Sea Venture. An interim report on an early 17th century shipwreck lost in 1609

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Introduction

By 1609 King James had occupied the thrones of England and Scotland for six years, and in the two preceding years two expeditions had left England with settlers and supplies for the infant colony at Jamestown, Virginia. The third supply, comprising 600 colonists in seven ships and two pinnaces, and led by the flagship Sea Venture, or Sea Adventure as she is called in some contemporary accounts (Brown, 1898: 92) set out from Plymouth, Devon on 2nd June (Strachey, 1610).

Six weeks later, on 23rd July, a great storm arose, scattering the ships amidst the howling winds and tremendous seas of a hurricane. Sea Venture, separated from the rest of the fleet, found herself in a perilous situation, having 'received likewise a mighty leake' (Strachey, 1610). After four days and nights of continual bailing and pumping, the ship's company was completely exhausted and had abandoned hope. However, Sir George Somers, who held the title of admiral of the flotilla, had remained alert and watchful throughout this ordeal. He noticed land ahead when hope was almost lost. The ship, now in a foundering condition and 'in every joynt almost, having spued out her Okam, before we were aware, was growne five feet suddenly deepe with water above her ballast' (Strachey, 1610), was headed in and driven aground, where she lodged firmly between two reefs, unable to capsize or sink. Boats were lowered and the 150 passengers and crew landed on Bermuda, a place known as 'The Isle of Devils' and feared by seamen of all nationalities (Fig. 1). In his letter of 20th June 1610 to the Earl of Salisbury, Sir George Somers gives 28th July as the date of the landing (Brown, 1890: 401).

In the months that followed the ship was stripped of as much useful material as could be salvaged, and two smaller vessels, *Patience* and *Deliverance*, were built, enabling the survivors to continue on to Jamestown, where they arrived on 24th May 1610. Not all the original survivors went on to Virginia. Two men remained in Bermuda—later joined by a third, after Sir George Somers had returned in *Patience* to fetch supplies for 'the languishinge Virginia colony' (Lefroy, 1882: 15). These three remained alone on the island until they were joined by 60 settlers, under the leadership of Governor Moore in 1612. At that point, Bermuda was established as an English colony.

A preliminary investigation of the wreck

In 1958, Edmund Downing, a keen amateur diver who was employed at the US Naval Operating Base, Southampton, Bermuda, located a shipwreck that he believed to be Sea Venture, lying between two reefs and in a sandhole, at a depth of about 9.1 m. Downing, a Virginian and a direct descendant of Sir George Yeardley, captain of soldiery on Sea Venture, had begun looking for the wreck in June 1958 inside the ship channel using a grid system, but to no avail. After talking to fishermen at St Davids Island, he took their advice to look in an area on the seaward side of the channel; and in October of that year, with the idea of duplicating Sea Venture's course, he headed in towards Fort St Catherine, dropping anchor over a cut in the reef. On his first dive he saw ballast stones and evidence of the timbers of a very old wreck.

Since 1959 was the 350th anniversary of the landing of the survivors of the shipwrecked *Sea Venture*, such a find sparked great interest both locally and abroad, and an investigation was

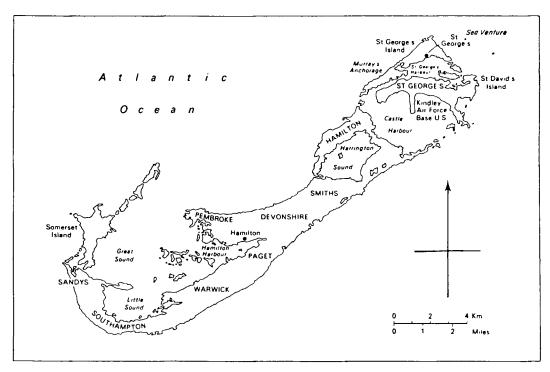


Figure 1. Map of Bermuda, showing approximate position of wreck site on Sea Venture Flat.

undertaken. Because Edmund Downing was only able to dive part-time, the Bermuda Government, with his consent, employed the Canton brothers, Bob and Donald, and Teddy Tucker to proceed with excavations and, in consultation with museums in the United Kingdom and the USA, to attempt a positive identification of the wreck.

