

The Dutch East Indiaman *Hollandia* wrecked on the Isles of Scilly in 1743

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1. Search, location and excavation

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The Isles of Scilly are an archipelago of approximately 200 islands and large rocks lying 25 miles west by south of Land's End, Cornwall. Only five of them are now inhabited, but several others were inhabited during the 17th and 18th century. During the days of sailing ships, lying athwart the shipping routes at the apex of the St George's and English Channels, they were a vital shelter and lay-by for ships homeward bound across the Atlantic, or running up from the Bay of Biscay and encountering contrary winds. The prevailing wind is south-westerly. Over the centuries the islands have been a graveyard for ships, for rocks and submerged reefs dot the surrounding seas like a natural minefield.

Plans for the first expedition to the Islands were prepared in April 1968. At the same time, parallel historical research, which had already been started in Holland and England, was continued and accelerated. Only two historical accounts gave any more than vague intimation of where the *Hollandia* sank. Heath (1750: 149), who was an officer in the garrison at St Mary's and was likely to have been present at the time of the (unnamed) shipwreck, described the place as 'off St Agnes in about 20 or 22 fathoms of water'. Troutbeck (1794: 208) describes the *Hollandia* (not named in his account) as having 'struck upon the Gunner Rock in Broad Sound off St. Agnes Island and sank down in about 22 fathoms depth of water'. Troutbeck was the vitriolic chaplain

to the Islands in the 1770s, but his use of the name Gunner Rock probably came from the oral tradition of stories about the wreck, which was at that time fairly recent, and must have been in the knowledge of some of the older islanders. However, Heath's failure to refer to Gunner Rock left us with the suspicion that the ship had not sunk near the rock. One other contemporary account in Holland afforded some more slender clues. A Dutch newspaper (*Amsterdam Courant*, 27 July 1743) reported that on 13 July 1743 (New Style) Captain Willem Bakker met two ships two miles south of the Scilly Isles 'at half past six in the morning in thick weather and heavy sea while the wind came from the west'. He heard that one ship was wrecked on the Scilly Isles.

Broad Sound is a vicious strip of sea between the western rocks and the islands of St Agnes and Annet; its area is approximately six square miles (Fig. 1). We therefore worked on the hypothesis that the ship struck Gunner Rock and sank somewhere in Broad Sound. As the wind was in the west, the place where the *Hollandia* foundered was likely to be to the east of Gunner Rock. Heath and Troutbeck refer to the firing of guns. To prime and fire a ship's cannon would take about 8 to 12 minutes. If, as we postulated, the *Hollandia* turned after having struck the rock to seek shelter in the easterly parts of the Islands and with the wind behind her, she could have sailed up to a mile during that period.

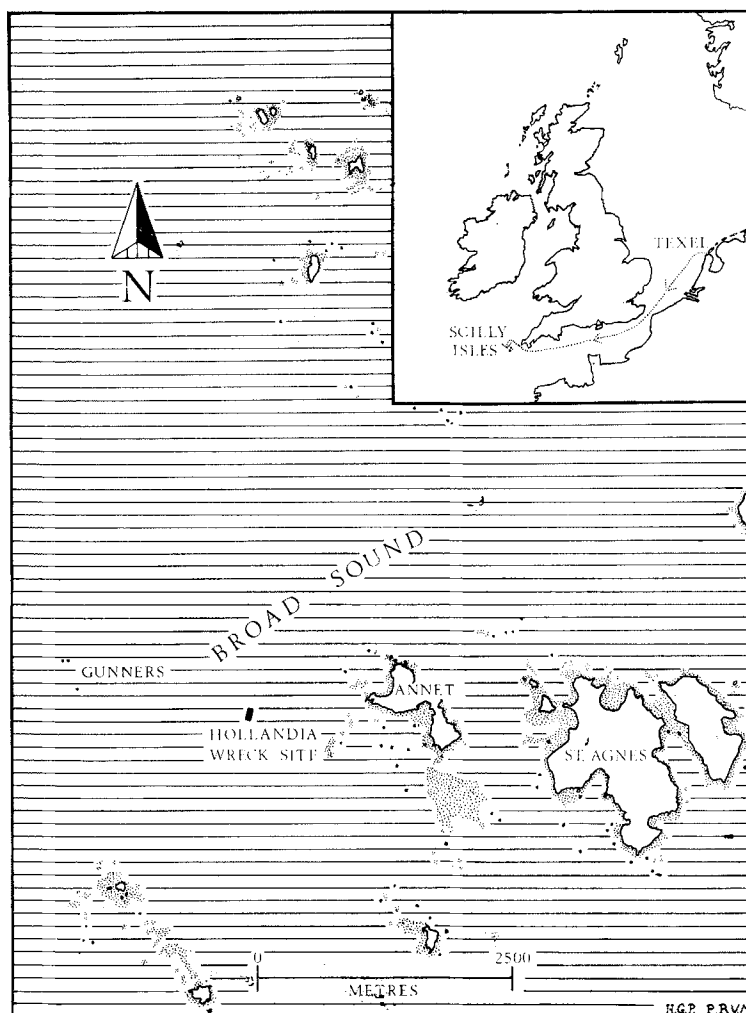


Figure 1. Map of Isles of Scilly showing position of *Hollandia* wreck. Inset: route of *Hollandia* from Texel.

This hypothesis depends upon the state of the tide; it was not known how badly the ship had been holed. As she sank deeper in the water the tide would have had more effect than the wind. It was therefore decided to search within an area of a semi-circle with a radius of one mile on the eastern side of Gunner Rock, paying particular attention to those places where the depth of water was around 20 fathoms (36.57 m). Perfidious sea conditions are one of the features of the Isles of Scilly. June and July 1970 were picked as being the most likely to provide safe sea conditions for an underwater search. However, the area is always poten-

tially dangerous, the shallow shoal areas prone to quickly whipped up mountainous seas and the tides running north and south being so strong during spring that a diver could be easily lost within minutes. Frequent disturbance of the sea-bed during gales means that the clear visibility for which the waters of Scilly are noted, could be reduced to less than a foot (0.317 m).

At the beginning of June 1970, with a team of divers varying in number from five to eight, the search for the *Hollandia* commenced. An immediate investigation of the whole of the base of Gunner Rock showed that no signs of any wreck were

within 100 yards (91.44 m) thereof. The remainder of the area was searched visually during long swims, with the divers navigating by compass bearings, fanning out taking different bearings, or strung together on swim lines. This is a crude method of search and navigation, but with five divers and reasonable visibility a strip of sea-bed over 100 ft wide (30.46 m), could be searched at a time. By the end of July no wreck had been sighted and we had been surprised to find the sea-bed barren, without trace of any debris. By this time we appreciated the enormity of the task and the relative crudity of the methods of search. Anthony Lonsdale, an electronics expert, was approached to provide a marine magnetometer. Magnetometers have been employed in underwater search in the United States for several years. Their successful use depends upon a number of unrelated factors, including the nature of the objective, the general sea-bed environment in the target area and the amount of local magnetic disturbance present. The first application involved the use of an alkali vapour version towed by an inflatable craft on the surface. This turned out to be an unpredictable and unreliable instrument in undulant sea conditions. Navigation is the key to the use of a marine magnetometer and this proved the most difficult task of all. The distance from landmarks made it impossible to utilize the method described by Robert Sténuit (1974: 221). We experimented with fixing the position of the boat at intervals using sextant bearings, but the rolling sea conditions made this form of navigational recording difficult and unreliable. In any event, it only enabled us to chart the course of the boat at a later point and not to correct its course. The accuracy required was for a sweep, in lanes not more than 40 ft (12.19 m) apart, in order to be sure of detecting the ferrous ship remains.

At the end of August 1970 the search was temporarily suspended. From then until April 1971 periodic experimental tests were carried out with a proton magnetometer, whose sensors had been designed to overcome hydrodynamic problems. In April 1971 a new team of two permanent and two or

three part-time divers, under the diving leadership of Lt Cdr Jack Gayton, RN (Ret'd), started the second phase of the exploration. By this time a large part of the suspect areas around Gunner Rock had been investigated and the theories about the position of the shipwreck and the results of subsequent research were re-evaluated. New financial and administrative arrangements were concluded and the team was to have two objectives: the main one, to search, visually, and with the magnetometer, in the area around Bishop Rock for the possible remains of the *Princesse Maria* (wrecked 1686 and discovered eventually in 1973), and the continuation of the magnetometer survey in Broad Sound as the secondary objective. A 28-ft (8.53 m) diesel powered launch, skippered by David Stedeford, an experienced Bryher boatman, was used. Fisherman's marks were used as transit bearings and the skipper's skill was such that we estimated that the lanes of sea searched were not more than 50 ft (15.24 m) apart.

This phase of the search, the combination of visual diving techniques with improved magnetometry, continued until the latter part of 1971 (Fig. 2). At a point when most of the resources, human and financial, were almost exhausted, an anomaly appeared on 16 September 1971 (Fig. 3) on the magnetometer chart indicating the existence of ferrous material. This anomaly appeared approximately $1\frac{1}{2}$ miles east of Gunner Rock. Diving on 17 September—no signs of a wreck on the sea-bed—but on 18 September, despite poor visibility, cannon, anchors and lead ingots were sighted. On the next day the discovery of a bronze cannon with the monogram of the Amsterdam Chamber of the VOC confirmed the existence of a Dutch East India ship, almost certainly the *Hollandia*. Subsequent evidence, including silver cutlery bearing the joint arms of the Bentinck and Imhoff families, has identified the wreck as the *Hollandia* with absolute certainty. Within a few days a large hoard of silver coins had been discovered and certain decisions concerning the priority of procedures had to be made. The weather was expected to deteriorate towards the

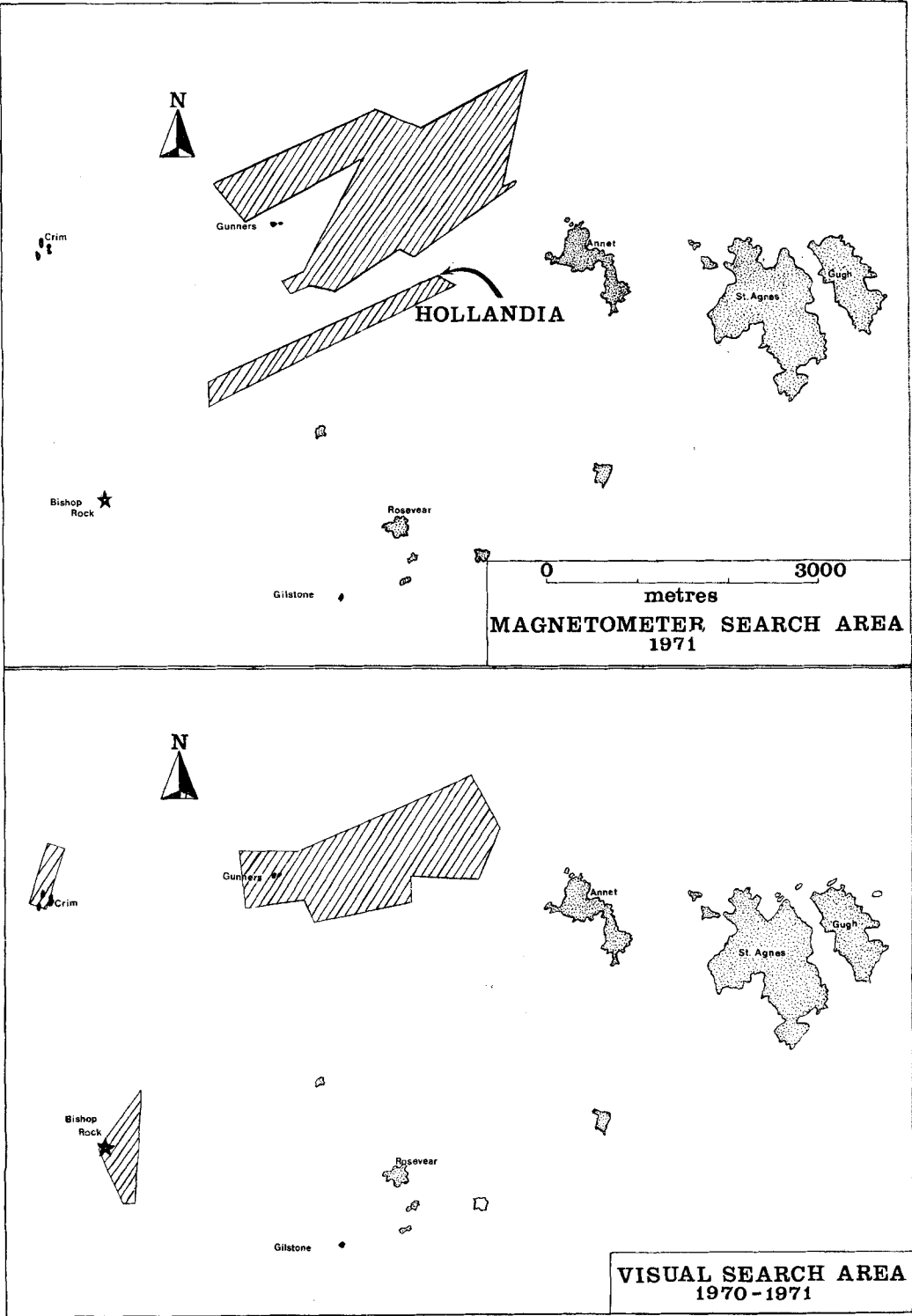


Figure 2. Plans of search area in Scilly Isles.

