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Fortifications of St Eustatius: An Archaeological and Historical Study of Defense in the Caribbean

Bryan Paul Howard

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FORTIFICATIONS OF ST. EUSTATIUS: AN ARCHAEOLOGICAL AND
HISTORICAL STUDY OF DEFENSE IN THE CARIBBEAN.

A Thesis

Presented to

The Faculty of the Department of Anthropology
The College of William and Mary

In Partial Fulfillment
Of the Requirements for the Degree of
Master of Arts

by

Bryan Paul Howard

1991

APPROVAL SHEET

This thesis is submitted in partial fulfillment of
the requirements for the degree of

Master of Arts

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And they shall make a spoil of thy riches,
and make a prey of thy merchandise:
and they shall break down thy walls,
and destroy thy pleasant houses:
and they shall lay thy stones and thy timber
and thy dust in the midst of the water.

(Ezekiel 26:12)

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ABSTRACT

The island of St. Eustatius developed into a major trade center during the 18th century. As such it played a major role in the conflicts of colonialist European nations, being situated in a convenient location for shipping both from and to Europe, as well as easily accessible as a trade and supply center to other islands of the West Indies. Over the course of two centuries the island changed hands repeatedly as result of its desirable geographic location and trade functions.

In an effort to protect its interests, the island was fortified in several successive stages, beginning in the early 17th century, with the last major phase ending in 1816. The island was known to have had various defensive features constructed by Dutch, French, and English occupations.

This thesis will examine and record the defenses and artillery of St. Eustatius based on fieldwork conducted on the island during the summer of 1990. Included will be sections on European wars affecting the Caribbean, background information on defensive theory relevant to the Caribbean, and the island's own fortifications, batteries and artillery.

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INTRODUCTION

St. Eustatius is a small island in the Dutch Lesser Antilles (Figure 1). Its environment was not especially suited to cultivation, but its position in the Caribbean, centrally located along the trade winds route from Europe to the New World, made it a desirable island. Functioning as a trade center, it attained a high degree of importance to the colonial world. All nations recognized its vital role in the development of the New World territories.

As an island of value, the government which controlled the island would be expected to have paid considerable attention to its protection. Although St. Eustatius was provided with fortifications, even so, it surrendered nearly every time it came under attack.

Preliminary examinations of the history of the island suggest it was reasonably well fortified. Although the effectiveness of the fortifications was important, this must be combined with information as to other defensive tactics employed by the Statians, especially the use of Naval

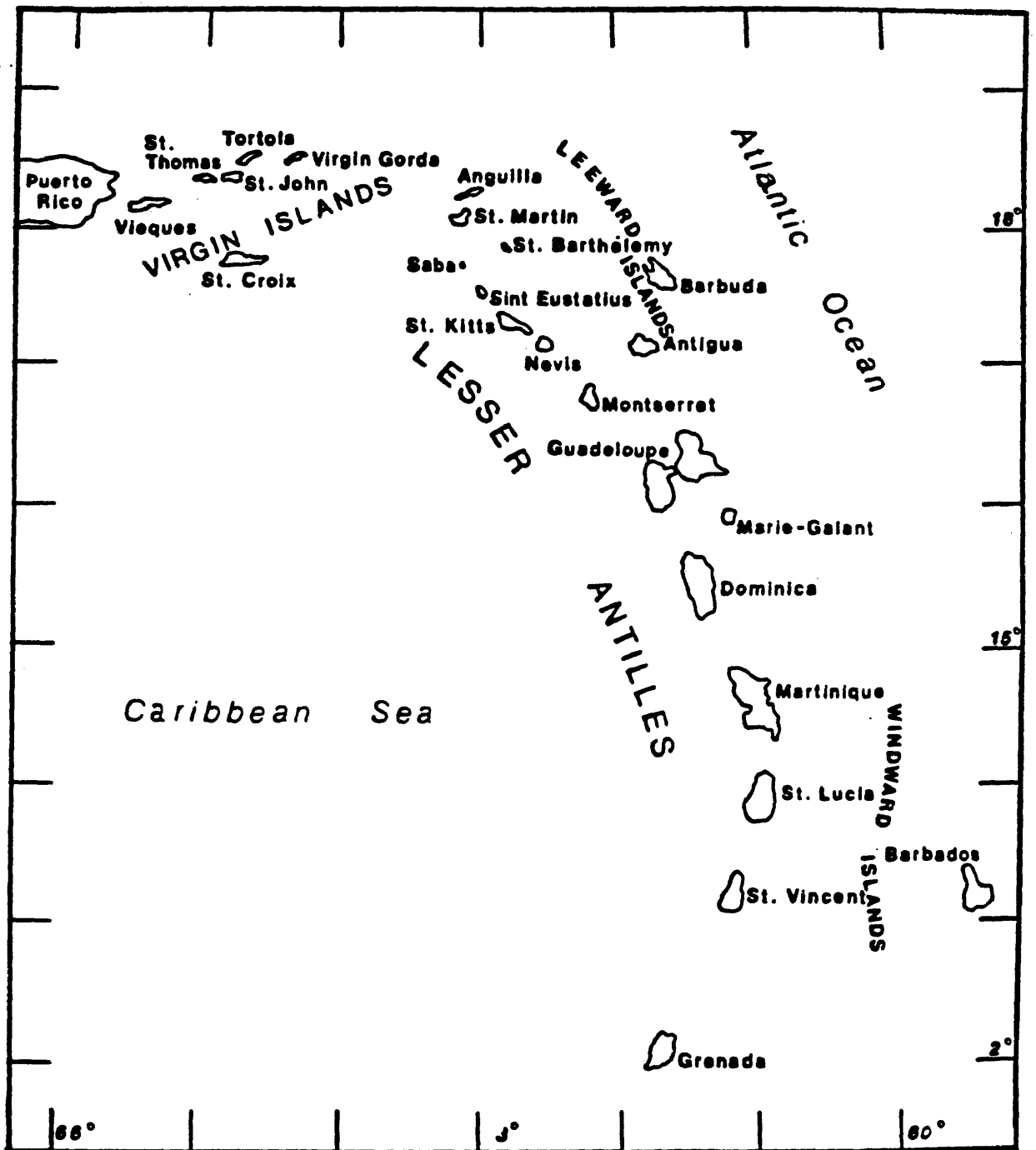


Figure 1 (Barka 1985)

protection. By the 18th century, fortifications alone were seldom sufficient in themselves to provide fail-proof security for an island nation.

This study proposes to examine the fortifications and defense of this crucial trade center, and attempt to determine why it fell to so many invaders. It is suspected that the surrender of the island after most invasions was not a result of poor fortification. It is proposed that it was rather a product of a lack of naval protection, defective equipment, and a general sense of apathy towards self protection on the part of the islanders.

Although numerous studies about fortification and defense have been undertaken over the years, few deal specifically with the West Indies. Research by Ed Harris of the Bermuda Maritime Museum has covered both artillery and fortifications on that island. Some work has occurred on Jamaica dealing with its fortifications, but little is available in published materials.

Spanish fortifications in the Caribbean perhaps have been better studied. The National Park Service has conducted research into the forts of El Morro, El Canuelo, and San Cristobal on Puerto Rico, mainly for restoration and interpretive purposes. In the same line, most early forts in

the United States were investigated for such goals.

A search of the literature revealed little scholarly work on Caribbean fortifications, but related research for the area has been published. Duffy (1987) and Buckley (1979) both deal with West Indian troops in the late 18th and early 19th centuries, an important element for defense.

Recent research into the British East India Company could provide valuable comparative data. One issue of The International Journal of Nautical Archaeology and Underwater Exploration (February 1990) devotes itself to this subject. Although no articles specifically cover fortifications, at least one deals with shipboard artillery (Brown, 1990).

Fortification studies are abundant for some other parts of the world. Forts in Africa are examined by Lawrence (1963), and in India by Mishra (1985). Scores of colonial era North American sites have been reported on (e.g. Stotz 1985; Robinson 1977; Ivers 1970; Luzader et al. 1976; Howard 1968; Downey 1965; Heldman and Widder 1990; Martin 1990; et cetera). Hopefully future studies will provide more scholarly information concerning fortifications in the West Indies on which to test theories of Caribbean defense.

This study had several limitations within which research

had to be conducted. The surveys were undertaken by a small crew on limited time. Several were recorded solely by the author, which impeded detailed mapping, and few, save Battery Concordia (SE81), were allowed the luxury of a more detailed study.

Comparative studies were complicated by the use and re-use of the fortifications by at least three different nationalities over a period of more than two-hundred years. There was little hope of accurately defining which group was responsible for what features, especially when they were often separated in time by only a few months.

Access to documents was generally confined to excerpts offered in Attema (1976). Only one inventory was available in its original form, and that in a poor quality photograph. Documentary investigations in the Hague and Great Britain might have significantly strengthened the quality of this research, but this was not possible. In addition, a great deal of the Dutch records have been destroyed over the years by the elements, invaders, and simple neglect.

Chapter 1

St. Eustatius

The island measures some 5 1/2 miles long (9 km) by 2 1/2 miles wide (4.25 km) (Hartog 1976). Geographically, three distinct regions are represented, the mountains to the north, made up of eroded volcanic cones, a flat plain in the center, (the "Cultuurvlakte"), and the "Quill", to the south, a more recent volcanic crater. The coast of the island is characterized by rocky cliffs abutting the sea, with scattered shallow beaches. Coral reefs lie offshore at numerous locations.

The highest point on the island is atop Mazinga, on the Quill, at 1,969 feet (600.4 meters). The Upper Town and Fort Oranje are at approximately 141 feet (43 meters) above mean sea level. The highest point in the northwestern mountains is on Boven, given as 950 feet (289.4 meters) (Cadastral Survey Department, Netherlands Antilles 1963).

Rainfall is not abundant on the main part of the island. There are no significant springs or underground water supplies, forcing inhabitants of both today and in the past, to

rely upon capturing what rain there is in brick cisterns.

The main bay, Oranje, is at the south-center of the island and has a sandy bottom suitable for large ship anchorages. Although there are several other bays none were generally used as a shipping anchorage. Winds, shallow depths, and coral prevented close-in docking at most coastal sites, though smaller boats involved with smuggling, or landing invading troops, could beach at several locations, necessitating defensive positions to be maintained around the island.

Other than Oranje Bay, sites at which small craft landing was possible included Tumble Down Dick Bay, Jenkin's Bay, Concordia Bay, Corre Corre Bay, and Back-Off Bay. Although landable, each of these sites would require an overland trek to the town and main fort. Landings are possible at a few other areas, but most involve difficult ascents up the escarpment, especially if under fire from defenders.

The European expansion into the Caribbean area began in earnest with the explorations of the late 15th century. It was on one of these voyages that St. Eustatius ("Statia") was first noted by non-indigenous peoples. Christopher Columbus sailed past the island on the 13th of November, 1493, recording it on his charts. Once charted, the islands would later be exploited by various European nations in search of

economic growth. Thus began the colonization of the West Indies. In the following two centuries, many European groups began to send colonies to the islands, including the Dutch.

The first Dutch expeditions into the Caribbean were concerned with trading activities. The Netherlands thrived on the principle of the "mare liberum", for without a "free sea", their world trade would come to a halt. Unlike Spain and other colonial expansions, the Dutch saw little need to establish permanent settlements in the early years. By the late 16th century, they had found a lucrative business in trading commodities from the Caribbean, with salt being of prime importance (Goslinga 1971). At the close of that century, they found more competition in the islands, during a time the Dutch were actively expanding their markets and resource bases. Conflicts with or among other nations threatened their commodities supply, so by the early 17th century the Dutch found themselves entering the colonial era along with several other European nations to secure permanent holdings in the New World.

The first decades of the 1600's saw rapid colonization of lands that had been known for over a century, but sparsely settled. Spain and Portugal had actively colonized their holdings from the moment of first discovery, but it was not until this period that most other nations followed their lead.

In the 1620's the English began to establish naval bases and mercantile colonies in the Caribbean. Among the islands they claimed was St. Christopher (Kitts), first settled in 1622. Permission was granted to English companies to colonize on Nevis, Montserrat, and Barbados in 1625. The French similarly settled on several islands, issuing charters for colonies between 1620 and 1630 on St. Lucia, Grenada, Martinique, and Guadeloupe (Claypole and Robottom 1980).

At this same time, the Netherlands enter the colonial race for territory. In 1621 the Netherlands (Dutch) West India Company was formed, after a truce had been signed with Spain. The Spanish and Dutch had been at odds for several years, particularly concerning the vital saltpans in the Indies. The formation of the Company was in theory to promote mercantile colonies, but unlike the East India Company, this was not its major function until after the rechartering of 1647. Until that time the West India Company was little more than an opportunity for Dutch traders to continue the fighting with Spain over Caribbean resources (Goslinga 1971). Open conflict broke out several times between the Dutch and the Spanish, allowing for legal privateering and destruction of competitive bases.

Around 1630, the Netherlands begin to establish their own colonies in the Caribbean. They sought a "supply station" for

their New World colonies, and in 1631 settled on St. Maarten (Hartog 1976). St. Maarten served as an excellent supply center for trade with the French and English colonies, as well as a privateering base. In addition the presence of saltpans was an attraction. The holdings were protected with the construction of a fort in 1631 (Kandle 1985). Two years later the Spanish drove them off the island. Not to be daunted by this failure, they sent an expedition to Curacao in 1634 and expelled the Spanish (Hartog, 1976). In 1636 the Dutch then planted colonies on Aruba, Bonaire, and St. Eustatius, and Tortuga by 1638 (Goslinga 1971). Between 1630 and 1650, Netherlanders also moved into Brazil for resources and plantations, but would eventually lose their foothold there.

Amongst the fury to colonize the Caribbean islands, St. Eustatius, a small island known to the Caribs in the 17th century as "Aloi", would soon be chosen for colonization (Versteeg and Effert 1987). A group of Zeelanders proposed to establish a plantation colony and a centrally located trade base in the islands to expand their profits. Accordingly the merchants fitted out a ship to colonize St. Kruis (St. Croix) and appointed Pieter van Corselles as leader. After arriving at St. Croix they decided to move on to St. Eustatius and settled in spring of 1636 (Attema 1976).

When they arrived there were no human inhabitants,

although they were not the first Europeans to occupy the island. Expecting a Spanish attack, in 1629 a French naval squadron landed and constructed a fort on the cliff above the southern bay (Hartog 1976). It was abandoned sometime after, when the threat of Spanish ships abated.

Within two years of their arrival the merchants began to realize profits from the island. Tobacco was soon exported and was found to be so profitable that it was grown on nearly every available patch of ground. The lack of land and other natural resources impeded the rapid growth of the colony, however, and caused the island to found "sub-colonies" in order to supply their deficiencies. Within a few years the new colony was firmly established and was then able to retake St. Maarten for the Netherlands (Hartog 1976).

Throughout this time constant European wars and arguments over Caribbean and New World lands kept the island in a state of continual turmoil. Numerous privateers and pirates raided and sacked the islands, inhibiting expansion and economic growth. This constant disruption to planting and trading activities proved too difficult for the Zeelander merchants. They gave the island to the Netherlands West India Company in 1682/83 (Hartog 1976).

St. Eustatius never had great potential as a plantation

colony. It is a small island with little arable land and no water supply other than rain. To make up for these drawbacks the Statians soon exploited their island's strength: a central location with a suitable harbour. As nature had placed the island half-way along the route following the trade winds, it would be a good port and resupply area for ships travelling between the Old and New Worlds.

Because it was the Dutch custom to favor free trade, St. Eustatius began exporting not only their own produce to Europe, but that of neighboring islands as well. The Dutch, coming from a long tradition of shipping, were better able to transport commodities from the islands and bring supplies back at a cost much lower than their competitors. In addition, the Netherlands did not impose heavy duties and taxes as many other nations were doing. Dutch merchants, therefore, could offer goods at lower prices in the colonies, and did so even if that meant smaller profits. In this way they were able to maintain their trade supremacy, whilst at the same time securing a loyal cliental. They engaged in trade with whomever they pleased, though many colonies were required by law to trade only with fellow countrymen. The Dutch largely ignored such restrictions, as did the colonists with whom they did business. In the same manner, planters were willing to send their goods back to Europe through Dutch merchants. By doing so, they could avoid their own governments duties and taxes,

and realize greater profits.

Illegal tobacco from Virginia and neighboring British islands commonly accompanied Statian tobacco in Dutch ship holds from the earliest (Attema 1976). Smuggling between St. Kitts and Statia was commonplace, with small crafts landing at night on the more secluded beaches (Kandle 1985). Each shipment lost to a British port meant less money to the Crown, though more profit to the planter. As the mother-country usually felt the colony's reason for existence was to enhance her own interests, the planter's desires were second to the Crown's. Therefore intensified naval activity followed in an effort to curtail such illegal trade.

The growth of smuggling activity resulted in an increase in laws restricting trade between nations. Nearly every European nation enacted such acts, but the English were perhaps the most aggressive in creating and enforcing such impositions.

By the end of the 17th century St. Eustatius was firmly established as a major shipping port for all countries, both legal and illegal. Illegal trade flourished amongst all nations in the Caribbean, especially after the imposition of laws regulating trade such as the Navigation Act of 1651. A multitude of similar measures were taken to control the export

and import of goods to the colonies. It was not until the next century, however, that St. Eustatius' role as a port would fully flower.

Around 1740 a new product began to replace the tobacco economy of the previous years: sugar. Due to the climate on Statia, sugar plantations did not thrive, though they were established. Sugar cane did do well on other islands, and soon St. Eustatius found that greater profit lay there. The island began a sugar refining industry to process the cane grown elsewhere. It was then sold abroad as sugar refined on the supplier's island, thereby avoiding fees and evading monopoly laws.

Statia's role as an export center for other islands grew tremendously in these years. As this was, for the most part, illegal for those selling to the Dutch, most of the sugar trade was done clandestinely, though only to the authorities. In the Indies such dealings were commonplace and were seldom frowned upon by planters. By 1746 this business of trade had become quite intense on Statia. About this time new warehouses were built all along the beach-front of Oranje Bay (Hartog 1976). In 1756 St. Eustatius became a free port to compete with its only real rival, St. Thomas (Hartog 1976). This would secure the islands place among international trade in the Caribbean, and legally open its port to all nations. Later in

the century upwards of 600 warehouses would crowd the narrow Statian beach (Barka 1985).

Another facet of the growth of trade was the neutrality of the Netherlands in many of the continual European wars. This enabled them to trade with surrounding islands which could not directly trade with each other. The major drawback of this role was the constant capture of their merchant vessels. Any vessel found to be carrying "contraband" goods was subject to boarding and seizure by the warring nations. Although a frequent occurrence, it was not a great threat to Dutch trade.

The majority of Statia's trade was with French and British West Indian colonies, as well as British colonies in North America (Kandle 1985). Thus, Dutch merchants were often harassed by the British Royal Navy, either because they were shipping illegally exported British colonial produce, or because they were doing business with the French, a country which seldom got along with Britain. This situation deteriorated with the start of the Seven Years War when open hostilities broke out between France and Britain. Every war in Europe resulted in increased trade at St. Eustatius from all nations, due to the closing of other ports to certain countries.

During the Seven Years War (1756-1763), St. Eustatius

flourished as never before. The Dutch took on the role of supplier to both sides, but especially for the French. They furnished (with considerable profit) arms and ammunition to the French in the Caribbean, and at the same time continued to sell goods to British colonies. While the Dutch often gained monetarily, their purchasers were not so often as fortunate. One arms sale in 1758 to Guadeloupe was said to have been of muskets meant for the African trade. Upon firing three-fourths of the inferior quality guns burst (Pares 1936:254 cited in Kandle 1985). This incident did little to discourage future sales, however, with the possible exception of the Governor of Guadeloupe. By the end of the war trade in the Dutch Indies was at a new height. It was not unusual for 75 to 80 ships a day to anchor in the Dutch roadstead (Attema 1976). St. Eustatius was quickly earning its title of the "Golden Rock".

Another commodity was soon to become a major source of income for merchants on Statia. Plantation work was difficult labor, and fieldhands were not easy to come by. The earliest planters often relied upon indian labor to tend the fields, but this source was neither plentiful nor adequate. The solution was the importation of African slaves, which the Dutch involved themselves in directly. On Statia the Waterfort was converted to hold slaves in transit, accommodating up to 450 individuals. Dealers on the island reportedly had up to 1,500 slaves in stock at one time (Newton 1933). Trade in

Africans would continue legally in the Dutch colonies until 1784, with the last slaver arriving in Oranje Bay in 1793 (Hartog 1976:50).

The decade following the Seven Years War witnessed a dramatic change in the political climate of the colonial world. The British North American colonies were moving closer to open rebellion and had found a willing accomplice in the merchants of the Netherlands. Britain and the Netherlands had themselves been entangled in several wars over the course of the last century. With the involvement of the Dutch in the Seven Years War there was little mutual affection. Thus, not only would selling banned goods to Britain's rebels earn profit, it would enable the Dutch to gain vengeance for British seizures from previous encounters. This, however, was not the official policy of the Netherlands but rather a private affair of its merchants.

In 1774 "as many as 20 American ships at once" were reported in the bay at St. Eustatius (Goslinga 1979:83 quoted in Kandle 1985:52). Though war had not been declared, stores were beginning to be acquired in the event armed rebellion was deemed the only solution to the colonies' grievances. Desperately collecting supplies, the American rebels were said to be "offering at the Dutch, Danish, and French Islands in these seas unlimited prices for ammunition and warlike stores"

according to a loyalist in Antigua in 1775 [Clark 1964(1):1170-1171 quoted in Kandle 1985:53].

No matter what the colonists wanted, it could be purchased on Statia. One Scottish visitor to the Lower Town in 1775, Janet Schaw, summed up the holdings of the warehouses nicely: "But never did I meet with such variety..." (Kandle 1985:52). Another observer, Abraham Van Bibber, agent for the American colonies, wrote in a letter concerning Statia: "Warlike Stores are very Plenty here and much more Reasonable then they are at the French Islands..." [Clark 1964(7):213 quoted in Kandle 1985:54].

The British government was not ignorant of such trade. British protests were quickly sent to the States General of the Netherlands demanding a cessation of contraband sales to the rebels. The initial result was that much of the stores being sent to Statia were documented as destined for the African trade, though in fact intended for the American colonies (James 1903 cited in Kandle 1985). Sending military stores to the island was not illegal, only their resale to the Americans. This ruse did not hold up long, and Britain continued to petition the Government in Holland to take firmer actions.

The government of the Netherlands had no desire to reenter

into war with Britain. Though relations were somewhat strained, especially in the Indies, the Dutch knew there was more to be gained by remaining neutral. Thus, relenting to the British petitions, the Dutch West India Company passed a law on the 20th of March 1775 banning trade in "warlike stores" to the American colonies for six months. On August 18th the ban was extended for one year. Later this was further extended for another two years (Tuchman 1988). The penalty for breaking the ban was 1,000 guilders (Force 1937 cited in Kandle 1985) but even so few merchants abided by it, either in the Netherlands or the Caribbean. Governor de Graaff himself ignored the orders, for in April of 1776 he allowed American ships buying these stores to anchor in the roadstead of Oranje Bay.

Numerous commodities were smuggled to and from Statia. As before the Revolution, sugar that entered the port illegally was still refined on the island. Goods of all kinds were traded between colonies whose countries were at war and were forbade to purchase such items. Among the contraband goods though, none were as profitable for the Dutch, and as desired by the Americans, as military stores. Muskets, pistols, cannon, mortars, flints, weapon parts, lead, balls, and especially gun powder, all regularly passed through the warehouses on St. Eustatius destined for America (Rodney 1789). Also banned were ship stores useful to the fledgling American Navy, as well as cloth. Few items that were necessary

to send an army or navy into action were unavailable on the island. When Admiral Rodney captured some 50 armed American ships in Oranje Bay,

The numerous Letters found on board them plainly prove that (their hulls and masts excepted) all their Rigging, Sails, Cannon, Powder, Ammunition, and Stores...were sent from this Island, without whose assistance the American Navigation could not possibly have been supported (Rodney 1789:54-45 from a letter dated March 26, 1781).

Weapons and ammunition were among the most profitable to smuggle. Gun powder could earn a profit of 120% for the Dutch merchants who dealt in it (Hartog 1976). The powder was often stored in barrels marked "sugar", "rum", "tea", and "rice" or "hidden under molasses" (Attema 1976; Jameson 1903, and Clark 1964 (1) 1013-34 cited in Kandle 1985). Soldiers were ordered to try and prevent such breaches of the law but were often engaging in such activities themselves (Kandle 1985). Contemporary accounts even describe the removal of the British Broad Arrow, the mark of property of the Crown, so they could be resold to the Colonies during the war (Clark 1964 quoting a letter of 1776, cited in Kandle 1985). Even British merchants cashed in on the profits. Several merchants from St. Kitts were known to have rented warehouses on St. Eustatius and were accused of conducting illicit trade with the rebellious colonies.

Common landings on the island used by smugglers included

Billy's Gut to the northwest of the Lower Town, Tumble Down Dick Bay, Jenkin's Bay, and Concordia Bay. The exact volume of illegal trade at Statia will never be known, for no one was foolish enough to record many details. It is suspected to have been enormous, possibly even "on a level with the common trade", which incidentally was \$3,700,000 in 1779 (Hartog 1976:39). That year 3,551 ships officially entered Statia's port plus an unknown number of illegal entries (Hartog 1976:40). This volume of shipping kept up throughout the war, for by 1780 there were still 3,217 vessels registered as having officially entered the harbour (Spinney 1969).

Statia's role as a trade port came to an abrupt halt with the British attack on February 3, 1781, shortly after the Netherlands entered into war with Britain. Admiral Sir G.B. Rodney led a fleet to the island with the intention of cutting off supplies to the Americans by securing the port, which he effectively did. No sooner had he shut off this outlet than merchants on nearby islands, including some British subjects on St. Kitts, began to arrange for other means to continue the illegal but highly profitable trade (Rodney 1789). St. Eustatius was not able to continue this activity during the British occupation. All stores and warehouse were closed and guarded, and the contents of most seized and sold at auction. This sale actually harmed the British forces, as although the proceeds went into the British war chest, the auctioned goods

were resold to merchants dealing with the colonists.

The British occupation was cut short by a surprise French invasion in November of 1781. Under their administration many warehouses reopened and business was allowed to resume. At the close of the war St. Eustatius was returned to Dutch hands and remained a free port from 1784 to 1795. Open to all nations once again, Statia prospered exceedingly during the post-war years, experiencing growth at an enormous rate. This was soon stifled by yet another invasion.

In the years following the end of the American Revolution another revolution broke out in Europe, this time in France. After consolidating its own internal power, France began military expansion and annexed the Netherlands into her empire. When this Revolutionary French government took control of St. Eustatius in 1795, it quickly fell into economic ruin. With severe war debts all French possessions were heavily taxed, some to the point of economic collapse. This occurred on Statia and the island was never to recover from this burden. Although trade continued, it dwindled to a point that it soon fell behind several other ports until it was no longer of any significance.

St. Eustatius was restored to Dutch rule at the close of the Napoleonic Wars, when France was defeated by an alliance

of several European nations. In 1816 Holland reopened the port without tariffs in an effort to revive trade, but by this time it was too late. A final blow was struck in 1819 when a hurricane hit the island destroying numerous warehouses. The warehouses of the Lower Town were, by and large, abandoned and began to be scavenged for brick which was sold to other islands. The days of the Golden Rock were over.

Chapter 2

The Need for Defense

St. Eustatius was never particularly coveted by other nations as a plantation colony. It offered few incentives for such enterprises. Had it remained a planter colony, the island would likely have seldom found itself in a position requiring it to fend off invaders.

When the island turned from its planting activities, and began to prosper under mercantilism, the situation was drastically altered. Once Statia began to accumulate wealth, from both international trade and industries such as sugar refining, it became a prime target. Pirates saw abundant riches waiting to be taken. Neighboring colonies found a new rival. European nations saw a vital trade center, and a potential supplier to ever changing enemies. From the very beginning of its prosperity, St. Eustatius was in need of protecting itself.

Once an island in the Caribbean began to amass wealth, it drew the attention of pirates. Numerous such bands roved the

sea. Some were tolerated by certain nations, if not actually sanctioned by them. Others, holding allegiance to none save themselves, attacked all with equal zeal. A great deal were former privateers who found they preferred to acquire their riches from the toil of others. Statia was ransacked on several occasions by such criminals, and found she needed to guard against these intrusions when sufficient "booty" was known to be on the island.

Most pirates traveled on small ships and relied, when sacking land cities, on the element of surprise. Observation posts alerting the town to the danger often proved sufficient to avert an attack. Some pirates, however, had armed frigates bearing from 50 to 90 guns (Cochran 1961). These were more of a threat, especially if they had banded together with other pirate ships.

Another concern the islanders had was not necessarily directly related to their own activity. As subjects of European nations, they were often drawn into conflicts based entirely on European disputes. As nations supported colonies in the New World, their colonies were often obliged to enter into their continental conflicts. If not involved as full-fledged combatants, the colonies were, at a minimum, encouraged to alter trade and commerce with the enemy's colony. This was commonly accomplished through privateering.

In essence, a privateer was little more than a legalized pirate. Many privateers were former pirates, and most pirates were at one time or another privateers. A "Privateer" was a ship that sought out enemy nationals in time of war. Their mission was to capture or destroy their ships and confiscate the goods they were transporting. This also included the capture of goods on land, such as the busy warehouses and port on St. Eustatius.

The privateer captain carried a "Letter of Marque", which was a license to carry out piratical acts for the good of his country. Crews of such "licensed" ships were normally accorded at least minimal rights of regular combatants in the event of capture by the enemy. This was not always the case though, especially in the American Revolution. American privateers were often considered by the British as pirates, and accordingly treated by many English officers (Coggins 1969).

In reward for their work in hampering the trade and supply efforts of the enemy, the privateer crew was granted rights on the captured ship and cargo. These rights differed from country to country, and were agreed upon before the issuance of a Letter of Marque. Every person on board was allotted a share of the prize, which was normally sold at auction (Coggins 1969). Recruitment was not very difficult for a privateer, for they offered quite reasonable rewards to the

crew. Naval vessels similarly allowed the crew to share in the value of captured enemy vessels or towns, such as when Admiral Rodney took St. Eustatius. The difference was the proportions allotted by the Navy versus the privateer. Their less generous system resulted in having to resort to gang impressment to outfit a ship.

A regular merchant ship often carried a Letter of Marque, even when not actively privateering. The fear of pirates and enemy privateers prompted most merchants to keep at least some cannon on board, even if only a swivel or small deck gun. Thus, if they inadvertently came upon a weaker opponent, they could vastly supplement their voyage's profits.

Privateers were often a major source of danger to the island. Several privateers targeted St. Eustatius during European wars for less than patriotic reasons as well. When war broke out, receiving a Letter of Marque enabled neighboring merchants and planters to legally destroy their competition. In this way they could bolster their own economy by widening their markets, and decreasing the supply going back to Europe, allowing greater control over prices.

The same reasons that would draw a privateer to an island, also brought armies and navies. St. Eustatius, as a major trade and supply center, had military value. Trade brought

economic power to an enemy nation. Goods offered at such a port also meant re-supply was facilitated to enemies in time of war. Thus, the warehouses of the Lower Town not only brought money to the islanders, but danger as well. Whenever a war broke out, and this was often, the warehouses became prime potential targets. It was this aspect of St. Eustatius, more than any other, that necessitated a strong defensive system for the island. One of the leading military and fortification experts of the day, John Muller commented:

... their trade, on which islands chiefly depend, would become very precarious, without having some strong place or other to secure their effects in, which otherwise might be surprised or carried off [sic], before an army can arrive to defend them (Muller 1755:121).

Another concern islands had to bear in mind was their strategic importance due solely to geographic location. St. Eustatius, lying along the trade route, was such an island. It was centrally located between Europe and the New World, and within the currents and winds that carried ships between the two. In addition, it had a large bay capable of harboring a large number of ships. Professor John Muller wrote:

It may happen that in some places such as islands and some other places, where there are very few things to be had for exportation, yet if the harbour is convenient for ships to come in, when distressed by weather, or the place may serve as a magazine to bring and deposit European commodities, to be taken from thence transported by vessels, to some other market; or else fresh water is to be found for ships, when no other place is near hand,

as is St. Helena; such situations may be fortified, and become very useful (Muller 1755:129-130).

Whilst Statia certainly was not the most logical port to take on fresh water and food, nor seek shelter in foul weather, it did function as a fine "magazine to bring and deposit European commodities". As long as it offered these amenities, St. Eustatius would need to be capable of defense.

By the 19th century, after French rule economically ruined the island, the need for defense all but disappeared. The island no longer contained the riches sought by pirates. The competition privateers sought to loot or destroy was gone. The empty warehouses were falling into ruins, no longer of any concern to admirals and generals. There was no longer any pressing need for defense.

Chapter 3

Fortification Theory

As these kinds of situations are the most useful to a trading nation, we have so much the longer dwelt upon the method of securing them in the best manner possible (John Muller 1755:129).

In the 17th century fortification theory in Europe began to develop into a sophisticated art. By the 18th century, a plethora of theoretical works and manuals had been published on the subject. Every European military officer who was considered as having been "properly trained", had read one or more of the "treatises" then available.

Although theories of fortification developed simultaneously in several countries, France was long considered the master of the subject (Robinson 1977). Among the most famous of fortification champions was Sebastien Le Preste de Vauban (1633-1707). He alone is often credited with the superb re-design of the defenses of France, and with the high level of aestheticism these exhibit.

Vauban was venerated in the 17th and 18th centuries as the authority on proper fortification. During his career, he personally directed about fifty sieges against fortified positions (Robinson 1977:11). These experiences clearly taught him not only how to conduct a siege, but also how to best defend against them. Eventually these revelations were set down and organized into the classic on the subject, Memoire pour Servir d' Instruction dans la Conduit des Sieges et dans la Defense des Places (Vauban 1691). Within a few short years it was translated and widely circulated among other European nations (Cambray 1693).

Within this seminal work, Vauban elucidated his collected theories. Among these was his most basic premise, that every defensive work must be able to defend all areas of its own grounds. To achieve this, he stated that all parts of the fortification must be "viewed, or flanked, from some other part so that there would be no sheltered place where an enemy could lurk" (Vauban 1691). Wide flanks were best for the achievement of this. Vauban developed three basic systems he found best suited.

First was "a simple, straight forward bastioned arrangement with tenailles before the curtains". Although perfected in the 17th century by men such as Vauban, this was actually first utilized by the Italians in the early 16th

century, utilizing plans drawn in the 15th century (Robinson 1977:8).

The bastion is a projection attached to a regular fortification. Loosely, it could be of round, square, or triangular form. Technically, a bastion must be four sided, but the term was used for three (a demi-bastion, or half-bastion) and five sides as well as circular (roundels) ones (Lawrence 1963:72). The feature was commonly built integral to the fortification wall so as to form a salient angle with at least two faces (Figures 2 and 3). If it were separate, it was considered a form of a redoubt rather than a bastion.

The basic premise of this feature was to provide protection to the fort walls, ensuring there were no areas unable to be covered by defensive fire. All bastions were designed so as to allow fire from cannon and small arms to cover the space between it and the adjoining bastions.

Second was "an arrangement wherein the bastions were separated from the enceinte and the angles of the latter were reinforced with small, pentagonal works called tower bastions" (Robinson 1977:11). Similar to this was the third, although this would be "a more complicated assemblage having added outworks, larger towers, and a more complicated enceinte which was traced to produce, in effect, a second set

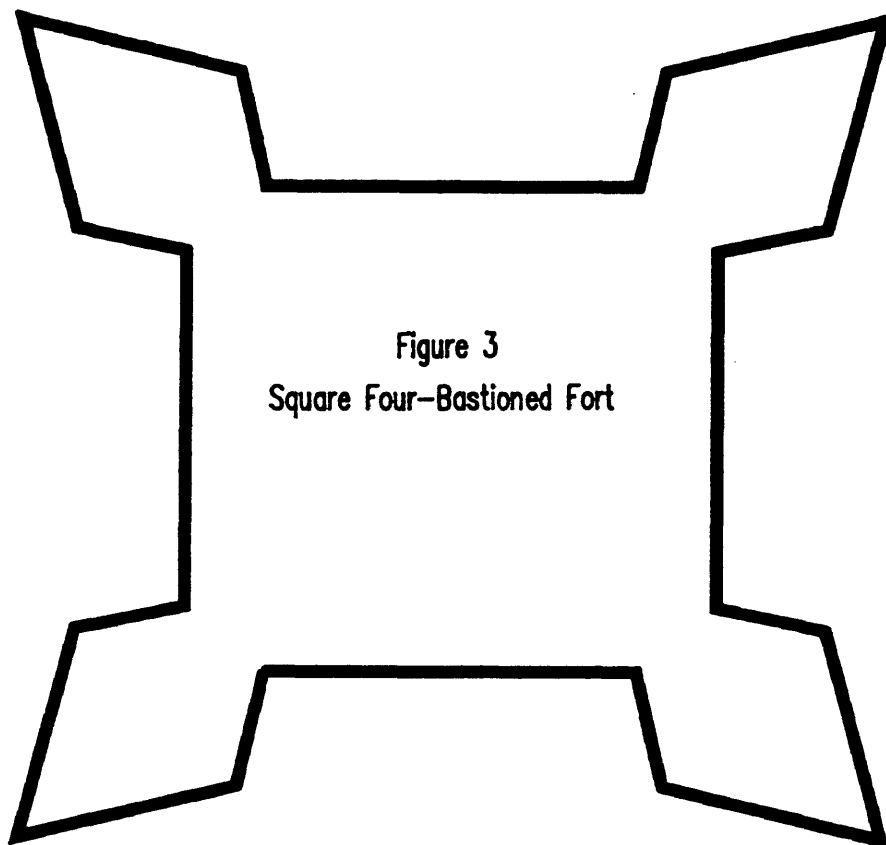


Figure 3
Square Four-Bastioned Fort

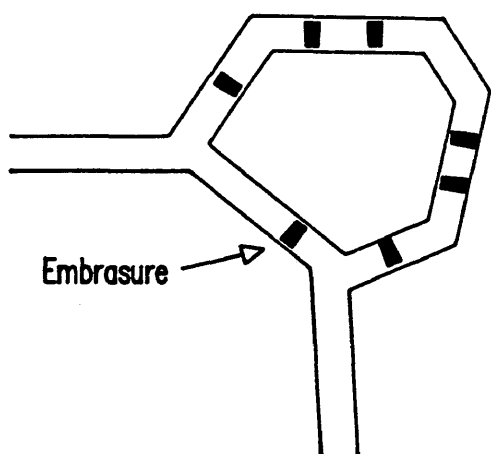


Figure 2
Bastion detail
Fort Oranje

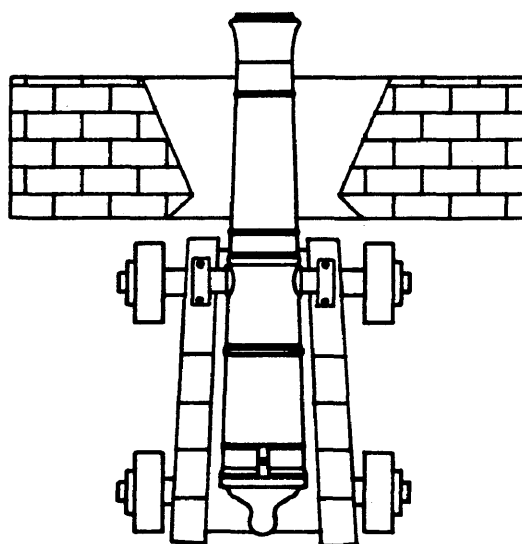


Figure 4
Embrasure

of flanks" (Vauban 1691, as cited in Robinson 1977:11). Of these methods, the first was by far the most common employed. In the Caribbean this held true, but often without the luxury of tenailles.

All of these variants included a moat surrounding the fort. Some were in the Dark Ages fashion, filled with water, but most were dry by the 17th century. In either case, the primary purpose for this feature was "to force aggressors into an exposed position in front of the enceinte" (Robinson 1977:9). Fort Oranje would receive such a moat by the end of the 17th century.

Although Vauban literally "wrote the book" on fortification building, he did not insist upon strict adherence to it. In fact, he urged it only be used in the general planning of a construction. Theories for laying out a fort's plan were "idealistically based on regular geometry", but "the surrounding terrain-hills, swamps, water, expected approaches for attack, and so on-often necessitated numerous adjustments in design" (Robinson 1977:8). If possible, the surrounding natural topography should be incorporated into the defensive plan, "to enable the garrison to dispute with energy the occupancy by the assailant of every point both within and exterior to the defenses" (Mahan 1836). Vauban stressed that the specific circumstances of each situation must take

precedence over the exact directives in his treatise (Vauban 1691).

Most nations established some form of military engineering school, such as the French "Ecole Polytechnique" which founded their "Corps of Engineers" in 1690 (Robinson 1977). In the event a country did not have its own such school, it was not unheard of to train in a foreign land.

Throughout the next century, Vauban remained chief pundit of defensive techniques. Later treatises on the subject continued to refer to his works for validation. Technological advances and new military strategies occurred, however, which necessitated updating the current theories. In the early 18th century, new battle techniques for example, such as those developed under the Duke of Marlborough, caused mainstream siegecraft to become somewhat antiquated.

Marlborough advocated military actions in enemy territories not against the fortified position itself, but against the armies it protected. Thus began the 18th century custom of field battles and troop maneuvers away from fortifications. This did not mean an abandonment of Vauban's siege techniques, only their relegation to a secondary role.

During the 18th century new manuals were written which dealt with such alterations to established warfare. Not only

were field guides for the military produced, but also fortification manuals, as the siege was not yet obsolete. One of the more prolific authors of such treatises was John Muller, "Professor of Artillery and Fortification, and Preceptor of Engineering, &c. to His Royal Highness the Duke of Gloucester" (Muller 1780).

Although never as venerated as Vauban, Muller was nonetheless a respected authority on fortifications. His writings were taught in most British military schools, and few educated officers were unfamiliar with his works. One of these, A Treatise Containing the Practical Part of Fortification (1755), outlines what was expected of a defensive work of the period.

Although Vauban's theories were the foundation of fortifications that would be built in the Caribbean, Muller's are much closer to the reality. He set down guidelines for field fortification, as opposed to the fortification of a large cities, as Vauban was accustomed. He also treated artillery batteries and island defense, both of which have more relevance to St. Eustatius than anything Vauban ever produced.

Muller stated that the "necessity of building fortresses in all states whatsoever, appears from... [an] innate

principle of self-preservation" (Muller 1755:120). This was especially true for an island such as St. Eustatius which depended so much upon shipping:

Maritime powers, and those who inhabit islands, such as England, Sardinia, Sicily, & c. require no less fortified places; for as an enemy may invade them by a surprize, and though his naval force be less, yet when he once gets a footing, may either conquer or destroy the country. Besides, their trade, on which islands chiefly depend, would become very precarious, without having some strong place or other to secure their effects in, which otherwise might be surprized or carried off[f], before an army can arrive to defend them (Muller 1755:121).

Statia certainly would find itself in a "precarious" position if trade were suspended, and indeed, was at a loss several times for lack of sufficient defensive positions and strongholds to secure their goods. Muller, as an Englishman, could relate well to island situations. He devoted part of his treatise to the subject of island defense, for in many cases these situations presented unique defensive requirements.

The first principle of planning the defense of any position is choosing the proper location for the works. In land situations these were normally determined foremost by the location of a city. This was also true for islands, but an island is also a contained situation, and therefore has additional defensive boundaries.

In islands, the best situations are upon the coasts, and

in such places, where an enemy may easily land, and where the garrison has a safe communication with some inland town to receive succours and subsistence in case of an attack.... (Muller 1755:122-3).

St. Eustatius has limited coastal areas suitable for landing. That which was best suited, from Oranje Bay, was prudently the first to be fortified. Within the first century of its existence, the island further fortified suitable beach landings, as common sense and Muller suggested. A good seacoast fortification would force the enemy to land at an inconvenient spot. The French having to land at Jenkin's Bay is an example of how this worked. The properly placed fort insured the assailants would pass along a route "preselected by the defenders" (Lewis 1970:7).

The presence of a safe and facile means of communication between the garrison and the town could well be a deciding factor in an assault (Mahan 1836). Batteries on St. Eustatius attempted to follow the advice of Muller. The French occupation of the 1780's is credited with building a road system between the forts to facilitate communication and movements. With the exception of the trench between Fort Panga and Battery Jussac, however, none were protected routes.

Not all military strategists agreed with the tactic of defending all suitable landings: "It is not necessary to make the coast a fortified line" (Lallemand 1820:103). Another 19th

century planner felt it was often more advantageous to allow the enemy to land and engage him on the field. The landing site, however, was to be encouraged by the defender. When defending an island against amphibious assault, fortifications to prevent it were not necessarily the main objective:

the securities of the points to be covered is considered to be greatly augmented whenever the defenses can be so arranged as to oblige an enemy to land at some distance... Instead of being designed to prevent a landing on any part of the coast...the system often leaves this landing as an open alternative to the enemy; and aims so to cover the really important and dangerous points, as to necessitate a distant landing and a march towards the object, through the people (Totten 1851:5-6).

St. Eustatius is a small island by any standards. Professor Muller treated this situation as well as the larger ones.

In an island of no very great extent, whose coast is of an easy access, in most parts, and where it is impossible to fortify every one; the best situation for a fortress is the middle of the island upon a rising ground; because troops may best be sent from thence to any part, to oppose the landing of an enemy; but this fortress should be pretty large, that in time of need, the inhabitants of the country may retire into it with their cattle, and other most valuable effects, and help to defend the place, till the enemy is obliged to retire, either, for want of provision, or having no hopes to get mastery of the place (Muller 1755:122-3).

Although by the 18th century Muller suggested a centrally located fort on high ground for small islands, this was not always the case. In earlier times batteries were commonly

closer to sea-level, such as the Waterfort. As guns improved, and ships began to be more heavily armed, batteries moved to higher ground. Low batteries retained their value however, as they could best damage a ship at the water-line.

Although Fort Oranje is not on high ground in relation to the Cultivation Plain, it did set high above the Lower Town and Bay. In size it loosely conformed to the ideal for a small island. It would not be able to harbour the effects of the inhabitants, but it did command the area above them, overlooking the sea, and afforded them at least some protection.

When locating a fort on an island, care had to be taken in deciding upon its precise placement:

If a fortress is built near a river, lake, or sea, it must be considered whether it should stand quite close to the water side, or at some distance, so as the works may not be battered by the ships; whether an enemy may easily land thereabouts, and attack it by land, whether ships may come close, or the water is shallow...When a fortress lies so near the water that it may be battered from the ships, it is in danger of being destroyed by the superiority of their fire; on the contrary, when the water is so shallow, that the ships cannot come near enough to batter in breach; care must be taken that the enemy may not land in their boats, and storm it by land; to obstruct which, redoubts or batteries must be built, to resist both in front and in flank; and if they can land any where beyond the reach of cannon, these redoubts or batteries must be fortified all round with a wall and good ditch, that they may not be surprized in the rear... (Muller 1755:123-4).

Fort Oranje was placed directly on the sea coast. The bay beyond did not allow large ships to get extremely close to its parapets, but they could easily sail within firing range. In this sense, the planners of Statia's defenses somewhat failed. There were no large defensive positions on the island which were secure from ships cannon and suitably defended against assault troops. Although Fort Panga was quite safe from the former, and reasonably secured against the latter, it was incapable of fending off an extended or determined siege. Housing a large number of troops was beyond its limitations, and there was no protection against besiegement save for its placement on a mountain top.

The main fort did have reasonable capabilities to defend against landed troops. Its guns were able to cover the bay, where troops were likely to approach from. The ascent from the beach was up a narrow path or the cliff itself. Either of these routes would have "cost the Expense of much Blood", had the Fort's occupants offered stiff resistance (Rodney 1789).

If assailants came from the inland side, having landed elsewhere, the Fort was equipped with certain elements necessary in repulsing an assault. Although by the 18th century some of its original bastions had fallen, it still retained two on the side of the Town. A moat was also installed further complicating an attackers efforts. It did

not have the additional systems of progressive defense, as a European fort would likely have. It also lacked the open spaces in front of its walls which could be of great importance. Archaeological evidence shows civilian structures to have lain in its path which were likely capable of protecting enemy troops and artillery from the Fort's guns.

Part of the Fort's protection from such circumstances were in its versions of "redoubts or batteries" as Muller proposed. Although slow in coming, the island eventually had a system of batteries which encompassed the island, conforming to the ideas set down in island fortification theory. Their only real deficiency was in their construction, which did not allow for protection from landed troops, only approaching troops and ships guns.

Oranje Bay was protected at one time or another by several batteries and fortifications. Besides Fort Oranje, the guns of the Waterfort, Hollandia, Rotterdam, Royal, Four-Gun, and Bouille were all within range of the harbour. This was an important element of defending an island which depended upon trade. Muller discussed this circumstance:

In a place where there is a harbour, some part or other of the fortress should command it if possible; for though redoubts and batteries are made to defend its entrance, yet if the enemy finds means to destroy some, or passes by others, the harbour lies open for the ships to come in, without any further obstacle... But if part of the

fortress commands the harbour, the ships are never secure in it till the place is taken, which is all that can be expected (Muller 1755:124).

Once the harbour to be protected was identified, further thought had to be given as to how it may best be secured:

...it must be carefully considered, on which side the fortress is to be placed, both in respect to the landing of the goods, and to the defence of the harbour, as likewise, where the ship may come as close to the quay as possible. In a fortress built to promote and protect trade, it must likewise be considered, what kind of goods are to be found in or near the place, what might be brought by ships from foreign parts, and what might be exported, in exchange for those manufactured there, and where to be carried to market (Muller 1755:129-130).

Although the island had other bays in which a ship could anchor, none were truly entitled to the status of "harbour" except for Oranje. The mere presence of the Fort then helped to secure the island. Even if it could not withstand an assault, the possibility had to be considered by a potential attacker. That alone may have been enough to ward off less confident aggressors.

The approach to a harbour needed to be secure as well. On Statia, small batteries were placed at strategic points where ships must pass on their way to the Roadstead. Professor Muller agreed with this tactic:

It is true, that the entrance should not be neglected;

for whenever there is a point of land that commands the approach of an enemy, it should be carefully secured by some works or other.... Nothing conduces so much to the safety of a place, situated near the sea, or navigable river, as those works which keep the enemies [sic] fleet at a distance (1755:124-5).

After the most advantageous positions for defenses were selected, they had to be properly constructed. Even in the right position, a poorly designed or executed fortification was of little use. The development of the art of fortification in the 17th century had profound effects on the layout of subsequent defensive works. This was most true in Europe itself, where the writings of the venerated masters were closely followed. In the case of the colonial world, however, this practice was less rigidly adhered to.

Although the basic elements were transferred to colonial engineers, unless they themselves had formally studied fortification theory, their creation was often a mixture of recommended elements and guesswork. The exception to this generality is when European armies or military engineers built the works rather than colonials. Even so the final result was quite often a simple function of available time, materials, skilled labor, topography, and motivation.

In the Caribbean there is an odd mixture of fortifications. Some colonies were equipped with structures that would have made Vauban or Muller proud, especially a few

of the larger Spanish colonies. Others had crude forms that would scarce have held off a single pirate ship. Most islands lay somewhere in between. Their forts contained the basic, though rudimentary, forms suggested, and often were supplemented by simple batteries such as found on St. Eustatius. They "rarely exhibited any of the geometric intricacy so typical of contemporary European forts" (Lewis 1970:15).

Among the most common fortification feature carried to the New World was the bastion system. On St. Eustatius, one fort, Oranje, followed this basic principle (Figure 3). Although little is known about the early manifestations of the Fort, it did have four bastions set onto a square wall by the time of Isaac Lamont (ca. 1701), thereby conforming to the basic plan. The French had also installed a moat about the walls circa 1689-1690, perhaps as a direct result of the theories proposed by their fellow countryman, Vauban.

The remainder of the defensive works on the island were mostly artillery batteries, even the Waterfort. These works were open on one side, negating any defensive value against landed troops. They did conform, for the most part, to standard field batteries of their period, except for being of stone rather than earth. Theoretical attention was paid to the construction of detached batteries, but mostly in their

placement rather than their actual manifestations.

Professor Muller suggested the best ways in which a fort or battery on a harbour ought to be built. Fort Oranje was so located, and should have met certain criteria he set down.

When the water is so deep that ships can come up close to the walls, the parapets must be made high, and those that can be seen from the main top, should be covered above with canvas, planks, or with anything else in time of siege, to cover the troop behind them (Muller 1755:123).

In these instances, Fort Oranje was moderately successful. It sat high enough above the sea that it had no worry about being seen from the main top. Although its parapets were not exceptionally high in themselves, that was made up for by the height of the Fort above the Bay. Few close-in ships could elevate their guns enough to lob shells into Oranje, unless carrying mortars. Ships anchoring farther out however, would have been able to strike the Fort.

When planning to build a fort, Muller reminded his students that three main points had to be first weighed, along with the more minor aspects (1755:132). The three encompassed the money necessary to build, requirements for the upkeep and garrisoning of the fort, and the space necessary for the proposed work.

The proposal must, of course, calculate the necessary expenses. On company islands such as Statia, this factor was frequently the sole deciding element of whether or not to build a new fort. Time after time the governor had to implore the West India Company for defense monies. Even when the island was no longer controlled by the Company, the government seldom was generous with such funds. All too often the assistance they received was inadequate, or non-existent. At times the islanders themselves raised the money, such as for the projects of 1748.

Second, and whilst still planning the budget, the builder had to estimate the number of troops which would be required. They also had to figure in the quantities and calibers of artillery and ammunition that would be needed to ward off a siege. A defensive work had to be of an adequate strength to repel conventional assaults (Mahan 1836).

The third factor which necessitated forethought was the "extent or capacity of the place, with respect to the space taken up by the works of fortification" (Muller 1755:132). Obviously on an island the size of St. Eustatius, a system the size of Brimstone Hill would be unrealistic. Regardless, it had to be of large enough proportions to provide cover for the troops, facilities for the weaponry, and storage magazines for provisions and ammunition (Mahan 1836).

In addition, new forts had to be built large enough to accommodate the nearby town without placing undue strain on the availability of room for the town to expand. Included in this should have been an open area about the fort that afforded no protection to an attacker. In this respect, Fort Oranje miserably failed, being within a stone's throw from town buildings.

Once the preliminary stages had been dealt with, the actual business of construction could begin. The basic shape of a fort was preferably square. Onto this were added bastions, placed so that all flanks could be covered by another bastion (Figure 3). Most often these were on the four corners. Sometimes only two bastions would be built, and if so, these would be situated on diagonal opposites. Oblong and rectangular shaped forts often had dead zones to which the enemy could retreat and avoid the defenders fire (Lawrence 1963:78).

The walls were the most crucial feature of a fort. Not only did they have to be designed to maximize their defensive capabilities, but also to withstand battering or artillery bombardment. Solid core walls were avoided for several reasons. A shot striking a solid wall could more easily shatter or damage it, for there was little to absorb the shock. They were also difficult to maintain, as water

percolation caused constant cracking.

Walls typically had cores of un-mortared stone. The English were sometimes known to use cores of "misshapen lumps of stone laid in a mud packing" (Lawrence 1963:94). Earthen cores were to be avoided, as the 18th century engineer Watson explained:

instead of mortar they use nothing but a loamy earth withinside the walls; which is not only improper, but also incapable of making a cement. When a wall is so built they plaster it with a thin coat of mortar, and whitewash it, which looks very well for a time, but when once the mortar cracks and is washed away by the heavy rains, the water gets into the loamy earth withinside the wall, and swells it so as to bulge the stonework, and then all or most of the wall falls down (speaking of West African forts, quoted in Lawrence 1963:94).

Faced walls and platforms were then laid over the core using stone and mortar, with care taken to make them as water tight as possible. These required frequent repair though, as the weight of the artillery and the shock waves from their firing quickly took its toll on the flooring. Fort Oranje was notorious for this problem, it being so severe that segments of the wall actually broke away on occasion.

When a fort had high parapets, as was the rule for a true fort, embrasures were required from which the cannon could fire (Figure 4). The sides of these were "splayed inwards to widen the arc of fire" (Lawrence 1963:73). A coastal fort

normally had most of these directed towards the sea, "because trouble on land, though it might come more frequently, could not be as dangerous as an attack supported by naval cannon" (Lawrence 1963:77). Fort Oranje is a prime example of this principle for it is Oranje Bay which most needed their protective fire.

Within the fort space was necessary for the garrison and commander. Even if they were regularly billeted outside its walls some form of barracks would be required in case of siege. Often civil and criminal offices, government offices, and other vital public administration quarters were located within the fort. All of these were to be found within Fort Oranje, and many remain there today.

The fort also had to have facilities for supplies in case of an extended siege. Munitions and powder would, of course, be quite precious in such an event. Powder magazines were commonly placed under a bastion, this being a fairly secure place. Fort Oranje's powder magazine somewhat conforms to this custom. Unfortunately such subterranean magazines tended to be damp, and fouled powder frequently. Prison cells were also often found under a bastion, having similar ill effects on inmates. Statia's fort had cells placed there, though these were said to be easily escaped due to the deteriorated condition of the Fort walls (Attema 1976).

All forts needed a lookout. Many were equipped with a tower from which a better view could be had. Forts atop cliffs, such as Oranje, did not need elaborate constructions for this task, for they had naturally elevated views. Nevertheless a small lookout station was placed above the gate. Eventually Fort Panga on Signal Hill would serve as the primary observation position for the island. From that post an unobscured view was possible in nearly all directions.

The materials with which a fort could be built were as variable as the geology of the surrounding area. In the Caribbean, as with most colonial settlements, importing large quantities of massive building material was not economically feasible. Stone was most often locally quarried. When Statians requested materials from Holland, they were often quizzed as to the availability of local resources (Attema 1976).

Few colonial endeavors used imported stone. In Africa only the Portuguese are known to have done this in any quantity (Lawrence 1963). It is improbable that such importation from Europe would have been justified for Caribbean fortifications. On St. Eustatius the stone utilized all appeared to be local. Outcrops observed on the slopes of the Quill, by Fort de Windt, matched that in several of the batteries and forts. This may well have been a quarry site for these works. Other batteries used faced or natural cobble, all of which was

available in the immediate area.

If suitable clay deposits were to be had, brick was made on the building site, but in the islands this was not the case. Almost without exception brick had to be imported. The Dutch were well known for their mastery of the use of brick, especially for vaults such as in a cistern. Dutch brick is commonly yellow in colour, but this was dependent upon their specific clay source (Noel-Hume 1985).

Although stone and cobble was used for the bulk of the parapets, brick was normally preferred for fine "jointing and coiging" (Lawrence 1963:90). Tumble Down Dick Battery is a perfect example of this mixture, with stone walls and brick lined embrasures. Brick was often preferred to build parapets that "line stairs and landings, flat roofs, and the inward side of the fortification wherever it was bounded by a sheer drop" because it was relatively light compared to most stone (Lawrence 1963:92).

Mortar necessary for joining the materials could be made from burning sea shell and coral. Many Statian forts have sea shell and coral pieces in their mortar, providing evidence that this was in fact a common source of mortar on the island. Cement, called tarras, for coating the parapet tops, like at Bouille and Concordia, could also be made from shell and coral

sources although this was inferior to that available from Europe. Top quality tarras included a volcanic stone quarried in the Rhineland. It was imported to Africa through Holland, so may have been available on Statia.

The purpose of capping the walls was to waterproof the stonework so that moisture could not seep down and cause structural damage (Lawrence 1963:90). If possible such final touches were done with the imported cement mixes. Evidence of the origin of cement on Statian batteries has yet to be collected, but may have utilized both sources. Most likely it was a primarily from local resources either from the island itself, or at least in the Caribbean. The capping on the forts appears to match that used on cisterns, and with the quantities involved, importation from Europe would have been quite expensive unless loaded as ballast. Other necessary materials which would have been imported included nails, hinges, bars, locks, and other non-locally available supplies.

In colonial situations, the actual construction of a fort could be accomplished by a variety of individuals. Most early 17th century defenses were built by the colonists upon their arrival. In the larger enterprises, military officers and engineers commonly accompanied the expedition, and would have been responsible for the planning and execution of these projects. Competency therefore would vary with the individual.

In colonial Africa, local craftsmen were usually employed for the skilled tasks, and the heavy labor supplied by soldiers (Lawrence 1963). Later the use of slaves, either employed by the military or owned by the company, would provide much of the manpower. This pattern might be assumed for the Caribbean, although European soldiers likely did most of the work on small field batteries. Slave labor would have been more expensive to contract than using their own men.

No matter who did the manual labour, they were surely supervised by an overseer at some level. A few would have been familiar with military engineering, others not. Military expeditions of the mid and late 18th century commonly had Sappers and Miners accompanying them. If so, these men would control the erection of field defenses. If these specially trained corpsmen were not in the complement, a handful of engineers at least minimally trained could be expected. Admirals Rodney and de Grasse both had engineers with their fleets.

This did not mean that the crew supervisor was an engineer, nor that he knew his business. West African English colonial forts were often said to have been built under the supervision of untrained engineers, and the result was inferior works (Lawrence 1963). The appearance of several of the Station batteries suggests this was an occasional

circumstance there as well.

Batteries were included in many treatises. Not only were these discussed in the fortification manuals, but also in those for the artillery. Often their construction was undertaken without the assistance of Sappers and Miners, or engineers. Artillery officers were therefore encouraged to acquaint themselves with the basic principles of building gun emplacements.

British forces were often accustomed to leaving this task to Royal Engineers. This was discouraged by many experienced matrosses, for "certainly none can be so good judges of those things as the artillery officers, whose daily practice it is; consequently they are the properest people to direct the situation and making of batteries on all occasions" (Smith 1779:22).

A battery was defined as "any place where cannon or mortars are mounted, either to attack the forces of the enemy, or batter a fortification..." (Smith 1779:22). As there were a variety of purposes for batteries, each developed into a specialized affair. At least sixteen types are classified in several military dictionaries (Hoyt 1811:361-362; Smith 1779:22-23; Tousard 1809:1-4). On St. Eustatius, however, this assortment was unnecessary.

Most batteries on the island are forms of "sea-coast" variety, which were an adaptation of a siege battery. A "proper" siege battery was of earth, sod, and wood. Parapets were suggested that stood up to seven and one-half feet high, and eighteen to twenty-four feet thick. Embrasures were included for the guns of siege batteries, but coastal batteries commonly fired over their lower parapet. Fascines or gabion construction was often employed.

Most batteries were three sided, the central wall being parallel to the target, and two "cheeks" which "diverge equally to the right and left of this vertical plane..." (Tousard 1809:34). Unless the threat of attack from behind was expected it was customary to leave the rear open. Wooden or stone platforms were included for the gun carriage to rest upon.

Remaining batteries on St. Eustatius that approached the recommended classic battery might include the Waterfort and Fort Rotterdam, though both are of stone. Nearly all are of the winged, open backed variety, common to the customary earth works. Several Statian batteries utilized brick for gun supports, along with stone paved floors. The presence of wooden flooring was neither confirmed nor refuted in the survey or documents.

Permanent coastal batteries often tended to be of stone rather than earth. Only the former are exhibited by remaining Station sites. This tendency, plus insufficient elevation, was among the chief deficiencies in most coastal batteries (Tousard 1809:65). Stone and mortar batteries were deplored by many fortification experts.

It is almost impossible to perform the service behind such breastworks with any kind of security, because one single shot, striking into the embrasure, if there are any, or the crest of the parapet, will throw a quantity of stone into the battery and do more harm than several shots (Tousard 1809:65).

For this reason stone walled parapets required additional earthen embankments to absorb the shock of projectiles. Although erosion has obscured much of the evidence, at least two of the island batteries had clear evidence of this feature; Tumble Down Dick and Battery Concordia. Others may have had this added protection, now missing.

One case is mentioned in the treatises for the construction of stone and mortar batteries. It is doubtful that the Station batteries were built as they were for this reason though:

For the sake of economy, the battery might be constructed without saucissions in the following manner. A small dry stone wall about three feet high should be built; then the breast-work taluted with good solid sods to its proper height... (Tousard 1809:68).

Few of the batteries on Statia were equipped with embrasures. Those that were tended to be Dutch, and pre-dated the mid 1700's, with the possible exception of Fort Rotterdam whose date is uncertain. The presence or lack of embrasures was a function of the height of the parapet, and the type of gun used. Mortar batteries for example did not require an embrasure regardless of the parapet. Tousard cautioned that except "in extraordinary cases embrasures should not be used when sea coast carriages may be procured..." (1809:65).

Sea-coast battery parapets were to be as low as necessary to permit the chase of the cannon to clear them when trained at a zero degree elevation. The elevation of the battery itself above sea-level would make up for the low wall. In this sense, the vast majority of the Statian batteries conform to the model. A great many of their parapets stood less than two feet high, which would have put them well below the level of the gun. This may have permitted firing at negative angles if the carriages were constructed as to allow this.

Island batteries performed two major duties. The first was to fend off assailants approaching the island by ship. This was the primary function of coastal batteries on any island. Most invaders were not so bold as to land directly under a battery, so they were seldom required to fire on approaching infantry.

The second use to which they might be put, in which they would fight infantry, was as a part of the line of defense for a fort. St. Eustatius had no such batteries, with the possible exception of Jussac protecting Fort Panga. Other islands did construct these batteries though, such as those encountered on Martinique by the Marquis de Bouille. In both scenarios the battery had to accomplish its task whilst providing security for the guns, that they might not be easily dismounted.

The placement of a battery was as important as the placement of a fort. The geographical location of a coastal battery was chosen in the manner discussed for that of a fort. Ideally batteries would be separated only as far as their guns could reach. In this manner they could use cross-fire to defend one another, and create a difficult opponent. The defenses of Oranje Bay were situated so as to allow this. Battery Bouille, Fort Oranje, Four-gun Battery, and Fort Royal were all in use in the 1780's, and within each other's general field of coverage.

The same principle applied to having successive batteries along the coast. A passing ship should fall under the guns of the next battery as soon as it goes beyond the range of the last (Tousard 1809:58). The defensive works along the southern coast of St. Eustatius, starting with Fort de Windt and ending with Tumble Down Dick, provided this kind of protection for

Oranjestad.

Topographically there were further considerations. Vauban stated that a target had to be elevated at least 50 or 60 yards above a battery (such as a ship) to be secure from ricochet shots, the most destructive angle for fire (Vauban 1691). Later treatises suggested that with the proper distance and elevation (about 1,200 yards at 13-14 degrees) ricochets could be effective to heights of 100 yards above the firing gun (Tousard 1809:5).

Obviously a coastal battery would be, in nearly all cases, at the same or a higher level than a ship, allowing the use of this type of shot. A greater height was preferable, as that would allow the land battery to use ricochets and not the ship. A ship's gun could not elevate above a certain limit, and still fire a projectile that would bounce in the manner sought to destroy the carriages. If they could not return ricochets, they could not hope to dismount guns short of a direct hit.

The sea-level battery had the same advantages and disadvantages as the similarly placed fort (e.g. Vauban 1691; Muller 1755). From here it could more easily fire at or below the water-line of a ship. It was also more exposed to fire from the ship at this elevation. Nonetheless the assets of

sea-level batteries seldom out-weighted the liabilities.

The elevation above sea-level at which a battery was set was normally determined more by the land than the engineer. If the luxury of choosing the height was available, tests could provide the answer.

To find the most advantageous height for a sea coast battery above the sea, it must be observed that the balls from this battery should strike the water a two hundred yards under an angle of four or five degrees. Let the distance from the ship to the battery be the total sine, the height of the battery will be the tangent of the angle of four or five degrees; it will then be found to be fourteen or eighteen yards. Let then the height of our sea coast batteries be eighteen yards. If the point blank shot misses the ship, our ricochet will have a good effect at two hundred yards; whereas their ricochets being fired only from two, four, or six yards height, can have no effect against the battery (Tousard 1809:59-60).

The optimum distance then was a product of how close ships could approach the coast. At 200 yards, 16 to 18 yards high was recommended. At 400 yards, the battery could be elevated to 24 or 32 yards without losing the advantages of ricochet firing. Defenses on Statia tended to be elevated according to the natural height of a fortified position rather than the ideal placement.

It also had to be remembered that sloping shores below a battery could assist the ship gunner. They provided a terrain conducive to a ricochet, allowing a ball to bounce uphill to

the high batteries. Properly angled topographic features could prevent this. The island batteries tended to neglect this fact. Some are placed on reasonably safe cliffs, such as Nassau, Bouille, Four-gun, Concordia, and St. Louis for example. Others, such as Corre Corre and Rotterdam, have slopes before them inviting the aim of a ship's guns. Overall, the British and French forts tended to be built on the better topographic inclinations. This may be due to professional military personnel planning them over the less experienced Dutch colonials.

Armament varied greatly in Caribbean batteries. Planners advocated large guns with greater range capabilities, plus some smaller guns to compliment these (Muller 1780; Hughes 1969). Tousard suggested each coastal battery be equipped with at least two or three 12 pounders. Records and remaining guns found in 1990 show that Statian batteries were often armed with, at a minimum, Tousard's recommended number of pieces. The calibre of the island's guns were less uniform, ranging from 6 to 24 pounders. The ammunition on hand should have included solid shot for use against the hull, grape to foul the rigging and thin the crew, and facilities for hot shot to set the ship aflame if possible.

Nearly every inventory taken on the island commented on the deplorable condition of many of the forts. This problem

seems to have been ubiquitous not only in the Caribbean, but in other trade colonies as well. An English engineer who traveled to Anomabu in 1753 to build a fort, reviewed other British forts in the region. He found their "forts are one-half tumbling down for want of repairs, and the others not worth the name in comparison with the Dutch forts" (John Apperley 1753, quoted in Lawrence 1963:93). Although the Dutch forts earned his respect in Africa, in the Caribbean they were no better than his own country's.