Artefacts recovered were found to be of the right period for *Sea Venture*, with the exception of a cannon that was wrongly identified as a saker when it should have been classified as a minion (Fig. 2). The authorities at the Tower of London opined that this 'saker' would have been a century too late for this ship, and in the face of such advice the Bermuda Government discontinued the investigation. Interest therefore waned, and the wreck slumbered on undisturbed for another 20 years.

In 1958 there was virtually no legal protection for historic wrecks, and the Wreck and Salvage Act of 1959 still left much to be desired. Realizing the inadequacy of the 1959 Act, the Bermuda Government amended it in 1964 to specifically protect historic wrecks, defining them as being 'not less than 50 years

old' and 'of historic interest or value'. Consequently, under Bermuda law, there are now two categories of wrecks, historic and unprotected. While it is permissible for anyone at any time to dive on an unprotected wreck, a licence to explore or conduct research on any particular historic wreck, or historic wrecks generally, is required from the Receiver of Wreck.

The newly formed Bermuda Maritime Museum Association applied to the Government in 1978 for a licence to dive on this protected wreck in order to conduct a controlled archaeological excavation. The licence was granted on the understanding that the Receiver of Wreck would be provided with a report on each dive and a description of all artefacts recovered. Since the writer is a retired professional diver and a member of the board of directors of the Bermuda Maritime Museum Association, it became his responsibility to conduct the excavation.

To date, 27 dives have been made. The wooden remains of the vessel have been exposed, using a portable water suction dredge, photographed and re-covered to prevent attack by

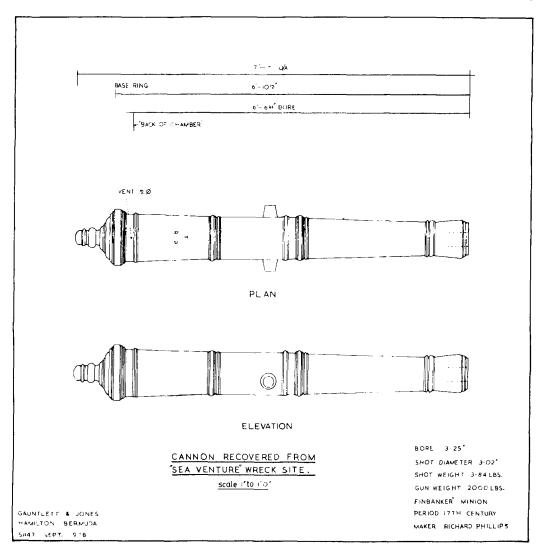


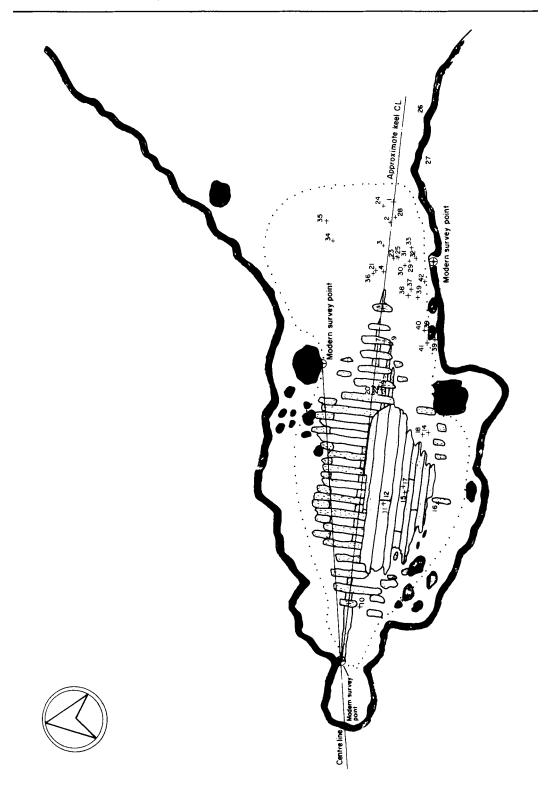
Figure 2. Iron cannon—minion, 7 ft 7 in (2.5 m) long, 3¼ in (0.082 m) bore, and 15 in (0.38 m) maximum width.

shipworm. All the artefacts have been recorded, photographed, researched and put through a conservation process where necessary.