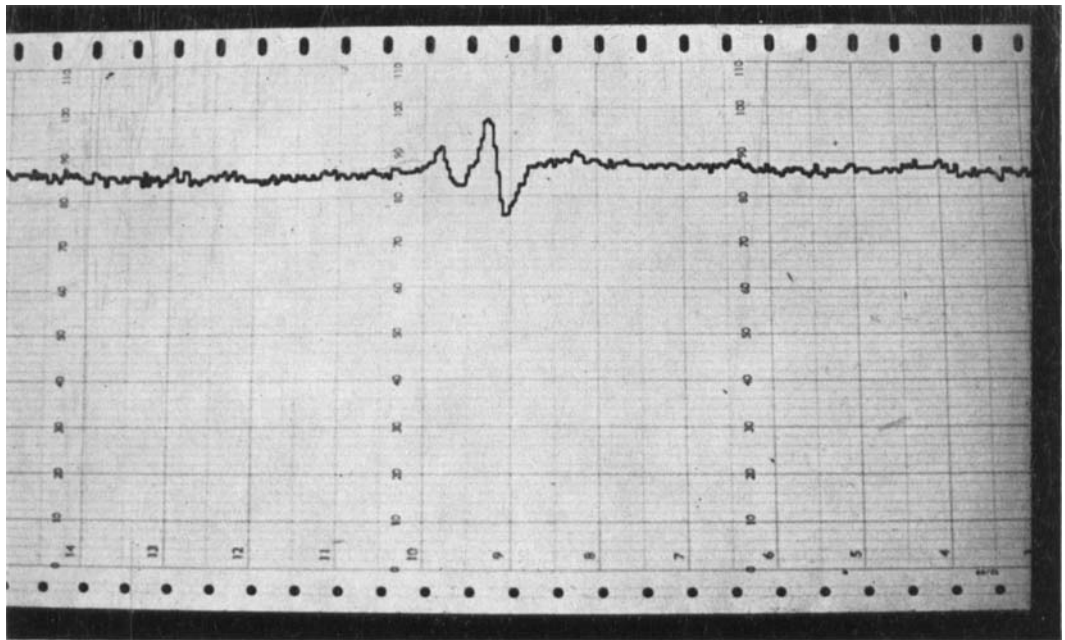


Figure 3. Magnetometer graph showing Main Site of wreck as indicated by arrow on Fig. 2.

latter part of the year which would make a full survey of the site impossible. Those parts of the wreckage which had been sighted were in approximately 100 ft (30.46 m) of water, and as our policy has been not to permit the divers to run into decompression, this limited the working period during each day (weather permitting) to approximately 40 minutes per diver. Once the news of the find was inevitably broadcast, with the attendant stories of a huge store of treasure, interference with the site from more than one source could be expected. It was therefore decided to remove as much as possible of the huge quantities of silver concreted into a relatively small area of the sea-bed, together with the bronze cannon. Recording procedures were initiated and sketch plans of the visible parts of the site put in hand and prepared by Nowell Pearce, an ex-Naval Chief Petty Officer. Later, contractual arrangements were put in hand for a full survey of the site to be carried out by Roy Graham, an experienced former Naval Officer. This was completed in the first half of 1972, as soon as the winter weather permitted. The site was concealed and not marked on the surface, but mooring lines

for the working boat were attached to the cannon on the sea-bed and floating buoys were sunk with weights each day after completion of the work, which continued in secret.

Towards the end of October 1971 a commercial diving team based on the Isles of Scilly, suspicious of the constant presence of our boat in Broad Sound, carried out magnetometer operations in the area and discovered the wreck site, when the sensor of their magnetometer hooked our sunken mooring lines. The subsequent publicity brought another diving team into the area and diving on the site took place, accompanied by the removal of material which, in accordance with the provisions of the Merchant Shipping Act, was handed to the Receiver of Wreck. Immediate measures were taken to safeguard the site and to assert the sovereignty of our rights thereto, which included the obtaining of an *ex-parte* interim injunction in the High Court of Admiralty against one of the teams which was settled by satisfactory undertakings being given by them against interfering with the site. By this time the winter had set in hard, but

it was necessary to maintain a constant vigil on the site. The sea-bed comprises granite rock with large patches of sand, shallow in some parts, together with gravel. No recognizable parts of the hull survive, although some broken or worm-eaten portions of timber are to be found under the concretion. Only the cannon and anchors are to be seen on the surface. Everything else has been concreted into the sea-bed into a hard amalgam now commonly found on undersea sites, and composed of ferrous compounds, organic material, pitch and gun powder, sand and gravel.

Sometimes this material is rock hard and the whole area presents the appearance of a large irregular cake baked on the sea-bed, with a hard crust, with some parts of the cake being as hard as granite and some soft and crumbling. Excavation techniques include the use of crowbars, cold chisels, shovels, a water pump (Honda W.30, 5, h.p., capacity 220 imp gall/min), to sluice away the sand; and the careful use of small explosive charges to crack the hard surface of some parts of the site, which (with one exception) has proved not only efficacious but a necessary and vital tool in underwater excavation. We calculate the use of explosives has reduced the damage rate of concealed material to less than a third of that using other methods. The dangers, difficulties and limitations of the work on this site cannot be overestimated. The table below shows the work time until the end of 1974:

Table of diving time

	No. of diving days	Total no. of diver hours
1971	49	103·03
1972	135	310·13
1973	152	321·28
1974	106	219·58

The depth, strong tides (between 2 and 3 knots, at some times), the sea surface conditions due to the exposed position of the wreck, and the uncertainty of weather

conditions provide one of the most unwelcome environments for wreck excavation around the British coast. For the better information of those who contemplate work such as this and for those institutions who need to evaluate the feasibility and importance of archaeological work on similar wreck sites, a look at the financial cost may prove salutary. Up to the end of 1973 the accounts (which include the cost of the search, research, archaeological work, conservation, restoration, etc.) show the overall unit cost as £2·13 per diver minute and inflation promises to increase that figure in subsequent years. In 1973, following exploratory swims to the south and north from the apparent extremities of the main site, large areas of material were sighted (see p. 269). Excavation still continues and in 1975 a full survey is to be completed of the south and north parts of the site.

The work on the *Hollandia* has been maintained on an all year round basis, despite the paucity of suitable diving days during the winter. This not only enables continuity of the work without lengthy breaks, and facilitates a constant and necessary vigil on the site to prevent interference, but also ensures that the highly experienced and professional divers employed on the work are not lost to other and more remunerative diving work. Working conditions on the *Hollandia* make an intimate knowledge of the underwater terrain essential and this is only acquired after a lengthy period of acclimatization. One of the developments affecting the archaeological work on the *Hollandia* has been the gradual development of a realistic policy by the Marine Division of the Department of Trade & Industry, the result of which has been that, working within the unsatisfactory, for archaeological purposes, provisions of the Merchant Shipping Acts, all the material recovered from the site has been available for study and conservation. In particular, the *Hollandia* team has been helped not inconsiderably by the sympathetic understanding of the problems arising from this archaic act by officials in the Department, particularly Mrs P. Vincent, the Secretary of the Runciman Committee.

2. Historical

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'About the year 1743 a Dutch East India-man outward bound, was lost off St. Agnes in about 20 or 22 fathoms of water, with all the people. Their firing of Guns, as a signal of their Distress, was heard in the Night; but none could give them Assistance. Many of their Bodies floated ashore at St. Mary's, and other islands, where they were buried by the Inhabitants. And some were taken up floating upon the Tide, and were buried. A Dutch Lady, with her Children, and Servants, going to her Husband, an East-India Governor, was prevented seeing of him by this unhappy Accident'. Thus wrote Capt Robert Heath, an Officer in the Garrison on the Isles of Scilly, in his delightful book (Heath, 1750: 149). Heath, a mathematician of some repute, was sent to Scilly in May 1744 to do a survey of the Islands, and his *New and Correct Draught* was also published with the account. Naturally his almost contemporaneous account has been used as a starting point, bald though it is, and taking note of later embellishments, notably those of Parson Troutbeck (1794). It was necessary to refer constantly to these two printed sources, since all the Scillonian records prior to the Parish registers of 1746 onward were destroyed by fire, first in 1750 and again in 1937. The ravages of war and earlier neglect had also destroyed much evidence in both Holland and England.

The *Hollandia* was built in the Amsterdam shipyard of the Dutch United East India Company (VOC) for the Amsterdam Chamber. The Resolutions of the Heeren XVII (ARA. KA. F. 4390a) give her measurements: 150 ft (45.72 m) long and a capacity of 150

last (approx. 5 English tons to a last). According to these Resolutions, the *Hollandia* was one of the seven largest ships built in Amsterdam during the period 1742-3. Another was the *Overnes*, her sister ship in convoy. Ship of comparable size, the *Hersteller*, and the *Endraght*, both built 1742, had sailed together in the Kermis (Autumn) Fleet 27 October 1742 to Batavia. The *Hersteller* carried 309 men, the *Endraght*, 364. Two slightly smaller ships, the *Wickenberg* and the *Adrichem* 145 ft (42.67 m), 140 last carrying a complement of 393 and 385, sailed within the month. Yet for ships sailing in the spring and summer fleets of the following year, the crews are noticeably smaller, the *Hollandia* and the *Overnes* heading the list with a mere 276 and 269 men respectively. Apparently there were difficulties in Amsterdam attending both the building and the sending out of VOC ships at this time. 'C'est une mauvaise fermentation qui s'élève ici' (PRO Admin.), wrote an Admiralty correspondent, describing riots among the ship's carpenters in Amsterdam. Later (31 May 1743) he refers to three ships due shortly to leave for Batavia and writes: 'I learn the Crew of the three vessels. . . will be put aboard one ship alone which will leave first. Sailors are harder to obtain here than ever before.' If the *Hollandia* and her two convoy partners were the three to which he referred, and the sailing Resolution shows this to be likely, they were able to increase their crew-numbers at the last minute although not to the full complement, for on 3 July 1743 the *Hollandia* sailed out of Texel under Captain Jan

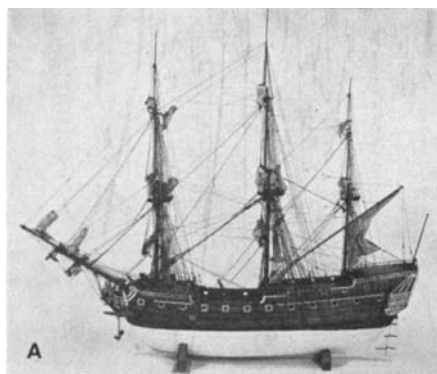
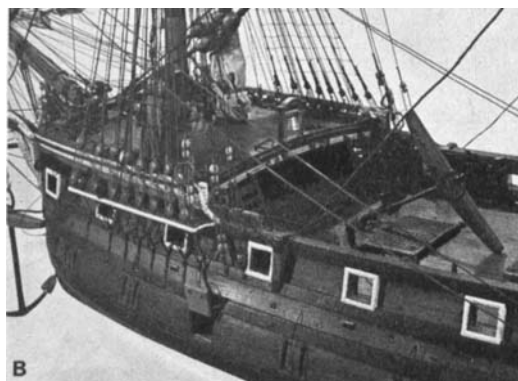


Figure 4. A. Model of VOC ship *Mercurius*, 1747, of the same type as the *Hollandia*. B. The forecastle. C. The quarter deck and poop. Photo: Rijksmuseum Amsterdam.



Kelder in company with the *Den Heuvel* and the *Overnes* (Capt de Ruyter) (ARA. KA 4390).

The *Hollandia* was carrying among her passengers the brother of Van Imhoff, Governor-General of the East Indies, and the wife of the former, and his sister-in-law, and attendants. Originally these were the only passengers known to us by name, since the first extant payroll (which would have provided the relevant information) is that of 1748 (Marsden, 1974). Later research yielded the account of a sea-chest washed up on the coast of Scilly; and a personal seal discovered in 1974 on the wreck site extended our meagre list by two more names. The first, that of Jan Holst, the first mate of the *Hollandia* referred to in a letter from the VOC agent Gerard Bolwerk (ARA, Coll. Radermaker 35): the second that of Pompejus Gruys, the eldest son of a well known and important family in Groningen, only 22 years old, when he lost his life in the

ship. On 6 March 1743, permission was given to Hendrik François Van Imhoff and his wife, Mechteld Bentinck to bring with them her 22-year-old sister Anna Bentinck, and Anna's maid, Margaret Klevering (ARA.KA 205). Hendrik François was the youngest brother of Gustav Willem, Baron von Imhoff the new Governor-General, and as the Baron's only son had died as an infant in 1736 and his wife had produced no more children, it is possible that he hoped his younger brother and his sister-in-law would provide some children to carry on the family name; and that he could make a match for young Anna Bentinck, her parents being lately dead (Van Beyen, 1901: 8).