On St. Eustatius, convincing the Company that money used on the upkeep of the forts was well spent was always a challenge. This effort was not unique to those dealing with the West India Company. The West African Company was just as stingy with funding. In 1707 a colonial governor wrote the Company to inform them "that your forts are very much out of repair, and that there will be no charge to do it but lime and the labor of your people..." (quoted in Lawrence 1963:94). Nearly identical petitions were sent to the Heren X from Statia, offering to supply the labor if they would only send supplies.

The forts and batteries of St. Eustatius were a mixed lot. Some conformed to the basic specifications set down by military theories. Others seemed to have been planned without the benefit of defensive experience or knowledge. Armament

typically stood muster as to type, but was all too frequently allowed to deteriorate to the point of uselessness. Supplies were commonly scarce. Last of all, the defenses were of little use if not manned by properly trained and motivated garrisons, as was the case throughout most of the Dutch period.

Chapter 4

Naval Warfare and Island Defense

An island's existence in the colonial world was unseverably linked with the sealandes. Not only were ships the only way to conduct commerce, but they were crucial to the defense of any island, as well as in offensive maneuvers against foreign islands. Without these vessels, no troops could be deployed by any country in the Caribbean. George Washington said of a navy that "no maritime power near the sea-coast can be safe without it" (quoted in Tuchman 1988:46). It is impossible to examine island defense without paying considerable attention to this realm, for without shipping, all islands would be impregnable.

By the 18th century three European countries had come to the forefront of naval superiority: Britain, France, and Holland (Tuchman 1988:115). It is not coincidental that these countries also were dominant in the colonial race, and were in constant competition in the Caribbean. The former world naval power, Spain, never recovered after the losses in the English Channel over a century before, and by this period was of

little threat on the sea. Her situation was exacerbated by an insufficient arms industry, resulting in what ships at sea she had mounting outdated guns (Padfield 1973:96).

The development of naval power had taken different courses in the three countries. Holland's major emphasis had been on shipping suitable to sustain and support trade activity. Britain and France had placed more into developing warships for protection and assertiveness. Britain especially was concerned with maintaining a strong navy, though at times it was allowed to fall into disrepair. She herself was an island nation, and was dependent upon the "Wooden walls of England" for defense against European threats (Tuchman 1988:115).

The strategy employed by the Royal Navy differed significantly from their French counterparts in many respects. Britain's Royal Navy was often hampered by being led by political appointees, not by professional naval officers. Ships' crews were usually gang impressed, resulting in the navy being full of less than desirable types, with little incentive or motivation. Although procurement parties usually preyed upon the domain of merchant sailors, a large percentage of those impressed had no seamanship skills whatsoever, and included scores of drunks, vagrants, and the unskilled (Tuchman 1988; Coggins 1969).

France conversely, chose to officer its navy with professionals, though these too were normally recruited solely from the upper classes. A naval academy was established for the training of officers and the design and construction of warships. A corps of 10,000 "cannoniers" were trained to man the guns creating formidable opponents for the British Navy (Tuchman 1988:116; Padfield 1973:96).

France instituted the "inscription maritime" to man her ships with regular seamen. This system proved somewhat more efficient than the British version, though often including the same classes of sailors. A new fleet was built to counter the British buildup, with individual cities donating the funds. The ships thusly sponsored were named after the donating city (Tuchman 1988). The largest ship so built was the Ville de Paris, with 110 guns.

When preparing an island for defense several factors must be taken into consideration, not the least of which is the capabilities of an enemy's ships. Although each country had minor differences in ship construction methods, this made little difference in the long run, for it was commonplace to re-man enemy ships and place them into service for the captors. After the Seven Years War Britain began to imitate French ship design, for it was a well known fact that their hulls permitted greater speed and maneuverability.

In first half of the 18th century ships were defined according to the "rate" classification. This system of rates, in use for several years before, was clarified by British Admiral George Anson in an inspection in 1749. At this time ships were classed as to their fitness for line duty by their armament. The following ranking was then generally agreed upon (Coggins 1969; Martin n.d.):

Ships of the Line:

First Rate.....100 or more guns, usually three gun decks.

Second rate.....90-98 guns, usually three gun decks.

Third rate.....64-80 guns, usually two gun decks. The 74 gun two deckers would become the most common ship of the line.

Cruisers:

Fourth rate....50-60 guns, two gun decks.

Frigates:

Fifth rate....30-40 guns, usually only one gun deck.

Sixth rate....18-24 guns, one gun deck.

Sloops.....8-18 guns, one gun deck.

Although there was still some flexibility in rates, this system was used to define a fleet's overall strength and capability. Few admirals would venture to engage a rival fleet with a superior number of certain rates even though he may

equal or outgun them with actual armament carried on lower rated vessels. There was also continued ambiguity as to the definition of certain types of vessels such as a cruiser or frigate, and often the function the vessel played to the fleet was as important to its rate as its actual armament. By the second half of the century a frigate was generally the term for a fast ship, often of "cruiser" ranking, whose main function was scouting for the fleet and engaging in raiding activity (Martin n.d.). A "Repeating frigate" was a ship whose main function was to relay flag signals and orders up and down the line from the commander's vessel. In addition, frigates often functioned as messenger ships between stations or fleet and shore, and aiding disabled ships during an engagement (Coggins 1969:39).

By the start of the American Revolution ships were classified more precisely by the number of guns they carried. Although the term "ship of the line" would still be employed to refer to a vessel fit for line service, it was seldom ranked with a rate. As the number of guns a type of ship carried became more uniform, the former rate now turned to the actual number. A "74" was a vessel with 74 cannon (excluding auxiliary guns). To rate as a "ship of the line" the minimum was now a "64". In addition, the ship had to meet certain construction requirements (occasionally overlooked) that would enable it to both keep up with the main fleet and to withstand

battering from enemy broadsides.

A warship had several major functions. It was a means of defense: a "first wall" in the fortifications of a seafaring nation. It acted as a major vehicle for offensive tactics, carrying not only its own fire-power, but acting as transports for land forces. When disembarking these forces, the troops were under the protective guns of ships whenever practical and necessary (Anon. 1783).

It also had to be able to bring the largest force possible against an enemy, while at the same time achieving this without excessive delay. Transport ships bound for the West Indies from England could be expected to reach port between one and two months after setting sail, provided all went well (Duffy 1987). An unencumbered warship could do better, with an average of six knots in fair wind with full sail (Coggins 1969:132).

Among British ship-builders there was a tradition of building ships quite stout, shorter than their French or Spanish counterparts, but arming them with an equal number of guns. This resulted in a slower moving vessel, but one that could equal the enemy in line engagements. The problem of speed was later rectified by changes in hull construction, copying French designs (Coggins 1969).

The effectiveness of naval gunnery at this period relied more upon sheer might than accuracy. In principle it mirrored land tactics; the more projectiles in the air at one time, the more likely to hit a target. Thus, while even one well aimed shot could do more damage to a ship than an entire broadside, few gunners were ever able to sufficiently control their pieces to the point that a ship could safely venture into battle with fewer guns than their opponent.

The H.M.S. Victory, 100 guns (built 1776-7), was the largest British warship of the 18th century. It was 220 feet long, sat 205 feet above water line (including masts), and had a three feet thick hull. It supported four acres of canvas sails, enabling it to do ten knots with her crew of 875 (Tuchman 1987:117-8). Its French counterpart, the Ville de Paris, mounted 110 guns. Similar sized vessels were typically 230 long, by 50 feet wide with a 22 foot draft. They were normally manned with 850 to 900 sailors.

Typical armament of a British 100 was thirty 32 pounders, twenty-eight 24 pounders, thirty 18 or 12 pounders on the upper decks, and twelve 12 pounders on the quarter deck and forecastle (Coggins 1969:35). After 1779 British ships were also armed with around ten carronades. These were short large guns which could fire a heavy (68 pound) ball. By 1781 they were in service in 492 Royal Navy vessels (Coggins 1969:154).

Many ships were also equipped with swivel guns. These normally fired 1 to 3 pound balls and were mounted on bulwarks. Some ships carried Coehorn mortars along with their other guns. These could be placed on the "fighting top" (mast deck) to lob bombs onto the enemy deck in close action. Carronades, swivels, and mortars were not counted among the number of a ships guns, though they added considerably to its fire-power.

A 74 ship then generally carried an actual 82 carriage guns, and a 36 frigate would normally have a total of 44 guns (Coggins 1969:35). Also, frequent additions and deletions of guns on board by the captain would alter the ship's actual armament while retaining its numerical rating, and the switching of calibers for various reasons was not at all uncommon.

The most common ship of the line, a 74, carried a crew of around 650 in the Royal Navy. By 1783, out of 174 ships of the line, 81 were 74's (Coggins 1969:38). Most were armed on two decks, typically with twenty-eight 32 pounders, thirty 24 pounders, and sixteen 9 pounders (Coggins 1969:35). Muller proposed these to be increased to twenty-eight 42 pounders, twenty-eight 32 pounders, and eighteen 18 pounders (Muller 1780:60). Heavy timbered construction was also a hallmark of the 74.

Next in line to the 74 was the 64. They normally carried twenty-six 24 pounders, twenty-six 18 pounders, and twelve 9 pounders. The hull of a 64 was lighter than that of a 74, giving them the advantage of speed, but a disadvantage in broadside engagements. The 64 was virtually abandoned by end of 18th century for they could seldom equal the 74 in such fights (Coggins 1969:38).

Along with ships of the line a fleet normally contained one or more cruiser squadrons. These consisted mainly of 5th and 6th rate ships, frigates making up the bulk of those. Most British frigates by the Revolution were 32's followed by 28's, 44's, and 36's in that order (Coggins 1969:39).

An average frigate had 9, 12, or 18 pounders on one deck, the latter two being most common (Coggins 1969). Carronades or lighter guns were often mounted on the quarterdeck to supplement their fire-power. Ships below the frigate class seldom directly accompanied a battle line fleet. Sloops, brigs, brigantines, and schooners normally engaged only in auxiliary duties.

As in land operations naval warfare had become formalized. It was understood that all participants would follow the established methods and rules. Although tactics differed, each side knew what to expect and what was expected. Once the

decision had been made to assemble a fleet and embark it upon a campaign, a system of order had to be established. In the 17th and early 18th centuries this was commonly arranged by the commander of the particular expedition, with the directives of the Admiralty in mind.

These directives from the Admiralty, over the course of the 18th century, came to be known as the "Fighting Instructions". They were issued by the Admiralty to the fleet's officers prior to sailing, and came to be quite formal in specifying the pre-determined options for conducting a naval engagement. Although originally intended only as general guidelines, they often became slavishly followed instructions, whether advantageous to a particular situation or not. Only the more adventurous captains would follow their own ingenuity, and more than one officer used them as his primary excuse for the loss of a ship or engagement.

Generally a fleet commander would avoid an engagement, if possible, if he felt the opposing fleet had significantly more ships than he. Admiral Grivel advised that the "one that has the fewest ships must always avoid doubtful engagements..." (quoted in Tuchman 1988:117).

The basic battle formation at sea was known as the "line". Fighting Instructions etiquette called for parallel lines of

ships, matching each others maneuvers, van to van, center to center, and rear to rear. When on opposite tacks, broadsides were difficult, as only one could usually be fired in a pass. Therefore, most engagements were fought when the lines were running in the same direction (Coggins 1969:132).

A ship of the line had its fire-power concentrated on its sides. Little or none at all was in the bow and stern, thus necessitating the practice of broadside warfare, and line engagements. In addition, the line was the only feasible way in which a fleet could all engage the enemy without interfering with their fellow ships firing.

As the outcome of an engagement was often a function of available fire-power and its appropriate use, control and order was essential. The line that could best maintain their formation and control their artillery were the most likely to emerge victorious, all else being equal.

The attacking battle fleet would form into the line, then turn together towards the enemy (bear down) whom by this time had also formed into a line. When within a suitable distance, the line turned again to form a parallel line to the enemy, and broadside exchanges could commence (Coggins 1969:130). This maneuver was often poorly executed due to obscured signals, and was a most vulnerable point in the attack.

In waging line warfare, the main concern of the navy was getting into the proper position. Due to wind and wave, this was frequently a laborious task. Once there, further difficulties could arise in the communication of orders and signals, especially in adverse weather, during battle, or at night. Signals were normally conveyed by flags hoisted from the command ship, each signifying an order detailed in a signal book kept by each ship. Repeating ships, usually frigates, would hoist the message and run up and down the line. Occasionally orders would be communicated by voice from ship to ship down the line, but all too often a captain had to wait until the ship up-line from his entered into a maneuver to determine which had been called for. The result was a domino effect movement of the fleet, frequently rendering the intended action ineffectual.

In line battle the windward side, or weather gage, was normally felt to be the most advantageous for offensive maneuvers, and was sought by the attacker. Gaining the weather gage allowed greater freedom in movement whilst making the enemy struggle to maneuver against the wind. Smoke from guns would obscure the fleet to the enemy and make it difficult for their ships to see their own commander's signal flags. At the same time the wind would clear the windward fleet's decks of smoke. It would also tilt the enemy ships enabling shot to hit below the water-line. This "hulling" tactic was a favorite of

the British (Padfield 1973:96).

The windward had adverse effects too. The windward ship often had to close its lower gun ports on the enemy's side, thereby losing some of their bigger guns, routinely stationed on these decks. Water could come through those ports left open, hampering the gun crews from easy movement. Aiming the gun was made more difficult by the downward tilt, as was the reloading process. Recoil, however, was made less strenuous on the breeching, as the force was against gravity. Similarly, there was less possibility of upending guns than on the lee gage.

If damaged, a weather gage ship could easily drift into the enemy's fire, unable to defend itself. Having its upper deck more exposed, it was also susceptible to heavier casualties.

Even with its drawbacks the weather gage was by far the most preferred by British captains. It gave them the advantage of "choice of time and distance for engaging and...provided more opportunities for 'doubling' the enemy's line..." (Padfield 1973:96).

On occasion the British tactician would choose the lee side. This was normally confined to times of extremely rough

seas and winds, when the gunports facing the enemy would swamped, or when the fleet had superior numbers (Padfield 1973:96). If the latter were the case, the lee position might be chosen to prevent the enemy from breaking off the engagement prematurely. To deter breaking off the British often tried to implement a melee, whereby some of their ships would pass through the enemy line, and form to the rear as well as the front (Coggins 1969:130-131).

The lee gage might also be beneficial when the fleet had fewer vessels. If the outcome looked foreboding, the lee side could break off before further damage was sustained. When engaging in a "doubtful" foray, Admiral Grivel warns the fleet that "... if [it is] forced to engage, [to] assure itself of favorable conditions" (quoted in Tuchman 1988:117). These lee gage advantages were well known to the French.

The French fleets often relied on the lee position (Coggins 1969:128). Here they found it easy to break off the engagement at will. They could also fire at the enemy when bearing down while his guns were unable to return the fire. French gunners usually directed their shot into the enemy's masts and rigging to impede them from giving chase. The French frequently utilized this tactic as they were most often in the leeward position, stemming from the British habit of gaining the weather gage before entering into an engagement. French

naval theory could often be summed up in three strategies: "circumspection, economy, and defensive war" (Tuchman 1988:117).

When engaged, ships of the line usually reduced their sail to topsail and jibs. This enabled the crew to work the guns while giving maneuverability with minimum requirements. In single ship to ship or ship to shore actions, sails were normally not so reduced, as the single ship could vary course more often to her better advantage, unlike the fleet line (Coggins 1969:132).

Strict adherence to the rules of ship warfare usually led to a draw in the battle. Recognized victories were normally a factor of breaking one or more of the established principles of sea engagements as set down in the Fighting Instructions (Coggins 1969:131). Although losses at sea could be defended at trial by passages from the Fighting Instructions, by the 1790's this was no longer a solid alibi. Philip Broke, a Royal Navy gunner, wrote that if an action were lost due to damages caused during implementation of a tactical maneuver,

the British commander would have been justly censured for losing by his theories a victory which the courage and ability of his officers and seamen would have almost ensured had they only been boldly led up to an abrupt, impetuous attack (1794 quoted in Padfield 1973:132).

Tactical maneuvers were generally not as likely to give victory as "bold" and "impetuous" attacks. If successful, these often forced the enemy to break off the engagement or surrender. The danger here was, if defeated, the commander had no reliable defense for his actions and was likely to be court marshalled. It was one of the many risks the ship's captain had to take. Without disabling the enemy, no matter how brilliant the maneuver, the engagement would likely end in a draw.

Ship to shore engagements were substantially different. In the defense of an island the first line of fortification was the navy. If for some reason this line failed, either from defeat in ship to ship action, or from failure to engage at all, the island itself had to contend with the enemy ships.

In the case of St. Eustatius the latter situation was the rule. Regardless of who held the island, it seldom had sufficient ships nearby to fend off an invading fleet. The Dutch had too few ships by the 18th century to secure their West Indian possessions. When the British fleet arrived off the shores in 1781, there were no more than two large Dutch warships in the area, hardly a match for the British fleet. Similarly, when the French invaded, the British fleet was occupied elsewhere, leaving the island to fend for itself.

In the 17th and 18th centuries there was a widespread belief that few shore batteries were capable of fending off a naval attack, once a ship had brought its broadside to bear. British Royal Engineer Justly Watson, who surveyed the forts along the African Coast in 1756, said that "three or four men-of-war, of forty guns each, could easily put us off the whole Coast" (quoted in Lawrence 1963:93-94).

These beliefs doubtless had an effect upon many such encounters, regardless of the reality of the situation. Many experts knew better, though. A land battery could build up its walls and defenses as much as it chose. It had excellent opportunities to erect protected positions for the garrison. It provided a stable and sturdy platform for its guns. It could mount larger guns, and if larger than the ship, could keep it out of firing range of their own position. The ship on the other hand had a hull which could not be further reinforced. The protection offered the crew was limited. A naval gunner had to deal with constant movement in all planes.

In 1809 Louis de Tousard tried to dispel this "prejudice" by outlining the capabilities of a properly situated and equipped coastal battery. Manned by "officers and soldiers with courage, coolness, and animated with the love of their country, [the batteries] have nothing to fear from the fire of the first rate ships" (Tousard 1809:58). For garrisons such as

that of Gibraltar or Sebastopol, this was true. Both successfully fended off large naval forces with an inferior number of guns (Hughes 1969). Each had highly motivated gunners, proper fortifications and equipment, and long range guns. Unfortunately for the islands, West Indian batteries were notoriously lacking in most of these areas.

Some theorists proposed that exposure to fire for a seacoast fort was actually far less than for a land fort. Ships were in constant movement and could not take prolonged and accurate aim against a stationary target. John Muller "calculated that a three-decker man-o-war...would have an apparent superiority of as much as six guns to one over a land battery. Yet the ship had no better than a one-in-three chance of hitting the battery..."(Muller 1746, in Browning 1983:69).

The land battery has an immense target to fire upon. A hit on any part of the vessel would cause at least some debilitation. Tousard calculates a 150 feet long hull to present a 2,700 square feet target, "exclusive of sails, masts, yards, and cordage" (Tousard 1809:60). The ship conversely, has a target confined to the guns of the battery itself. Barring the disablement of the gun crew or its dismounting, no amount of shots around the piece will be able to silence it.

In the case of small coastal batteries such as Bouille or Concordia, even if the walls themselves were the target, there was still less than two feet above ground to aim at, not to mention the lack of rear walls to facilitate ricochets, a ball fired with a small charge from an elevation of 3 to 6 degrees (Muller 1780:152). The intent was for the solid shot to skim the surface, in the case of shore to ship, so as to hit on or near the water line. A similar effect was sought from ship to shore so the ball would bounce around within the fort, thereby having a greater chance of dismounting a piece. The effectiveness of such fire from a ship depended heavily upon the locale and situation of the target.

Unlike ships in sea engagements, the battery remains stationary whilst the ship is in constant motion. At a speed of one knot a ship would travel approximately 100 feet per minute. With naval guns having an average maximum training angle of 20 degrees, the firing range of a broadside would, theoretically, be quite limited against a small battery. This meant that the ship could generally fire off only one or two broadsides per pass at the battery and then have to tack about to pass again. Tacking was a time consuming affair, and, if within range of the shore batteries, would leave the ship quite vulnerable during the process. The shore battery, however, would have an opportunity to train its guns and fire on the moving ship during all times it was within range.

The ship's gunner had to estimate each shot, unable to use the last as a precise indicator of aim due to the vessel's movement. In addition he had to contend with the rolling of the ship "since a single line of it would cause the gunner to miss his aim" (Tousard 1809:60). This could also be used to his advantage, to gain additional elevation allowing shells to be lobbed into an elevated fortification.

If a coastal battery were situated near reefs or shallow waters, as was the case for several on St. Eustatius, the warship would have to maintain a distance to avoid running aground and insure sufficient maneuvering room. This would significantly decrease the efficiency of their fire-power, as accuracy sharply declined with a corresponding increase in distance. Ricochets would also be impeded by the necessity of increasing the angle of trajectory on the ships guns.

The ship still had some advantages over land opponents. Firing at a moving target, the battery had to constantly readjust their training angles, consuming valuable time. Almost without exception, a ship prodigiously outgunned a battery, especially a ship of the line with a minimum of 32 guns on a side. An average Caribbean battery was fortunate to mount more than a dozen guns. Smaller batteries, such as those which ringed Statia, often had fewer than five working guns at any one time. If a ship chose to anchor off-shore, their

superior fire-power would somewhat compensate for their increased vulnerability to receiving direct hits. It would also allow the ship's gunners to fire from a relatively stationary position, giving better opportunity to actually hit the battery's guns.

Theoretically, a shore battery could mount guns with greater ranges than warships. In practice, however, especially in the West Indies, this was not true. On St. Eustatius the remaining guns suggest batteries were by and large equipped with smaller calibers than most ships of the line. In the "Old Establishment" the smallest ship of the line, a 64, mounted some twenty-six 24 pounders, twenty-six 12 pounders, and twelve 9 pounders (Muller 1780:60). The largest gun listed in most inventories of Statia is an 18 pounder, but these were by far outnumbered by 12 pounders and below. By 1780, many British ships may have mounted even larger guns (Muller 1780).

A multiplicity of tests proved the weight of the shot was directly proportionate to the amount of damage it could produce, especially on thick oaken hulls or stone parapets (Muller 1780). A battery on St. Eustatius then would likely be outgunned (in caliber) by anything above a 40 gun frigate, and outnumbered in artillery, if not calibre, by even the smaller armed sloops.

Ship's gunners were, as a rule, better trained than the average West Indian matross. The graduate of the French "cannonier" school, or the veteran British gun captain would scarce find the "constable, small boy, and black maid" manning Fort de Windt in 1780 a formidable opponent, no matter how large their guns may have been. The island seldom received more than 60 regulars and these of questionable proficiency (Hartog 1976). Last of all was the local militia, more concerned with honing their merchant skills than martial ones.

The outcome of ship to shore engagements depended principally upon the efficiency of the land battery. Properly manned, equipped, and situated, even a small battery could fend off a ship of the line. In practice, however, especially in the 18th century West Indies, such David and Goliath matches commonly ended in the immediate surrender of the battery, often without a shot. Whilst Tousard may have felt this simply a function of unfounded "prejudice", the "constable, boy, and maid" facing a British man-o-war surely felt it extremely prudent.

Chapter 5

European Wars in the Caribbean

As with any colony, St. Eustatius' fate was tied up not in local occurrences so much as world wide European power relations. From the time of first settlement, the island had to deal with the effects of distant wars brought to its shores regardless of the current domestic situation in the Caribbean. Peace was continually disrupted from the 16th century onward.

Following the European discovery of the New World, Spain took the leading role. It claimed all territories to the west of the Line of the Treaty of Tordesillas, which encompassed most everything in the New World. This claim resulted in numerous conflicts, as few but the Spanish recognized their authority to make such a claim. As other nations moved into the new lands, much of these conflicts were carried out through piratical and privateering activities. This was especially prevalent in the Caribbean where Spanish treasure ships sailed for Europe with gold and other valuables stolen from the native populations. This in turn was frequently purloined by other Europeans to keep it from reaching the

Spanish Crown. The new supply of wealth enhanced Spanish power in Europe, creating fear among her non-allied nations, particularly Protestant countries.

The 16th century witnessed numerous conflicts that spread into the Caribbean. Between 1521 and 1559 Spain and France were continually engaging in privateering. The French were especially interested in capturing gold carried in the bi-annual Spanish flotillas. Sailing in great numbers, the slower moving galleons were able to have some protection with the accompaniment of armed escorts. Even this could not guarantee safety, and more than once France's treasury was boosted by Spanish gold.

By the 1560's France was supplanted by England as Spain's main threat in the Caribbean. They carried on the tradition of piratical engagements, as well as stepping up illegal trade with Spanish colonies. Among the more famous privateers of this period was John Hawkins, with Sir Francis Drake in his service. Drake would later make a name for himself in England by mastering the art of privateering, and leading his own fleets into the Spanish Main. By the late 1560's Sir Francis was joined in this profession by Sir Walter Raleigh and Sir Anthony Shirley, to name but a few.

Spain's problems intensified in 1568 when the Low

Countries rebelled and began their struggle for independence. The Netherlands then joined into war with Spain and Portugal in 1581. Since 1519 they had been under the rule of the Spanish King, and now sought sovereignty. A Dutch prince, William of Orange, led the revolt and formed the Sea Beggar's, a privateer fleet with which to further harass the Spanish (Claypole and Robottom 1980). Spain halted Dutch trade to her territories, as well as Portugal's. The increase in difficulties for the Dutch trade with Iberia gave them the necessary impetus to build up an independent trade to replace that which had been lost. Thus the Dutch soon became involved in Caribbean affairs through starting up trade with South America. Netherlands merchants began to engage in illegal trade with Spanish possessions, and tensions began to build with the English, with whose business they were now in competition. This new relationship soon proved to be quite beneficial to both colonists and merchants.

While Spain was dealing with her Dutch affairs, old conflicts between England and Spain renewed. Fueled by the new rivalry in the Caribbean, the two entered into open war from 1585 to 1604. This struggle culminated in 1588 when the Spanish Armada set sail for England. Spain's fleet, the largest the world had yet known, was nearly totally destroyed in the ill fated expedition. Although the English navy could not claim responsibility, they did claim victory. Spain had

all but lost clear mastery of the seas. This wounding allowed further liberties to be taken in the Caribbean by Spain's adversaries in the years to come.

By the start of 17th century, Dutch, French, and English ships controlled most of the sea lanes. Spanish colonies began to accept foreign trade more willingly, though it was still illegal. A common saying of many Spanish colonial officials was "Obedezco pero no cumplo" (I obey the law, but I do not insist upon it) (Claypole and Robottom 1980:45).

Starting in 1609 Holland and Spain called a truce. Both realized the necessity for cooperation to assist the salt trade, and agreed to cease open hostilities for the time being. Although no longer officially at war, both countries, as well as all others in the Caribbean, were engaged in ongoing wars with Carib and Arowak natives throughout this time.

At the end of the truce, in 1621, the Dutch West India Company was formed. Although set up as a commercial enterprise, one of the Company's main objectives was to renew the fight with Spain in the Indies. The Company even went so far as to outfit their own privateer fleet to diminish Spanish competition in the Caribbean.

In 1628 the Company fleet, under Piet Heyn, consisted of 31 ships mounting over 700 guns (Cochran 1961). They lay in wait for the Spanish flotilla, and when off the northern coast of Cuba, ascended on the treasure fleet. The prize was the capture of the entire flotilla. Fifty percent of the booty went to Company stockholders, and the Spanish Crown executed the unfortunate flotillas' admiral (Cochran 1961). From this time until 1648, the Dutch succeeded in forcing the Spanish out of the sea lanes, save for the continuance of the bi-annual convoy and occasional brave souls. At the same time England and Spain renewed old enmities. England had begun to colonize the Caribbean in the 1620's, in part to prepare for another major conflict with Spain.

By 1640 the Dutch were at war with the Portuguese in Northern Brazil, a prime resource area for commodities desired in Europe. Two years later the English Civil War broke out, effectively withdrawing English power from the Caribbean for the next few years, and allowing the Spanish a slight reprieve from the ongoing privateering. This was further alleviated when France made peace with Spain in 1648. In this year Spain recognized St. Eustatius, St. Maarten, Saba, Aruba, Curacao, and Bonaire as Dutch possessions in the Treaty of Munster, which ended the war begun in 1621. This marked the first time Spain publicly acknowledged the right of other nations to colonize in the Indies.

Although most European nations were now temporarily at peace, England was still embroiled in her own internal conflict. In 1649 most of the English West Indian islands chose not to side with Commonwealth, but Charles II, now in exile. Within two years few of the islands were under control of the new government in England. To subdue these Royalist colonies, Oliver Cromwell sent Commonwealth forces in 1651. In the process twelve Dutch ships were confiscated at Barbados, angering many Netherlanders and turning sympathy to the colonists who had succumbed to Cromwell's forces. In the agreement signed, the "Barbados Charter", articles allowed the colonists control over their own financial affairs, though Parliament had to approve their decisions. This would soon prove to be a rare occurrence, especially when dealing with trade with surrounding colonies, including the affronted Dutch merchants. Then, in 1651, the Commonwealth Parliament passed the Navigation Act which controlled free trade. This was seen as in direct conflict to the Barbados Charter by many islanders, and only served to fortify sentiment against the English government by all involved.

After the implementation of the Navigation Act, England knew it must have the actual power to enforce its will. They began to build up their navy, but no sooner had this begun than war broke out. The Dutch felt the Navigation Act to be unfair and harmful to their economic well-being, not to

mention the capture of their property in English ports throughout the Caribbean. Thus began the First Dutch War (1652-1654).

The majority of the war touched the Caribbean only in a secondary manner. Most battles were fought in the European theatre, but that did not preclude privateering raids in the islands. Damage and suffering in the Indies was caused not so much through cannon and musket as by the severing of free shipping. Islands that depended upon Dutch merchants for supplies and transportation of their own produce now had to fend for themselves. Those hit hardest were the English colonists, but with the official declaration of war with Holland, the Royalists began to give their support to the Commonwealth (Claypole and Robottom 1980). These hardships would continue for the islanders until the signing of the Treaty of Westminster.

Weakened from the war with England, in 1654 the Portuguese were able to force the Dutch out of the last of their holdings in Brazil. England also implemented her "Western Design" whereby Spain's recognition would be sought for her Caribbean colonies. This was to be accomplished through might rather than diplomacy, and soon English ships began attacking Spanish colonies in the Caribbean.

Among the prizes won was the island of Jamaica. This was immediately fortified for use as a base for further operations. From here, starting in 1657, the English recruited buccaneers to help harass Spanish shipping. By 1660 the naval build-up began in 1651 had added some 200 ships to the English fleet. They were now in a prime position to impose their will through naval power over the country that had once sent an Armada towards her own shores. More importantly for her own coffers was the possibility of superceding Holland in the lucrative Caribbean trade. By the 1660's that country had become a major supplier of all colonial nations in the Indies.

In 1660 Charles II was restored to the throne and England passed another Navigation Act. This was followed by the Staples Act of 1662. The first act required certain goods to be exported only to England or English colonies. The second required foreign goods to pass through English ports before going elsewhere, so a duty could be collected. This was extremely damaging to the Dutch trade, and was a burden to those with whom they conducted business. In addition, the "Company of Royal Adventures Trading into Africa" was established to break Holland's slave trade (Claypole and Robottom 1980).

These acts soon renewed hostilities between the English and Dutch, including privateer raids such as on St. Eustatius

in 1663 by the English pirate Robert Holmes. As acquisition of territory was not an objective in this conflict, most raids were simple sackings and lootings, the perpetrators then leaving their victims to rebuild their lives until the next parley.

By the middle of the decade this hostility led the Dutch and English into the Second Dutch War (1665-1667) in which France allied with Holland. Privateering raids increased in the Caribbean and St. Eustatius was only one of several ports to feel its affects. In retaliation to Dutch attacks on shipping and English ports, in July 1665, English buccaneers under Colonel Edward Morgan united briefly to sack the Dutch Lesser Antilles. They had planned to pillage Curacao, but after destroying St. Eustatius and Saba began to fight amongst themselves, sparing the third target. This type of behavior was widespread among the pirate fraternity. Fortunately for the Caribbean colonies, pirate bands from differing nations seldom succeeded in working together as a single entity, thereby reducing their overall potential threat. Even those from the same homeland often found it difficult to remain united for any extended period.

Upon the entry in 1666 of France into the war, the pirate bands were quickly driven from the sea by the French fleet. Buccaneers defending St. Kitts sailed off in the midst of

battle in order to plunder Spanish settlements, retaining little or no loyalty to any cause but their own private lusts (Claypole and Robottom 1980). Many of the islands fared little better with the French in their waters, and suffered pillaging from ships flying King Louis' colours as well.

The debacle off St. Kitts convinced the English that utilizing pirates was unpredictable, and so they sent the Royal Navy and troops to the Caribbean in 1667. With less opportunistic champions, England was able to retake several of the islands she had lost in the past two years. Later that year peace was restored with the Treaty of Breda. All colonies were returned to their pre-war owners, save for Tobago and Surinam, which were traded to the Netherlands by England in exchange for New York. The treaty also ended Dutch trade supremacy in the Caribbean, at least for the time being.

England soon won another victory in her colonial enterprises. In 1670 Spain recognized England's right to charter Caribbean colonies. Sixteen years after embarking on the "Western Design", the task was accomplished. In return England agreed to cancel all "Letters of Marque" effectively putting an end to "legal" pirate activity in the Caribbean sea. Also in that year France sent a fleet to drive Dutch traders from her colonies in the West Indies. This was accomplished to some degree but only amidst the strong

protests of her own colonies and the Netherlands. Illegal trade continued nonetheless.

The efforts of France to oust Holland from her colonies lead Europe into yet another Dutch War, the third of that century between England and Holland. From 1672 to 1683 war raged between four countries who had formed new alliances with former adversaries. This time France and England were pitted against the Netherlands and Spain. France was soon on her own when England dropped out of the fighting in 1673, about the same time that Spain began to assist Holland.

Even though England was no longer actively involved, the Dutch were forced to recall their entire fleet from the Caribbean back to European waters in 1674. The Netherlands and France continued the war until 1678, when Holland capitulated and agreed to pull out of (officially anyway) French ports. In the treaty most captured islands were returned, St. Eustatius included. The failure of the Dutch navy was also mirrored in her mercantile ranks: the Dutch West India Company went into bankruptcy. Not to be ruined by this, Dutch merchants registered their ships in Denmark and Brandenburg, both neutral countries, or smuggled goods to continue their commerce (Claypole and Robottom 1980).

France, however, had not finished with their wars.

Fighting continued with Spain after the Dutch surrender. In 1679 the French fleet began new attacks on Spanish colonies, with 11 ships, plus the aide of "flibustiers" (French pirates). After several more years Spain and France called a truce in 1683. France had in the meantime, successfully looted numerous Spanish colonies.

Although the wars had officially ended in 1683, and even earlier than that by nearly a decade for some of the involved nations, pirates continued to haunt the waters of the West Indies. Disregarding whether they carried Letters of Marque or not, the pirates sustained their patterns of pillaging and theft on any and all ships unlucky enough to become their quarry. To put an end to this menace England sent a fleet to the Caribbean once again in 1685. They met with mixed success, but did diminish the threat of piracy on the high seas.

Back in Europe the winds of war were stirring once again. Louis XIV of France besieged Phillipsburg in the fall of 1688, starting the Nine Years War (1688-1697) also called King William's War and the War of the League of Augsburg. The Netherlands took advantage of the chaos and seized territories along the lower Rhine. Not to be left out William of Orange, King of England, ordered his fleet to attack the French. Spain then entered the fray and allied with England and the Netherlands against France. Before long the conflict spilt

into the Caribbean once again, and troops soon were invading foreign islands, including Statia. The war accomplished little, and drag on until its end in 1697 with the Treaty of Ryswick. At the close of 17th century England and France were firmly colonized in the Caribbean, Spain's colonies were considerably weakened, and Dutch power had been crippled.

International relations fared no better during the 18th century. During the period from 1702 to 1814 no less than seven wars were waged in the Caribbean area. Most of these had their beginning in European affairs, and as the wars of the previous century, quickly advanced into the West Indies. There were numerous reasons for the continual disagreements in Europe and of these a great many were based on grievances concerning the New World. Amongst these disputes were the competition between England and France for the South American trade, export rights and the expansion of markets (including the Caribbean trade), and the control of North America (Claypole and Robottom 1980). Added to this were old rivalries within Europe itself, as well as other parts of the globe such as Africa and India, where Europeans were carving out their empires.

The wars of the 18th century in the Caribbean differed somewhat from those of Continental Europe and North America. Traditional battle was difficult in the West Indies. Land

engagements were generally impractical as few islands were large enough to allow two or more armies to maneuver in the accustomed manner of warfare. Most campaigns were therefore based on beach landings and assaults of fortified positions. It was very rare that ground forces were able to fight in regular lines of battle on open fields.

Another factor in the West Indian campaigns was the available troops commanders had to work with. Due to the limitations of support and transportation, most armies were small by European standards. Seldom were there sufficient troops engaged to claim decisive victories. Most land battles were merely a part of an overall campaign tied to naval forces. Proper battles could not be conducted hopping from small island to small island, and therefore most Caribbean wars were primarily fought at sea.

Troops that were stationed in the West Indies were quite expensive to maintain, and added to the dilemma. Supplies had to be shipped, inflating the costs. Disease ran rampant among the soldiers, being the number one cause of mortality. Morale of the troops was always amongst the lowest in the services, with some regiments in England absolutely refusing to board ships once they learned they were to be sent to the West Indies (Duffy 1987). All this resulted in a strategy of raiding enemy territory rather than extended occupations.

Although this often had the desired military effect, it was not always so. "These Englishmen are mad; they march through a country and think they have conquered it" (Marquis de Lafayette, quoted in Martin 1830).

Just one year into the new century another general European war broke out. Carlos II, King of Spain, had been in poor health for some time. Upon his death the throne of Spain would go to one of several candidates, any of whom would create a powerful alliance with another country, causing all involved to fear the possible consequences. Louis XIV of France was both a son and husband of Spanish princesses, as was Leopold I, Emperor of Austria. Had either one received Spain, war would certainly break out with the other European nations.

An agreement was reached between Louis, Leopold, and William III in which the throne would go to Leopold's grandson, but he suddenly died in 1699. In an effort to avoid war, negotiations were renewed, and Archduke Charles, Leopold's second son was chosen as the new heir. Carlos then passed away in 1700, but named his successor as Philip, Duke of Angou, grandson of Louis, rather than Archduke Charles. Louis XIV accepted the throne for Philip V.

Soon after Louis sent troops into the Spanish occupied

Netherlands to stop English trade there, and acknowledged the son of the exiled James II as King of England upon James' death in 1701. These actions soon brought together England, Austria, and the Netherlands into the "Grand Alliance" to counter the new threat. The following year William III died leaving Queen Anne, daughter of James II, as monarch (Plumb et al. 1978).

The actions of France and Spain brought England officially into the war in 1702. The French, already in the Netherlands, were also fighting in the Rhineland and Italy. The war escalated in 1703 upon the entrance of Bavaria and Cologne on the side of France, and Savoy and Portugal with the Grand Alliance. The Duke of Marlborough lead the army against France and her allies, but employed a unique strategy. Rather than conduct siege warfare, the standard up to his time, he sought out the enemy to engage them in field, and thereby accomplished the same effect of isolating their fortifications. His techniques would have a long term effect on warfare for the remainder of the century.

Although the vast majority of the war was fought on European soil and waters, both sides sent fleets and troops to the Caribbean. The French were based at Martinique and Guadeloupe, whilst the British were quartered in Jamaica and Antigua. One large sea engagement was fought in the Caribbean,

but little else took place militarily. Privateering, however, was another matter.

As neither alliance could really afford large scale operation in the Caribbean, both issued Letters of Marque to allow patriots and opportunists to fight for their countries. The colonies were quite aggressive, raiding one another's islands to destroy the competition. They were much less concerned with the throne of Spain than the sugar plantations on neighboring islands cutting into their own profits. As the acquisition of these plantations would only harm their economy by increasing the supply, their strategy mirrored that of Marlborough: attack and destroy. All sides engaged in this activity of raiding and destruction in the West Indies. Among the casualties was St. Eustatius, raided in 1703, 1709, and 1713.

Peace finally came with the Treaty of Utrecht signed on April 13, 1713. Britain gained tremendous trade privileges and territory from France and Spain. This had been their greatest international victory since Cromwell's wars, and would not be equalled until the end of the Seven Years War in 1763 (Plumb et al. 1978).

Peace, though strained, would prevail from this time until 1739. During these years British smuggling activity greatly

increased in the Caribbean. The Dutch and French also stepped up illegal commerce, but to a lesser degree than the English for the time being. Spain recruited her own privateers (guarda-costas) to check this growing illicit menace and soon the situation would again escalate.

Spain's guarda-costas were succeeding in their mission. Numerous English ships were captured, most guilty of smuggling, some only accused. On October 19th, 1739, Britain proclaimed a state of war with Spain. The declaration cited among the grievances "that for several years unjust seizures and depredations" had been committed against their vessels. These actions often involved "great cruelties" and that "the British colours had been most ignominiously insulted" (Southey 1968). The situation was in direct violation of the treaties of 1667 and 1670, and that the seizure of English holdings in "Spanish dominions...[was] contrary to the express stipulations of the treaties between the two crowns" (Southey 1968:273). Thus began the "War for Jenkin's Ear". The British fleet was sent into the Caribbean but little was decisively accomplished. By 1744 the war was ended.

In the meantime war had resumed in Europe. Ghosts from the Spanish War of Succession were recalled when the question of the heir to the Austrian throne was asked. Frederick II of Prussia decided to add Silesia province to his holdings when

the new Empress of Austria, Maria Theresa, took the throne that he desired to claim (Plumb et al. 1978). War quickly ensued and soon engulfed most of Europe yet again. The War of Austrian Succession (1740-1748) would put Britain with Austria, and France with Prussia and Spain, which was already at war with England in the Caribbean.

The British had already sent troops to the West Indies but due to their new commitments in Europe, they recalled most of their military by 1745. That same year an uprising in Scotland was launched for "Bonnie Prince Charlie", under French encouragement. In addition, the British were involved with French-Canadian campaigns, which meant some front had to be neglected, and the Caribbean was it.

Fighting did not, however, cease in the islands. As in the war at the beginning of the century, privateers on all sides once again took Letters of Marque and plied their trade. English and French planters hoped to devastate one another's sugar plantations to keep the prices up in Europe, exactly as they had done some forty years earlier. Once again territory acquisition would not be to their benefit.

The war came to an end in 1748. The Treaty of Aix-La-Chapelle, while ceasing hostilities, ignored Spain and Britain's argument which had begun in 1739. Several Caribbean

islands were declared neutral, and two colonies were traded. Britain did gain some slave trading rights but the Spanish question went, by and large, unresolved. As a consequence smuggling and illegal trade in the Caribbean continued much as before.

With scarcely enough time to recover, Europe went back to war in 1756. France and England were quarrelling over their colonies and trade relations once again, as was the predominant pattern throughout the century.

Hostilities began at a small French outpost along the Ohio River in North America. A British force, under Virginia Colonel George Washington, failed in an attack on Fort Duquesne in 1754. England then sent troops under General Edward Braddock and they too were defeated. France reinforced their Canadian defenses, and the British sent a fleet to attempt to stop this.

Knowing war was imminent Britain persuaded Prussia and Russia to ally with them. France likewise joined with Austria, Prussia's enemy, and secured Holland's word of neutrality. Fighting in earnest began in May of 1756 with the French attack on Minorica. This was quickly followed by France sending fleets to capture several British colonies. In 1758 the British captured Goree in West Africa, effectively

severing the slave supply to the West Indies (Plumb et al. 1978).

The war entered the Caribbean in 1759 when the British sent a fleet and troops. This time the West Indian military policy was to capture the islands rather than simply sack them. In addition, unlike many previous campaigns, sufficient numbers were sent to secure the islands for they were a crucial link to the North American colonies. The following year Britain succeeded in pushing France out of India securing yet another portion of the globe for her empire.

The unresolved Spanish grievances with Britain pulled them into the war in 1761 allied to France. Regardless, Britain's string of victories continued with the capture of all but one of the French islands in the Indies, along with several Spanish possessions. Not able to continue, France and her allies capitulated in 1763. The resulting treaty, the "Peace of Paris" granted Britain some of her largest concessions ever won from an enemy. King George II returned some of the Caribbean islands in exchange for North American possessions, keeping several neutral and French islands in the Caribbean for Britain. He also received Florida from Spain, to whom he returned Havana. Trade relationships were also set down for areas in Central America, Africa, and India.

The wars of the first half of the 18th century caused great hardships for the colonies in the Caribbean. Trade was often disrupted, supplies were scarce at times, and transportation of their produce was difficult, all effecting their economies. Even with all the wars and resulting treaties, little really had changed in the West Indies. The only real change was that Britain's world wide power had grown tremendously.

Although Britain had gained numerous trading advantages from the Seven Years War, the costs of that venture, plus an unquenched desire for continued trade and economic expansion, led to another series of tax laws. From 1767 into the 1770's Britain passed a series of acts which created tension between her and her colonies. The laws imposed new taxes and sought to gain tighter control of the colonial economy. The islands of St. Kitts and Nevis had their own version of the Boston Tea Party when they burned stamped paper in the streets in protest of the Stamp Act. The same political maneuvers that fueled the unrest in the American colonies were at work in the Caribbean, leading to the British West Indies sympathizing with the American colonies. This attitude prevailed until outright war erupted, when most islanders realigned with Britain (Claypole and Robottom 1980). This was mostly out of a need for British protection of trade goods and secure markets. It did not mean that illicit trade with the American colonies would cease.

Some unscrupulous English merchants even supplied military stores used by the rebel forces (Rodney 1789).

The American problem came to a head in April of 1775 when colonial militia and British regulars skirmished at Lexington, Massachusetts, beginning a war that was to last until 1783. From the start, the Caribbean, and especially St. Eustatius, played a vital role as a supply base for the rebel colonies.

As with the previous conflicts the war soon spread to encompass most of the major European nations, either directly or indirectly. In 1778 France and Spain allied with the American colonies. On April 28, 1780 the Spanish sent a convoy of 10,000 troops and 11 ships of the line from Cadiz to the West Indies. There they joined with France's force under de Guichen off Guadeloupe on June 9. Unfortunately for the new coalition, most of Spanish force was disabled with disease and useless. Not only hampered by this, the Spanish Admiral refused to engage in combined actions with the allies, and eventually returned to Cuba.

Compounding matters in the Caribbean, on the 20th of December, 1780 Britain declared war on the Netherlands due to their role in the American war (4th Dutch War, 1780-1784). That year several European nations, led by Russia, signed an "Armed neutrality" pact, whereby they would fight British

ships that attempted to search them for illegal goods destined for America. Not only supporting fronts in America, Britain had to spread her forces between there, Canada, the West Indies, and India. Finding his troops needed bolstering, George III called on several German states to supply regiments involving even more of Europe.

In the Caribbean, American privateers attacked British islands from Dutch, Danish, and French bases. Realizing the importance of the Caribbean connection, Britain sent Admiral Sir George Bridges Rodney to the West Indies immediately after the declaration of war with Holland. Rodney's naval noose was quite successful, and the fleet took several Dutch possessions, including St. Eustatius on February 3, 1781. The strangulation of the Indies supply route was too late, however, for by October of that year the war would, in essence, end in North America.

After the surrender of Cornwallis at Yorktown the Caribbean theater escalated, with both French and Spanish fleets in the area. Beginning in 1781 the French began evicting British garrisons from captured islands. St. Eustatius was so purged on November 25. The French retook many Dutch islands, as well as occupying some British islands. Led by the Marquis de Bouille, a force of 8,000 besieged the "Gibraltar of the West Indies", Brimstone Hill, on St. Kitts,

which fell within a month.

On their way to St. Kitts, several French warships stopped in Oranje Bay. The French field artillery was on board "the Caton and Lion Brittanique (a transport taken from the English), ...which anchored at St. Eustatius" (Gossencourt n.d., in Shea 1971:95). On February 12, 1782 other French transports anchored in the road at Statia and on the 13th sailed on for Nevis to resupply the troops beginning their siege of Brimstone Hill (Gossencourt n.d., in Shea 1971:103).

One account of the campaign may have been written by Admiral de Grasse himself (according to the 1827 editors of the anonymous publication). The unknown officer's rendition tells of the initial landing consisting of the infantry. The assault quickly followed, and "by night Brimstone Hill was invested. The artillery was landed next day; and mortar batteries soon established; but when a breach was to be made the first battery of 24 of the Caton was taken for the service" (Anonymous 1783, in Shea 1971:166). The French officer called this "the most difficult [siege] in America" (Anonymous 1783, in Shea 1971:166).

Although British land forces were defeated on numerous islands, the naval forces fared considerably better. After a series of small engagements, the Battle of the Saints took

place. The British fleet scattered the French and Spanish, effectively stopping further attacks in the Caribbean until the signing of the peace treaty in 1783.

The siege at Yorktown may have effectively ended the American Revolution, but formal peace was not entered into until 1783. That year the Treaty of Versailles was signed and American independence recognized. In the European war, most islands captured in the West Indies were returned to their pre-war owners, and the French gained the right to trade in Swedish ports (Plumb et al. 1978).

Following the loss of their colonies, Britain made it illegal for her remaining subjects to trade with North America. This prohibition caused great difficulty to British Caribbean colonies: they lost both a major export market and supplier at the same stroke. As before, illegal trade quickly began to fill the warehouses on both sides. The Royal Navy was sent to check the continued smuggling soon after the treaty had been finalized. Eventually enforcement let up and by 1794, American ships were allowed in British West Indies ports.

During the American rebellion France had financed a great deal of the war costs. This, combined with other economic and political hardships, led to a revolution in France in 1789. In an age old tradition, other European nations were soon

involved. Austria and Prussia declared their support to Louis XVI. Jacobean elements then executed Louis XVI and Marie Antoinette. In 1793 Revolutionary France declared war with Spain and Britain (Plumb et al. 1978).

Prior to this France had been having difficulties in the Caribbean with slave revolts, and emancipated their slaves on St. Dominique in 1793 (Claypole and Robottom 1980). After the declaration of war, British troops were sent to St. Dominique from Jamaica, whilst Spanish troops invaded the French side of the island. French planters considered them allies against the Jacobin French and the black army. Several islands then became entangled in slave revolts and wars with ex-slaves, not to mention the European conflict now encompassing them again.

Napoleon then rose to power with the rejection of Jacobean rule. He soon defeated the Austrian and Prussian forces, bringing them into alliance with France. By 1795 Spain made peace with France, and Britain lost their assistance in the Caribbean. Nevertheless Britain succeeded in taking all of the important French sugar islands, except St. Dominique and Guadeloupe.

France then decided to escalate the conflict by invading the Netherlands. This caused the Dutch to give their West Indian colonies to Britain rather than surrender them to

France. French troops also moved into the Rhineland, and northern Italy.

The black army on St. Dominique defeated both French and British troops by 1798, and went on to fight the "coloureds", blacks that were not ex-slaves, massacring over 10,000 of them (Claypole and Robottom 1980). This same year France invaded Egypt, but Horatio Nelson defeated the French fleet in the battle of the Nile. Napoleon escaped the British forces in Egypt and declared himself First Consul in France in 1799.

After his return, Napoleon wished to restore the slave system to St. Dominique. An imminent invasion of French troops was expected in the Caribbean, causing most islands to refit their defenses. St. Eustatius, under the British commander Richard Blunt, also revamped their batteries at this time. Before the expected invasion occurred however, the Peace of Amiens was negotiated, ceasing open hostilities in 1802. St. Eustatius reverted to Dutch control.

The Peace of Amiens was destined to be short lived. In 1803 the French invaded the Caribbean to gain a base from which to enlarge their holdings in the area, as well as in North America. Louisiana had already been taken from Spain, and France wished to obtain more. St. Dominique was retaken, and the black army dispersed (Claypole and Robottom 1980).

A general European war erupted again and Britain allied with Austria and Russia against France. France invaded Prussia and annexed Spain and Italy. Except for Britain, all succumbed to Napoleon's strong and well seasoned army. The French navy did not share in the victories, however, as they were severely crippled at Trafalgar. By 1810 St. Eustatius was again under British control.

British blockades of neutral nations brought the United States into the conflict in 1812 (Plumb et al. 1978). Prussia, Russia, and Austria then allied with Britain, whilst uprisings occurred in Germany, Italy, and Spain, against Napoleonic occupation. In 1813 combined European armies defeated Napoleon, and entered Paris by 1814. The Treaty of Paris was signed and Napoleon exiled. Britain gained numerous territories, including holdings in the Caribbean.

The wars had not yet ended though. Napoleon escaped from exile on Elba and resurrected his army. A combined force of British, Dutch, and other allies defeated Napoleon for the final time at Waterloo in 1815. By 1816 Statia, along with other captured territories, was returned to the Netherlands. From that time on the island's security was not significantly threatened.

Chapter 6

Warfare in the Caribbean

Warfare in the Caribbean required certain alterations to the conventional style practiced in Europe. Large land masses were virtually non-existent, and traditional army movements were impractical. The only tactical maneuvers that could be retained intact were those of the navy, with the exception of occasional actions against islands that were not commonplace in European waters.

War in the West Indies had to be fought either entirely at sea, or by smaller armies hopping from island to island. The size of the land masses, and the reliance on wind patterns, required strategic sacrifices. Island taking campaigns, as a rule, " had to be fought from windward to leeward in the age of sail..." (Duffy 1987:64). It was for this reason, and not military planning, that the campaigns of 1793/4 started with the windward islands. Commanders of expeditions in the Caribbean would describe warfare there "as a matter of tides, currents, and winds, and these determined the order of... objectives" once a general strategy had been chosen (Duffy

1987:219).

Whilst having necessary limitations on the size of an invasion force one could carry, it was some comfort to know that the small islands seldom had sizable garrisons to fend off the larger forces that were landed from ships. Normally it was not difficult to outnumber the opponent in such cases. These maneuvers, though, were entirely dependent "on a good understanding between the sea and land services" (Admiral Harvey, 1796/7 campaign, quoted in Duffy 1987:274).

This cooperation between the army and navy was essential in island warfare, for without it, no land troops could move. The distance between friendly ports or the homeland was often inconvenient. Several campaigns had to wait on transports and supplies from overseas, but this is common to all wars, anywhere. The separation of islands from the occupier's mother country gave attackers some advantages, though. The same elements prevented the defenders from rapidly receiving reinforcements and supplies. This factor often kept St. Eustatius low on ammunition, powder, and soldiers in time of need.

These impediments required fleets to carry sufficient artillery trains and plentiful provisions. Re-supply was not always possible for an extended period of time, and often a

campaign's outcome depended upon who was better able to wait it out (Duffy 1987).

Not only distances and geography had an effect on campaign planning. Although weather is an important element in all warfare strategy, in the West Indies it took on added burdens. Campaigns had to be adjusted to avoid the rainy and hurricane seasons. Poor weather, or disease brought on by the damp conditions, could quickly decimate an army in the islands.

Winds and currents strictly controlled the movements of a seaborne expedition. Gales often blew portions of a landing force off course, weakening the available troop supply as they fought the elements to get back into position. One example of such an occurrence was in the British invasion of Surinam. A full one-fourth of the troops meant to land at the Surinam River were delayed for four days, being blown off-course (Duffy 1987:315).

Storms and rough seas were always a hazard. Landing craft overturned drowning troops, whilst others were often dashed against the shore, disabling soldiers before ever having seen an enemy, such as the French experienced at Jenkin's Bay. Seasickness caused by rough seas on land troops lessened their effectiveness. The hazards of amphibious assaults were many, and frequent.

Weather and positioning also had a hand in the evacuation of troops from islands where they had no reasonable hope of successfully defending themselves. No available transport ships could easily doom a garrison. Poor weather could prevent their escape altogether, even if ships were available. It was for this reason Cornwallis' troops were trapped at Yorktown.

Once an island had been targeted for assault, other considerations had to be reckoned with. As with any amphibious assault "in West Indian operations, the first concern was to find a safe anchorage for the fleet" (Duffy 1987:90). The sea floor at the landing site was quite important.

Reefs and shallows often kept ships from getting within firing range to lend support to troops in long boats. This enabled coastal batteries the opportunity to shell the approaching enemy, virtually helpless until reaching shore.

Once the ships had found secure anchorage, small craft, either longboats or small sail crafts, had to be brought alongside for the troops. A suitable approach for landing then had to be located. Coral reefs could crush the long boats, as happened at Jenkin's Bay. Mud bogged down the disembarking soldiers, as happened to the British landing on the Orinoco. The best landing site was a gentle sandy beach.

Multiple landings were often planned to "disperse and distract the defenders" (Bouille, in Duffy 1987). This tactic was employed by Bouille both at St. Eustatius in 1781, and in his attack on Martinique in the 1793/4 campaign. The 1796/7 campaign had an assault on Trinidad that utilized a one and one-half mile long beach-head at three points to divide and confuse the defenders (Duffy 1987).

If it were a large island, troops would commonly go along the coasts taking sea batteries from the rear, as most were open backed as were those on Statia. At the same time another force would besiege the central fortifications (Duffy 1987). Once again, this tactic was used by the French both at St. Eustatius and Martinique.

If necessary, before or during the invasion, local guides were sought and detailed information about the fortifications was gathered by the use of spies and reconnaissance missions. The approach to a town was always carefully considered before setting out. Most of the larger islands had the approach covered by successive batteries, as was suggested in several manuals of fortification theory (Muller 1755). A good example of such a defense is seen at Fort Royal on Martinique (Duffy 1987:68).

Landings could be either day or night. Normally a night

landing was chosen when surprise was to be a main factor in the assault. It was this tactic that won St. Eustatius for the French in 1781. If a day landing was chosen, it was preferable to go in under the guns of the navy. Hopefully these would be able to silence or at least cripple any coastal batteries in range of the landing site.

Batteries were generally placed at all beaches where landings would be feasible. Many batteries in the Caribbean were poorly manned and armed, as Bouille found at Martinique in the 1793/4 campaign (Bouille's papers cited in Duffy 1987:68). Records indicate this was also generally the case of the batteries on St. Eustatius. Several guns mounted in Martinique batteries had been salvaged from a sunken warship and had not been fired in years (Bouille, in Duffy 1987).

The coastal battery ideally had both solid and grape or canister shot in their magazine: the solid to fire at the ship, the grape and canister for the disembarking troops. The ship's guns often took the place of the conventional land forces use of a "battering train". Although expeditions normally carried land artillery, these were often not able to be engaged until after the infantry had secured the beachhead. Local conditions determined their ability to be landed at all.

On occasion the invading troops were able to leave their

own artillery on board, and turn captured guns on the defenders. The French found this to be the case at Brimstone Hill. The English had left eight 24 pounders, two 13 inch mortars, 1,500 shells, and 6,000 cannon balls on St. Kitts that had been left below Brimstone for lack of help from the islanders in hauling them up to the fort (James 1926:327). The French trained the captured mortars against the British fleet in the bay, forcing the ships to leave and abandon the besieged troops there. With that the British garrison lost the support of an estimated 22 war ships (Anonymous 1783:170).

Most islands and principle towns had some sort of fort. If this could not be immediately taken, siegecraft was employed until the fort surrendered or the invaders were repelled. It was by this method that the British finally lost the great fortress on St. Kitts after a month's siege.

As large numbers of infantry were seldom practical to transport and deploy, more reliance had to be given to the use of small, preferably elite, forces utilizing the element of surprise. Cavalry was almost always impractical to deploy, either from the size or topography of the islands, or from the difficulties involved in transporting and landing equestrian units.

In island warfare, traditional tactics had to be altered.

British General Grey in the 1793/4 campaign on Martinique:

ordered the troops always to form in line two deep, and to march in file since the roads would be so narrow... [He also] stressed the efficacy of attacking with the bayonet, particularly in view of the character of their opposition, (blacks, mulattoes, and few regulars). In his 'Further Orders' he explained why only bayonets should be used in night attacks: it concealed the position and numbers of the attackers from their enemy, who usually fired at where-ever they saw or heard fire and consequently ended by firing on each other and falling easy prey (cited in Duffy 1987:65).

General Grey customarily attacked the most difficult objectives first. In the 1795/6 campaign, General Abercromby tried to take the easy ones first, and only then go on to the more difficult. Not having the reliable elite forces Grey had, he felt this tactic more prudent. He later changed this tactic and went for the stronger objectives first (1796/7 campaigns). That way his troops were still fresh and at their strongest: he had learned the effects of the Indies on European soldiers.

The nature of island campaigns, especially on small islands such as St Eustatius, meant supplies often ran short. Fresh water was frequently difficult to obtain, especially for large bodies of men. Drinking from ponds and rivers inflated the already high sickness rate. European troops often had great difficulty adjusting to the West Indian climate.

Morale was almost always low in the Caribbean campaigns

(Buckley 1979). There was a high desertion rate among the soldiers due to poor conditions and isolation. Problems getting supplies on time only exacerbated the dilemma. For these reasons the European West India troops often had a low level of motivation. General Abercromby wrote to Dundas that the "Officers commanding working parties will in a particular manner attend to their duty and not allow the men either to be idle or slovenly" (May 22, 1796, in Duffy 1987:232).

Plundering was also an ongoing problem. At the Port of Spain assault, troops stopped to drink a cache of new rum they found in a plantation house near the beach, and were too drunk to be of any further use. Another group of fusiliers abandoned their mission of capturing smaller fortifications during an assault to pillage the town they passed through (Duffy 1987:281). This was especially a problem with non-regular troops and local recruits. As looting was felt to deteriorate the discipline of an army, it could be punishable with summary execution. Looting, however, was differentiated from the "capture" of enemy goods as Rodney had done on St. Eustatius in a previous war.

The lessons of the first half of the 18th century eventually caused military planners to revamp their Caribbean policies. Troops were dying of disease in astronomical proportions in the West Indies and were becoming more and more

difficult to replace from Europe. Beginning in 1795 changes were sought that would alleviate the problems.

To curb the disease rate, the British began to furnish the island troops with prefabricated barracks and hospitals. This helped to keep them out of unhealthy billets they commonly encountered in island towns. More attention was paid to the placement of the barracks, with higher ground being preferred. It was also found to be beneficial to distance the barracks from towns, to slow the spread of illnesses.

Another lesson learned concerned the way in which battles were best fought in the islands. As many British commanders had discovered in the American wars, the rules were often different in the New World than on the Continent. It was found to be much more effective to utilize the natural protection that vegetation and topography offered in the islands, particularly when engagements were between unequal forces. Guerilla warfare was common in the islands, particularly when dealing with slave insurrections, or native born West Indian troops.

European regiments had become quite decimated from losses to disease and the drain of manpower to the Napoleonic wars. Therefore, in 1795, the British began large scale recruitment of black West Indian troops (Buckley 1979). These men were

felt to be better suited to the climate and as having immunity to many of the diseases there. It was said that "negro troops were better adapted to the requirements of fighting in the mountainous interiors" of the islands. They were "nimble, lighter-dressed and equipped, and could sustain hardship longer than European line infantry" (Duffy 1987:363).

After several years of service, British commander Dundas wrote to Trigge that this had in fact been the case. He stated that black soldiers "are undoubtedly better calculated for those duties which are so apt to impair the health of European troops when engaged in active service in the West Indies" (October 1801, quoted in Duffy 1987:365).

The government in England found this solution to be quite beneficial. It was less expensive to raise local troops than to transport European troops to the area. Soldiers from the home country also had to be replaced every two years, but the West Indian regiments did not (Duffy 1987:363). In addition, every black soldier recruited in the Caribbean meant one more white soldier could be sent to aid in the wars against Napoleon raging elsewhere.

Many colonial administrators, however, were opposed to the raising of black troops. Most were recruited from slave segments of the population, for that element was where most

blacks in the islands resided (Buckley 1979). Fear of future slave uprisings was prevalent among the colonists, and few wished their slaves to receive military training.

It also worked to break down the existing economic and social systems. The labor pool was endangered, for later on slaves enlisting in an army regiment were granted freedom. Former slaves becoming British Army regulars could also dramatically change their social status, and undermine the established hierarchy in the island culture.

For these reasons, most island colonies only allowed temporary units to be raised when the system was first introduced. They were to stay upon their home island, and not be sent on campaigns elsewhere. This resistance was held up until 1797, when regular units were firmly established by the home government that were above the authority of the colonial administrator.

To implement their plan of raising black army troops, the British government began by purchasing slaves from plantations (Buckley 1979; Duffy 1987). One problem they encountered when acquiring recruits in this manner was the quality of men they received. Planters would only sell their worst slaves to the military. This led to an inferior force at first, but that would be overcome somewhat with the implementation of

emancipation offers, as well as new procurement strategies.

General Abercromby set a policy of buying recruits directly from slavers. This method did take longer to get the men into fighting order. Normally they had to be taught English and be somewhat allowed to mentally and physically adjust to their new environment. The result, however, was well worth the effort, for better quality troops were attained in the long run. The government soon became the single largest purchaser of slaves in the British West Indies.

Whilst black regiments were in use, they were still vastly outnumbered by European troops. In an effort to conserve the regiments commanders felt to be more valuable in the event of a battle with Napoleonic forces, differential stationing and deployment was utilized for the regiments. Commanders were often ordered to use the West Indian troops whenever possible, to preserve the white regiments as reserves for the European theater. Often these troops were sent to the Caribbean during the "healthy season" and withdrew when the season changed.

White and black troops were found to have different disease resistances and climate necessities. These requirements turned out to be beneficial for both were healthiest where the other was least healthy. Blacks retained their health in the lower, warmer areas, whereas the Europeans

thrived in the higher, cooler regions of the islands. This compatibility led to a strategic segregation of the troops. The system worked fairly well, for the mortality rates of all troops dropped, although by 1803 the white disease and mortality rate was still two times that of black soldiers (Duffy 1987:365). Black troops though, continued to suffer from high rates of foot injury and disease. Generally they wore no shoes, thought to be an advantage for light infantry in the islands.

By 1797 the use of West Indian regiments resulted in a black constituency in the region of nearly one-third of the total regulars in Caribbean garrisons (Duffy 1987:362). The presence of black troops also meant one-third of the white West Indian army could be re-routed to fight Napoleon in Europe. Like the British, the French also greatly increased their available manpower by using blacks from the islands.

The end of the 1790's wars saw no less than nine West Indian regiments in the British army. They comprised some 4,400 men in the Windward and Leeward islands at that time (Duffy 1987:365). The use of British black West Indian troops would peak in 1807, with some 8,000 regulars (Duffy 1987:367).

Chapter 7

The Military History of St. Eustatius

The island of St. Eustatius endured numerous invasions, raids, sackings, and naval blockades. From the time the island first became of any note, it was a pawn in the economic and political power struggles of colonial Europeans. Between 1636 and 1816, this tiny rock in the Caribbean sea "changed hands no less than twenty-two times" (Hartog 1976:23).

The first military activity took place on St. Eustatius with its initial European occupation. A French squadron landed on the island in 1629 to seek a safe haven from an anticipated Spanish attack. They quickly prepared a fort from which to defend themselves, but the attack evidently never came. Soon after, the French enterprise was abandoned, as was the island, until the first permanent colonist were to arrive in 1636.

After achieving success as a producer and, more importantly, a shipper of goods the island became a target for pirates, privateers, and armies. As early as 1627 a Royal Patent declared St. Eustatius to be property of England

(Attema 1976), though this was not considered valid by any save the English themselves. Accordingly, English privateers and pirates felt justified in relieving the inhabitants of their goods. The first recorded incident was the sacking of the island in 1663 by the English pirate Robert Holmes and his crew. They were content with those goods presently at hand, and left soon after.

The events leading up to the hostilities had caused the islanders to reasonably arm themselves, although the generally peaceful early years of the colony may have led to a false sense of security. This was compounded by the arrival of a Dutch fleet under Admiral De Ruyter on May 14, 1665. This presence eased the worries of the islanders, for word had already arrived that the Netherlands was at war with England. Three days after the fleet arrived, a hurricane arose and forced it to retreat to Bermuda. With this departure, the island now lay open, defended only by Fort Oranje.

Another English privateer to sack the island did not follow Holmes' pattern. Edward Morgan, along with a conglomeration of privateers and pirates, invaded the island on the 23rd of July, 1665. As England and the Netherlands were now embroiled in the Second Anglo-Dutch War, Morgan carried a Letter of Marque from the English crown and was given the rank of Colonel, making this a legal military action.

A year later France joined in the war and the island underwent another change of owners. In November 1666, the Dutch attempted to retake Statia from the occupying English privateers. Their efforts proved fruitless for on the 17th of that month "through trickery French forces moved in and drove the Dutch away" (Kandle 1985:33). The island was secured from Morgan's men with little difficulty (Attema 1976). The French subsequently thoroughly sacked the island. They would remain in possession of St. Eustatius until mid 1668 when it was returned to the Dutch.

The start of the Third Dutch War meant yet another invasion. In 1672 the English from the Leeward islands retook Statia (Goslinga 1971). Shortly, on June 8, 1673 the Dutch returned and burned the fort because the Statians had sided with the English during the 1672 attack (Attema 1976). When they left, the English resumed control and held it until 1679 when the Netherlands regained it by treaty.

Following the Third Dutch War the island remained under control of the Netherlands for nearly ten years. This ended when the French took over on the 6th of April 1689. France and England were once again at war, and as Holland was allied with the latter, they were attacked by the former. French troops landed and encamped below Signal Hill (Attema 1976). The

following morning they plundered their quarry and took control. Although they had thoroughly destroyed the town, they preserved the Fort which they occupied (Hartog 1976).

A little more than a year later, on the 28th of July 1690, a joint English and Dutch force retook the island. The English kept control of it until 1697 when they returned it under articles of the Treaty of Ryswick.

Several wars took place amongst Europeans during the 18th century which were profoundly felt in the Caribbean. Miraculously, St. Eustatius would remain in Dutch hands for over three quarters of that century, regardless of the wars being fought in the seas around her.