The hull

As ships of this period are not well documented, very little is known about the specifications of *Sea Venture* and we know only that she was 300 tunnes (Lefroy, 1882: 11). The residual timbers of the hull are still available for study, having survived the ravages of shipworm by being covered over with flint ballast stone, sand and mud after settling down between the

reefs as in the plan (Fig. 3). Approximately 54 ft (16.45 m) of keel remain with a corresponding number of floor timbers. These measure 0.30 m square and average 0.61 m on centres, and although there are a number of first futtocks, none of them are long enough to indicate the turn of the bilge. The flooring was found to be pegged and treenailed with split and wedged treenails, and the measurement of four of the planks uncovered was 0.064 m thick, by 0.26, 0.35, 0.44 and 0.49 m, respectively. A horizontal stringer still in position on the port side indicates a strong, heavily built ship (Fig.



APPROXIMATE LOCATION OF WOODEN TIMBER	KEY CORAL REEF FACE & LUMPS A.NASH 19/8	SKETCH BY A. NASH 19/8/80
REMAINS & LOCATIONS OF ITEMS FOUND ON	APPROX AREA OF BALLAST GRAVEL	SCALE
	TIMBER REMAINS SHOWING KEEL, FLOOR TIMBERS, 8 to 1	
SITE (SEA VENTURE) DURING SUMMER 1980/81	18 FUTTOCK ENDS, CEILING & REMAINS OF PLANKING	
		!
1980	21 MUSKET SHOT & POT FRAGMENT	
1 AFTMOST ENCRUSTED KEEL BOLT	22 LEAD PATCH	
2 2cd. " " "	23 BELLARMINE JUG	
3 3rd	24 LEAD 11b "EL" WEIGHT	
4 ENCRUSTED KEEL BOLT	25 LEAD VENT COVER	
5 LAST WOODEN REMAINS OF AFTMOST FLOOR TIMBER	26 IRON BAR ON REEF FACE	
6 FOREMOST	27	
7 CAULKING FROM GARBOARD	28 SPANISH OLLA JAR REMAINS	
8 LIMBER HOLE 2½ w 3 IN HEIGHT	29 to 33 incl. ENCRUSTED LUMP UNCOVERED	
9 FLAT ANIMAL RIB		
10 14 PORT FUTTOCK		
11 NOTCH IN BILGE STRINGER	1981	
12 WEDGED BUTT IN CEILING	34 SWORD HANDLE	
13 WEST OF ENGLAND PLAIN POT (Upside down 9" in mud under coral)	35 CANDLESTICK	
14 TUDOR GREEN JUG (WHOLE)Upright in 16" mud	36 MUSKET BALL & PISTOL SHOT (MERCHANTS LEAD WEIGHT - JAMES 1)	AMES 1)
15 BONE SMALL ANIMAL	37 SMALL CLYSTER OR SYRINGE	
16 BASE OF JAR (WEST OF ENGLAND PLAIN POT)	38	
17 WOOD TWIG	39 PEWTER SPOONS (3)	
18 LEAD SHEET & SLATE RECOVERED (IRON GRATE POSITIONED AFT #12)	40 DIRK OR DAGGER	
19 TWO DOUBLE HEADED SHOT	41 CANNON BALLS	
	42 BALL PADLOCK	

Figure 3. Plan of wreck site by Anson Nash, drawn by Ian Waddington.

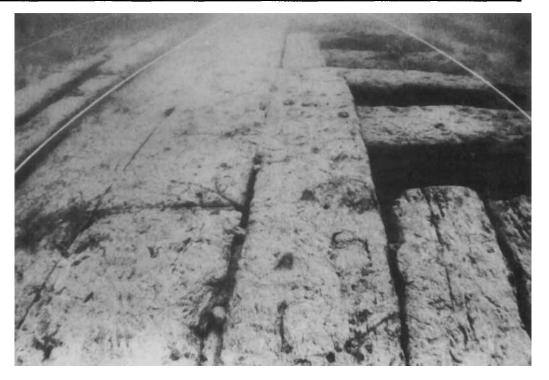


Figure 4. View of oak flooring planks, looking forward from a point above midships (Photo L. Gould).