On 28 May, Van Imhoff himself had made a triumphant return to the East Indies only a few weeks before the *Hollandia* sailed. His ship was the *Hersteller*, named in his honour 'The Reformer', for such was the intention of this appointment. In January,

he stayed at the Cape for one month on his way to Batavia, and it is clear from his 'Report' that he not only intended to stamp out abuses, such as private trade, but that he wished to instil new fervour into the jaded Colonists, 'for having imported slaves, every common or ordinary European becomes a gentleman and prefers to be served rather than to serve. . . . Such a bad example' (Chavonnes, 1918).

There is unfortunately no extant cargo list of the *Hollandia* except for the accountant's lists of the specie (ARA.KA 10425). There was no bullion either in gold or silver, the only metal aboard in unworked form being iron bars and the pigs of lead which served as paying ballast. Ship's money given to Skipper Jan Kelder is as follows: 300 Mexican marks as payment of salary and expenses; value, 796 guilders. Specie for India: twelve chests containing 4000 marks Mexican and 8000 silver ducatoons to hand over to the Governor of Batavia; value, 121,712 guilders, 18 stuivers. Finally, monthly payments on hand for 2/3 of wages; value, 4284 guilders (for the sailors) and 2922 guilders for the militiamen. The high proportion of Mexican reales in the cargo of the *Hollandia* has been explained by Professor Boxer (1972): '(it) reflects the high popularity of this coin in the East India trade, and particularly in the trade with China. This popularity is frequently commented on by European traders, travellers and missionaries in China. . . . "So excessive is this longing on their part that it is epitomised in a local proverb . . . Plata sa sangue (Silver is their life's blood)" . . . these coins were also in general demand in India and South-east Asia. In a typical dispatch from the Governor-General and Council at Batavia, dated 12 January 1685, they asked for a supply of 350,000–400,000 guilders worth of ready money, "preferably in Mexican rials of eight, . . . the peoples of Java, Sumatra, and the other adjacent islands refusing to abandon their preference for these coins, not so much on account of their fineness and value of the silver content, but because of their familiarity with this type, which has been in use with them for so many years".'

Sailing instructions for 1748 (Nederlands Oostind. Co., 1780: 28 ff) reiterate previous instructions of the Heeren XVII for ships of the Summer Fleet travelling from the Netherlands to Java: 'Firstly that they shall go down the Channel and, arriving at the Lizard or Land's End, shall set a South-Westerly course to latitude 43° in order to bypass Cape Finisterre by 60 miles, except when otherwise ordered in the written instructions given to them'. It was in sailing this course, then that 'Capt Jan Boot, coming from Bilbao, met the three ships in good order'. This was reported on 9 July (*Amsterdam Dinsdaegse Courant*, 23 July 1743). The same newspaper was the first to print the news of the shipwreck on 13 July: 'Captain Willem Bakker met two ships two miles south of the Scilly Isles at half-past six in the morning in "thick weather and heavy seas, the wind to westerly". He heard that one ship was wrecked on the Scilly Isles' (*Amsterdam Dinsdaegse Courant*, 27 July 1743). A letter from the VOC correspondent in London, Gerard Bolwerk, on 24 July reporting that the chest of the *Hollandia's* first mate, Jan Holst, had been washed ashore, is the first definite indication that this wreck was in fact the *Hollandia*. In England the *London Evening Post* gave the news in their edition of Saturday 9 July—Tuesday 12 July (Old Style) 'By a letter from Penzance we hear that a ship was lost lately off Scilly, and all the crew perished; and that by some papers drove ashore, she appears to be a Dutch East-Indiaman outward-bound'. These papers are mentioned again on 30 July in the Dutch *Mercury*; letters for Batavia and the Cape had been found, and some beer casks (mark Princess Royal) found floating. The final confirmation that it is the *Hollandia* was printed in the *Amsterdam Dinsdaegse Courant* of 13 August, and in a letter of 2 September 1743 the Heeren XVII informed Batavia: 'that the ship *Hollandia* was lost off the Sorlings on 13 July "met man en muys"'. (Nederlands National Archives, Djakarta: 697).

Little time was wasted bemoaning the fate of the great vessel. Gerard Bolwerk reported to Amsterdam on 9 September

that he had already made contact with Lethbridge the diver, and an expedition had been organized (ARA.KA 273). His lack of success was reported by Heath (1750: 150): 'A Diver there'upon was sent by the Dutch Merchants to discover and Weigh the Plate, of Considerable Value. But the Tide Running strong at Bottom and the Sea appearing thick the Diver could not see distinctly through the Glass of his Engine so he returned without success'. The problems that John Lethbridge (Amery, 1880), a Devon man and probably the most effective early diver and salvor ever, met with, plague divers on the site today. However, he might have been successful (his 'Engine' was reputed to be capable of descending 50 ft [15.24 m]) (Fig.5B) had the ship simply holed and sunk. Traces of graphite impregnated into the coins suggests that there may have been an explosion aboard, in which case the debris would have been scattered over the sea-bed well below the level to which he was capable of diving. Heath (1750: 151) was naturally interested in the machine, and describes it at some length. 'The figure of the diving-Engine (made of thick Planks, bound together with Iron Hoops, and headed at the Ends) was a Tapering-Vessel in which the Diver was plug'd up, with as much air as could be blown into it, with a pair of Bellows, at the Time of his going down. His naked Arms went out at a couple of round Holes, next the biggest End; being exactly fitted to them, wrapt round with Neats-Leather, to keep out the water. Lying flat on his Face, with his legs buckled down with Straps, to keep him steady, he looked through a piece of round Glass, fixed right before him, in the side of the Engine, of about six Inches over, and two in thickness. Thus he descends by force of Weights fixed to the under Parts of the Engine. He carries a Life-line in his hand, which he pulls hard upon, when he feels too much Pressure, or wants to be drawn up'. This machine, ridiculously simple though it was, was considerably more successful than more complicated inventions. This fact is attested by the register of the Parish of Woolborough, Devon: 'December 11th, 1759. Buried Mr.

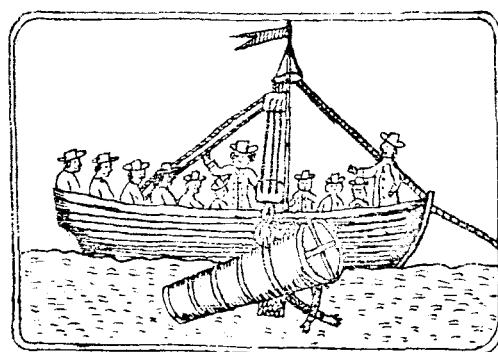
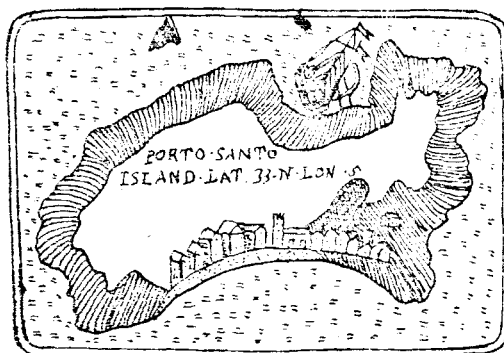


Figure 5. A Porto Santo island with a ship sinking in one of the harbours, where Robert Stenuit discovered the wreck of the Dutch East Indiaman, *Slot der Hooge* in 1974. John Lethbridge dived successfully on this wreck, recovering a large part of the treasure. There are many references to his diving in Porto Santo in Resolutions of the VOC Zeeland Chamber. (ARA.KA 4481).

B. Contemporary view of the diving machine used by John Lethbridge from *Trans. Devon Ass.*, 12, 1880: 491. This is therefore undoubtedly John Lethbridge's boat and diving engine; perhaps one of the standing figures represents himself?

The illustrations are rubbings taken from a silver tankard, the whereabouts of which is now unknown. Between the two drawings was a coat of arms viz. a bridge of three arches, turreted; in chief an eagle displayed. On the handle were the initials *LIE*.

John Lethbridge, inventor of a most famous diving-engine, by which he recovered from the bottom of the sea, in different parts of the globe, almost £100,000 for the English

and Dutch Merchants which had been lost by shipwreck'.

The Dutch had to accept the fact that nothing now could make good their loss. Van Imhoff himself, who had suffered (van Imhoff, 1746) as he wrote to Prince William IV 'a multiple loss in the *Hollandia*' could not resign himself, although his letters from Batavia to his cousin, Jacob Boreel (Van Imhoff, 1738–50) in Amsterdam are full of discussions concerning God's purpose and expressions of acceptance of His Will, revealing however a mind still torn between bitterness and belief. In reply to his cousin's letter describing the circumstances of the shipwreck (written 12 October 1744) he replied in incredulous, if restrained, anguish that when he considered that 'the vessel has been lost not in gale, or thunder-storm, or fog, or through miscalculation . . . that when the other ships took the right course (as every seaman knows) namely a South-westerly one, and that they kept the Channel open, standing well away from the leeshore the obvious course (as every seaman knows)—how in God's name did they (in the *Hollandia*) find themselves *above* the Sorlings?'

These questions are not answered, and Imhoff simply concludes that 'God's Hand appears in all this' although in his private thoughts he probably meant that of the Heeren XVII. Their fatalism as to shipping losses, and their obstructive conservatism had thwarted him for many years. He had attempted to have all the company's ships built on new, safer lines, similar in design to the English ships.

An English shipbuilder was employed in the Company yards and built the *Hersteller*, but the Heeren XVII insisted that Dutch shipbuilding methods had always proved best, and the *Hersteller*-type design was shelved (van Malsen, 1932). Imhoff (the Reformer) doubtless imputed, in some measure, the loss of the *Hollandia* to her construction. Our Admiralty correspondent describes the disadvantages of the old design, and the reason for it (PRO. State Papers: 101–69): 'It is 16 years since the Directors of this Company took a Resolution to change the construction of their ships to allow for

more space, particularly in the front, to enable them to carry more cargo because of the enormous quantity of Coffee which they have cultivated in Java & which must be brought to Europe; which change, along with other defects, is now seen to be an unfortunate one. The Ships have become less manoeuvrable, heavier, and more liable to ship water. In fact, since that time it has been perceived that Shipwrecks have increased and that the ships have become separated from one another beyond all possibility of their being reunited, and that they have suffered immense losses both in men and merchandise'.

Robert Heath (1750: 15–17) quotes Edmund Halley's observations on the variation of the compass, providing another angle from which to view the *Hollandia's* position north-west of the Scillies. 'The Lizard Point, by undoubted Observation, lies in Lat. 49° 55' whereas in most charts and books of Navigation, that Point of Land & the Islands of Scilly, lying East & West of each other, are laid down to the Northward of 50° & in some full 50° 10'. Nor was this without good effect, so long as the Variation continued Easterly, as it was when those Charts were made. But since the Variation is become considerably Westerly (as it has been ever since the year 1657) all ships standing out to the Ocean, East by the Compass, get the Variation to the Northward, of their true Course, & thereby alter their Latitude to the Northward, in about $\frac{1}{2}$ a day's sailing, very considerably; so that if they miss having an Observation for two or three days, at coming into the Channel, and do not allow for this Variation Westward, they fail not to fall greatly to the Northward of their Expectation; especially if they reckon Scilly in or above 50°. And by this Means Ships are often exposed to the Danger of running up the Bristol Channel (not knowing their Latitude) or fall in with the Rocks of Scilly, and are lost'.

Another uncertain factor was the functioning of the lighthouse on St Agnes at that precise moment. Trinity House Minutes for 26 June 1743 run as follows: 'Our Light-keeper at Scilly being dead, several letters and Certificates from thence were read,

some recommending Mr John Christie or Chr. Harvey, but both being inhabitants of said Islands . . . according to a standing rule of the Corporation they were refused . . . Mr Thomas Cross of London, a younger brother of this Corporation . . . was appointed'. He is

reported to have 'taken possession of the Light' on 14 July, the day after the wreck. Undoubtedly Mr Christie, as usual, would have been attending to the light, but there may have been some confusion in those few days when the change over was made.

3. Archaeological report

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Initially the wreck was found by using a proton magnetometer which indicated the presence of a considerable quantity of iron on the site, and this was followed by a visual examination of the sea-bed to confirm that this was an historic wreck. The discovery successfully concluded two years of patient research using both documentary records and site investigation to locate this particular ship.

During the winter and spring of 1971–2 a survey of what is now called the Main Site was completed by Roy Graham with the assistance of Nowell Pearce, and their plan and report of the underwater features, together with subsequent reports by the diving team, is used as a basis for this archaeological description of the site. Subsequently, the South and North sites were discovered and sketch plans were made prior to formal surveys being carried out during 1975, these sketch plans being included on the general wreck plan (Fig. 6). It is intended that, after both North and South sites have been properly surveyed, the plans will be published together with additional information recovered from the Main Site.

