PROGRESS REPORT ON THE MARINE EXCAVATION AT RED BAY, LABRADOR A SUMMARY OF THE 1983 FIELD SEASON

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INTRODUCTION

Since 1978 Parks Canada's Marine Archaeology Unit has been carrying out the excavation of a shipwreck thought to be the San Juan, a Spanish Basque galleon documented to have sunk in Red Bay, Labrador in 1565. The excavation is part of a multidisplinary research project being undertaken in cooperation with Memorial University of Newfoundland, where the anthropology department, under the direction of Dr. James Tuck, is conducting the excavation of related shore station remains.

The 1983 field season was the most ambitious to date. Its objectives encompassed a wide range of archaeological goals which included disassembly of the ship's port stern, starboard stern and starboard midship areas, as well as excavation below the hull. Other objectives involved above hull excavation in the bow area and continuation of the faunal survey in Red Bay harbour.

STRUCTURAL DISASSEMBLY

In 1983 approximately one-third of the uncovered integral hull was disassembled (Figure 1). Recovery began in the stern with the removal of the aft-most futtocks or frames, followed by ceiling planking, y-shaped floors, external planking, the stern knee and finally the ship's keel. Most of these timbers were quite large and heavy and could only be freed safely with the aid of specially designed hydraulic jacks. The timbers were then brought to the surface using a large lifting crane. Once the stern disassembly was completed

work began on the starboard disassembly. The basic approach was to begin at the upper extremities of the integral hull and work in towards the ship's center line. The third futtocks were the first timbers recovered, followed by, in sequence, the inner hull stringer, the spaces, spacer planks, waterway fragments and second futtocks. Removal of the associated external planks completed the disassembly.

BELOW HULL EXCAVATIONS

These excavations resulted in the recovery of timbers and artifacts from the ship's upper works and of a small boat or chalupa that was probably used by the Basques for hunting whales. The excavations also provided the opportunity to completely record the stratigraphic profile of the bottom as it related to the ship's final deposition.

Port Stern

Excavations below the hull in the port stern area revealed very few timbers from the ship's upper works. This was primarily due to the fact that the ship was lying on its starboard side and when collapsing began most of the structure would have fallen to that side. It is also likely that much of the port stern was above water, thus making it accessible to immediate salvage. Further, the possibility of ice damage cannot be ruled out. Whether one or all of these factors were responsible, the result was a definite lack of structural elements from the port stern upper works.

The number of artifacts found beneath the port stern, including faunal remains, was also extremely limited. Among the total were 19 cast parts, 7 whale bones, 2 oyster shells, 1 ceramic sherd and 1 complete wooden bowl. The paucity of artifacts under the hull in this area coincides with the absence of structural timbers. It would appear that whatever reasons account for the lack of structure were also responsible for the lack of artifacts.

Although lacking in structural and artifactual information the port stern excavation did reveal an interesting sequence of stratigraphic development (Figure 2). Directly below the external planking was a layer of organic sediments (peat mixed with silt), followed by a large concentration (60+ cm)

of barnacle shells. These deposits were lying directly on top of the pre-wreck harbour bottom. Such a stratigraphic formation could only have occured if the barnacles were deposited shortly after the grounding of the ship, thereby preventing the build up of other deposits on the pre-wreck bottom. This opens the possibility that some of these barnacles may have been attached to the ship's hull before sinking.

In addition to the depositional sequence, an examination of the stratigraphic record revealed some interesting observations regarding ship movement, particularly the grounding sequence. The initial contact with the bottom rocks appears to have been made by the ship skeg - a short length of keel which projected aft beyond the stern post serving to protect the rudder if the ship went aground (Kemp 1976:807). This resulted in a cracked skeg as well as some damage to the bottom of the rudder. It also appears that the ship bounced, at least once, forming a depression in the sub-bottom rock. The bounce caused the ship to pass over a one metre section of harbour silt which was subsequently covered by falling barnacle shell.

Starboard Stern and Midship

In contrast to the port stern area the starboard side revealed a significant number of timbers from the upper works. Many of these were softwood planks, which had fallen beneath the side of the listing ship and were later covered by the collapsing hull. Other softwood timbers recovered included several beams and various unidentified timbers. There were also numerous oak timbers, including skids, fenders and wales. Perhaps the most significant find in regards to structure was a remarkably detailed etching of a ship at anchor. It had been etched on the interior side of a softwood plank, and is complete with structural perspective, masts, rigging, anchor lines and a small boat moored to the stern. The etching is indeed a work of art offering a rare glimpse of a sixteenth-century ship as seen through the eyes of someone who was actually there.

The ship's rudder, which had fallen beneath the starboard stern, was excavated and recovered for detailed study. It was over six metres in length and was fashioned from a single piece of oak. Found near the rudder was a gun port lid which matched the single port located in the transom.

A large variety of artifacts was also collected, most important of which were a number of navigational instruments: compass, sand glass, possible log reel and log chip and a binnacle (Figures 3-6). The compass was housed in a circular wooden case with brass gimbals around the outside. A circular wooden lid for an outer box was found nearby. Careful excavation of the interior of the compass revealed portions of the glass facing, fragments of the iron needle, the brass pivot pin mounted in a lead sheet, and a small brass cap that fit over a card on top of the pivot. The sand glass, measuring 20 cm high and 12 cm wide, is likely to be a watch glass. It was complete with the exception of the glass bulbs. A unique and as yet unidentified instrument may represent an early version of the log chip, used in conjunction with the log line and reel to estimate the speed of the ship.