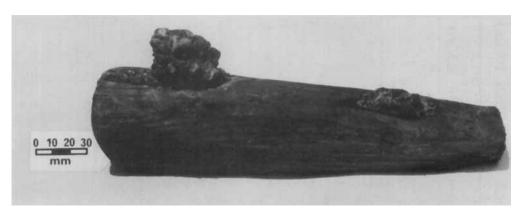


Figure 5. A wedge-shaped chock found spiked to the flooring with three square shanked iron spikes—use unknown.

4). Beyond 54 ft (16.45 m) aft no wooden remains of the keel exist, but there is evidence from worm casts and concreted keel bolts that the original keel could have been as long as 75 ft (22.86 m). The only surviving wooden object above floor level is perhaps an insignificant, wedge-shaped piece of wood of a species so far unidentified, 0.25 m long, 0.03 m thick, tapering to 0.016 m at the small end and

0.075 m wide, found spiked on top of the flooring with three square shanked iron spikes (Fig. 5). It is smooth on top with chamfered edges and rough on the underside, i.e. not dressed, and its use is so far unknown. The garboard strake was caulked with two twisted strands of oakum (Strachey states that the ship had 'spued out her Okam'), and as several other seams were caulked in a similar fashion, one







Figure 6, F. R. P. mark on cannon.

might assume that this was a common All shot for small arms has been classified and technique in 17th century ships.

Armament

In his A true reportory, Strachey, an eye witness to events, stated that in order to lighten the ship during the hurricane, '(we) heaved away all our ordnance on the starboard side'. Curiously, only one gun, the controversial

salvaged in 1959 (Fig. 6), and none have been found since, although others were found in the time of Nathaniel Butler, the Governor of Bermuda from 1619 to 1622 (Lefroy, 1882: 290). The recently found gun was muzzle down in the coral about 25 ft (7.62 m) from the keel and in a 'stored' condition. When the tompion was removed along with a piece of waste, out rolled a 3 in diameter cannonball. The cannonball has never received any treatment, has not deteriorated and still exudes oil. Seventyseven heavy shot found during the preliminary investigation have been classified as follows (A. Mardis, personal communication, 1980):

sorted into the following calibres:

_	
15 mm	2036
17 mm	1527
19 mm	1157
	4720

A number of lead aprons, or touch-hole covers, measuring 21 X 22 cm, to be used when a gun was loaded to keep spray or rain out of the touch-hole, were retrieved. These would be tied to the cannon with light hemp rope and fastened through holes on either side after the touch-hole had first been plugged with tallowed hemp. Several lead patches were found, not uniform in size or shape, showing imprints of nail heads. Mainwaring (c. 1623), refers to these patches as 'tingles', and recommends their use in stopping leaks inboard and out (Fig. 7).

A cast iron grenade of a type dated to the 16th century (Venn, 1672) was found in 1958 with part of the wooden fuse still in place and the contents intact. The seemingly modern screw to the side of the fuse hole, and for which there is as yet no explanation, was found as shown in the illustration (Fig. 8). The

Gun class	Gun calibre (inches)	Shot weight (lb)	Shot type	No. found
Demi-culverine	41/4-43/4	8½-12½	Round	5
Saker	3½-4	58	Round	49
Minion 3¼	31/4	3¾-4	Round	14
			Expanding bar	6
			Spike	2
Falconet	21/2	1½	Round	1
			Total	77