The location and geology of the wreck site

The wreck is situated in Broad Sound west of the island of Annet near the position

49° 53' 40" N, and 6° 23' 4" W, and lies at a depth of about 90 ft (27.43 m) below chart datum. The site lies east-south-east of Gunner Rock which the ship is said to have struck before she sank.

The sea-bed around the wreck is generally fairly flat granite which has been eroded to form gullies. Around the Main Site it gently slopes down from north-east to south-west at a gradient of 1:25. Seaweed, fortunately, does not cover the site, so the archaeological features are not obscured except where they are buried in sand and concretion.

Methods of excavation and surveying

From the diving point of view, the site is not easy to investigate due to the considerable depth, to its exposure to the Atlantic swell and to strong tidal currents. Initially the method of excavation used was by pick or chisel: but it was decided that where particularly hard concretion occurred a very small charge of explosive would be used to fracture the concretion; and in practice it was found that this method was much more satisfactory, as the quantity of objects damaged was negligible the fractures generally freeing artefacts without damaging them. Quantities of concretion

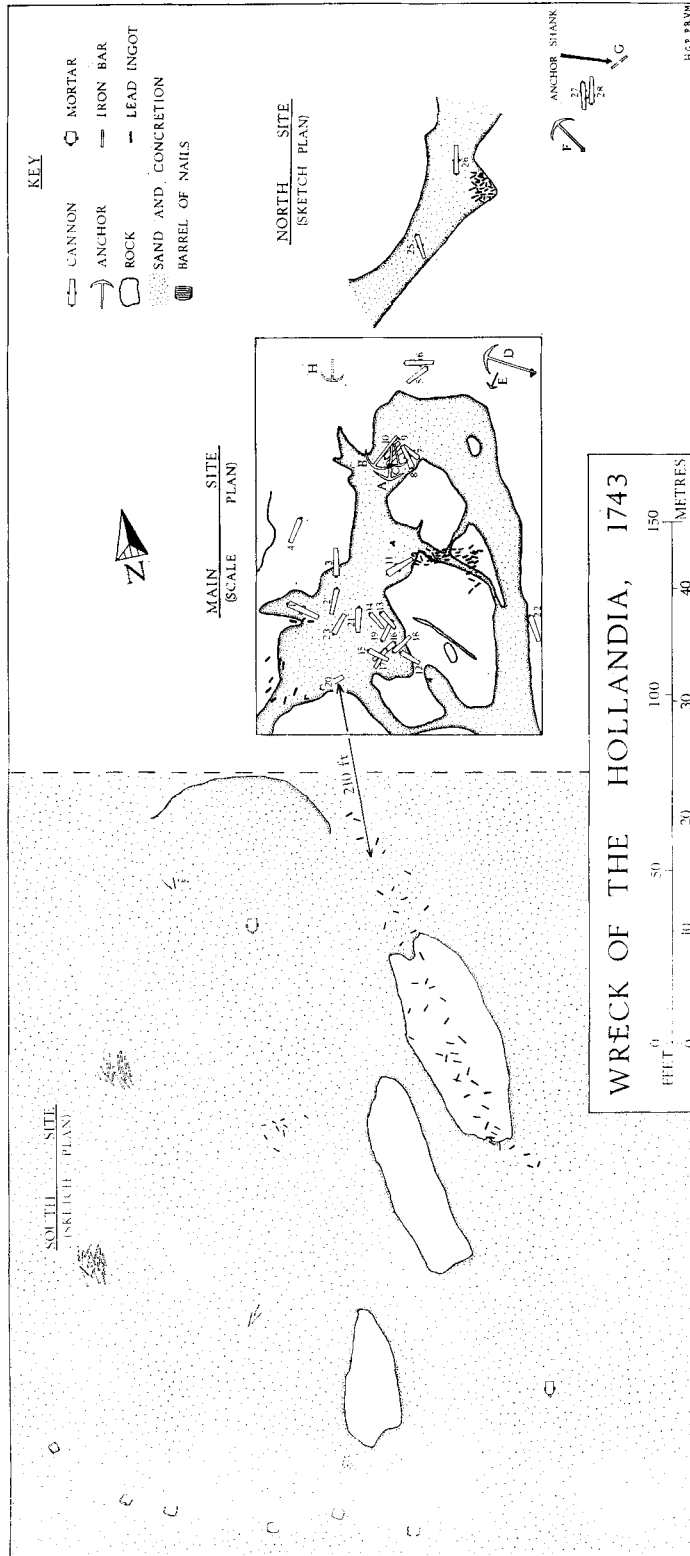


Figure 6. Plan of wreck site.

containing artefacts were then raised to the surface where, in the diving boat they were carefully broken open to recover the objects.

Very shortly after the discovery of the site a sketch survey of the Main Site as it then appeared was prepared, and three months later, in December 1971, Roy Graham was invited to undertake a large scale survey and plan of the Main Site. Due to bad weather that winter it was not possible to complete the survey until July 1972, but in effect this did not matter, as the area of excavation was limited to removing a concentration of silver coins which covered approximately 500 ft² (46 m²). The method of surveying was by triangulation from two base lines to plot the positions of anchors and cannon.

It was hoped that a photomosaic could be attempted but the force of the currents, the small amount of matter in suspension in the water, and the poor light at this depth all combined to make photography very difficult.

The plan of the Main Site accurately records the positions and orientation of the major artefacts, but the limits of exposed granite, concretion, and sand are approximately sketched because, in places they periodically change slightly, due to the sand and light aggregate being moved by tidal currents and wave motion.

Identification of the wreck

Initial and provisional identification of the site as that of the *Hollandia* was confirmed when a bronze cannon bearing the A-VOC insignia of the Dutch East India Company was discovered, as were other characteristic Dutch artefacts and many ducatoons minted in the Netherlands inside the mound of treasure.

The identification of the wreck as the *Hollandia* is now certain. Of more than 35,000 silver coins recovered comprising the treasure of the ship, none is later in date than 1742; and indeed a large consignment of Dutch 1742 ducatoons of the 'Silver Rider' type, absolutely fresh from the mint, indicates that the wreck occurred soon after 1742. This date is confirmed by many other

artefacts also recovered from the wreck, none of which can be dated later than 1743.

A quantity of pewter tableware bearing the official stamped insignia of the Amsterdam Chamber of the VOC, together with the VOC insignia on certain other items such as several bronze cannon, two military mortars which were probably part of the cargo, and even on one silver ducatoon, all show that this wreck was a Dutch East Indiaman of Amsterdam Chamber.

The incontrovertible evidence that this wreck was the *Hollandia* was furthermore established some time after its discovery, by the recovery of various personal possessions belonging to people known to have been on board that particular ship. Especially significant were items of silver plate engraved with the linked coat of arms of the Imhoff and Bentinck families (Fig. 18, no. 30). In addition, the personal seal of Pompejus Gruys, who is recorded in Dutch genealogical records as having died in the *Hollandia* in 1743, has been found. This case is interesting in that the presence of this person in the ship was completely unknown until his bronze seal was found (Fig. 17, no. 25). Although seals belonging to other people have also been found it seems that most of them were unrecorded in Dutch archives and as a result, their owners cannot be traced.

Description of the wreck

The wreck of the *Hollandia* is in a very decayed condition; thus, although of the same 150 ft (45.72 m) class as the *Amsterdam* lost five years later near Hastings (Marsden, 1974), none of its timber structure survives intact. Instead, all that remains is debris, much of it of a durable nature, lying in sand and concretion-filled gullies in the sea-bed.

Mapping of the site accurately is not fully completed as the wreck debris is scattered over a large area, and the total exploration of the sea-bed is not yet finished. The debris occurs in three main regions: called the North Site, the Main Site, and the South Site, each of which is separately described below.

The North Site (Fig. 6)

Very little excavation has occurred here, and the wreck debris is of limited extent. At the north end there lie two iron cannon (27, 28), an anchor (F) and the shank of a large anchor (G). West of these and nearer to the Main Site was found a concentration of 30–40 lead ingots, and nearby two other iron cannon (25, 26).

The Main Site (Fig. 7)

The Main Site contains the greatest concentration of wreck debris from the *Hollandia*, and measures about 115 ft (35 m) long (north-south) by about 80 ft (24 m) (east-west). The main features of the site are as follows: At its north end are located five anchors (A–E) of varying sizes, situated in two groups. Their sizes are tabulated below:

	Length of stock	Fluke to fluke
Anchor A	15 ft (4.57 m)	10 ft (3.04 m)
Anchor B	15 ft 6 in (4.72 m)	9 ft 10 in (2.99 m)
Anchor C	9 ft 3 in (2.81 m)	6 ft (1.82 m)
Anchor D	15 ft (4.57 m)	9 ft 3 in (2.81 m)
Anchor E	5 ft 3 in (1.6 m)	3 ft (0.91 m)

Throughout the whole area of the Main Site are located iron and bronze cannon, the greatest concentration being situated at the south end of the area. Most of the cannon are of iron and seem to be 6-pounders and 12-pounders but in addition, two fine bronze 6-pounders have been recovered from the southern part (Fig. 8). In the same area were also found four small bronze breech-loading guns. (Fig. 11, nos 1,2). It is interesting to note that some of the iron cannon have traces of 'fins' on their barrels; two at the muzzle end and two at the other end, each fin being spaced about 45° from its twin. Each fin is about 2 in (0.05 m) high, 0.25 in (0.006 m) thick, and between 6 and 8 in (0.15 and 0.20 m) long.

A low mound containing more than 35,000 silver coins was found in the southern part of the Main Site, the coins, both duca-

toons and Spanish-American rials, undoubtedly forming a major part of the official VOC treasure of this ship. In the region of the coins were found various bronze and copper fittings from chests which had once perhaps contained the treasure (Fig. 12, nos 9, 10).

Another major feature of the Main Site has been the scatter of lead ingots, presumably from the ship's ballast, many of which lie on the exposed granite of the sea-bed.

Excavation of the sand and the hard concretion in the gullies all over the Main Site has revealed objects representing many aspects of the use of the ship, and the lives of the people on board. In due course it is hoped that, when excavation is completed, it will be possible to compile distribution maps of various classes of objects to help to establish their probable original location in the vessel.

The South Site (Fig. 6)

The South Site lies approximately 200 ft (60 m) south of the Main Site, and the area of debris is of much greater extent than the Main Site. Very little excavation has occurred here and although the area has not yet been mapped to scale, a sketch plan has been prepared and some major dimensions recorded.

At the south end of the site were found six or seven barrels, each apparently filled with iron nails, while nearby were two groups of iron bars. Scattered over a considerable part of the site were a large number of lead ingots. Two important objects; bronze military mortars made by the Amsterdam gunfounder Cyprrianus Crans (Figs 9 and 10), whose products were also found in the wreck of the *Amsterdam*, have been raised.

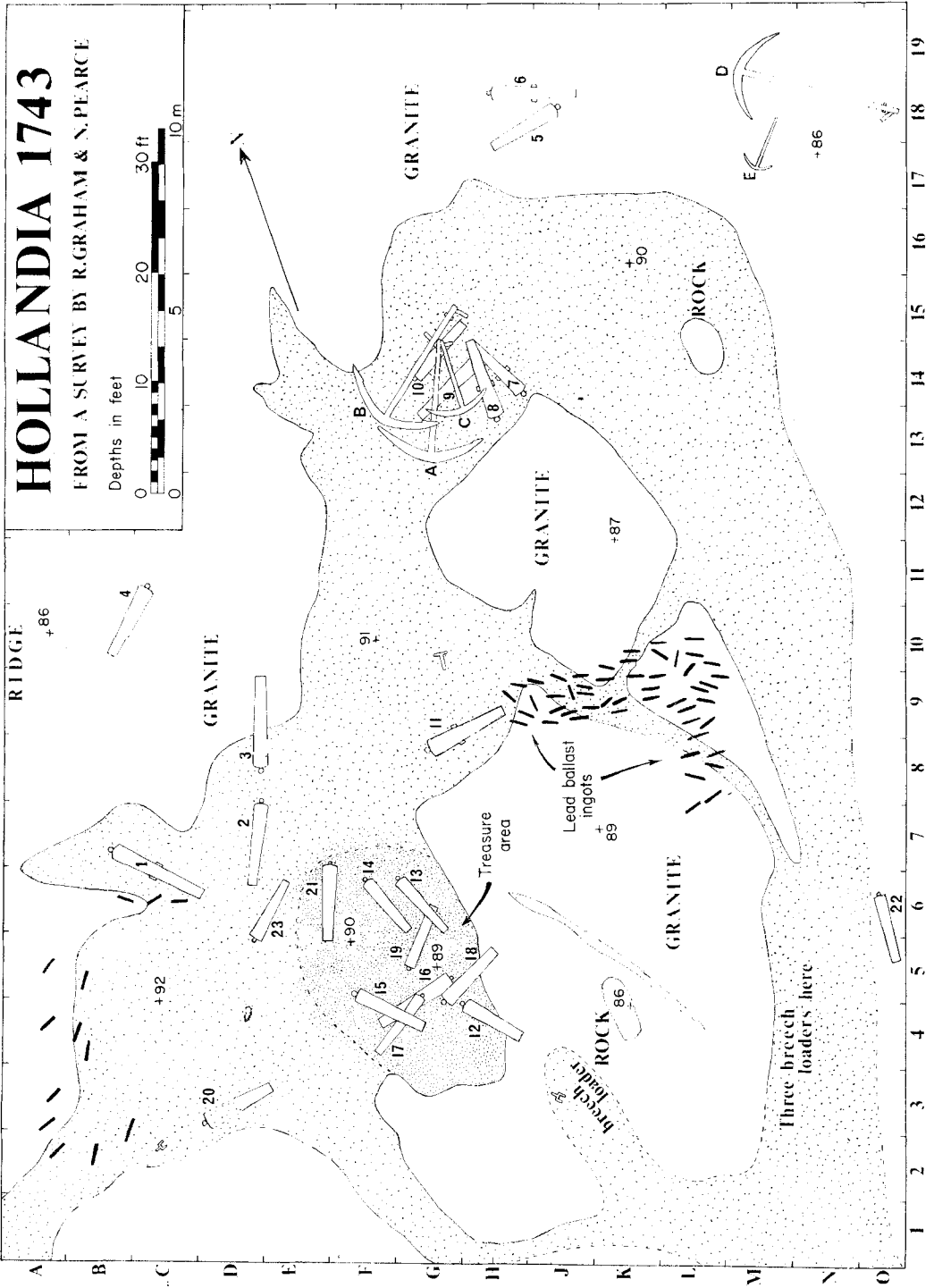




Figure 8. One of the 6-pounder bronze guns recovered from the Main Site.