That did not mean, however, that the island was left unmolested. The wars being fought at this time were not those of conquering territory and occupations. They were wars fought mainly at sea or in Europe. Eighteenth century land warfare was difficult to "properly" conduct on small islands. The result was a series of raids by privateers with Letters of Marque to make their activities technically legal.

The Spanish War of Succession pitted France and Holland against each other once again, France being allied with Spain, and Holland with Britain and Austria. Between 1702 and 1713,

Statia was attacked on no less than three separate occasions by French filibusters. The first came in 1703. After the island had sufficiently recovered, a second attack came in 1709. On November 25th the filibusters landed at Tumble Down Dick Bay (Attema 1976:24). There was a battery there by this time but, though apparently less than ten years old, it was already deteriorated to the point of being out of service. The invaders marched overland and briefly occupied Ft. Oranje. The Fort commander was said to be "tranquilly smoking his pipe" upon their arrival (Hartog 1976:33).

The French supposedly wanted to fire off a cannon in celebration of their easy victory, but none were in shape to be fired (Hartog 1976). The island was sacked one more time during this war, in 1713, by French pirates under Jean Jaques Cassard. Cassard took control of the island, but his brief reign lasted only from the 24th to the 27th of January 1713 (Hartog 1976:170).

After the peace of the Treaty of Utrecht, St. Eustatius was allowed a period of rest. Their next military concern came with the tension that would erupt into the War of Austrian Succession. A few years before this, in 1737, Commander Isaac Faesch and the leaders of the colony instituted a new tax in order to repair the defenses. The Heren sent some 30,000 bricks from Holland for that project (Attema 1976). Among the

projects planned was a restoration of Tumble Down Dick Battery, but Faesch was unable to renovate it as he had hoped. Fortunately for the islanders, this war did not result in the same intense raiding the last had. Though economically effected, they were not invaded, as the Netherlands did not officially enter the war.

At the close of the War of Austrian Succession, Statian citizens and merchants felt it would be in their best interest to refortify the island. Accordingly, starting in 1748, they voluntarily raised funds for the construction of improved defenses (Attema 1976). Several new batteries were laid out, including the New Fort II, or Hollandia, and the first Nassau, which would become Fort Royal, high above the bay.

A few years later, in the mid-1750's, another major war was anticipated. The new Statian commander, Jan de Windt, set about improving the island's defenses once again. In addition to repairing the existing batteries, he constructed Fort de Windt, from pre-existing "entrenchments" on Back-Off Bay, facing St. Kitts. With the outbreak of the Seven Years War in 1756, these fortification projects continued with intensified apprehensions, and the main fort was renovated as well.

Throughout this conflict Dutch traders prospered, as they had found there was great profit in supplying stores to

warring nations. Statia served as a military supply center for the French during the Seven Years War and, as the Dutch had an insufficient navy, the French navy offered to protect it (Hartog 1976). Thus they incurred the wrath of the British, and a naval battle ensued, but once again, the island escaped without suffering a land attack.

In the years that followed, the major military concern of the island was confined to smuggling activity. This would quickly change with a declaration of independence by Britain's North American colonies. When independence was asserted in 1776, St. Eustatius was already deeply involved in supplying the colonies with goods, contrary to both British and Dutch law. Preparations for a conflict had begun in the colonies as early as 1774, with fighting breaking out the following year.

Due to the smuggling, Sir Joseph Yorke, ambassador to the Netherlands, informed the Dutch that "English warships were ordered henceforth to show 'more vigilance and less reserve' in their attentions to St. Eustatius" (Tuchman 1988:9). Making matters even worse was a century old treaty between Britain and Holland (Plumb et al. 1978). George III went so far as to request troops from Holland to assist in the rebellion, but he was refused.

In January of 1776 George III wrote: "every intelligence

confirms that principally St. Eustatius, but also all the other islands are to furnish the Americans with gunpowder this winter" (Tuchman 1988:10). The King was correct. Ships regularly docked at ports or unloaded in secluded rivers in Virginia, North Carolina, and Pennsylvania carrying cargoes of powder from 1,000 to 4,000 pounds each, and at least one ship transported as much as 49,000 pounds (Tuchman 1988:20).

Although naval patrols were increased the flow could not be stopped. The same month the King wrote his concerns, British warships pursued merchant vessels into Oranje Bay and, in the words of the current governor Abraham Heyliger, enacted "irregularities so flagrant that they must be considered as a total violation of all the laws of all civilized nations" (Schulte 1982:38).

Then, on the 16th of November 1776, Fort Oranje fired a return salute to an armed ship in the bay, the Andrew Doria, which was flying the new American flag. This act, no matter what the intent, was considered "a flagrant insult to His Majesty's colours" by the British Ministry (quoted in Tuchman 1988:16). This would have serious repercussions in the years to come.

The island was, by this time, under the governorship of Johannes de Graaff, having been in charge only nine weeks at

the time of the salute. Himself a merchant, he did nothing to suppress the illicit trade, against orders from his superiors in Holland. In fact de Graaff appears to have been quite sympathetic to the Americans. Statia's warehouses were "opened without reserve to all American vessels" stated British Captain Colpoys in St. Kitts (Clark 1976 VII:500). At the same time an American agent on Statia, Abraham Van Bibber, wrote:

I am on the best terms with H.E. the Governour...Our Flag flys current every day in the road...The Governour is daily expressing the greatest desire and intention to protect a trade with us here (November 19, 1776, quoted in Tuchman 1988:13-14).

Following the lead of their governor the majority of Statians welcomed the Americans, doubly so realizing the potential profits to be made in supplying the rebellion. The Captain of the Andrew Doria, Isaiah Robinson, was, as Van Bibber put it, "most graciously received by his Honour [the Governour] and all ranks of people...Tories sneak and shrink before the Americans here" (quoted in Tuchman 1988:16).

Yet another incident pushed Britain and the Netherlands closer to open conflict. A British merchant ship, the May, was captured off St. Eustatius by an American ship, the Baltimore Hero. It was claimed by some that the capture had taken place within the range of Statia's artillery. The Baltimore Hero was afterwards allowed to anchor in the Road of Oranje Bay, and

both acts irritated the British. The Governor of St. Kitts, Craister Greathead, vehemently protested but was ignored by de Graaff. De Graaff did deny to his own superiors in Holland that the capture was within range of his guns. A related earlier incident further fueled the fire, when the guns of the Fort prevented a British ship from seizing an American merchant offshore (Tuchman 1988).

Throughout the War for American Independence, St. Eustatius continued its illegal trade in arms, ammunition, and naval stores to the rebellious colonies. In an attempt to avoid notice, powder was often transported in barrels marked as non-illegal goods such as tea, rice, molasses, etc. The trade was quite profitable, as shown by a 120% profit margin on the sale of gunpowder in 1776 (Hartog 1976). It is no surprise that Statian merchants were unwilling to give up the trade. Smuggling of arms and powder, "...manufactured in Sweden, in the Southern Netherlands (present day Belgium), and in West Friesland and Zeeland (The Netherlands)..." continued in prodigious volume, being shipped to St. Eustatius out of Ostend and Amsterdam (Hartog 1976:66).

This led to an increase in British seizures of merchant ships, and because of it, Dutch anger. Ever since the 1774 British law against the transport of military goods to the colonies, the Royal Navy had continually been seizing their

ships, building tensions to near the breaking point.

The point finally came to a head on the 20th of December 1780. Rather than being dismissed as the British had requested, de Graaff was allowed to return to St. Eustatius and resume his governorship. Britain could tolerate no more of this kind of treatment, and declared war on Holland, starting the Fourth Anglo-Dutch War.

Although privateering raids had been taking place for some time between the colonies in the West Indies, especially since the entrance of France into the war in 1778, no major military actions had touched Statia. Upon the declaration of war, this relative safety would abruptly end when Admiral Sir George Brydges Rodney sailed into the Caribbean with the British Royal Navy.

Admiral Rodney was ordered by the Lords of the Admiralty to "attack and subdue Dutch possessions in the Caribbean" (Rodney 1789:v). The King instructed Rodney, suggesting that

The Islands which present themselves as the first Objects of Attack are St. Eustatius and St. Martin's, neither of which it is supposed are capable of making any considerable Resistance against such a Land and Sea Force as you and the General can send against them, if the attack be suddenly made, and carried on with that Vigour and Intrepidity which your high Characters leave no Room to doubt will be exerted upon such an occasion (Rodney 1789:6).

St. Eustatius accordingly was chosen as his first target. He well knew that "In peace St. Eustatius had prospered; in war it grew fat on the proceeds of contraband trade" (Rodney 1789:v-vi). Rodney sent Rear Admiral Sir Samuel Hood's squadron of seven ships to encircle the island and prevent any vessels in the bay from escaping.

The unsuspecting island had not yet even learned of its entrance into the war. British intelligence reported that the "Dutch governour was ignorant that his country was at war and the island was unprepared for defence" (Rodney 1789:vi). To supplement what meager defenses they did have, there were two Dutch warships in the vicinity. The first, a 64 gun ship of the line with 418 men, was commanded by Rear Admiral Willem Crull. It had left with a convoy shortly before Hood's squadron arrived. The second, a 38 gun frigate, the Mars, had 250 or so sailors under Frederik Sigismund graaf van Bylandt, and lay anchored, unprepared for action, in the bay. Upon the approach of Hood's squadron, the Mars prudently surrendered. It was allowed to fire a broadside for the sake of honour, but was not able to fire any guns in the defense of the island. Hood was congratulated by his superior for he had "most effectively performed the service" (Rodney 1789:8).

On Saturday, the 3rd of February 1781, the remainder of Rodney's fleet arrived off St. Eustatius, anchoring around 3

p.m. The British fleet consisted of fourteen to sixteen ships of the line, three to five frigates, three galleons, and upwards of 120 smaller support vessels (Rodney 1789; Spinney 1969; Hartog 1976; Attema 1976). In addition, they carried at least three full regiments of foot, marines, and assorted soldiers, numbering about 3,000 men.

The island on the other hand reportedly had sixty regular garrison troops stationed there, along with some all but useless civilian militia units. Rodney's intelligence reports correctly informed him that there were no more than 100 regulars, but also that there were some 2,000 American sailors on the island. In addition there were 82 mounted artillery pieces reported by Rodney on Statia at his arrival: Hood's largest ship alone, the *Barfleur*, carried 90 guns, not to mention the over 300 guns on his squadrons' other warships. With the arrival of the fleet, Statia's artillery had less of a chance than the Spartans of Leonidas at Thermopylae.

Admiral Rodney had several other advantages as well. The first and foremost was he was sailing into Dutch waters before most islands had learnt of their entrance into the war. Secondly, with his sizeable fleet, he would encounter little resistance from the meagerly defended islands. The British had by this time some twenty or more ships of the line in the Caribbean alone, whereas the Netherlands could only boast some

eleven of comparable size in their entire fleet (Tuchman 1988). The French fleet, Rodney's only real rival, was not within striking distance.

Upon the arrival of the main fleet, the Men-o-War ships were stationed offshore at each of the islands small batteries (Rodney 1789). The positions were out-manned by as much as 300 to 1, and severely out-gunned. The fleet deployed "in a line from Gallows Bay, south of the Orange Bay, to the Diamond Rock on the north side of this bay" (Hartog 1976:85). The land troops were prepared for disembarkation. Admiral Rodney and General Vaughan, knowing their upperhand, "in order to save the Effusion of human Blood, thought it necessary to send the Dutch Governour [a] Summons...", via Lieutenant-Colonel James Cockburn and another officer, with "...which he instantly complied" (letter by Rodney February 4, 1781, in Rodney 1789:8). Within a few days, seeing the predicament their sister island was in, Saba and St. Maarten sent word they would surrender as well.

The American sailors on Statia had offered to help defend the island, but the Governor felt it more wise to surrender. The British troops "secured" most of them, though in a letter dated the 10th of February "still a considerable Number remain lurking on the Mountains. Hunger will soon compel them to surrender at Discretion" (Rodney 1789:13). Rodney also

immediately manned the Mars with British sailors, which was armed with 18 pounder naval guns, and renamed it the Prince Edward. This frigate may be the one fired upon by the Gibraltar and the Prince William, the only shots fired by the fleet during the invasion. Both captains were later arrested for firing without orders (Spinney 1969). In addition, the British refitted five other armed vessels captured in the roadstead, each having from 14 to 26 guns (Rodney 1789).

Not wanting anything to escape his trap, Rodney quickly dispatched a squadron to pursue the convoy under Admiral Crull. The fast British warships soon overtook the slower merchants, and a battle ensued. In the cannonade, Admiral Crull was inadvertently killed, an event the British Admiral regretted. Eighteenth century warfare etiquette frowned upon the slaying of the Upper Ranks. Rodney also allowed the Dutch flag to remain flying over the Fort, and was rewarded by this deception with the capture of another 150 ships. Among this number were 50 armed American merchant vessels that unknowingly sailed into his grasp.

Upon landing, Rodney found just what he had expected and hoped for: warehouses packed full of stores. He wrote back to England that "All the Magazines and Storehouses are filled, and even the Beach covered with Tobacco and Sugar..." (Rodney 1789:9). The magazines he found to be "filled with Provisions,

Naval and other Store, intended for the use of his Majesty's Enemies and Rebel Subjects..." (Rodney 1789:29). Other letters he sent indicated that the stores included numerous weapons, gunpowder, ammunition, and naval stores of all kinds, some of which his fleet was in great need of a short time before, when he had been told by Statian merchants there were none of these on the island.

Rodney's furor at the suppliers of the rebels was compounded by the fact that a good many were Britons from nearby St. Kitts. Rodney felt he had done a great service to his country by stopping the island's trade: "I am fully convinced our possessing St. Eustatius will be the Means of cutting off entirely the Enemy from Supplies in this Part of the World (Rodney 1789:28). He went on to state Statia's warehouses had "...been more detrimental to England than all the forces of her enemies, and alone had contributed to the continuance of the American war" (quoted in Tuchman 1988:96). Fortunately for the colonies, no sooner had Rodney closed this port than other British islands unscrupulously began to make deals to supply their American purchasers.

Activities such as this led Rodney to hold little compassion for the Statians, British subjects or not. He justified his treatment by believing that "This Island has long been an Asylum for Men guilty of every Crime and a

Recepticle for the Outcast of every Nation" (Rodney 1789:29). In fact, it was the British on the island he probably detested the most: "English merchants, base enough from lucrative motives to support the enemies of Great Britain, will for their treason justly merit their own ruin..." and that "they deserve scourging and they shall be scourged" (quoted in Tuchman 1988:105). All the stores were closed up, and "a military man was posted in the capital at every fifteen paces" (Hartog 1976:94). He also allowed his men to dismantle "many new houses...in order to build barracks for the soldiers" (Attema 1976:40).

Rodney knew the value of the island would eventually bring the French. He set out to properly fortify it, and wrote on the 24th of March 1781 that "The Fortifications for its Protection, are almost complete" (1789:47). By the 8th of April the task was finished, as he stated "I shall leave it in a very few days to the Care of General Vaughan and its Garrison (it is now fortified) and shall join the Fleet off Martinique" (Rodney 1789:64). The British commanders believed they had now sufficiently refortified the island, and left as its garrison two regiments of foot, the 13th and the 15th, as well as at least parts of the 35th and 90th regiments. These men and their new defenses were felt sufficient to safe-guard against any attack the French might mount. In an act of hubris that would come back to haunt them, they deemed Statia the

"newest of the British Gibraltars", not unlike similarly fated Brimstone Hill on nearby St. Kitts.

The expected arrival of the French fleet was borne out. They were first sighted by the British on April 28, 1781 with a reported twenty ships of the line (Rodney 1789). Admiral de Grasse, aboard his flagship the Ville de Paris, was accompanied by land troops numbering in the thousands. This began a series of naval engagements and island assaults which would keep the British navy busy in the West Indies, and hinder relief to British forces trapped in Yorktown, Virginia.

On the 4th of May, the Russel arrived at St. Eustatius and reported to Admiral Rodney on board the Sandwich. They informed him of the details known about the approaching French fleet. Soon after he set out to join his fleet with Hoods, whom he met between Antigua and St. Kitts.

The French fleet then sailed on to Yorktown, leaving Rodney's fleet in the Indies. There they engaged Graves' fleet to assist the siege of Cornwallis' army. Following his surrender on October 19, the French fleet sailed back to the Indies on November the 4th, 1781.

Admiral de Grasse was under orders to continue the war in the Indies by attacking whatever British targets he could,

especially those weakened by the passing of the hurricanes that season. Believing Jamaica would be the first objective, the British focused their attention there, foolishly thinking St. Eustatius to be sufficiently fortified and garrisoned to defend itself without the navy. This assumption was quickly proven false, and it was in fact the island which was chosen as the first target for the French forces.

On the 15th of November, the French expedition readied for the upcoming assault on St. Eustatius. Eight ships were loaded with nearly 1200 men, under the command of the Chevalier de Girardin. The squadron then sailed with utmost secrecy to the British occupied island. Their intended quarry was to be taken by surprise, especially knowing that the British claimed it was now so well defended. In order to convince the enemy that they were preparing to assault a larger island, "a number of pilots from the harbour of St. Pierre" were taken on board in public view to supply the British informants with misleading information (Connecticut Gazette 1782). This would give the impression that the squadron was planning to meet the main French fleet due to arrive in these waters soon. After sunset on the 25th of November, at approximately 9 p.m., the squadron anchored off of St. Eustatius.

The following account of the French invasion is one of the most complete to be found. It was first printed in the

Martinique Gazette on December 6, 1781. This rendition is from a reprint of the Connecticut Gazette on January 25, 1782:

The sloops, with each a frigate's long-boats attending, anchored with much difficulty at the mouth of Jenkin's Bay, situated to the N.W. of the island, whilst the frigates lay too at a little distance. Count Dillon, who was on board the Diligent, with the chasseurs of his regiment, landed the first. The surf running high, the boats were dashed against the rocks, and some soldiers were drowned. Our intrepid General, with a part of the Irish brigade, made good his landing after some time, with great risque and danger; his own boat was upset, but every person on board was saved. A safer landing place was afterwards discovered, where part of the troops disembarked with great difficulty. Those first landed took possession of the heights, after climbing up a rock of between 700 and 800 feet, almost perpendicular height, the only way by which they could penetrate the island; this was overcome by our troops, Mons. de Bouille himself, with great eagerness and intrepidity, setting the example. An hour before day only 400 were landed, and we had no expectation of effecting the landing any more, most of the boats having been dashed to pieces.

Our only resource was now in victory, and we had to attack an enemy greatly superior in numbers. Nothing could discourage M. de Bouille, he instantly took his measures, and marched at the head of his troops who were full of ardour and courage. At half after four in the morning, being still at the distance of a league and a half from the fort, we hastened our march.

Count Dillon received orders to march immediately with the Irish brigade to the barracks, to send a detachment to seize the batteries, on the right of the town, and another to surprize the Governor in his own house. Mons. de Fresne, Major of the Royal Contois, with 100 chasseurs, taken from his own regiment and that of Auxerrois, was ordered to attack the fort, and to scale the walls if he could not enter at the gate. Mr. le Vicomte de Damas was ordered to support him with the remainder of the troops.

Count Dillon reached the barracks at six o' clock in the morning, and found a part of the garrison exercising on the parade. The enemy, imposed upon by the uniform of

the Irish brigade,¹ were soon undeceived by a fire from the latter within pistol shot. Governor Cockburne, on his way to the parade, was taken prisoner at the same time, by the Chevalieur O'Conner, Captain of the chasseurs of Walsh. The Chevalieur Fresne pushed on to the fort, into which the enemy were throwing themselves in great numbers; he reached the drawbridge at the moment they were attempting to raise it; Mons. de la Motte, second Captain of the chasseurs of Auxerrois, rushed forward on the bridge, and by a well timed well directed fire, obliged the enemy to let go the chains. This vigorous attack, deserving the greatest encomiums, was the signal of victory. The enemy were pursued into the fort by the chasseurs of the Comtois. The Chevalieur de Fresne ordered the bridge to be raised, and the whole garrison threw down their arms. All the prisoners paraded in the fort, and we found on examination, that we had lost only 10 men in killed, drowned, or wounded. The enemy lost 32....

The garrison at St. Eustatia was composed of the 13th and 15th British Regiments, consisting of 691 men, and all the prisoners taken amounted to 776, viz. two Lieut. Colonels, 7 Captains, 33 Lieutenants, Ensigns, and Quartermasters, 702 non-commissioned officers, privates, and matrosses,² and 32 sailors. The Count de Bouille, nephew to the General, sailed on the 28th from St. Eustasia, in the Corvette Eagle, to carry the news of this success of our arms to the King, and to present to his Majesty the four standards of the 13th and 15th regiments....

The English cannot have forgot the doctrine held out by General Vaughan, Col. Cockburne himself, and other officers, that St. Eustatia, with a garrison of 1000 men, could defend itself against 10,000. What will they say, when they learn that the new Gibraltar was conquered by 400 Frenchmen? They must confess their Generals are bad calculators, and that intrepidity supplies the place of

¹ The Irish Brigade was uniformed with red regimental coats, faced in yellow. These uniforms were all but identical to several British regiments. In addition, the brigade was made up of Irish and British mercenaries, which compounded the British soldiers confusion at first sighting.

² Matrosses were artillery personnel. Attema (1976:42) has confused these troops with bedding material, and proposes the ludicrous situation of the French troops carrying mattresses up the cliffs at Jenkin's bay, across the island, and laying them in the moat at Fort Oranje.

numbers.

The article goes on to describe the taking of St. Martin, and the surrender of Saba that same day. Although the islands were said to be returned to the "laws of Holland" and the flag of the "United Provinces was hoisted on the fort", the islands remained in French control with the new military commander being "M. Fitzmaurice, Captain Commandant of the battalion of Walsh". Masseur de Geoffry was appointed "Aid-Major to the town and Fort Orange" on St. Eustatius (Connecticut Gazette January 25, 1782).

Eventually Lieutenant-Colonel James Cockburne (of the 35th Foot) returned to England and was court martialed. He was found "guilty of culpable neglect in not taking the necessary precautions for the defence of the island, notwithstanding he had received the fullest intelligence of an intended attack" (Gossencourt n.d., in Shea 1971:93).

Following their British predecessors lead, the French forces refortified: "Monsieur de Bouille at the same time put the place in a respectable situation, and left a sufficient garrison for its defence" (Connecticut Gazette, January 25 1782). The British prisoners were taken to Martinique. The British were unable to mount an offensive against the island for the remainder of the war.

After the cessation of hostilities France returned St. Eustatius to the Netherlands on February 7, 1784. For the next eleven years the island prospered and recovered from the damages of late war. In the meantime France had undergone a revolution of her own, starting in 1789. The country, then still involved in internal strife, compounded it by declaring war in 1792 on several other European nations. The Netherlands were annexed by France, and as a result on April 14, 1795 St. Eustatius came under French rule once again.

Revolutionary France soon destroyed the islands economy, which never completely recovered. Bloody excesses with the guillotine eventually caused the fanatical Jacobin rebels to be expelled, and the leadership was replaced by the army, with Napoleon Bonaparte at the head. Under Napoleon's rule the external wars intensified and were extended into the Caribbean. Fearing attack from her numerous enemies, France once again prepared the island for defense.

In the early months of 1801 British convoys sailed for the Leeward Islands carrying some 5,400 of His Majesty's troops. The commanders of the forces in the Indies were Lieutenant General Thomas Trigge, with two and a half regiments already in Barbados, and Rear Admiral John Thomas Duckworth. Among the newly transported troops were two battalions of the 68th Foot,

the 64th, the 1st Royals, the regiment of Castries (emigrants), and 1130 recruits from Ireland and England (Southey 1968). Not waiting for the full complement, Trigge began operations in late February, utilizing local garrisons, as well as the 3rd, 11th, and 68th regiments, the 8th West India, and 100 artillerists, and being joined by the 2nd West India, newly arrived from Trinidad (Duffy 1987). After easily capturing St. Bartholomew the expedition turned south for St. Martin, arriving on the 23rd of March (Southey 1968). Parts of the 3rd, 8th West India, 64th, and 100 sailors landed, followed several hours later by the 1st Royals, 2nd West India, 11th Foot, and 100 more sailors (Duffy 1987). The British then marched to Marigot, the French town, and Fort Amsterdam at Phillipsburg, in the Dutch sector. After engaging in several skirmishes, both sides of the island surrendered to the British.

The captured island being garrisoned, the British forces proceeded on their expedition, easily taking several more islands. Realizing that the size of the British force was too great to repel, the French evacuated their troops from the islands of St. Eustatius and Saba on the 16th of April, "carrying with them as much plunder as their vessels could stow" (Southey 1968:88). This included several pieces of artillery from Statia's batteries. The French troops were transported to Guadeloupe to reinforce the garrison there.

Learning of the evacuation, British troops stationed at nearby St. Kitts were dispatched on board the sloop Arab to secure St. Eustatius for Great Britain. Lieutenant Colonel Blunt of the 3rd Foot arrived with 100 of the "buffs",³ accompanied by Lieutenant Brown and 10 of the artillery corps (Southey 1968). The island formally capitulated on the 21st of April followed on the 22nd by Saba. Their surrender marked the last of the Dutch islands to be captured. In late April of 1802, a truce agreement was reached, and by November of that year St. Eustatius, along with the other captured islands, was restored to its pre-war owners, the Dutch.

During the following years the Napoleonic wars flared up again, causing the island to fear for its safety. In 1810 this danger appeared eminent and the fortifications were readied once again. The expected British expeditions in the area came that year, with several islands being captured, including St. Martin in mid-February. Immediately following that island's unconditional surrender, the British forces moved on to St. Eustatius. In command of this force was Vice-Admiral Sir A. Cochrane who received the following letter from W.C. Fahie concerning the action:

³ The "buffs" was the name given to the 3rd Regiment of Foot (East Kent), derived from the shade of their uniform facings.

His Majesty's ship Abercrombie, at anchor in
the road of St. Eustatia, the 22nd Feb. 1810

Sir,

The measures which it became necessary to adopt for the internal government of the Dutch quarter of the island of St. Martin, in consequence of its unconditional surrender to His Majesty's arms, having been completed on the evening of the 20th instant, I sailed from thence at daylight on the following morning, and at twelve o'clock on the same day anchored in this road. On the appearance of the Abercrombie off the road, Captain Dowers, of His Majesty's brig the Ringdove (who had been sent forward with a joint summons from Brigadier-General Harcourt and myself, addressed to the governor), joined us with his answer, together with the terms on which he offered to capitulate; but as they were in some points inadmissible, Lieutenant-Colonel Stewart and Captain Dowers were sent on shore to meet the Dutch commissioners, and I have the satisfaction to inform you, that before night the articles of capitulation were framed and ratified on both sides, and the grenadier company of the 25th regiment landed to occupy the principle fort.⁴ Entire possession of the island was given to us at nine o'clock this morning, and the Dutch garrison marched out with the honours of war and embarked.

Though the island of St. Eustatia is of little value itself, the acquisition of it is important, as it finally expels the enemy's flag from the archipelago; and, I am assured, Sir, that it will be to you, as it is to me, a source of peculiar satisfaction, that I have been able to carry your orders into complete execution without the loss of a single life.

Vice-Admiral Sir A. Cochrane.

I have, &c.
W.C. FAHIE

(reproduced in Southey 1968:489, vol. III). Saba likewise surrendered at 4 a.m.

⁴ The 25th regiment, from which the grenadier company was detached, was part of the 2nd brigade, under Brigadier-General Barrow.

St. Eustatius remained in the hands of the British throughout the remainder of the Napoleonic wars. British forces in the Caribbean were kept strong enough to discourage enemy land forces from retaking the island, though some small naval engagements did take place in Caribbean waters. Most of the war, however, was fought on European soil. Following the final defeat of the French forces at Waterloo, a treaty was signed with all parties involved. The Netherlands, by the end of the war a British ally, were allowed to take possession of the island on the 1st of February 1816.

An inventory indicated that Fort Oranje and four other batteries were still in use when the Dutch returned (Attema 1976). Among the other four was Fort Panga, and probably Battery Bouille, as suggested by a British artillery button located there during the survey of 1990.

By the end of the Napoleonic wars St. Eustatius lost its attraction as a military target. Its formerly crucial role in trade and supply had dwindled to an insignificant amount, and the island offered no natural resources worthy of coveting. Its only potential military value was as a naval base, being in a central location, but its total dependence on other islands for supplies made this of little strategic value. Several other islands had better accommodations for such installations.

Even though it no longer had a great deal to fear from foreign attack, the island remained nominally fortified throughout the first half of the 19th century. Most small batteries surrounding the island were abandoned after 1816, some being partially dismantled to salvage brick. Fort Panga was occupied until destroyed by a hurricane in 1819 (Hartog 1976). In 1829 the Fort was still garrisoned by twenty-one men of the Jager (Riflemen) Battalion, but by this time the walls were falling into ruin, and the parade ground was completely overgrown (Attema 1976). In 1834 the walls were rebuilt, and the gate house was renovated into quarters for the commander. The guns of the fort fired another salute that year, to Prince Hendrik, who visited on board the warship Maas (Hartog 1976). This was among the Fort's last cannonades, for by 1846 it was abandoned by the regular military.

At the abandonment of Fort Oranje, no fortifications were maintained on a regular basis. The island did have a militia unit throughout the 19th century. On occasion they drilled on the Fort grounds. A photo of the "Statia Militia" around 1890 (see Hartog 1976:39) shows the unit to be infantry, equipped with what may be surplus from the United States Army.

By the early 20th century, parts of the old Fort were in use by the police and night watch of the island. The bell in

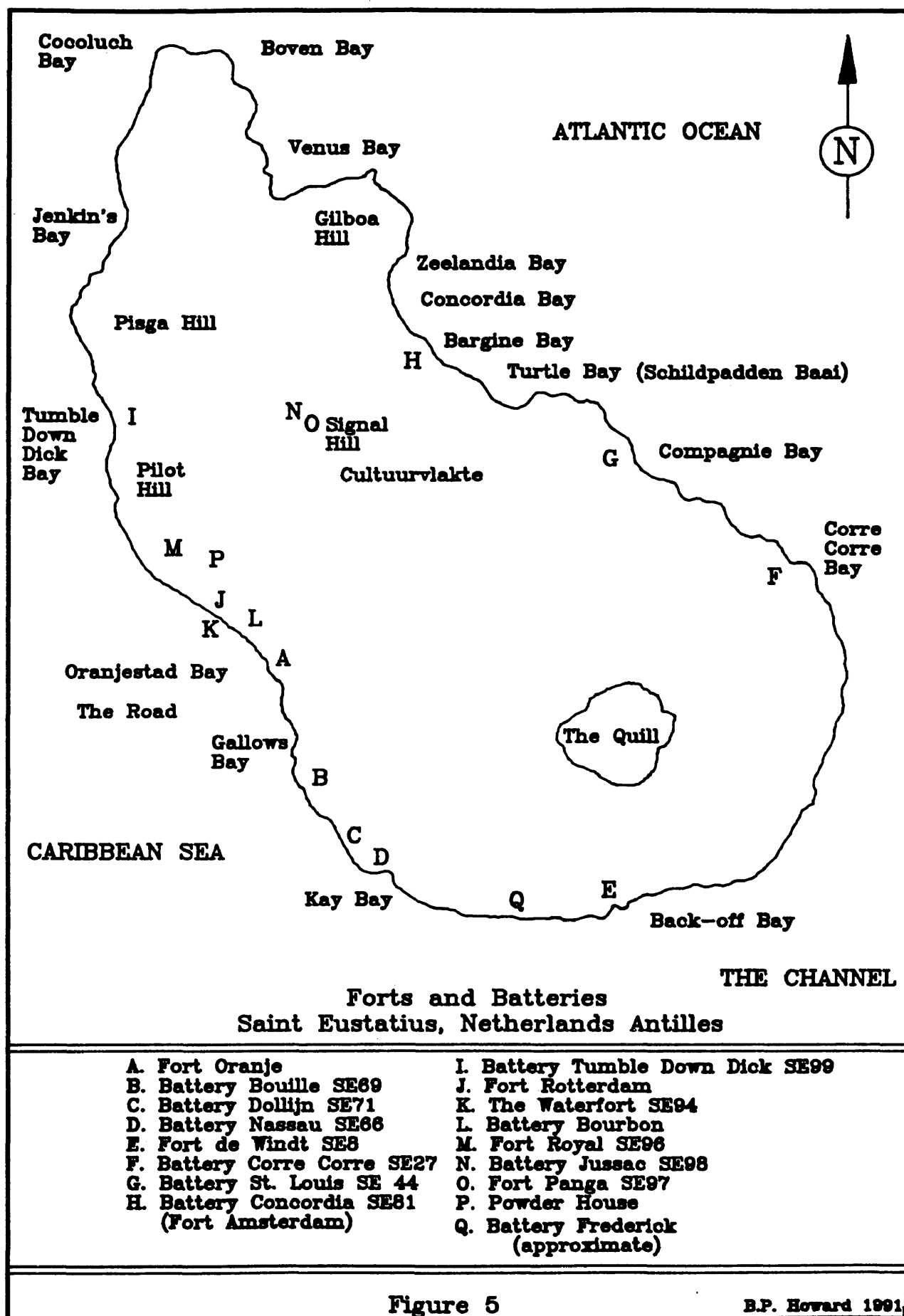
the gate-house was rung on the hour by the night-watch stationed there, who communicated with another watch in the Lower Town below the Fort (Lampe, personal communication, 1990).

Chapter 8

The Fortifications Survey

The defensive fortifications of St. Eustatius were archaeologically surveyed during the summer of 1990 (Figure 5). The survey crew was normally limited to the researcher, with occasional assistance from various members of the field school. As a result, most batteries were mapped using only compass and tape measure. Such independent mapping naturally presented some difficulties, but all resulting plans were made to be as accurate as possible. Several other batteries were mapped with from two to three persons, and two more were mapped using an alidade (Battery Nassau, and Battery Concordia, by the field school). One map (the Waterfort) was compiled with an alidade by J.D. Hartley and an assistant in 1988, and updated in this survey after Hurricane Hugo apparently uncovered additional wall sections. Fort Oranje and Fort de Windt were not re-mapped. Both have been reconstructed and maps already existed.

Several historic maps of the island exist (Figures 6-12). Most denote at least some of the defenses in existence at the



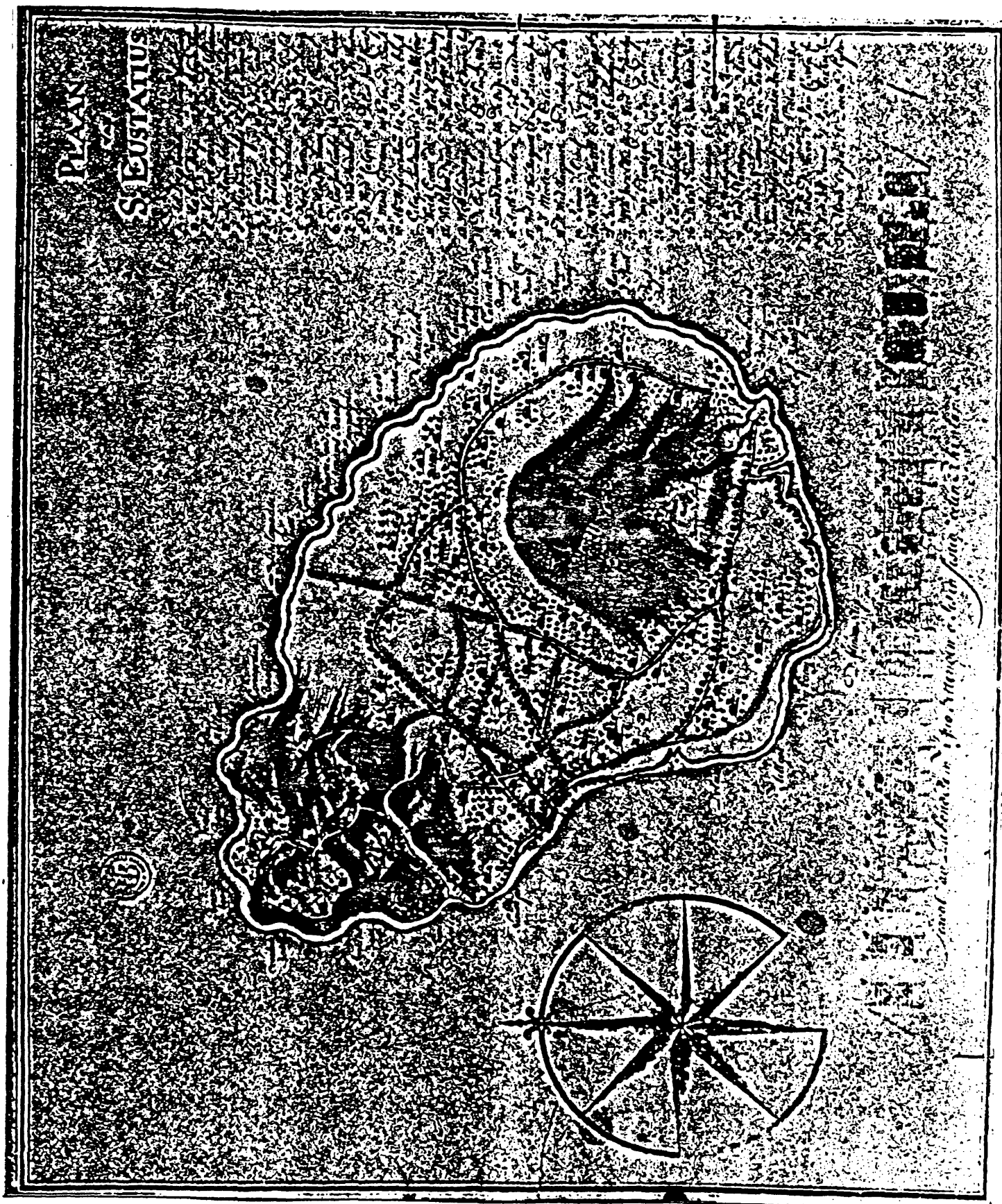


Figure 6 Map of St. Eustatius, 1742

NAAMEN der PLANTAGIEN
in de **WILDELIJKE GARDEN**

van den JAARE 1775.

1. <i>Abies</i>	2. <i>Pinus</i>	3. <i>Larix</i>	4. <i>Juniperus</i>	5. <i>Thuja</i>	6. <i>Cedrus</i>	7. <i>Sequoia</i>	8. <i>Metasequoia</i>	9. <i>Podocarpus</i>	10. <i>Taxus</i>	11. <i>Yew</i>	12. <i>Juniper</i>	13. <i>Thuja</i>	14. <i>Cedrus</i>	15. <i>Sequoia</i>	16. <i>Metasequoia</i>	17. <i>Podocarpus</i>	18. <i>Taxus</i>	19. <i>Yew</i>	20. <i>Juniper</i>	21. <i>Thuja</i>	22. <i>Cedrus</i>	23. <i>Sequoia</i>	24. <i>Metasequoia</i>	25. <i>Podocarpus</i>	26. <i>Taxus</i>	27. <i>Yew</i>	28. <i>Juniper</i>	29. <i>Thuja</i>	30. <i>Cedrus</i>	31. <i>Sequoia</i>	32. <i>Metasequoia</i>	33. <i>Podocarpus</i>	34. <i>Taxus</i>	35. <i>Yew</i>	36. <i>Juniper</i>	37. <i>Thuja</i>	38. <i>Cedrus</i>	39. <i>Sequoia</i>	40. <i>Metasequoia</i>	41. <i>Podocarpus</i>	42. <i>Taxus</i>	43. <i>Yew</i>	44. <i>Juniper</i>	45. <i>Thuja</i>	46. <i>Cedrus</i>	47. <i>Sequoia</i>	48. <i>Metasequoia</i>	49. <i>Podocarpus</i>	50. <i>Taxus</i>	51. <i>Yew</i>	52. <i>Juniper</i>	53. <i>Thuja</i>	54. <i>Cedrus</i>	55. <i>Sequoia</i>	56. <i>Metasequoia</i>	57. <i>Podocarpus</i>	58. <i>Taxus</i>	59. <i>Yew</i>	60. <i>Juniper</i>	61. <i>Thuja</i>	62. <i>Cedrus</i>	63. <i>Sequoia</i>	64. <i>Metasequoia</i>	65. <i>Podocarpus</i>	66. <i>Taxus</i>	67. <i>Yew</i>	68. <i>Juniper</i>	69. <i>Thuja</i>	70. <i>Cedrus</i>	71. <i>Sequoia</i>	72. <i>Metasequoia</i>	73. <i>Podocarpus</i>	74. <i>Taxus</i>	75. <i>Yew</i>	76. <i>Juniper</i>	77. <i>Thuja</i>	78. <i>Cedrus</i>	79. <i>Sequoia</i>	80. <i>Metasequoia</i>	81. <i>Podocarpus</i>	82. <i>Taxus</i>	83. <i>Yew</i>	84. <i>Juniper</i>	85. <i>Thuja</i>	86. <i>Cedrus</i>	87. <i>Sequoia</i>	88. <i>Metasequoia</i>	89. <i>Podocarpus</i>	90. <i>Taxus</i>	91. <i>Yew</i>	92. <i>Juniper</i>	93. <i>Thuja</i>	94. <i>Cedrus</i>	95. <i>Sequoia</i>	96. <i>Metasequoia</i>	97. <i>Podocarpus</i>	98. <i>Taxus</i>	99. <i>Yew</i>	100. <i>Juniper</i>	101. <i>Thuja</i>	102. <i>Cedrus</i>	103. <i>Sequoia</i>	104. <i>Metasequoia</i>	105. <i>Podocarpus</i>	106. <i>Taxus</i>	107. <i>Yew</i>	108. <i>Juniper</i>	109. <i>Thuja</i>	110. <i>Cedrus</i>	111. <i>Sequoia</i>	112. <i>Metasequoia</i>	113. <i>Podocarpus</i>	114. <i>Taxus</i>	115. <i>Yew</i>	116. <i>Juniper</i>	117. <i>Thuja</i>	118. <i>Cedrus</i>	119. <i>Sequoia</i>	120. <i>Metasequoia</i>	121. <i>Podocarpus</i>	122. <i>Taxus</i>	123. <i>Yew</i>	124. <i>Juniper</i>	125. <i>Thuja</i>	126. <i>Cedrus</i>	127. <i>Sequoia</i>	128. <i>Metasequoia</i>	129. <i>Podocarpus</i>	130. <i>Taxus</i>	131. <i>Yew</i>	132. <i>Juniper</i>	133. <i>Thuja</i>	134. <i>Cedrus</i>	135. <i>Sequoia</i>	136. <i>Metasequoia</i>	137. <i>Podocarpus</i>	138. <i>Taxus</i>	139. <i>Yew</i>	140. <i>Juniper</i>	141. <i>Thuja</i>	142. <i>Cedrus</i>	143. <i>Sequoia</i>	144. <i>Metasequoia</i>	145. <i>Podocarpus</i>	146. <i>Taxus</i>	147. <i>Yew</i>	148. <i>Juniper</i>	149. <i>Thuja</i>	150. <i>Cedrus</i>	151. <i>Sequoia</i>	152. <i>Metasequoia</i>	153. <i>Podocarpus</i>	154. <i>Taxus</i>	155. <i>Yew</i>	156. <i>Juniper</i>	157. <i>Thuja</i>	158. <i>Cedrus</i>	159. <i>Sequoia</i>	160. <i>Metasequoia</i>	161. <i>Podocarpus</i>	162. <i>Taxus</i>	163. <i>Yew</i>	164. <i>Juniper</i>	165. <i>Thuja</i>	166. <i>Cedrus</i>	167. <i>Sequoia</i>	168. <i>Metasequoia</i>	169. <i>Podocarpus</i>	170. <i>Taxus</i>	171. <i>Yew</i>	172. <i>Juniper</i>	173. <i>Thuja</i>	174. <i>Cedrus</i>	175. <i>Sequoia</i>	176. <i>Metasequoia</i>	177. <i>Podocarpus</i>	178. <i>Taxus</i>	179. <i>Yew</i>	180. <i>Juniper</i>	181. <i>Thuja</i>	182. <i>Cedrus</i>	183. <i>Sequoia</i>	184. <i>Metasequoia</i>	185. <i>Podocarpus</i>	186. <i>Taxus</i>	187. <i>Yew</i>	188. <i>Juniper</i>	189. <i>Thuja</i>	190. <i>Cedrus</i>	191. <i>Sequoia</i>	192. <i>Metasequoia</i>	193. <i>Podocarpus</i>	194. <i>Taxus</i>	195. <i>Yew</i>	196. <i>Juniper</i>	197. <i>Thuja</i>	198. <i>Cedrus</i>	199. <i>Sequoia</i>	200. <i>Metasequoia</i>	201. <i>Podocarpus</i>	202. <i>Taxus</i>	203. <i>Yew</i>	204. <i>Juniper</i>	205. <i>Thuja</i>	206. <i>Cedrus</i>	207. <i>Sequoia</i>	208. <i>Metasequoia</i>	209. <i>Podocarpus</i>	210. <i>Taxus</i>	211. <i>Yew</i>	212. <i>Juniper</i>	213. <i>Thuja</i>	214. <i>Cedrus</i>	215. <i>Sequoia</i>	216. <i>Metasequoia</i>	217. <i>Podocarpus</i>	218. <i>Taxus</i>	219. <i>Yew</i>	220. <i>Juniper</i>	221. <i>Thuja</i>	222. <i>Cedrus</i>	223. <i>Sequoia</i>	224. <i>Metasequoia</i>	225. <i>Podocarpus</i>	226. <i>Taxus</i>	227. <i>Yew</i>	228. <i>Juniper</i>	229. <i>Thuja</i>	230. <i>Cedrus</i>	231. <i>Sequoia</i>	232. <i>Metasequoia</i>	233. <i>Podocarpus</i>	234. <i>Taxus</i>	235. <i>Yew</i>	236. <i>Juniper</i>	237. <i>Thuja</i>	238. <i>Cedrus</i>	239. <i>Sequoia</i>	240. <i>Metasequoia</i>	241. <i>Podocarpus</i>	242. <i>Taxus</i>	243. <i>Yew</i>	244. <i>Juniper</i>	245. <i>Thuja</i>	246. <i>Cedrus</i>	247. <i>Sequoia</i>	248. <i>Metasequoia</i>	249. <i>Podocarpus</i>	250. <i>Taxus</i>	251. <i>Yew</i>	252. <i>Juniper</i>	253. <i>Thuja</i>	254. <i>Cedrus</i>	255. <i>Sequoia</i>	256. <i>Metasequoia</i>	257. <i>Podocarpus</i>	258. <i>Taxus</i>	259. <i>Yew</i>	260. <i>Juniper</i>	261. <i>Thuja</i>	262. <i>Cedrus</i>	263. <i>Sequoia</i>	264. <i>Metasequoia</i>	265. <i>Podocarpus</i>	266. <i>Taxus</i>	267. <i>Yew</i>	268. <i>Juniper</i>	269. <i>Thuja</i>	270. <i>Cedrus</i>	271. <i>Sequoia</i>	272. <i>Metasequoia</i>	273. <i>Podocarpus</i>	274. <i>Taxus</i>	275. <i>Yew</i>	276. <i>Juniper</i>	277. <i>Thuja</i>	278. <i>Cedrus</i>	279. <i>Sequoia</i>	280. <i>Metasequoia</i>	281. <i>Podocarpus</i>	282. <i>Taxus</i>	283. <i>Yew</i>	284. <i>Juniper</i>	285. <i>Thuja</i>	286. <i>Cedrus</i>	287. <i>Sequoia</i>	288. <i>Metasequoia</i>	289. <i>Podocarpus</i>	290. <i>Taxus</i>	291. <i>Yew</i>	292. <i>Juniper</i>	293. <i>Thuja</i>	294. <i>Cedrus</i>	295. <i>Sequoia</i>	296. <i>Metasequoia</i>	297. <i>Podocarpus</i>	298. <i>Taxus</i>	299. <i>Yew</i>	300. <i>Juniper</i>	301. <i>Thuja</i>	302. <i>Cedrus</i>	303. <i>Sequoia</i>	304. <i>Metasequoia</i>	305. <i>Podocarpus</i>	306. <i>Taxus</i>	307. <i>Yew</i>	308. <i>Juniper</i>	309. <i>Thuja</i>	310. <i>Cedrus</i>	311. <i>Sequoia</i>	312. <i>Metasequoia</i>	313. <i>Podocarpus</i>	314. <i>Taxus</i>	315. <i>Yew</i>	316. <i>Juniper</i>	317. <i>Thuja</i>	318. <i>Cedrus</i>	319. <i>Sequoia</i>	320. <i>Metasequoia</i>	321. <i>Podocarpus</i>	322. <i>Taxus</i>	323. <i>Yew</i>	324. <i>Juniper</i>	325. <i>Thuja</i>	326. <i>Cedrus</i>	327. <i>Sequoia</i>	328. <i>Metasequoia</i>	329. <i>Podocarpus</i>	330. <i>Taxus</i>	331. <i>Yew</i>	332. <i>Juniper</i>	333. <i>Thuja</i>	334. <i>Cedrus</i>	335. <i>Sequoia</i>	336. <i>Metasequoia</i>	337. <i>Podocarpus</i>	338. <i>Taxus</i>	339. <i>Yew</i>	340. <i>Juniper</i>	341. <i>Thuja</i>	342. <i>Cedrus</i>	343. <i>Sequoia</i>	344. <i>Metasequoia</i>	345. <i>Podocarpus</i>	346. <i>Taxus</i>	347. <i>Yew</i>	348. <i>Juniper</i>	349. <i>Thuja</i>	350. <i>Cedrus</i>	351. <i>Sequoia</i>	352. <i>Metasequoia</i>	353. <i>Podocarpus</i>	354. <i>Taxus</i>	355. <i>Yew</i>	356. <i>Juniper</i>	357. <i>Thuja</i>	358. <i>Cedrus</i>	359. <i>Sequoia</i>	360. <i>Metasequoia</i>	361. <i>Podocarpus</i>	362. <i>Taxus</i>	363. <i>Yew</i>	364. <i>Juniper</i>	365. <i>Thuja</i>	366. <i>Cedrus</i>	367. <i>Sequoia</i>	368. <i>Metasequoia</i>	369. <i>Podocarpus</i>	370. <i>Taxus</i>	371. <i>Yew</i>	372. <i>Juniper</i>	373. <i>Thuja</i>	374. <i>Cedrus</i>	375. <i>Sequoia</i>	376. <i>Metasequoia</i>	377. <i>Podocarpus</i>	378. <i>Taxus</i>	379. <i>Yew</i>	380. <i>Juniper</i>	381. <i>Thuja</i>	382. <i>Cedrus</i>	383. <i>Sequoia</i>	384. <i>Metasequoia</i>	385. <i>Podocarpus</i>	386. <i>Taxus</i>	387. <i>Yew</i>	388. <i>Juniper</i>	389. <i>Thuja</i>	390. <i>Cedrus</i>	391. <i>Sequoia</i>	392. <i>Metasequoia</i>	393. <i>Podocarpus</i>	394. <i>Taxus</i>	395. <i>Yew</i>	396. <i>Juniper</i>	397. <i>Thuja</i>	398. <i>Cedrus</i>	399. <i>Sequoia</i>	400. <i>Metasequoia</i>	401. <i>Podocarpus</i>	402. <i>Taxus</i>	403. <i>Yew</i>	404. <i>Juniper</i>	405. <i>Thuja</i>	406. <i>Cedrus</i>	407. <i>Sequoia</i>	408. <i>Metasequoia</i>	409. <i>Podocarpus</i>	410. <i>Taxus</i>	411. <i>Yew</i>	412. <i>Juniper</i>	413. <i>Thuja</i>	414. <i>Cedrus</i>	415. <i>Sequoia</i>	416. <i>Metasequoia</i>	417. <i>Podocarpus</i>	418. <i>Taxus</i>	419. <i>Yew</i>	420. <i>Juniper</i>	421. <i>Thuja</i>	422. <i>Cedrus</i>	423. <i>Sequoia</i>	424. <i>Metasequoia</i>	425. <i>Podocarpus</i>	426. <i>Taxus</i>	427. <i>Yew</i>	428. <i>Juniper</i>	429. <i>Thuja</i>	430. <i>Cedrus</i>	431. <i>Sequoia</i>	432. <i>Metasequoia</i>	433. <i>Podocarpus</i>	434. <i>Taxus</i>	435. <i>Yew</i>	436. <i>Juniper</i>	437. <i>Thuja</i>	438. <i>Cedrus</i>	439. <i>Sequoia</i>	440. <i>Metasequoia</i>	441. <i>Podocarpus</i>	442. <i>Taxus</i>	443. <i>Yew</i>	444. <i>Juniper</i>	445. <i>Thuja</i>	446. <i>Cedrus</i>	447. <i>Sequoia</i>	448. <i>Metasequoia</i>	449. <i>Podocarpus</i>	450. <i>Taxus</i>	451. <i>Yew</i>	452. <i>Juniper</i>	453. <i>Thuja</i>	454. <i>Cedrus</i>	455. <i>Sequoia</i>	456. <i>Metasequoia</i>	457. <i>Podocarpus</i>	458. <i>Taxus</i>	459. <i>Yew</i>	460. <i>Juniper</i>	461. <i>Thuja</i>	462. <i>Cedrus</i>	463. <i>Sequoia</i>	464. <i>Metasequoia</i>	465. <i>Podocarpus</i>	466. <i>Taxus</i>	467. <i>Yew</i>	468. <i>Juniper</i>	469. <i>Thuja</i>	470. <i>Cedrus</i>	471. <i>Sequoia</i>	472. <i>Metasequoia</i>	473. <i>Podocarpus</i>	474. <i>Taxus</i>	475. <i>Yew</i>	476. <i>Juniper</i>	477. <i>Thuja</i>	478. <i>Cedrus</i>	479. <i>Sequoia</i>	480. <i>Metasequoia</i>	481. <i>Podocarpus</i>	482. <i>Taxus</i>	483. <i>Yew</i>	484. <i>Juniper</i>	485. <i>Thuja</i>	486. <i>Cedrus</i>	487. <i>Sequoia</i>	488. <i>Metasequoia</i>	489. <i>Podocarpus</i>	490. <i>Taxus</i>	491. <i>Yew</i>	492. <i>Juniper</i>	493. <i>Thuja</i>	494. <i>Cedrus</i>	495. <i>Sequoia</i>	496. <i>Metasequoia</i>	497. <i>Podocarpus</i>	498. <i>Taxus</i>	499. <i>Yew</i>	500. <i>Juniper</i>	501. <i>Thuja</i>	502. <i>Cedrus</i>	503. <i>Sequoia</i>	504. <i>Metasequoia</i>	505. <i>Podocarpus</i>	506. <i>Taxus</i>	507. <i>Yew</i>	508. <i>Juniper</i>	509. <i>Thuja</i>	510. <i>Cedrus</i>	511. <i>Sequoia</i>	512. <i>Metasequoia</i>	513. <i>Podocarpus</i>	514. <i>Taxus</i>	515. <i>Yew</i>	516. <i>Juniper</i>	517. <i>Thuja</i>	518. <i>Cedrus</i>	519. <i>Sequoia</i>	520. <i>Metasequoia</i>	521. <i>Podocarpus</i>	522. <i>Taxus</i>	523. <i>Yew</i>	524. <i>Juniper</i>	525. <i>Thuja</i>	526. <i>Cedrus</i>	527. <i>Sequoia</i>	528. <i>Metasequoia</i>	529. <i>Podocarpus</i>	530. <i>Taxus</i>	531. <i>Yew</i>	532. <i>Juniper</i>	533. <i>Thuja</i>	534. <i>Cedrus</i>	535. <i>Sequoia</i>	536. <i>Metasequoia</i>	537. <i>Podocarpus</i>	538. <i>Taxus</i>	539. <i>Yew</i>	540. <i>Juniper</i>	541. <i>Thuja</i>	542. <i>Cedrus</i>	543. <i>Sequoia</i>	544. <i>Metasequoia</i>	545. <i>Podocarpus</i>	546. <i>Taxus</i>	547. <i>Yew</i>	548. <i>Juniper</i>	549. <i>Thuja</i>	550. <i>Cedrus</i>	551. <i>Sequoia</i>	552. <i>Metasequoia</i>	553. <i>Podocarpus</i>	554. <i>Taxus</i>	555. <i>Yew</i>	556. <i>Juniper</i>	557. <i>Thuja</i>	558. <i>Cedrus</i>	559. <i>Sequoia</i>	560. <i>Metasequoia</i>	561. <i>Podocarpus</i>	562. <i>Taxus</i>	563. <i>Yew</i>	564. <i>Juniper</i>	565. <i>Thuja</i>	566. <i>Cedrus</i>	567. <i>Sequoia</i>	568. <i>Metasequoia</i>	569. <i>Podocarpus</i>	570. <i>Taxus</i>	571. <i>Yew</i>	572. <i>Juniper</i>	573. <i>Thuja</i>	574. <i>Cedrus</i>	575. <i>Sequoia</i>	576. <i>Metasequoia</i>	577. <i>Podocarpus</i>	578. <i>Taxus</i>	579. <i>Yew</i>	580. <i>Juniper</i>	581. <i>Thuja</i>	582. <i>Cedrus</i>	583. <i>Sequoia</i>	584. <i>Metasequoia</i>	585. <i>Podocarpus</i>	586. <i>Taxus</i>	587. <i>Yew</i>	588. <i>Juniper</i>	589. <i>Thuja</i>	590. <i>Cedrus</i>	591. <i>Sequoia</i>	592. <i>Metasequoia</i>	593. <i>Podocarpus</i>	594. <i>Taxus</i>	595. <i>Yew</i>	596. <i>Juniper</i>	597. <i>Thuja</i>	598. <i>Cedrus</i>	599. <i>Sequoia</i>	600. <i>Metasequoia</i>	601. <i>Podocarpus</i>	602. <i>Taxus</i>	603. <i>Yew</i>	604. <i>Juniper</i>	605. <i>Thuja</i>	606. <i>Cedrus</i>	607. <i>Sequoia</i>	608. <i>Metasequoia</i>	609. <i>Podocarpus</i>	610. <i>Taxus</i>	611. <i>Yew</i>	612. <i>Juniper</i>	613. <i>Thuja</i>	614. <i>Cedrus</i>	615. <i>Sequoia</i>	616. <i>Metasequoia</i>	617. <i>Podocarpus</i>	618. <i>Taxus</i>	619. <i>Yew</i>	620. <i>Juniper</i>	621. <i>Thuja</i>	622. <i>Cedrus</i>	623. <i>Sequoia</i>	624. <i>Metasequoia</i>	625. <i>Podocarpus</i>	626. <i>Taxus</i>	627. <i>Yew</i>	628. <i>Juniper</i>	629. <i>Thuja</i>	630. <i>Cedrus</i>	631. <i>Sequoia</i>	632. <i>Metasequoia</i>	633. <i>Podocarpus</i>	634. <i>Taxus</i>	635. <i>Yew</i>	636. <i>Juniper</i>	637. <i>Thuja</i>	638. <i>Cedrus</i>	639. <i>Sequoia</i>	640. <i>Metasequoia</i>	641. <i>Podocarpus</i>	642. <i>Taxus</i>	643. <i>Yew</i>	644. <i>Juniper</i>	645. <i>Thuja</i>	646. <i>Cedrus</i>	647. <i>Sequoia</i>	648. <i>Metasequoia</i>	649. <i>Podocarpus</i>	650. <i>Taxus</i>	651. <i>Yew</i>	652. <i>Juniper</i>	653. <i>Thuja</i>	654. <i>Cedrus</i>	655. <i>Sequoia</i>	656. <i>Metasequoia</i>	657. <i>Podocarpus</i>	658. <i>Taxus</i>	659. <i>Yew</i>	660. <i>Juniper</i>	661. <i>Thuja</i>	662. <i>Cedrus</i>	663. <i>Sequoia</i>	664. <i>Metasequoia</i>	665. <i>Podocarpus</i>	666. <i>Taxus</i>	667. <i>Yew</i>	668. <i>Juniper</i>	669. <i>Thuja</i>	670. <i>Cedrus</i>	671. <i>Sequoia</i>	672. <i>Metasequoia</i>	673. <i>Podocarpus</i>	674. <i>Taxus</i>	675. <i>Yew</i>	676. <i>Juniper</i>	677. <i>Thuja</i>	678. <i>Cedrus</i>	679. <i>Sequoia</i>	680. <i>Metasequoia</i>	681. <i>Podocarpus</i>	682. <i>Taxus</i>	683. <i>Yew</i>	684. <i>Juniper</i>	685. <i>Thuja</i>	686. <i>Cedrus</i>	687. <i>Sequoia</i>	688. <i>Metasequoia</i>	689. <i>Podocarpus</i>	690. <i>Taxus</i>	691. <i>Yew</i>	692. <i>Juniper</i>	693. <i>Thuja</i>	694. <i>Cedrus</i>	695. <i>Sequoia</i>	696. <i>Metasequoia</i>	697. <i>Podocarpus</i>	698. <i>Taxus</i>	699. <i>Yew</i>	700. <i>Juniper</i>	701. <i>Thuja</i>	702. <i>Cedrus</i>	703. <i>Sequoia</i>	704. <i>Metasequoia</i>	705. <i>Podocarpus</i>	706. <i>Taxus</i>	707. <i>Yew</i>	708. <i>Juniper</i>	709. <i>Thuja</i>	710. <i>Cedrus</i>	711. <i>Sequoia</i>	712. <i>Metasequoia</i>	713. <i>Podocarpus</i>	714. <i>Taxus</i>	715. <i>Yew</i>	716. <i>Juniper</i>	717. <i>Thuja</i>	718. <i>Cedrus</i>	719. <i>Sequoia</i>	720. <i>Metasequoia</i>	721. <i>Podocarpus</i>	722. <i>Taxus</i>	723. <i>Yew</i>	724. <i>Juniper</i>	725. <i>Thuja</i>	726. <i>Cedrus</i>	727. <i>Sequoia</i>	728. <i>Metasequoia</i>	729. <i>Podocarpus</i>	730. <i>Taxus</i>	731. <i>Yew</i>	732. <i>Juniper</i>	733. <i>Thuja</i>	734. <i>Cedrus</i>	735. <i>Sequoia</i>	736. <i>Metasequoia</i>	737. <i>Podocarpus</i>	738. <i>Taxus</i>	739. <i>Yew</i>	740. <i>Juniper</i>	741. <i>Thuja</i>	742. <i>Cedrus</i>	743. <i>Sequoia</i>
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THE ISLAND OF SEUSTATIUS corruptly SEUSTATHIA

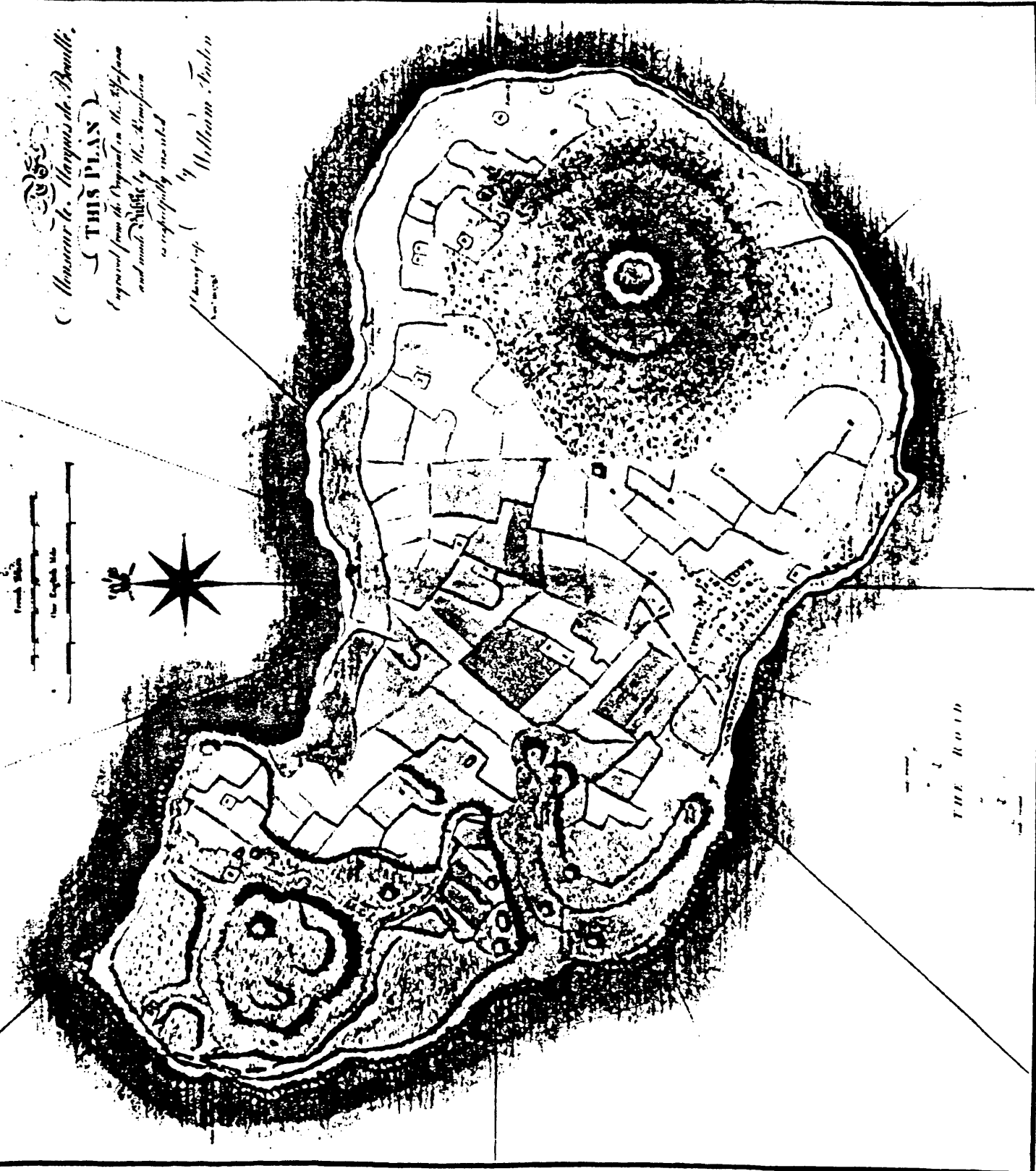


Figure 9 Map of St. Eustatius, 1795

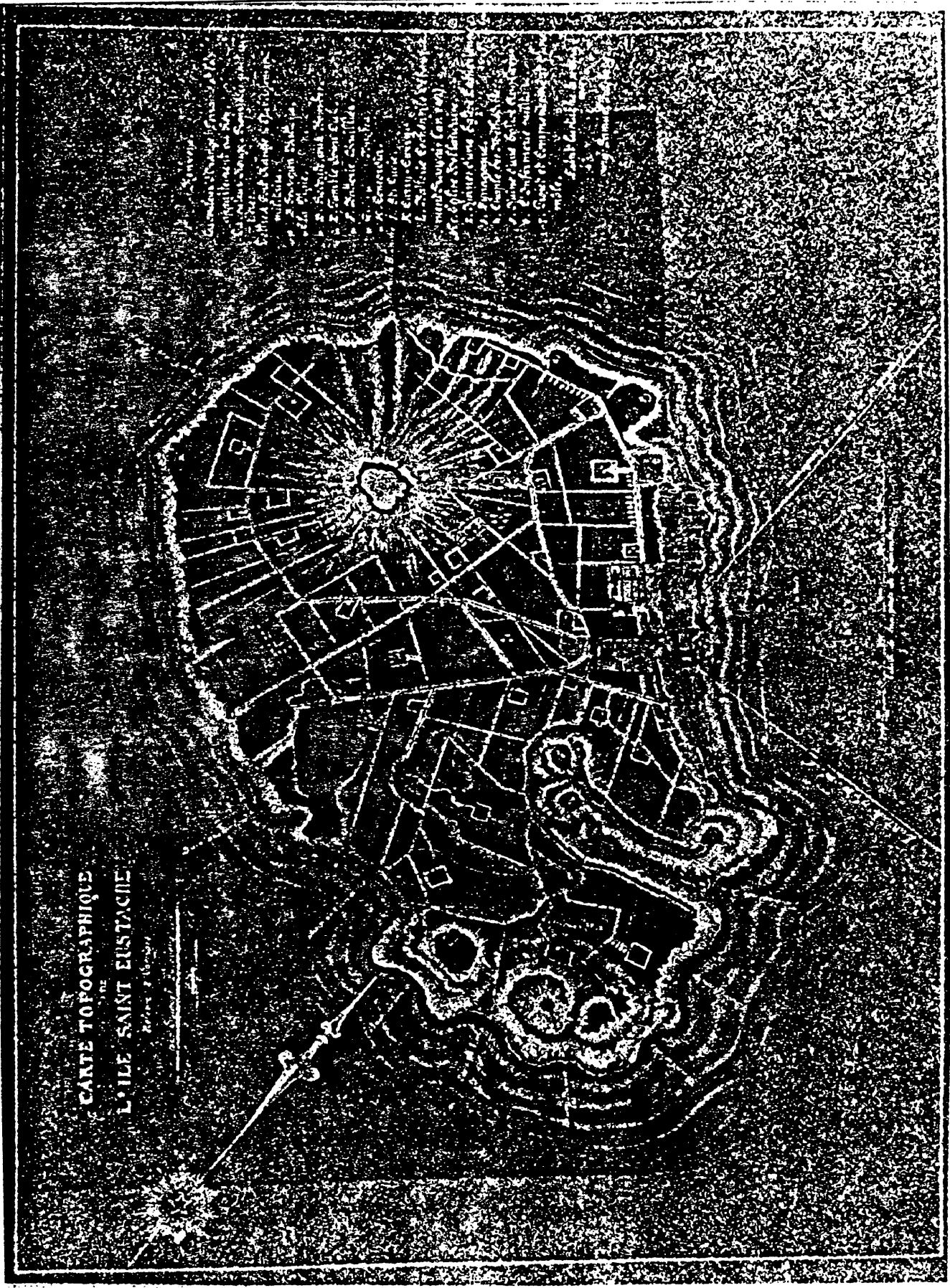


Figure 10 Map of St. Eustatius, 1830

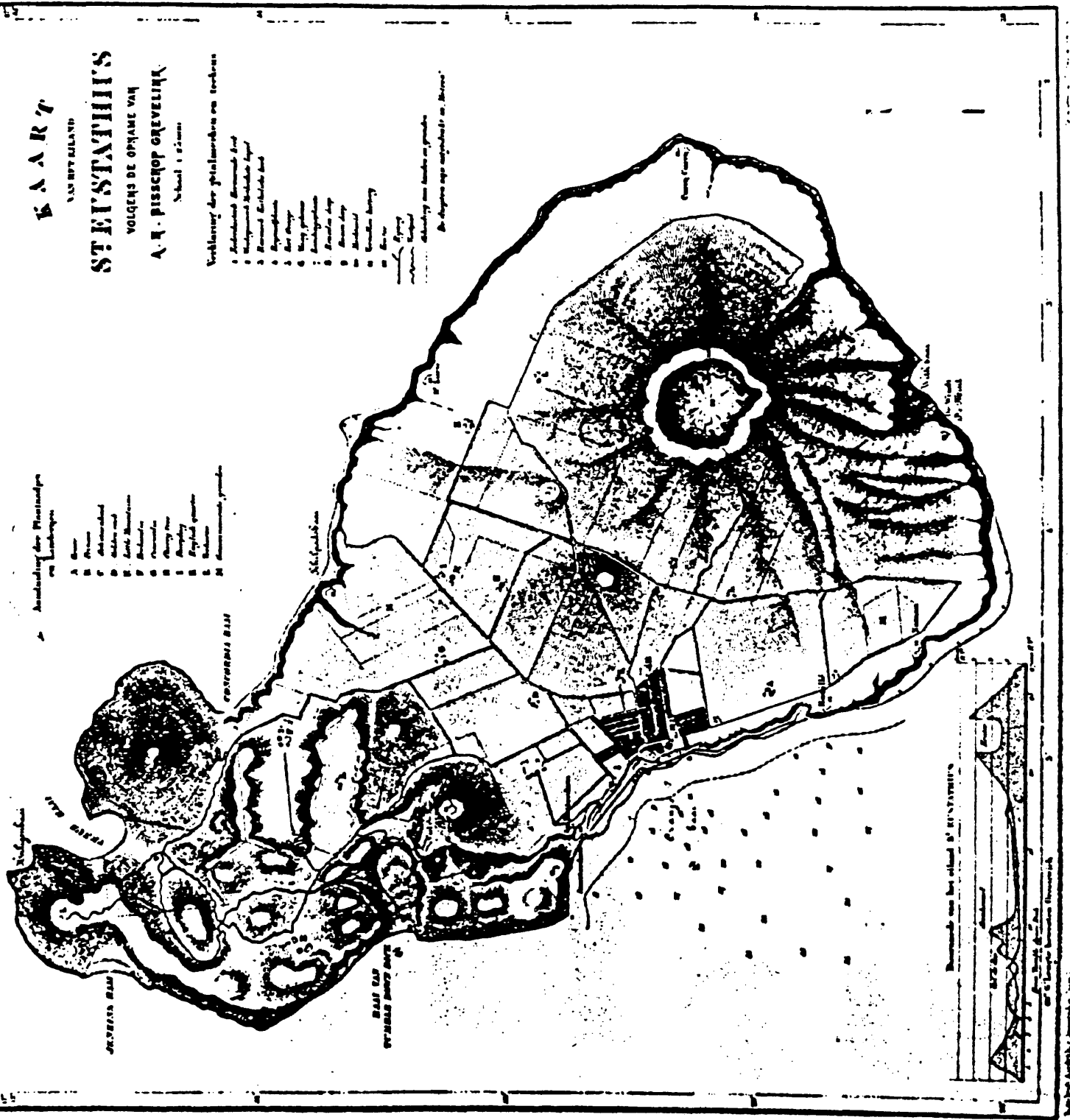


Figure 11 Map of St. Eustatius, circa 1840

time of compilation, though there are omissions. These maps were used as the principle source of information to guide the field research.