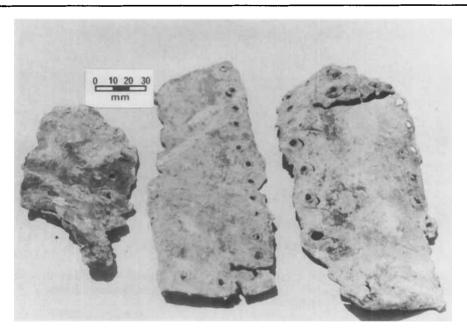


Figure 7

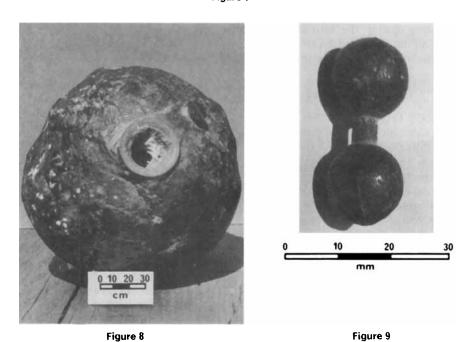


Figure 7. Lead patches or 'tingles', average size 0.05×0.15 m, used to plug leaks inboard or out.

Figure 8. Cast iron grenade; the modern looking screw next to the fuse hole was found as illustrated—its use is unknown.

Figure 9. Double-headed lead shot. Only eight of these have been found so far, and not in the same context as the other small shot.

contents had not been analysed by spring of 1981. Also retrieved thus far are eight doubleheaded bar shot, 3 cm in length, consisting of two 12 mm lead bullets joined by a lead bar. At first this appears to be an unclipped shot, but on closer scrutiny it is obvious from the mould marks that it was poured in one piece and clipped at the sprue end. A similar type of missile is described in Harford's military discipline (London 1680) ... 'For the musket may be used double-headed shot, which are two bullets fastened together by a little piece of iron, about half an inch long, as may be seen by the Figure'. From this description one might assume that the shot pictured is an earlier form of the same missile (Fig. 9). To date only two items of personal weaponry have been found. One is the completely encrusted hilt of a basket-hilted sword with approximately 0.15 m of the blade. The other is the wooden onepiece grip or pommel and the heavily encrusted, tapering blade, (diamond-shaped in section) of a very basic type of dagger. English writers called such a weapon a ballock knife and French writers a dague à couillettes. More prudish Victorian writers called it a kidney dagger. This type of dagger first appeared about 1300, was in use on the Continent until well into the 16th century, and persisted in England into the 17th century (Peterson, 1968: 27).

Ceramics

Several types of ceramics were present on the wreck site, the predominant type being west of England plain pottery (Peterson, personal communication, 1979). Two intact jars c. 0.35 m tall were recovered, one in 1958/59 and the other in 1979 (Fig. 10). This type of pottery, produced in the 16th and 17th centuries, was believed to have been made in north Devon at Bideford and Barnstaple (Plymouth Museum Archaeological Series, 1979, no. 1: 17), Many fragments of similar pottery were found during excavations between 1959 and 1969 at Plymouth, Devon, the port of Sea Venture's departure. Rim sherds were also excavated at Martin's Hundred, Virginia in 1976 (Peterson, personal communication, 1979). Two examples of Rhenish salt-glazed stoneware of Bellarmine type were recovered, a jug 0.15 m tall and a bottle 0.19 m tall. Both have medallions on

the bodies and benign, fully human masks or faces sprig-moulded on to the necks, indicating manufacture during the best period, the mid to late 16th century (Fig. 11). By 1650-70 the masks and medallions were deteriorating and becoming stylized (Noël Hume, 1978: 55-7). They have been dated 1580 and 1600 respectively (Göbels, 1980) but with the medallions as yet unidentified. In 1980 a pottery jug, 0.19 m tall and having a partial green glaze, was found and identified as Surrey ware (Matthews & Green, 1969: 12-3) dating from the mid-16th century, 1610 being the latest dateable context for this type of pottery (Fig. 12). Examples of what is probably English delftware have been recorded; base sherds of an apothecary's jar, and an ointment jar or gallipot with a piece missing from the rim, all having pale blue and purple decoration (Fig. 13). Similar jars were produced in kilns in or near London by J. Andries and Jacob Janson, two Netherlandish potters, in the late 16th and early 17th centuries (Noël Hume, 1978: 288). A base ring of a plate of English delftware decorated with the pinwheel design was found in 1981 (Fig. 14). Several sherds of a Spanish olive jar, representing about 60% and including the complete lip fragment have been retrieved, akin to jars from the Armada ship Trinidad Valencera, wrecked on the Irish coast in 1588 (Martin, 1975: monochrome pl. 15b, and 1979, IJNA: 280, fig. 1). An earthenware fragment with a good brown glaze on the inside was recovered. It has a recessed rim and is thought to be from a cooking pot meant to take a lid (Fig. 15). Similar pots were found at Martin's Hundred, Virginia (A. Noël Hume, personal communication, 1980). Another sherd found was from a Chinese bowl with a grotesque animal (a hornless dragon) and on the bottom two pseudo-characters (Fig. 16A & B). Bowls with a similar motif occurred in late 16th/early 17th century levels at Gedi and Fort Jesus Mombasa in Kenya (Kirkman, 1963: pl. xv, and 1974: 102 (6b); Sassoon, 1975: 17).