All of these instruments were found in close association with each other and with a binnacle, (a small chest to house the instruments). This remarkable find represents the earliest surviving example of a ship's binnacle. Its overall dimensions were 60 x 60 cm and in effect it was like a large wooden cube. There were two openings or doorways, both of which functioned with sliding doors. One of the openings had a lubber's point, a small v-shaped notch used to align the compass with the ship's masts or stem.

Other artifacts below-hull included several complete pulley blocks of types not previously found on the site. Three knightsheads and seven pairs of heart blocks with corresponding iron straps and rope strops were also recovered. Given the total lack of deadeyes it is believed that the heart blocks were used to maintain tension on the main shrouds. Numerous leather shoes, rope fragments, glass pieces, ceramic sherds, walnut shells, pewter fragments and a single coin were all retrieved during excavation. Two long wooden tool handles, one of which may be from a harpoon, were also found. The metal ends of these handles had corroded so badly that they could not be identified or recovered.

One of the largest and more significant artifacts recovered below the hull was a small boat. It measured approximately eight metres in length and was built with a two piece keel scarfed in the middle. The stem and stern post were scarphed to the ends of the keel and both contained rabbets to accept the hull planking. The boat was carvel built with the exception of the

top two strakes which were clinker built.

Internally the boat was framed out with floors and futtocks averaging eight centimeters square. Single waterway holes had been cut through the floors directly over the keel. Risers were found with notches cut out to accept the thwarts and a mast step was recovered. Parts of gunnels revealed single thole pin holes for rowing although the exact method of oar attachment is still uncertain. The entire boat appears to have been made from oak with iron fasteners. Because of its completeness and location, directly beneath the ship's starboard stern, it is thought to have gone down with the large vessel.

The starboard side stratigraphic sequence was not unlike that of the port side. The principle stratum was a layer of barnacle shells; however it was not as concentrated as on the port side due to the completeness and list of the hull. The barnacles were located directly on top of the pre-wreck bottom of silt which was considerably thicker than the port side. This was a result of the ship's keel pushing eastward through the silt, creating a snow plow effect, prior to grounding. The accumulation of the silt prevented the build-up of other deposits below-hull.

BOW EXCAVATION

The objectives of the bow excavation included the removal of casks, the exposing of the integral hull structure for mapping, the recovery of bow-related artifacts, and excavation peripheral to the integral hull to recover disarticulated structural pieces.

A total of 25 partial and complete barrica cask assemblies were excavated within the bow area. Incomplete remains of smaller capacity casks were also recovered as well as a few examples of staves from substantially larger casks, tentatively identified as being from a pipa. All casks were stowed horizontally in a fore-aft position with the bung stave uppermost. Contrary to the stern and midship areas where three distinct tiers of casks were found, only two tiers were found in the bow deposit. Whether this means that fewer casks were stowed in the bow or whether there has been more disturbance in the bow has not been determined. The evidence does indicate that the

casks were stacked in rows with each successive tier offset and between the casks below it, forming an interlocking network. This was precisely the pattern encountered in both the midsection and stern cask deposits.

The ground or bottom tier casks were supported between rows of ballast stones which lay directly on the ceiling planking and the futtocks. This served the two-fold purpose of supplying the needed ballast for the proper trim of the vessel, and to prevent the sideward rolling of casks. However, the amount of ballast used was surprisingly large. A two metre by two metre excavation unit yielded between 645 and 854 kg of ballast stone. The most probable explanation for the extra ballast is that it was needed to compensate for the heavy stern structure common to vessels of the sixteenth century.

Artifacts recovered in the bow area included the ever present roofing tile fragments, coopering debris, whale bone, and leather shoes. The shoes were found in association with several small spacers located between futtocks just above the first deck level. These spaces would have made a convenient shelf for the storing of personal possessions. Similar spaces bearing personal possessions were found on the Tudor Warship Mary Rose (Rule 1982:198). Just beyond the solid hull structure on the starboard side a complete and articulated whale flipper was uncovered. Other less common artifacts included a number of wooden tool handles, pieces of cork bungs, a wooden scoop, a small bever cask, and ceramic vessel fragments.

FAUNAL SURVEY

The faunal survey involved testing areas of Basque artifact concentrations identified in 1982 and continued excavation of a small boat initially found in 1980 (Figure 7). Additionally, two exploratory trenches were excavated between the wreck site and Saddle Island. These trenches were a follow-up to the study of near shore resources initiated in 1980 with the excavation of the shore trench.

In 1982 four areas of artifact concentration were identified, two of which were tested in 1983 (Area C and Area D). Area D consisted of an intensive bottom cover of ceramic roofing tiles and whale bone. It was located on the north side of the harbour directly across from Saddle Island. A test

trench measuring five metres by one metre was excavated with the aid of a water dredge. Whale bone was encountered immediately, just below the bottom silt. The entire trench proved to be a pavement of whale bone made up mostly of skulls and some ribs. The density of the remains was such that it became impossible without mechanical assistance to continue the excavation. Such concentrations of whale bone, particularly complete skulls which are all but absent on the Saddle Island side of the harbour, will no doubt help us to better understand the carcass disposal practices of the Basques.

Area C, similar to Area D in bottom cover, was also tested. It was located several hundred metres north of Area D along the same shoreline (Figure 7). Prior to the actual testing a concentration of oak timbers and ballast rock was discovered. The timbers included what appeared to be integral framing, with futtocks similar to those found on the wreck site. Further probing and fanning of the silt revealed the mast step. This new wreck represents what is believed to be a second sixteenth-century galleon very similar in size and construction to the initial wreck discovery. Further testing is planned in 1984. (Eds.: see Ringer, this volume).