Plans of six batteries and Fort Oranje appear on a copy of field sketches given to the researcher whilst on the island by Mr. Franz Lampe (Figure 13). Although the plans are not scaled nor are any dimensions given, they do note the distance of each site from Fort Oranje, as well as its elevation. A comparison of these elevations with information from the Cadastral Survey map show they may be in error. The date of this document is unknown, although it may date from the 2nd quarter of the 19th century. The names used for Fort Panga and Battery Jussac (Vigis and Redoutte) are similar to those on the circa 1830 map, possibly indicating a date of this general period or shortly after. Notations are in English.

After returning to the United States, preliminary survey notes of the island compiled in 1981 by J.B. Hauster Jr. and the William and Mary field school crew were given to the researcher. These contained roughly measured sketches of several of the batteries which were used to compliment the information gathered in the 1990 season. Unfortunately, they were not available on the island during the fortification survey.

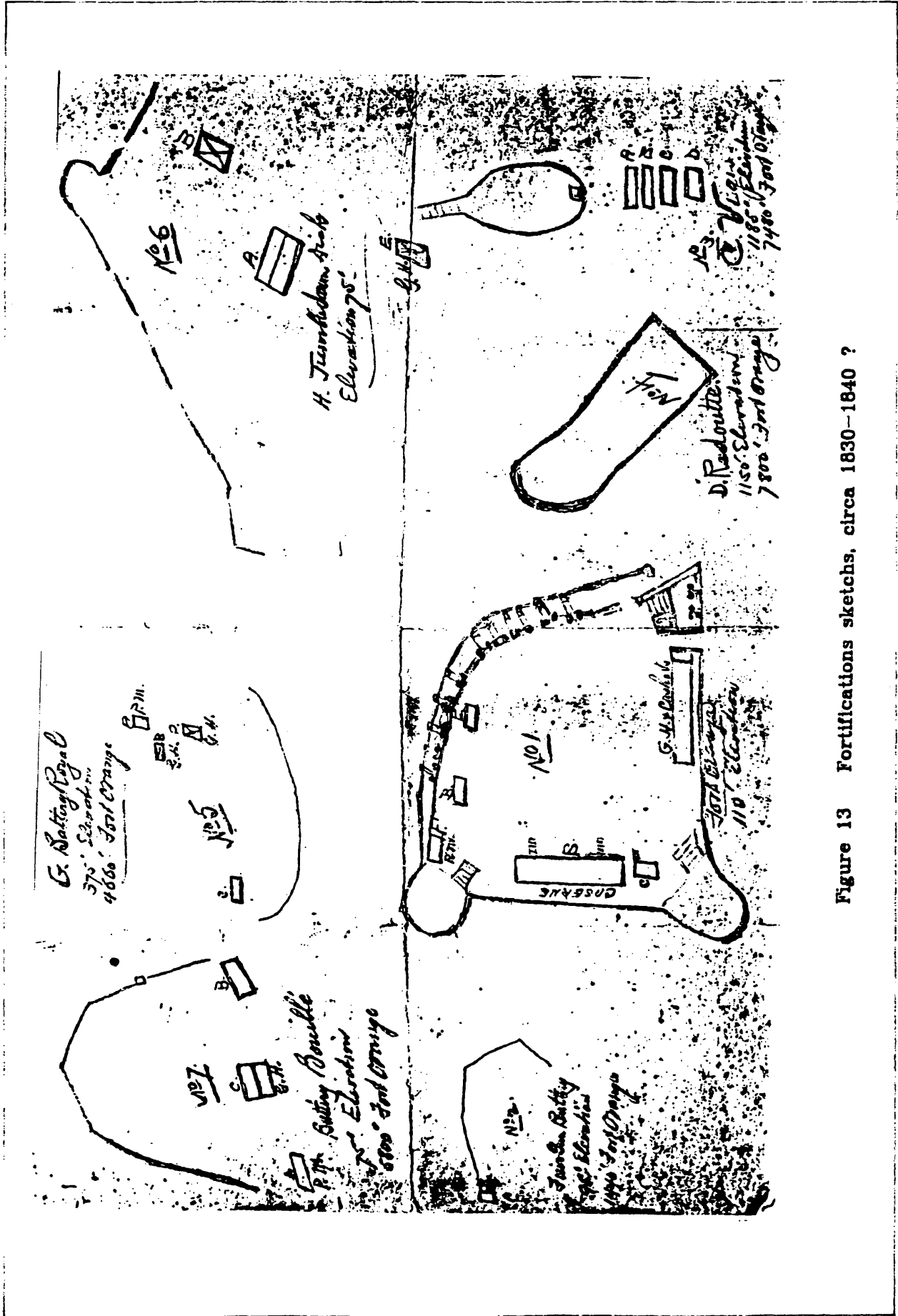


Figure 13 Fortifications sketches, circa 1830-1840 ?

At the time field maps were made of the batteries, limited artifact collections were undertaken at most sites. With the exception of Battery Concordia (Fort Amsterdam on the Netherlands Antilles, Cadastral Survey Department map), no excavations took place. Battery Concordia (SE81) underwent partial excavation for one week by the College of William and Mary field school. A separate report has been prepared on this excavation by Dr. Norman Barka of the College of William and Mary, for restoration purposes by the people of St. Eustatius.

Surface artifacts at all sites, and excavated artifacts from SE81, were collected and are stored in the William and Mary archaeological field school laboratory on St. Eustatius. A small number of items were sent to be conserved at the College of William and Mary. Unfortunately, the collections were not able to be thoroughly analyzed before the end of the field season. Hopefully future researchers will compile and study this information to further understand the sites.

St. Eustatius was fortified starting with the first European occupation. When French ships landed on its shores in 1629, they immediately set about the construction of a fort, later to be the site of Fort Oranje. This fort or its successors, would remain the principle defensive structure on the island for the following three centuries.

In the early years Fort Oranje was the only permanently fortified position. Whenever a threat posed itself to the island's security, temporary batteries would be constructed. When "alarm threatened, entrenchments were thrown up at the most vulnerable spots and gradually simple forts developed in this way. Most of them were open on the side facing inland" (Hartog 1976:23). Presumably this entailed the construction of loose stone and earth breastworks capable of supporting a few artillery pieces.

The areas chosen for such temporary defenses would likely be, as Hartog suggests, those places most accessible by approaching ships. Among these would be to the north of Oranje Bay, near Billy's Gut, to the south at Back-Off Bay, Tumble Down Dick Bay, parts of Corre Corre Bay, and Concordia Bay. Other places have acceptable beaches for landing, but are considered less critical for defensive purposes due to the topography from the shore to the town. Bays such as Jenkin's and Venus have areas for landing, but present a difficult overland trek before encountering the town.

Although the island had several vulnerable landing sites, throughout the 17th century this fact was largely overlooked. It was believed that the only viable approach would be from Oranje Bay, and with the Fort at the cliff-top, the island was considered reasonably secure. The De Rochefort 1666

description of the island states:

This Island is the strongest, as to situation, of all the Caribbies, for there is but one good descent which may be easily defended; so that a few men might keep off a great Army: But besides this natural Fortification, there is in it a Strong Fort which commands the best Haven, the Guns of it carrying a good distance into the Sea (quoted in Kandle 1985:27).

For the remainder of the 17th century, two additional fortifications are mentioned, both pertaining to the period 1686-1689. A letter to the Heren X from the island's governor suggests a position on Gilboa hill by 1688 (Attema 1976:23,52). The second fortification attributed to this period is the Waterfort, or Fort Amsterdam (SE94) (Attema 1976:23).

The early years of the 18th century saw a decline in the fortifications. Several governors such as Isaac Lamont, reported back to Holland about the deplorable state of the existing forts. Within the first decade of the new century perhaps as many as three batteries had been constructed. The French Jesuit Labat mentioned a fort "off a place known as l'Interloppe" sometime before 1705 (Eaden 1970:210 quoted in Kandle 1985:46). Assumedly this reference refers to either the battery at Tumble Down Dick or the Waterfort.

A document of 1709 names a total of four fortifications in

use. They were Fort Oranje, Battery Dollijn, the New Fort (I) (probably the Waterfort), and Battery Tumble Down Dick (Attema 1976:23). Of these several were already once again in various states of degradation, Tumble Down Dick being virtually useless. By the 1720's the Waterfort also had a diminished defensive role and was allowed to be partially converted into a slave depot (Hartog 1976:26; Attema 1976:29).

Commander Isaac Faesch found the situation no better. A letter from him dated June 27, 1737 to the WIC reported the forts in such bad condition that cattle and civilians freely meandered in and out (Attema 1976:24). To upgrade security, new taxes to repair the forts were imposed in that year. A shipment of 30,000 bricks for this purpose was then sent from Holland (Attema 1976:24). The Heren requested in return a report as to the necessity and disposition of the brick.

Rising tensions in the West Indies, combined with the growing importance of the island, led to further fortification projects by mid 1700's. Two governors are credited for this boost to the defenses: "Commanders Johannes Heyliger (1743-1752) and Jan de Windt (1753-1775)" (Hartog 1976:26). The two apparently both rebuilt and strengthened the older, permanent defenses and temporary entrenchments, and constructed new ones. This task was not eased by the lack of interest the West India Company continually showed in the island's security

(Attema 1976). Repeated letters to the Heren requested additional assistance and supplies. If and when such aide was sent, it was frequently found to be inadequate.

In 1748 the citizens of Statia provided monies for the building of "some coastal forts ('waterforten') by the 'Manchenillebomen' (manchineel trees) - a place below the neglected New Fort between Tommelendijk and Fort Orange" (Attema 1976:24). This perhaps refers to the "New Fort" (II) or Hollandia. There was also a proposed battery to be built "at Hillegatspoint, to the east of Dollijn, from which ships arriving to the south of the island could be attacked. This stronghold was to have the name Zeelandia and was to have 8 cannons" (Attema 1976:24). Although sources disagree as to the date of this battery's appearance, it would come to be known as Nassau. Nassau was the name chosen in 1748 for another proposed fort, one "on a hilltop, which could cover Fort Orange, the Village..., the approaches, and the whole plain" (Attema 1976:24). The most likely site for such a fort would be atop the "Horseshoe" mountain, where Fort Royal is located.

Five forts were said to be presently in use after 1750. Fort Oranje was, as it would always remain, the principle defensive work. In addition there was the Waterfort, the batteries of Nassau and "Tietschy" (speculated by at least one author to be Tumble Down Dick), and a battery at Back-Off Bay,

later to become Fort de Windt (Hartog 1976:44).

Whether this "Nassau" is the battery at Kay Bay or a hilltop fortification above Billy's Gut is uncertain. Hartog states that this same Nassau was destroyed by the hurricane of 1772 along with Fort de Windt, and was rebuilt, after which it was used as a military hospital (Hartog 1976:44). If this is true it would eliminate this Nassau as being atop the "Horseshoe" mountain, an inconvenient place for a hospital.

The Dutch attempts at fortification, with the possible exception of Fort Oranje itself, apparently "were not systematically planned and were built without any engineering aid from the Netherlands West India Company...St. Eustatius surrendered twenty-two times without striking a blow because the island was considered untenable" (Hartog 1976:27). Although this feeling may have prevented resistance to attacks, there is little doubt that Fort Oranje was laid out by an engineer that was familiar with fortification principles. The Fort and batteries would not have been built if some did not believe it defensible.

Comparatively little military assistance came from the homeland. The West Indies were never a popular location with troops of most European nations, and few sent their more valued regiments. On St. Eustatius, the Dutch "garrison

numbered at the most fifty-odd men of a low standard" in the years before start of the American Revolution (Hartog 1976). Soldiers were often of the lowest social orders, a conglomeration of nationalities owing allegiance to none in particular. This was not unique to the islands owned by the Netherlands. The scenario was quite similar on the French and British islands (Hartog 1976:28). Only in times of war were some of the better European regiments deployed in the Caribbean, and these often not without grumbling from commanders and privates alike. In essence, the West Indian defenses were manned by a small number of qualified, professional soldiers, and a larger number of "vagrants" and mercenaries of all ages with "a liking for adventure" (Hartog 1976:28).

Along with the "professional" military, the garrisons were supplemented by local militia. These units commonly drilled at least one day a month, and included most male citizens from 16 to 60 (Martin 1830). This was the situation on St. Eustatius where there was both a "mounted and unmounted civil guard" (Hartog 1976:28). It must be assumed the mounted guard served a social function as much or more so than a military one, for cavalry tactics would be of little use on the island. Some residents, such as the Jewish population, were exempted from martial duties (Hartog 1976). No mention is made if those excused had to pay fines or extra taxes, as was the case in

some other colonies.

An inventory of military stores on January 17, 1753 found little had improved since the last report. It listed in part, "8 pairs of shackles for what they are worth...14 six-pounder cannons, two of them useless without gun-carriages...[and] three dilapidated ware-houses [for military use]" (Attema 1976:19-20). The inventory excerpts do not list a great deal of equipment in good order, and "the majority of comments about the guns are complaints about their poor condition" (Attema 1976:20).

It should be remembered that the commander had little need to comment about adequate equipment to the Company. In fact, the less said the more likely he would be to receive his requested supplies. The commander had to rely upon Holland for nearly all weapons and military supplies at this time, so it might not be wise to lull the Heren into a sense of false security for the island. The batteries, according to multiple letters from the various Commanders, were notoriously short of ammunition when under Company jurisdiction. It was not uncommon to receive weapons without powder or shot, or to receive shot that would not fit the guns on hand. The 1776 inventory did record several hundred round shot on hand by that time, but this may have been the exception to the rule (Plate I). Unfortunately only parts of this inventory could be

included in this study. It was translated by the researcher from photographs, and many words were illegible, especially to one not fluent in Dutch.

The fault with the state of the defenses cannot, however, be laid entirely upon the Company. The aforementioned factors, plus a tendency to favour profit oriented pursuits, or perhaps even simply a general apathy, all worked to allow the Statian defenses to continually fall into ruins after each renovation. Inventory after inventory cite the dilapidated condition of the existing defense works. Although this would be compounded by poor supplies and funding from the Netherlands, the fact remains that the island's inhabitants themselves neglected their own fortifications until imminent danger was perceived.

Planters and merchants seldom gave thought to the upkeep of the defenses in times of peace and prosperity, and commonly fell prey to invaders too quickly for sufficient preparation in times of war. This pattern was typical throughout the Caribbean. The French, British, Spanish, and Dutch were all guilty of such neglect and shared in the habit of letting forts go into ruins, only repairing them when in immediate danger. The problem did not lie with Statia alone. Such was the state of the defenses when Admiral G.B. Rodney arrived with his fleet in February of 1781:

The Upper Town is upon a steep clift, at least seventy foot perpendicular. You ascend to it by a zig zag road, very difficult, steep & must have cost the Expense of much Blood, had the enemy defended it. In the whole island they had about 82 pieces of Cannon Mounted, but as Trade had totally engrossed their Minds, their Fortifications had been Neglected. Though the revenue belonging to their West India Company was upwards of seventy thousand pounds a year, neat, they could not be induced to afford any part of it towards fortifying their Island (Rodney 1789:v).

Rodney also reported there to be "2,000 American sailors" on St. Eustatius at his arrival, whom he said offered their services in its defense to the Governor (Rodney 1789). The Governor refused their help, preferring to surrender and presumably thereby spare the warehouse district and town. Most of the sailors surrendered in the next few weeks.

Prior to the arrival of the British fleet, the Mars, a 38 gun, 300 man Dutch warship under Count Bylandt, arrived in Oranje Bay. Its presence "allayed their Fears of Hostilities" (Rodney 1789:8) and probably contributed to the continued neglect of the land batteries, the majority of which were ineffective in 1781 (Hartog 1976). By this period ships were trusted more than land forts in the defense of an island. Unfortunately for the Statian population, the Dutch navy did not have a strong presence in the West Indies.

Under British occupation, from February 3 to November 25, 1781, the island was brought up to a state of fortified

defense it had never experienced before. Within this period of less than a year, several sites vulnerable to landings were refortified or fortified for the first time, so far as is known. Mentions of earlier earth entrenchments at various sites are made, but few with stated locations.

Among the defensive works attributed to the British occupiers are the batteries at Concordia Bay, Compagnie Bay (St. Louis), and Corre Corre Bay. Other possible sites included "the North point (probably Venus Bay) and Coculusbay" (Cocoluch Bay) (Attema 1976:42). Although not mentioned in the literature, Four-gun Battery and Battery Bouille may have been of British origin, being completed by the French.

Attema supplies a list of named forts during the 1781 British period (1976:55, note 17). Of the list only two can be presently identified with known batteries: Frederick, which has retained that name, and Lisburne, which is SE8, Fort de Windt. The remaining names, Gloucester, Townshend, Vaughan, Camberlind, Rodney, Bernick, Charlotte, Amburt (?), and Cunningham presumably were applied to batteries either currently unknown, or now known only by other names. In addition Fort Oranje was renamed Fort George, and Fort Royal was repaired and may have been called by that name by the British.

Rodney's correspondence, along with French statements of their capture of the island, suggest that it was the British that began fortifications on most if not all sites of defensive works of this period. Although popularly attributed to the French, they may well have had their foundations with the British, if not the Dutch even earlier.

Although he does not actually admit to their role in securing their prize, Rodney hinted in his correspondence that there were in fact Royal Engineers with the fleet (Rodney 1789). Their activities in the renewed fortification of the island is unknown. If they surveyed the situation on Statia at all, it may be that they were more influential in determining the placement of the batteries than their actual construction. If not, the asymmetrical and irregular structures that resulted do little to testify to the ability of his engineers.

France and Britain had carried the American War into the Caribbean from the beginning. Soon after the naval battle off Cape Henry, the French fleet sailed back to the West Indies. Although the British expected French attacks, they had placed their confidences on the probability that an attack would come on their larger island holdings before ones such as St. Eustatius. The French took advantage of this assumption, and in a surprise attack captured Statia on November 25, 1781. The

commander of this expedition was Francois Claude Amour, the Marquis de Bouille.

Under the direction of the Marquis de Bouille, the French military garrison, with the cooperation of the "commander and councilors", began a program of re-fortification for the small but coveted island (Hartog 1976:97). Old Dutch defenses were refurbished, recently built British batteries were strengthened, and new works were constructed. The French had no intention of losing their newly gained prize back to the British, from whom they had so easily won it.

It is claimed that at this time Battery Bouille was constructed, as well as Fort Panga atop Signal Hill (Attema 1976). Whether or not they were in fact the originators of defensive positions at these sites is unknown. Both locations would have been logical positions for the British to occupy in the nine months before the French, not to mention the Dutch before that. Signal Hill affords an excellent view of the approaches to the island, and if not previously fortified, must certainly have been occasionally used as a look-out, especially during times of open hostilities or piratical activity. Archaeological investigation at these sites may clarify some questions.

Regardless of what nationality founded the many batteries

now surrounding the island, by the year after the forced departure of the British, the governor, Johannes de Graaff, felt reasonably secure. In 1782, with the French still present, he wrote to the Netherlands and informed them that the island was now "in a formidable state of defence" (quoted in Hartog 1976:97).

The French military planners also wished to improve the support systems necessary for the coastal batteries. As suggested in theoretical manuals of defense (e.g. Vauban 1691; Muller 1755) they constructed communication lines from the batteries to the town and Fort, and between each other. This consisted chiefly of a roadway connecting all the batteries. The sixteen feet wide road was built at the expense of landowners upon whose property the fortifications were situated (Hartog 1976:97). Unfortunately, these roads were not clearly visible on the ground during the 1990 survey.

Two maps attributable to this occupation period neglect to depict the roads, save for the main thoroughfares. Even these are less complete in the 1781-1795 maps than the pre-war maps of 1742 and 1775. It would not be surprising to find that many of these roads were less than the French engineers had hoped for, if they were completed at all, due to the fact that the cost came from the pockets of the planters rather than from a general tax base.

Although not mentioned in the records, it would seem likely that the French also repaired the several barracks associated with the batteries. In addition they garrisoned some troops in the Dutch Reformed Church, as the British had done before them (Hartog 1976). Several private residences were also used to billet the garrison, including Simon Doncker's home, where Admiral Rodney is said to have set up his headquarters. Today this houses the St. Eustatius Historical Society Museum, where the visitor may view hammock hooks still in place, said to have been from the British occupation.

The French left the island in 1784 and it reverted back to Dutch rule. The wars ended, the batteries were once again left to the elements and quickly fell into disrepair. After the French wars began the island came back under their control in 1795. From this time to the end of the Napoleonic wars the batteries were re-equipped and repaired every few years as new conquerors took the island, or fear of attack swept the population.

Plans from this period exist for the reconstruction of Battery Amsterdam (the Waterfort) and Battery Bouille, along with the building of a new battery, Monplaisant. It does not appear any of these projects were carried out. In fact, no new defensive works are known to have been built after the French

withdrew in 1784, nor are major changes suspected to have taken place to the smaller defenses after this time (other than the replacement of guns). Fortification inventories from the early 19th century do not appear in the published literature. If additional inventories and documents do survive, they would be exceptionally beneficial for this study.

Fort Oranje

Fort Oranje is located on the cliffs overlooking Oranje Bay, above the Lower Town, on the edge of Oranjestad. It now houses several of the island's civil administration buildings and the post office.

Fort Oranje is the earliest and largest defensive work on St. Eustatius. It remained, from its inception, the main fortification on the island, and appears on all known maps. It was built atop the coastal cliff on the Caribbean side of Statia at about 110 feet above sea level. It commands the roadstead of Oranje Bay, the main access route to the Upper Town, and the warehouse section along the beach.

The present fort, now reconstructed, was built on or very near the site of the French fort of 1629. This original defensive work was credited by "the French writer Dutertre, [to] a French squadron under Francois de Rotondy, sieur de Cahusau" (Attema 1976:17). The squadron is believed to have landed on St. Eustatius in August of 1629. Expecting an attack by Spanish forces, they hastily constructed a small fort. Later accounts of the site suggest it may not have been a substantial work, for it was immediately rebuilt upon reoccupation. In practice with techniques of the period for field defenses, it was perhaps an earth and wooden walled

fortification, or piled stone. The use of earth would have been the most sensible construction method for a hastily erected, temporary fortification, as this almost certainly was intended. Stone breastworks were capable of causing greater casualties to the defenders if shelled (Tousard 1809). No archaeological evidence of the French fort of 1629 has yet been discovered.

Soon after their initial occupation, the French abandoned the island and their fort. On April 25, 1636 colonists from Zeeland settled on St. Eustatius, and immediately set about building their own fort. Traditionally, the Dutch fort was built from the remains of the French fort. Initially it was armed with "a pair of cannons provided by the Company" (Attema 1976:17). Within a short time the Zeelanders had "rebuilt it, mounted sixteen cannon, and called it Fort Oranje (Hartog 1976:21). As with the French fort, no archaeological remains of this period have yet been identified.

Although modest in size and fire power compared to its contemporaries in Europe, Fort Oranje was an impressive military installation in the early 17th century West Indies. Built "on a cliff 150 steps high" Jan Snouck wrote to the Zeeland chamber in April 1636, the "fort called Orange" sat guarding the approach to the island (quoted and translated in Attema 1976:17). Although situated on a small island, it did

not pass the attention of other nations. A soldier of Spain recorded it in 1640, carefully noting the sixteen iron cannon it contained (Attema 1976:20).

The first decades of the island were concerned with building a successful colony. In this period St. Eustatius was relatively secure, as it had little to be coveted. This changed by mid century as the planters prospered and the colony gained wealth.

By 1665 the Fort had 20 cannon and 131 small arms on hand (Attema 1976:20). Added to this was a shipment of 700 pounds of powder sent by Admiral De Ruyter that year (Kandle 1985). A Dutch fleet then arrived, and was to provide some additional protection. Storms forced it to sail on May 17 leaving the fort to defend itself.

The year of 1665 witnessed another of the many European conflicts that spread into the Caribbean. Combined with the political hostilities of the Second Anglo-Dutch War, Statia's now prosperous planters easily attracted piratical invaders. Under the legal protection of a privateer, such a group under Thomas Morgan attacked the Fort in July, and captured the island for England. Little or no resistance was offered from the fort. The following year Fort Oranje fell to the French, in much the same manner. The French reportedly severely

ransacked the island, though no mention is made as to the specific fate of Fort Oranje.

The island was returned to Dutch hands in 1667, only to be captured again in 1672. An English party took the Fort and island, followed soon after by the French. Many of the inhabitants of Statia, probably remembering the French conduct in 1666, supported their English captors, which would nonetheless tie the millstone about their necks. The following year a Dutch squadron reclaimed the Fort and island. The Dutch who had supported the English were shipped to Curacao, and the English to St. Kitts (Kandle 1985:41). Fort Oranje and the Upper Town was then razed by the Dutch and the island abandoned.

No sooner had they left, than the English deported to St. Kitts and elsewhere returned. They rebuilt Fort Oranje and parts of the Town in 1673. The new Fort would remain out of Dutch hands until 1678. It is unknown to what extent the Fort was destroyed by the Dutch, or what, if any, alterations the English made in its reconstruction.

In the following decade renewed hostilities led the defenders of St. Eustatius to give thought to the Fort once again. An impending French attack in April 1689 caused them to "frantically begin to strengthen the Fort "which had very weak

walls" (Attema 1976:21). A description of these efforts is summed up by Attema (1976:21):

Heavy beams were placed on top of the walls ready to roll down on attacking Frenchmen. Also, 400 pack-cloth sacks were sewn together, filled with 10 pounds of earth and stacked two high on beams and walls to serve as a breast-work.

The improvements may suggest the walls of the Fort were not yet the masonry construction found there today. The preparations, however, were not fruitful for the Fort surrendered to the French. The town was somewhat destroyed but the Fort was spared.

During the French occupation of 1689-1690, the Fort was again repaired and upgraded. At this time a dry moat was constructed, in accordance with fortification principles espoused by the French master Vauban (1691). In addition a palisade was erected, adding further evidence to suggest that the 17th century period Fort bore little resemblance to the 18th century fort now reconstructed.

The beginning of the new century also was a new beginning for the Fort. In 1701 Isaac Lamont took control as commander. His disappointment in the condition of the Fort was reflected in his correspondence with the Heren. His initial inspection revealed the following:

The walls of Fort Orange, built from piles of stones half man height threatened to collapse. The four bastions-Nassou point, the small Bocke point (de kleine Bockepunt), the large Orange point, and Sea-side point-had been made out of stamped down earth, in which the wheels of the gun-carriages were continually sticking, making it impossible to carry out any gun-drill... The Fort consisted of an entrance gate, four bastions containing the severely deteriorated guns, a dilapidated powder-house, guard's quarters..., a house used for church services but temporarily serving as barracks, three water tanks, one of which leaked and the commander's house that was so dilapidated that it was no longer habitable (Attema 1976:22).

The new commander therefore petitioned the West India Company to renovate the Fort using "good quality flat stones", planks, beams, rafters, and tiles", as well as 30,000 bricks for the cisterns. Lamont, however, was replaced by 1704 without the renovation being implemented.

It is clear that the Fort was a four-bastioned construction by sometime in the 17th century. At what date it took on this plan is unknown, but it may well have been from the first half of the century. It was probably similar to the simple square four-bastioned forts common to the era (Figure 3).

Lamont's successor, Jan Simonsz Doncker, found the situation had worsened. The Bockepunt bastion threatened to fall into the sea from erosion, not to mention the deteriorated condition of the remainder of the Fort. Even so, no significant repairs were undertaken before Isaac Lamont

took over again from July to December 1709.

Although it was Lamont that had requested the repair of the Fort, it was also he that is blamed for its loss on the morning of November 25, 1709. The previous night a French force landed on St. Eustatius. A letter of May 20, 1710 to the Heren X from Jan Simonsz Doncker points to Lamont's own carelessness for the easy French victory that morning. Although perhaps embellished (or even fabricated) for political reasons, the story is as follows:

He [Lamont] had entered the Fort very early in the morning, still in slippers and dressing-gown and smoking his pipe, and left the entrance-gate open. Whilst talking to the guard he heard shots in the village, saw the approach of the enemy and fled (Attema 1976:23).

Following the attack the French destroyed the Fort once more. They also spiked the cannon vents, and laid waste to the gun powder. Although here the literature is silent, it is assumed the Fort was at least partially repaired after the 1709 attack when Doncker took over again.

The next major phase of Fort Oranje began in 1737. In that year a tax was levied for the repair of the islands defenses. The commander, Isaac Faesch, had another dry moat dug around the Fort in 1738, "but the palisades which also should have been placed were too dear" (Attema 1976:25). The damaged

cisterns were not repaired until circa 1740. In 1741 a new bridge and palisade were built, bringing the Fort back into a respectable, and formidable, appearance. Wooden planks, Bristol lime, and Flushing lime and cement now complimented the native materials making up the defenses (Attema 1976:25).

Rising tensions in European politics lead to another inspection of the defenses of Statia on February 8, 1755. Echoing its previous history, the Fort had again fallen into disrepair. Jan de Windt, the commander of that period, wrote that the "bastions were so undermined that they threatened to collapse with cannons and all" (Attema 1976:25). Ever since Doncker's administration the Bockepunt had threatened to fall away and by 1765 it had done so, though exactly when is unknown. De Windt's letter may indicate the event took place between 1755 and 1765, although his references could have been to any of the walls, all of which were apparently unsound.

Between 1757 and 1762 records cited by Attema (1976) show the Fort received a new bridge, a new commander's house, cistern repairs, and repairs to the prison. This was followed in 1765 with a new Gunner's house (the "constable") with two new prisons underneath, one for criminal and one for civil offenders. There were also repairs to the barracks, though at least on occasion some troops continued to be billeted in the nearby church (Hartog 1976). Along with those newly

constructed or repaired, the Fort at this time contained "rooms for non-commissioned officers and gunners, a kitchen, a room for the valet of the commander, gun-rooms...[and] the town hall (Hartog 1976:44).

Fort Oranje grew to maturity during the period from the Seven Years War to the start of the American Revolution. It took on the shape of its now reconstructed form, being rebuilt from predominately stone and brick materials. With the loss of the Bockepunt and one other bastion, the plan now supported only two bastions rather than four. This design change, visible on the oldest surviving plan made sometime after 1765 (Figure 14), would greatly decrease the effectiveness of the fort's defensive capabilities. The loss of the bastions would leave areas of the wall unprotected by cross-fire (Figure 15).

After the end of the Seven Years War little thought was given to the upkeep of the defenses, including Fort Oranje. By the third quarter of the century, the American situation had deteriorated to the point of impending war. St. Eustatius, now a major trade center, became entangled in this conflict early on, as a supplier of weapons and powder to the Americans. Even so the Fort was not renovated in the event of an invasion. A letter of May 1776 from the Commander's secretary, Alexander le Jeune, described the situation:

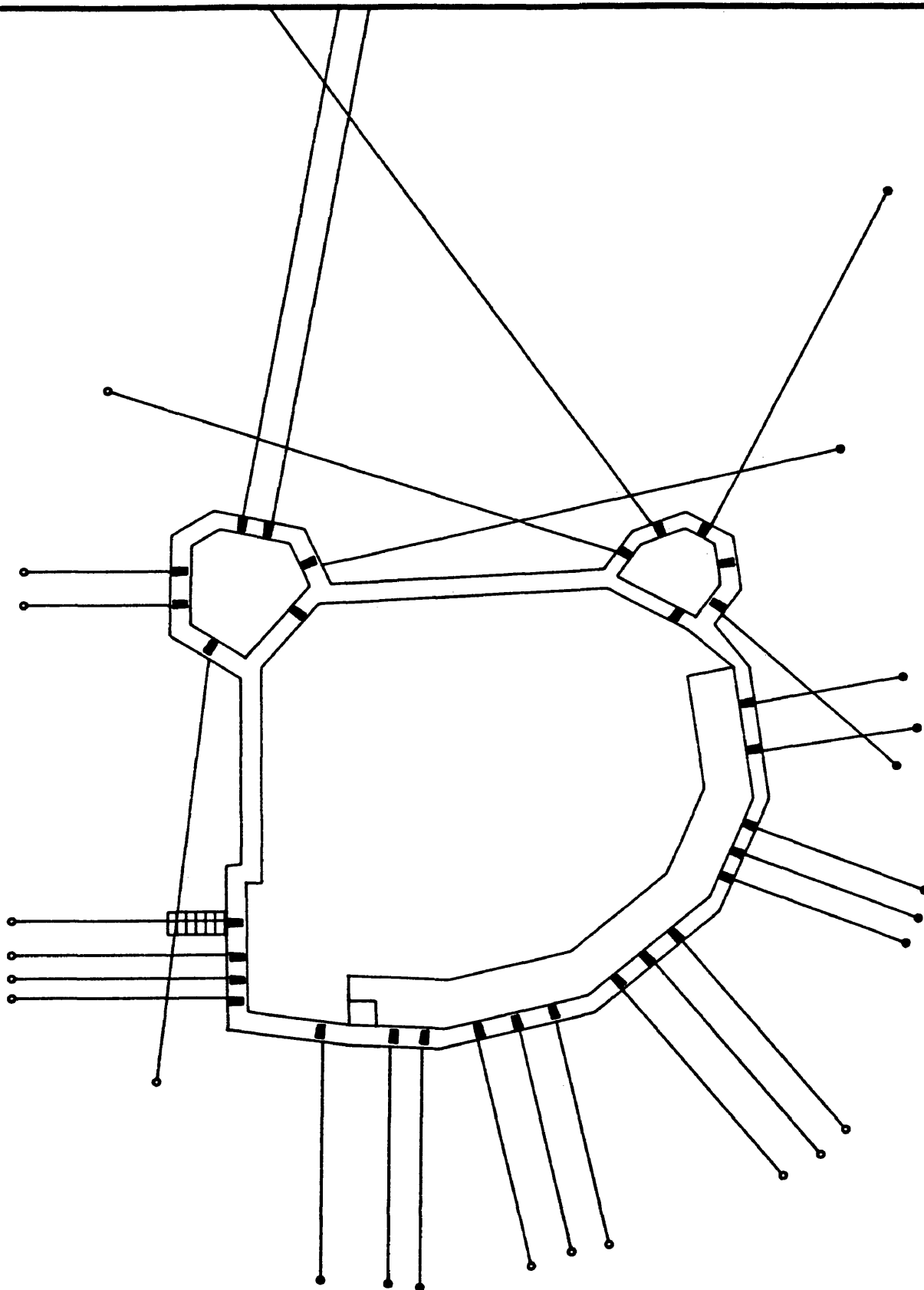


Figure 15
Estimated Artillery Coverage
Fort Oranje (1765 plan)

The two roomed stone building (probably formerly the constable's [gunner's] house...) was particularly dangerous; weapons were left lying around and the powder was stored in the cellar underneath. ...Next to this building were five wooden ones, including the house of the commander of the Fort and the constable [gunner], also with a cellar underneath it. There was also a house for the sergeant, a square wooden building for the corporals, a guard room, and a kitchen for the officers and men (in Attema 1976:40-41).

All the buildings within the Fort were reported to be deteriorated. Several of the cannon were in a similar condition. An inventory of April 6, 1775 records a wooden gunner's house had been constructed "half in and half out of the Fort" (Attema 1976:41). These wooden buildings would prove quite dangerous, for a letter of July 23, 1777 described the conditions at the powder-house:

...an open barrel of gunpowder stood near the door. Whenever shots were fired the powder-house was open because it was so damp inside. Powder-filled paper cartridges could not be kept inside because they became too damp to use within eight days. Cartridges had to be filled in between shots and brought quickly to the appropriate place (from a letter paraphrased in Attema 1976:41 from H.M. Evertsz to le Jeune).

The problem of dampness experienced in the powder-house also extended to other equipment. An inventory of Commandant Ravene reveals that the old cast iron guns (used in the famed Andrew Doria salute) had to be "condemned and [were] substituted by bronze ones in 1778" (Hartog 1976:77). The effects of the salt air and moisture from the sea would

habitually be a problem for the maintenance of ferrous guns and equipment.

During inquiries following the salute incident, Statia's commander, Johannes de Graaff, declared that he fully realized the deplorable state of the Fort. When pressed as to why he had not remedied the situation, he replied that the West India Company funds for such projects were insufficient.

Along with descriptions and a drawing a building in the Fort (Plate II), a 1775 inventory listed the armament on hand. There were six 12 pounders, two 9 pounders, two 8 pounders, fourteen 6 pounders, and three 3 pounders with serviceable carriages. Another group of two 12 pounders, six 6 pounders, two 3 pounders, and one 8 pounder sat useless, without a gun-carriage (Plate I). A partial listing of the ammunition inventoried includes 500 "Blinde" cartridges (dummy's for salutes and etc.), 500 ball cartridges, 350 pounds of fuse, 34 flintlocks (12 out of service), 3,000 musket balls, and 3,000 pounds of gun-powder (Plate I).

At his arrival in 1780, ship's officer C. de Jong found the artillery situation worse than before. He took an inventory of the island's defenses, and at Fort Oranje reported that of 25 cannon present there, "less than 5" were "in working order" (Attema 1976:41). The garrison at that time

was said to consist of "50 of the worst men in the service of the West India Company" (Attema 1976:41).

Among the surviving records concerning the garrison of this period is a muster roll of 1775 detailing the national origin of each soldier. Five were from the island itself, and another two from the Netherlands. The remainder, some 38 individuals, were from Germany, Austria, Denmark, England, France, Scotland, the Southern Netherlands (Belgium), Sweden, and Switzerland. Among the garrison was to be found the Commander, one sergeant, one constable (gunner), four corporals, two constable mates (gunner's mates), twenty-three soldiers, and two drummers. The position and rank of the remainder are unknown.

The American War of Independence quickly drew the island into the affair as a supplier. Accordingly, in February 1781, Admiral Sir George Bridges Rodney sailed to St. Eustatius and captured the supply center for Britain. Fort Oranje surrendered without a fight and was rechristened Fort George by the new garrison of 650 British troops. Lieutenant Colonel Cockburne, of the 35th Foot, and Lieutenant Colonel Stafford were placed in immediate command, with Admiral Rodney and General Vaughn as their superiors overall.

As the British highly relied on sea power, and could see

from their own capture of the Fort, that Oranje was not very formidable, they did little to repair it. Instead, they began constructing a series of coastal batteries to ward off any invasion attempts.

The loss of the island through an attack on the Fort in November of that year resulted in a court martial trial for Cockburne. During these proceedings it was mentioned that in 1781 the Fort still had problems with weak walls. On one occasion, during a morning gun drill and firing, part of the parapet crumbled and fell over the side of the cliff (Attema 1976:42). The dry moat was filled with vegetation, supposedly thought to be a deterrent to its crossing in an attack. The attack did come, with a French expedition. One author cites this force brought along "mattresses...to cover the thorns and so cross the moat!" (Attema 1976:42). The French army did indeed bring along matrosses for the attack. However, it seems doubtful that artillerymen, known as "matrosses" in the 18th century, would have agreed to this uncomfortable duty.

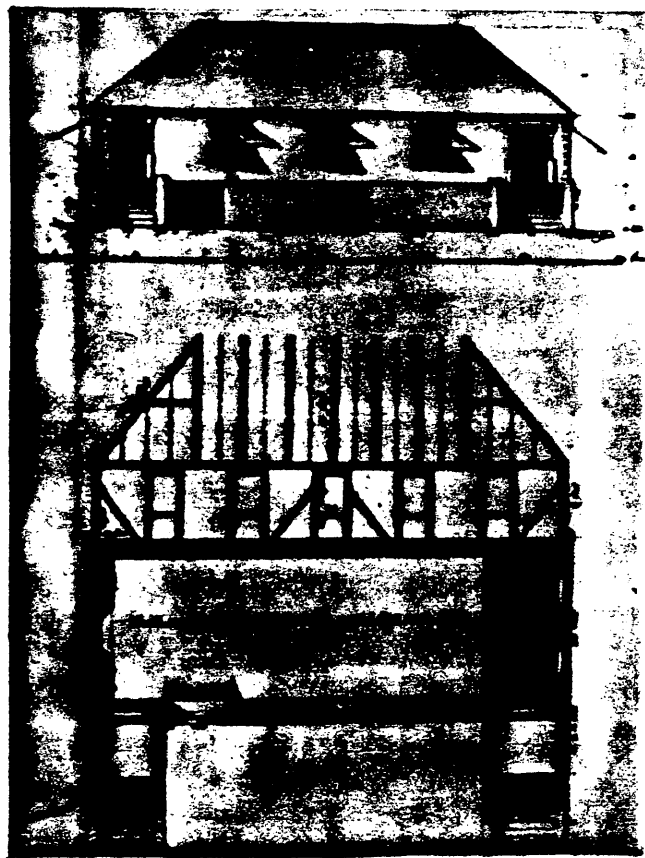
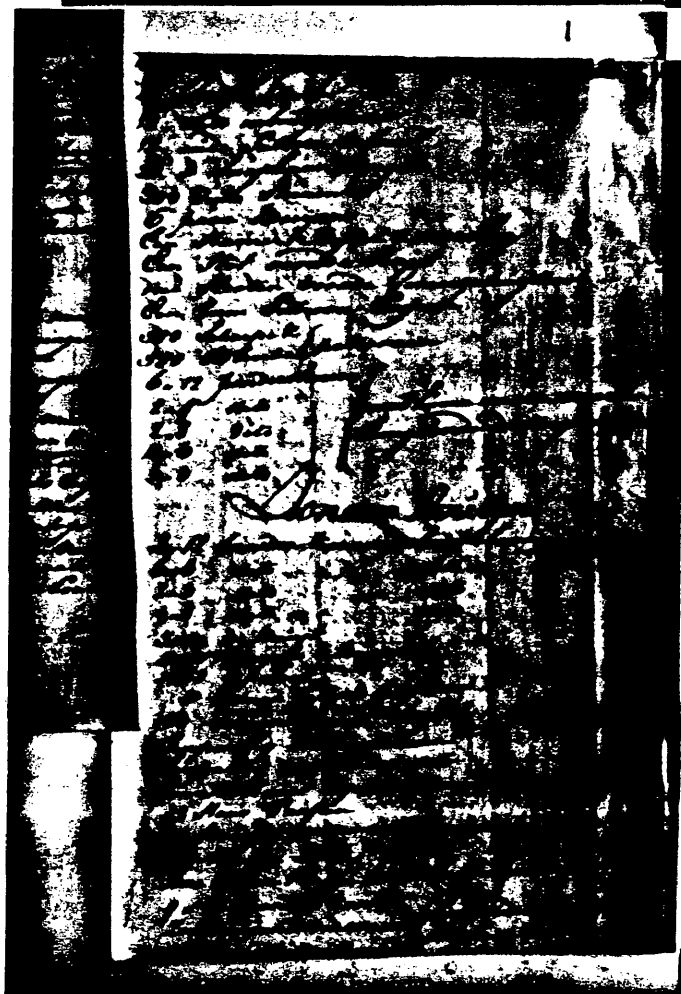
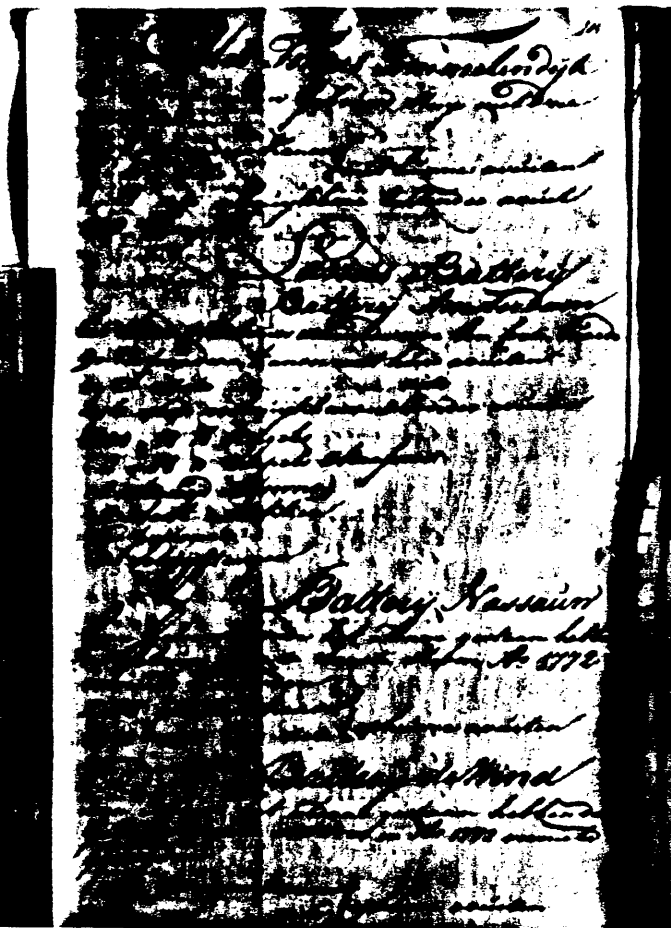
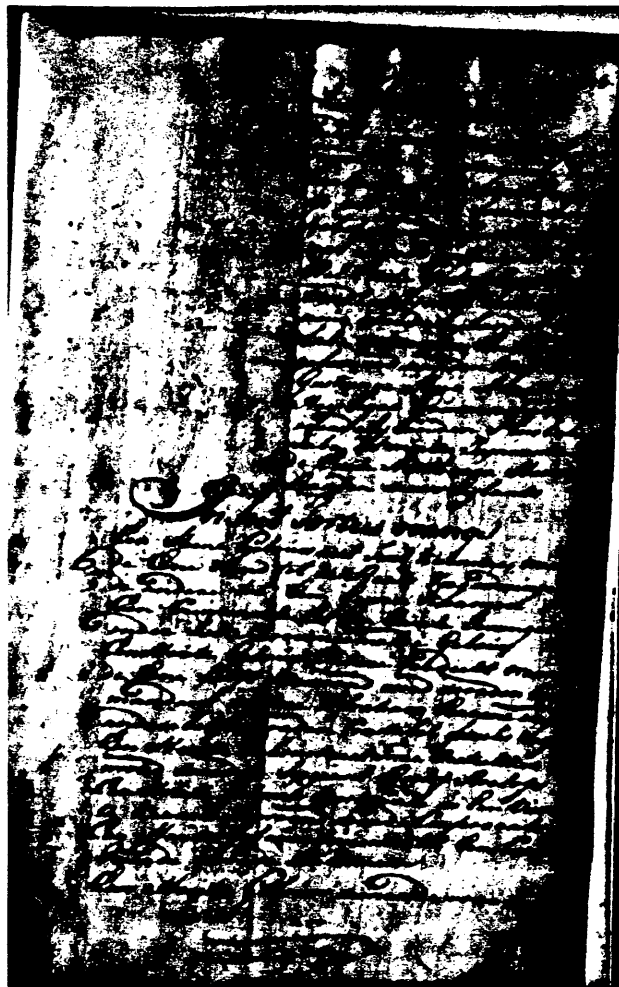
Although detailed accounts of the French taking of the Fort survive, there is no specific mention of its fate during their occupation. What is known is that the French continued to fortify the coasts with additional batteries, as well as rebuilding lookout posts on Signal Hill. It would seem logical that they also repaired Fort Oranje during their occupation,

though to what extent is not known.

St. Eustatius was restored to the Dutch after the war, and on March 4, 1785 another inventory was taken (Attema 1976). It was concluded that the walls could no longer support the larger caliber guns. Their weight and recoil when fired too often damaged the parapet, and sent pieces to the beach below. Accordingly, in or shortly after 1786, new iron cannon were installed in the Fort, all of smaller caliber (FO-1 through FO-11). Most appear to be 3 pounders, except for the three in the monument, which may be 4 pounders or have been altered.

A plan of the Fort dated to 1787 survives, and shows it retained its basic pre-war appearance (Figure 16). The inventory of 1785, and another in 1791, both suggest that the Fort was no longer a reliable source of protection for the island although its history might indicate it never had been.

Little is recorded about the history of Fort Oranje after the 1780's. The island fell under French control again in 1795, and remained so until 1801. At that time the French removed some of the cannon on the island, but, as the 1786 Dutch cannon remain to this day at Oranje, it is assumed they were too small a caliber to be of great interest to the French. Knowing the island would be under British hands after they evacuated, they apparently felt these guns would pose



1775 Inventory

Plates I and II

Building in Fort Oranje

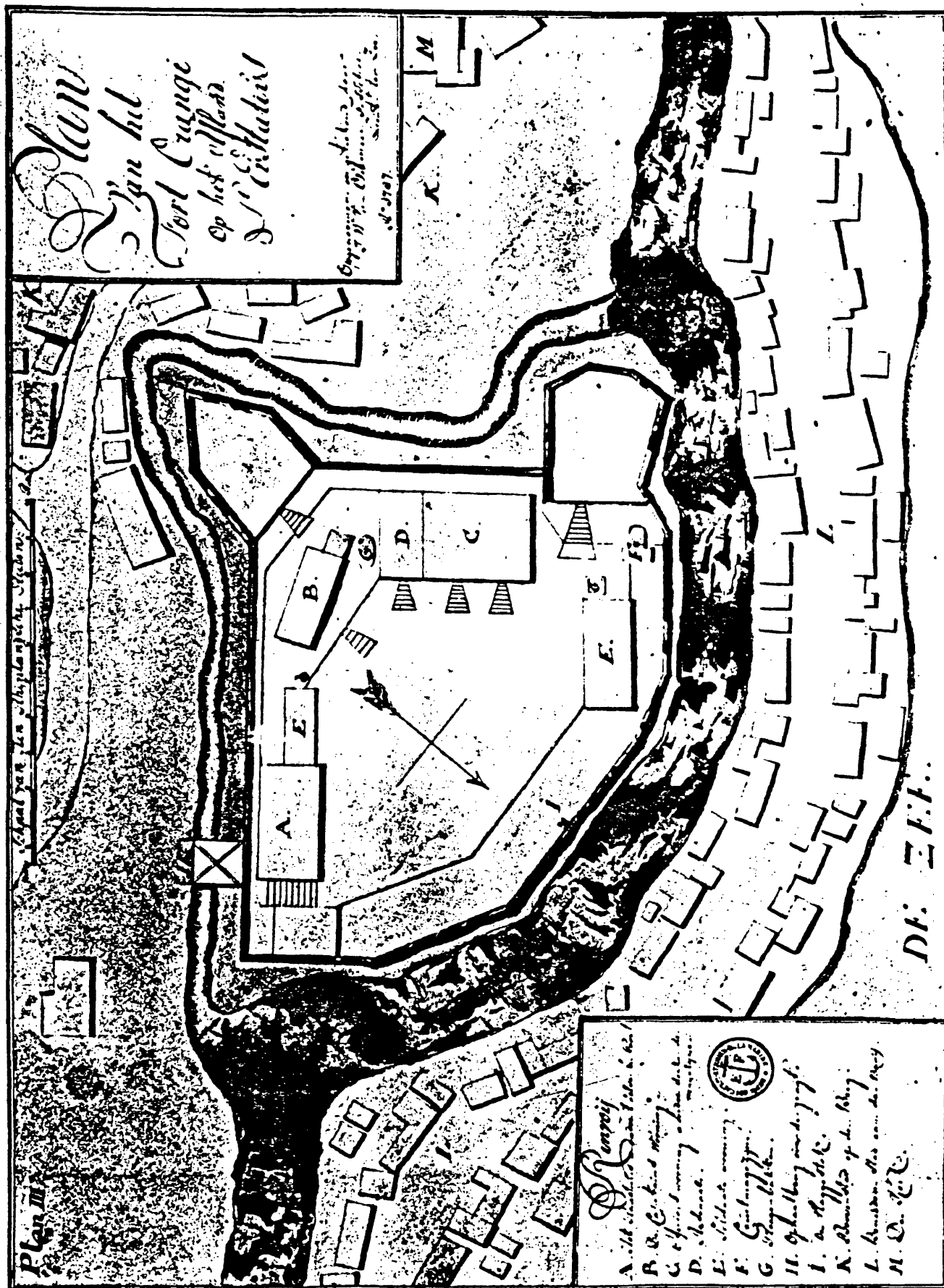


Figure 16 Plan of Fort Oranje, 1787

little threat in the event that they might eventually attempt to recapture the island, although they may have spiked the vents.

The early 19th century also has little to remark about the Fort. In 1816 the Reverend G.B. Bosch visited the island, and reported the garrison buildings and council house still present, though sorely in need of repair (Attema 1976:43). The garrison of the Fort was reduced to 21 men of the 'Jaegers' Battalion by 1829, "but this number steadily decreased, according to Teenstra..." (Attema 1976:43).

M.D. Teenstra, another visitor to the island, reported further deterioration between 1829 and 1834. He saw crumbling walls and the entire interior overgrown with vegetation (Teenstra 1836/7, cited in Attema 1976). This state of affairs led to a limited renovation in 1834. The walls were repaired and the gate house remodeled into quarters for the commander (Hartog 1964, cited in Attema 1976). Nevertheless, Fort Oranje was abandoned as a military post in 1846.

The Fort continued to be used for a variety of purposes for the next century. Occasional militia drills were held on its grounds. It served as an administration center, as well as a night-watch post in the earlier years of the 20th century (Lampe, personal communication 1990). A revived interest in

the Fort came with the Bicentennial of the American Revolution. At that time groups from the United States and the Netherlands raised funds to restore the Fort to its 18th century appearance. Before this was completed, a map was drawn up in 1973 (in Attema 1976:plate 15).

As the fort stands today, it is of stone, mortar and brick. The restoration raised the walls considerably, as noticed from photographs taken in the 1930's-1960's. The lower walls over which the cannon could fire may have been the 19th century appearance. The brick embrasured walls are said to reflect its 18th century style, as embrasures are denoted on the earlier maps. The principal gun platform is elevated slightly above the main floor. The whole is paved with stone. The buildings stand restored, and in 1990 continued their existence as administration housing, the Post Office, and a draw for tourism.

Fort Oranje, situated as it was above the best access to the island, had the potential to be a formidable obstacle to attempts at invasion or piracy. In the 17th century it could have been at its peak effectiveness, but the rise of the use of large warships diminished that as sea powers developed.

Its placement was both an asset and a liability. On the cliff it was difficult to assault from the Lower Town. It

could command the bay with its guns, and could, if reasonably prepared, equipped, and motivated, have put up a respectable fight against moderate assaults from the land side. Fort Oranje was often plagued by problems with its equipment and armament, but the Fort itself, had the human factor not been so neglectful, may have stopped several of the invasion attempts, especially those of the privateers and pirates.

Gilboa Hill

A fortification atop Gilboa Hill (elevation 582 feet), on the Northwest side of the island is mentioned during the 17th century. Little is known about the possibility of a defensive work at this site. The area of Gilboa was not visited during the 1990 field season due to its remote location, a lack of information with which to direct the search, and a lack of time. Two residents of St. Eustatius were questioned about this site, both of whom have in the past been in the area. Neither one could remember any such remains, although one said it could be possible there was a platform on the hill, as well as sketchy reports of cannon scattered on that side of the island. The 1981 survey visited the area, and found no artifacts or features whatsoever on Gilboa (Haviser fieldnotes 1981).

Attema states that a fort was built atop Gilboa during the command of Lukas Schorer (1686-1689) "overlooking Tommelendijkbay on the north side of the island, giving command of the plain" (1976:23). Gilboa Hill is on the other side of the island from Tumble Down Dick, overlooking Venus and Zeelandia Bays, and no cannon of that time could reasonably "command the plain" from Gilboa. Attema's description of the location, save for the name, could only plausibly be a battery placed somewhere on the Horseshoe

mountain up to Cul-de-Sac, which overlooks both Tumble Down Dick Bay and the plain.

However, a letter dated April 17, 1688 from Schorer to the Heren X in Amsterdam specifically mentions a battery on Gilboa (Attema 1976:52, note 12). If in fact a defensive work was placed on Gilboa, it would in all likelihood have been a simple gun platform. The placement of a military installation at this spot would have had value as a lookout post, but little as a defensive position. Only further research and field survey will help to clarify these questions.

The Waterfort SE94

Fort Amsterdam, Lands Battery

Nieuwe Fort (New Fort I)

After Fort Oranje, the second known defensive work built on St. Eustatius was the Waterfort, also called Fort Amsterdam on occasion. The Waterfort, as the name implies, lies on the beach at near sea level (approximately 10-15 feet), on the north end of Oranje Bay (Figure 17).

The placement of this fort at sea level was deliberate, and well intentioned. Fort Oranje commanded the Bay from above. It could easily lob projectiles onto enemy vessels, but, due to its elevation, could not fire accurately at or below the water-line of ships close to shore. The Waterfort conversely, with its guns barely above sea level could readily ricochet projectiles off the water and strike a ship where it would most severely disable it. Such "point-blank" firing was in fact the preferred method of disabling a ship.

The exact date of the Waterfort's construction is unclear. Hartog states simply that the date is unknown (1976:26). Attema believes it to have been constructed during the command of Lukas Schorer, between 1686 and 1689, and having been armed with 16 cannon (Attema 1976:23). This time frame is also echoed by Kandle who states the Waterfort was "built sometime

The Waterfort (Amsterdam) SE94

E= Probable Embrasure

B= Possible building foundation

JD Hartley 1988

Updated BPH 1990

Feet

6

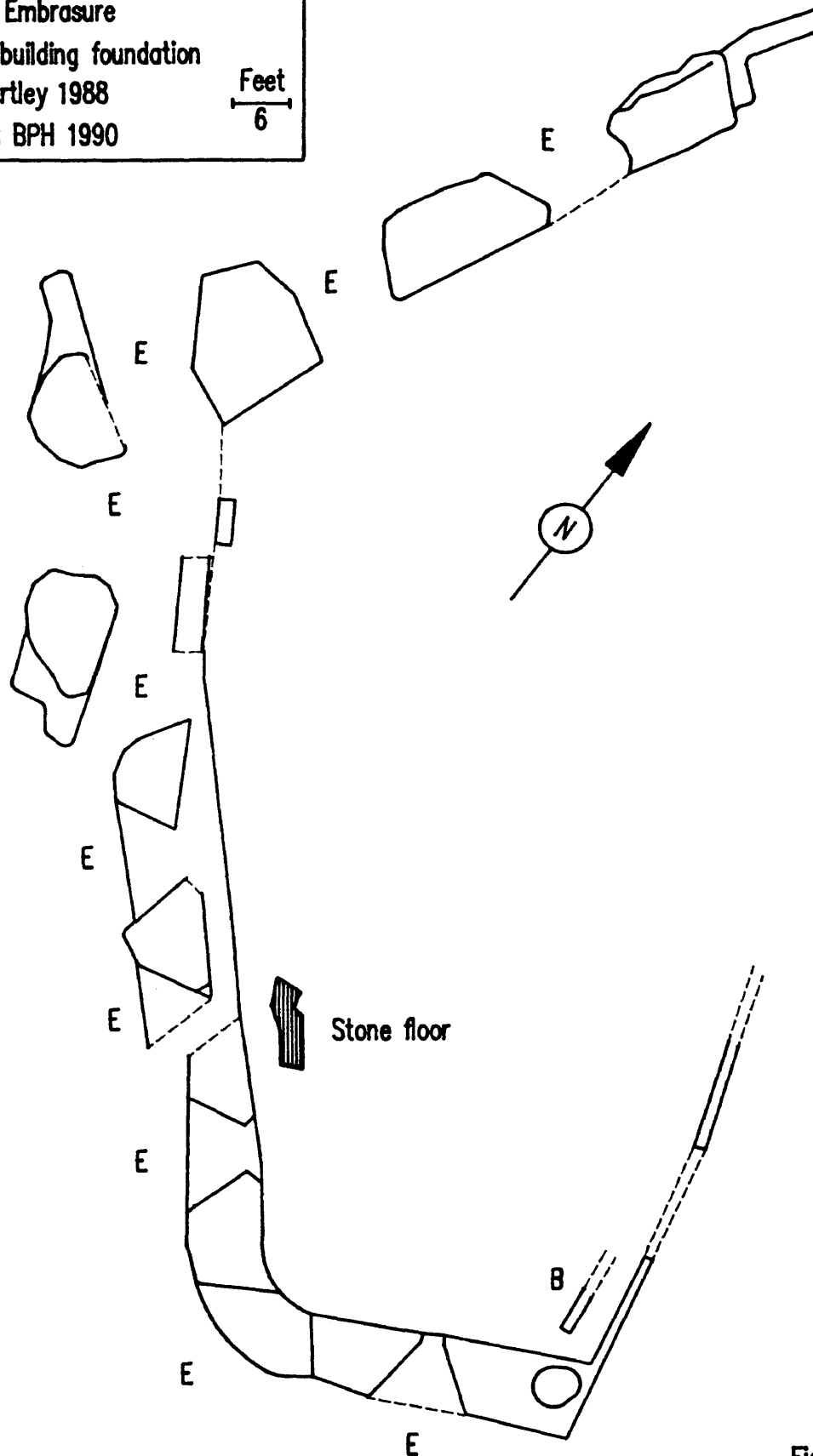


Figure 17

during the close of the 17th century..." (1985:107).

Isaac Lamont proposed the building of new fortifications in 1701. No mention is made of the Waterfort at this time, either as a proposal or as a fort already present. He did suggest the building of new fortifications up the coast from the Bay, but these may be in reference to the Tumble Down Dick site.

Later mention is made of a "New Fort", in a 1709 inventory. It was located "between Tommelendijk and Fort Orange", as is the Waterfort, and was reportedly in ruins by 1753 (Attema 1976:23). This information, combined with the location of the "Nieuwe Fort" on the map of 1742 suggest that the Waterfort is the same as the "Nieuwe Fort" (here termed New Fort I), and it was in existence before 1709.

The Waterfort, then, may have been built anytime between about 1686 and the first decade of the 18th century. Archaeological excavations or further documentary research in the Netherlands may further clarify the date of its first appearance.

The Waterfort was an open walled fortification with embrasures facing the sea and bay (Figures 17, 18, and 19). Both surviving historic plans of the fort indicate seven

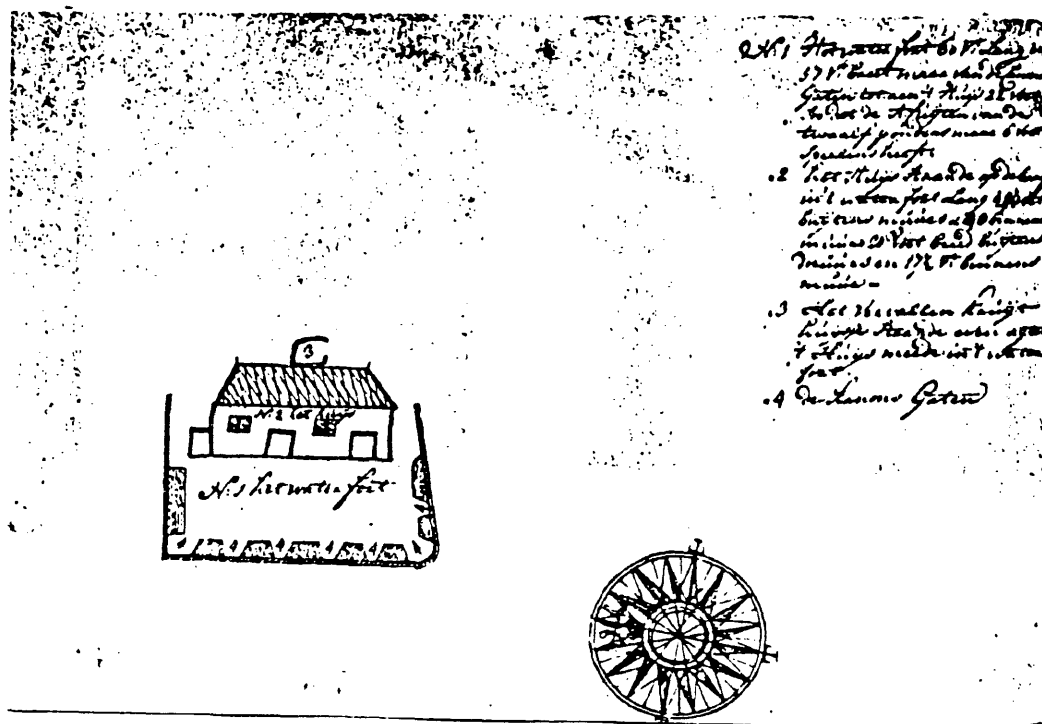


Figure 18 The Waterfort, 1724 (Attema 1976: PL. 7)

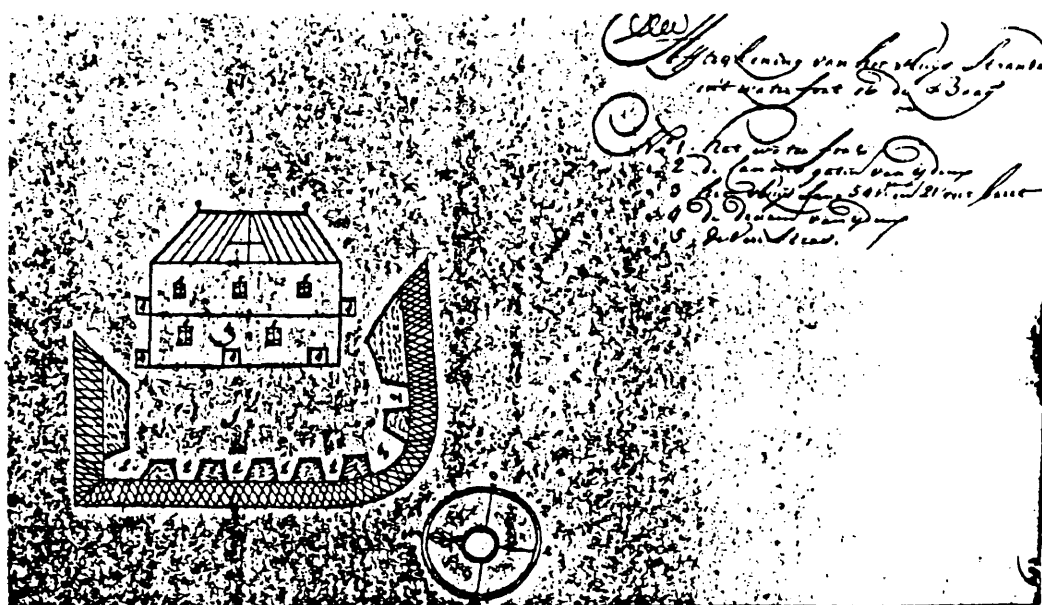


Figure 19 The Waterfort, 1728
(Attema 1976: PL. 8)

embrasures. A 1988 mapping of the site indicated eight embrasures. The 1990 survey, after Hurricane Hugo uncovered buried portions of the walls, found the remains of ten possible embrasures. If these are in fact embrasures, they may represent a remodeling of the fort after 1726, perhaps as a part of the 1748 projects. It is not stated whether or not there were any associated structures until after 1724, when its function significantly altered.