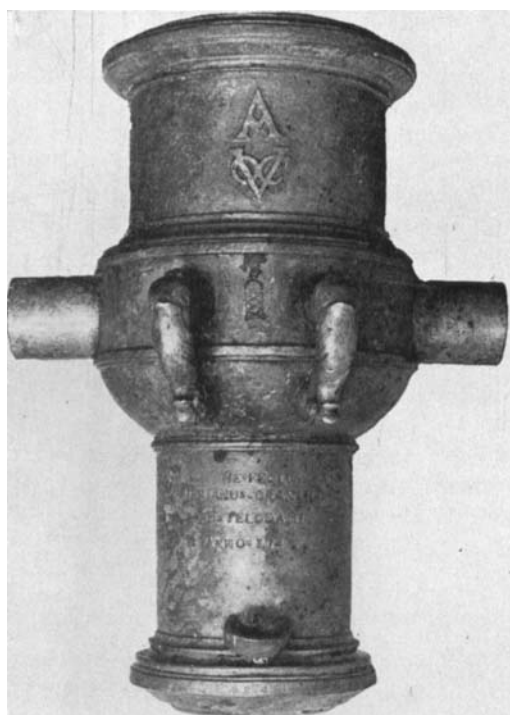


Figure 9. Bronze military mortar made by C. Crans of Amsterdam in 1743.



Figure 10. Inscription on the bronze military mortar on Fig. 9.

Reconstruction of the loss of the *Hollandia* in 1743

Contemporary records describing the loss of the *Hollandia* mention that the ship struck Gunner Rock at night, and then sailed on for a sufficient length of time for one or more of her guns to be loaded and fired as a

distress signal. The ship sailed into Broad Sound and then sank with no survivors.

This record leaves many queries unanswered, not the least of which is how the local people on the Isles of Scilly knew that the *Hollandia* had struck Gunner Rock during the night. Unless someone was in a boat near the Rock that night and close enough to see what happened, it is likely that this part of the story is what the local people conjectured had happened.

Fortunately the study of the pattern of wreck debris, although incomplete, enables us to judge what may have happened, though further excavation will no doubt help to elucidate the complete train of events. The three main regions of wreck debris each contain artefacts whose original location in the ship can be estimated with a high degree of precision. The *Hollandia* was

150 ft (45.72 m) long from stem to stern, and this is roughly the distance between the extreme limits of the North and Main Sites. When the ship sank, there is no doubt that the stern came to rest at the south end of the Main Site, for here have been found a number of features which certainly belong at the stern. These include three rudder pintles; four breech loaders which were almost certainly mounted on the poop deck; two bronze 6-pounder guns probably originally located in the after part of the ship near the compass; and the large quantity of silver coins which would have been located in the captain's quarters on the quarter deck at the stern.

The bottom of the ship is indicated by the scatter of lead ballast ingots which extends all over the Main Site, while the area of cannon, both 12-pounder and 6-pounder guns, indicates the extent of the lower and upper gun decks.

The North Site is particularly interesting, not only because several more ballast ingots have been found there, but also because there seems to be a marked absence of smaller artefacts. It is significant that parts of two anchors have been found near the north end of the North Site, this perhaps being indicative of the bow. On the other hand, the complex of anchors at the north end of the Main Site needs explanation, for if the form of the intact *Hollandia* were superimposed over the pattern of wreck debris the anchor complex would be in an area roughly amidships. It is therefore possible that the anchors on the Main Site comprised part of the cargo of supplies for the Indies, or more probably spare anchors stored in the hold.

The South Site is somewhat enigmatic, for although it includes many ballast ingots it does not seem to contain anchors or cannon. Only a very limited amount of excavation and recovery has taken place here, so there is little information on which to judge its significance. Nevertheless, the barrels filled with nails, the iron bars (cf. Cederlund, 1973: 322) and many lead ingots are all likely to have been part of the cargo being carried as ballast. The two heavy bronze military mortars clearly had

no place in the defence of Dutch East Indiamen and may be presumed to have been part of the cargo as well. Judging from this it would seem that the South Site represents a large portion of the bottom of the *Hollandia* which had become detached from the main part of the ship, before the main part of the ship had sunk to the sea-bed.

This analysis indicates, therefore, that the events up to the disaster may have been as follows: firstly the ship struck a submerged rock, probably Gunner Rock, which shattered the forward part of the bottom of the hull. In a leaking state she then sailed on eastwards carried by the current and the prevailing wind, while the captain ordered one or more of her guns to be fired as a distress signal. She continued to sink as she sailed onwards, until about $1\frac{1}{2}$ miles east of Gunner Rock a large portion, the forward part of her shattered bottom, collapsed and sank to the sea-bed to form the South Site. The ship now rapidly filled with water but was carried onwards by momentum, wind and current a little further east before striking the sea-bed to form the Main and North Sites. The ship structure then gradually but completely decayed away to leave areas of artefacts on the sea-bed; the small number of artefacts on the North Site is due to their having sunk after the ship's bottom had collapsed to form the South Site.

Processing the artefacts

The diving leader, or one diver delegated by him, is required to fill in a day sheet on which are listed the objects that have been recovered from the sea bed, and also the grid references of areas from which they have come. As each diver spends a very limited time working on the wreck (not more than 40 minutes per diving day) it is usual that the bulk of the objects will have been derived from only one or two limited areas each day. The objects, excluding coins and other items of great intrinsic value which are similarly but separately treated elsewhere due to the need for greater security, are then placed in their wet state into polythene

day bags and, together with the day sheets, are sent to a finds processing office on board *HMS Belfast*, the wartime cruiser now moored in the Thames almost opposite the Tower of London.

Here the bags are opened, and the objects are catalogued and receive any necessary temporary treatment that will ensure that they will not deteriorate prior to cleaning and conservation. The cataloguing policy has generally been to number separately each object, though in some cases where a whole group of similar objects, such as clay pipes, have been recovered from the same grid-square on the site, the group may receive a single number.

Satisfactory conservation has proved difficult to obtain particularly as museums are generally unwilling to become actively involved in marine archaeological research; most objects are commercially cleaned to a certain extent so that they can be recorded in detail. Objects of wood, leather and iron, however, have proved to be especially difficult to conserve and usually require laboratory facilities which are not generally available except through archaeological museums.

After conservation many objects are recorded by being drawn to actual size; some are photographed, while others are simply described, if they are similar to objects which have already been drawn. The record of each object is then indexed in three ways: by its place in the numerical sequence, by the type of object, and by its site-grid reference. It is then possible to establish immediately the site distribution of any major group of artefacts, to list all the objects which have been recovered from each grid square, or to locate easily any object in the store of artefacts.

A particularly difficult problem has been that many of the metal objects have been recovered from the wreck in a crushed and folded state, which it is pointless to draw; consequently it has been decided to draw such objects as close to their probable original shape as can be judged from their buckled condition.

Each artefact is stored in a perforated polythene bag to which a numbered label

has been attached; while the pottery sherds and clay pipes are normally marked with their object numbers and site-grid reference, and are placed in a general store of such objects. This latter has been found to be far more convenient than separate storage for it enables the scattered fragments of the same object to be reassembled.

The finds

The range of objects which has been recovered from the *Hollandia* is considerable and in this report only a selection of them can be given. However, it is intended to publish a more comprehensive description of the finds. They fall into several easily recognizable groups, though it is not always certain which articles in wrecked Dutch East Indiamen were the personal possessions of the people on board and which were officially owned by the Company, for the latter apparently issued large quantities of supplies for use in the ships and for sale at the Cape and in the Indies.

Ship's fittings

Various fittings from the ship have been found, including parts of pulley blocks, fragments of rope, part of a leather hose with its bronze fittings, yellow bricks from the galley hearth, small fragments of the ship's bronze bell, and a large portion of a bronze lantern of a type which has also been found in the *Amsterdam* (Marsden 1974: fig. 29, nos 112, 114). The armament of the ship is represented by iron and bronze cannon, and four small bronze breech-loading guns (Fig. 11, no. 1), and many iron cannon balls.

Military equipment

Many parts of military equipment have been found in the *Hollandia*, the bulk of these presumably being used by some of the 100 VOC soldiers that the ship was carrying. On board were many muskets judging from the number of bronze side

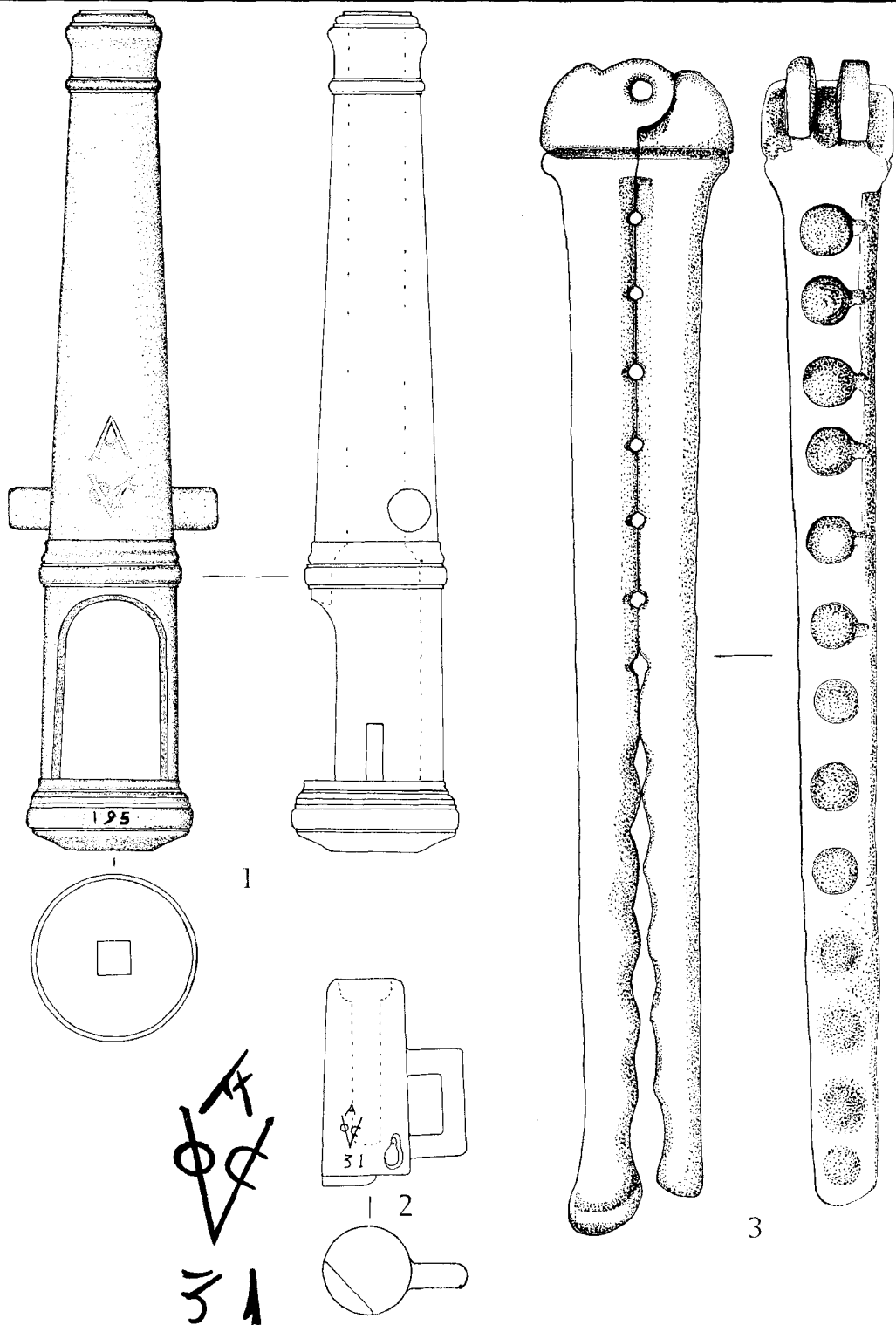


Figure 11. 1. Bronze breech-loader gun, bearing insignia A-VOC, Scale 1:8. 2. Bronze breech block with insignia. Scale 1:8; incised insignia. Scale 1:2. 3. Bronze musket-ball mould, in closed (left) and open positions. Scale 1:2.

plates which have been found (Fig. 12, no. 5). Each bears the coat of arms of the city of Amsterdam and the A-VOC insignia of the Amsterdam Chamber. Two wooden musket butts have also been recovered, together with the wooden part of a musket in which the form of the corroded firing mechanism also survives. Various musket flints have also been found.