Miscellaneous finds

An assortment of household items has been found, including part of a wooden knife handle encased in metal; brass open-ended tailors' or cordwainers' thimbles nested over a metal bar (Fig. 17), sometimes referred to as sewing rings



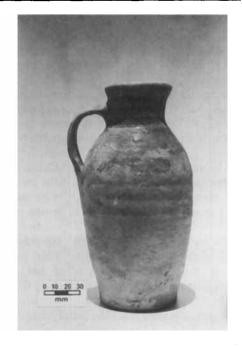


Figure 10



Figure 11A

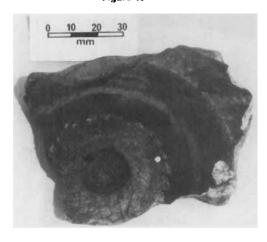


Figure 11B

- Figure 10. Baluster jar of west of England plain pottery, 0.35 m tall, of light buff red fabric with gravel inclusions and poor glaze on interior only.
- Figure 11. A. Rhenish salt-glazed stoneware jug and bottle, dated to 1580 and 1600 respectively; B. with detail of the medallion on the bottle.
- Figure 12. Surrey ware jug with faded green glaze externally to the bottom of the handle, and internally for 0.12 m below the lip.



Figure 13



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Figure 15

Figure 14

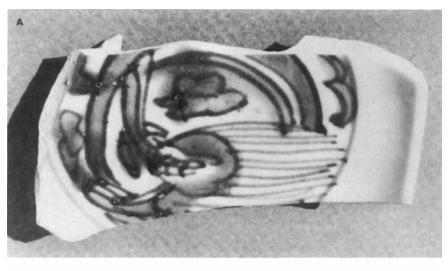
Figure 13. English delftware gallipot and base fragments of an apothecaries jar, with pale blue and purple decoration

Figure 14. English delftware plate fragment. The design is known as the pinwheel pattern.

Figure 15. Earthenware cooking pot fragment, glazed internally, with a recessed rim meant to take a lid.

(Holmes, 1976: 13). Also several pewter spoons, one with a finial top was dated to the late 16th century by Mr Mendel Peterson, then of the Smithsonian Institution; another, with part of the bowl missing, had what appeared to be a pewterers' mark. However, this may be corrosion. A candlestick in excellent condition was found wedged between two planks in the port after section (Fig. 18). It is comparable to candlesticks of pewter and harder alloys made in the late 16th century and prior to the middle

of the 17th century (Michaelis, 1979: 62-70). A concretion, when broken apart, revealed a perfect hollow sphere, which on careful examination showed the imprint of a key-hole, surrounded by faint decorative markings and vestiges of a hasp. From this negative cast a mould was made of dental plaster and a replica of a ball padlock was produced (Fig. 19). This type of padlock, originally made in Europe, mainly in Germany, reached England during the reign of Elizabeth I (Noël Hume, 1978: 250).



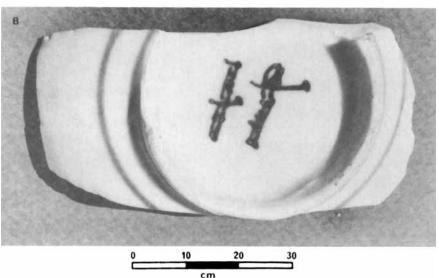


Figure 16. A. Small Chinese porcelain bowl with a grotesque animal (a hornless dragon) and B. two pseudo-characters on the bottom.