Militarily, little is said about the Waterfort in the earlier years of its existence. Through neglect and apathy, it soon fell into disrepair as a defensive work. By the 1720's it had begun to be used for mercantile purposes, and was then converted to a more lucrative task: a slave depot.

In 1724 a barracks was built (Figure 18) within the fort for the quartering of in-transit slaves (Hartog 1976:26). The barracks was expanded in 1726 to lodge more slaves (Figure 19). The 1726 enlargement accommodated some 450 individuals (Hartog 1976:50).

On April 22, 1726 Commander Lindesay wrote "...as the Heren can see from the accompanying drawings...[he had built] a two-story house,...to give the slaves more comfort" (quoted in Attema 1976:29). Although he states this would give the slaves more comfort, he also pointed out it could now house

some "400-450 slaves...The men have the ground floor, and the women, girls, and boys above..." (quoted in Attema 1976:29). The new barracks was "54 feet long by 21 feet wide (about 18 by 7 meters) and two stories high" (Attema 1976:29).

The slave trade declined on St. Eustatius by about 1740 or 1750 and the use of the Waterfort as a depot may have ceased. Although the massive stone walls were still present by mid-century, its main function in that period is assumed to have been mercantile, for space in the Lower Town was valuable. Commander Johannes de Windt wrote of the Waterfort on April 12, 1754. He reported it to be in ruins and no longer having any artillery present whatsoever (Attema 1976:25 and p. 52, note 25).

Within twenty years the fort apparently experienced a revival. The muster of 1775 lists "Fort Amsterdam" ("Lands Battery" now as well) as garrisoned by one corporal and one soldier. Further evidence comes from Alexander le Jeune, who wrote to the Amsterdam Chamber in May of 1776 concerning Fort Amsterdam:

A house situated there was divided into two by a thin wall. One part was lived in by the constable, whilst the other served as the powder-house, containing more than 100,000 pounds of powder. Ten paces away was the kitchen, where open fires were used. The wooden roof of the powder-house was rotten, and the windows were closed up with sun-dried and very flammable linen. Seeing that a public footpath went past the storage place where whites

and negroes walked with pipes, cigars, and open lanterns, the danger of a fatal fire was a very real one (paraphrased in Attema 1976:41).

The inventory of 1776 shows this battery to have as strong an arsenal as Fort Oranje, if not more so. There were nine 18 pounders and one 12 pounder on carriages, apparently with a full 1,800 18 pounder round-shots among the other munitions. Only two cannon were sitting idle without carriages, both 6 pounders (Plate I).

The Waterfort is again mentioned in 1780 by De Jong. He found "one small brick building and ten cannons" (Attema 1976:41). After this report no additional references in the inventories are found concerning the site as a defensive work.

One plan of the late 18th or early 19th century does exist for this site. Apparently drawn up at the same time as one for the proposed work at Bouille, it is entitled "Plan en Profil op wat wyse de gedemoileerde Batterye Amsterdam diend herbouwd en Versterkt te worden" (Figure 20). It depicts walls conforming to the remains of the Waterfort. Behind is a building, presumably the barracks. Four additional buildings are to the east. Sixteen cannon of 24 pounder calibre were indicated.

North of the main battery, on a higher topographical

level, is another battery with two buildings. This plan is like that of Fort Rotterdam, and in a similar location. It was marked as having (or to have) six cannon of 13 pounder size (?), six mortars, and two howitzers. It was connected to the lower section by a stairway.

The profile has some distinct differences from the remains found at the Waterfort, even if the plan is in basic agreement. As the plan for rebuilding Bouille and constructing Montplaisant was apparently not carried out, this may also be a proposed plan not carried to completion. The presence of Rotterdam could suggest it was, although the suspicion of a date for Rotterdam pre-dating this document could also mean existing works were to be renovated.

Few surface artifacts and no cannon were found within the fort. The area is often used for recreational activities, and most surface objects reflected this present use. Some scattered ceramic shards were located. A 1981 visit to the site located a brown gunflint, suspected to be French. A second gunflint was seen in the bay off-shore in 1990. An unidentified early 19th century British military button was noted east of the fort in disturbed soil behind the present "Dance Pavilion".

Tumble Down Dick SE99**Tommelendijk**

Tumble Down Dick battery was placed on the beach at the end of a valley formed by Pisga and Pilot Hill. The battery gives command of Tumble Down Dick Bay, traditionally a popular landing of smugglers, slavers, and pirates. The beach was well suited for landing small craft. Although not necessarily an "easy" overland access to Oranjestad, it provided a way onto the island whilst at the same time affording reasonable concealment.

The battery was built sometime between 1701 and 1709, probably after 1704. Its construction was first proposed by Commander Isaac Lamont in 1701. His letter to the Heren X suggested a new fort "on the west of the island at the foot of the Little Mountains" to ward off smugglers (Attema 1976:23). Although this reference could have been to a different fortification, it seems most likely to describe Tumble Down Dick. Attema implies he wished two defenses, one at Tumble Down Dick and one "at the foot of the Little Mountains" (Attema 1976:23). Armament of this unnamed battery was to be 8 cannon.

According to the map of ca. 1840 (Figure 11) the "Little Mountains" are those known as Pisga and the area of Little

Mountain on the 1963 Netherlands Antilles Cadastral Survey Department map. Whether the "Little Mountains" site was or was not Tumble Down Dick, it is clear that Lamont wished a battery built on this bay. Later documents insinuate this project had not been realized before Lamont's replacement in 1704.

Although the exact date of its inception is vague, the battery was in place by 1709, for by that year it had already fallen into disrepair. An "inspection" found "cannons and gun-carriages partly buried under the ground" (Attema 1976:23). In addition it was so prodigiously vegetated that some of the cannon were unable to be located (letter from I. Lamont, September 22, 1709, Attema 1976:52, note 15). The fort apparently was not repaired by the returned Commander Lamont, and on November 25th French pirates landed there and went overland to take Fort Oranje and plunder the island.

During the leadership of Isaac Faesch (1737-1740) the desire to completely rebuild Tumble Down Dick resurfaced. The difficulty in attaining sufficient funds from the Company remained however, and he was unable to accomplish what he wished. In a letter dated March 29, 1740 he reported nothing greater than the re-bricking of eight gun platforms and the strengthening of the walls (Attema 1976:24).

Also in 1740, Tumble Down Dick received a new guard-house

"consisting of three rooms" (Hartog 1976:26). A plan of the battery, dated March 29, 1740 indicates the barracks was of upright wood or cane, with a thatched roof (Figure 21). Unfortunately, all traces of the barracks, an indigo processing area, walls running up the valley, and a considerable portion of the battery walls were destroyed from construction by the oil terminal (Figure 22). A wall has been erected to the north of the remaining wall which mirrors the battery's style. Another modern retaining wall behind the battery is also reminiscent of the original construction techniques.

Tumble Down Dick appears in inventories at least three more times. In the January 17, 1753 listing it had 12 cannons, of 8 and 6 pounder size. The muster roll of 1775 shows a compliment consisting of two corporals and one soldier. The August 14, 1776 inventory shows the battery had lost two guns, down to 10 cannon (Plate I). These consisted of three 12 pounders and six 6 pounders with their carriages, and one 12 pounder without a carriage. Ammunition on hand consisted of 100 cannon-balls. No further mentions appear in the records.

The ground plan of Tumble Down Dick is somewhat irregular. There is a wall facing the beach with several angles, none of which are for apparent topographical reasons. They may perhaps represent an unskilled attempt at providing flanking cover for

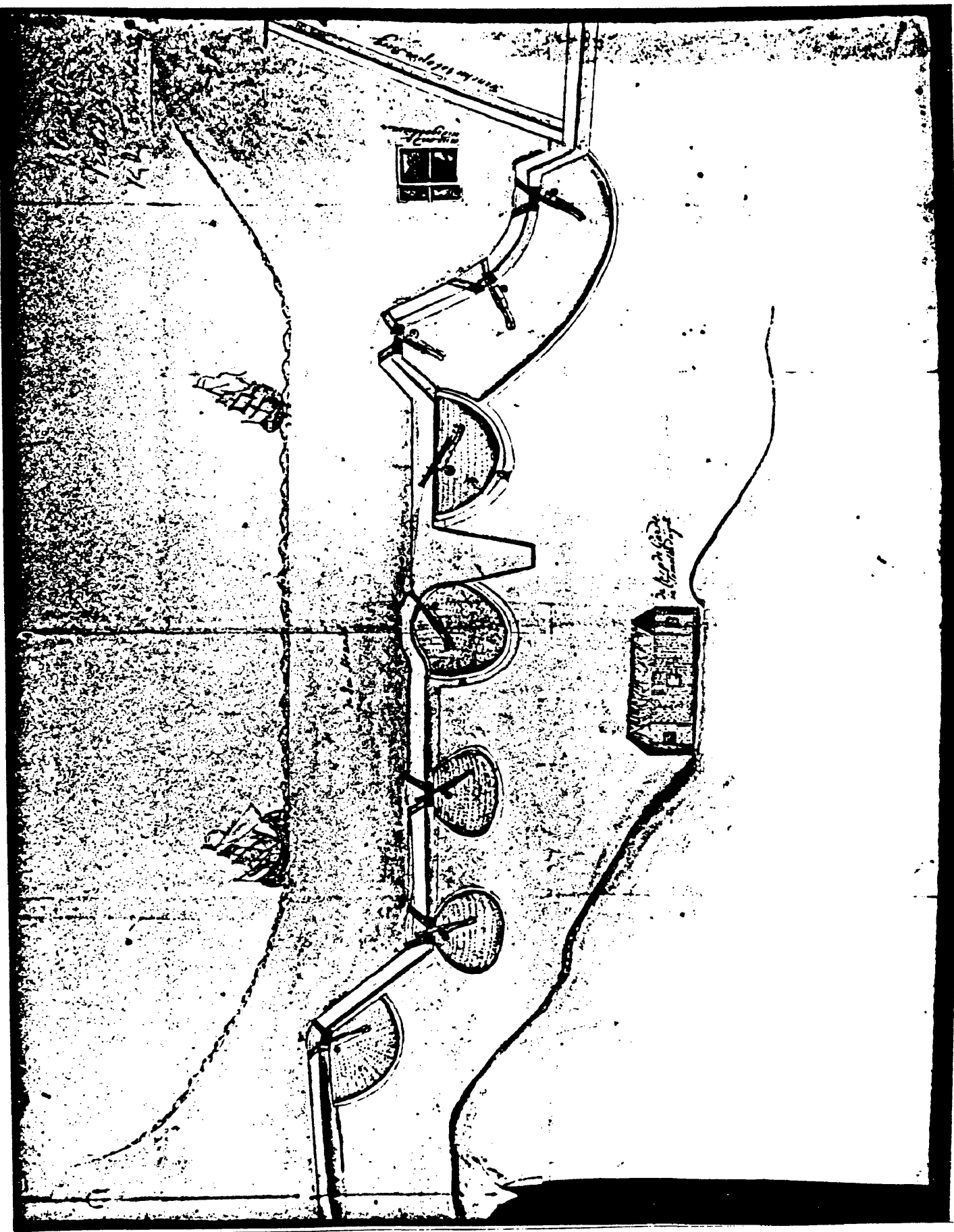


Figure 21 Plan of Tumble Down Dick Battery, 1740

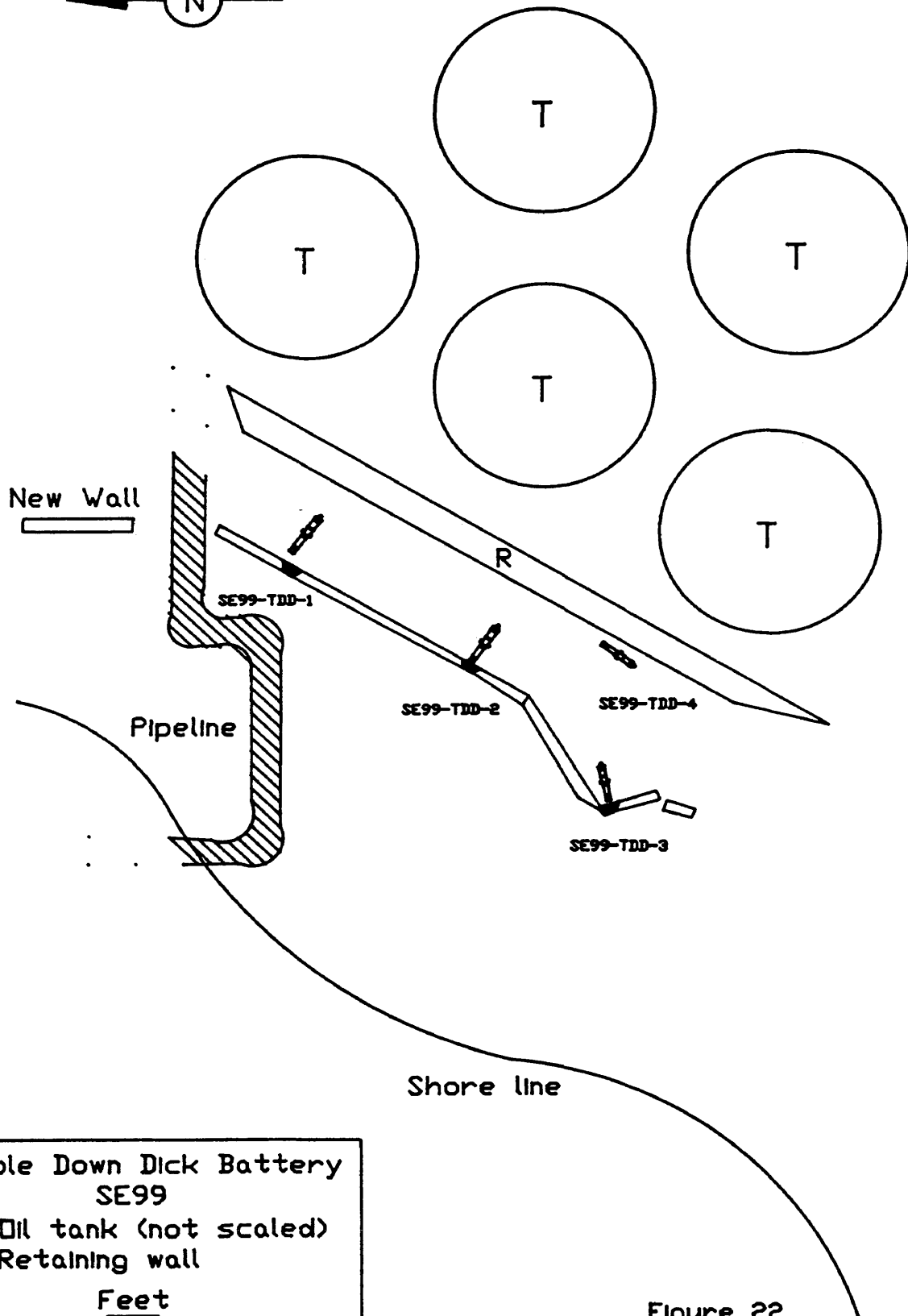
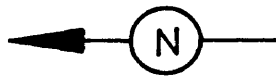
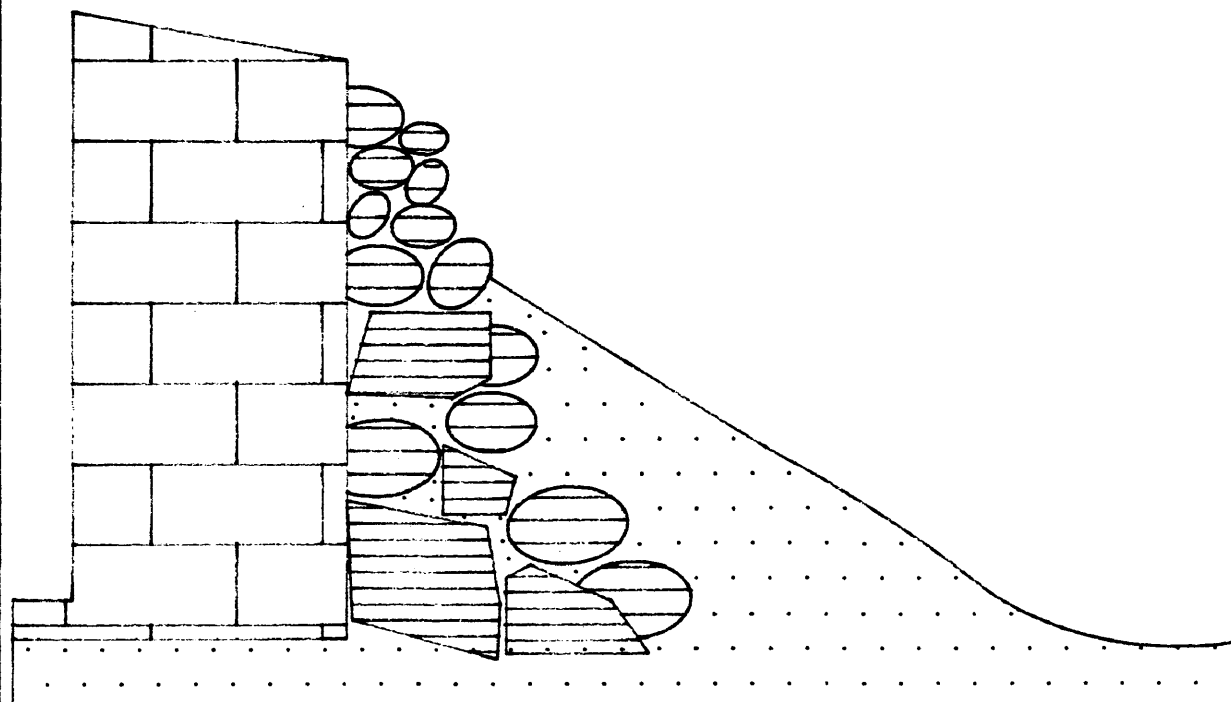


Figure 22

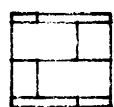
the central area of the parapet. If so, they would likely have failed miserably.

The walls are a mixture of cut stone, faced stone, and rounded cobble. These are mortared into approximately nine courses. One embrasure incorporates brick on one of its wall sections. The uppermost course (in certain sections) and the embrasures were most commonly laid with the worked stone. The parapet was capped with concrete and small cobble. Writing in the concrete prove at least some of the capping is not original. There is a slight slant towards the sea on the top of the parapet.

The base of the wall interior has areas of an exposed footing. This is of the same stone as the walls. The exterior has unmodified cobble cemented onto the bottom half of the original faced stone wall. This addition was then covered in soil to form an embankment (Figure 23). This feature has the appearance of being a later modification. Although the use of stone for filler was unadvisable, the soil embankment would have improved the batteries defensive capability (Tousard 1809). The soil would act as an absorbent for the impact of incoming shells, diminishing their destructive potential. This addition may have been from the renovations of Faesch, but could have also been from improvements done in the 1780's, when that technique was more appreciated.



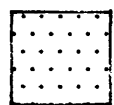
Battery Tumble Down Dick SE99
Schematic Wall Profile



Masonry Wall



Cemented Cobble



Soil Embankment

Approximate Scale

Feet

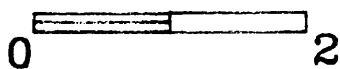


Figure 23

The battery has been stabilized and reinforced with new stone and concrete. To what extent is unknown, but it appears limited to re-capping sections of the parapet and sealing the eroding ends of fallen sections.

During the 1990 survey, a natural phenomenon was detected which would have had significant importance to the battery and potential invaders. The present oil terminal jetty extends approximately one mile from the shore. Officials at the terminal allowed the surveyors access to this terminal. From this, it was possible to detect wind patterns on the bay that would affect a ship's ability to maneuver and land at Tumble Down Dick.

On the day of the survey, a wind was blowing from the direction of Oranje Bay. Between Oranje Bay and the battery lies Pilot Hill. This height effectively serves to deflect the winds, creating a calm zone on Tumble Down Dick Bay, from the beach to approximately one-eighth of one mile out to sea. This "dead zone" would prove disastrous to an attacking sailing ship if they were unfortunate enough to get into it. The resulting lack of maneuverability would enable the shore battery ample opportunity to disable or sink the vessel, whilst preventing the ship from quick escape.

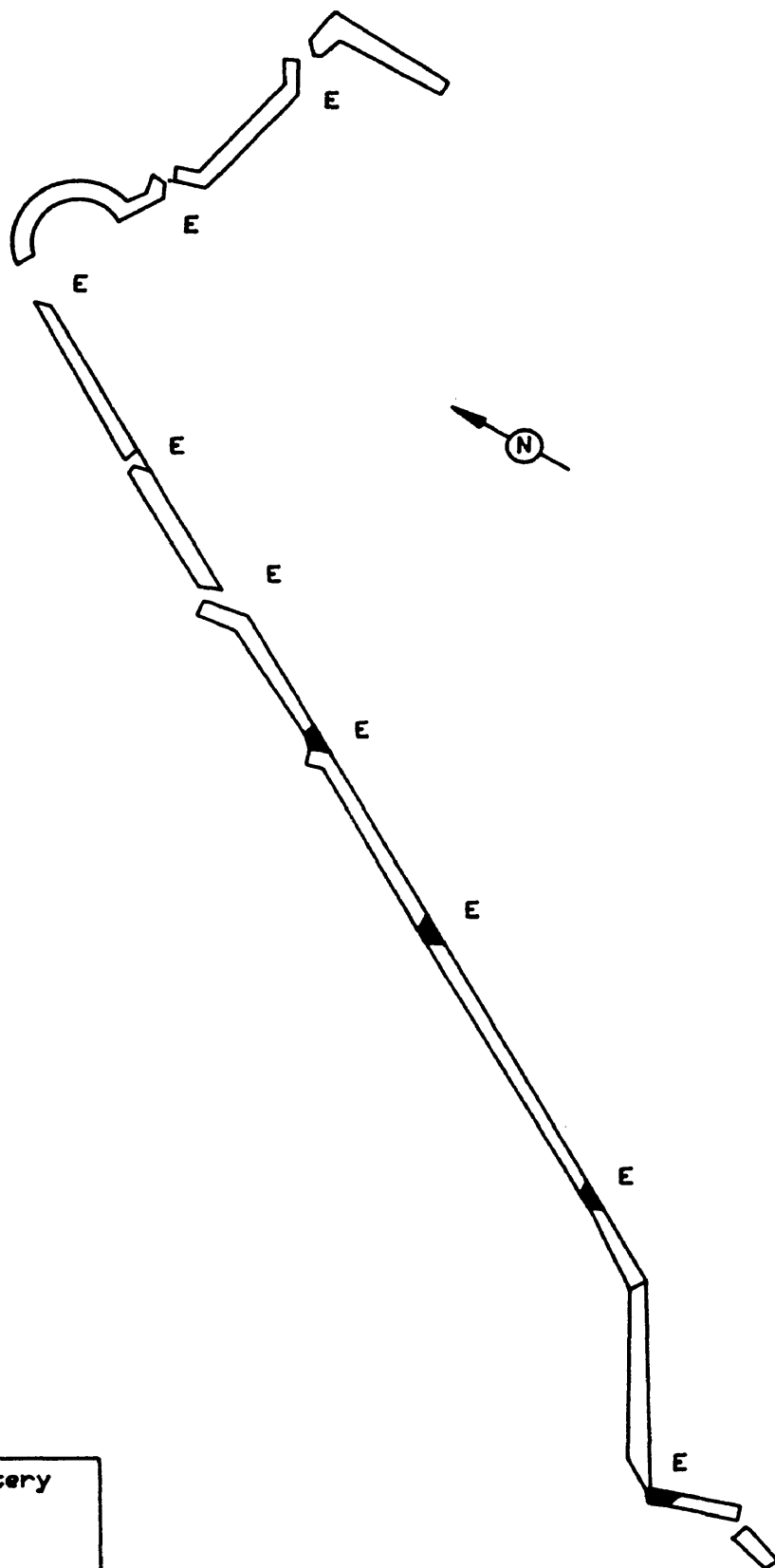
This same effect however, if the battery were ineffective, as was the case in the 1709 French pirate landing, would facilitate the approach to shore by long boats. Wind and rough seas were the cause of several such boats being lost by the 1781 French invasion at Jenkin's Bay. The hill would also serve to conceal landings at this spot, although their vessel would lie within sight of Fort Oranje.

The battery at Tumble Down Dick would also suffer from the visual impediments caused by both Pilot Hill and Pisga. The placement of the battery, flanked on both fronts, prevents the garrison from detecting approaching vessels close in to shore until they are already within firing range at some points. Observers at Fort Oranje could presumably alert the battery on such occasions.

The site has been heavily disturbed and modified. Only two artifacts were found, both ceramic shards dating to the 18th century. An earlier survey of the vicinity found a few scattered shards of porcelain and pearlware (Haviser 1981). Four cannon were inventoried at Tumble Down Dick, SE99-TDD-1 to SE99-TDD-4. Two are probably 12 pounders and two 6 pounders. Varying degrees of deterioration and incongruities with standard bore sizes makes these designations dubious.

Fortunately the site was mapped prior to some destruction,

although not before the loss of the barracks area, the "oude indigothiere" ("former" indigo-processing area), and the walls seen to the extreme right of the 1740 map. This map was reconstructed from field survey notes of J.B. Haviser (Figure 24).



Tumble Down Dick Battery

Reconstruction
SE99
from 1981 sketch

E= Embrasure

Feet
0 10

Figure 24

Battery Dollijn SE71

1a Hayes Battery, 1a Bayes Battery

Battery Dollijn is located at "White Hook, the place where the enemy usually passed" (Hartog 1976:26). It is situated in a low, vegetated area on the slope above the beach, around 50 feet above sea level. Although Hartog (1976:26) first mentions Dollijn with the construction efforts of Heyliger and de Windt (circa 1740's), it seems to be an earlier site. Its first appearance in documents show it to have been in place by 1709 (Attema 1976:23). It appears on the 1742 as "Dolien" (Figure 6), and again on the 1775 copy (Figure 7). Hartog suggests the name may be a corruption of "D'Olinda, a Netherlands colony in Brazil" (1976:26).

As White Hook is located on a slight protrusion, this position offered protection of the approach to Oranje Bay from the southeast. Most ships coming in from Europe or islands east of St. Eustatius would pass this point due to both wind and current patterns on the Caribbean side of St. Eustatius.

The low, irregular walls are now situated directly upon the bluff edge above the beach. A large gut runs down to the shore to the immediate northwest of the battery, and has eroded away part of the original wall. The site was prepared by excavating a depression to place the battery within,

somewhat conforming to the cliff edge (Figure 25). Erosion has taken a heavy toll on Dollijn, and the entire site is under imminent threat of destruction. Several portions of the wall have already fallen into the sea and several portions mapped in the 1990 survey were precariously perched on the edge. A comparison with the 1981 survey by Haviser shows a significant part of the site has been lost within the last nine years.

The battery was constructed of native stone, both worked and rubble, mortar, and brick. The ground plan is irregular, and seems to have followed the cliff edge more than any organized system. The walls were equipped with embrasures at several points. The northern most parapet, stands some 2.5 feet high from the exterior. It is of stone and mortar with some brick remaining. Moving southward, mortared rubble is all that remains until a better preserved area of parapet is once again encountered, this of faced stone and mortar with yellow Dutch brick "lining". The floor beneath, in front of the embrasure, is laid with yellow brick in triangular formation, to serve as a gun carriage platform. The parapet at this point stands approximately 3 feet high. Fallen wall segments measured up to 4.2 feet in original height, but would have been slightly lower when set within a footing and abutted by flooring (Figure 26).

Dollijn appears infrequently in the records. On January

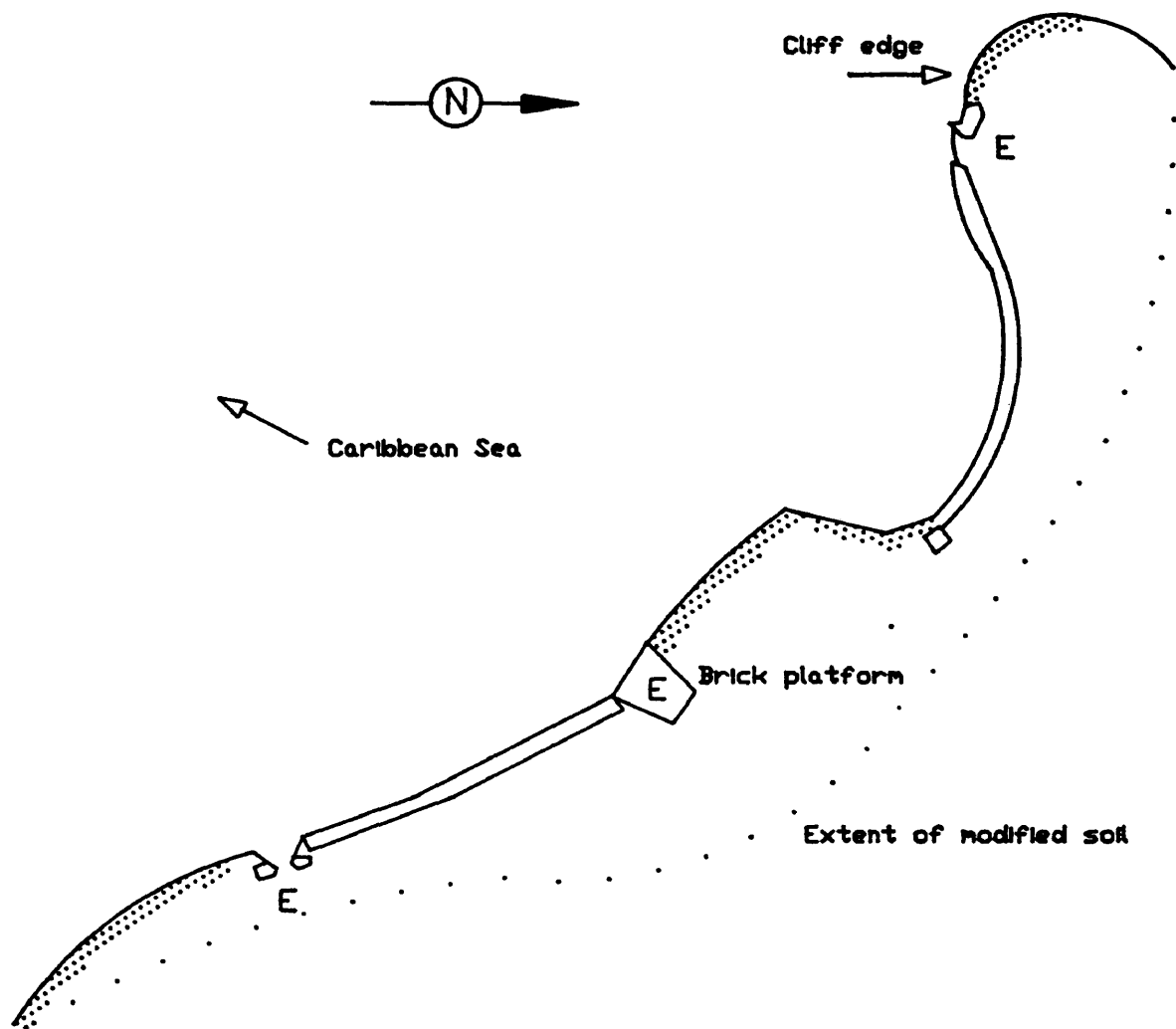
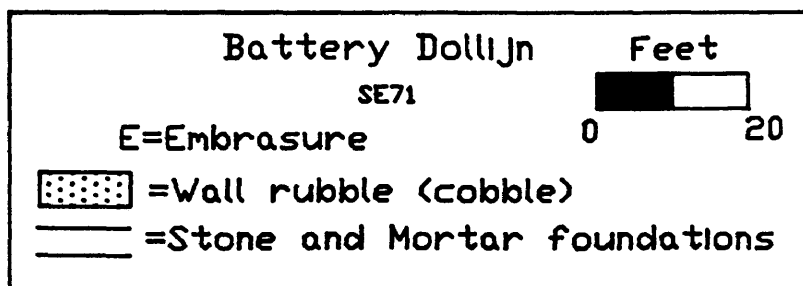
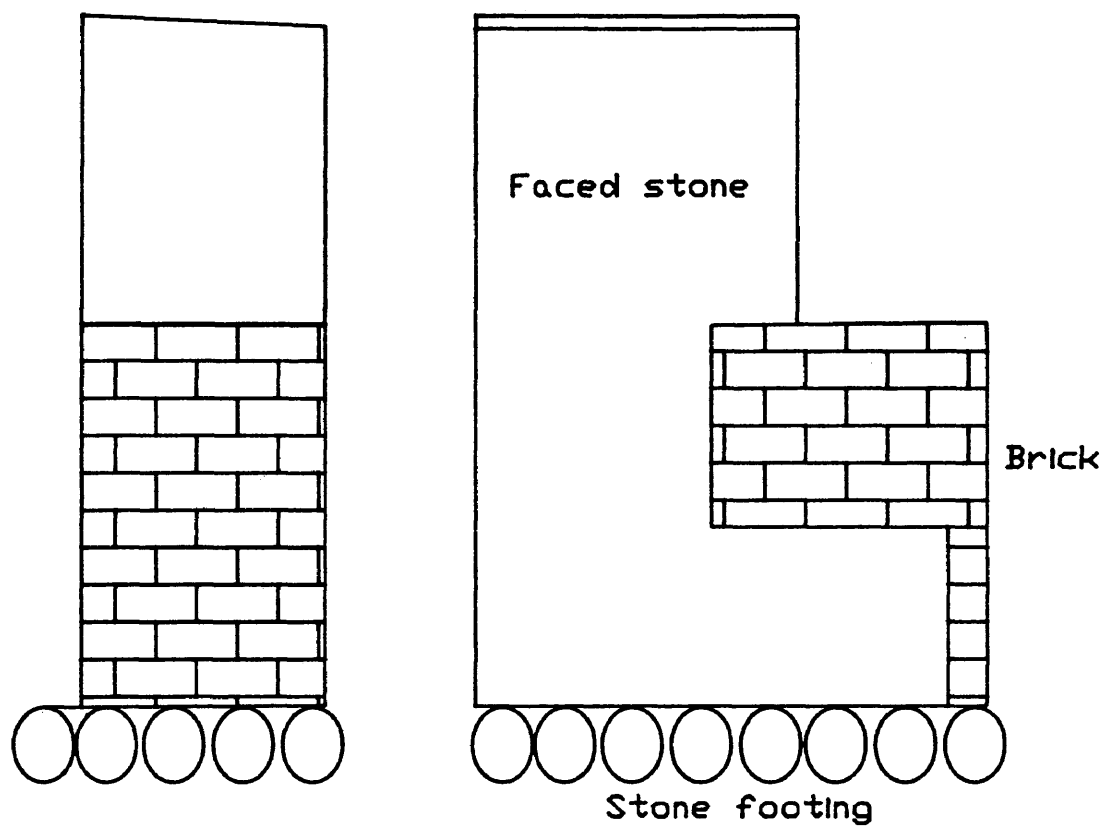


Figure 25





Battery Dollijn SE71
Detail of fallen embrasure wall

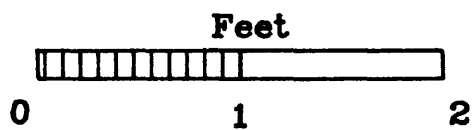


Figure 26

17, 1753 an accounting of the armament found 6 cannon. These consisted of 12, 6, and 3 pounders (Attema 1976:25). Future inventories, including that of 1776 are silent concerning Dollijn, leading to the conclusion that by this time it had been abandoned. However, the battery reappears around 1781, now under the name of La Hayes battery.

It is probable that during either the British or French occupations of 1781-1784 that this defense was resurrected. It would have afforded the new defenders a battery with a minimum of effort as opposed to beginning a new construction altogether.

The irregular shaped battery appears in the legend of the circa 1781-1784 French map as number three, "Batterie de la Baye" (Figure 8). Whether this spelling was intentional or a corruption from "Haye" is unknown, but most references of this period prefer the latter. It again appears on Faden's 1795 map for the Marquis de Bouille, this time as "la Hayes Battery" (Figure 9). Both maps indicate its irregular form to distinguish it from the more typical "U" shaped battery.

By the mid 19th century Dollijn had disappeared from the maps, not even mentioned as a "vervallen battery". Neither the 1830, 1840, nor 1847 maps indicate its position (Figures 10-12). It may be that it had become lost to memory as well as

sight early in the 19th century. It is easily overlooked, situated in an excavated depression where vegetation and erosion obscure its low walls to all but those who inadvertently stumble upon it.

No identifiable military artifacts nor cannon were located during the survey. Domestic artifacts were few, but included ceramic shards and wine bottle fragments. All artifacts appeared from field inspection to date in the 18th century.

Fort Royal (Royale) SE96**Fort Nassau**

Fort Royal, on the southern end of Horseshoe Mountain, was originally built by the Dutch as Fort Nassau (Hartog 1976:26). Its location allowed a command of the northern-most sections of the bay and town. The elevation is approximately 270 feet above mean sea level, although the 19th century sketch gives it as 375 feet (Figure 13).

This Fort Nassau was probably that suggested in the defense projects of 1748. At that time it was proposed to construct a battery "on a hilltop, which could cover Fort Orange, the Village...the approaches, and the whole plain" (Attema 1976:24). This best describes the vicinity of Fort Royal.

As with all other batteries on the island, soon the Dutch Fort Nassau deteriorated and was out of service. Thus it was when the British found it in 1781. Realizing its strategic potential they rebuilt the battery and christened it Fort Royal. The battery had an excellent command of the bay, as well as offering an observation post for the western side of the island. From here Fort Oranje, the Waterfort, Fort Rotterdam, Battery Concordia, Four-Gun Battery, and Battery Bouille are visible, as well as Oranjestad and the entire

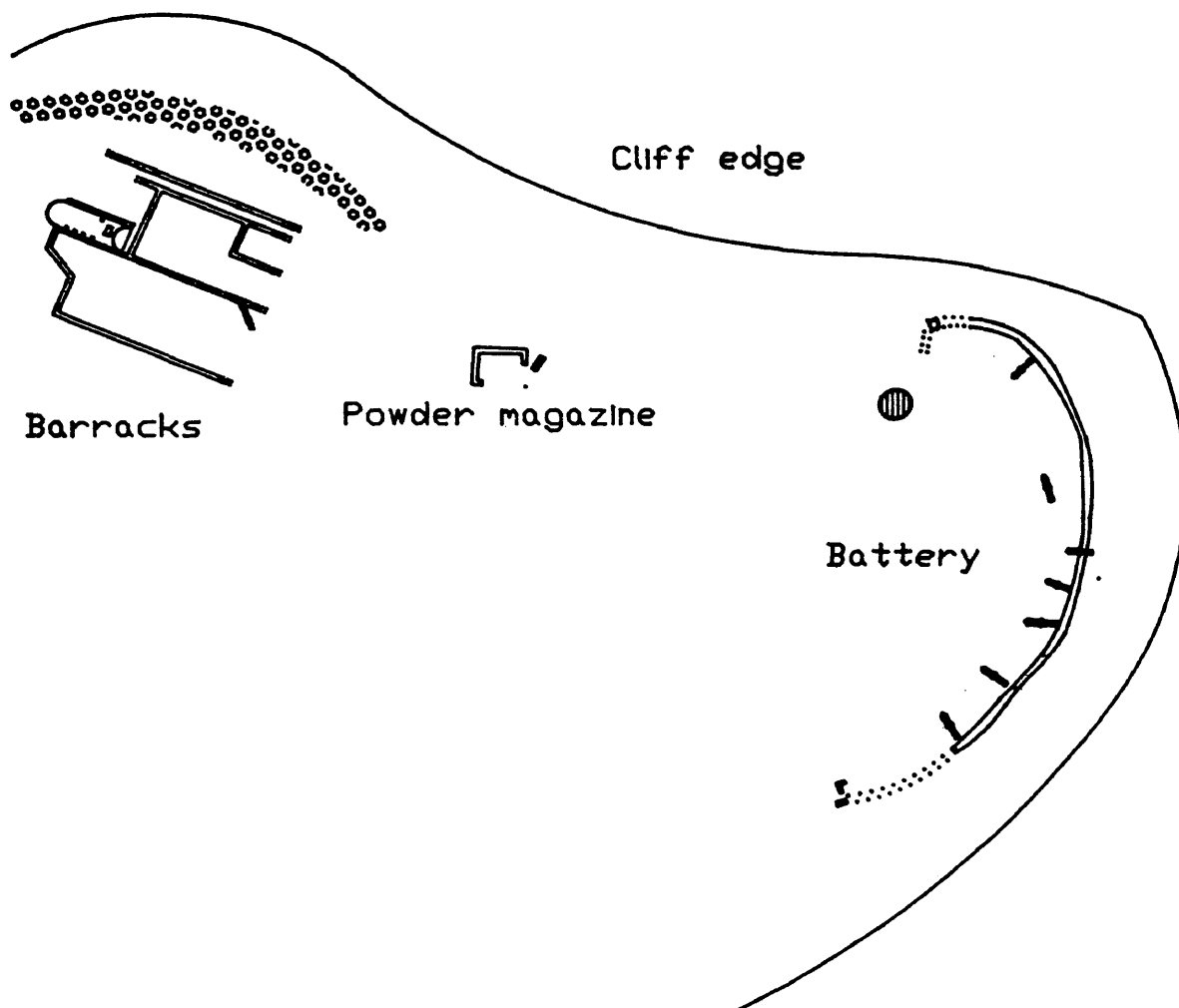
Cultivation Plain.

Inventories of the island defenses neglect Fort Royal. References to a "Nassau" in the Dutch records apparently refer to the coastal battery rather than this one. Later records (post 1781) mention its name (Royal), but no specific information is offered in the available references to these inventories.

The battery first appears on maps with the circa 1781 French cartographic rendition. It is named in the legend under number 12, the "Batterie Royal" (Figure 8). The 1795 map also marks "Royal Battery" (Figure 9). By 1830 Fort Royal had long been abandoned. It appears on the map of this date, but does not appear in the legend, nor is it named on the map itself (Figure 10). Both the circa 1840 and 1847 maps list Royal as "vervallen" and mark its position (Figures 11 and 12). Neither call it by name.

The remains of the Fort Royal complex consist of a semi-circular low wall on the cliff edge above Oranje Bay (Figure 27). Situated further inland along the ridge top is a stone and yellow brick powder magazine, and further on the garrison barracks and cistern (Figure 28).

The concrete and stone remains of the wall range anywhere

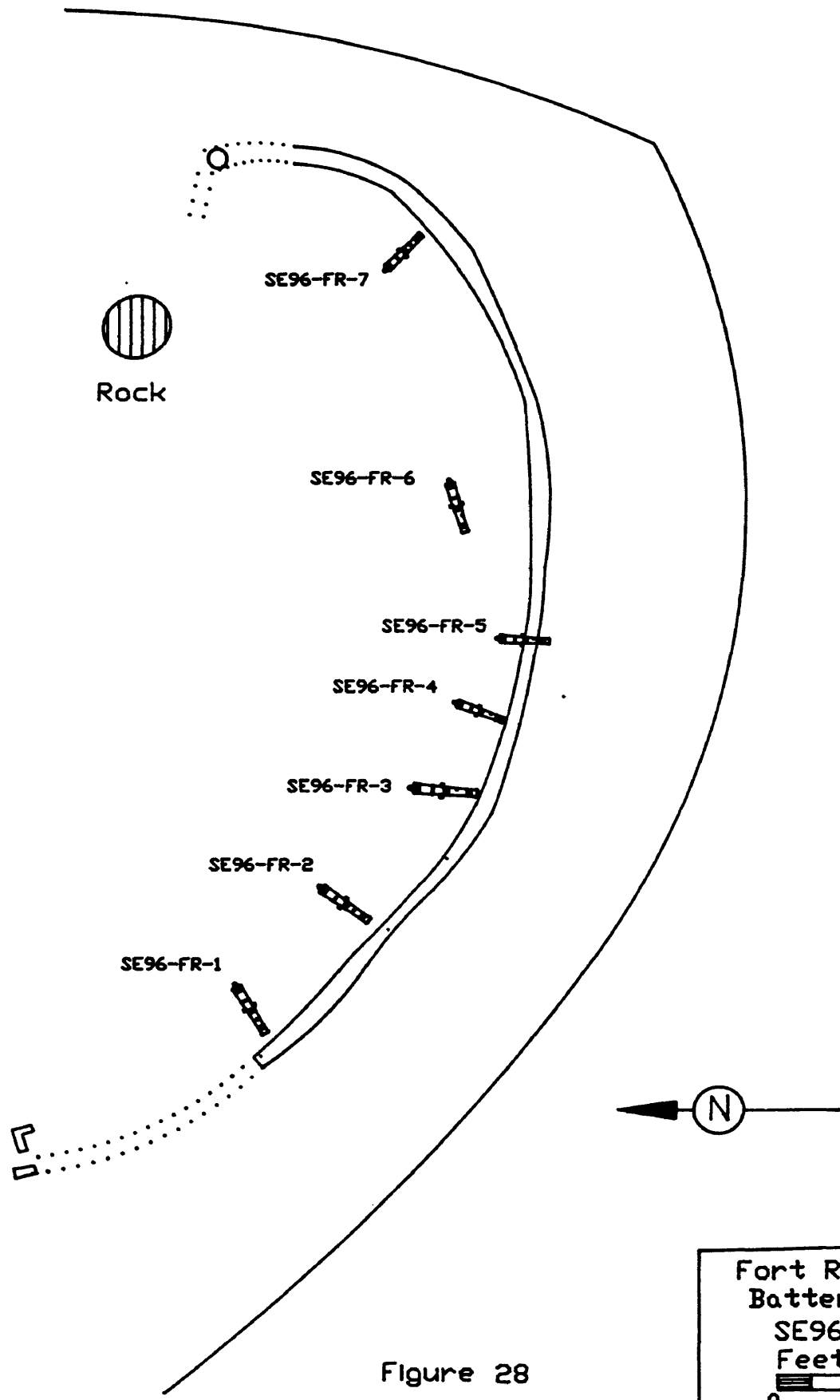


Overall Plan of
Fort Royal
SE96

Feet

0 50

Figure 27



Rock

SE96-FR-7

SE96-FR-6

SE96-FR-5

SE96-FR-4

SE96-FR-3

SE96-FR-2

SE96-FR-1

Fort Royal
Battery
SE96
Feet
0 10

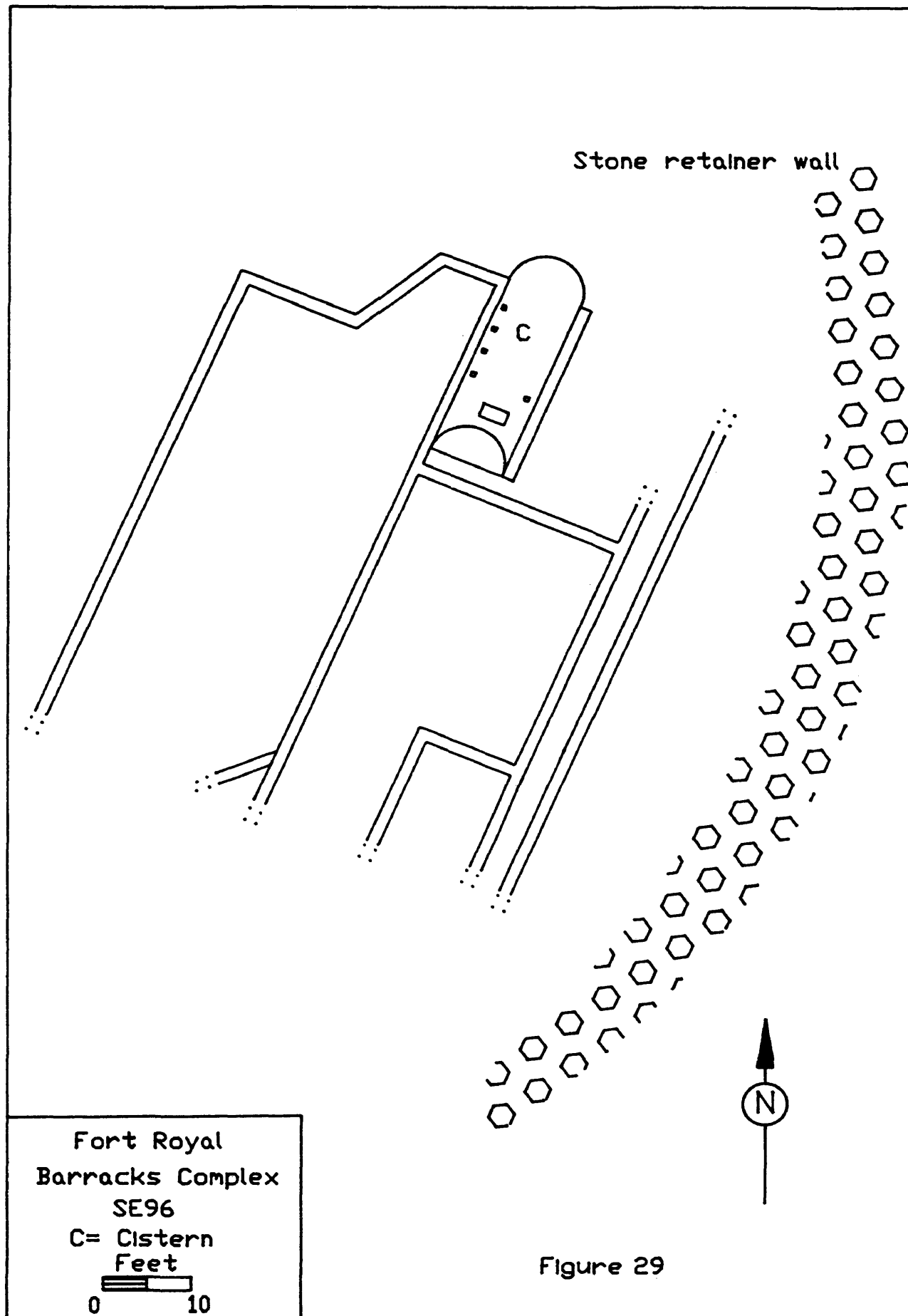
Figure 28

from 1.8 to 3.4 feet wide. The maximum height along the wall, from the exterior, was approximately 2 feet, and had 2 to 3 courses of volcanic stone. The wall had other areas of concrete alone remaining, with no stone present. The stones were placed so as to present a faced surface. Along the wall were 7 cannon, some lying across the wall, others behind (SE96-FR-1 to SE96-FR-7). The cannon included three 18 pounders, one 12 pounder, two 8 pounders, and one 8 or 9 pounder.

Approximately 200 feet to the northeast of the southern wall of the battery are the remains of the suspected powder house. This building was constructed of stone, yellow brick, and mortar. It measured 17 by 13 feet, and standing walls were up to 7 feet in height, though most had fallen.

Continuing northwest some 100 feet beyond the powder house, along the eastern edge of the mountain, may be found the barracks compound (Figure 29). This feature contained the foundations of the barracks area, a domed cistern of yellow brick, and several other foundations or low running walls. All were of mortared stone.

Running up the mountain side from the plain below the eastern edge was a road of unknown vintage. It now has several large boulders on it, making it impassable to all but foot



travel. These appear to have rolled onto the road, and do not appear recent. Several trees have also grown up within the road. This feature does not appear on maps until 1830 (Figure 10). According to this map, it began in the Upper Town, climbed the mountain below Royal, and then followed the ridge up to the entrenchment between Battery Jussac and Fort Panga. Although it is not seen until this date, as the batteries were largely abandoned by 1830, and the necessity of its presence for the garrison before that date, it is suspected this road was contemporaneous with the 18th century barracks and battery.

Surface artifacts were few, including green glass bottle fragments, pearlware, stonewares, and pipestems. Additional artifacts, mostly green glass fragments, were noted in the cistern at the barracks.

The site has suffered disturbance within the last twenty years. A cement pad and antenna are within the battery, and a road along the ridge top extends within the battery walls. Both were constructed by a former oil terminal supervisor, sometime in the 1970's.

Fort Hollandia/ New Fort II

Fort Hollandia, also referred to as the "Nieuwe Fort" (here New Fort II, to distinguish it from the Waterfort), was said to have been built in 1748 "on the bay" (Hartog 1976:26). The name Hollandia was that used until after 1749, when "Nieuwe Fort" became the more common appellation. Its intent was to help protect the warehouses springing in the Lower Town, as the island's importance as a trade center boomed.

Attema (1976:24) reports it was built amongst the "Manchenillebomen" (manchineel trees), which apparently refers to somewhere along the Lower Town/Bay area. Such trees can be found in the vicinity of the Waterfort, and some records suggest extended up to Billy's Gut in the 18th century. She goes on to pin-point its proposed location as at "a place below the neglected New Fort [the Waterfort] between Tommelendijk and Fort Oranje" (Attema 1976:24). If this placement is correct then Fort Hollandia would have been located somewhere along the Lower Town between Smoke Alley (or even Billy's Gut) and the area below Fort Oranje.

No definitely identifiable traces of Fort Hollandia (as an independent fortification) were found. There are several possibilities. One is that it was also known by a name other than the Hollandia and the New Fort. If this is the case, the

likely candidates are the Waterfort or Fort Rotterdam. The second possibility is that the remains of this defense have yet to have be discovered.

If Hollandia was in fact the Waterfort, that would explain discrepancies in the number of embrasures noted in the surveys and on historic maps. According to one resident familiar with the island's history, the Waterfort may also have been known as Hollandia from time to time (Lampe, personal communication, 1990).

The Waterfort, known to have been severely deteriorated by the 1740's, could have been rebuilt by the 1748 project. If this is true, it soon reclaimed its former name. In 1753 there were 16 cannon at the "Nieuwe Fort" (Hollandia) according to the January 17 inventory. At this accounting it contained 12, 8, 6, and 3 pounders (Attema 1976:25).

The "Nieuwe Fort" (II) appearing in the inventory does, however, seem to be distinct from the New Fort (I), known to be the Waterfort. A letter of 1754 from Commander de Windt clearly states that the New Fort (I) was in ruins and devoid of artillery. The loss of 16 cannon in one year seems improbable, barring severe storms at such a low fort. The evidence suggests that the Waterfort was not in fact the Hollandia of the 1748 project, although it may have assumed

that moniker at some other time for a brief period.

The second candidate for this first hypothesis is Fort Rotterdam. Little is known about this fortification. It is built in the area suggested for Hollandia in the records, at a slightly higher elevation than the Waterfort. Considering the rapid deterioration the Waterfort experienced, it seems logical a new fort would be placed in a somewhat more protected area, yet still at a level close enough to the water-line for effective ship destruction. Rotterdam fulfills these requirements.

The second hypothesis, that Hollandia remains undiscovered, is also a distinct possibility. Limited searches of the Lower Town for military sites resulted in a few potentialities. The first is a low, mostly buried yellow brick wall near the base of the "Slave Trail", in front of SE341. It is quite reminiscent of the embrasures seen at Battery Nassau. However, its placement in the warehouse section probably suggest it is no more than the remains of an entrance-way to a former commercial building.

The second site with military inclinations was SE383. Here there are two iron cannon (SE383-LT-1 and SE383-LT-2). SE383 is described as "One north-south oriented stone wall fragment...1.5 ft. wide" (Barka 1985:25). No further

information could be found concerning this wall. It is probable that this is not a battery wall, though the exposed remains somewhat conform in size to batteries of the 1780's, if not in plan. The mere presence of the cannon is not in itself suggestive of SE383 as a military site. In fact, these cannon quite possibly represent two of the guns condemned in 1778, credited with the salute to the Andrew Doria, and pushed over the cliff for scrap iron.

Fort Hollandia remains a mystery. Of all the known sites, it is best fitted to Fort Rotterdam. Rotterdam follows the style of construction seen at the Dutch fortifications of the first half of the 18th century, and it is located in an area that matches written descriptions for the placement of Hollandia. Further documentary research or archaeological exploration at Rotterdam or in the Lower Town may reveal new information, but little more may be said at this time.

Fort de Windt SE8**Lisburn's Battery, Back-Off Bay Battery**

Fort de Windt, on Back-Off Bay, began as simple earthen "entrenchments" as early as 1748 if not before (Hartog 1976:26). These were later transformed by Jan de Windt into the fortification which is now restored. The stone walled battery was erected in 1756 (Barka 1985:65). The site may be reached by following the Coast Road to its termination at Back-Off Bay, overlooking St. Kitts.

Fort de Windt was briefly excavated by a team from the College of William and Mary, under James Kochan, for restoration purposes in 1981. Unfortunately the resulting report (Kochan, J. Archaeological and Architectural Investigations at Fort de Windt, St. Eustatius, Netherlands Antilles, 1982) could not be located. A summation was given in Barka (1985:65-67). It reported in part that the:

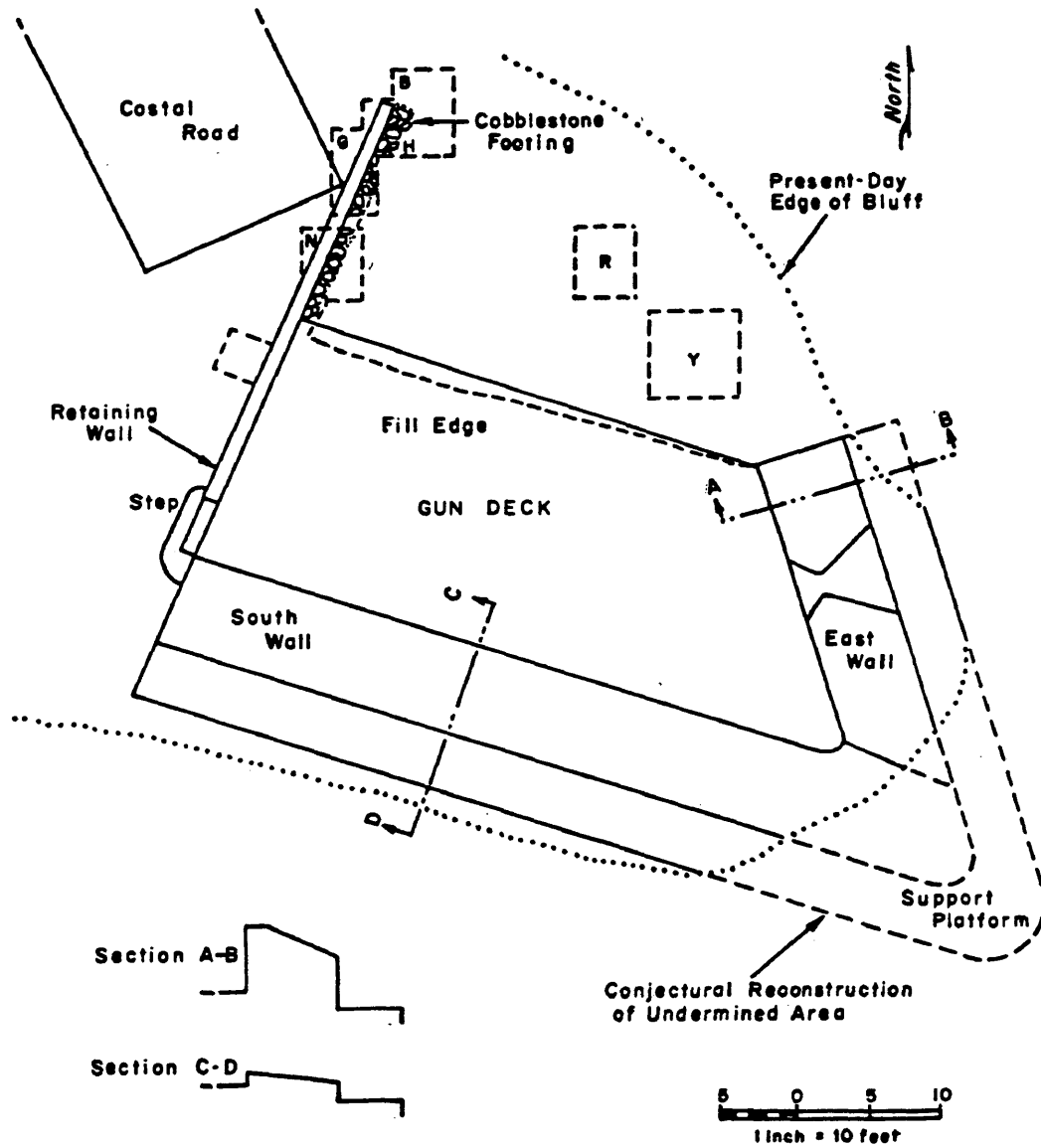
...research revealed Fort de Windt to be an irregular fortification, built following the contour of the site it was constructed upon. The battery was probably designed and executed by an amateur or self-trained military engineer rather than a professional, to meet local conditions.

No remains of structural features were found within the battery, although building rubble and ceramic scatter near the site may indicate the possible location of a water cistern or small guardhouse.

Fort de Windt was situated upon a point on the cliffs above the bay. This position could defend against passing ships from the direction of St. Kitts, as well as attempts at landing troops on the beach below. Although a more difficult ascent than at other landing sites, Back-Off Bay provides sufficient access to the island and is unobservable from Oranjestad and Fort Oranje.

The position also had utility as an observation post. Ships approaching from the eastern islands and Europe would commonly pass this point. In addition, the British island of St. Kitts, with its formidable Brimstone Hill fortress, was in view.

The "V" shaped battery consisted of two parapets, and a low wall (Figure 30). The wall is of cobble placed to present a faced surface. One parapet, that facing Brimstone Hill to the east, stands just under 5 feet high, with one embrasure, and is capped with lime mortar or cement. In this parapet is embedded a stone plaque reading "I.D.W." (Jan de Windt) with "A R" below. The southern parapet is much lower, standing approximately 1.5 feet high, with no embrasures. A low wall on the inward side possibly functioned as a retainer for the soil behind. The interior of the battery was cobble paved for a gun platform.



FORT de WINDT (SE 8)
Plan of Battery and Excavation
St. Eustatius, N. A.

Figure 30
(Barka 1985)

Fort de Windt appears in the 1776 inventory as "de Wind" (Plate I). Although most likely a corruption of de Windt, it could also describe the site, as it is constantly under the winds of the sea. In fact, records indicate it was destroyed by hurricane winds in 1772, and had to be rebuilt (Hartog 1976:44). Perhaps the omission of the "t" in de Windt was not completely a mistake.

The inventory lists 4 cannon at the battery, one 12 pounder and three 6 pounders. The 12 pounder likely stood guard at the single embrasure facing St. Kitts, and the 6 pounders along the lower parapet. A 1775 muster roll records three men stationed at de Windt, one corporal and two soldiers.

The next inventory that mentions the site is the 1780 listing of De Jong. The 4 cannon remained, but the garrison had changed considerably. De Jong stated the battery was "manned by a constable, a small boy, and a black maid" (Attema 1976:41).

The arrival of British forces in 1781 saw de Windt renamed "Lisburn's Battery" (also spelled Lisbourne). It appears as such in inventories of 1784 and 1791, as well as both the circa 1781 and 1795 French maps (Figures 8 and 9). Both armies utilized this fortification, but to what extent, if any, they

modified or rebuilt it is unknown. The battery continued in use off and on from this time until around 1815 when it was abandoned at the end of the Napoleonic Wars (Barka 1985:65).

The battery is not listed in the legend of the 1830 map (Figure 10). There is a marking at the site which may be the fort's ruins, but available copies of this map are too illegible to be certain. It is unlikely that this fort could be overlooked, as substantial remains would have existed at that time, and several less impressive ruined batteries were located on this map. Both the circa 1840 and 1847 maps list the battery as "Vervallen", but revert to the use of the name "De Windt" (Figures 12 and 13).

An artifact collection was not undertaken in 1990. Artifacts noted included stonewares of the late 18th and early 19th centuries, and assorted ceramics of the same date. Four cannons were inventoried, SE8-FDV-1,2,3, and 4. Two (SE8-FDV-1 and 2) have been remounted onto reproduction carriages. There is one 18 pounder, one probable 12 pounder, and two probable 6 pounders. The battery was restored in the early 1980's.

Battery Nassau SE66

Battery Nassau was begun as a Dutch defense. It was first proposed for the projects of 1748. The battery at "Hillegatpoint", was to be named Zeelandia, and armed with 8 cannon. Although planned, it was not actually built until a later date (Attema 1976:24 and p.52 note 19).

Although the starting date of construction is unknown, Fort Nassau was in use by 1750 (Hartog 1976:44). During the hurricane of 1772, Nassau was severely damaged. It was soon rebuilt and received "three extra rooms, which were used as the military hospital" (Hartog 1976:44). The remains of this building were not clearly identifiable during the survey. A small, rectangular stone cobble foundation and associated rubble was located, but this did not conform to the documentary description.

Map data on Battery Nassau is somewhat unreliable. The fort, as expected, does not appear on the 1742 map of the island. The 1775 map, which should denote Nassau, however, does not. This rendition is known to be a copy of the 1742 map, and this omission exemplifies the poor quality and reliability of that document for military sites.

The French map of 1781 proves more trustworthy. The legend

names "Batterie de Nassau" as number 4 (Figure 8). Faden's 1795 map also locates "Nassau's Battery" (Figure 9). In 1830 it reappears as "Batterie Nussea" (Figure 10), and again in circa 1840 and 1847 as "vervallen" (Figures 11 and 12).

The position at Hillegatspoint sets at approximately 50 feet above sea-level, on the northern cliff of Kay Bay. It was meant to monitor and control the approach of ships from the southeast, the direction from which a great deal shipping arrived. Although Kay Bay itself is of little value for landing, to the immediate north of the battery is a gut up which troops could easily march. The cliff itself also slopes down to the beach north of the site, facilitating access to the top. The major impediment to such landings here are not from the beach cliffs: they are from the coral reef along the coast here. This area presently has sufficient coral colonies to prevent any landing. Presumably this situation also existed in the 18th century.

The battery remains seem reasonably well preserved, although they are dangerously close to falling over the cliff edge. The ground plan of Nassau is a short, wide arc (Figure 31) with rounded ends. Rubble shows the battery extended further to the north than the solidly intact wall. The wall sections measure approximately six feet wide.

Several areas exhibited what is thought to be the original

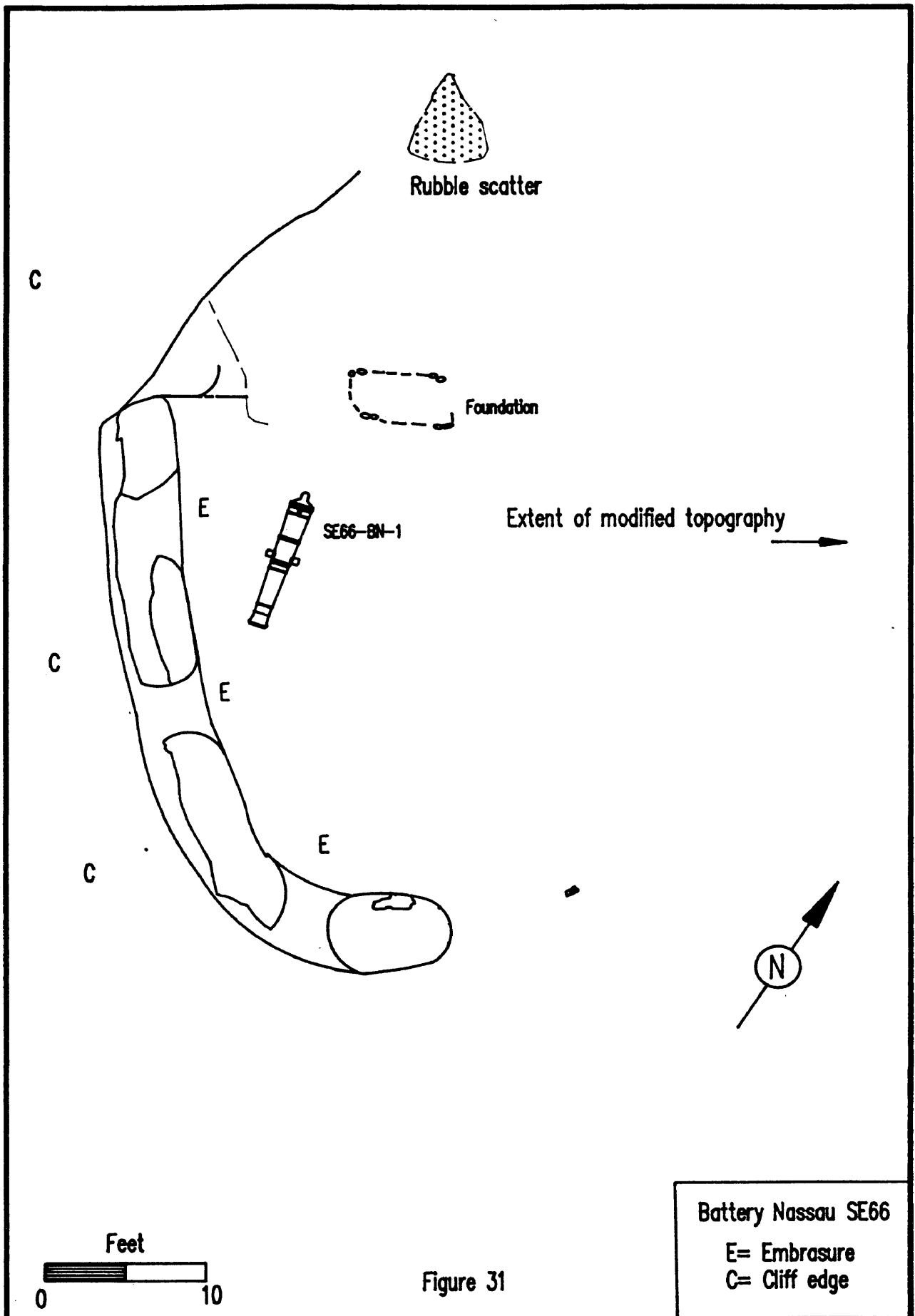


Figure 31

surface capping, suggesting this battery had a low parapet. The interior height at an intact area measured .85 of a foot from the present soil surface. The exterior on this portion of the parapet stood 1.6 feet above the present ground level. The walls are constructed of cobble stone held together with mortar. The parapet was capped with a smoothed cement.