The small boat found in 1980 was partially excavated this year so that measurements and photographs could be taken. The boat lay upside-down in less than two metres of water. Although this boat has not been positively identified its dimensions closely resemble those of a pinaza, a small coastal sailing vessel larger than a chalupa, and also used in the whale fishery. It is hoped that further excavation of this boat in 1984 will provide a correct identification.

The two near-shore exploratory trenches were excavated with the objective of collecting data which might supplement the information obtained during the excavation of the shore trench in 1980-81. These trenches were located east and west of the shore trench and revealed some interesting comparisons. The east trench was notable not so much for the material recovered but for the lack of it. The trench was virtually free of whale bone (10), in contrast to the shore trench. This occurrence seems to be directly related to the shore station activity and the positioning of ovens or tryworks. The west trench, on the other hand, was located off-shore from a nearby oven complex and contained a large number of whale bones (119), particularly flipper and vertebrae

elements.

Stratigraphically, both trenches were basically similar to the shore trench. However, in both instances there was a thinning out of the fish bone deposit (cod-splitting discard) which was the predominant layer in the shore trench stratification. This would indicate that the cod-splitting was concentrated in the area of the shore trench and based on the large number of billets also recovered, probably on some form of wharf structure. More excavation will be carried out in 1984 to investigate this possibility.

FAUNAL ANALYSIS

The analysis of faunal remains has been ongoing since the initiation of the Red Bay Project in 1978. It is being conducted by Dr. Stephen Cumbaa, a zooarchaeologist with the National Museum of Natural Sciences. For the whale bone remains the analysis is focusing on the species hunted, the population proportion of each species, and the age and size of individual whales. For the non-whale remains the principal aim is to determine the types of fauna, both imported and local, that the Basques were using as food-stuffs. According to Cumbaa, nearly 1500 whale bones have been examined from surface and underwater deposits, representing 45 to 50 individuals. Two species have been identified: the North Atlantic right whale and the bowhead. The majority of whales were large (40-45 ft.), sexually mature individuals. There is little evidence of calf mortality; no more than one or possibly two individuals appear to be in the 0-1 year group.

An important outcome of the faunal analysis has been the discovery that a significant number of whales (approximately half of the sample) taken by Basques were bowheads. This finding will have a direct bearing on previous estimates of right whales killed by the Basques, since most estimates have assumed one species taken and are based on numbers extrapolated from cargos of oil. As bowheads produce significantly more oil and whalebone (baleen) than right whales, the estimates of numbers of individuals killed could be reduced. Furthermore, the apparent regular presence of bowheads in the Strait of Belle Isle in the mid-16th century helps clarify aspects of their distributional history which were unclear (Cumbaa 1983:5).

SUMMARY

The 1983 field season was a complete success from the point of view of both disassembly and excavation objectives. The entire stern and most of the starboard side were dismantled and many timbers raised for recording. Excavation below the hull resulted in a large number of important artifacts being recovered as well as recording of significant timbers from the upper works. The starboard bow was completely excavated and mapped as was the remaining cargo of casks. The ship's rudder was raised and a small boat or chalupa was also brought to the surface for recording.

The faunal survey of Red Bay harbour was continued and resulted in the discovery of a second wreck, tentatively dated to the sixteenth-century. Excavation of another small boat, a pinaza, was started and preliminary indications are that it may also date to the sixteenth-century.

Excavation and the survey will continue in 1984 with the major emphasis on completing the dissassembly of the wreck.

REFERENCES CITED

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1983 "Archaeological Evidence of 16th Century Basque Whaling Fishery at Red Bay, Labrador". Proceedings of right whale workshop, International Whaling Commission, Boston, June 1983, Doc. 35-RW-11. 1976.

Kemp, Peter
1976 The Oxford Companion to Ships and the Sea. Oxford University Press, London.

Rule, Margaret
1982 The Mary Rose: The Excavation and Raising of Henry VIII's Flagship, Conway Maritime Press, London.

Figure 1

Structural plan of wreck site showing bow excavation area and area disassembled to 1983. (Drawing by R. Hellier).

