4b have an
Figure 127: Artifact distribution map of Building 4
(Map after Port Royal Archives)

Figure 128: Artifact distribution map of Building 5
(Map after Port Royal Archives)
Figure 129: Auger distribution map
(Map after Port Royal Archives)

Figure 130: Awl distribution map
(Map after Port Royal Archives)
Figure 131: Axes distribution map
(Map after Port Royal Archives)

Figure 132: Caulking irons distribution map
(Map after Port Royal Archives)
Figure 133: Chisels distribution map
(Map after Port Royal Archives)

Figure 134: Dividers distribution map
(Map after Port Royal Archives)
Figure 135: Drawknife distribution map
(Map after Port Royal Archives)

Figure 136: File distribution map
(Map after Port Royal Archives)
Figure 137: Flat irons distribution map
(Map after Port Royal Archives)

Figure 138: Hammers distribution map
(Map after Port Royal Archives)
Figure 139: Knives distribution map
(Map after Port Royal Archives)

Figure 140: Pincers and pliers distribution map
(Map after Port Royal Archives)
Figure 141: Scissors distribution map
(Map after Port Royal Archives)

Figure 142: Twilbil distribution map
(Map after Port Royal Archives)
Figure 143: Wedge distribution map  
(Map after Port Royal Archives)
awl, two chisels, a hammer, and a pair of scissors. The heaviest concentration of
artifacts is in the vicinity of Hearth 4a and the walls of Hearth 7 and include: three axes,
three caulking irons, three chisels, three pairs of dividers, two knives, a chisel, a file, a
flat iron, a hammer, a pair of pincers or pliers, and an auger. The remaining two
artifacts, a drawknife and a file, are just outside the east walls. There seems to be two
sets of artifacts within this building; the household items and those belonging to the
ship. It is difficult to tell one from the other as a majority of the tools could easily cross
over. However, the concentration of tools such as the multiples of hammers and chisels
provides evidence that they most likely came from the ship as a household would
probably have no need of that many tools. Likewise, it is more logical to find some of
the tools in one area and not the other. For example, the flat irons and knives located
near the hearths are indicative of the activities performed there whereas; an auger, an
awl, and a drawknife would have been of little use in the average residence. It seems
most probable that contents of the ship were deposited as it wrecked or from the
subsequent tidal action.

Part of the original goals of this thesis was to attempt to attribute tools to their
owners based on their proveniences. However, after reviewing the plat records, the
buildings in this site cannot yet confidently be ascribed ownership. In addition,
ownership does not necessarily correlate to tenancy, further complicating the situation.
No additional work will be done on this subject until such time as more information
becomes available.
CHAPTER V

CONCLUSION

This thesis, intended as a continuation of the catalog presented in the Franklin thesis, set out to illustrate the artifacts by examining the people who would have used them. The probate inventories provided the details of trades and tradesmen, and in adding historical context a background was set to study the artifacts. It was important to find out what tradesmen were working in Port Royal, and the environment in which they worked. The relationship between the merchants and the townspeople, and the merchants and the tradesmen, was explored in order to discern if the tools were locally manufactured or imported, and from whom they were purchased. It was also necessary to find out what tools the tradesmen were using, and if they were trade-specific. These conditions were only partly explained through the other chapters, and it is on such conditions that the research questions previously posed are based.

The first research question posed at the beginning of the thesis: "Do the types of tools present in the archaeological record reflect the variety available to the island?" can be answered most accurately by examining the tools listed in the inventories, the tools listed in the contemporary bibliography for each trade, and the ones found in the archaeological record (Tables 2 and 3). Many tools listed in the inventories were not found in the archaeological record. There are anvils, bills, bitts, boarers, calipers, froes, gimlets, hatchets, hoes, howells, pitch pots, planes, punches, rules, sheep shearers, shovels, sledges, slices, snip bills, stakes, swages, tongs, and vises. This disparity,
seemingly large, can be accounted for by the size of the area excavated. The TAMU/INA/JNHT excavations concentrated on the intersection of Queen and Lime Streets, which is quite small in regards to the 33 acres of the city that sank into the harbor during the earthquake. In regards to the tools listed for each trade, a comparative view was undertaken in the Tools, Trades, and Tradesmen chapter in which it was observed that in general Port Royal had access to and was using tools similar to those used in Europe. Logically, all these tools were in fact utilized in Port Royal and are not in the archaeological record for a few reasons: they did not survive in the saltwater conditions, they were salvaged at the time of the earthquake or soon afterwards, or they are represented by artifacts in non-excavated areas of the site. Considering such conditions, it is reasonable to answer the first question with a yes. The artifacts do, in fact, represent the types of tools available.