As with several other earlier Dutch fortifications, Nassau was engineered with embrasures for its cannon. Even allowing for soil deposition on the battery floor, the parapet appears to have never been high enough to require this type of feature. Their inclusion may be attributable to tradition rather than function. The use of such embrasures on the island appears to be associated with Dutch fortifications. Depending upon the date of construction of Fort Rotterdam, this may be further narrowed to Dutch works of the mid-18th century and earlier.

Fort Nassau appears in several inventories. Although said to have been in use by 1750 in Hartog (1976), Attema (1976) does not mention its presence in the inventory of January 17, 1753. This may be indicative of it not being in service yet, already in ruins, or simply having been omitted.

It does appear by 1775. In that year a muster roll of the island's garrisons was taken and Nassau was found to be manned

by two individuals, one corporal and one soldier.

Another inventory (Plate I) of that period informs us that the battery was equipped with two 18 pounders and one 12 pounder, both with serviceable carriages. A few years later, in 1780, de Jong found these cannon, and declared all three to be "untrustworthy" (Attema 1976:41). The 1990 survey recorded one cannon at Nassau (SE66-BN-1). Its bore was 130 mm. It may have been an 18 pounder.

The precise date of abandonment of the battery is never specified. In 1816 Fort Orange and 4 other forts were still in use. One was Fort Panga, leaving three unknown. Nassau may or may not have been among these. Either way it would have been out of service shortly thereafter if not before.

Fort Rotterdam

Fort Rotterdam is another of the defenses shrouded in mystery. The first appearance of Rotterdam as such in those documents available for this study was not until the map of circa 1840 (although that section of the 1830 map was illegible). The St. Eustatius Historical Foundation Museum has a map of the island's defenses which gives Rotterdam a date of late 18th century. Inquiries could not discover the origin or author of this particular map. Field inspection and comparisons to other works on the island of known dates suggest to the researcher an earlier date.

It may be that Rotterdam was known by another name when it was first constructed, and was built and into ruins again before being located on maps. The 1742 map does not denote it, unless it is the "New Fort" rather than the Waterfort. The 1775 version has no "Rotterdam" but that map also omits other defenses known to have been in use at that time.

It may well be that Rotterdam was Hollandia (New Fort II). Architectural and masonry styles resemble those of the Dutch fortifications of the Waterfort, Nassau, and Fort Orange. Those are all pre-1750's works, which, by association, may indicate a similar date for Rotterdam.

The late 18th century date given on the museum map may have its founding from a document of the Waterfort, or Fort Amsterdam that survives. A late 18th or early 19th century plan exists entitled "Plan en Profil op wat wyse de gedemoileerde Batterye Amsterdam diend herbouwd en Versterkt te worden" (Figure 20). The plan depicts walls conforming to the remains of the Waterfort, and perhaps represents a proposed reconstruction of the defenses.

Behind Fort Amsterdam's walls, north of the main battery on a higher topographical level, is another battery with two buildings. This plan conforms to the remains of Fort Rotterdam, and is in a similar location. It was marked as having (or to have) six cannon of 13 pounder size (?), six mortars, and two howitzers. It was connected to the lower section by a stairway.

Whether or not this actually is Rotterdam is unknown, but it seems probable. The important question is whether this plan is a proposal like that of Bouille and Montplaisant that was not completed, or a map of a completed project. No trace of the two buildings indicated there were located, possibly indicating it was merely a proposal. The existence of a battery at this site in the plan does nothing to solve the date question. Rotterdam may well have been in existence when it was drawn up and as an intended renovation project.

The fortification is situated upon a hill overlooking the Waterfort. This hill, beyond Smoke Alley, forms the southeastern side of Billy's Gut, and is the end of a ridge extending from the Upper Town. It faces Oranje Bay at a distance of an estimated 150 feet. It stands around 75 feet above sea level.

The ruins at Rotterdam have suffered fairly extensive damage from erosion and probable scavenging for building material (Figure 32). The remaining parapet sections have fallen, but *in situ* foundations exist. The intact, though displaced, parapet remnants were of a massive stone mortared construction as seen at the Waterfort, built in the last decade of the 17th century or first decade of the 18th. It was open at the back, the whole being laid into an excavated area. Behind this, over the hill, is a flat area which contained the Godet (SE95) ruins. This tract was too overgrown to investigate, but associated barracks might also be somewhere in that vicinity, or back along the ridge toward the Upper Town, if there ever were such buildings.

The parapet wall stood some 5 feet high, consisting of at least 6 courses of mortared stone. The wall measured 4.6 feet thick. Exposed stones were faced, and the wall core included some coral as well. They were then capped on the top of the parapet with smoothed cement. Embrasures would have been

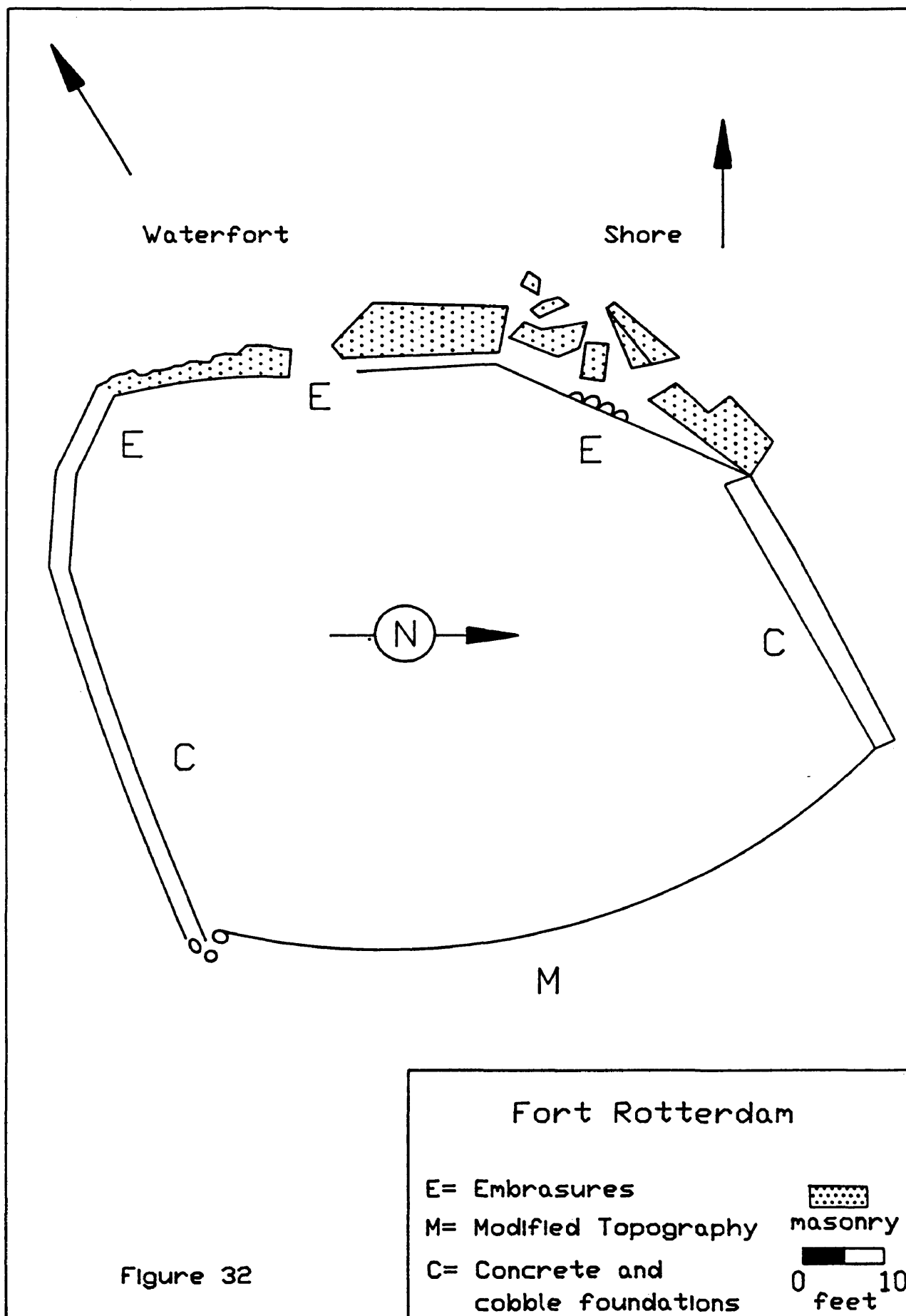


Figure 32

necessary to allow the cannon to fire beyond these large walls. One definite and two possible examples of such features were detected.

Artifacts located at Rotterdam included the usual selection of ceramics, but a field assessment suggested more 18th century types were represented than 19th. Several pipestems were located, as well as green glass, clear glass, and a wine-glass stem fragment among the other objects. No cannon were present at Rotterdam, which is to be expected considering its proximity to the bay and the relative ease salvors would have in retrieving cannon abandoned there. A site close to Rotterdam contained a British military button of circa 1781 (see "Powder-House").

Battery Bouille SE69

Battery Bouille is situated on the coastal cliff southeast of Gallows Bay, above and southeast of Crooks Castle (SE7). The position commands the approach to Oranje Bay from the direction of St. Kitts, as well as Gallows Bay. A gut north of the battery, situated behind Crook's Castle, would also be worthy of protection. It provided access to the Upper Town, and was within range of the battery guns. It is elevated approximately 70 feet above the sea. An early document gives its distance from Fort Oranje as 5,800 feet (Figure 13).

Battery Bouille is a well preserved example of an open coastal artillery battery of the 18th century. Hartog (1976:97) states that it was built by the French during their occupation of 1781, and named after the Marquis de Bouille, commander of the expeditionary force, at that time. This date is supported by evidence from several maps. Those maps pre-dating the British occupation of 1781 show no sign of a battery at this location, although the few maps of this earlier period concentrated on plantations.

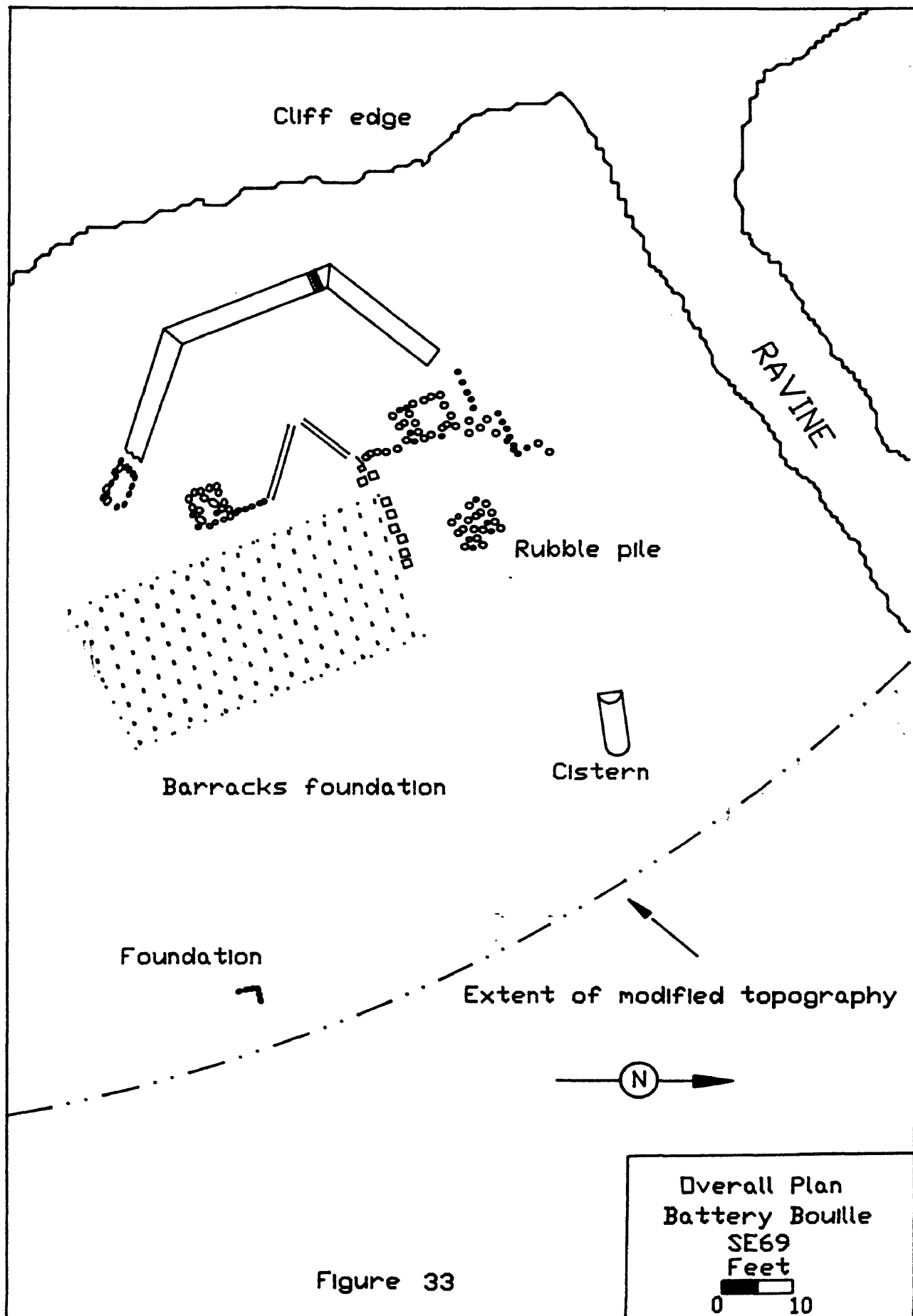
The first appearance of a battery at this location on known documents occurs on the circa 1781 French "Plan De L'Isle De St. Eustache" (Figure 8). As the map marks the landing site of the French forces, this denotes a tempus post

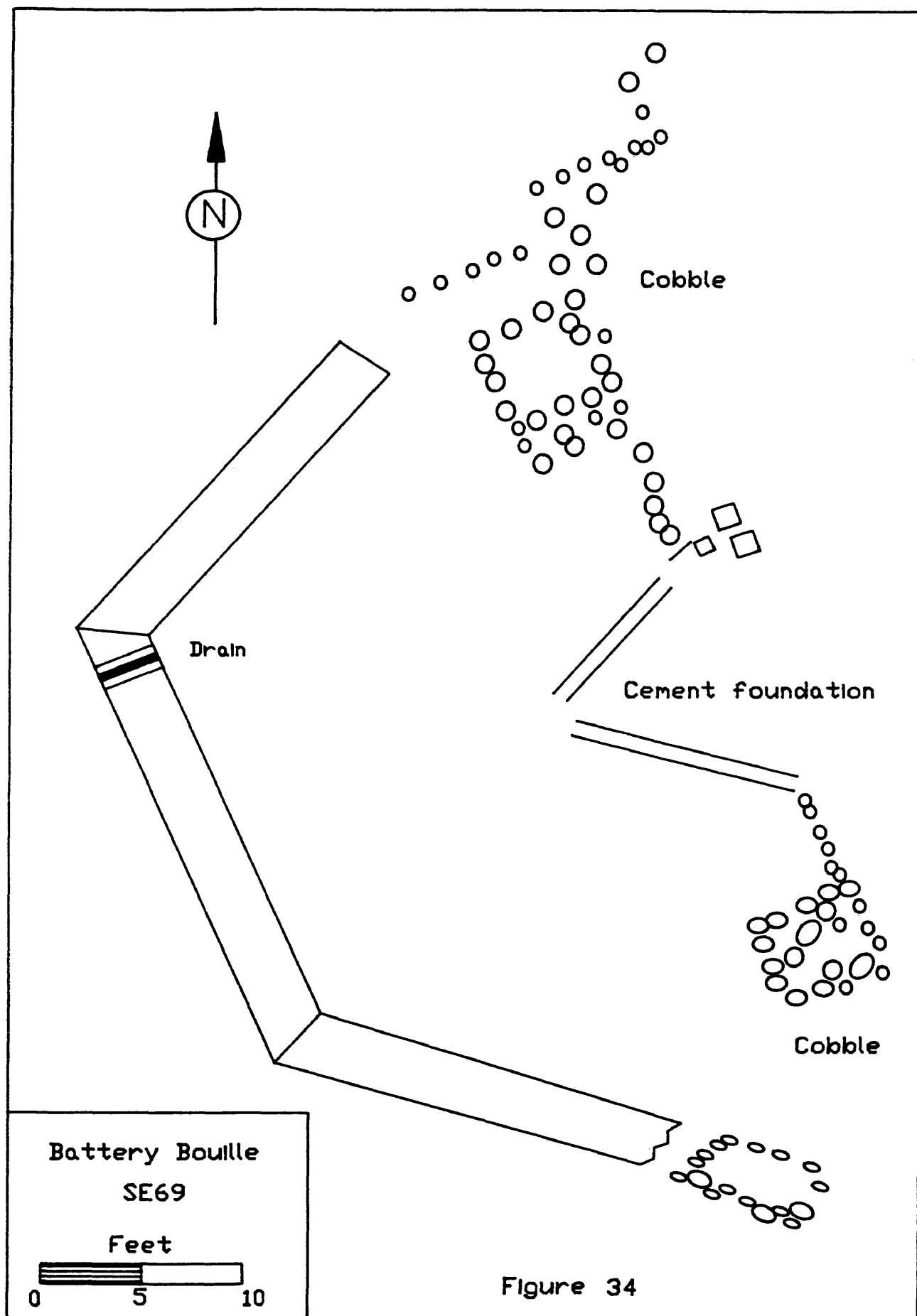
quem of November 25, 1781 for the document, so it may date to 1782. Here the site is listed as "Batterie de Bouille", number 2 in the legend. It is depicted as an open battery with a central building behind, closely resembling the appearance of the ruins surveyed (Figures 33-35).

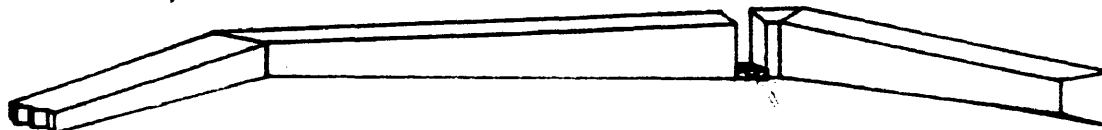
The next appearance of Battery Bouille is on the map engraved by William Faden dated November 10, 1795 for the Marquis de Bouille (Figure 9). The map notes that it was prepared "from the Original in His [Bouille's] Possession". The original draft then would date after November 25, 1781, presumably when the Marquis had the island mapped for his own defensive purposes. The battery is once again depicted as an open wall with a building to the rear.

Following the 1795 map, Bouille Battery appears on Samuel Falsberg's 1830 map (Figure 10). Ten years later the site is marked by A.H. Bisschop Grerelihk. This map, circa 1840, denotes it as number 11, "Vervallen battery" (decayed or ruins) (Figure 11). Although the battery walls are depicted, no associated buildings appear on the map by this time. One additional map by the same cartographer, dated 1847, also records the "Vervallen" battery (Figure 12).

In addition to map references, at least one other document survives relating to the site. The Hague preserves a copy of







Interior towards Caribbean



View of battery from Caribbean face

Figure 35
Three dimensional views of
Battery Bouille SE69

the "Plan en Profil der Geprojecteerde Batteryen op Bouille en Montplaisant" (Figure 36). This plan, dating to the late 18th or early 19th century, was a proposed project to reconstruct Bouille and supplement its defensive position with the addition of another battery, Montplaisant, to the north of the gut above Crooks Castle.

The plan suggests a new layout for Bouille which would accommodate "14 canons". These were to be supplemented by six mortars and two howitzers. The sister battery was to be armed with "14 stukken a 24 lb. 4 Mortieren en 2 Howitzers" (fourteen 24 pounders, four mortars and two howitzers). Investigations around the area indicated on the plan revealed no evidence of Battery Montplaisant. Limited investigations at Bouille did not show any significant alterations to that battery, suggesting the plan was never implemented. Cobble foundations were located that may have extended the battery somewhat. It is unknown whether these pertain to the original battery, or post-date it. The possibility also exists that some features may pre-date the suspected French origin for the battery. It is quite probable the British placed a work at this site.

Although the name of the battery, and literature (Hartog 1976; Attema 1976), suggest the French built Bouille after November 25, 1781, no irrefutable evidence yet exists to

PLAN. PROFIL.

der Geprojecteerde Batterijen op Bouilleen Mont plaisant:



ontwerpen

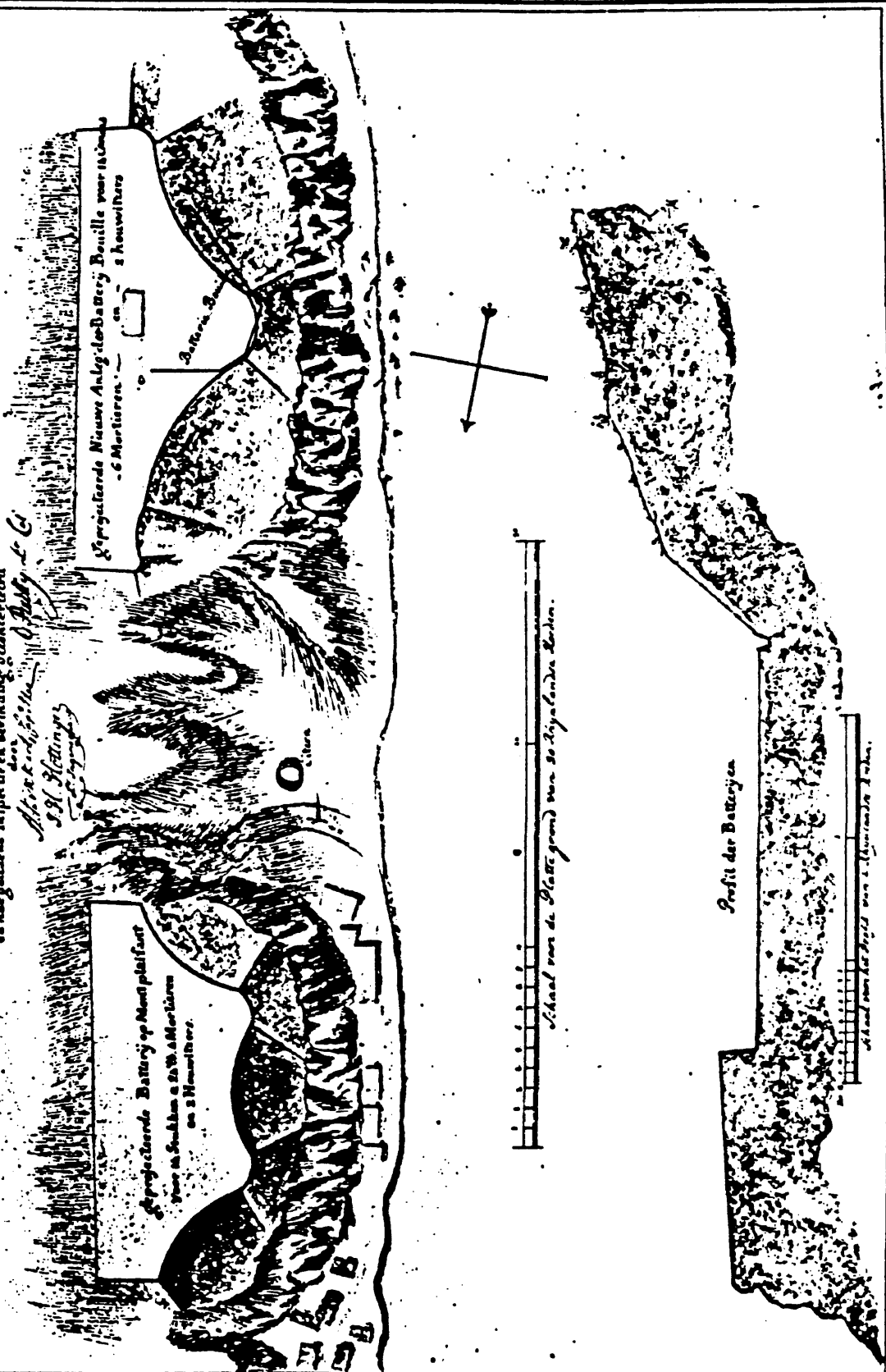
Ingevolge het bijgevoegd Plan van Defensie plan A/ en naaghtlene Inpositien bevindinge van overland

Attest and certify
09/26/20

99/ Holdings

Self-proclaimed Battery of Non-plaintiff
 From the Southern & 24th. American
 on 2 November.

Reproducible Nieuwe Antiquarische Boekhandel
- 6 Mortier - 2 houtwitten



Profil der Batterien

Figure 36 Late 18th Century Projected Plan of Battery Bouille

support this claim. Documents record that the British also fortified the island during their occupation from February to November, 1781. Currently little information has come to light to confirm what defensive features the British had begun or completed by their ousting with the arrival of French forces. All that is known is that Admiral Rodney and General Vaughan, along with Colonel Cockburne, attended to the fortification of the island, and believed it secure. The long list of British forts on the island for 1781 may suggest that Bouille was in fact begun before the arrival of the French, though they may have been responsible for its completion.

The masonry of Bouille suggests time was not a large factor as the stone is carefully cut and faced. The parapets do not incorporate cobble as at Concordia, which is attributed to the British occupation. As the French occupied the island for several years after capturing it from Britain, they would have had the luxury of preparing the stonework. The British on the other hand were preoccupied with the distribution of captured commodities and the rapid re-fortification of St. Eustatius and therefore may have constructed in a hastier manner.

Battery Bouille's parapet is constructed of cut stone and mortar. The stone, probably native, was cut into rectangular blocks. An average block measures 1.8 x .8 x .3 feet. Variance

was more commonly found in length than width or breadth. The blocks were then laid with a lime based mortar incorporating crushed coral. Red brick is also utilized in the drain to the front left of the center section (Figure 37). The brick was probably imported. The stone may have been quarried from the cliffs near Back-Off Bay, north of Fort de Windt, although this theory has not been investigated.

The interior of the battery was laid with a stone floor. The entire floor is presently covered in approximately two to six inches of soil, and could not be accurately mapped. A small section was uncovered beneath cannon SE69-BB-1. This area was floored with small flat stones roughly one inch thick and three to six inches wide. Probing of the remainder of the battery's interior suggested a similar surface to be present throughout the interior of the battery.

To the rear of the battery are foundations of cobblestone and poured concrete. The concrete forms a triangular area centered between the two outer wings. The rear section was found to be open. From the end of either concrete footing extended cobblestone foundations. These may have functioned as gun platforms.

The front right wing had an additional cobble pile at the north-east termination. The configuration of the rubble

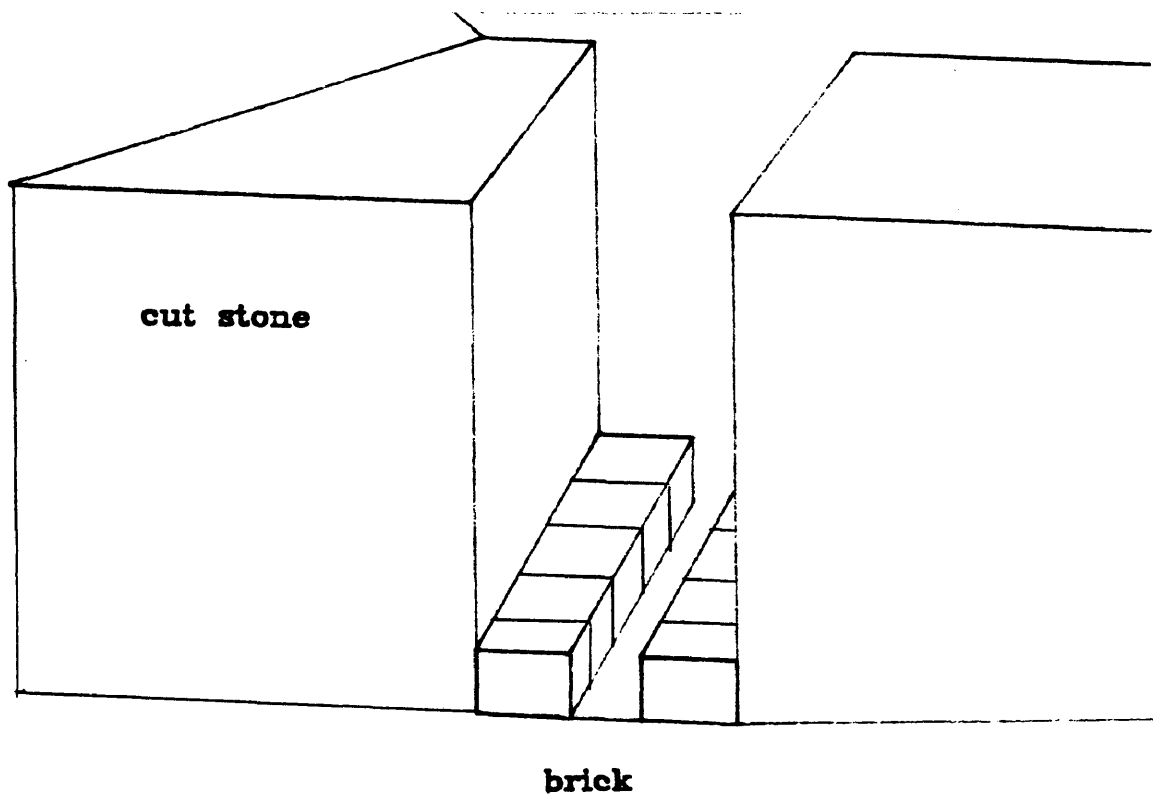


Figure 37
Detail of water drain at
Battery Bouille SE69

suggests it is the remains of a short extension of the wall. The lack of worked stone here may indicate a later feature, though this does not bring the battery up to the specifications noted on the proposed reconstruction plan.

The opposite termination had a smaller rubble pile nearby, but was not as indicative of a wall extension. From this (front-left) termination extended a small cobble foundation in a step pattern, creating an asymmetrical plan.

To the rear of the battery ruins was a large rectangular depression, approximately 23 feet wide by 47 feet long. The northern edge had several square stone blocks forming a partial foundation. No other foundation or footing was exposed along the depression's perimeter. This feature probably represents the barracks, and is that which is indicated on the 18th century maps. A probable 19th century sketch also shows a guard house in this position (Figure 13). A rubble pile of large cobble is located between the barracks and the northern cobble floor foundations.

Northeast of the battery is a large rubble pile and hill, possibly the remains of a well or circular cellar. This may be the remains of another building on the sketch. A cistern with the western end now open is located closer to the present road, also north-east of the battery. It is not known if this

is associated with the military site or plantation activity.

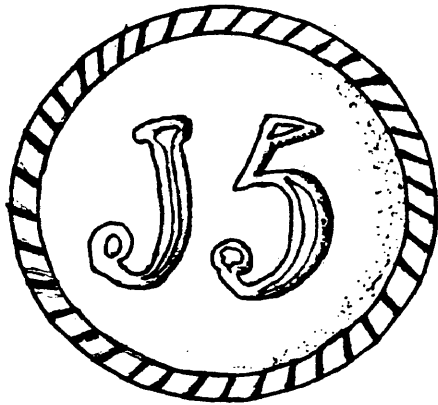
To the south-east of the battery is another possible foundation of laid stone. This feature suggests a small rectangular structure. This may be the powder magazine indicated on the early sketch, although it is not in the same position indicated.

The entire battery is situated within a slight depression apparently prepared at the time of original construction. This feature does somewhat conform, in principle if not in detail, to the "Plan en Profil". It is unlikely that this would have been landscaped after the battery was completed, as the main battery features are situated on top of the excavated area.

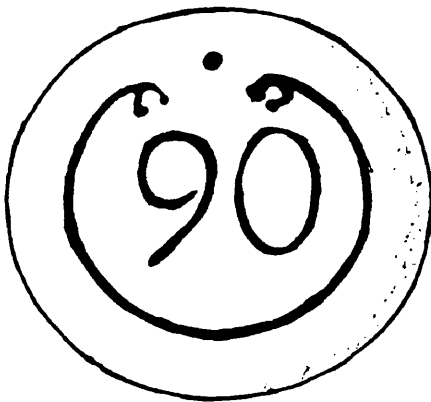
The battery faces west-southwest (approximately 250 degrees), fronting the Caribbean. This placement allows the battery control of the area and approach south of Gallows Bay, and the southern approach to the Roadstead and Oranje Bay. The battery also could have controlled boat access to the beach and gut behind Crook's Castle, north of the battery. During the 18th century there was a path up this ravine giving access to the southern end of the Upper Town (Barka 1985:43-44), although the coral reef just offshore would have made landing there difficult.

A surface artifact collection was undertaken at the site. A variety of artifacts were recovered, as well as the recording of three artillery pieces (SE69-BB-1,2,and 3). At least one gun, SE69-BB-1 may be attributable to British manufacture. This piece included a cartouche (Figure 57), though difficult to view, due to the position of the gun and condition of the metal. The symbol appears to be a crown and cipher, as found on many British cannon. Its bore calibre also conforms to the size of an English 12 pounder. One 2 inch round iron solid shot was found in the soil in front of the muzzle of cannon SE69-BB-1. It may have been part of a grape or canister shot stored at the battery. An identical sized shot was noted below the battery, in the ruins of Crooks Castle (SE7), but was not collected. The second cannon appears to be a 12 pounder, and the third a 24 pounder, possibly French.

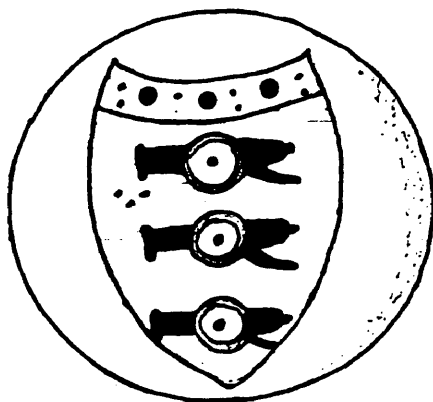
One narrowly identifiable military artifact was a brass button of the British Royal Regiment of Artillery (Figure 38). This object was found on the present surface near the rear of the southern-most wing of the battery. The Other Ranks button is a one piece convex brass disk with eye. The face has a Norman shield with three cannon balls in line across the top, and three cannon in line down the shield. The cast button is backmarked, this being slightly obscured from oxidations. It read "...GOWAN LONDON" (Gowan or McGowan, both thought to be



British 15th Regiment of Foot
 (The East Yorkshire Regiment)
 Other Ranks pewter button
 style in use circa 1760's-1800
 Regimental information suggests
 this specimen was from the 1781 occupation
 (reconstructed view)



90th Regiment button
 British ?
 (The Clydesdale Regiment of Light Infantry ?)
 SE81, Battery Concordia (Fort Amsterdam)



British Royal Artillery button
 SE69, Battery Bouille
 style in use from 1785-1802

Figure 38 Military buttons from St. Eustatius

firms producing such buttons). The style of the button places it in the period 1785-1802 (Wilkinson-Latham 1973:96). The presence of a backmark suggests a manufacture in the last decade of the 18th century to 1802 when the button style changed. This time-frame suggests the button was lost during the British occupation of April 21, 1801 to November 21, 1802. The previous British occupation would have had uniformed artillerists with a different button design, as did the next British occupation in 1810. This artifact was returned to the archaeological laboratory at the College of William and Mary for conservation.

Among other artifacts found at this site were several ceramic shards including Dutch delft, Chinese porcelain, Germanic salt-glaze, English luster ware, creamware, pearlware/whiteware transfer print, white salt-glaze, and a variety of lead glazed and unglazed earthenwares. One green glass wine bottle base fragment was found, and probably dates to the early 19th century. Two tobacco pipe bowl fragments were found, one appearing Dutch, and having a heelmark. One leisure item was located, half of a clay marble. Miscellaneous metal artifacts include 3 to 5 iron nails, and a brass diamond shaped plate (approximately 1.8 x 1.3 x .1 cm).

Frederick's Battery

Battery Frederick is located about midway between Battery Nassau and Fort de Windt. The site could not be located during the 1990 survey. Long time residents of the island who were questioned had not seen this battery. One suggested it may have suffered the fate Dollijn is quickly succumbing to, and had fallen over the cliff into the sea. Although this is one alternative, it is also possible that the site was simply missed. The terrain and vegetation often obscure such ruins, especially those with low walls or only foundations remaining. In addition, sections of the coast from Nassau to de Windt were not able to be thoroughly covered.

Frederick's battery appears on only two maps before again disappearing. It is number 5, "Batterie de Frederic" in the circa 1781 version, and Frederick's Battery on the 1795 map.

Faden's map depicts this battery as an opened walled construction as Bouille, complimented with a barracks for the garrison behind. In all likelihood this battery was built by the British in 1781, and re-occupied by the French. It was probably abandoned after the return of the Dutch in 1784, for it soon disappears from all maps and records.

Fort Panga SE97

Signal Hill, Vigis, Digie

Fort Panga is a battery and observation post at the pinnacle of Signal Hill. It is generally attributed to the French, although there is little evidence to substantiate this theory. Hartog simply states it is of "unknown origin" (1976:27), whilst Attema implies it may have been one of the proposed 1748 projects (1976:52 note 21). Other evidence suggests the 1748 project was in fact Fort Nassau (Royal) and not Panga. Later Hartog, while discussing the French re-fortification of 1781-1782 writes that "a new fort was constructed where one could reconnoitre the sea" atop Panga (1976:97). This could have been a new fort altogether, or a rebuilding of an existing observational position. Early maps of St. Eustatius do not denote a fortification atop Signal Hill until after 1781. It is may therefore be likely this is the date of its origin.

The first occurrence, on the French map of circa 1781, marked "Fort de Panga" with a drawing of a square, four-bastioned fort (Figure 8). The remains did not conform to the symbolic depiction. Fort Oranje is drawn in the same manner.

The next map, the 1795 version for the Marquis de Bouille, also marks it in the way the earlier one did (Figure 9). Such

similarities suggest the circa 1781 map was used by Faden in the preparation of Bouille's map, possibly supplied to him by the Marquis himself.

In 1830 Panga is called "la Digie" in that map's legend (Figure 10). The nearby Battery Jussac is noted as the "Redoutte, aux Bombes", suggesting it was considered a part of Fort Panga rather than an independent battery as it appears on the previous maps. The sketch of the defenses, suspected to be of a similar date, calls Jussac "Redoutte", but refers to Panga as "Vigis" rather than "Digie" (Figure 13). These appellations might be translatable as "Lookout" from the French "Vigie". Within ten years, Fort Panga was called by yet another name. Both the 1840 and 1847 maps refer to it as "Seinpost" (Figures 11 and 12).

Fort Panga was garrisoned from at least the French occupation of 1781, until its abandonment by the Dutch in 1819. In that year it was destroyed by a hurricane, and was not rebuilt (Hartog 1976:97). Remains of modern Dutch and American ration containers and ammunition clips left at Panga are evidence of continued periodic military use during field exercises.

The work atop Panga is well fortified: not through strong defensive walls, but through its topographic position. Any

approach to Panga requires an ascent of the mountain from one side or another, and would expose the enemy to the defenders cannon. The fort complex rests at 766.4 feet according to the Cadastral Survey map. The 19th century sketch gives this as 1,185 feet, and 7,480 feet from Fort Oranje.

The shortest route to the fort is up the northern face, from the saddle where the present oil terminal gate is. Remains of a roadway were located during the 1990 survey on this side, and together with the road from Fort Royal could have provided access to Signal Hill.

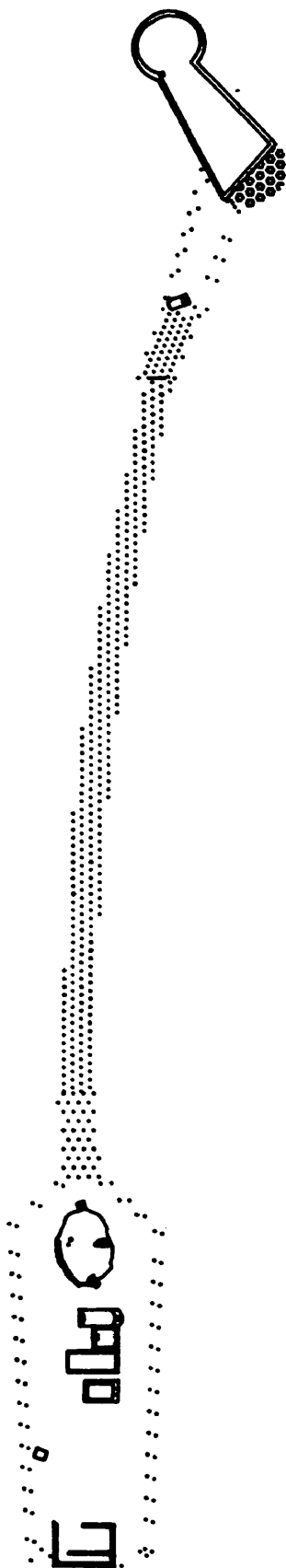
The side facing the Cultivation Plain is steep and rocky, and would have been a poor choice for an assault head. Another reasonable approach from the Plain would have been from the Fort Royal direction along the ridge, or up between the Horseshoe Mountain and Signal Hill.

Vegetation was quite abundant on Signal Hill, both reducing visibility of ground features and increasing difficulty of the ascent. Had this vegetation existed in the 18th century an attacking army would have been severely hampered in the assault. The presence of a north-south stone wall on the northern side of the mountain however, may suggest the area was at one time in cultivation.

The battery is constructed on the upper-most height of Signal Hill (Figure 39). It is an elevated platform resting on a high, man-made, stone base (Figure 40). The platform rises from 5 to 7 feet from the natural surface, in several courses of mortared stone cobble placed to present a faced surface. The road ends at the base of the platform, and at this point an earthen trench or road heads off to the west to connect Panga with the battery on Cul de Sac.

On the northeast side was a series of stone steps acting as an entrance to the battery platform. A second set of steps, though less preserved, were on the southwest side of the oval platform. Three cannon (SE97-FP-1,2,and 4) are located on top of the battery, and two more have fallen over the platform, one the west (SE97-FP-3), and one, mostly buried, at the base of the northeast steps (SE97-FP-5). The first four cannon all have bores of 89 mm, or about 3.5 inches. The fifth was likely identical, but not measured. The bore measurements suggests they were 6 pounders.

The platform is stone paved and was surrounded by a low parapet of mortared stone. This parapet averaged 2 feet in thickness and the remaining standing portion was approximately 1 foot high, although this was missing the original capping. At least one cannon position had a stone platform, distinct from the overall flooring, for its carriage. The others were



Fort Panga SE97
Battery Jussac SE98
Overall plan
(Trench angle estimated)

Feet



Figure 39

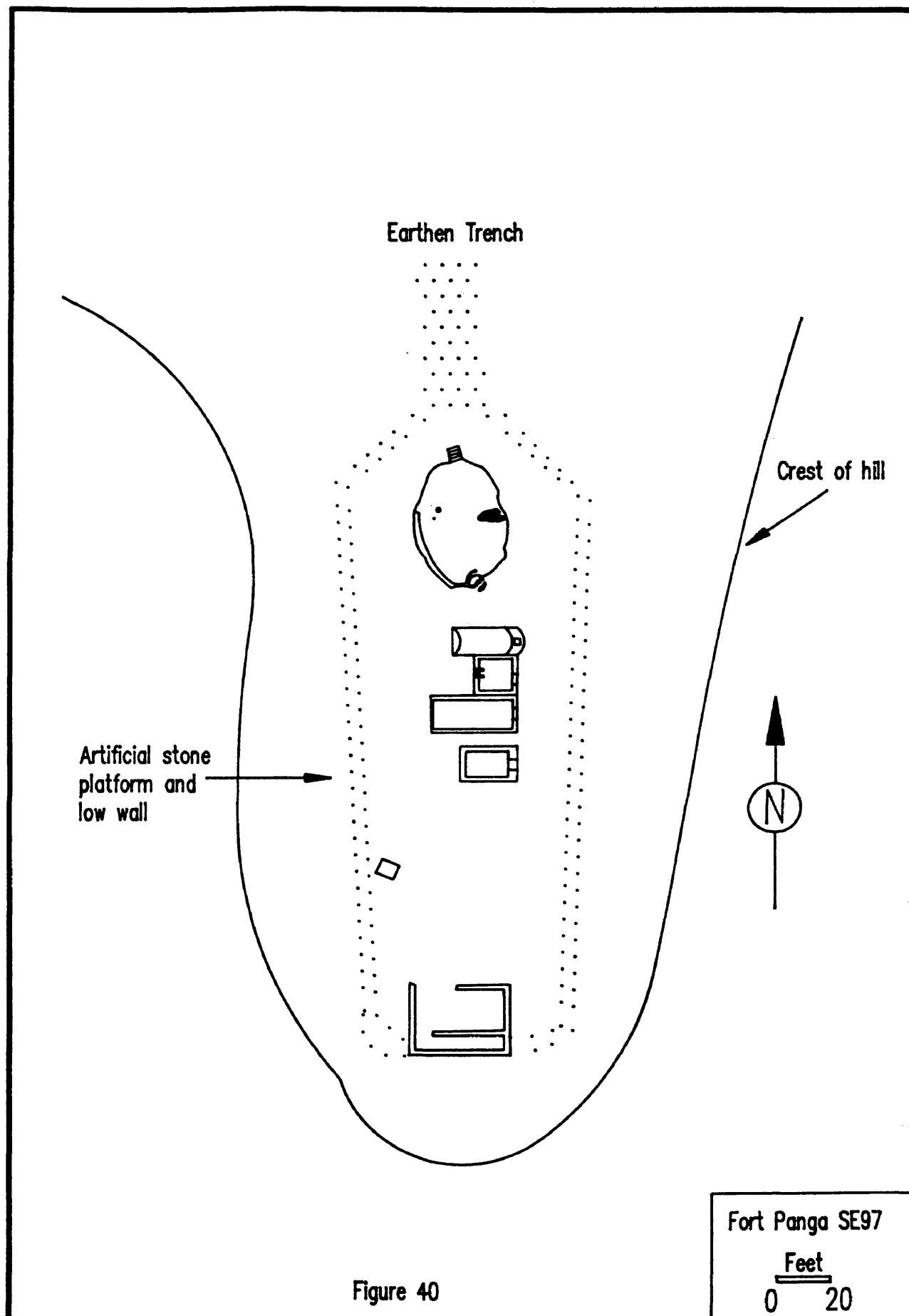


Figure 40

soil covered and were not uncovered for observation. This platform consisted of smaller stones tightly cemented with large gravel and artifacts in the mix. It was lined with slightly larger stones. Within the concrete were shards of blue delft (2), blue Chinese porcelain (1), a kaolin pipe stem, and one fragment of creamware.

A large, deep stone-lined hole was on the platform, near the modern topographic survey cement marker. As it appeared to be deliberately lined, it is possible this was a flag-pole setting. A rough sketch of Panga drawn in 1981 does not show this feature. Intensive investigation was not undertaken in 1990, so the assumption as to the hole is tentative.

The battery platform is situated within a larger complex that includes the garrison's quarters, cistern, and auxiliary features. One additional building appears on the suspected 19th century fort sketch (Figure 13). It was not located during the survey, but was indicated as "G.H.", presumably a guard house.

The buildings that were located are to the immediate south of the gun platform (Figure 41). They are constructed of faced stone, yellow and red brick, and mortar. The mortar contained several clearly visible fragments of coral suggesting it was prepared on the island from its own resources and not

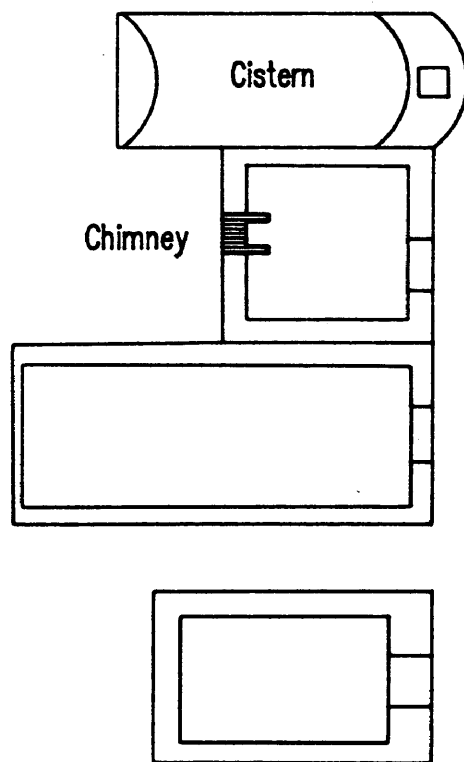
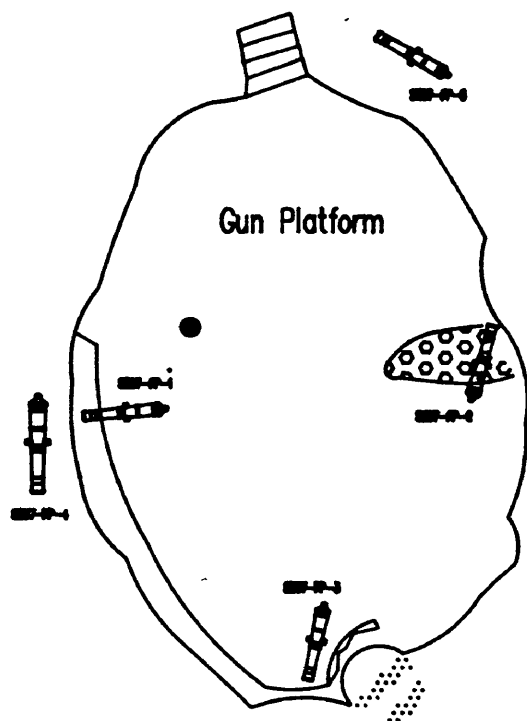
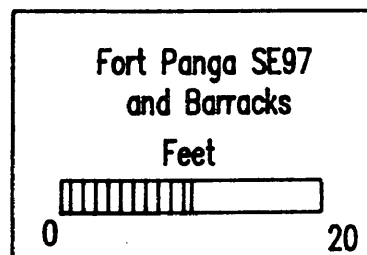


Figure 41



imported. The buildings supported large yellow bricked, concrete capped, roofing domes as those commonly used on cisterns, all of which have now fallen. The ruins probably represent one or two barracks, a food preparation area (a large red brick fire place), a powder magazine, and a cistern. The 19th century sketch does not indicate their function, only labeling them A-D. Excavation could clarify possible functions for the structures.

At the base of the northern gun-platform steps begins an earthen walled trench that connects Fort Panga with Battery Jussac. It runs northward averaging about 30 feet wide from crest to crest, and 6 or more feet high in places.

Few artifacts were noted at Panga, probably a function of prodigious vegetation and bare rock. No distinct historic military artifacts were located (excepting the cannon), although several modern pieces were found. Domestic artifacts included Dutch delft, Chinese porcelain, a kaolin pipe stem, a fragment of creamware, and green glass bottle fragments.

Fort Panga probably functioned mainly as an observation post. As the name of the hill implies, it is well situated to warn the island of approaching ships. The small cannon would be of little use against ships, the distance being too great for any serious hopes of striking a target. Their main task

may have been in signalling the island of danger, or to defend the position against troops already landed.

The fort has an unobstructed view of all but the northernmost parts of the island, and from here, along with Battery Jussac, most landing points can be monitored. The nearby islands of St. Kitts and Saba are also in view, along with St. Barthelemy on clear days or with a field-glass.

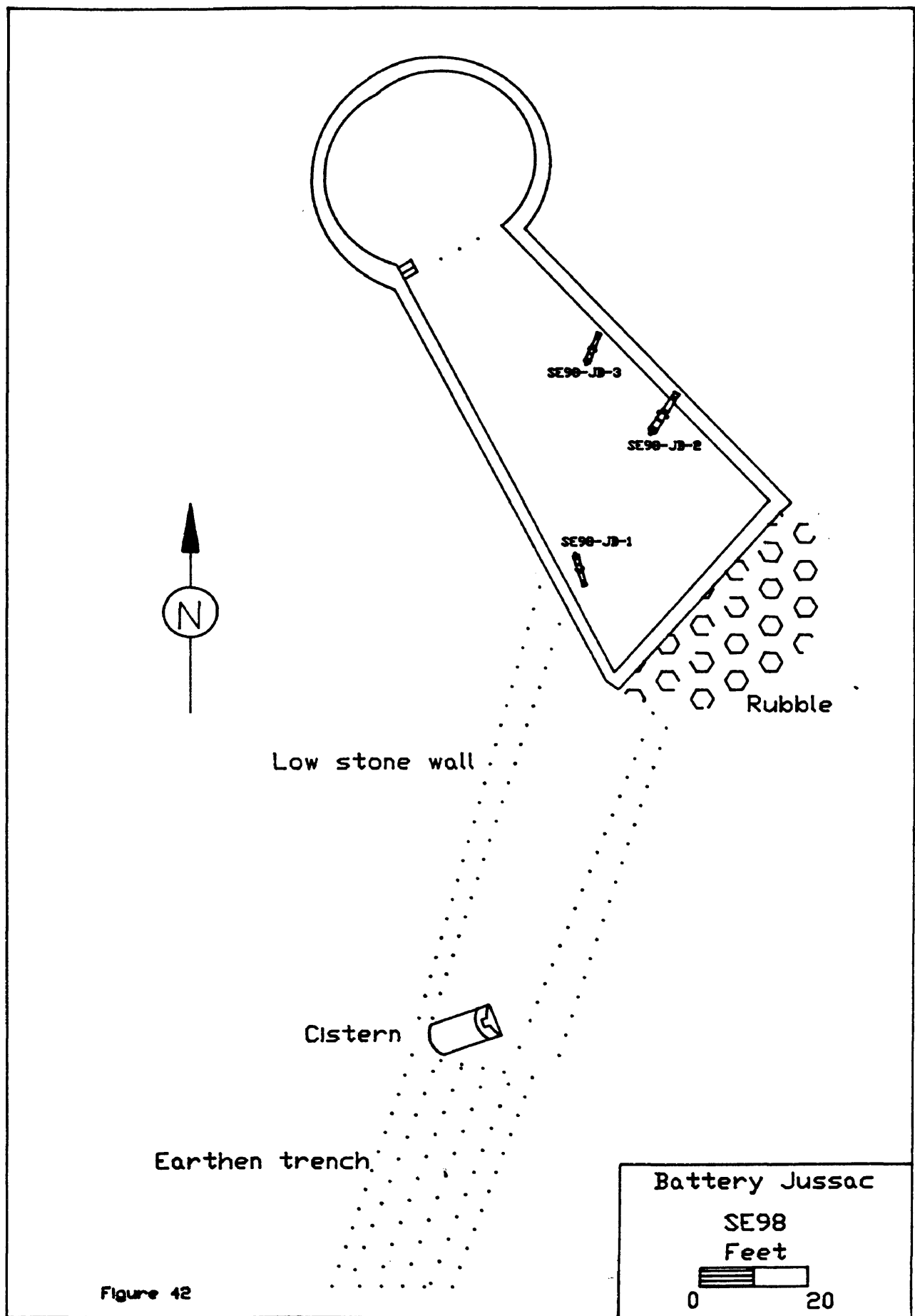
Communication with Panga from the Upper Town would not have been extremely difficult. Sound carries well up to the post. During mapping music could be clearly heard coming from Concordia where Carnival bands practiced. Signaling by musket or small cannon fire would certainly have been heard by the garrison.

Battery Jussac SE98**Cul-de-Sac, Redoutte**

Battery Jussac probably correctly belongs to Fort Panga, as a detached bastion or redoubt. Its connection to Panga by the trench and its apparent lack of separate barracks all suggest Jussac was an extension of the Panga fortification complex. However, it appears on most maps as a battery apart from Panga, and so will be thusly described.

"Batterie de Jussac" first appears along with Fort Panga on the post-1781 French map (Figure 8). Jussac's Battery is also on Faden's 1795 version (Figure 9). In 1830 it is called "Redoute, aux Bombes", presumably as a part of "la Digie" (Fort Panga) (Figure 10). By 1840 it is a "vervallen" battery under the name of "Cul de Sac". The 1847 copy also reflects this (Figures 11 and 12).

The battery on the tip of Cul de Sac is irregular in form, and was probably engineered to follow the contours of the natural hill-top. Its elevation is 689 feet (Cadastral Survey), or 1,150 feet according to an early sketch (Figure 13). That document also gives it as 7,800 feet from Fort Oranje. It has a rounded front, flanked on either side by walls (Figure 42). The parapet stands up to 3 feet high from the interior of the rounded end, and up to 3.5 feet wide. The



wall stands lower on the straight parapets.

As at Panga, the battery platform is built up upon the natural surface with stone, placed to present a faced surface. The resulting outer wall has a maximum height of approximately 7.5 feet, on the northwest side. The height from the exterior ground surface to the floor level would measure about 4.5 feet.

The walls are constructed of stone and mortar. Exposed faces were carefully laid to present a flat surface, but in general the stones were unworked. Large stones were employed, and up to 4 courses remain along the northwestern wall. The southwestern wall has more courses, but utilizes much smaller stones in the upper portions. This wall also contains a water drain, built into the masonry. It measures 3 inches wide by 7.5 inches high. It runs from the floor of the battery to the exterior of the work.

Within the battery, there are two distinct floor levels. The rounded bastion area is sunken a few inches below the rectangular rear section of the battery, with two stone steps along the south wall. Both floors had exposed areas of stone pavement, and it is suspected this covered the entire interior. This assumption was not confirmed through testing.

The origin of Jussac, like Panga, is not known with certainty. Although attributed to the French, it may well have a Dutch predecessor. At least two periods of wall construction are clearly represented. On the southwestern wall, the parapet was raised at some point in time. The original parapet stood at about 1.5 feet high from the interior (if the present floor is contemporaneous to the older wall). It was cement capped as seen at several other batteries on the island. During a renovation this parapet was raised another 1.5 feet for a new interior wall height of 3 feet (Figure 43).

Three cannon were inventoried at Battery Jussac (SE98-JB-1,2, and 3), and a fourth was found between Jussac and Panga on the southern face of the southern breastwork (SE97/98-Trench-1). At Jussac two were identical to those at Panga, probably 6 pounders. The third was perhaps an 18 pounder, but was not of a uniform bore size. The trench gun was identical to the two at Jussac and those of Panga.

No barracks or other foundations were located near Battery Jussac, nor did any appear on the early sketch. There was a cistern approximately 100 feet southwest of the battery, which did not appear on the sketch. This feature was not surveyed in the 1990 project. The 1981 island survey sufficiently recorded the cistern for the purposes of this work. It is a typical domed yellow brick structure approximately 11.5 feet long by

6.5 feet wide. The distance from the base of the cistern to the crest of the dome is about 8.2 feet. Surrounding the cistern is a low stone and mortar wall, some .8 of a foot wide, and about 26 by 27 feet on either side. This wall serves as a terrace upon which the cistern rests (Haviser fieldnotes 1981).

As with Fort Panga, Battery Jussac probably had more emphasis on observation than actual defense. Its placement on the more northern tip of the mountain allows it a view of those areas not clearly observable from Panga. These include the valley leading down to Tumble Down Dick Bay and the battery, as well as the northern mountains of the island and nearby Saba.

Battery Concordia SE81**Fort Amsterdam**

Another of the batteries attributed to de Windt by Hartog is Battery Concordia (1976:27). Now commonly called Fort Amsterdam, this site was partially excavated for restoration purposes during the 1990 field season by the William and Mary field school. A report of this undertaking was prepared by Dr. Norman F. Barka, Department of Anthropology, The College of William and Mary.

This defense is situated at the end of the present airstrip, on the cliff above Bargine Bay. The area of the bay in general could be considered a prime landing site for an invading army. The shore is reasonably clear of obstacles such as protruding off-shore reefs, and the cliffs here are considerably less high than several other sites. Easy access to the Cultivation Plain and the Upper Town are afforded at sites such as Zeelandia, Smith's Gut, and smaller guts along the coastline. Among the drawbacks for landing along this beach are the rough waves, and stiff winds, making for difficult anchorage on the Atlantic side of the island. Landings in this area could also be readily detected foiling most attempts at surprise.

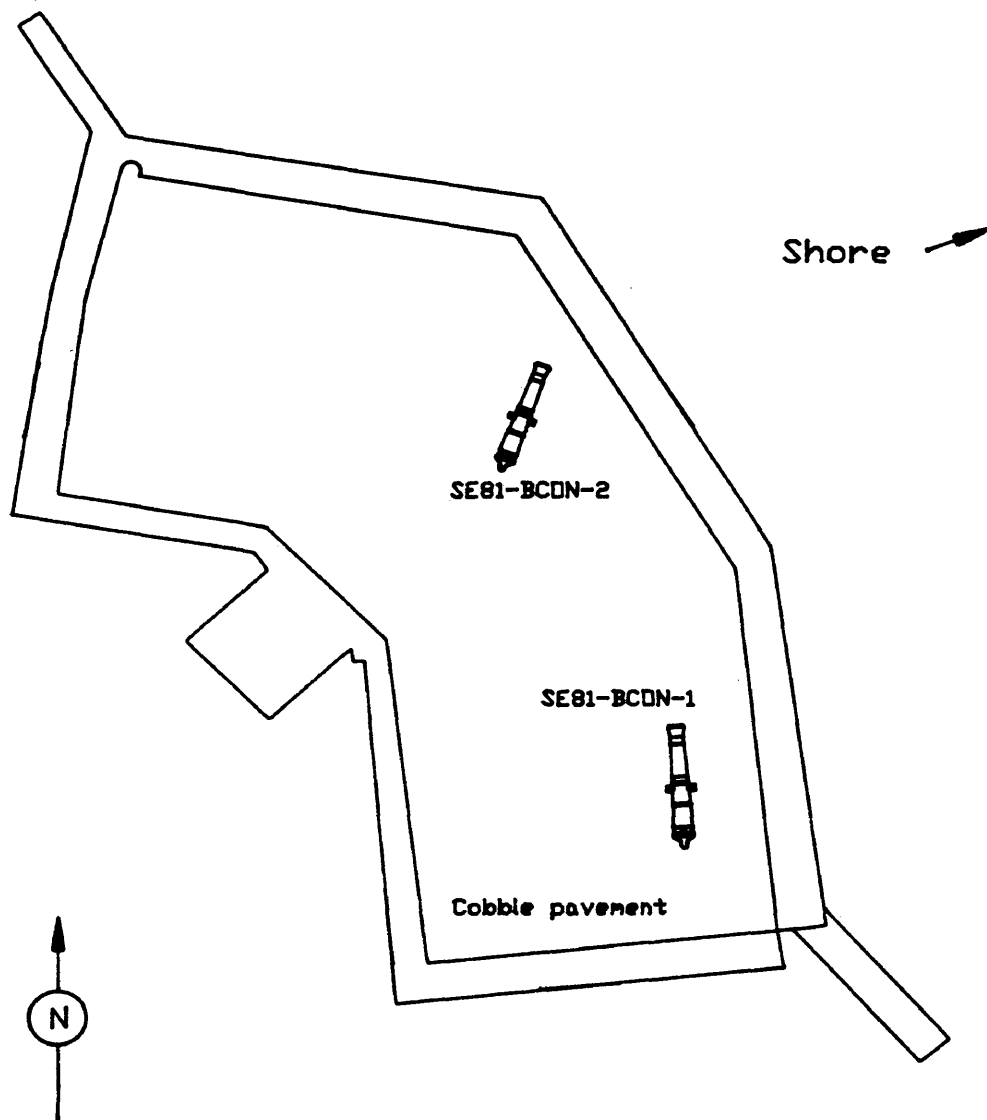
If Concordia was in fact among de Windt's projects, it was

almost certainly completely rebuilt by the British in 1781. Records from the trial of Cockburne indicate the British did construct a battery here after their arrival.

The battery is of faced stone and mortar, with an overall interior cobble pavement (Figures 44 and 45). Cement footings were laid, and the low parapet was protected with a soil embankment. This feature was added for additional protection against incoming shells. Much of it has disappeared through aeolian erosion, especially on the southeast section and part of the central section. It was best represented on the northwest section. Large stones were placed under the embankment as a fill.

Although somewhat irregular in plan, the battery is laid out in angular fashion common to the late 3rd and 4th quarter of the 18th century. It has three main sections with an open back. Two low wings had been added to either end. The northwest wing was sloped downward from the wall out, and cement capped. The southeast wing also got progressively shorter from the wall outward, but not in the continuous slope as its opposite.

The parapet, of faced volcanic stone and mortar, was capped with cement. This sloped towards the exterior, creating a wall of an average of 15 inch height on the outside and 29.5



Battery Concordia SE81

(Fort Amsterdam)

Feet



Figure 44

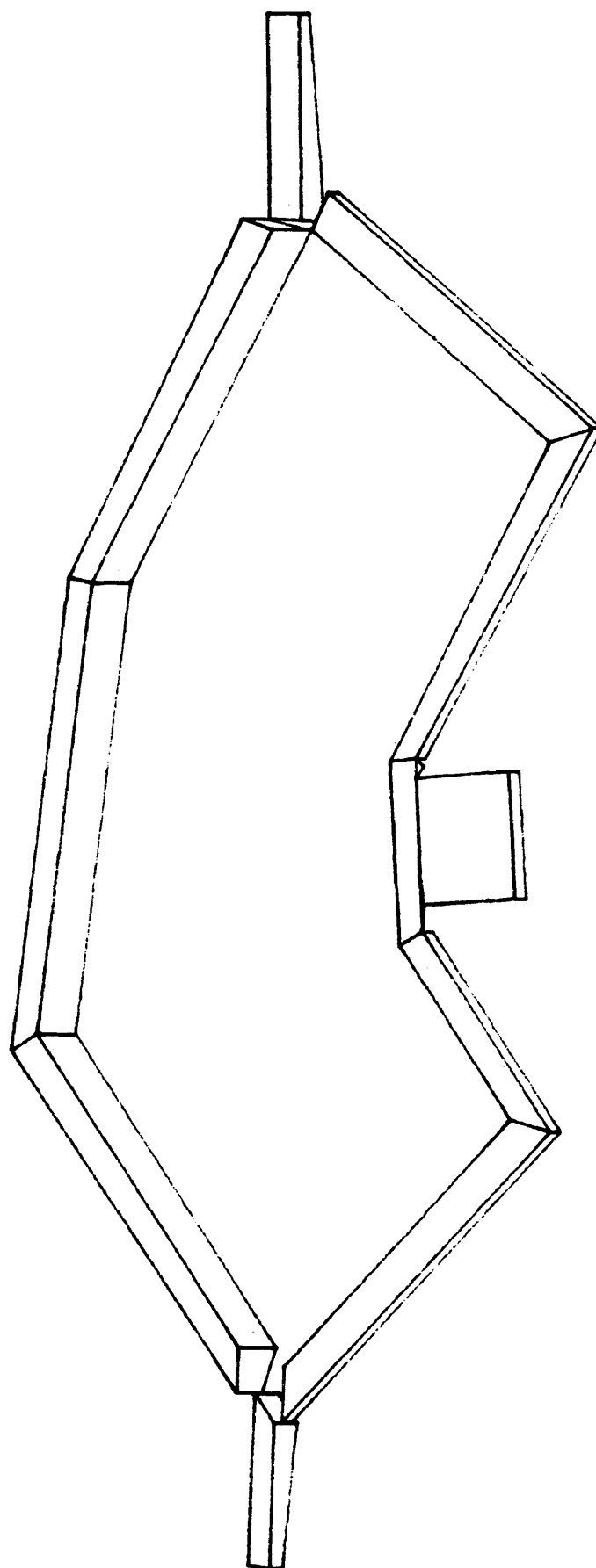
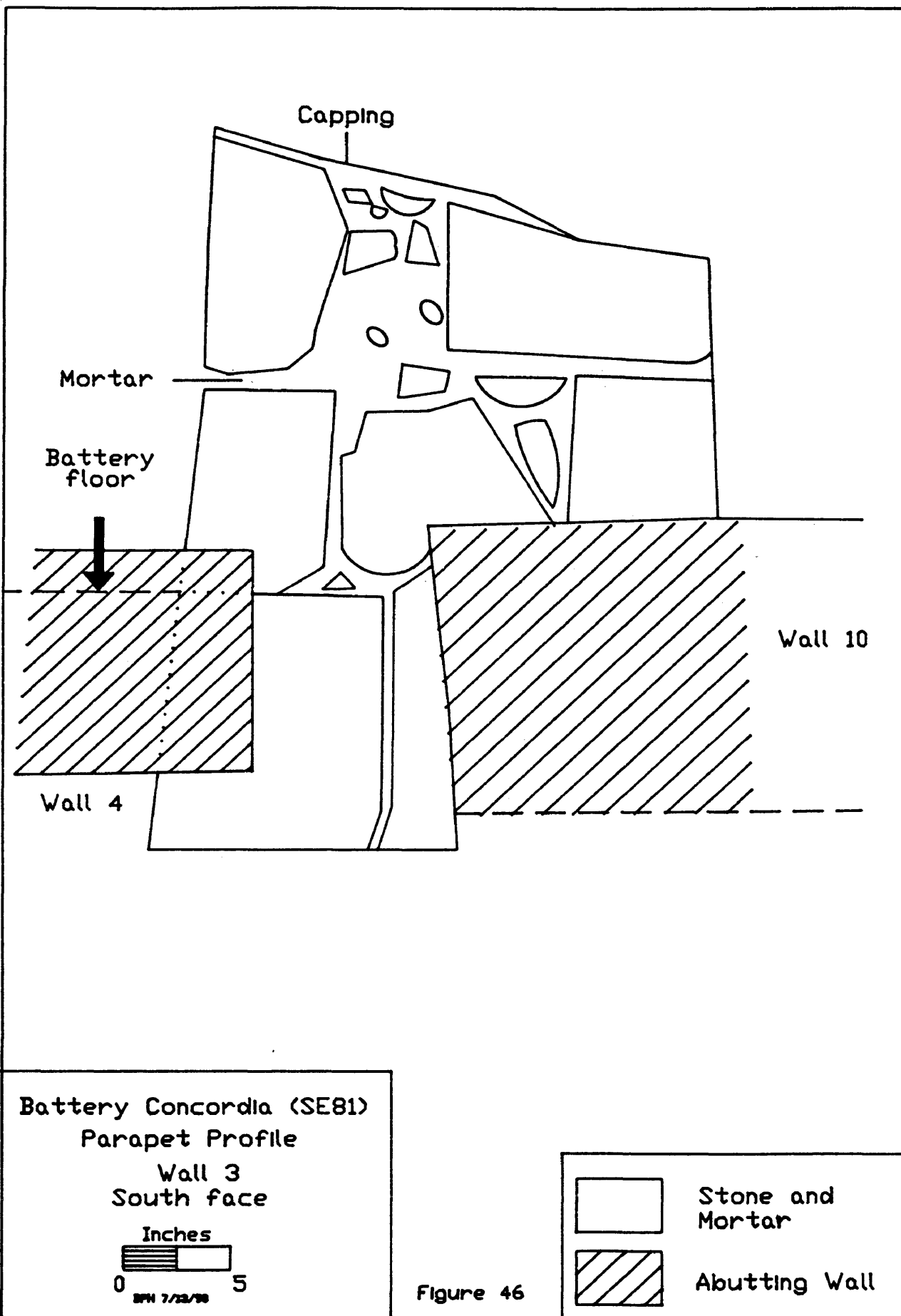


Figure 45
Three dimensional view of
Battery Concordia SE81
(Fort Amsterdam)
looking towards Atlantic Ocean

inches high on the interior at the eastern end. The wall width was some 28 inches here (Figure 46). A narrow drainage trough for the interior floor was located along the rear northwestern side, by the wing and wall section. It measured .25 feet deep and wide, in a V or U shape.