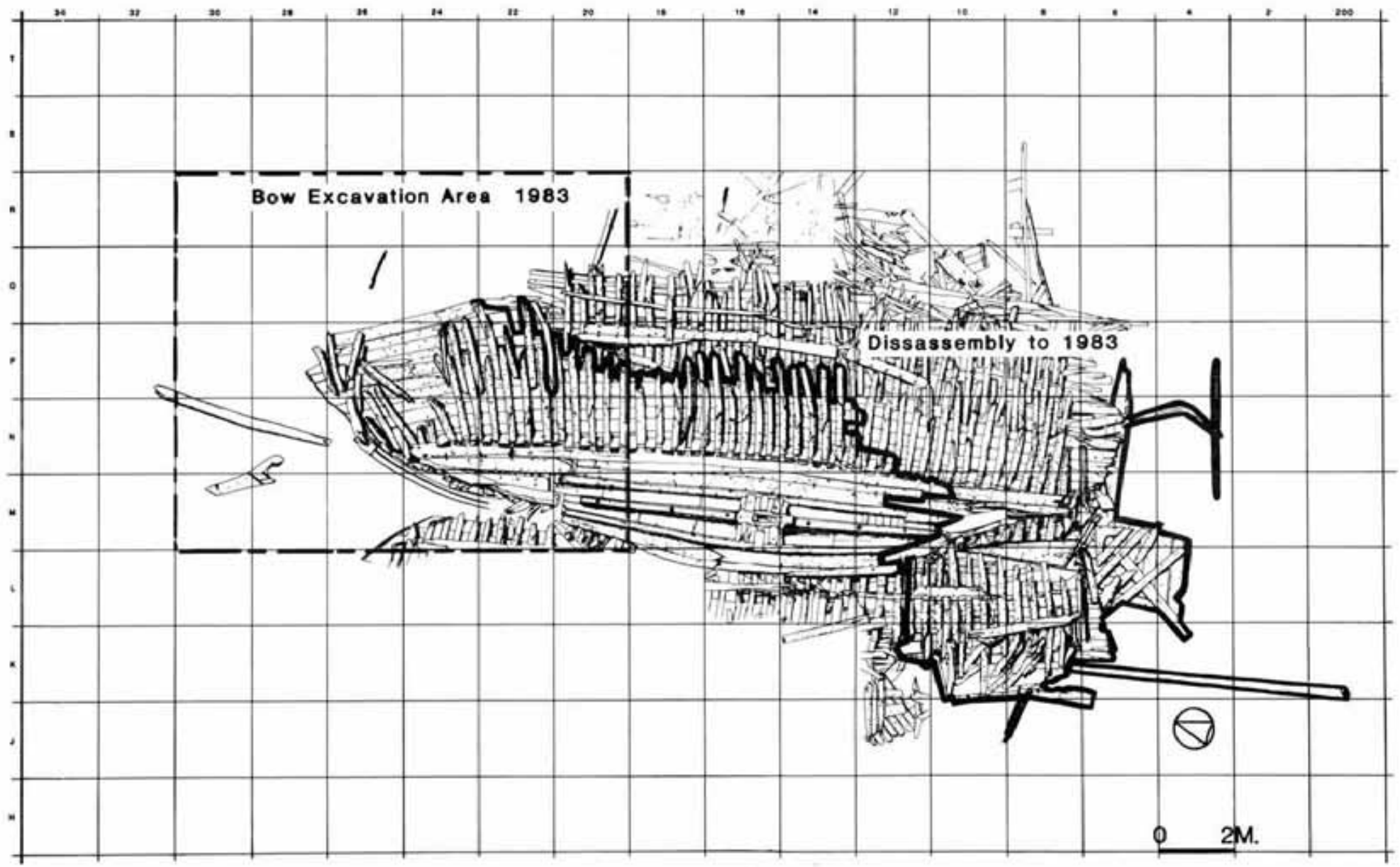

Bow Excavation Area 1983
Dissassembly to 1983
0 2M.

FIGURE 2

Stratigraphic profile along line 8 of the site grid in the stern area of the wreck. (Drawing by W. Stevens and R. Hellier).

Layer	Description
1	Sandy silt
2	Organic silt
3	Rock, silt, peat, woodchips, shell
4	Peat, twigs, silt
5	Peat, woodchips, silt, barnacle, shell
6	Barnacle shell
7	Silt, peat, woodchips, shell
8	Woodchips
9	Peat
10	Peat, twigs, silt
11	Crushed shell
12	Sandy silt
13	Rock, crushed shell