Ordinary lead musket balls and smaller lead pistol balls have been recovered, the former in large quantities. In addition there were a number of examples of linked shot (two musket balls linked by a coil of bronze wire) (Fig. 12, no. 6). This type of shot has been found in other Dutch wrecks and their significance is discussed by Stenuit (1974: 225).

Fragments of military cartridge belts have been found of the type which has been recovered almost complete from the *Amsterdam* (Marsden, 1974: fig. 32). The parts from the *Hollandia* include bronze cartridge cases, each with twelve tubular compartments to contain cartridges, bronze buckles, (Fig. 12, no. 7) and bronze musket touch-hole pricklers.

In addition, what appear to be various fragmentary VOC swords have been found, especially the wooden sword handles covered with bronze wire, and also parts of one or more wooden scabbards. In one case the leather belt with the bronze buckle still in place, is tightly wound around the wooden scabbard.

Several whetstones found in the wreck may have been used by the military personnel (see Marsden, 1974: 100), and one of these is dated 1739 (Fig. 12, no. 8). Another small group of items are some impressive VOC bronze plaques (Fig. 12, no. 4) which Mr Bas Kist of the Rijksmuseum suggests may have been military cap badges or grenadier pouch badges. A possible alternative use is suggested by their resemblance to some fittings on the cover of a VOC book in the Fehr Collection, housed in the 17th century VOC castle in Cape Town (Fehr, 1973: fig. 39).

A bronze mould for casting 13 lead musket balls at one time has been found (Fig. 11, no. 3). The mould, looking a little like a nutcracker, has two arms hinged at one end,

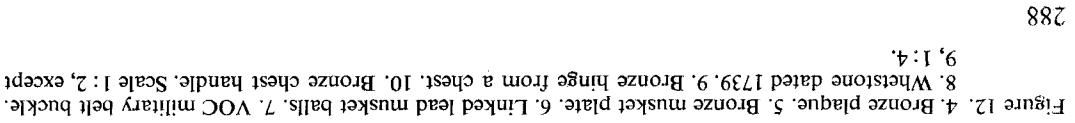
while at the other, somewhat eroded, end there is a slot which may have been part of some method of securing the arms together. Part of a somewhat similar mould made of iron has been recovered from the *Kenne-merland* (Price & Muckelroy, 1974: 263).

The two bronze military mortars found on the South Site are unlikely to have been part of the ship's armament as these ships did not normally carry such weapons. Instead they are more likely to have been supplies for the VOC troops at the Cape or in the Indies. Each mortar (Figs 9 and 10) bears the A-VOC insignia, and the name of the gunfounder Cyprianus Crans of Amsterdam. The five small guns also made by Crans found in the wreck of the *Amsterdam* in 1969 (Marsden, 1974: fig. 24), make it clear that they comprised part of the cargo or supplies.

Navigation and drawing instruments

A very interesting range of navigation instruments has been recovered from the *Hollandia*. In addition to a number of standard and single-handed bronze dividers, one bronze drawing compass has been found; also a small bronze case containing several drawing instruments among which were a small pair of bronze dividers, two folding rulers, one of bronze and one of wood, as well as several other items which cannot be identified until the case is opened.

Undoubtedly the most important single instrument in the collection is an early octant which has been recovered in fragments. The octant, invented by the Englishman James Hadley and published in 1731, was the first scientifically accurate method of establishing latitude, and, taking the place of the comparatively inaccurate cross-staff and the back-staff, it was at the time claimed to be 'the most perfect appliance that has ever been invented'. The surviving fragments include the index arm and its mirror mounting, the mounting for the shade and its two associated mirrors, and the mounting for the sight (Marsden, 1972: 599). The use of the instrument in this ship so soon after its invention is interesting, but by 1747 all Dutch East Indiamen were



being issued with octants as part of their standard navigational equipment (Boxer, 1962: 88).

The presence of the octant is of especial interest as parts of two wooden cross-staves have been found in the wreck; and thus we find the older and less accurate form of determining latitude in use at the same time as the most modern. This possibly suggests a transitional period to test the efficiency of the octant but still relying upon the traditional cross-staff.

In addition, several sounding leads (Fig. 13, no. 11), parts of two globes and part of the mounting of a compass have been found.

Medical

The ship's medicine chest is represented by two bronze mortars (Fig. 14, nos 14, 15)

one inscribed 'AMOR VINCIT OMNIA: 1693' (love conquers all). The inscribed mortar is one of standard type possibly issued by the VOC to their ship's surgeons for use on board; a similar mortar from the *Vergulde Draeck* lost in 1656, carried the A-VOC insignia in its decoration (Green, 1973: 285). Another medical find was a stone pestle (Fig. 14, no. 16).

Cargo and supplies

A number of objects from the wreck may be broadly classified under the general heading of cargo and supplies. These include fragmentary wooden barrels, onion-shaped green glass wine bottles one of which was still full of wine; brass taps for attachment to the barrels (Fig. 13, no. 13), unused clay pipes with traces of their packing of buck

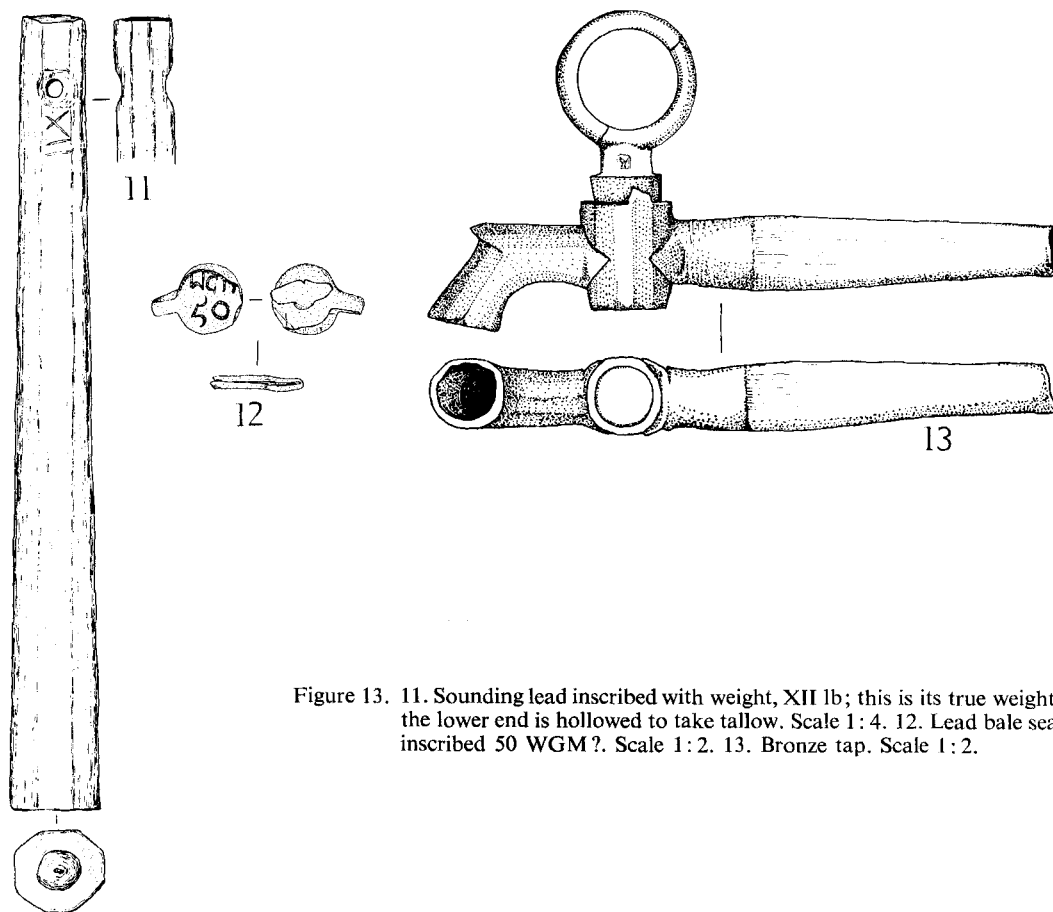
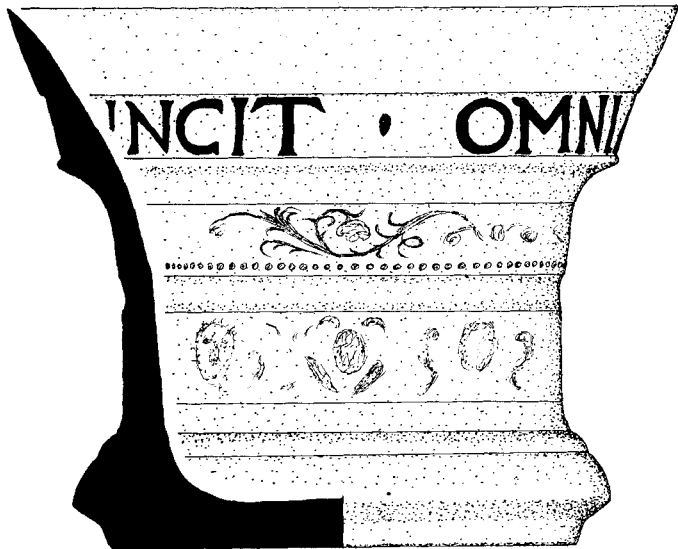
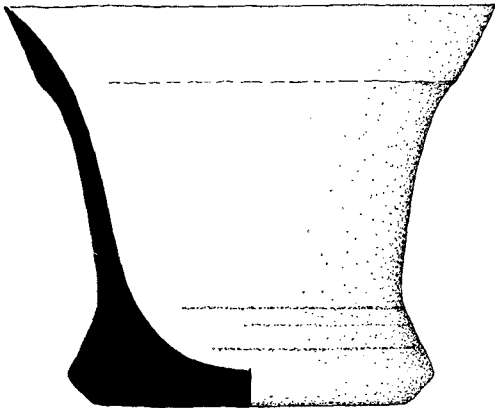


Figure 13. 11. Sounding lead inscribed with weight, XII lb; this is its true weight; the lower end is hollowed to take tallow. Scale 1:4. 12. Lead bale seal inscribed 50 WGM?. Scale 1:2. 13. Bronze tap. Scale 1:2.

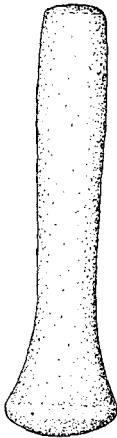
• AMOR • VINCIT •
OMNIA • J G 9 3 •



14



15



16

Figure 14. 14. Decorated and inscribed bronze mortar. 15. Plain mortar. 16. Stone pestle. Scale 1:2.

wheat (cf. Marsden, 1974: 89–90), square-sided green glass bottles with pewter screw caps, and one or two animal bones. A lead bale-seal indicates that the ship also probably carried cloth (Fig. 13, no. 12). Traces of mercury found in the region of the ship's treasure shows that the vessel carried what is being increasingly recognized as a very important item of cargo (see appendix).

The treasure

The ship's treasure was found mainly concentrated within a radius of about 3 m of cannon 16, though some was scattered beyond this point. The recovered treasure comprises only silver coins; more than 35,000 have been found so far, almost all of which are ducatoons and Spanish-American rials. As the range of coins has not yet been fully catalogued it would be premature to give a list at this stage.

Several items have been found which may have been parts of treasure chests, including hinged bronze straps with fleur-de-lys terminals (Fig. 12, no. 9); and copper chest handles specially shaped so as not to crush the hand when the heavy chest was lifted (Fig. 12, no. 10).

Tableware

A considerable amount of tableware in metal, ceramics and a little glass has been recovered, many of the finds being of pewter. Some of the pewter articles including several plates, a spoon and a cup are stamped with the A-VOC insignia of the Company within a wreath showing that they were VOC property (Fig. 15, no. 18, and Fig. 16, no. 21). Pewter bearing the VOC stamp is not often found in wrecked Dutch East Indiamen, though a spoon with this mark was found in the *de Liefde* wreck which was lost in 1711 in the Shetland Isles (Bax & Martin, 1974: 86). The bulk of the pewter ware in the *Hollandia* does not bear any identification marks of the owner but merely the pewterers' 'touches', and includes a spice pot, tankards, cups, plates, spoons (Fig. 15, nos 19, 20, and Fig. 16, nos 22, 24) and forks.