At the rear of the battery is a square pad, measuring 5.9 by 5.65 feet. Similar to the flooring, it was stone paved. The center had been disturbed, possibly as the result of a local legend that it was a cellar roof. Excavation of the interior of the feature found it to be filled with rubble and soil. Fragments of a porcelain bowl were mixed in the soil. Clearing from the exterior, where the long trench began, found it to be formed in two courses of large mortared stone blocks, with a footing. Although no evidence for the function or purpose of this feature was found, it may have been a mortar platform. This assumption is based solely on its shape and size, both of which conform to small mortar platform dimensions. With the beach below the fort, safe from the direct fire of the large guns, a mortar would have been a prudent addition to the armament of this battery.

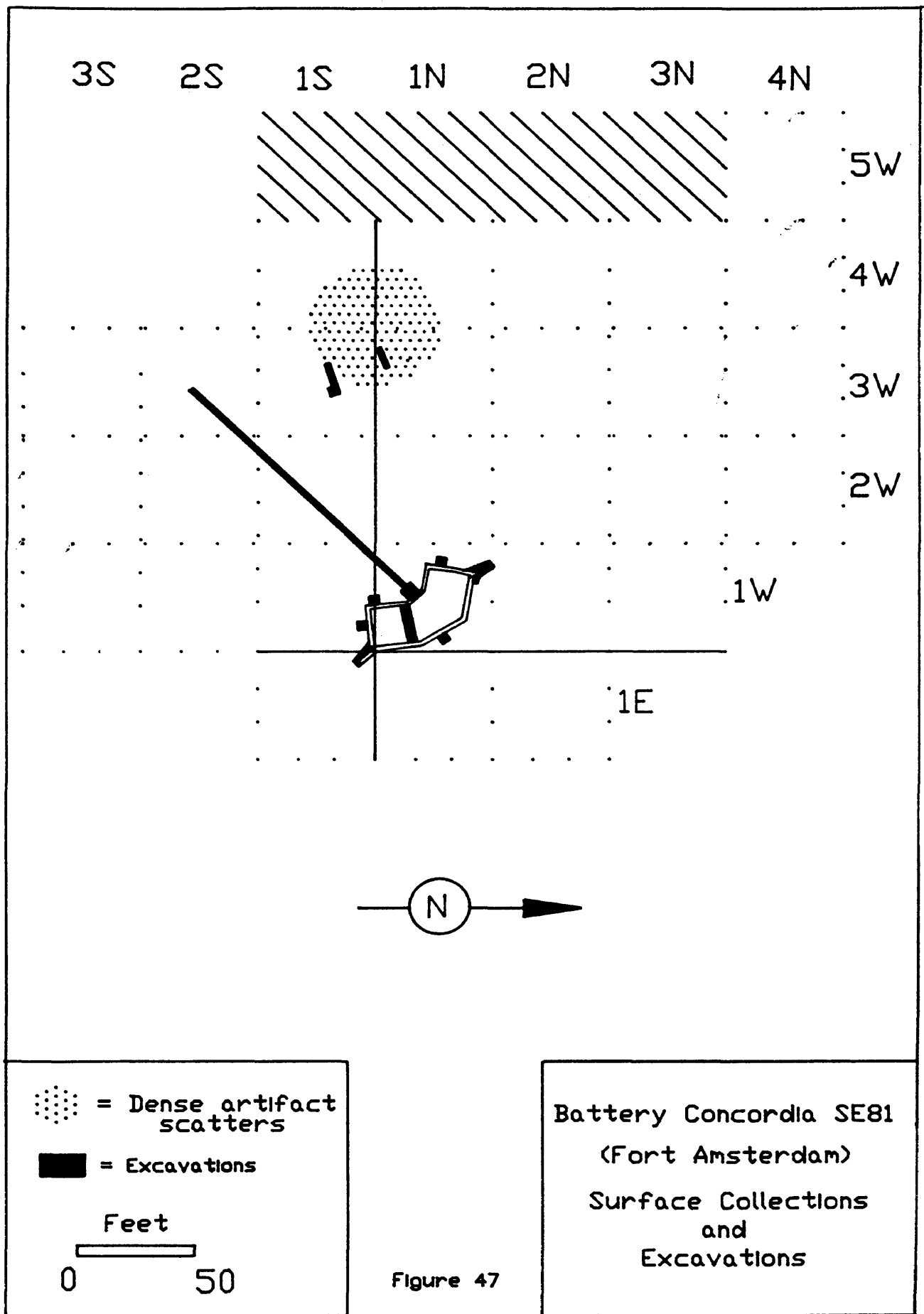
No inventories have been located that detail the site. One late 18th or early 19 century plan exists for a "Fort Amsterdam", but that is the present Waterfort. How Battery Concordia came to be called Fort Amsterdam on modern maps is

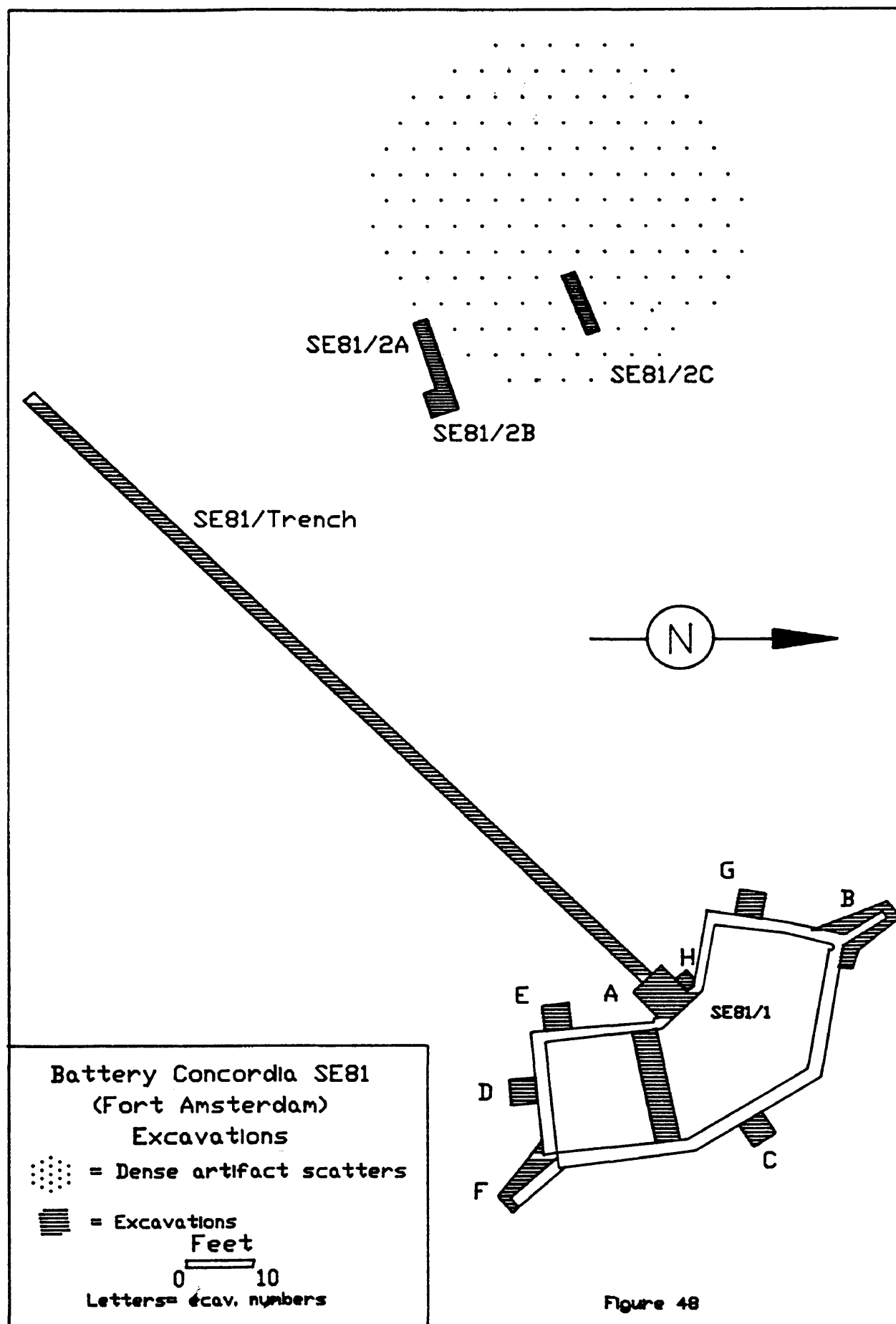


unknown. Historic maps of the island show a barracks behind the battery, and this was tested for during excavations. A surface collection was undertaken prior to the arrival of the field crew at the site, which revealed artifact clusters suspected to be associated with the barracks (Figure 47).

A 130 feet long trench was dug perpendicular to the battery in search of the barracks, which would intersect the area indicated on the maps. This effort revealed no definite traces of the barracks, although two areas were encountered with stone. Clearing of these found them to be isolated and not apparently foundations, even though one section had mortar with the stone. Only a few isolated artifacts were turned up in the trench. Test excavations dug near areas identified through the prior surface collection revealed a hard-packed earth surface with abundant artifacts (Figure 48). Numerous domestic artifacts were found, as well as large numbers of cut bone. Full analysis of the artifacts collected at SE81 could not be undertaken in 1990, and they are stored in the field school laboratory on St. Eustatius. A small number of artifacts were returned to the College of William and Mary for conservation.

An abbreviated listing of some of the domestic objects located include fragments of green wine bottles, creamware, pearlware, salt-glaze stoneware, delft, earthenwares, annular





ware, kaolin pipestems and bowl fragments, blue 'slave' beads and fragments, bone buttons (including bone blanks with buttons removed from them, indicating on site manufacture), brass buttons, clear glass, porcelain, and a brass Jew's harp. A large square worked stone was also found and collected. In its center was a semi-spherical concavity, possibly a door swivel base.

At least one probable prehistoric artifact was also located during the surface collection. It was a hand grinding stone (mano) with a definite work surface. A few small lithic flakes were also found, but could be either prehistoric debitage or from a gun flint. The Cultivation Plain is known to contain several prehistoric sites (Versteeg and Effert 1987).

Military items were also located at the site. Among this group were two regimental buttons, one of the 15th British Regiment of Foot (The East Yorkshire Regiment) and one of an undetermined 90th regiment (Figure 38). The 15th regiment was left along with the 13th to garrison the island between February and November 1781. The button has a script "15" within a rope border. It is made of pewter, and had an iron shank, now missing.

The 90th regimental button is most likely British,

although it is a style of both French and British use. The British did have at least some members of the 90th at St. Eustatius in 1781. Lieutenant Charles Forrest of that regiment engraved a depiction of the island as it appeared on April 13, 1781 and gave it to the Prince of Wales (see Hartog 1976:141). The two-piece brass button has a double loop shank. Although the British had members of the 90th on the island in 1781 this button may also be later in date.

Another button fragment may be that of a British officer. It has traces of gold plating, and a design similar to those known to have been worn by officers of some of the regiments present. It was too fragmentary for an accurate assessment in the field, and was returned, along with the other military buttons, to William and Mary for conservation.

One musket part was collected during the surface survey. This fragmented brass object proved to be part of a side-plate from a British Brown Bess musket, probably the First Model Land Pattern. The first model would have likely have been carried by most British troops serving in the American Revolution, and this artifact may be from the British occupation of 1781. Also found relating to such small arms were fragments of gun-flints, though of the amber color most often attributed to French origins.

Two cannon (SE81-BC-1 and 2) were still present at Battery Concordia. Both suffer from extreme deterioration due to their constant exposure to the Atlantic winds and sea salts. One cannon had both the cascable and trunnions knocked off. This was a common practice prior to salvage, to facilitate rolling the barrel. This could also be explained by the weak nature of the iron, however. This piece was a classic naval gun with a very large breech proportional to the length, and limited flaring of the muzzle. It is possibly a British 9 pounder. The second piece had a bore presently measuring between a 3 and 4 pounder. Both bores were difficult to assess accurately due to corrosion and flaking of the metal.

Battery at Turtle Bay

Schildpadden Baai

A battery is said to have been built at "Turtle Bay" by Commander Jan de Windt in Hartog (1976:27). No traces of a battery were located at this bay (Schildpadden Baai). It may be that many of the smaller batteries de Windt are credited with by Hartog were insubstantial works, possibly earthen entrenchments. Only later were some rebuilt into the batteries of the 4th quarter of the century. If this is not the case, this battery may be that which would become Concordia, which is located very near to Turtle Bay. Other possibilities include it being a proposed defense never constructed, a site which has simply never been located, or one which has been totally destroyed, such as occurred to Four-Gun Battery.

Battery St. Louis SE44**Battery Lucie**

Battery St. Louis is situated on the north cliff above Compagnie Bay (Figure 5). It is at an estimated elevation of 90 feet above the shore. The remains are extremely disturbed from erosional forces.

Battery "Lucie" may have been first begun by Commander de Windt just after the mid 18th century (Hartog 1976:27). As with Battery Corre Corre it does not appear on any pre-1781 Dutch fortification list currently known. Post-1781 listings do not offer details nor itemized inventories.

The first occurrence of this defense on maps is that of the circa 1781 French version, where it is listed in the legend (Figure 8). It likewise appears in Faden's map for the Marquis de Bouille in 1795, and again in the 1830 map (Figures 9 and 10). Both maps of the 1840's mark the site as St. Lucie and call it "vervallen" (Figures 11 and 12).

If St. Louis battery did pre-date the 1780's, it may have been rebuilt in 1781. The architectural style follows that attributed to the British and French occupiers of 1781, as seen at Battery Bouille and Concordia. The different appearances of Corre Corre and St. Louis might be explained by

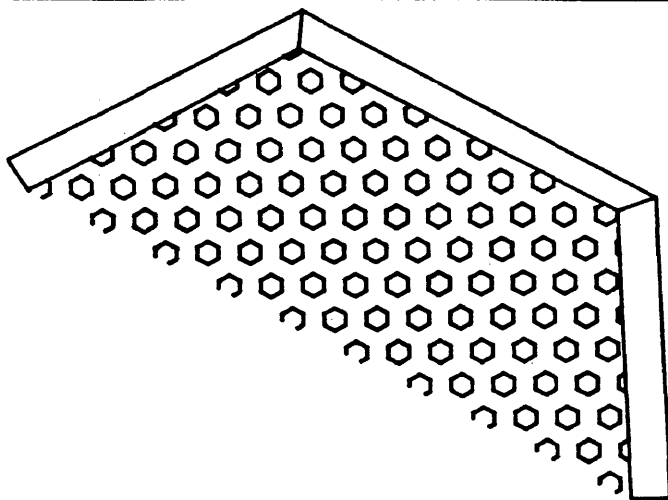
cultural or temporal differences, with the more regular ground plan of the latter common to the 1780's fortifications.

The battery was built from cobble and mortar, with exposed stone roughly faced or placed so as to give a faced appearance. Although by 1990 the ruins were extremely disturbed, combined with a 1981 sketch, it appears that the battery had a plan very much like Battery Bouille, three walls with an open posterior (Figure 49). Remnants of the flooring were present. The battery apparently had the entire interior paved with stone and mortar.

The walls of St. Louis have all fallen, and erosion has moved several sections downslope (Figure 50). Similarly, the original floor of the battery has been eroded into a series of small depressions and humps.

Fallen wall sections measured an average of 2.4 feet in width and up to 2.9 feet high. The original parapet height could not be determined, but is estimated to have been in the vicinity of 2.5 feet, to account for footing depth. No clear indications of embrasures were evident.

No structural remains of the barracks were found. A heavy artifact scatter was located southeast of the battery which may be related to the garrison's quarters. Several stoneware



Compagnie Bay
and cliff edge



Representational Reconstruction

Battery St. Louis SE44

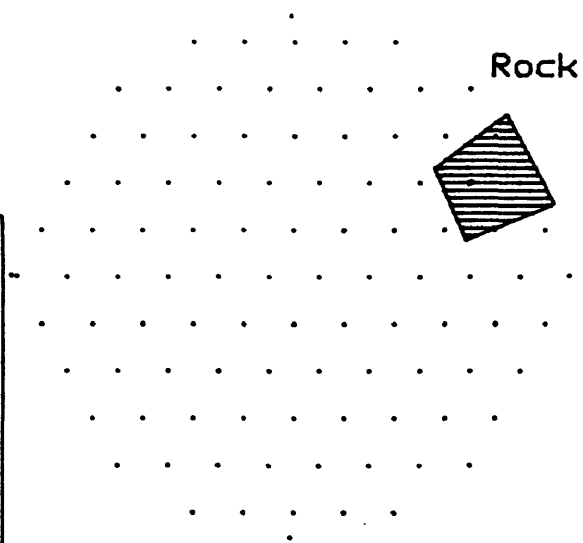


= Cobble floor



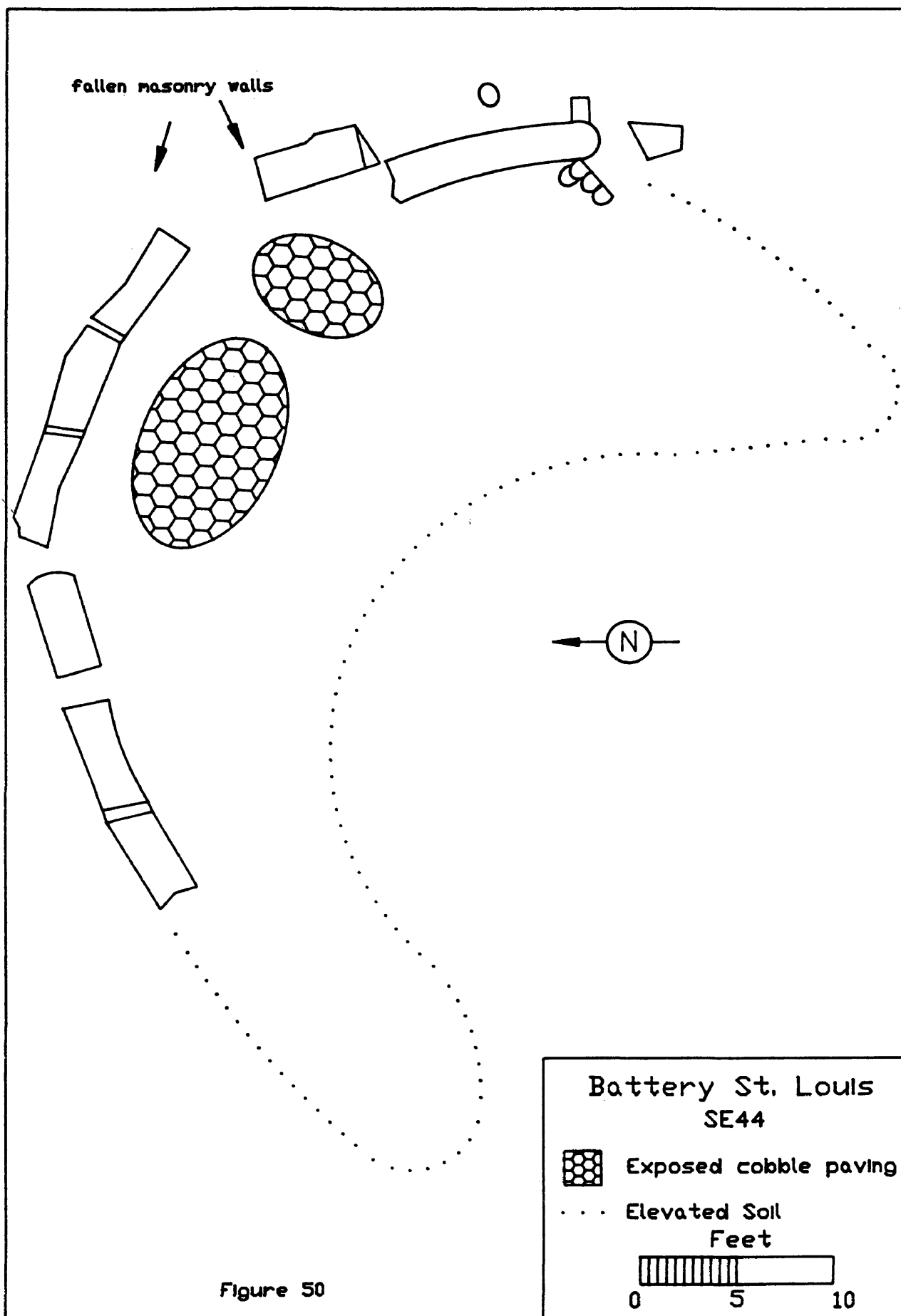
= Artifact scatter

Feet



Rock

Figure 49



bottle fragments were noted, along with kaolin pipe stems and bowl fragments, green glass, and creamware shards. An artifact collection was not undertaken at this site. Fieldnotes from a 1981 visit included these artifact types in addition to overglaze porcelain, delft, Buckley ware, and three cut building stones (Haviser fieldnotes 1981).

No cannon were located during surveys in 1990 or 1981. The site listing in Barka (1985:59) mentions two cannon and a 1.5 feet high parapet at SE44, listed as "possibly St. Louis battery". The cannon and parapet description accurately describe SE81, Battery Concordia, which is located a short distance northward along the coast, and it is assumed that SE81 is described in the text for SE44.

The placement of a battery at this site may not have been for the purpose of warding off enemy troop landings. The cliffs at Compagnie Bay are high and steep, and would likely be the cause of heavy casualties in an attempt to scale them. The battery could check ships from anchoring in the bay and sending boats in either direction to more reasonable landing sites. In addition, it was centrally located between Concordia and Corre Corre and might be of use in the conveyance of messages and signals.

Battery Corre Corre SE27

The battery on Corre Corre Bay may have been in existence as early as the mid 18th century. It is possible that it was among the fortification projects enacted by de Windt in the 1750's (Hartog 1976:27). It was refortified in 1781, first by the British and followed soon after by the French.

The battery is on a small hill at the southeastern end of Corre Corre Bay. It is an estimated 30 feet above the beach. Here the coral reef ends, creating a clear approach from the Atlantic side to the beach. Access to the island from the beach is not difficult, and the ascent is up a low gentle slope. Troops landing here would have few difficulties disembarking and climbing above the beach once the boats had reached shore. The only obstacles would be vegetation and the distance overland to the town, but maps of plantations in the area show some roads would have been available by at least 1742.

In the water, beach access at Corre Corre is hampered by wind, currents, and coral. The Atlantic side often experiences strong winds, and the result is large waves. The same phenomena cause fairly strong currents, which would hamper both long boats and the stable anchoring of troop ships disembarking large landing forces. Once this had been

accomplished landing crafts would have to safely skirt the coral reefs in the area before beaching.

The site has both merits and detractors as an assault head. It is secluded, enabling a landing with a minimum of observance, but at the same time necessitating an overland march to reach the Fort (though much easier than the French route of 1781). It also allows access to the Upper Town without having to climb steep embankments or cliffs as at Jenkin's Bay or Oranje Bay, but only after traversing a perilous approach to shore.

Corre Corre Battery, like Fort de Windt, has a view of St. Kitts, and would be useful as an observation post. The wind and current patterns normally caused ships to pass to the east of this battery, towards de Windt, and not up this coastline when coming from the vicinity of St. Kitts.

Inventory records cited in the literature seldom refer to this battery. Although it may have been in existence from at least the 1750's according to Hartog, it does not appear in the Dutch inventories or listings of 1753, 1755, 1776, or 1780. In 1784 Commander Oyen stated that 14 small batteries had been constructed during the British and French occupations. Whether this number includes renovations of former batteries is unknown, but after this time Corre Corre

is mentioned as having a battery. This work was likely abandoned along with the others by 1816, if not before.

Battery Corre Corre initially appears on maps beginning with the circa 1781 French version, as number 7 in the legend, "Batterie de Couroucourou Baye" (Figure 8). The 1795 map indicates the battery, but does not name it (Figure 9). It is named under letter K as "Curry-Curry" in 1830 (Figure 10). By circa 1840 it is called the "vervallen" Curry-Curry battery, as does it appear in circa 1847 (Figures 11 and 12).

Corre Corre (Figure 51) was constructed of cobble, mortared together to form a wall approximately 1.5 to 1.9 feet wide. Erosion has tumbled the low parapet, but surviving remnants stood at least 1.5 feet high on the exterior, and 1.1 feet on the interior. The wall probably originally stood around 1.5 feet high from the interior floor. The wall forms an arc, terminating at both ends with concrete footings at near 90 degree angles to the abutting wall. Heavy vegetation made investigations directly behind the battery impossible. The concrete footings disappeared into a soil covering before reaching the vegetation, but from probing did not appear to extend into the brush. A sketch made in 1981 shows a small platform at the front of the battery, which had, by 1990, mostly fallen away.

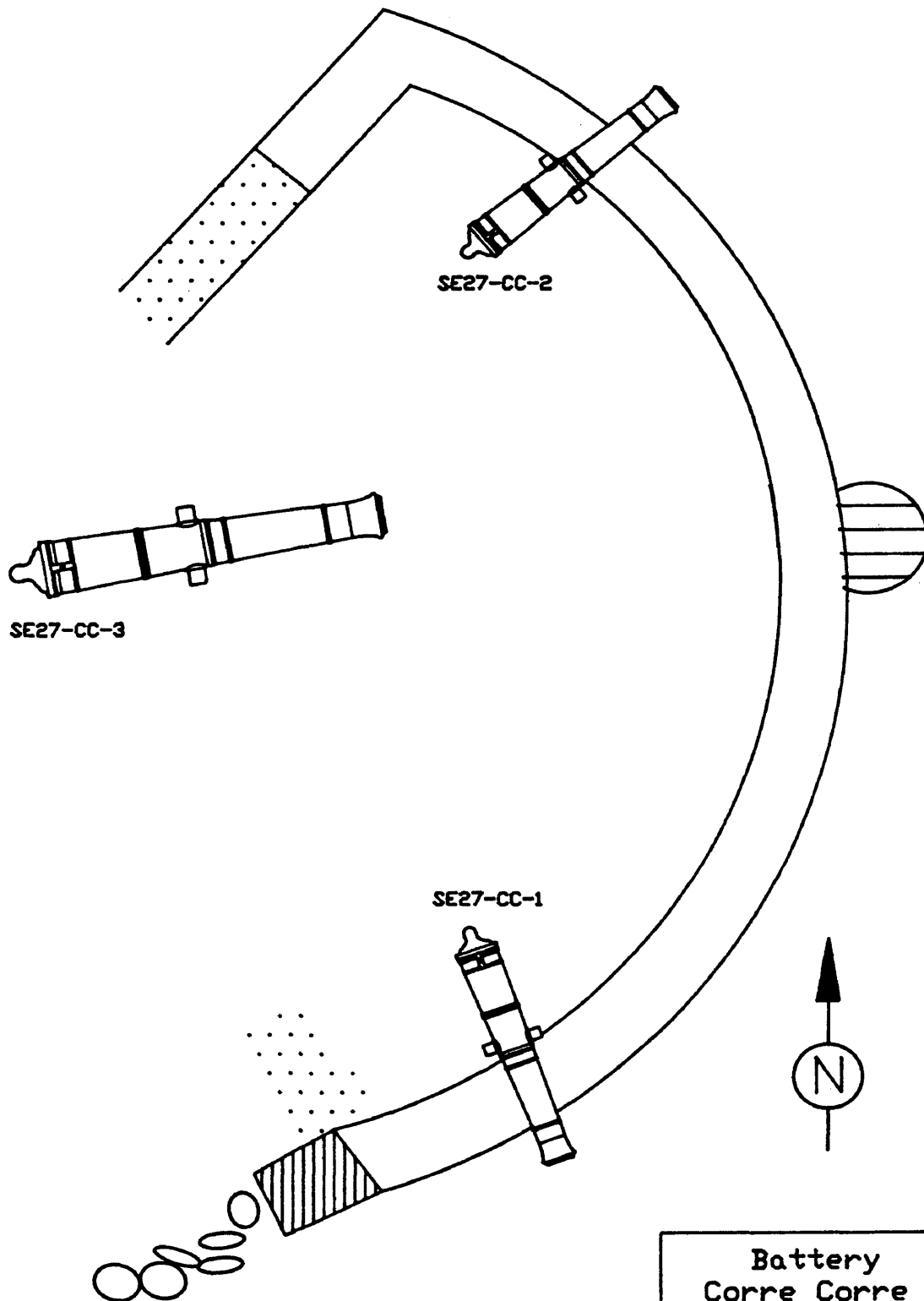
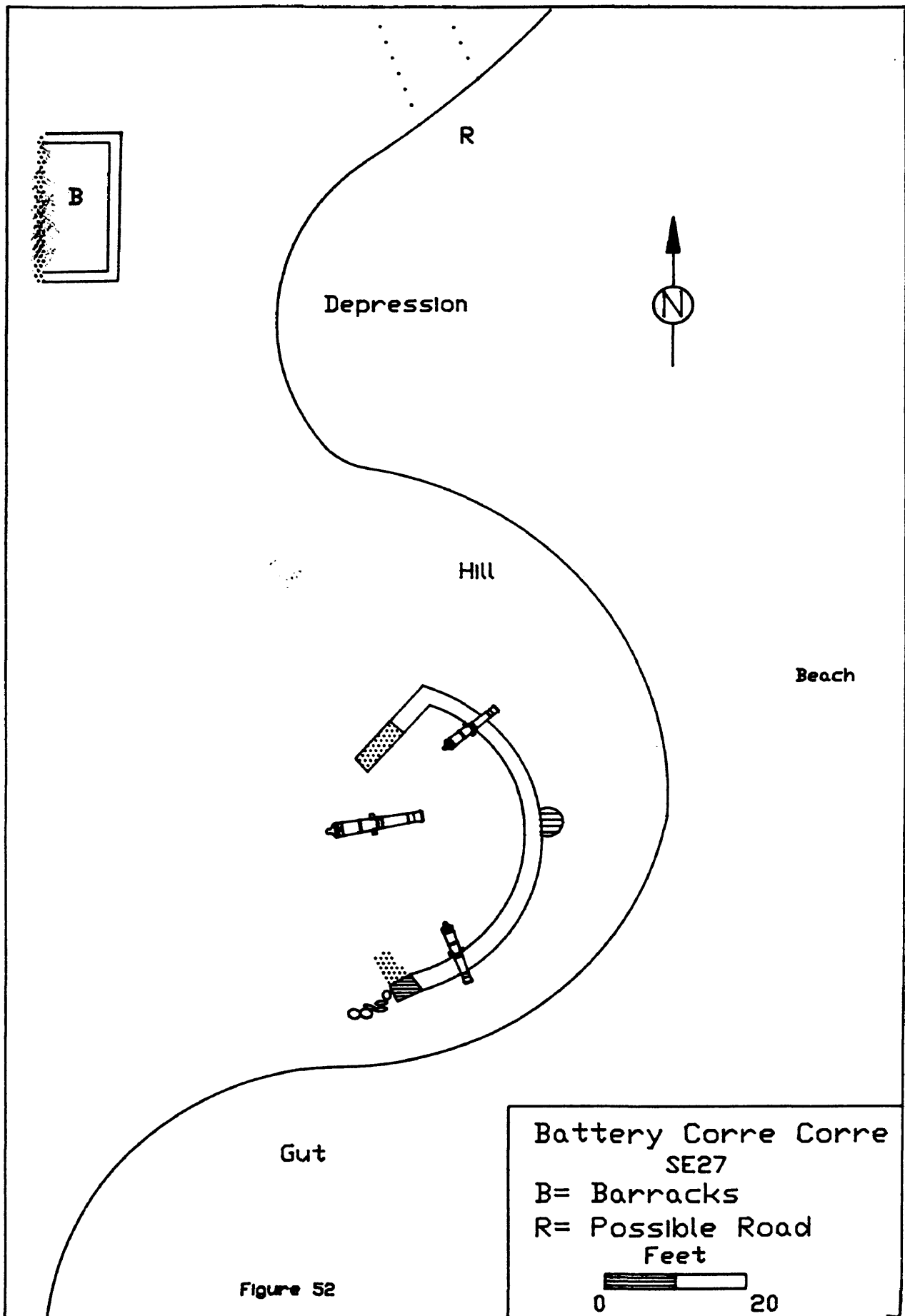


Figure 51

Approximately 50 feet to the northwest of the battery were the foundations of what probably served as the garrison barracks (Figure 52). The concrete foundations indicate a rectangular building some 15 feet long (shore face) by 7 or more feet wide. The remains stand some .5 to .7 of a foot high, and are from approximately .8 to 1 foot thick. Soil covered the island side of the foundations. This feature is situated in a depression caused by two low flanking hills. An eroded road segment was on the hill in front of the structure, to the north.

Artifacts located around the barracks included ceramic shards of a stoneware bottle, creamware plates, and lead glazed red earthenware. One flint flake was discovered, although its association is unknown as a possible prehistoric site lies to the north along the coast. The battery contains three cannon, SE27-CC-1,2, and 3. These represent a 12 pounder, a 6 pounder, and a 4 pounder, although the bores were deteriorated and the last two designations are somewhat tentative.

Artifacts found in 1981 were more abundant for this site. Haviser noted the following items were collected: "a slave 'blue-bead', a button of brass '76', a belt buckle, a gunflint, creamware, pearlware, olive jar, porcelain, green glass, stoneware, and kaolin pipestems" (fieldnotes 1981).



Fort Tietchy

Fort Tietchy is an elusive battery. It is mentioned by this name in a few records but little else is known concerning it. The site (if it is in fact an independent site) was not located during the 1990 survey.

The earliest reference to this battery indicates it was built by Jan de Windt at the time Fort de Windt was upgraded from earthen entrenchments (Hartog 1976:27). It is said to have been an open backed work, like the majority of the island's batteries (Hartog 1976:27).

A map in the St. Eustatius Historical Foundation Museum places Fort Tietchy above Gallows Bay, on the southern end of Oranje Bay, between Battery Bouille and the Fort. Here it is dated to the "late 18th century". The area indicated would suggest a site in the vicinity of the heights above the above Crook's Castle or the present Large ("Fishing") Pier. Inquiries were unable to determine the origin of the museum map, or details to support its accuracy.

Fort Tietchy is mentioned in the 1780 inspection by C. de Jong. Attema (1976:41) states this is the only occurrence of "Tietchy" in the records, although Hartog indicates mention was made by de Windt or someone in his administration. De Jong

listed 10 cannon at Tietchy, "which were so bad that ten others would be needed before they would be of any use" (Attema 1976:41, from de Jong 1807:112).

The main question concerning Tietchy is whether it was a separate battery, or merely a corruption of the name of an existing battery. One author suggests the latter, noting that Tommelendijk (Tumble Down Dick) had 10 cannon in 1776, and the two may be the same (Attema 1976:41). An inhabitant of the island suggested it may have been Four-Gun Battery, but he was uncertain (Lampe, personal communication, 1990).

Another possibility is some rubble noted during the Battery Nassau survey. From the cliff edge, remains of masonry could be seen in the surf to the northwest of the battery. These were inspected more closely and found to consist of mortared cobbles. There was some resemblance to the large battery walls of Rotterdam, but the origin of these displaced ruins were not discovered. Examination of the cliff above revealed no conclusive evidence.

On the beach near Gallows Bay, north of the rubble, a gut was located with a stone and mortar pavement leading to the beach. Although this is not suspected to be related to the forts, it may have been the area Rodney mentioned was used for careening ships (barnacle removal and hull repair). It would

not be unusual to have a battery above such a place, for this would indicate ships could beach there.

Finally, if Tietchy was between Bouille and Oranje, it may have fallen over the cliff edge, or have been completely scavenged. This would not be unusual as the total disappearance of Four-Gun Battery demonstrates.

The question of Fort Tietchy remains an open one. No fortification works were located that could be directly linked to Tietchy, nor were any records or documents found that cleared up the matter. Its brevity in the records may indicate this was only a temporary battery, or that in fact the name "Tietchy" was a corruption of the name of another defensive work.

Four-Gun Battery

Battery Bourbon

Four-Gun battery or Battery Bourbon, was a small open backed battery similar to Bouille. It was placed on the cliff above the Lower Town, where two cemeteries now rest. Most maps place it east of where the present road curves to go down to the Lower Town. From this position it could supplement the guns of the Fort in protecting the Bay and Lower Town.

Four-gun Battery probably originated as a British emplacement in 1781. The French subsequently reoccupied the position, and assumedly are responsible for its new moniker of "Bourbon".

The first appearance of the site on maps is with the French cartographic work made after their arrival in 1781 (Figure 8, "13. Batterie de Bourbon"). Faden's map also shows "Bourbon's Battery" (Figure 9). On the 1830 map it is called "Four-gun Batterie" (letter B, Figure 10). The circa 1840 and 1847 maps prefer to allow the name to suffice with a "vervallen battery" indication (Figures 11 and 12).

Four-gun Battery was not able to be mapped in 1990: it no longer exists. According to Mr. Franz Lampe, a descendant of 18th century colonists to St. Eustatius, the last remains of

the parapet fell over the cliff in 1989, and were broken apart and scavenged by island residents for building material (personal communication, 1990). A search of the talus slope below proved fruitless.

The walls, he stated, similar in plan to Bouille, were constructed from faced stone, brick, and mortar. The last wall to survive may have been 8 to 10 feet long. The battery was also on the 19th century field sketches Mr. Lampe provided (Figure 13). It states an elevation of 95 feet, and a distance of 1440 feet from Fort Orange. A small structure is indicated to the southeast of the battery.

Battery Cochan, Jenkin's Bay

Battery Cochan was not surveyed during the 1990 field season. An employee at the oil terminal discouraged attempting an overland approach to the site, as it lies at the base of steep cliffs in rough terrain. Safe access is best achieved by boat.

Most references in the literature suggest this battery was built around 1781 by the French. This is where they landed, climbing the cliffs in the night, and marching overland to capture the island the following morning.

The battery is mentioned on some post-1781 maps, although others simply denote Jenkin's Bay as the site of the French landing without specific mention of a battery there. The earliest such map, the circa 1781-1784 French map (Figure 8) lists "Jenkis Baye, ou les Francois one debarque en 1781" as number 10 in the legend. No mention is made of a battery. A similar treatment is afforded the site in the Marquis de Bouille's 1795 map by William Faden (Figure 9). This rendition also indicates the route of the French into Oranjestad.

The battery is not mentioned by name on those maps currently known, until 1830. At this date it appears in the legend of Samuel Falsberg's map under letter "L", as "Batterie

Cochon (le De'barquement Francais l'an 1781)" (Figure 10). On the circa 1840 map (Figure 11) it is marked, but not by name, and now is listed as a "Vervallen battery" (in ruins) as are all except Fort Oranje. This designation is mimicked in the 1847 copy of this map (Figure 12).

Evidence for the origin of this battery from the maps does not appear until the early 19th century. Documentary evidence, however, mentions this defense as early as 1785. Upon the return of the island to the Dutch, reports were sent back to the Netherlands on the condition of the forts and batteries (Attema 1976:44 and 55, note 4). This supports an early 1780's French origin theory. The fact that the French were able to land here and go on to take the island would also argue for the French having placed a battery here, for fear of the feat being repeated by someone else.

It is thought that the battery lies on Jenkin's Bay, as opposed to the cliffs above, precisely where the French landed on November 25, 1781. Contemporary accounts tell of a rocky landing where the expedition lost most of their landing craft. Above this was the "heights...a rock of between 700 and 800 feet, almost perpendicular height..." (Connecticut Gazette January 25, 1782).

It is assumed the French would have placed this battery at

the lower level, such as the Dutch battery at Tumble Down Dick. A battery 700 or 800 feet above the sea would have difficulty firing to the shore below. Island residents questioned about Cochan had not seen evidence of this battery. Previous surveys to the area make no mention of such ruins being located.

Cocolouch Bay

One island resident suggested there might be another battery, distinct from Jenkin's Battery, located at Cocolouch Bay, just north of Jenkin's Bay (Lampe, personal communication, 1990). No additional evidence was found to support this, nor was ground survey attempted. A number of fortifications named by the British in 1781 are still unaccounted for, so there may be truth to this statement.

Venus Bay

A "stronghold" is mentioned as having been located at Venus Bay. It appears only after 1781, and is no longer mentioned after 1785 (Attema 1976:44). This may have been a British or French project, but no information is known concerning this possible site. It was not visited in the fortification survey due its remote location. No island residents interviewed could recall any battery at this site, though few acknowledged ever having been there.

Powder House

On the Netherlands Antilles Cadastral Survey map, an area referred to as "Powder House" appears in the vicinity of Billy's Gut. No additional information concerning this apparently martial site could be located. Limited field survey revealed no evidence of ruins in the area that could be termed a powder-house. The 1981 island survey remarked on this site, also citing negative evidence for any such ruins. The only military evidence in the area was a 15th regiment button (British, as found at SE81 and other sites on Statia), noted at the mouth of Billy's Gut along the beach. Above the indicated site, however, can be found a powder-house associated with Fort Royal, which may explain the question.

Other Sites

No hard evidence exists for any American defensive works on St. Eustatius. There is the possibility, however, as some passages in Admiral Rodney's writings may suggest. It is known that nearly 2,000 American sailors were on the island at the arrival of the British in 1781 (Rodney 1789).

The sailors offered to defend the island, but were turned down. Most were then captured, although "still a considerable Number remain lurking on the Mountains" (Rodney 1789:13). It is possible that these "lurkers" hastily constructed minor defensive positions in the northern mountains. Scattered reports of such remains were alluded to by some informants, but nothing that could be confirmed. Undoubtedly, if such positions were prepared, they were small, insubstantial, earth or loose stone breastworks intended for use in fending off British scouting parties in search of American sailors.

Several sites in Oranjestad had a military presence at some time. Statements by Rodney (1789) clearly show the Upper Town was well occupied by his troops, presumably billeted in existing structures as well as their own constructions. Several years of excavation at SE219, the "Guest House" have unearthed military buttons, including at a minimum those of the 15th, 90th, and 95th British regiments.

Chapter 9

The Artillery Survey of St. Eustatius

The basic weapon used for both defense and offence in ship and fortification warfare was the cannon. Artillery predated hand-held firearms in Europe by several centuries. Its main task was to assist in the besiegement of fortifications. By the 16th century ships were commonly armed with small cannon, but island assaults still depended upon landing troops, for the guns were insufficient to be of any serious threat to a fortification. This rapidly changed over the following two centuries.

In the 18th century warships had become little more than floating artillery platforms. The massive fire-power they now carried were easily capable of reducing a small fort to ruins. No campaign in the Caribbean would have been planned without the inclusion of artillery, nor would any defensive plan fail to make artillery their main weapon.

By the period of the most intense fortification of St. Eustatius, cannon were constructed by uniform designs. All

guns were made of either "gun brass" (bronze) or iron. Most ships carried iron guns, and all the guns remaining on Statia were of iron. An iron gun heated and cooled differently than a bronze gun, and was felt superior at sea. They were also cheaper to produce. Records show brass guns were at Fort Oranje in the early 4th quarter of the 18th century, but no more are ever mentioned before or after that time.

With the exception of a few siege guns, pieces were mounted on wooden carriages, often painted red. Sea carriages had wooden wheels, and fortification carriages normally were supported by ones of iron. Those cannon on St. Eustatius that are now remounted have iron wheels. Barrels were usually blackened or painted gray (Coggins 1969:147).

Although details and specifics could vary widely, the tubes were limited to certain proportions necessary in their manufacture. This was most crucial in the calibre of the bore, and hence the size of the projectile. An artillery battery with each gun having different sized projectiles was cumbersome, not to mention unwise, during battle.

To control this, cannon were made, and classified, by their calibre. This was denoted by the weight of a solid shot the piece could fire. Thus an "18 pounder" fired a round shot of that many pounds. Calibers ranged from very small deck guns to

enormous siege guns, but the majority fell somewhere between the 3 and 48 pounder size. Deck or swivel guns were normally only 1 or 2 pounders.

By far the most common projectile fired in the 18th century was the round solid shot of cast iron. Solid shot was normally the ammunition of choice by both naval gunners and coastal batteries. This type was better suited to damaging a ship hull than other shot. The larger balls had a lower velocity, which tore planks rather than pierced them as a high velocity shot could. The pierces were easily patched, shattered planking was not. They were also suited to destroying a battery on shore (Manucy 1949:64).

Related to solid shot are two variants: bar shot and chain shot. Bar shot is a split solid shot connected by an iron bar. Chain shot is two round balls connected by a chain. Both were specifically intended for ripping ship rigging. At least one specimen of bar shot has been located on St. Eustatius, and is presently housed in the Historical Foundation Museum. Numerous solid shot are also represented there.

Another class of shot intended for the mass destruction of ship rigging, field carriages, or personnel was case shot. Case shot includes a variety of projectiles, all of which use small shot contained within a charge. The most two common

types were grape and canister. Case shot literally transforms a cannon into a giant shotgun.

Grape shot is a collection of small iron balls, nine being the most common. They are layered and tied together with canvas so as to come apart in flight. Grape was most useful against ship rigging, landing craft, and for dismounting land artillery.

The weight of the shot used in grape varied according to the calibre of the gun. A 32 pounder had balls of 3 pounds each. A 24 pounder, 2 lbs., a 12 pounder 1 lbs., and a 6 pounder, 8 ounces (Coggins 1969:154). The shot found at Battery Bouille and by Crook's Castle both suggest use in a 12 pounder. Two 12 pounders are at the battery, and the ball was found at the muzzle of one of these. Several more examples are in the museum collection.

The other case shot most frequently used in the 18th century was canister shot. This is a container filled with small iron or lead musket balls. Upon firing the balls scatter, creating a deadly rain to massed troops. This shot was most popular in land engagements, though occasionally used at sea. It lost its lethal effect past about 200 yards.

Exploding shells were rare for naval guns. The only

exceptions were on "Bomb ships", which were essentially floating mortar batteries. These would be used to batter a coastal fortification if they were available in the fleet. Land batteries commonly had exploding shells in their arsenal, but seldom used them against a ship. The explosion was caused through a hollow round shot being filled with powder ignited by a fuse.

More popular to use against ships was "hot shot". This was simply a solid shot heated to red hot, or else a canister of burning coal. As fire aboard a wooden ship was most devastating, it was an effective defense against a fleet. As the use of this projectile type was dangerous to load, ships seldom attempted it. Too often their own vessel was set afire in the process.

In the event a battery ran out of conventional ammunition, it could still fire. Langridge was the technical term for improvised projectile matter. Scraps of iron, nails, broken glass, and etc, could be loaded and fired in an emergency.

No matter what type of ammunition was chosen, it was loaded in a similar fashion. As the guns of this era were smoothbore, shot fit fairly loose in the barrel. The space left over between the bore and the projectile was called windage. The greater the amount of windage, the less accurate

the aim could be.

As the guns were mostly without sights, aim was a matter of skill and guesswork. Few gunners were ever able to claim great accuracy and those who could were highly valued. Firing at long ranges was usually a waste of powder and shot. Elevation adjustment accounted for the most common method of aiming, but on board ship cannon were generally not adjusted on a shot to shot basis. That was taken care of by the natural role of the ship.

In firing a gun, from ship to ship or from a battery to a ship, "point blank" was most effective. Point blank is the range a ball will travel at zero degrees elevation before striking the surface. The "first consideration of naval gunnery" wrote British Royal Navy gunner Philip Broke, is "accuracy of shot at long point blank" (Broke 1794 quoted in Padfield 1973:132). This tactic was most likely to debilitate a ship at water-line, its most vulnerable spot.

Although the iron flying back and forth wrecked havoc above deck, only shots below the water line could actually sink a ship. Relatively few vessels were ever actually sunk in battle. Most damaged ships sunk later on, after gradually taking on water for some time (Coggins 1969:156). The loss of masts and rigging, however, could leave a ship dead in the

water and at the mercy of the victor. Even so, Philip Broke wrote he preferred a fight at a reasonable distance, though still qualifying as close action. When two enemies were so close that every shot was sure to hit, skill was no longer the deciding factor. He favored a distance which resulted in victory from the best "horizontal gunnery", a feat at which the British were superior (Broke 1794, in Coggins 1969).

Many guns were made in both long and short varieties which gave them different range capabilities. The long versions were generally more accurate at a distance, but less manageable, especially aboard a ship. Over time this duality of tube lengths became less common as the shorter ship guns became more numerous.

The range of a gun depended upon its angle of elevation more than the size of the powder charge (Muller 1780). Experiments in the 18th century found a 12 pounder, a common size in the islands, could fire a projectile an average 450 "paces" at point blank (no elevation) and up to 5,000 at "random" elevations (Muller 1780:viii). In more tangible terms, the "extreme effective range" was generally around 1,700 yards (Gooding 1988:19; Hughes 1969:116), but it could still throw a solid shot up to nearly a mile (Coggins 1969:152). The accuracy at this range was negligible. Other calibers could fire at lesser or greater ranges according to

their size.

The range for grape and canister shot was somewhat less. Normally these shots were reserved for close-in fighting, either against personnel or ship rigging. A large gun could throw grape up to three-quarters of a mile, but with little effect at that range. Test firing of a 32 pounder using grape, at 750 yards, had 10 hits on a ship out of 27 balls in the charge. One penetrated four inches into the oak planking (Coggins 1969:153). Case shot was not used over a few hundred yards if any significant results were expected.

The loading and firing of a gun was rehearsed constantly at sea. There were no less than 12 steps necessary to fire a cannon (Coggins 1969:149-150; Tuchman 1988:118). These often had to be performed in less than ideal conditions. Nevertheless, a typical well trained crew could fire once every two minutes (Whipple 1978:30, cited in Tuchman 1988:118). This rate was not sustainable for extended periods of time, due to fatigue and the heating of the gun (Coggins 1969:150).

Realizing the importance of artillery to the defense of St. Eustatius, remaining guns were inventoried during the fortification survey project of 1990. Fifty-six pieces were located and recorded on the island. The majority were found in

association with the batteries, although several others have been moved over the years to different locations. Still more were found underwater in Oranje Bay. One being conserved at William and Mary was also noted but not measured. All but one of the submerged cannon were located and noted, but not measured in 1990.

The artillery pieces were measured using a field form developed from the recommended measurements to be taken given in Roth (1989). Roth provides a table listing average bore size for most standard cannons (long guns only) (Table 1).

Another table was located which was commonly included in field books of naval and artillery officers of the period (Table 2). This chart gives the diameter of a shot in inches (mm x .04) for French and English shot. If they were to acquire shot or guns from the enemy, they could calculate in what gun their own shot could be fired, or what enemy shot could be fired in which English cannon. French and English guns were not identically classed. A British 12 pounder for instance fired a maximum shot of 4.4 inches, whereas a French 12 pounder fired up to a 4.6 inch shot. A gun, then, with a bore of 4 inches (100 mm) can be a British 9 pounder, or a French 8 pounder which could take a ball of up to 4.02 inches.

TABLE 1 (Roth 1989)

R. ROTH: PROPOSED STANDARD FOR REPORTING HISTORIC ARTILLERY

	Danish	Dutch	English	French	Port- uguese	Prus- sian	Russian	Spanish	Swedish	Amer- ican
48-pounder	—	187	—	—	190	—	—	—	195	—
42-pounder	—	—	179	—	—	—	—	—	—	—
36-pounder	176	170	—	175	173	—	173	174	178	—
32-pounder	—	164	163	—	—	—	—	—	—	177
30-pounder	—	160	—	165	—	—	165	—	—	—
24-pounder	153	149	148	153	151	—	153	153	152	148
18-pounder	139	136	135	138	137	—	139	140	141	134
16-pounder	—	—	—	134	—	—	—	—	—	—
12-pounder	122	120	118	121	120	140	121	122	123	117
9-pounder	—	—	107	—	—	—	—	—	—	106
8-pounder	106	105	—	106	109	—	106	107	108	—
6-pounder	95	96	94	96	95	111	96	—	98	93
4-pounder	84	84	82	84	—	—	—	—	86	—
3-pounder	76	77	74	53	—	90	—	—	77	—
2-pounder	67	68	65	—	—	—	—	—	68	—
1½-pounder	—	—	59	—	—	—	—	—	—	—
1-pounder	53	55	52	—	—	—	—	—	54	—
½-pounder	—	—	41	—	—	—	—	—	—	—

TABLE 2 (Wilkinson-Latham 1973)

DIAMETER OF IRON SHOT, ENGLISH AND FRENCH, EXPRESSED IN INCHES

Weight (lb)	Diameter (English)	Diameter (French)	Weight (lb)	Diameter (English)	Diameter (French)
1	1.92	2.01	26	5.69	5.96
2	2.42	2.53	27	5.76	6.04
3	2.77	2.90	28	5.83	6.11
4	3.05	3.19	29	5.90	6.18
5	3.28	3.44	30	5.97	6.25
6	3.49	3.66	31	6.04	6.32
7	3.67	3.85	32	6.10	6.39
8	3.84	4.02	33	6.16	6.45
9	4.00	4.18	34	6.23	6.52
10	4.14	4.33	35	6.29	6.58
11	4.27	4.47	36	6.35	6.64
12	4.40	4.60	37	6.40	6.70
13	4.52	4.73	38	6.46	6.76
14	4.63	4.85	39	6.52	6.82
15	4.78	4.96	40	6.57	6.88
16	4.84	5.07	41	6.63	6.94
17	4.94	5.17	42	6.68	6.99
18	5.04	5.27	43	6.73	7.05
19	5.13	5.37	44	6.78	7.10
20	5.22	5.46	45	6.84	7.16
21	5.30	5.55	46	6.89	7.24
22	5.38	5.64	47	6.94	7.26
23	5.40	5.72	48	6.98	7.31
24	5.54	5.80	49	7.03	7.36
25	5.63	5.88	50	7.08	7.42

Unfortunately, the two tables are not always in strict agreement. As the second table was intended to tell a gunner what dimension of shot was maximum for what gun, it was decided to approximate pounder designations on the Statia forms using primarily Roth's table. In questionable cases, the lower class was chosen, or the designation was omitted. A ball could be fired with excessive windage (fitting loose in the barrel), but a ball even a fraction of an inch over the bore would not be able to be fired at all.

For these reasons, plus the fact that most guns have not been identified as to nationality of manufacture, all "pounder" designations given on the forms (Appendix 4), or in the fortification survey chapter, must be taken as estimates only. Further study using the entire gun's measurements and proportions would be required for more substantial estimations, as well as research into the noted markings for place of origin information (Figures 55-61). In cases where no listing was in Roth (such as a 100mm bore), or the gun was obviously of the "short" variety, the second table was used for the designation.

The guns on St. Eustatius were continually listed as being in a poor or useless state. Often this was a result of the condition of the gun carriage (Figure 53). With the

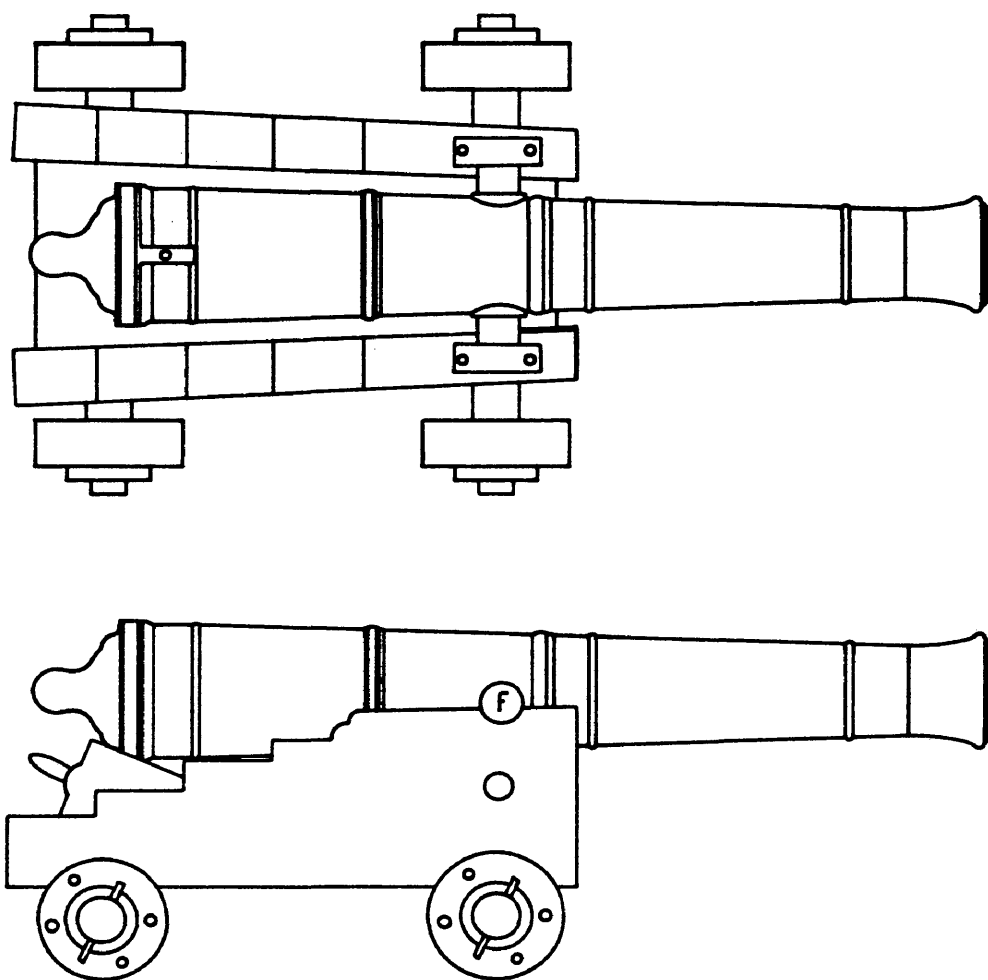


Figure 53
Garrison Gun and Carriage

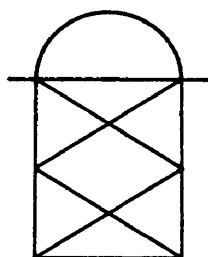
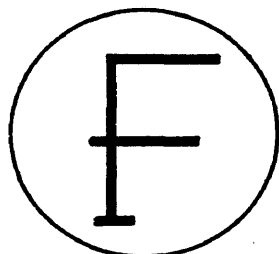


Figure 54
Dutch Arsenal (?) Mark



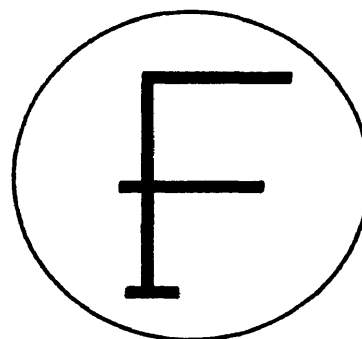
on muzzle

FO-1



right

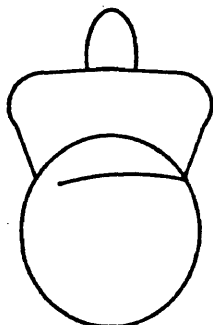
Figure 55



right

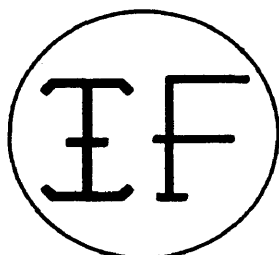
SE8-FDV-1

Figure 56



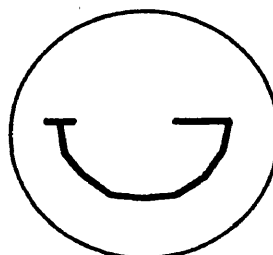
on barrel

SE69-BB-1



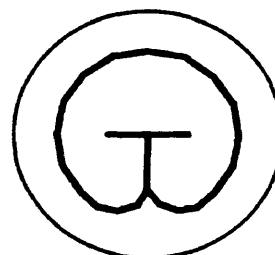
right

Figure 57



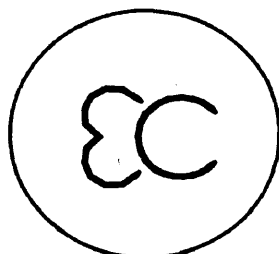
left

SE69-BB-2



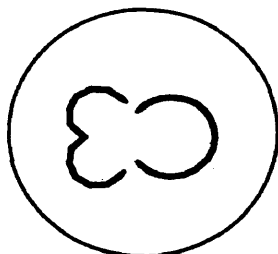
right

Figure 58



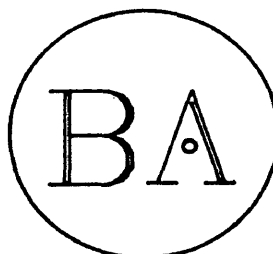
left

SE69-BB-3



right

Figure 59



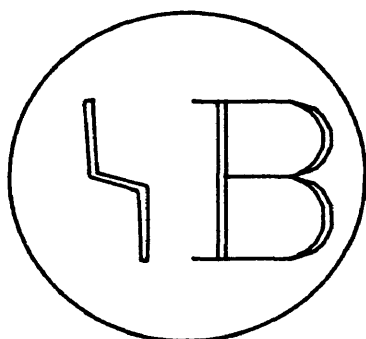
left

SE97-FP-1



right

Figure 60



left

SE97-FP-4

Figure 61

Figures 55-61
Markings found
on cannons and
trunnions

exception of clogged bores or vents, little could go wrong with a properly produced gun, but an unmounted gun was useless. Those with internal weaknesses were often undetectable until too late. At least one gun inventoried (SE8-FDV-4) appears to have burst. Mention of this occurrence is also made in the records. De Windt wrote to the Heren that "...some time ago soldier Jacob Kage of the 1758 unit was killed when a cannon exploded..." (quoted and translated in Attema 1976:19).

Inferior weapons often found their way into the colonies, most destined for trade elsewhere. They were also commonly supplied with old surplus and outdated supplies. The French were especially notorious for having outdated guns or examples in poor condition on their ships (Coggins 1969:159). This could partially explain their interest in removing guns from Statia whenever they evacuated, along with keeping them out of English hands.

Supplies for their own artillery were not easily procured on Statia. A letter of July 16, 1750 by Commander Johannes Heyliger (Pzn.) states the "Heren have not sent any cannonballs with the 12 and 18 pounder cannons that I have received. So I request the Heren to send these as soon as possible. Also two gun-carriages. Without that can not make any use of them. Also I have no cannon-balls of that size

and cannot obtain them here..."(quoted and translated in Attema 1976:51).

Commander de Windt had no better luck with the cannons. On 1st September 1760 he requested guns and ammunition from the Heren X because "...the deplorable state of the artillery, its small calibre and the age of the cannons allow few to be fired without fear..." (quoted and translated in Attema 1976:19).

During the American Revolution it seems that Commandant Ravene found the iron cannon in Fort Oranje unacceptable. He had them replaced in 1778 with bronze pieces (Hartog 1976). These did not survive, however, possibly having been removed by the British or the French, for by 1786 new cannon were installed in the Fort. These iron cannon, clearly dated, still remain. Attema (1976) states they were all from Amsterdam.

The French who occupied St. Eustatius in 1795 "carried away old cannon on their departure in 1801..." (Hartog 1976:77-78). This could have included a variety of iron cannon, and any of the more valuable bronze cannon that may have been left. In any event, no bronze cannon were found on the island during the artillery inventory.

More cannon were removed by 19th century scrap-iron dealers (Hartog 1976). Others have been taken for restoration purposes and museums. Some of the cannon used for the Andrew Doria salute were reportedly sold by Harbour-master De Geneste around 1870, to scrap iron dealers. A visitor to the island of 1911, Frederick A. Fenger, said "The trunnions were knocked off so that they would roll easier and they were thrown over the edge of the cliff" (Hartog 1976:78). Only four were reported to have been taken, out of at least 11. Fenger related seeing the remaining cannon at Gallows bay in 1911. Three of these "salute guns" were removed in 1961 by Lucius Burch, E.T. Muller, and Congressman George Grider, and are now in Memphis, Tennessee, the Smithsonian Institution, and the Naval Institute at Washington, D.C. Whether these were in fact from the salute cannot be proven. One other gun purported to be from that notable battery is in Curacao (Hartog 1976:78).

The remainder of the Statia guns are scattered throughout the island. Mr. Franz Lampe remembered hearing of two or three more guns being buried under the pavement of the coastal road, where it goes south from the Guest House (SE219). One more cannon is incorporated into the wall surrounding the house, on the left side of the staircase gate as you exit the compound.

Chapter 10

Summary and Conclusions

The study of the fortifications on St. Eustatius revealed many things. As an island that was occupied and fortified by at least three different nations over a long period of time, it has potential in comparative research. This fact soon became obvious during the mapping of the batteries. One main difference noted between the defenses was in the style of construction. Unfortunately, due to the chain of events in the island's history, it is difficult to explain all of the observations.

Fortifications built by the Dutch tended to include embrasures. All works surveyed that were undoubtedly of Dutch origin incorporated this feature. Even the very low walled Battery Nassau had embrasures. At this site there was no apparent reason for their inclusion. Artillery could easily clear the wall. Some embrasures with intact capping at Nassau stood a mere three-quarters of a foot high from the exterior. Although it is possible that there are missing components, no such evidence was detected.

Fort Oranje, the Waterfort, and Fort Rotterdam are also considered Dutch sites. Each was built with massive stone walls, several feet thick and up to five or six feet high. Fort de Windt also has one such massive wall along with one low wall. This "monumental" construction technique also seems to be solely a function of the Dutch works.

Unfortunately, these two observations are limited in scope. Although the defenses were Dutch, which might lead to that as the explanation, they also dated to the first half of the 18th century or earlier, with Fort Rotterdam the only possible exception. If in fact all are pre-1750, this could be a reason for their construction style. It becomes obscure then whether the inclusion of embrasures and the size of the walls are a function of nationality or time. Large walls would require the embrasures, but that cannot explain them at sites such as Battery Nassau.

The same problem is found when looking at the circa 1781 fortifications. These tend to be low walled batteries, with no embrasures. Most walls stood around one and one-half to two and one-half feet high, low enough for the guns to clear them without embrasures.

Differentiating between British and French works is dubious at best. The only possible differences noted were

between the "rough" cobble in the walls of Concordia, Corre Corre, and St. Louis and the fine cut stone of Bouille. The first three, though some are possibly of Dutch origin, probably now reflect British works. The last is attributed to the French. As the French had several years on the island and were not as fearful of recapture, they may have spent more time on their batteries, hence the more polished appearance. The British expected an imminent attack, and presumably built with rapidity.

The problem with this type of assumption lies in the fact that the two nations occupied the batteries in the same year. There is presently little hope of clearly identifying which elements are from which occupants. Even if the faced cobble batteries were begun by the British, they were used by the French for at least four years, then successively by the Dutch, French, and British on and off for the next 30 years. Even the cut stone of Bouille could be a British rebuilding of a French battery during the Napoleonic wars. Only further documentary and archaeological research will help to clarify the situation.

It should also be noted that these batteries, though of British and French origin, were late 18th to early 19th century works. Their style of construction is definitely at least a partial product of this time frame. To test the

possibility that nationality was a factor of the style, batteries of the same period of known Dutch construction would also have to be present, and they are not.

The choice of placement for fortifications cannot be comparatively studied to a great degree. It is not possible from surface survey to determine if an early Dutch work underlay a later British or French position. The remaining surface evidence on the defenses did, however, suggest that the British and French were somewhat more attentive to the placement of their fortifications than the Dutch.

As with any study in historical archaeology, the project could have been greatly supplemented by the use of additional documents. Access to the surviving records was restricted for two reasons. First, most are located in the Netherlands, and second, they are in Dutch. Both of these facts limited their usefulness to the researcher. What documents were used were mostly reported in secondary sources. These were therefore often fragmentary. Only one document was available in its entirety, from photographs of the original. Future research into the fortifications would greatly benefit from more intensive investigation of the remaining documents in the Hague, and those presumably held in the archives of Britain and France.