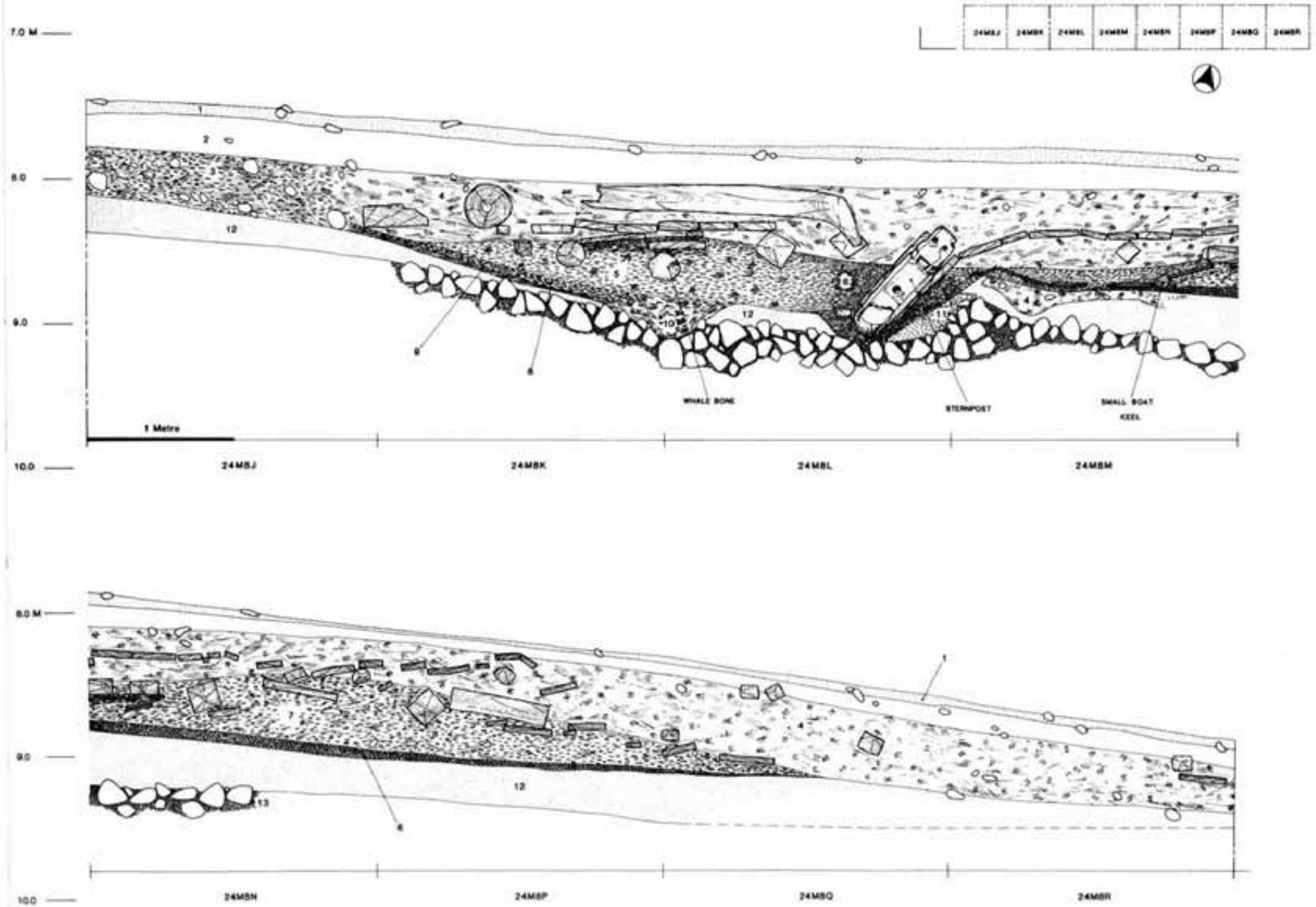
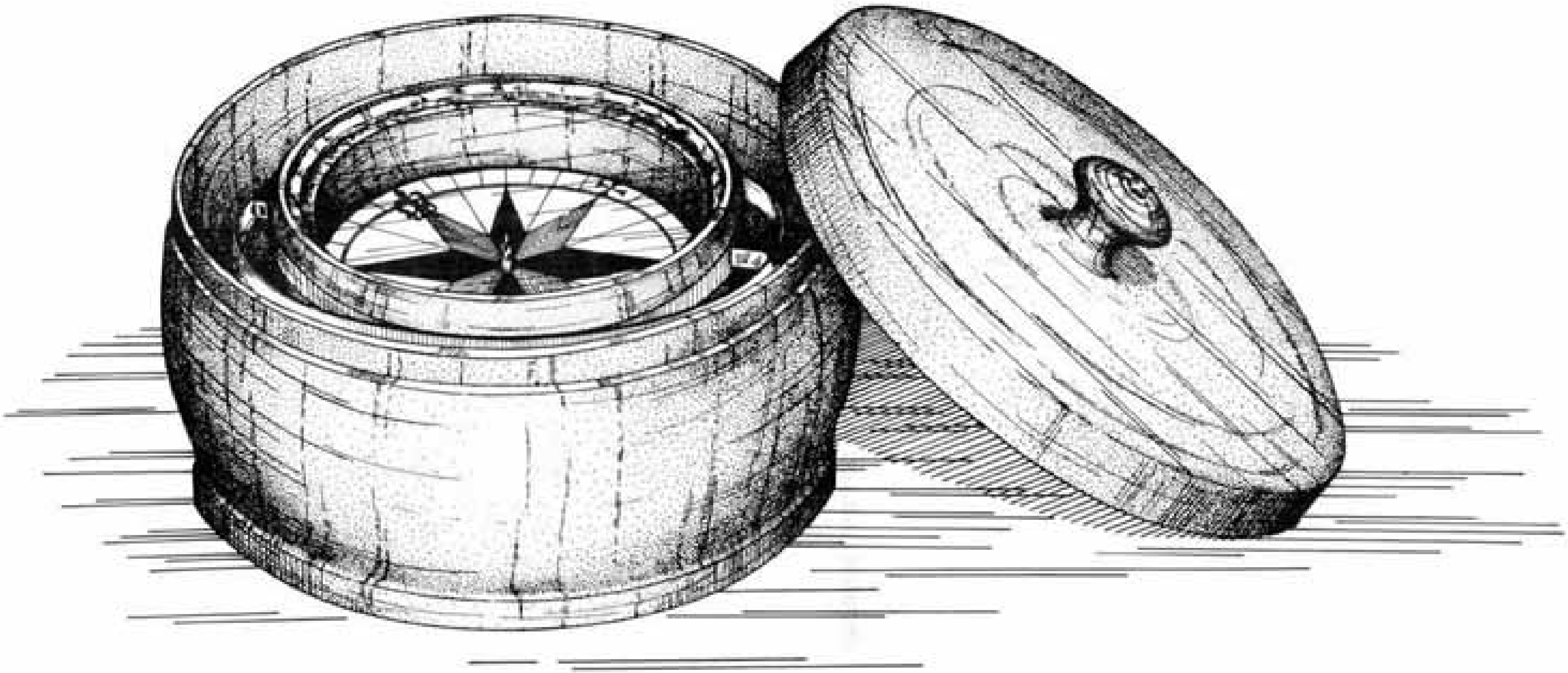

7.0 M
8.0
9.0
10.0
24MBJ
24MBK
24MBL
24MBM
24MBN
24MBP
24MBQ
24MBR
1 Metre
WHALE BONE
STERNPOST
SMALL BOAT KEEL
8.0 M
9.0
10.0

Figure 3

Reconstruction of ship's compass. (Drawing by C. Piper).