Several lead discs, which appear to be merchants' weights for use in a scale balance have been found. One, weighing 449.4 g, presumably originally 1 lb, bears a crowned EL, the stamp of Elizabeth I. A smaller disc, weighing 112.9 g (½ lb) is stamped with the crowned I of James I (Fig. 20), and both are stamped with the sword of Saint Paul, the hallmark of the City of London. It is significant that F. J. Waldo, in his Short history of the Worshipful Company of Plumbers, states that one of the most important

early duties of the Plumbers Company was the detection of false weights in London and for 7 miles around. It seems that these rights were removed in 1599 and not re-instated until 1611. Meanwhile this duty was carried out by the Keeper of the Guildhall with the assistance of two members of the Company of Founders or Coppersmiths (Le Cheminant, 1979). Therefore one would expect to find only the Guildhall mark on weights originating in London and verified between these two dates.

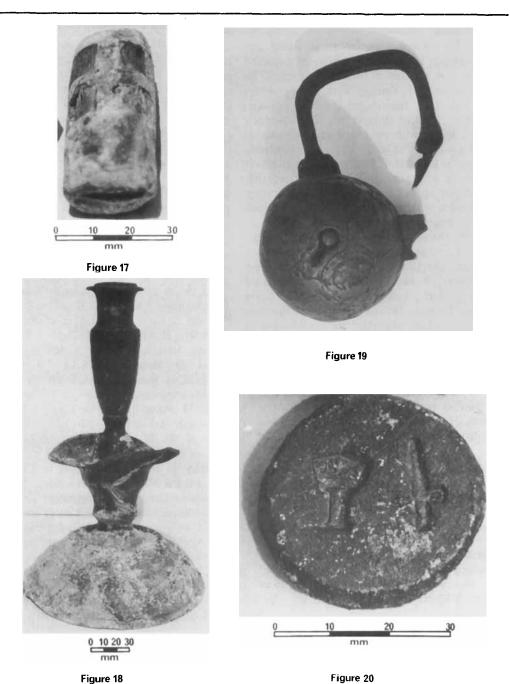


Figure 17. Part of a wooden knife handle, encased in metal.

- Figure 18. Pewter candlestick of extremely rare type, slightly corroded, dateable to late 16th century, with a small amount of candle remaining.
- Figure 19. Elizabethan ball padlock in replica. An example of recovery of a lost object. A hollow sphere was found in a broken concretion, with the impress of a keyhole. From this negative cast a dental plaster mould was made and the replica produced in brass.
- Figure 20. Quarter lb lead merchants' weight, showing the crowned I of James I and the sword of St Paul. In excellent condition.

Conclusions

From the evidence so far accumulated and researched it appears that this wreck occurred in the first quarter of the 17th century. Its position on Sea Venture Flat, three-quarters of a mile from the nearest land and between two reefs, headed directly for St Catherine's Beach, agrees with contemporary accounts of the shipwreck. Probably the most conclusive evidence is the west of England plain pottery. It would be a strange coincidence indeed that would put an unknown ship on Sea Venture Flat loaded with pots made in Devon, England and also discovered in Jamestown, Virginia.

Noël Hume, the Director of the Department of Archaeology at Colonial Williamsburg, Virginia, has this to say in personal correspondence: 'I have neither seen nor heard anything that precludes your ship from being the Sea Venture. On the contrary, all the artefacts that I have examined are consistent with stores, possessions or cargo likely to be found aboard an English ship lost c. 1610. Collectively, however, they are quite definitely not what one would expect to find aboard a Spanish, Dutch or French vessel of the same period'.

As further funds have been donated to the Bermuda Maritime Museum to continue this investigation, work will re-commence during 1982.

Acknowledgements

The author is indebted to the Bermuda Maritime Museum Association for sponsoring this underwater archaeological investigation, and to numerous individuals for their assistance.