Several bronze and copper vessels have

been found, mostly in a buckled condition which renders many of them almost unrecognizable, but one of these which is probably a copper tea pot has been reconstructed.

The pottery is mostly broken, and there are many sherds of stoneware jugs of Bellarmine type; two flagons have been found almost complete. Apart from this there are fragments of Westerwald ware, saltglazed stoneware, Chinese porcelain, delft ware, and coarse pink earthenware. In addition to glass wine bottles, and the square glass bottles with pewter screw caps which were probably stored in 'cellars'—chests containing a dozen compartments—there have been a few fragmentary wine glasses of clear coloured glass, mostly similar in form to those found in the *Amsterdam* (Marsden, 1974: fig. 25).

Dress and personal possessions

Many buckles of pewter, bronze, silver and gold have been found in the wreck, but unfortunately it is not yet possible to establish if any were on garments issued by the VOC either to the soldiers or even to the sailors, though it is known that the latter did not wear any uniforms. Most of the buckles seem to have come from shoes, though some are clearly from belts, while others must be from breeches and hats. The buckles of silver and gold, however, must have been the personal property of the more wealthy people on board the ship (Fig. 18, no. 27).

We know that several members of the wealthy Bentinck and Imhoff families were on board, and it is reasonable to suppose that the items of gold probably belonged to them. Of particular interest are a beautiful gold cloak clasp (Fig. 18, no. 29), part of a gold book-clasp probably to secure a Bible (Fig. 18, no. 28), and a set of 11 gold buttons each holding an agate. Various articles of silver tableware have been found which bear the linked coats of arms of the Bentinck and Imhoff families, including knives, forks and spoons (Fig. 18, no. 30 and Fig. 19).

Ordinary individuals also are represented by their personal possessions, particularly

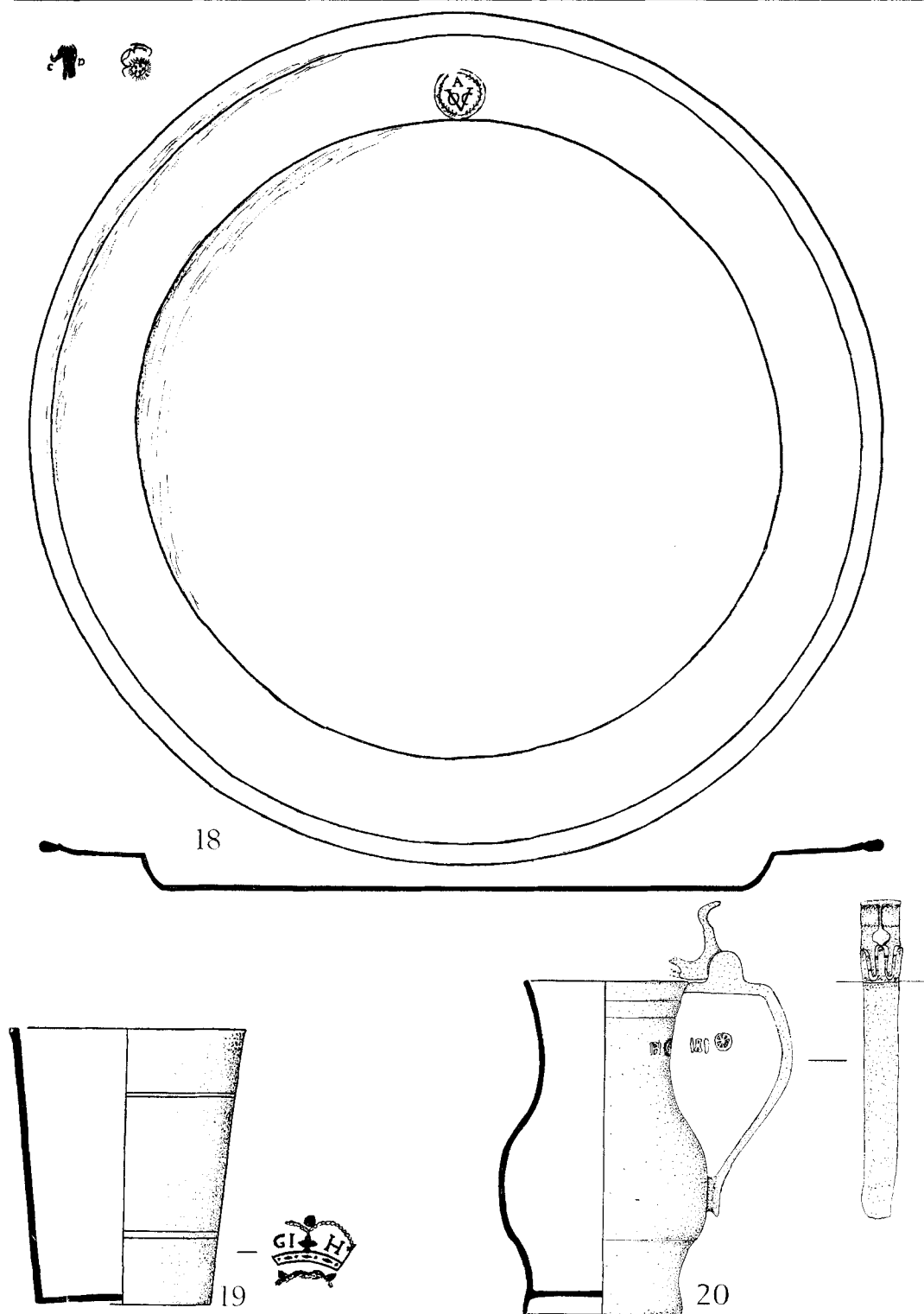


Figure 15. Pewter. 18. Plate stamped with wreathed A-VOC insignia. Pewterer's touches from base are sketched. 19. Cup with enlarged sketch of pewterer's touch on base. 20. Tankard, the hinged lid is broken; touch mark shown. Scale 1:2.

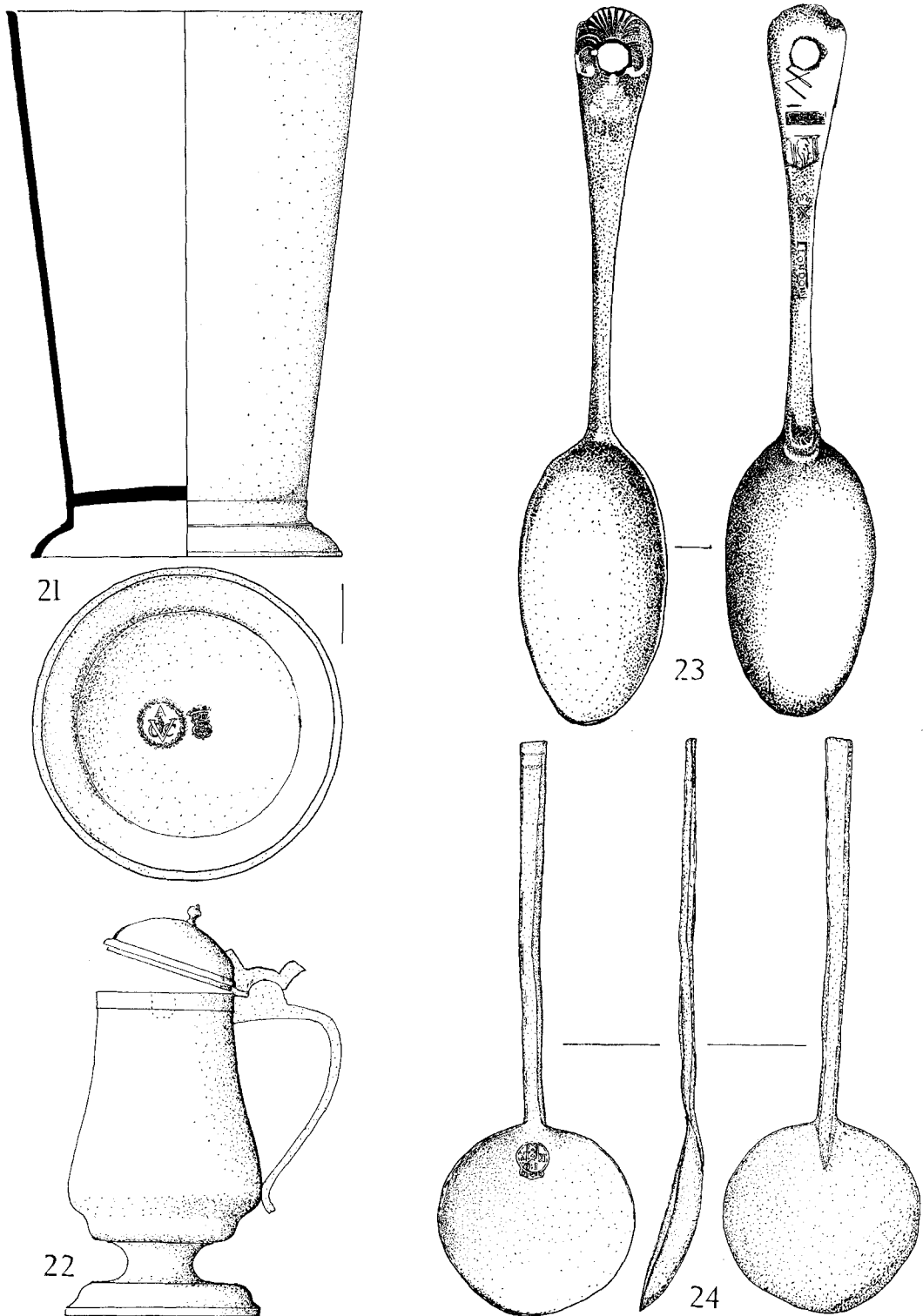


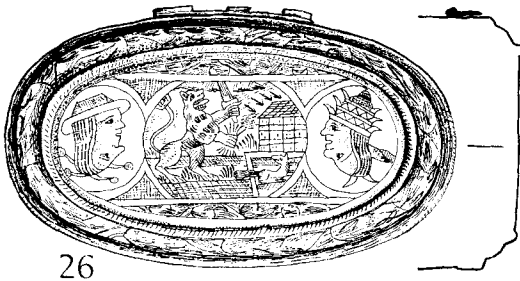
Figure 16. Pewter. 21. Cup with A-VOC insignia on base and pewterer's touch CDH. 22. Spice pot with hinged lid; a small slot in the rim, probably for a spoon. 23. Spoon made by Jones of London; the letter M or W, scratched on the handle is presumably the initial of the owner. 24. Spoon bearing the mark of an Amsterdam pewterer. Scale 1:2.



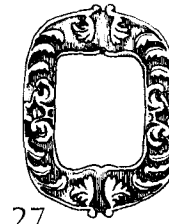
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Figure 17. 25. The broken bronze seal of Pompejus Gruys. Scale 1: 1.

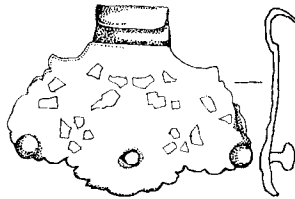
by a series of bronze seals bearing coats of arms and other motifs. Amongst them is the coat of arms of Pompejus Gruys, whose death in the *Hollandia* has been reported in Dutch genealogical records (Fig. 17). Other personal possessions cannot be linked to individuals whose names are known, one such item being a bronze tobacco box decorated with what may be a political motif in which two individuals, possibly including the Pope and/or the king of Spain, are transformed into jesters (Fig. 18, no. 26).



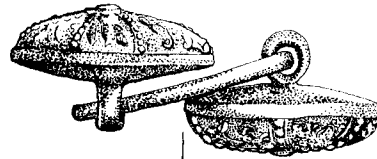
26



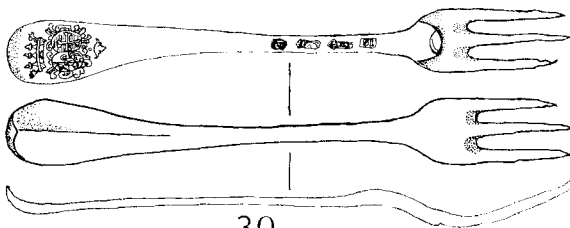
27



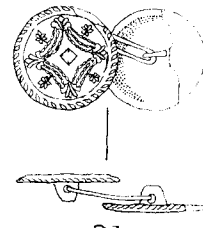
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29



30



31

Figure 18. Personal possessions: 26. Bronze tobacco box lid, design possibly the Pope and King of Spain. 27. Silver buckles. 28. Gold book clasp. 29. Gold cloak clasp. 30. Silver fork bearing Amsterdam silversmith's mark and the linked coat of arms of the Imhoff-Bentinck families. 31. Copper cuff link. Scale: 26, 27, 30, 1: 2; 28, 29, 31, 1: 1.



Figure 19. Silver fork with arms of Imhoff-Bentinck families. Scale 1:2.

Another personal item is an ordinary copper cuff-link (Fig. 18, no. 31).