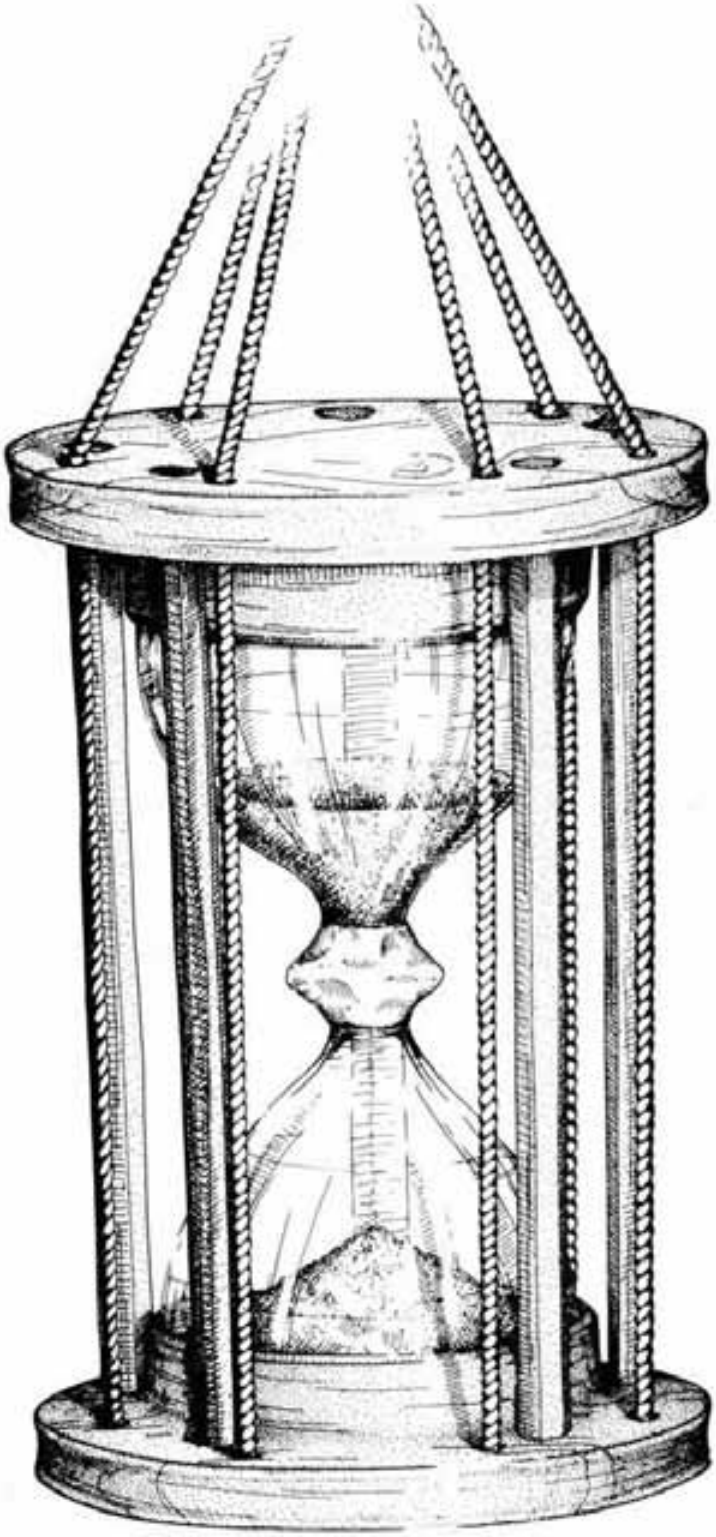


COMPASS & CASE RECONSTRUCTION
ACTUAL SIZE
C. PIPER
13.06.84

3cm

Figure 4

Reconstruction of sand-glass. (Drawing by C. Piper).