Other recommendations for future research include archaeological projects. The surface collections from the survey are stored on St. Eustatius, and could reveal interesting information. The extensive collections from Battery Concordia, SE81, may prove most beneficial.

Excavations of the fortifications could also clear up many questions raised here. Exploration around Fort Oranje may show evidence of its early 17th century appearance. Projects at Fort Rotterdam may provide insight into its origin, and therefore be useful for the study of construction style as a function of nationality or time.

Excavation of the barracks and associated buildings of several of the batteries could elucidate upon the lives of the garrisons. Comparative studies between the island, other islands, other colonial areas, and European barracks of the same date could reveal interesting information on military life. There may also be the opportunity to compare material culture of colonial militia and island troops with regulars stationed in Europe or North America.

The fortifications survey and study is suggestive of several points concerning the business of the defense of St. Eustatius as well. The small island had numerous fortifications and coastal batteries, yet continually fell to

invader after invader. This phenomena is attributable to one or a combination of reasons. Among these would be a lack of naval protection from the motherland, a lack of batteries to fend off ships carrying troops, improperly placed and/or constructed batteries, insufficient weaponry or ammunition, improperly trained or motivated personnel, or habitually being besieged by overwhelming odds.

The evidence gathered in this study indicates that the island probably surrendered so often due to all of the aforementioned factors. It also suggests that these were not insurmountable, and that the island need not have changed its colours as often as it did.

The first factor, insufficient naval protection, was probably foremost among the deficiencies in the defense of St. Eustatius. Had the Dutch navy been capable of warding off enemy fleets, the batteries need never have come under the guns of rivals. The same holds true for subsequent administrations, such as the British and French. No matter how well or poorly fortified an island is, it was safe so long as friendly vessels kept hostile ships at bay.

The Dutch navy cannot be held responsible for the loss of Statia, for they never had sufficient ships or men to protect their islands. As a sea-faring nation, perhaps the government

of the Netherlands was most negligent, for not providing the naval strength so vital to a colonial and trading nation. The British and French however, can both be faulted for the loss of the island by not providing adequate naval protection when it was within their power to do so.

The second factor, a lack of fortifications on St. Eustatius, does not seem to be a primary cause, especially after 1781. Before this it was definitely a major source of consideration. Prior to the British invasion, there were scattered coastal batteries around the island, along with the main fort. Even so, numerous landing sites lay unprotected. Troops wishing to land could do so without falling under the defenders guns until well established on the beach or approaching the Fort itself.

In the 17th century the island was reasonably protected by Fort Oranje and the occasional entrenchments. Situated as it was above the bay, the Fort was a formidable obstacle to most attempts at invasion or piracy. It was not until the rise of the use of large warships that its defensive role diminished.

As military theorists proposed, the lack of coastal batteries in the earlier years was not all that crucial. What was crucial was the proper defensive works being in place to deal with enemies whom had already landed. Had the Statians

placed their batteries to force landings at specific areas, easily defended once a field engagement had resulted, they could have significantly reduced their vulnerabilities.

After 1781 this practice was better adhered to. The British and French both re-fortified the island, covering areas of desirable landings. This did force assaults to come from inconvenient areas. The French attack of November 1781 is a prime example. They landed at Jenkin's Bay, which required a difficult and dangerous ascent up the cliffs, followed by an overland trek across rough terrain. Had the British followed up on their strategy and been prepared to meet the French, the story may have had a different outcome.

The fortifications were also a mixture of competency and incompetency. In the late 17th century and early 18th century, Fort Oranje was built according to the established methods of the time. As a four-bastioned fort, it was defensible from land attacks. The majority of the guns were placed to protect the main bay, as was most prudent. The ascent to the Fort from the Lower Town was difficult, and as Rodney said, would have cost the aggressor much if it had put up a fight. From the land side it theoretically had the advantage of being able to detect the approaching troops, as well as having their coastal side safe from land attack. Its only real drawback was the proximity of the Upper Town, which impeded its effectiveness

from the land side.

After the loss of two bastions, the Fort no longer maintained this position. Although by any means still defensible, it now had increased vulnerabilities. Once the bastion system was no longer operational for providing coverage to all areas of the Fort, it failed Vauban's most basic premise of proper defensive works. A determined attacker could easily launch a frontal assault without fear of total failure. The change of the artillery to smaller calibers also greatly decreased the Fort's effectiveness.

The batteries were functional, but commonly substandard. All remaining batteries were of stone. This was a chief source of casualties to defenders, as a hit to the stone wall was more likely to wound a gun crew from flying debris than the shell itself. Military engineers understood this principle well and advocated earthen batteries. Some even took it so far as to suggest the soil be screened to remove stone if it were present (Tousard 1809).

At least two batteries, Tumble Down Dick and Battery Concordia, added soil embankments to the front of their walls. Whilst this helped, by providing an absorbent for the incoming shells, it was not perfect. By 1990 at least, most of the batteries had no sign whatsoever of having had this added

protection.

In general the batteries were open backed constructions. This, although making it indefensible from a land attack, was not discouraged by learned strategists. The main function of the battery was to provide the initial defense from the amphibious assault. It was the function of the Fort to protect the inhabitants from landed troops. In this aspect the Statian batteries were acceptable. In fact, this open design was beneficial in that it discouraged ricochets within the battery walls.

The placement of the batteries was by and large, competent. They protected the major landing sites, and most were sufficiently elevated to fire the recommended shots whilst making return fire difficult from the sea. The works most vulnerable to return fire were Battery Corre Corre, Battery Dollijn, and the Waterfort. Others placed on cliffs were reasonably safe. These included Nassau, Bouille, Four-Gun, Concordia, and St. Louis for example. Overall, the British and French forts tended to be built on the better topographic inclinations. This may be due to professional military personnel planning them over the less experienced Dutch colonials. In all, the fortifications and batteries were reasonably placed and constructed.

The major fault of the defenses was in their condition and maintenance. From the beginning of the islands occupation, the defenses were perpetually reported to be in wretched conditions. Batteries such as Tumble Down Dick were constructed and useless in less than a decade. Cannon were continually out of service, usually due to deteriorated carriages. As a carriage was able to be built by local carpenters, this was blatant negligence.

The insufficient upkeep of the defenses was partially the fault of the islanders and partially that of the governing body in Holland. It was the Statians themselves that allowed the defenses to deteriorate, when regular maintenance may have prevented a great deal of the problems. Once these had developed, however, there was always a problem in obtaining the necessary equipment and supplies to repair the damage. Had the island received "sufficient powder, weapons, and cannons...from Holland in time to strengthen the forts, it is quite likely that some of the unexpected attacks could have been beaten off" (Attema 1976:20).

Even when supplied from the Netherlands, the island batteries were almost always outgunned by military expeditions. Warships commonly carried guns of larger calibre than many of the coastal batteries:

It was one of the peculiar functions of technology that shore batteries on the islands were generally of inadequate caliber and range to knock out a ship approaching with hostile intent. One is moved to wonder why, if a 10-pounder gun could be mounted on the rolling deck of a sailing vessel, the same or larger could not be mounted on land? The fact is that blind parsimony of the defense kept the shore batteries usually too few in number to equal in firepower the heavy guns of a ship of the line (Tuchman 1988:95).

In fairness to 18th century military engineers, it should be remembered that 12, 18, and 24 pounders were suggested for most coastal batteries. The reality, however, cannot be overlooked: land batteries such as found on St. Eustatius were seldom armed with calibers larger than an 18 pounder, whilst a typical ship of the line carried 24, 32, or even larger guns with little effort.

In addition to the larger calibers they carried, a single ship of the line mounting 90 guns in itself outgunned the entire island, according to Admiral Rodney's count of 1781 (Rodney 1789). A fleet of such warships could easily be considered overwhelming odds.

Another reason the defenses were allowed to deteriorate was from a lack of motivation by the inhabitants. Most were solely concerned with trade or other lucrative endeavors, and seldom thought of defense until too late. This was a common pattern throughout the Caribbean islands of all nationalities. Added to this was the reported low standard of training and

motivation that the regular island garrisons exhibited. Well trained troops from Europe commonly lost much of their effectiveness when sent to the Caribbean. Morale was excessively low, and disease exceedingly high. What troops were stationed on the island were often too few in number to withstand a siege.

The choice made by the leadership of St. Eustatius in time of besiegement, therefore, was most often immediate surrender. Had the island kept their defenses in working order, well supplied and manned, it is not doubtful that at least some of the invasions would have been successfully repelled.

Others, such as the capitulation to the British expedition of 1781, were probably the right decision. Surrendering a fort, ship, island, etc., did not have the same negative connotation it later would acquire. It was not dishonorable to surrender without a fight to a superior force. In fact, needless waste was less acceptable than a judicious surrender. The submission of the island in most cases probably saved many lives with only the cost of some material goods.

The defense of St. Eustatius was a difficult matter. In the early years of the colony, a fort and a few scattered batteries proved sufficient for the most part. As naval technology advanced it became necessary to defend an island,

any island, by the use of ships. In this respect, St. Eustatius was doomed. The Dutch navy was no match for the navies of Britain or France, even in their own waters, let alone in the Caribbean and the Americas. The only real defense of St. Eustatius was its role as a supplier for the colonies of all nations: its "... utility was its defense. The universality of its use, the neutrality of its nature was its security and its safeguard" (Tuchman 1988:19).

As long as it held this role of a trade center and central open port, the island would always remain in danger. It became entangled in war after war simply by allowing the arguing nations to use its bay. The economic collapse of the island in the 19th century was ironic. It ruined the economy of Statia and resulted in its depopulation, but it also meant the island would now be safe from aggression. St. Eustatius had finally found a way to live in peace: it was no longer of use to European nations.

Appendix 1

The French Invasion Force as it set out for
St. Eustatius on November 15, 1781.

Troops:

<u>Regiment</u>	<u>Strength</u>
Auxerroir regiment	400 men
Royal Comtois	320 men
Dillon's and Waith's regiments	400 men
Martinique Grenadiers	50 men
Matrosses (artillerymen)	24 men

Ships they embarked on:

<u>Ship</u>	<u>Commander</u>
Medea	La Chevalier de Girardin
Amazon	M. De Villages
Galatea	Chevalier de Rocquart
Corvette Eagle	Mons. de Prencos
Sloop St. Louis	
Sloop Diligent	
Schooner Felicity	
Schooner Charmante	

Appendix 2

Ship Lists

Ships with Rodney and Hood, 1781 (Spinney 1969, James 1926).

<u>Ship</u>	<u>Guns</u>	<u>Commanding</u>
Barfleur	90	Sir Samuel Hood, Rear Admiral of the Blue, J. Inglefield
Gibraltar	80	Walter Stirling
Invincible	74	C. Saxton
Vengeance	74	
Princessa	70	Sir T. Rich
Monarca	70	J. Gell
Prince William	64	Stair Douglas
Belliquex	64	T. Fitzherbert
Prince Edward	62	(Former Dutch Mars)
Panther	50 or 60	J. Harvey
Sybil	28	
Sloop Swall		
Unknown	38	
Unknown	32	

French Ships with the St. Eustatius Invasion Force, 1781

<u>Ship</u>	<u>Commander</u>
Medea	La Chevalier de Girardin
Amazon	M. De Villages
Galatea	Chevalier de Rocquart
Corvette Eagle	Mons. de Prencos
Sloop St. Louis	
Sloop Diligent	
Schooner Felicity	
Schooner Charmante	

Appendix 3

A Report of the French taking of St. Eustatius.

The following was written by "Chevalier de Goussencourt" who was presumed to have accompanied de Grasses' fleet in 1781 and 1782. It was apparently a pseudonyme.

[November 1781]

We were greatly surprised, on arriving at Fort Royal, to learn the departure of the Marquis de Bouille with 1500 men, on two frigates and all the boats or domains, on an expedition to which no one had any clue.

December. [1781]

On the 1st we learned that he had just taken St. Eustatius, a Dutch emporium which Rodney had captured, as I stated on our arrival in the West Indies. To recover this colony, he used one of those bold stratagems that always succeed with a man of talent who has won the affection of his troops. The Marquis de Bouille knew how negligently the English lay at St. Eustatius, and first landed Dillon's Regiment, which, in red coats, and speaking English, could better cover the design.... A hundred men of Walsh's regiment had landed on another side, commanded by Mr. O'Connor. Imagining that he heard the signal, he marched straight on the fort, but was much surprised to see, instead of his fellow-soldiers of Dillon's regiment, the English recruits at drill. He fired on them at once; they fled into the fort, and he after them up to the gate, which he seized. The French troops came up in a moment, rushed in, and compelled the English to capitulate in their quarters, breeches in hand. Mr O'Connor went and arrested the governor, who, taking him for an officer of his garrison, scolded him for the firing and the trouble among the troops, but was much amazed when informed that his interlocutor was French, and himself a prisoner of his Most Christian Majesty. He went to the window to look, and fell back fainting when he saw the regiment of Auxerrois drawn up in line of battle on the square, and Mr. de Bouille giving orders. He then repented of the party of pleasure in the country to which he had just been, and from which he got back two hours before the surprise. The garrison, to the number of 756, were taken prisoners of war.... (Goussencourt n.d., reprinted from an 1864 reprint in Shea 1971:91-93).

APPENDIX 4
THE ARTILLERY OF ST. EUSTATIUS

Artillery Survey Form

Field Number: FO-1
Present location/context: Fort Oranje
Approximate "Pounder" designation: 3
Place of manufacture: Amsterdam, Netherlands
Date of manufacture: 1786
Markings: on tube; Cartouche (Figure 55) above N 1? 954
W III X, crown on muzzle face, 1786 on left trunnion, F on
right trunnion.
Dimensions;
Length, muzzle face to back of base ring: 1883 mm
Cascable: 100 mm **Overall (tube + cascable):** 1983 mm
Diam. of bore: 77 mm **Diam of muzzle swell:** 230 mm
Min. tube diam: 169 mm **muzzle face diam:** 170 mm
Trunnion diam: 80 mm **diam behind trunnions:** 235 mm
overall width: 399 mm **trunnion length:** 82 mm
diam. of backring: 280 mm **diam. at vent:** 274 mm
Cascable diameters: **Min:** 63 mm **Max:** 81 mm
Number of staves or rings: 4
Present condition: Restored to gun carriage
How many pieces at this location: 11
Number of variant styles at this location: 2-3
Photo on file ?: no Additional comments or information:

Artillery Survey Form

Field Number: FO-2
Present location/context: Fort Oranje
Approximate "Pounder" designation: 3
Place of manufacture: Netherlands, Amsterdam ?
Date of manufacture: 1786
Markings: On left trunnion; 419(or 2)95 CAS..O 1786. On
right trunnion; 3*P 8'L'O 8+ 16.
Dimensions;
Length, muzzle face to back of base ring: 1680 mm
Cascable: 150 mm **Overall (tube + cascable):** 1830 mm
Diam. of bore: 80 mm **Diam of muzzle swell:** 225 mm
Min. tube diam: 172 mm **muzzle face diam:** 142 mm
Trunnion diam: 80 mm **diam behind trunnions:** 234 mm
overall width: 380 mm **trunnion length:** 80 mm
diam. of backring: 275 mm **diam. at vent:** 267 mm
Cascable diameters: **Min:** 70 mm **Max:** 77 mm
Number of staves or rings: 6
Present condition: Restored to carriage
How many pieces at this location: 11
Number of variant styles at this location: 2-3
Photo on file ?: no Additional comments or information:

Artillery Survey Form**Field Number:** FO-3**Present location/context:** Fort Oranje**Approximate "Pounder" designation:** 3**Place of manufacture:** Netherlands, Amsterdam**Date of manufacture:** 1786 ?**Markings:** On muzzle face are 3 crowns and "26". On tube is arsenal mark (figure 53), and "N LII 958 W III X". Left trunnion marked "178..." (last numeral missing), right marked "F".**Dimensions;****Length, muzzle face to back of base ring:** 1890 mm**Cascable:** 105 mm **Overall (tube + cascable):** 1995 mm**Diam. of bore:** 79 mm **Diam of muzzle swell:** 230 mm**Min. tube diam:** 168 mm **muzzle face diam:** 175 mm**Trunnion diam:** 74 mm **diam behind trunnions:** 230 mm**overall width:** 395 mm **trunnion length:** 91 mm**diam. of backring:** 280 mm **diam. at vent:** 256 mm**Cascable diameters:****Min:** 62 mm**Max:** 85 mm**Number of staves or rings:** 4**Present condition:** sound, restored to carriage.**How many pieces at this location:** 11**Number of variant styles at this location:** 2-3**Photo on file ?:** no**Additonal comments or information:**
-----**Artillery Survey Form****Field Number:** FO-4**Present location/context:** Fort Oranje**Approximate "Pounder" designation:** 3**Place of manufacture:** Netherlands, Amsterdam**Date of manufacture:** 1786**Markings:** On tube is arsenal mark (figure 53), and "N : II 966 W III X". Left trunnion marked "1786", right marked "F". Muzzle face marked with two crowns flanking "23"**Dimensions;****Length, muzzle face to back of base ring:** 1885 mm**Cascable:** 113 mm **Overall (tube + cascable):** 1998 mm**Diam. of bore:** 79 mm **Diam of muzzle swell:** 214 mm**Min. tube diam:** 166 mm **muzzle face diam:** 178 mm**Trunnion diam:** 74 mm **diam behind trunnions:** 230 mm**overall width:** 395 mm **trunnion length:** 91 mm**diam. of backring:** 280 mm **diam. at vent:** 265 mm**Cascable diameters:****Min:** 62 mm**Max:** 85 mm**Number of staves or rings:** 4**Present condition:** sound, restored to carriage.**How many pieces at this location:** 11**Number of variant styles at this location:** 2-3**Photo on file ?:** no**Additonal comments or information:**

Artillery Survey Form**Field Number:** FO-5**Present location/context:** Fort Oranje**Approximate "Pounder" designation:** 3**Place of manufacture:** Netherlands, Amsterdam**Date of manufacture:** 1786**Markings:** On tube is arsenal mark (figure 53), and "N XLIII 948 W III IX V". Left trunnion marked "1786", right marked "F". Muzzle face marked with two crowns flanking "19" (?)**Dimensions;****Length, muzzle face to back of base ring:** 1890 mm**Cascable:** 105 mm **Overall (tube + cascable):** 1995 mm**Diam. of bore:** 79 mm **Diam of muzzle swell:** 232 mm**Min. tube diam:** 165 mm **muzzle face diam:** 169 mm**Trunnion diam:** 7 mm **diam behind trunnions:** 230 mm**overall width:** 395 mm **trunnion length:** 91 mm**diam. of backring:** 290 mm **diam. at vent:** 268 mm**Cascable diameters:****Min:** 62 mm**Max:** 85 mm**Number of staves or rings:** 4**Present condition:** sound, restored to carriage.**How many pieces at this location:** 11**Number of variant styles at this location:** 2-3**Photo on file ?:** no**Additonal comments or information:**
-----**Artillery Survey Form****Field Number:** FO-6**Present location/context:** Fort Oranje**Approximate "Pounder" designation:** 3**Place of manufacture:** Netherlands, Amsterdam**Date of manufacture:** 18th century**Markings:** On tube is arsenal mark (figure 53). Left trunnion is marked "3.P 8 11 0 8J6" (?). Right is marked "4I..... 17 9"(last numeral appears to be a date, but the third character is obscured).**Dimensions;****Length, muzzle face to back of base ring:** 1692 mm**Cascable:** 160 mm **Overall (tube + cascable):** 1852 mm**Diam. of bore:** 80 mm **Diam of muzzle swell:** 225 mm**Min. tube diam:** 173 mm **muzzle face diam:** 146 mm**Trunnion diam:** 77 mm **diam behind trunnions:** 234 mm**overall width:** 380 mm **trunnion length:** 83 mm**diam. of backring:** 286 mm **diam. at vent:** 274 mm**Cascable diameters:****Min:** 70 mm**Max:** 77 mm**Number of staves or rings:** 6**Present condition:** sound, restored to carriage.**How many pieces at this location:** 11**Number of variant styles at this location:** 2-3**Photo on file ?:** no**Additonal comments or information:**

Artillery Survey Form

Field Number: FO-7
Present location/context: Fort Oranje
Approximate "Pounder" designation: 3
Place of manufacture: Netherlands, Amsterdam
Date of manufacture: 1786
Markings: On tube is arsenal mark (figure 53), and "N XX XV 976 W III XI V". Left trunnion marked "1786", right marked "F". Muzzle face marked "13"
Dimensions;
Length, muzzle face to back of base ring: 1885 mm
Cascable: 115 mm **Overall (tube + cascable):** 2000 mm
Diam. of bore: 78 mm **Diam of muzzle swell:** 229 mm
Min. tube diam: 170 mm **muzzle face diam:** 170 mm
Trunnion diam: 74 mm **diam behind trunnions:** 230 mm
overall width: 395 mm **trunnion length:** 91 mm
diam. of backring: 282 mm **diam. at vent:** 270 mm
Cascable diameters:
 Min: 62 mm **Max:** 85 mm
Number of staves or rings: 4
Present condition: sound, restored to carriage.
How many pieces at this location: 11
Number of variant styles at this location: 2-3
Photo on file ?: no
Additonal comments or information:

Artillery Survey Form

Field Number: FO-8
Present location/context: Fort Oranje
Approximate "Pounder" designation: 3
Place of manufacture: Netherlands, Amsterdam
Date of manufacture: 1786
Markings: On tube is arsenal mark (figure 53), and "N XLV III 950 W. III IX X". Left trunnion marked "1786", right marked "F". Muzzle face marked "...8" (18?)
Dimensions;
Length, muzzle face to back of base ring: 1885 mm
Cascable: 115 mm **Overall (tube + cascable):** 2000 mm
Diam. of bore: 78 mm **Diam of muzzle swell:** 216 mm
Min. tube diam: 167 mm **muzzle face diam:** 168 mm
Trunnion diam: 74 mm **diam behind trunnions:** 230 mm
overall width: 395 mm **trunnion length:** 91 mm
diam. of backring: 296 mm **diam. at vent:** 274 mm
Cascable diameters:
 Min: 62 mm **Max:** 85 mm
Number of staves or rings: 4
Present condition: sound, restored to carriage.
How many pieces at this location: 11
Number of variant styles at this location: 2-3
Photo on file ?: no
Additonal comments or information: Vent is spiked (plugged).

Artillery Survey Form

Field Number: FO-9
Present location/context: Fort Oranje, central monument
Approximate "Pounder" designation: 4
Place of manufacture:
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: mm
Cascable: mm **Overall (tube + cascable):** mm
Diam. of bore: 86 mm **Diam of muzzle swell:** mm
Min. tube diam: mm **muzzle face diam:** mm
Trunnion diam: mm **diam behind trunnions:** mm
overall width: mm **trunnion length:** mm
diam. of backring: mm **diam. at vent:** mm
Cascable diameters:
Min: mm **Max:** mm
Number of staves or rings:
Present condition: embedded in concrete monument.
How many pieces at this location: 3 in monument, 11 in fort
Number of variant styles at this location: 2-3
Photo on file ?: no
Additonal comments or information: The bore diameter may have been altered as all three have a solid shot ball embedded half into the muzzle.

Artillery Survey Form

Field Number: FO-10
Present location/context: Fort Oranje, central monument
Approximate "Pounder" designation: 4
Place of manufacture:
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: mm
Cascable: mm **Overall (tube + cascable):** mm
Diam. of bore: 86 mm **Diam of muzzle swell:** mm
Min. tube diam: mm **muzzle face diam:** mm
Trunnion diam: mm **diam behind trunnions:** mm
overall width: mm **trunnion length:** mm
diam. of backring: mm **diam. at vent:** mm
Cascable diameters:
Min: mm **Max:** mm
Number of staves or rings:
Present condition: embedded in concrete monument.
How many pieces at this location: 3 in monument, 11 in fort
Number of variant styles at this location: 2-3
Photo on file ?: no
Additonal comments or information: The bore diameter may have been altered as all three have a solid shot ball embedded half into the muzzle.

Artillery Survey Form**Field Number:** FO-11**Present location/context:** Fort Oranje, central monument**Approximate "Pounder" designation:** 4**Place of manufacture:****Date of manufacture:****Markings:****Dimensions;****Length, muzzle face to back of base ring:** mm**Cascable:** mm **Overall (tube + cascable):** mm**Diam. of bore:** 85 mm **Diam of muzzle swell:** mm**Min. tube diam:** mm **muzzle face diam:** mm**Trunnion diam:** mm **diam behind trunnions:** mm**overall width:** mm **trunnion length:** mm**diam. of backring:** mm **diam. at vent:** mm**Cascable diameters:****Min:** mm**Max:** mm**Number of staves or rings:****Present condition:** embedded in concrete monument.**How many pieces at this location:** 3 in monument, 11 in fort**Number of variant styles at this location:** 2-3**Photo on file ?:** no**Additonal comments or information:** The bore diameter may have been altered as all three have a solid shot ball embedded half into the muzzle.

Artillery Survey Form

Field Number: SE99-TDD-1
Present location/context: SE99, Tumble Down Dick Battery
Approximate "Pounder" designation: 12-18
Place of manufacture:
Date of manufacture:
Markings: on backring "...I...OA"
Dimensions;
Length, muzzle face to back of base ring: 2685 mm
Cascable: 250 mm **Overall (tube + cascable):** 2935 mm
Diam. of bore: 130d mm **Diam of muzzle swell:** 275 mm
Min. tube diam: 250 mm **muzzle face diam:** 225 mm
Trunnion diam: 105 mm **diam behind trunnions:** 350 mm
overall width: 555 mm **trunnion length:** 120 mm
diam. of backring: 390 mm **diam. at vent:** 370 mm
Cascable diameters:
 Min: 100 mm **Max:** 140 mm
Number of staves or rings:
Present condition: corroded
How many pieces at this location: 4
Number of variant styles at this location: 3
Photo on file ?: yes
Additional comments or information: Cannon have been moved into their current positions by the Oil Terminal.

Artillery Survey Form

Field Number: SE99-TDD-2
Present location/context: SE99, Tumble Down Dick Battery
Approximate "Pounder" designation: 12-18
Place of manufacture:
Date of manufacture:
Markings: on vent ring "11 3 1(?)480A"
Dimensions;
Length, muzzle face to back of base ring: 2685 mm
Cascable: 250 mm **Overall (tube + cascable):** 2935 mm
Diam. of bore: 130d mm **Diam of muzzle swell:** 275 mm
Min. tube diam: 250 mm **muzzle face diam:** 225 mm
Trunnion diam: mm **diam behind trunnions:** 350 mm
overall width: mm **trunnion length:** mm
diam. of backring: 390 mm **diam. at vent:** 370 mm
Cascable diameters:
 Min: 100 mm **Max:** 140 mm
Number of staves or rings:
Present condition: corroded
How many pieces at this location: 4
Number of variant styles at this location: 3
Photo on file ?: yes
Additional comments or information: Both trunnions are missing, possibly for salvage preparation. Cannon have been moved into their current positions by the Oil Terminal.

Artillery Survey Form

Field Number: SE99-TDD-3
Present location/context: SE99, Tumble Down Dick Battery
Approximate "Pounder" designation: 6
Place of manufacture:
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: 2220 mm
Cascable: 170 mm **Overall (tube + cascable):** 2390 mm
Diam. of bore: 92d mm **Diam of muzzle swell:** 225 mm
Min. tube diam: 180 mm **muzzle face diam:** 160 mm
Trunnion diam: 80 mm **diam behind trunnions:** 285 mm
overall width: 435 mm **trunnion length:** 75 mm
diam. of backring: 370 mm **diam. at vent:** 355 mm
Cascable diameters:
 Min: 90 mm **Max:** 130 mm
Number of staves or rings:
Present condition: heavily corroded
How many pieces at this location: 4
Number of variant styles at this location: 3
Photo on file ?: yes
Additonal comments or information: Cannon have been moved into their current positions by the Oil Terminal.

Artillery Survey Form

Field Number: SE99-TDD-4
Present location/context: SE99, Tumble Down Dick Battery
Approximate "Pounder" designation: 6 or 9
Place of manufacture:
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: 2210 mm
Cascable: 245 mm **Overall (tube + cascable):** 2455 mm
Diam. of bore: 100d mm **Diam of muzzle swell:** 210 mm
Min. tube diam: 190 mm **muzzle face diam:** 180 mm
Trunnion diam: 90 mm **diam behind trunnions:** 300 mm
overall width: 490 mm **trunnion length:** 95 mm
diam. of backring: 380 mm **diam. at vent:** 360 mm
Cascable diameters:
 Min: 90 mm **Max:** 130 mm
Number of staves or rings:
Present condition: corroded
How many pieces at this location: 4
Number of variant styles at this location: 3
Photo on file ?: yes
Additonal comments or information: Cannon have been moved into their current positions by the Oil Terminal.

Artillery Survey Form

Field Number: SE96-FR-1
Present location/context: SE96, Fort Royal
Approximate "Pounder" designation: 18
Place of manufacture:
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: 2590 mm
Cascable: 270 mm **Overall (tube + cascable):** 2860 mm
Diam. of bore: 135 mm **Diam of muzzle swell:** 315 mm
Min. tube diam: 250 mm **muzzle face diam:** 275 mm
Trunnion diam: mm **diam behind trunnions:** mm
overall width: mm **trunnion length:** mm
diam. of backring: 470 mm **diam. at vent:** 440 (est.) mm
Cascable diameters:
 Min: mm **Max:** mm
Number of staves or rings:
Present condition: stable
How many pieces at this location: 7
Number of variant styles at this location:
Photo on file ?: no
Additonal comments or information: Cannon was mostly buried

Artillery Survey Form

Field Number: SE96-FR-2
Present location/context: SE96, Fort Royal
Approximate "Pounder" designation: 18
Place of manufacture:
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: 2610 mm
Cascable: 290 mm **Overall (tube + cascable):** 2900 mm
Diam. of bore: 135 mm **Diam of muzzle swell:** 320 mm
Min. tube diam: 270 mm **muzzle face diam:** 250 mm
Trunnion diam: 110 mm **diam behind trunnions:** 370 mm
overall width: 570 mm **trunnion length:** 100 mm
diam. of backring: 430 mm **diam. at vent:** 410 mm
Cascable diameters:
 Min: 130 mm **Max:** 170 mm
Number of staves or rings:
Present condition: sound
How many pieces at this location: 7
Number of variant styles at this location:
Photo on file ?: yes
Additonal comments or information:

Artillery Survey Form

Field Number: SE96-FR-3
Present location/context: SE96, Fort Royal
Approximate "Pounder" designation: 18
Place of manufacture: Possibly Dutch
Date of manufacture: 18th century
Markings: Trunnion marks similar to SE69-BB-2
Dimensions;
Length, muzzle face to back of base ring: 2885 mm
Cascable: 270 mm **Overall (tube + cascable):** 3155 mm
Diam. of bore: 140 (deteriorated) mm **Diam of muzzle swell:** 310 mm
Min. tube diam: 270 mm **muzzle face diam:** 260 mm
Trunnion diam: 135 mm **diam behind trunnions:** mm
overall width: mm **trunnion length:** 135 mm
diam. of backring: 480 mm **diam. at vent:** 440 mm
Cascable diameters:
 Min: 130 mm **Max:** 170 mm
Number of staves or rings:
Present condition:
How many pieces at this location: 7
Number of variant styles at this location:
Photo on file ?: no
Additonal comments or information: Partially buried in soil.

Artillery Survey Form

Field Number: SE96-FR-4
Present location/context: SE96, Fort Royal
Approximate "Pounder" designation: 8
Place of manufacture: Dutch ?
Date of manufacture: 18th century
Markings: Trunnion marked "S17"
Dimensions;
Length, muzzle face to back of base ring: 2240 mm
Cascable: 150 mm **Overall (tube + cascable):** 2390 mm
Diam. of bore: 105 mm **Diam of muzzle swell:** 220 mm
Min. tube diam: 195 mm **muzzle face diam:** 170 mm
Trunnion diam: 100 mm **diam behind trunnions:** 270 mm
overall width: 470 mm **trunnion length:** 100 mm
diam. of backring: 390 mm **diam. at vent:** 360 mm
Cascable diameters:
 Min: 75 mm **Max:** 90 mm
Number of staves or rings: 7 groups
Present condition:
How many pieces at this location: 7
Number of variant styles at this location:
Photo on file ?: yes
Additonal comments or information: Muzzle face abuts wall, partially buried tube.

Artillery Survey Form

Field Number: SE96-FR-5
Present location/context: SE96, Fort Royal
Approximate "Pounder" designation: 8
Place of manufacture: Dutch ?
Date of manufacture: 1787 (?)
Markings: On backring "1690". Trunnions marked "X" and "1787" (or 1747 ?).
Dimensions;
Length, muzzle face to back of base ring: 2240 mm
Cascable: 150 mm **Overall (tube + cascable):** 2390 mm
Diam. of bore: 105 mm **Diam of muzzle swell:** 220 mm
Min. tube diam: 195 mm **muzzle face diam:** 170 mm
Trunnion diam: 90 mm **diam behind trunnions:** 270 mm
overall width: 450 mm **trunnion length:** 90 mm
diam. of backring: 380 mm **diam. at vent:** 340 mm
Cascable diameters:
 Min: 75 mm **Max:** 90 mm
Number of staves or rings: 7 groups
Present condition:
How many pieces at this location: 7
Number of variant styles at this location:
Photo on file ?: yes
Additonal comments or information: Numbers on backring are weight marks, not date as suggested in Barka 1985:62.

Artillery Survey Form

Field Number: SE96-FR-6
Present location/context: SE96, Fort Royal
Approximate "Pounder" designation: 12
Place of manufacture:
Date of manufacture: late 18th century ?
Markings: "IF" on right trunnion, identical to SE69-BB-1.
Dimensions;
Length, muzzle face to back of base ring: 2535 mm
Cascable: 200 mm **Overall (tube + cascable):** 2735 mm
Diam. of bore: 120 mm **Diam of muzzle swell:** 340 mm
Min. tube diam: 300 mm **muzzle face diam:** 210 mm
Trunnion diam: 110 mm **diam behind trunnions:** 340 mm
overall width: 560 mm **trunnion length:** 110 mm
diam. of backring: 440 mm **diam. at vent:** 400 mm
Cascable diameters:
 Min: 120 mm **Max:** 140 mm
Number of staves or rings: 6
Present condition:
How many pieces at this location: 7
Number of variant styles at this location:
Photo on file ?: no
Additonal comments or information: Trunnion mark like on a suspected British cannon at Battery Bouille.

Artillery Survey Form**Field Number:** SE96-FR-7**Present location/context:** SE96, Fort Royal**Approximate "Pounder" designation:** 8 to 12**Place of manufacture:****Date of manufacture:** 1787 (?)**Markings:** Right trunnion marked "X".**Dimensions;****Length, muzzle face to back of base ring:** 2250 mm**Cascable:** 150 mm **Overall (tube + cascable):** 2400 mm**Diam. of bore:** 110 mm **Diam of muzzle swell:** 220 mm**Min. tube diam:** 195 mm **muzzle face diam:** 170 mm**Trunnion diam:** 90 mm **diam behind trunnions:** 270 mm**overall width:** 450 mm **trunnion length:** 90 mm**diam. of backring:** 360 mm **diam. at vent:** 320 mm**Cascable diameters:****Min:** 75 mm**Max:** 90 mm**Number of staves or rings:** 7 groups**Present condition:****How many pieces at this location:** 7**Number of variant styles at this location:****Photo on file ?:** yes**Additonal comments or information:** Nearly identical to SE96-FR-5 SE, so date is assumed. Left trunnion was not able to be uncovered from the soil.

Artillery Survey Form

Field Number: SE8-FDV-1
Present location/context: Fort de Windt (SE8)
Approximate "Pounder" designation: 18
Place of manufacture:
Date of manufacture:
Markings: On backring; "...OA", trunnion and vent marks.
 (Figure 56)
Dimensions;
Length, muzzle face to back of base ring: 2595 mm
Cascable: 230 mm **Overall (tube + cascable):** 2825 mm
Diam. of bore: 132/5 mm **Diam of muzzle swell:** 320 mm
Min. tube diam: 260 mm **muzzle face diam:** 260 mm
Trunnion diam: 130 mm **diam behind trunnions:** 390 mm
overall width: 610 mm **trunnion length:** 110 mm
diam. of backring: 470 mm **diam. at vent:** 440 mm
Cascable diameters:
 Min: 130 mm **Max:** 180 mm
Number of staves or rings: 6
Present condition: Restored to reproduction carriage.
How many pieces at this location: 4
Number of variant styles at this location:
Photo on file ?: yes
Additonal comments or information: Tube has "Willem Pul P
 Vet 1986 SIEP VEIDSTRA" hand stamped onto it.

Artillery Survey Form

Field Number: SE8-FDV-2
Present location/context: Fort de Windt (SE8)
Approximate "Pounder" designation:
Place of manufacture: English ?
Date of manufacture:
Markings: Cartouche on barrel. Crown over the obscured remainder.
Dimensions;
Length, muzzle face to back of base ring: 2460 mm
Cascable: 250 mm **Overall (tube + cascable):** 2710 mm
Diam. of bore: 125 mm **Diam of muzzle swell:** 265 mm
Min. tube diam: 210 mm **muzzle face diam:** 265 mm
Trunnion diam: 90 mm **diam behind trunnions:** 320+ mm
overall width: 500 mm **trunnion length:** 105 mm
diam. of backring: 420 mm **diam. at vent:** 370 mm
Cascable diameters:
 Min: 110 mm **Max:** 150 mm
Number of staves or rings: 5
Present condition: Restored to reproduction carriage.
How many pieces at this location: 4
Number of variant styles at this location:
Photo on file ?: yes
Additonal comments or information:

Artillery Survey Form

Field Number: SE8-FDV-3
Present location/context: Fort de Windt (SE8)
Approximate "Pounder" designation: 6 or 9
Place of manufacture: English if a 9 pounder
Date of manufacture:
Markings: none
Dimensions;
Length, muzzle face to back of base ring: 2230 mm
Cascable: 185 mm **Overall (tube + cascable):** 2415 mm
Diam. of bore: 100 mm **Diam of muzzle swell:** 205 mm
Min. tube diam: 165 mm **muzzle face diam:** 160 mm
Trunnion diam: 65 mm **diam behind trunnions:** 270 mm
overall width: 380 mm **trunnion length:** 110 mm
diam. of backring: 350 mm **diam. at vent:** 340 mm
Cascable diameters:
 Min: 75 mm **Max:** 90 mm
Number of staves or rings: 6
Present condition: One trunnion broken off.
How many pieces at this location: 4
Number of variant styles at this location:
Photo on file ?: no
Additonal comments or information: Cannon laying on ground by cliff edge. In danger of falling if erosion continues to ground north of wall.

Artillery Survey Form

Field Number: SE8-FDV-4
Present location/context: Fort de Windt (SE8)
Approximate "Pounder" designation: 6 or 9
Place of manufacture: English if a 9 pounder ?
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: mm
Cascable: 180 mm **Overall (tube + cascable):** mm
Diam. of bore: 98 mm **Diam of muzzle swell:** mm
Min. tube diam: mm **muzzle face diam:** mm
Trunnion diam: 80 mm **diam behind trunnions:** 280 mm
overall width: mm **trunnion length:** 110 mm
diam. of backring: 390 mm **diam. at vent:** 360 mm
Cascable diameters:
 Min: 120 mm **Max:** 125 mm
Number of staves or rings:
Present condition: Cannon apparently burst, leaving only rear half.
How many pieces at this location: 4
Photo on file ?: no
Additonal comments or information: With SE8-FDV-3, on cliff edge.

Artillery Survey Form

Field Number: SE66-BN-1
Present location/context: SE66 Battery Nassau
Approximate "Pounder" designation: 18
Place of manufacture:
Date of manufacture:
Markings: "F" on trunnion.
Dimensions;
Length, muzzle face to back of base ring: 2590 mm
Cascable: 270 mm **Overall (tube + cascable):** 2860 mm
Diam. of bore: 130 mm **Diam of muzzle swell:** 300 mm
Min. tube diam: 275 mm **muzzle face diam:** 270 mm
Trunnion diam: 120 mm **diam behind trunnions:** 370 mm
overall width: 610 mm **trunnion length:** 120^{top} mm
diam. of backring: 460 mm **diam. at vent:** 410 mm
Cascable diameters:
 Min: 130 mm **Max:** 160 mm
Number of staves or rings: 5 groups
Present condition: sound
How many pieces at this location: 1
Number of variant styles at this location: 1
Photo on file ?: no
Additonal comments or information:

Artillery Survey Form

Field Number: SE69-BB-1
Present location/context: SE69 Battery Bouille
Approximate "Pounder" designation: 12
Place of manufacture: Britain ?
Date of manufacture: 18th century
Markings: Crowned cartouche on tube. IF (Figure 57) on right trunnion.
Dimensions;
Length, muzzle face to back of base ring: 2440 mm
Cascable: 217 mm **Overall (tube + cascable):** 2657 mm
Diam. of bore: 119 mm **Diam of muzzle swell:** 310 mm
Min. tube diam: 240 mm **muzzle face diam:** 225 mm
Trunnion diam: 105 mm **diam behind trunnions:** 545 mm
overall width: 111^{top} mm **trunnion length:** 430 mm
diam. of backring: 386 mm **diam. at vent:** 110 mm
Cascable diameters:
 Min: 130 mm **Max:** 6 mm
Number of staves or rings:
Present condition: Sound
How many pieces at this location: 3
Number of variant styles at this location: 2
Photo on file ?: No
Additonal comments or information:

Artillery Survey Form

Field Number: SE69-BB-2
Present location/context: SE69 Battery Bouille
Approximate "Pounder" designation: 12
Place of manufacture: Netherlands
Date of manufacture: 18th century
Markings: Cartouche (Figure 58) on tube. On backring "VA??EH". Both trunnions have markings (figure 58)
Dimensions;
Length, muzzle face to back of base ring: 2590 mm
Cascable: 270 mm **Overall (tube + cascable):** 2860 mm
Diam. of bore: 123 mm **Diam of muzzle swell:** 280 mm
Min. tube diam: 240 mm **muzzle face diam:** 248 mm
Trunnion diam: 133 mm **diam behind trunnions:** 390 mm
overall width: 620 mm **trunnion length:** 125 mm
diam. of backring: 430 mm **diam. at vent:** 420 mm
Cascable diameters:
 Min: 48 mm **Max:** 135 mm
Number of staves or rings: 5 groups
Present condition: sound
How many pieces at this location: 3
Number of variant styles at this location: 2
Photo on file ?: no
Additonal comments or information: 2 inch ball found at muzzle.

Artillery Survey Form

Field Number: SE69-BB-3
Present location/context: SE69 Battery Bouille
Approximate "Pounder" designation: 24
Place of manufacture: Dutch or French ?
Date of manufacture: 18th century
Markings: "X" on bottom of tube between trunnions. Both trunnions marked (Figure 59).
Dimensions;
Length, muzzle face to back of base ring: 3110 mm
Cascable: 375 mm **Overall (tube + cascable):** 3485 mm
Diam. of bore: 155 mm **Diam of muzzle swell:** 370 mm
Min. tube diam: 305 mm **muzzle face diam:** 305 mm
Trunnion diam: 150 mm **diam behind trunnions:** 425 mm
overall width: 680 mm **trunnion length:** 150top mm
diam. of backring: 550 mm **diam. at vent:** 535 mm
Cascable diameters:
 Min: 130 mm **Max:** 165 mm
Number of staves or rings: 5-6
Present condition: sound
How many pieces at this location: 3
Number of variant styles at this location: 2
Photo on file ?: no
Additonal comments or information:

Artillery Survey Form

Field Number: SE97-FP-1
Present location/context: SE97 Fort Panga
Approximate "Pounder" designation: 6
Place of manufacture: Possibly British
Date of manufacture: late 18th century
Markings: on backring; "H 10P 1234". See figure 60 for trunnion markings.
Dimensions;
Length, muzzle face to back of base ring: 1790 mm
Cascable: 155 mm **Overall (tube + cascable):** 1945 mm
Diam. of bore: 89 mm **Diam of muzzle swell:** 240 mm
Min. tube diam: 195 mm **muzzle face diam:** 195 mm
Trunnion diam: 80 mm **diam behind trunnions:** 270 mm
overall width: 420 mm **trunnion length:** 85 mm
diam. of backring: 295 mm **diam. at vent:** 290 mm
Cascable diameters:
 Min: 75 mm **Max:** 115 mm
Number of staves or rings: 4
Present condition: sound
How many pieces at this location: 5
Number of variant styles at this location:
Photo on file?: yes
Additonal comments or information:

Artillery Survey Form

Field Number: SE97-FP-2
Present location/context: SE97 Fort Panga
Approximate "Pounder" designation: 6
Place of manufacture: Possibly British
Date of manufacture: late 18th century
Markings: on backring; "ANN.....". "VB(?)" on trunnions.
Dimensions;
Length, muzzle face to back of base ring: 1790 mm
Cascable: 155 mm **Overall (tube + cascable):** 1945 mm
Diam. of bore: 89 mm **Diam of muzzle swell:** 240 mm
Min. tube diam: 195 mm **muzzle face diam:** 195 mm
Trunnion diam: 80 mm **diam behind trunnions:** 270 mm
overall width: 420 mm **trunnion length:** 85 mm
diam. of backring: 295 mm **diam. at vent:** 290 mm
Cascable diameters:
 Min: 75 mm **Max:** 115 mm
Number of staves or rings: 4
Present condition: sound
How many pieces at this location: 5
Number of variant styles at this location:
Photo on file?: yes
Additonal comments or information:

Artillery Survey Form**Field Number:** SE97-FP-3**Present location/context:** SE97 Fort Panga**Approximate "Pounder" designation:** 6**Place of manufacture:****Date of manufacture:****Markings:****Dimensions;****Length, muzzle face to back of base ring:** 1790 mm**Cascable:** 155 mm **Overall (tube + cascable):** 1945 mm**Diam. of bore:** 89 mm **Diam of muzzle swell:** 240 mm**Min. tube diam:** 195 mm **muzzle face diam:** 195 mm**Trunnion diam:** 80 mm **diam behind trunnions:** 270 mm**overall width:** 420 mm **trunnion length:** 85 mm**diam. of backring:** 295 mm **diam. at vent:** 290 mm**Cascable diameters:****Min:** 75 mm**Max:** 115 mm**Number of staves or rings:** 5**Present condition:** sound**How many pieces at this location:** 4**Number of variant styles at this location:****Photo on file ?:** yes**Additonal comments or information:**
-----**Artillery Survey Form****Field Number:** SE97-FP-4**Present location/context:** SE97 Fort Panga**Approximate "Pounder" designation:** 6**Place of manufacture:** Possibly British**Date of manufacture:** Late 18th century**Markings:** See figure 61 for trunnion mark. Backring; "A P12.2.8" (center characters obscured)**Dimensions;****Length, muzzle face to back of base ring:** 1930 mm**Cascable:** 120 mm **Overall (tube + cascable):** 2050 mm**Diam. of bore:** 89 mm **Diam of muzzle swell:** 235 mm**Min. tube diam:** 170 mm **muzzle face diam:** 180 mm**Trunnion diam:** 85 mm **diam behind trunnions:** 230 mm**overall width:** 400 mm **trunnion length:** 85 (top) mm**diam. of backring:** 310 mm **diam. at vent:** 290 mm**Cascable diameters:****Min:** 65 mm**Max:** 80 mm**Number of staves or rings:****Present condition:** sound**How many pieces at this location:** 5**Number of variant styles at this location:** 2**Photo on file ?:** yes**Additonal comments or information:**

Artillery Survey Form

Field Number: SE97-FP-5
Present location/context: SE97 Fort Panga
Approximate "Pounder" designation: 6
Place of manufacture:
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: mm
Cascable: mm **Overall (tube + cascable):** mm
Diam. of bore: mm **Diam of muzzle swell:** mm
Min. tube diam: 250 mm **muzzle face diam:** mm
Trunnion diam: mm **diam behind trunnions:** mm
overall width: mm **trunnion length:** mm
diam. of backring: mm **diam. at vent:** 360 mm
Cascable diameters:
Min: mm **Max:** mm
Number of staves or rings:
Present condition: Partially buried
How many pieces at this location: 5
Number of variant styles at this location: 2
Photo on file ?: no
Additonal comments or information:

Artillery Survey Form

Field Number: SE97/SE98-Trench-1
Present location/context: Trench running between SE97 and SE98, Fort Panga and Battery Jussac.
Approximate "Pounder" designation: 6
Place of manufacture: Possibly British
Date of manufacture: 18th century
Markings: on backring; "A.....1226".
Dimensions;
Length, muzzle face to back of base ring: 1790 mm
Cascable: 155 mm **Overall (tube + cascable):** 1945 mm
Diam. of bore: 89 mm **Diam of muzzle swell:** 240 mm
Min. tube diam: 195 mm **muzzle face diam:** 195 mm
Trunnion diam: 80 mm **diam behind trunnions:** 270 mm
overall width: 420 mm **trunnion length:** 85 mm
diam. of backring: 295 mm **diam. at vent:** 290 mm
Cascable diameters:
Min: 75 mm **Max:** 115 mm
Number of staves or rings: 4
Present condition: sound
How many pieces at this location:
Number of variant styles at this location:
Photo on file ?: yes
Additonal comments or information:

Artillery Survey Form

Field Number: SE98-JB-1
Present location/context: SE98, Jussac Battery.
Approximate "Pounder" designation: 6
Place of manufacture: Possibly British
Date of manufacture: 18th century
Markings: on backring; "A 1772 7PJ22.6"(J may be a 1).
 Trunnions are marked "RV"
Dimensions;
Length, muzzle face to back of base ring: 1790 mm
Cascable: 155 mm **Overall (tube + cascable):** 1945 mm
Diam. of bore: 89 mm **Diam of muzzle swell:** 240 mm
Min. tube diam: 195 mm **muzzle face diam:** 195 mm
Trunnion diam: 80 mm **diam behind trunnions:** 270 mm
overall width: 420 mm **trunnion length:** 85 mm
diam. of backring: 295 mm **diam. at vent:** 290 mm
Cascable diameters:
 Min: 75 mm **Max:** 115 mm
Number of staves or rings: 4
Present condition: sound
How many pieces at this location: 3
Number of variant styles at this location: 2
Photo on file ?: no
Additonal comments or information:

Artillery Survey Form

Field Number: SE98-JB-2
Present location/context: SE98, Jussac Battery
Approximate "Pounder" designation: 12 to 18
Place of manufacture: Possibly Dutch
Date of manufacture:
Markings: Similar to trunnion marks on SE69-BB-2.
Dimensions;
Length, muzzle face to back of base ring: 2580 mm
Cascable: 270 mm **Overall (tube + cascable):** 2850 mm
Diam. of bore: 130 mm **Diam of muzzle swell:** 300 mm
Min. tube diam: 235 mm **muzzle face diam:** 235 mm
Trunnion diam: 120 mm **diam behind trunnions:** mm
overall width: mm **trunnion length:** 110 mm
diam. of backring: 450 mm **diam. at vent:** 410 mm
Cascable diameters:
 Min: 105 mm **Max:** 140 mm
Number of staves or rings:
Present condition: sound
How many pieces at this location: 3
Number of variant styles at this location: 2
Photo on file ?: yes
Additonal comments or information:

Artillery Survey Form

Field Number: SE98-JB-3
Present location/context: SE98, Jussac Battery.
Approximate "Pounder" designation: 6
Place of manufacture: Possibly British
Date of manufacture: 18th century
Markings: on backring; "49PJ234" (J may be a 1). Trunnions are marked "RV"
Dimensions;
Length, muzzle face to back of base ring: 1790 mm
Cascable: 155 mm **Overall (tube + cascable):** 1945 mm
Diam. of bore: 89 mm **Diam of muzzle swell:** 240 mm
Min. tube diam: 195 mm **muzzle face diam:** 195 mm
Trunnion diam: 80 mm **diam behind trunnions:** 270 mm
overall width: 420 mm **trunnion length:** 85 mm
diam. of backring: 295 mm **diam. at vent:** 290 mm
Cascable diameters:
 Min: 75 mm **Max:** 115 mm
Number of staves or rings: 4
Present condition: sound
How many pieces at this location: 3
Number of variant styles at this location: 2
Photo on file ?: no
Additonal comments or information:

Artillery Survey Form

Field Number: SE81-BCON-1
Present location/context: SE81, Battery Concordia
Approximate "Pounder" designation: 3
Place of manufacture:
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: 1795 mm
Cascable: 180 mm **Overall (tube + cascable):** 1975 mm
Diam. of bore: 80 mm **Diam of muzzle swell:** 285 mm
Min. tube diam: 210 mm **muzzle face diam:** 200 mm
Trunnion diam: 100/140 mm **diam behind trunnions:** 325 mm
overall width: 450 mm **trunnion length:** 70/100 mm
diam. of backring: 330 mm **diam. at vent:** 325 mm
Cascable diameters:
Min: 75 mm **Max:** 85 mm
Number of staves or rings: 2+?
Present condition: Deteriorated. Fe deeply cracked.
How many pieces at this location: 2
Number of variant styles at this location: 2
Photo on file ?: yes
Additonal comments or information: Exposure to the Atlantic winds and salts has caused severe deterioration.

Artillery Survey Form

Field Number: SE81-BCON-2
Present location/context: SE81 Battery Concordia
Approximate "Pounder" designation: 9 or 12
Place of manufacture: Britain ?
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: 1650 mm
Cascable: 130 mm **Overall (tube + cascable):** 1780 mm
Diam. of bore: 110d mm **Diam of muzzle swell:** 240 mm
Min. tube diam: 230 mm **muzzle face diam:** 165d mm
Trunnion diam: mm **diam behind trunnions:** mm
overall width: mm **trunnion length:** missing mm
diam. of backring: 380 mm **diam. at vent:** 340 mm
Cascable diameters: Missing
Number of staves or rings: 4
Present condition: Deteriorated. Cascable and both trunnions missing
How many pieces at this location: 2
Number of variant styles at this location: 2
Photo on file ?: yes
Additonal comments or information: Cascable and trunnions being knocked off was common to prepare for salvage, however, deteriorated condition of the piece may account for some of this alteration. Style of the gun is very typical of pieces meant specifically for naval use.

Artillery Survey Form

Field Number: SE27-CC-1
Present location/context: SE27, Battery Corre Corre
Approximate "Pounder" designation: 4
Place of manufacture:
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: 1750 mm
Cascable: 160 mm **Overall (tube + cascable):** 1910 mm
Diam. of bore: 85 mm **Diam of muzzle swell:** 230 mm
Min. tube diam: 225 mm **muzzle face diam:** 175 mm
Trunnion diam: 100 mm **diam behind trunnions:** 300 mm
overall width: 440 mm **trunnion length:** 70 mm
diam. of backring: 310 mm **diam. at vent:** 310 mm
Cascable diameters:
 Min: 65 mm **Max:** 80 mm
Number of staves or rings:
Present condition: heavy corrosion
How many pieces at this location: 3
Number of variant styles at this location: 2-3
Photo on file ?: yes
Additonal comments or information: Exposure to Atlantic winds and sea salts has caused heavy deterioration.

Artillery Survey Form

Field Number: SE27-CC-2
Present location/context: SE27, Battery Corre Corre
Approximate "Pounder" designation: 6 or 9
Place of manufacture:
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: 1770 mm
Cascable: 180 mm **Overall (tube + cascable):** 1950 mm
Diam. of bore: 100d mm **Diam of muzzle swell:** 240 mm
Min. tube diam: 190 mm **muzzle face diam:** 180 mm
Trunnion diam: 90 mm **diam behind trunnions:** 290 mm
overall width: 430 mm **trunnion length:** 70 mm
diam. of backring: 345 mm **diam. at vent:** 310 mm
Cascable diameters:
 Min: 70 mm **Max:** 90 mm
Number of staves or rings:
Present condition: heavy corrosion
How many pieces at this location: 3
Number of variant styles at this location: 2-3
Photo on file ?: yes
Additonal comments or information: Exposure to Atlantic winds and sea salts has caused heavy deterioration

Artillery Survey Form

Field Number: SE27-CC-3
Present location/context: SE27, Battery Corre Corre
Approximate "Pounder" designation: 12
Place of manufacture:
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: 2490 mm
Cascable: 300 mm **Overall (tube + cascable):** 2790 mm
Diam. of bore: 120 mm **Diam of muzzle swell:** 320 mm
Min. tube diam: 260 mm **muzzle face diam:** 270 mm
Trunnion diam: 160 mm **diam behind trunnions:** 380 mm
overall width: 700 mm **trunnion length:** 120 mm
diam. of backring: 470 mm **diam. at vent:** 427 mm
Cascable diameters:
 Min: 130 mm **Max:** 175 mm
Number of staves or rings:
Present condition: corroded
How many pieces at this location: 3
Number of variant styles at this location: 2-3
Photo on file ?: yes
Additonal comments or information: Exposure to Atlantic winds and sea salts has caused heavy deterioration

Artillery Survey Form

Field Number: SE219-1
Present location/context: SE219, the Guest House, in the compound wall.
Approximate "Pounder" designation:
Place of manufacture:
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: mm
Cascable: mm **Overall (tube + cascable):** mm
Diam. of bore: mm **Diam of muzzle swell:** mm
Min. tube diam: mm **muzzle face diam:** mm
Trunnion diam: mm **diam behind trunnions:** mm
overall width: mm **trunnion length:** mm
diam. of backring: mm **diam. at vent:** mm
Cascable diameters:
 Min: mm **Max:** mm
Number of staves or rings:
Present condition: sound, but encased in concrete wall
How many pieces at this location: 1
Number of variant styles at this location: 1
Photo on file ?: no
Additonal comments or information: Not measured

Artillery Survey Form**Field Number:** SE383-LT-1**Present location/context:** Cliff side of Bay Road, on low wall (SE383).**Approximate "Pounder" designation:** 12**Place of manufacture:****Date of manufacture:****Markings:****Length, muzzle face to back of base ring:** 2061 mm**Cascable:** broken mm **Overall (tube + cascable):** 2073 mm**Diam. of bore:** 125d mm **Diam of muzzle swell:** 320 mm**Min. tube diam:** 250 mm **muzzle face diam:** 250 mm**overall width:** mm **trunnion length:** mm**diam. of backring:** 460 mm **diam. at vent:** 445 mm**Cascable diameters:** Missing**Number of staves or rings:** 5**Present condition:** Deteriorated, trimmed for salvage**How many pieces at this location:** 2**Number of variant styles at this location:** 1**Photo on file ?:** no

Additonal comments or information: Cannon may have been removed here from elsewhere, or could be associated with Lower Town batteries. The former is suspected as both guns had the cascables removed, possibly for salvage purposes, and known salvage activity along the bay in the 19th century.

Artillery Survey Form**Field Number:** SE383-LT-2**Present location/context:** Cliff side of Bay Road, on low wall (SE383).**Approximate "Pounder" designation:** 18**Place of manufacture:** Date of manufacture:**Markings:****Length, muzzle face to back of base ring:** 2054 mm**Cascable:** broken mm **Overall (tube + cascable):** 2069 mm**Diam. of bore:** 140d mm **Diam of muzzle swell:** 350 mm**Min. tube diam:** 310 mm **muzzle face diam:** 305 mm**Trunnion diam:** est.140 (broken) mm**diam. of backring:** 520 mm **diam. at vent:** 475 mm**Cascable diameters:** Missing**Number of staves or rings:** 5**Present condition:** deteriorated, trimmed for salvage**How many pieces at this location:** 2**Number of variant styles at this location:** 1**Photo on file ?:** no

Additonal comments or information: Cannon may have been removed here from elsewhere, or could be associated with Lower Town batteries. The former is suspected as the guns had cascables and trunnions removed, common for salvage purposes, and known salvage activity along the bay in the 19th century.

Artillery Survey Form

Field Number: HF-1
Present location/context: St. Eustatius Historical Foundation Museum collections
Approximate "Pounder" designation: 18
Place of manufacture: Dutch
Date of manufacture: 18th century
Markings: "120A" above vent
Dimensions;
Length, muzzle face to back of base ring: 2685 mm
Cascable: 260 mm **Overall (tube + cascable):** 2945 mm
Diam. of bore: 137 mm **Diam of muzzle swell:** 275 mm
Min. tube diam: 242 mm **muzzle face diam:** 229 mm
Trunnion diam: 120 mm **diam behind trunnions:** 349? mm
overall width: mm **trunnion length:** 120 top mm
diam. of backring: 449 mm **diam. at vent:** 423 mm
Cascable diameters:
 Min: 98 mm **Max:** 135 mm
Number of staves or rings: 6
Present condition: restored to carriage, tube painted black
How many pieces at this location:
Number of variant styles at this location:
Photo on file ?: no
Additonal comments or information: Cannon mounted in front of museum on carriage with iron wheels. Reportedly originally from Battery Tumble Down Dick.

Artillery Survey Form

Field Number: HF-2
Present location/context: St. Eustatius Historical Foundation Museum, on ground by rear door at time of recording.
Approximate "Pounder" designation: 3
Place of manufacture:
Date of manufacture:
Markings:
Length, muzzle face to back of base ring: 1210 mm
Cascable: 135 mm **Overall (tube + cascable):** 1345 mm
Diam. of bore: 80d mm **Diam of muzzle swell:** 195 mm
Min. tube diam: 150 mm **muzzle face diam:** 140 mm
Trunnion diam: 65/75 mm **diam behind trunnions:** 240 mm
overall width: 340 mm **trunnion length:** 75/50 mm
diam. of backring: 300 mm **diam. at vent:** 270 mm
Cascable diameters:
 Min: 60 mm **Max:** 65 mm
Number of staves or rings: 5d
Present condition: deteriorated
Photo on file ?: no
Additonal comments or information: Piece was thought to have been brought up from Oranje Bay.

Artillery Survey Form**Field Number:** HF-3**Present location/context:** St. Eustatius Historical Foundation Museum, on ground by rear door at time of recording**Approximate "Pounder" designation:** 1**Place of manufacture:****Date of manufacture:****Markings:****Dimensions;****Length, muzzle face to back of base ring:** 1150 mm**Cascable:** 100 mm **Overall (tube + cascable):** 1250 mm**Diam. of bore:** 48d mm **Diam of muzzle swell:** 140 mm**Min. tube diam:** 115 mm **muzzle face diam:** 85 mm**Trunnion diam:** 50 mm **diam behind trunnions:** 170 mm**overall width:** 240 mm **trunnion length:** 67 mm**diam. of backring:** 200 mm **diam. at vent:** 190 mm**Cascable diameters:****Min:** 70 mm**Max:** 77 mm**Number of staves or rings:** 4-5**Present condition:** deteriorated, severe flaking, in need of immediate conservation**How many pieces at this location:****Number of variant styles at this location:****Photo on file ?:** no**Additonal comments or information:** Thought to have been brought up from Oranje Bay.**Artillery Survey Form****Field Number:** HF-4**Present location/context:** St. Eustatius Historical Foundation Museum**Approximate "Pounder" designation:****Place of manufacture:****Date of manufacture:****Markings:****Dimensions;****Length, muzzle face to back of base ring:** mm**Cascable:** mm **Overall (tube + cascable):** mm**Diam. of bore:** mm **Diam of muzzle swell:** mm**Min. tube diam:** mm **muzzle face diam:** mm**Trunnion diam:** mm **diam behind trunnions:** mm**overall width:** mm **trunnion length:** mm**diam. of backring:** mm **diam. at vent:** mm**Cascable diameters:****Min:** mm**Max:** mm**Number of staves or rings:****Present condition:** heavy crustation**Photo on file ?:** no**Additonal comments or information:** Swivel gun from Oranje Bay, not measured.

Artillery Survey Form

Field Number: HF-5
Present location/context: St. Eustatius Historical Foundation Museum
Approximate "Pounder" designation:
Place of manufacture:
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: mm
Cascable: mm **Overall (tube + cascable):** mm
Diam. of bore: mm **Diam of muzzle swell:** mm
Min. tube diam: mm **muzzle face diam:** mm
Trunnion diam: mm **diam behind trunnions:** mm
overall width: mm **trunnion length:** mm
diam. of backring: mm **diam. at vent:** mm
Cascable diameters:
Min: mm **Max:** mm
Number of staves or rings:
Present condition:
How many pieces at this location: heavy crustation
Number of variant styles at this location:
Photo on file ?: no
Additonal comments or information: Swivel gun from Oranje Bay, not measured. Remnants of original packing. Said to be from a lost cargo, and with HF-6.

Artillery Survey Form

Field Number: HF-6
Present location/context: St. Eustatius Historical Foundation Museum
Approximate "Pounder" designation:
Place of manufacture:
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: mm
Cascable: mm **Overall (tube + cascable):** mm
Diam. of bore: mm **Diam of muzzle swell:** mm
Min. tube diam: mm **muzzle face diam:** mm
Trunnion diam: mm **diam behind trunnions:** mm
overall width: mm **trunnion length:** mm
diam. of backring: mm **diam. at vent:** mm
Cascable diameters:
Min: mm **Max:** mm
Number of staves or rings:
Present condition: heavy crustation
Photo on file ?: no
Additonal comments or information: Swivel gun from Oranje Bay, not measured. Said to be from a lost cargo, and found with HF-5. Packing material removed.

Artillery Survey Form**Field Number:** UT-1**Present location/context:** House yard in upper town across from cemetery**Approximate "Pounder" designation:****Place of manufacture:****Date of manufacture:****Markings:****Dimensions;****Length, muzzle face to back of base ring:** mm**Cascable:** mm **Overall (tube + cascable):** mm**Diam. of bore:** mm **Diam of muzzle swell:** mm**Min. tube diam:** mm **muzzle face diam:** mm**Trunnion diam:** mm **diam behind trunnions:** mm**overall width:** mm **trunnion length:** mm**diam. of backring:** mm **diam. at vent:** mm**Cascable diameters:****Min:** mm**Max:** mm**Number of staves or rings:****Present condition:** deteriorated**How many pieces at this location:****Number of variant styles at this location:****Photo on file ?:** no**Additonal comments or information:** Not measured. Small gun deck or swivel gun.**Artillery Survey Form****Field Number:** GE-1**Present location/context:** The Golden Era**Approximate "Pounder" designation:****Place of manufacture:****Date of manufacture:****Markings:****Dimensions;****Length, muzzle face to back of base ring:** mm**Cascable:** mm **Overall (tube + cascable):** mm**Diam. of bore:** mm **Diam of muzzle swell:** mm**Min. tube diam:** mm **muzzle face diam:** mm**Trunnion diam:** mm **diam behind trunnions:** mm**overall width:** mm **trunnion length:** mm**diam. of backring:** mm **diam. at vent:** mm**Cascable diameters:****Min:** mm**Max:** mm**Number of staves or rings:****Present condition:****How many pieces at this location:****Number of variant styles at this location:****Photo on file ?:** no**Additonal comments or information:** Not measured

Artillery Survey Form

Field Number: OB-1
 Present location/context: Oranje Bay
 Approximate "Pounder" designation:
 Place of manufacture:
 Date of manufacture:
 Markings:
 Dimensions;
 Length, muzzle face to back of base ring: mm
 Cascable: mm Overall (tube + cascable): mm
 Diam. of bore: mm Diam of muzzle swell: mm
 Min. tube diam: mm muzzle face diam: mm
 Trunnion diam: mm diam behind trunnions: mm
 overall width: mm trunnion length: mm
 diam. of backring: mm diam. at vent: mm
 Cascable diameters:
 Min: mm Max: mm
 Number of staves or rings:
 Present condition: Coral encrusted
 How many pieces at this location:
 Number of variant styles at this location:
 Photo on file?: no
 Additonal comments or information: Appears to be of a
 similar size to SE382-LT-1 and 2. Not measured.

Artillery Survey Form

Field Number: OB-2
 Present location/context: Oranje Bay, north of the Large
 ("fishing") Pier
 Approximate "Pounder" designation:
 Place of manufacture:
 Date of manufacture:
 Markings:
 Dimensions;
 Length, muzzle face to back of base ring: mm
 Cascable: mm Overall (tube + cascable): mm
 Diam. of bore: mm Diam of muzzle swell: mm
 Min. tube diam: mm muzzle face diam: mm
 Trunnion diam: mm diam behind trunnions: mm
 overall width: mm trunnion length: mm
 diam. of backring: mm diam. at vent: mm
 Cascable diameters:
 Min: mm Max: mm
 Number of staves or rings:
 Present condition: Coral encrusted
 How many pieces at this location:
 Number of variant styles at this location:
 Photo on file?: yes
 Additonal comments or information: Not measured.

Artillery Survey Form

Field Number: OB-3
Present location/context: Oranje Bay
Approximate "Pounder" designation:
Place of manufacture:
Date of manufacture:
Markings:
Dimensions;
Length, muzzle face to back of base ring: mm
Cascable: mm **Overall (tube + cascable):** mm
Diam. of bore: mm **Diam of muzzle swell:** mm
Min. tube diam: mm **muzzle face diam:** mm
Trunnion diam: mm **diam behind trunnions:** mm
overall width: mm **trunnion length:** mm
diam. of backring: mm **diam. at vent:** mm
Cascable diameters:
Min: mm **Max:** mm
Number of staves or rings:
Present condition: Coral encrusted
How many pieces at this location:
Number of variant styles at this location:
Photo on file ?: no
Additonal comments or information: Swivel gun ? Not measured.

Artillery Survey Form

Field Number: SE502/151E5
Present location/context: College of William and Mary Archaeological Conservation Labs (to be returned to St. Eustatius Historical Foundation Museum)
Approximate "Pounder" designation:
Place of manufacture:
Date of manufacture:
Markings:
Dimensions; Not measured
Present condition: Cleaned and consolidated, but retains much concretions.
How many pieces at this location: 1
Photo on file ?: No
Additonal comments or information: Found at shipwreck SE550, at a depth of 55 feet. Two swivel guns were located, one on the starboard and one on the port bow. Several muskets were noted at the stern. The companion gun to this was not given a number here, nor observed in 1990.

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