It would seem that the *Hollandia* may have been carrying an Englishman, for amongst the personal possessions recovered is a pewter spoon, made in London (Fig. 16, no. 23), and two copper medallions, commemorating Admiral Vernon's successful attack on Porto Bello in 1739, linked to form a cloak clasp (Fig. 20, no. 32). The attack on Porto Bello was a valued encouragement to the English in their war against the Spanish trade monopoly with Central

America, and it was challenges such as this to the monopolistic trading nations of the 18th century that helped to lead to the eventual collapse of organizations such as the Dutch East India Company, and to the establishment of free trade (Parry, 1974: 150-2).

Conclusions

The archaeological and historical value of the *Hollandia* is great, for of the 18 wrecked Dutch East Indiamen which have now been found, this is the only one which has never been salvaged in the past. Thus although natural causes have destroyed much of the contents of the ship, the lack of salvage does mean that many of those items which have usually been recovered from sunken ships, still remain in the *Hollandia*.

Together with the *Amsterdam* and the *Nieuw Rhoon* (wrecked at Cape Town in 1776) the *Hollandia* forms part of a valuable group of wrecked Dutch East Indiamen of the same class, all of which were lost in a relatively short period of time about the middle of the 18th century. In fact the *Hollandia* and *Amsterdam* were both built for the same Chamber in the same VOC shipbuilding yard in Amsterdam, and they were lost within five years of each other on their respective maiden voyages to Batavia. They complement each other, therefore, for although the partly salvaged *Amsterdam* contains much of her cargo and the hull remains, she has lost her treasure and no doubt many other valuable articles of her contents. The *Hollandia*, however, has no hull and much that is fragile has perished, but when both have been completely excavated it will be possible to compare the contents to determine which objects were perhaps officially issued by the VOC during the 1740s.

Already it is becoming clear that certain items recur in VOC wrecks, and are probably part of the standard issue of official equipment and supplies to the ships. For example, several bronze belt buckles (Fig. 12, no. 7) of distinctive form which have been found in the *Hollandia* are of the

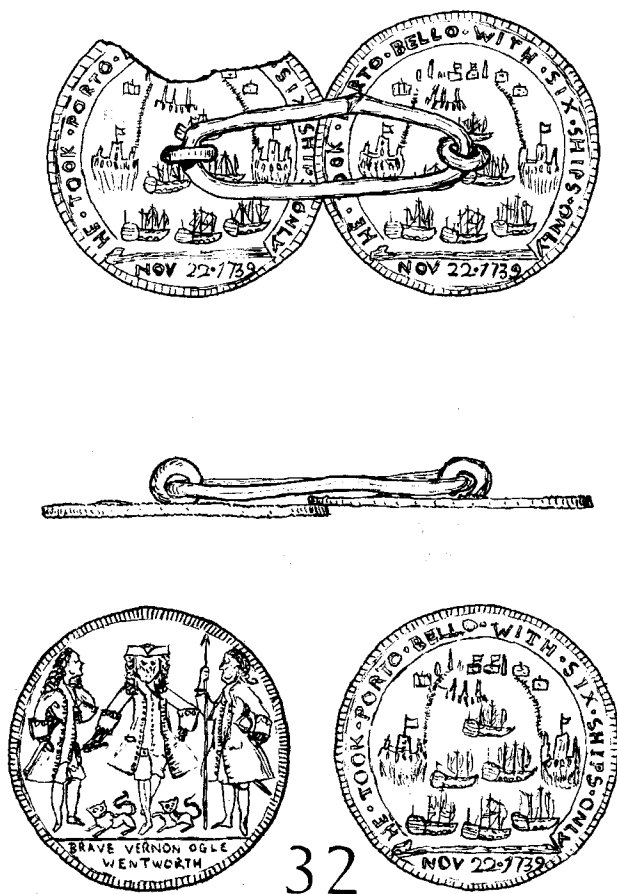


Figure 20. 32. The Vernon medallions. Two copper medallions celebrating Admiral Vernon's attack on Porto Bello, 1739, joined to form a cloak clasp. Scale 1:1.

same type that have been found in the *Amsterdam*, where they were used on the military cartridge case belts (Marsden, 1974: fig. 29, no. 129; fig. 32). One of these buckles has been found in the *Hollandia* on a leather belt wound around a sword scabbard, showing that their military use was not confined to cartridge case belts but that they were generally used on equipment no doubt issued to the VOC soldiers carried in Dutch East Indiamen. Similar buckles have also been found in the *de Liefde* lost in 1711 (Bax & Martin, 1974: fig. 6, E).

It is thus extremely important that scale illustrations of all objects, however fragmentary, from wrecks should be published, for only then will it be possible to identify objects common to wrecks of similar age, and thus be able to isolate articles that were officially issued by the VOC for use in their ships.

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Important and relevant information has been

obtained by the writers in correspondence and personal discussions with those other VOC aficionados whose experience relative to VOC wrecks has enlarged our understanding: namely, Colin Martin of the Institute of Maritime Archaeology, University of St. Andrews, Jeremy Green of the Western Australia Museum, and Robert Stenuit.

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The knowledge that the archaeologically important material recovered from the site was both appreciated and desired by two of the most important Dutch museums has ensured that our interest and enthusiasm has never flagged. This supportive interest is reflected in the collections of material being assembled for exhibition with foresight and understanding by Mr W. H. Vroom, Head of the Department of Dutch History, Rijksmuseum, and Mr H. Hazelhoff Roeldzema,

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Appendix

Mercury

Rex Cowan

Robert Stenuit has drawn attention to the historical importance and significance of the finds of mercury amongst the remains of Dutch East India vessels (Stenuit, 1974: 239–43). His observations should stimulate further historical research for, as will be seen from the following additional comments, the importance of mercury in the East India trade seems to have been underestimated or overlooked. It was not until 1973 that the presence of mercury and its compounds was detected on the *Hollandia*

site. Coins found in areas L/M/1 (sandy patches, see Fig. 7) were discovered, after cleaning, to have a coating of mercuric chloride, the compound which occurs after mercury breaks down in a saline environment. Other coins were found to be an amalgam of mercury and silver, difficult to separate by chemical means. Some sherds of stone-ware were found nearby but no other evidence of packaging. Because of the scarcity of information in Dutch sources and translation problems, it was decided to enlarge

the area of historical research by studying the records of the English East India Company in addition to the Dutch, and to extend it back into the 17th century.

World-wide trade in mercury and its importance

In the 17th and 18th centuries the production and sale of silver was one of the vital elements in the struggle for power between the Spanish and other colonial empires. Prior to 1550 simple smelting was the main method of refining silver. It was a lengthy and expensive process. After 1550, as the result of a German technique, the amalgamation process came into use, using mercury to separate silver from base metal. Thus the mining of mercury and its cost became one of the key factors in silver production. Without mercury much medium quality ore could not be refined, because in this grade of mineral, smelting did not produce sufficient silver to pay for its cost.

An anonymous correspondent to the Spanish Crown, writing in the 1690s about a Mexican leader declared: 'The only way to obtain more silver is to send this kingdom sufficient mercury' (Brading, 1971: 12). Regional fluctuations in the price of mercury created competitive markets, particularly between the Austrian mines and those in China. So vital was the supply of mercury to silver mining that Dr M. Lang of Salford University ascribes the rundown of the silver mines in the Spanish empire to the recession of mercury production at Almaden, that is to a shortage of mercury rather than to the demographic and other considerations adduced by historians. Dr Lang sees the American world with greater autonomy, Mexico and Peru particularly, in their 17th century looking to China for their mercury supply. The Dutch needed mercury in the 17th century and an analysis of the cargoes by weight shipped in East India vessels in that century shows that mercury was the second largest consignment to the Indies, only exceeded by lead (pers. comm., Jeremy Green, Western Australia Museum). Amsterdam was one of the main centres for

the commodity market and in the 18th century the banking and business houses of Deutz and Goll held the monopoly of the Austrian mercury production. More detailed accounts of the practice and extent of this trade and monopoly are to be found in Dutch printed sources (Elias, 1905: 1046–52; van Dillen, 1970: 267–8, 321, 607; Posthumus, 1943: table 217).

When the price of Spanish or Peruvian mercury became too high the potential customers, the East India Companies, would look elsewhere. A remarkable insight into the power of the English East India Company and its commercial techniques, is revealed in correspondence between the Government of the Emperor of Austria and the English East India Company, (India Office Minutes, D/18) whereby the English Company agreed not to buy cheaper mercury from China, but to use the more expensive mercury of Idria, in return for the Court of Vienna agreeing not to grant any more commissions for the East Indies to the rival Ostend ships. The directors of the company having instructed the Foreign Secretary, Earl Stanhope, 'That upon the Assurances given in a former letter from Monsieur de St Saphorin That the Court of Vienna would not grant any more Commissions to the Ostend Ships The Company have forbid their China Ships bringing home any Quicksilver altho; if that Commodity was as cheap in China as at sometimes it has been they could Import and Sell it for good Profit at the Common whole Sale Price it goes at in Holland which as mentioned in the Memoriall aforesaid is Forty four Stivers [sic] Banco about Four Shillings & Six Pence Sterling though they pay above Twenty Pounds a Ton Freight and it is very obvious that any Quantities may be procured in China' (India Office Letterbook, E/1/20: fo. 167). This reflects a relatively unknown aspect of the world trade, i.e. that there was a two-way trade between the East and West in mercury and that East India vessels brought back mercury from China when it paid them to do so. Apart from the export of mercury from China to India there are also examples of East India vessels taking mercury to Europe. In 1792 four Dutch

East India Company ships took aboard Canton 153 piculs of mercury (one picul weighs 133½ lbs). During an early period Ostend East India ships frequently took mercury to Europe and, when the price of mercury in China was low, supercargoes of the English East India Company would often invest the proceeds of sale of the outward bound cargoes in mercury for shipment to Europe (Morse, 1926: 177, 203, 271).

Packaging

Mercury is elusive to contain and references to comparative methods of packaging are copious. 'The method suggested for packaging quicksilver viz: in copper pots soldered at the top, had been tried and found too expensive; so the Dutch plan of using stone bottles had been adopted, as both better and cheaper' (Foster, 1906, II: 15). In 1669, Gerald Aungier writing to Benjamin Albyn of the English East India Company said 'For quicksilver there is also a vast loss. Dutch bottles are best they are lighter and easier handle too' (India Office, Factory records Misc 2: 48). Earlier records refer to the shipment of mercury in coconut shells covered with raw hides 'artificiallye to prevent losse by leakage in portage' (Strachan & Penrose, 1971: 125). In 1686 the Dutch were certainly carrying mercury in Bellarmine flagons; an intact one, corked and filled with mercury having been recovered from the wreck of the *Princesse Maria* (1686) on the Isles of Scilly in 1973. Constant complaints of losses and spillage by the managers of the English and Dutch East India Companies leads one to suspect (Professor Boxer's personal views) that busy hands took a part in theft, for whilst it is easy to spill mercury it is more difficult to lose it.

This next much earlier account, dated 12 June 1614, of William Keeling's journey to the East Indies complaining of the company's packaging also refers to lemon water stone bottles. 'The Compns quick silver in the *Lyon* runs out; wherefore I sent Mr. Barkley aboard her ordering it should be put in lemon water stone bottles, which filled should be restowed into chests, raw hydes

first stowed twixt the chests and bottles to preserve the commoditie if bottles should breake; who affirmed 300 weight at least to have beene run out, causing me wonder the Compn have no more care, sith it is reported they were informed of a greater losse of the same kind in a former voyage' (Strachan & Penrose, 1971: 80-1). Two other references from Dutch sources later in the 17th century show the same problems of leakage and even more ingenious methods to prevent it. 'The quick silver that came on the *Wesel*, *Nassouw* and *Hollandia* is received in good condition through the leaving of your Honours in good season and the speed that it came here, through which the skins through heating were undamaged. Though that (quicksilver) brought by the *Amsterdam*, *s'Gravenhage* and *Amboino* have extreme lackage, through the dampness of the ship's hold, and the long time they were there, above mentioned skins came to perish and also the casks not thick oiled was of thin and spongy wood, and was hardly a little finger thick and so badly jointed, so that as in the past (?) the first leaked, another second the half a third and same less etc. The above mentioned quicksilver was in spongy wood of the same casks so soaked in that they were empty and so heavy weighed all the others, that the skins much in them stayed. The Complaints over the quicksilver packing has now successively lasted four years. We have Your Hons. also written that the English bring it in thick glass flasks and also in heavy thick strong jugs' (Coolhaas, 1960: 509). 'From Suratte was written that the English their quicksilver not uncommonly comes in better condition in different new casks manageable to handle and also very much stronger and heavier than we make and prefer' (Coolhaas, 1960: 341).

Evidence of the presence of mercury aboard Dutch East India shipwrecks has now been reported, spanning almost 100 years as follows:

Lastdrager 1653 (Robert Sténuit, 1974).
Kennemerland 1664 (Price and Muckelroy, 1974).

Princesse Maria 1686 (Rex Cowan).

Hollandia 1743 (Rex Cowan).

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