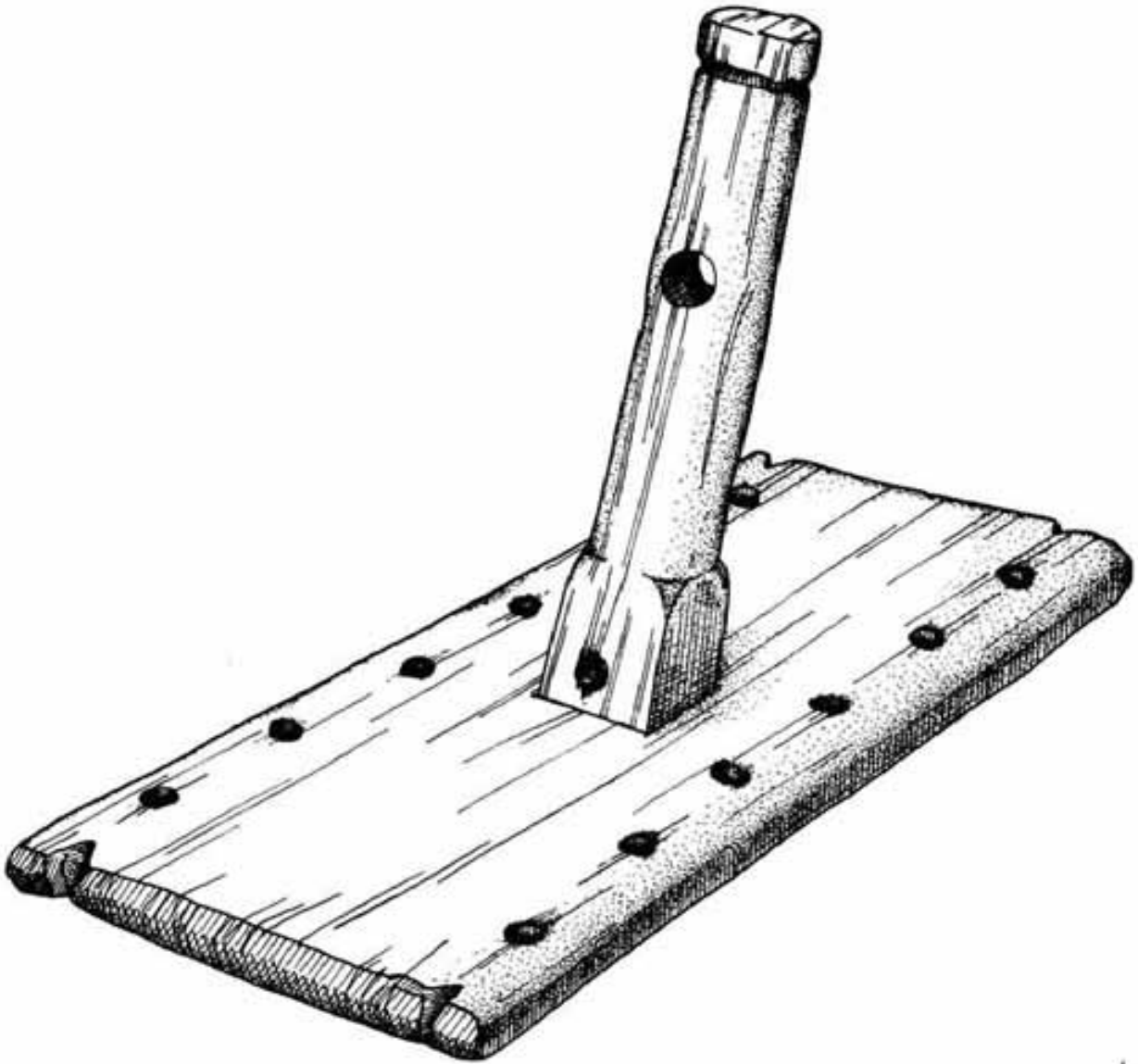
Sandglass Reconstruction
06·12·89
C Piper

3 cm

24M10P21·1 (-2)

Figure 5

'As found' drawing of a possible log chip. (Drawing by C. Piper).