The second and third questions: “Were the majority of tool types imported or locally forged?” and “Does the quality of crafted tools lend any information about the makers and users of the tools?” are difficult to discern. In the first the inventories show that local merchants imported and sold tools, but also reveal that the blacksmiths made many of the same tools. It is difficult to say either way, but realistic to assume that a relative majority were in fact made locally due to the considerable amount and types of tools in the blacksmith inventories.

The third question is obstructed by the natural corrosion process associated with iron artifacts in a saltwater environment. The corroded state of most artifacts prevents manufacture quality to be determined. There is no auxiliary information available to
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(K.M.Custer, 2003)
aid in answering this particular question. Presumably a gradation of quality, resembling that of most markets, was present in Port Royal.

The fourth research question: "Does the collection accurately reflect the diversity of crafts and craftsmen in Port Royal?" can soundly be answered positively. The collection as a whole, including the artifacts already described Franklin's thesis, contains a wide variety of hand tools that are representative of many different trades. This summation leads into the fifth question: "Were tools traditionally assigned to a particular craft in fact used singularly by that craft, or were the tools utilized as multi-purpose instruments?" and the fifth question is again answered by the inventories, which demonstrate that while some tools are listed as belonging to a specific trade, i.e., cooper's adze, most are classified as multi-purpose tools.

The last question, "Does a cross over of tools result from a limited amount of imported tools, or was it an adaptation to a colonial environment?" refers to the nature of tool use and can generate only an ambiguous answer. Imports, though fairly diverse, were of a limited nature, necessitating a colonial adaptation to said limitations. Tools were and are, for the most part, multi-purpose items which can be partly explained through the same reasoning as to why form and function has changed little throughout history: they are simple and effective. Tool design is only slightly altered for trade specialization, but not enough to preclude another trade from utilizing the tool. As such, it is likely that the people of Port Royal, as do people in general today, have a set of standard tools that are used for a variety of purposes, with a few trade-specific items when necessary.
Tools, often overlooked, are the driving power behind a creative force to design, to build, and to manufacture. Without these simple and mundane objects, great works of art, means of transportation, and the fabric that clothes us would not be. They were the first technological advancement of our race, and they set us on a course that defines human intelligence. The artifacts from Port Royal provide a unique research opportunity, and the study of the collection of hand tools can more thoroughly be analyzed with the publication of 17th-century artifacts from other sites. Until such time, insight gained from the material presented from a single artifact collection remains incomplete.
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| Vol. 2 | 7 254 | 796 | 36 |
| Vol. 2 Adjusted | 5 189 | 251 | 44 |
| Vol. 3 | 4 206 | 334 | 138 |
| Vol. 3 Adjusted | 2 177 | 199 | 154 |

**MERCHANT**

| Average | 29 1761 | 17837 | 29 |
| Adjusted Average | 27 1166 | 5886 | 27 |
| Vol. 2 | 2 672 | 1116 | 228 |
| Vol. 3 | 24 1909 | 17837 | 29 |
| Vol. 3 Adjusted | 22 1271 | 5886 | 49 |
| Vol. 5 | 1 2086 | 2086 | 2086 |
| Vol. 10 | 2 39 | 50 | 27 |

**PEWTERER**

| Average | 2 888 | 1399 | 376 |
| Vol. 3 | 2 888 | 1399 | 376 |

**SAILMAKER**

| Average | 3 984 | 1883 | 528 |
| Adjusted Average | 2 534 | 539 | 528 |
| Vol. 2 | 1 1883 | 1883 | 1883 |
| Vol. 10 | 2 534 | 539 | 528 |

**SHIP CARPENTER**

| Average | 2 71 | 124 | 17 |
| Vol. 5 | 1 17 | 17 | 17 |
| Vol. 6 | 1 124 | 124 | 124 |

**SHIPWRIGHT**

| Average | 2 411 | 666 | 155 |
| Vol. 3 | 1 17 | 155 | 155 |
| Vol. 10 | 1 124 | 666 | 666 |

**TAILOR**

| Average | 3 151 | 206 | 108 |
| Vol. 3 | 2 124 | 140 | 108 |
| Vol. 10 | 1 206 | 206 | 206 |

**TANNER**

| Average | 4 876 | 2637 | 157 |
| Adjusted Average | 2 356 | 540 | 171 |
| Vol. 1 | 2 349 | 540 | 157 |
| Vol. 3 | 2 1404 | 2637 | 171 |

**WHERRY BUILDER**

<p>| Average | 4 144 | 275 | 14 |
| Vol. 5 | 1 14 | 14 | 14 |
| Vol. 6 | 1 275 | 275 | 275 |
| Vol. 9 | 1 142 | 142 | 142 |</p>
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**PEWTERER**

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**PLANTATION OWNER**

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**SAILMAKER**

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**SHIP CARPENTER**

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**SHIPWRIGHT**

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**TAILOR**

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**TANNER**
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**WHERRY BUILDER**

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