I would especially like to thank Ivor Noël Hume, Director, Department of Archaeology at Colonial Williamsburg, Virginia, and his wife, Audrey, for their encouragement, interest and support from the outset, and particularly for the initial identification of the west of England pottery. Also for their always readily given advice and help in identifying the other artefacts after seeing and handling each one.

I thank Mrs Marilyn Peterson of Boston for making a special journey to Williamsburg so that Mr and Mrs Noël Hume could see the west of England fragments. I am grateful to Lt R. Jack, Corporal D. Roe, Leading Seamen B. Willis and T. Read, and Marine S. Pendry, of HMS Eskimo, and A. Nash, all of whom spent so many hours uncovering the hull; A. Nash for the overall measured plan of the wreck site; and Laurence Gould for photography. For their assistance on site at different times, either as divers or with the loan of boats and other equipment I thank R. Boys, G. Bourne, B. Branson, S. Cook, E. Downing, D. Fleming, E. Gauntlett, R. Gillies, W. Gillies, C. Haines, P. Haynes, Miss J. Kimblin, A. Mardis, Dr J. Markham, D. Mowett, R. Scott, D. Sousa, R. Steinhoff, R. Whayman and W. Wivell.

I much appreciate the assistance I received from Mr M. Ponsford of the City of Bristol Museum and Art Gallery, Mr James Barber, Director of the Plymouth Museums, and Mrs Preston, of the City of Plymouth Museum and Art Gallery in verifying the west of England pottery. I thank Mr Howard Blackmore, then of the Tower of London, and Mr Norris Kennard (retired) formerly of the Tower of London for help in identifying the double-headed lead shot, and Mr A. Mardis for his tireless pursuit of the cannon identification.

Last, but by no means least, my thanks go to my wife, Peggy for typing and re-typing this manuscript many times, and particularly for her photographs of all the artefacts.

References

Brown, A., 1890, The genesis of the United States, Reprinted New York, 1964.

Brown, A., 1898, The First Republic in America. New York.

Göbels, K., 1980, Keramik Scherben aus Frechen. Germany.

Harfords Military Discipline, 1680, London, 'A Treatise of Arms, the Musket', referring to the matchlock. Copy in Tower Armoury, London.

Holmes, E. F., 1976, Thimbles. London.

Kirkman, J., 1963, Gedi, the palace. The Hague.

Kirkman, J., 1974, Fort Jesus, a Portuguese fortress on the East African Coast. Oxford.

Le Cheminant, R., 1979, Antique Lead Merchants' weights from the City of London. London Archaeol., 3.11: 289-93.

Lefroy, Gen. Sir J. H., R.A., 1882, Historye of the Bermudas or Summer Islands. Edited from a ms. in the Sloane Collection, British Museum.

Mainwaring, Sir H. C., c. 1623, Seamans' dictionary. Martin, C., 1975, Full fathom five. New York.

Martin, C., 1979, Spanish Armada pottery. IJNA, 8.4: 280.

Matthews, L. G. & Green, H. J. M., 1969, London. Post-Medieval Archaeology, 3.

Michaelis, R. F., 1979, Old domestic base-metal candlesticks from the 13th to 19th century.

Noël Hume, I., 1978, Guide to artifacts of Colonial America. New York.

Peterson, H. L., 1968, Daggers and fighting knives of the western world from the Stone Age till 1900. London, Arms and Armour Series.

Plymouth Museum Archaeological Series, 1979, no. 1.

Sassoon, C., 1975, Chinese porcelain in Fort Jesus. National Museums of Kenya.

Strachey, W., 1610, A true reportory of the wreck and redemption of Sir Thomas Gates, Knight.

Venn, T., 1672, The complete gunner. From Military and Maritime Discipline, London.

Waldo, F. J., 1923, Short history of the Worshipful Company of Plumbers. London.

French Summary

Rapport préliminaire sur le Sea Venture une épave du début du XVIIe siècle, coulé en 1609

Les artefacts découverts lors des fouilles archéologiques entreprises dès 1978 par le Bermuda Maritime Museum Association permettent d'établir que l'épave localisée en 1958 par Edmund Downing est le Sea Venture, navire-amiral de la troisième migration de colons en Virginie. Il sombra au large des Bermudes en 1609.