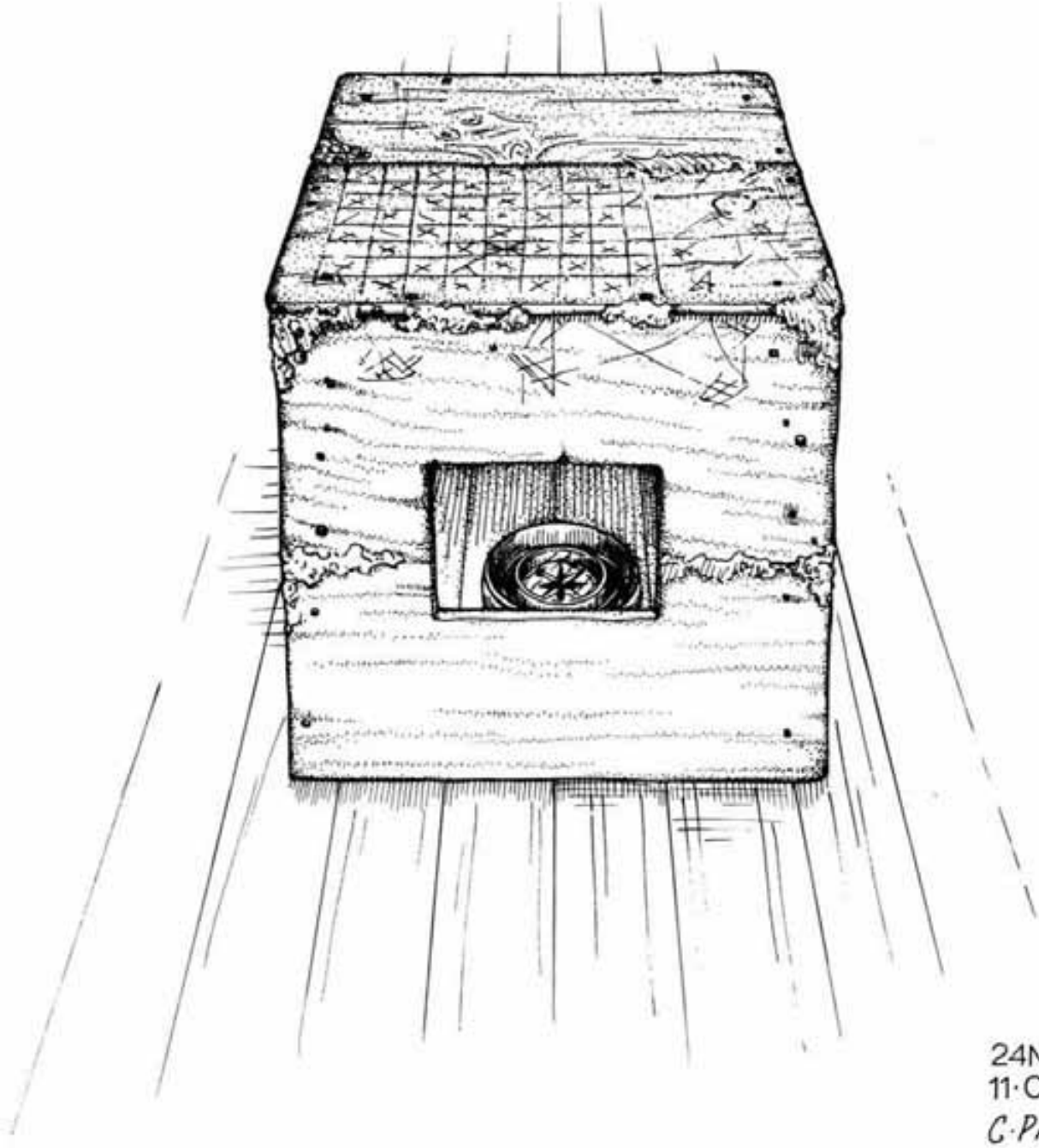
3cm

C. PIPER
01·11·83

Figure 6

Reconstruction of binnacle. (Drawing by C. Piper).

Binnacle Reconstruction

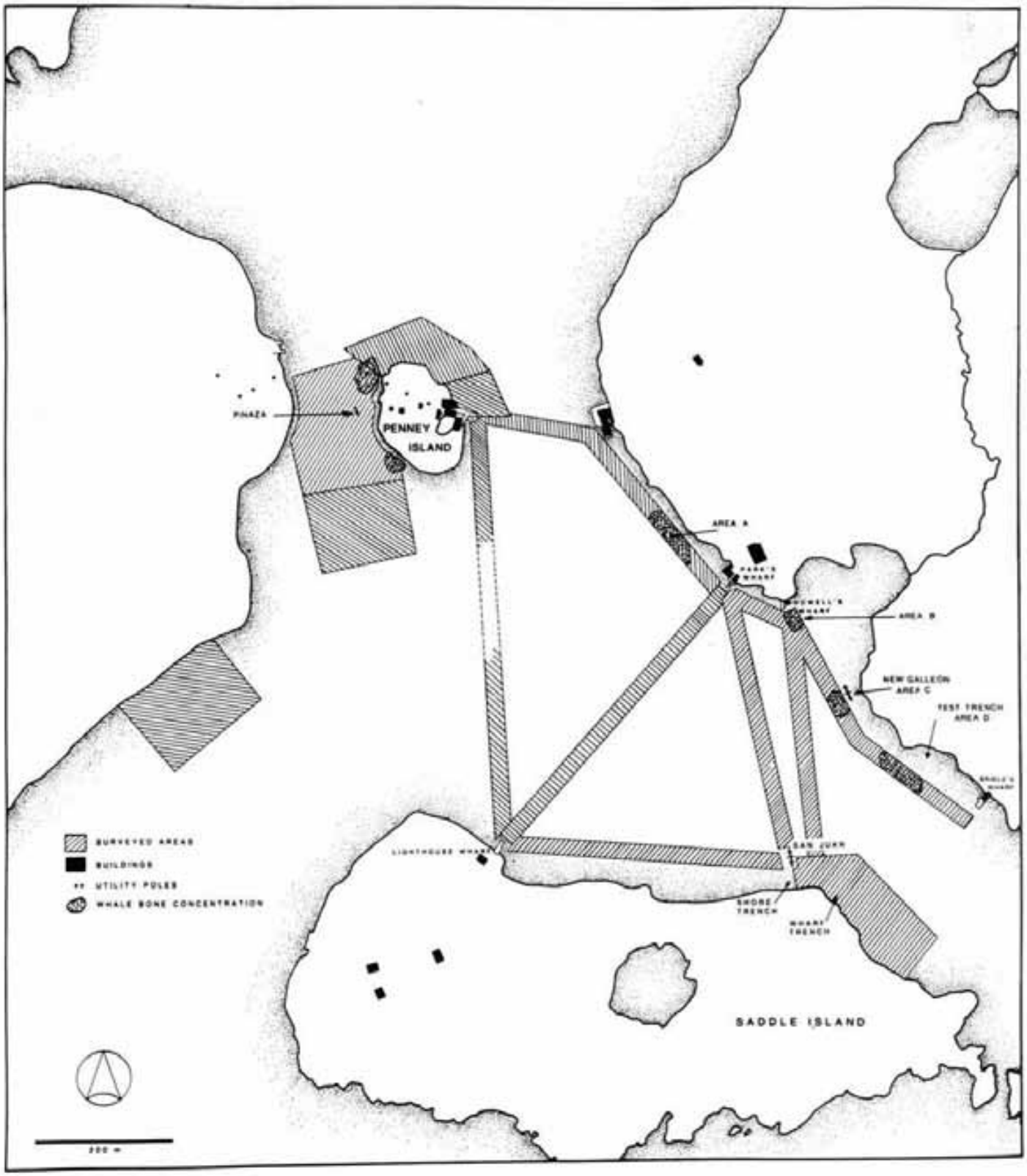


24M10P22 -
11·02·85
C·PIPER

± 20cm

Figure 7

Survey map of Red Bay harbour showing location of wreck sites and areas surveyed. (Drawing by W. Stevens and R. Hellier).


PENNEY ISLAND
PINAZA
AREA A
AREA B
NEW GALLEON AREA C
TEST TRENCH AREA D
SADDLE ISLAND
SHORE TRENCH
WHARF TRENCH
SURVEYED AREAS
BUILDINGS
UTILITY POLES
WHALE BONE CONCENTRATION