THE V.O.C. SHIP BATAVIA 1629

REPORT ON THE THIRD SEASON OF EXCAVATION

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Introduction

A report covering the first and second seasons of excavation of the Dutch Indiaman Batavia by the Western Australian Museum has already been published by Jeremy N. Green (1975).

This paper concentrates on the third season of excavation, 21st December, 1974 to the 2nd June, 1975 and deals with recording techniques, excavation methods and the results achieved.

The main task during the 1975 season was to raise the $35m^2$ of timber from the after part of the ship at the southern end of the wreck site. Once this work was completed the aim was to continue the excavation in the northern area, towards the bow half of the ship (see Fig. 1).

The Wreck site

The remains of the Batavia lie at a depth of 3-7m at the south-west end of Morning Reef in the Abrolhos Islands, W.A. The wreck site covers an area about 50m long and 15m wide. Cannons and anchors are visible. Buried in coral concretion, sand and coral-lumps, are parts of the ship's structure and artifacts that once were part of the ship's cargo, the ship's equipment or belongings of the people on board.

At the southern end of the wreck one third of the ship's stern section has been preserved. Part of this area was exposed in 1974. In order to protect the cleared timbers from the damage of the surge and wave action during the off-season in 1974, 150 bags of sand and coral, each weighing 100 Kg, were put over this part of the site together with about 50 sections of railway line (Fig. 2).

Operating Facilities:

As in 1973 and 1974 the Museum field camp was based on Beacon Island, where all the necessary facilities were available e.g. living quarters, workshop, generator, etc. The Museum boat 'Henrietta', a 14m long x 5m wide steel vessel, with a hydraulic 'A' frame and an electric 2.5 tonne wire-winch, served as transportation and work boat. During excavation the boat was moored 20m or 75m from the wreck site, depending on weather conditions and wave action. For the divers' air supply a low pressure Honda compressor with "Hookalines" was used, allowing three divers to work at the same time on the wreck. To power the air lift a low pressure air compressor with a capacity of 40 cubic feet was found to be sufficient.

The Excavation

The first phase of the 1975 excavation involved removal of the temporary protective covering from the ship's timbers. The sections of railway line were winched aboard the work boat and brought back to the island, while the coral bags were removed from the wreck site. Initially the divers removed the bags one by one. However, this method proved to be too slow and the following method was introduced:-

> To a 1.5m length of 20mm thick nylon rope, made up as a ring, 15 ropes, 0.8mm thick and 0.5-1.5m long, were attached. 12 to 15 coral bags were then tied to the individual ropes. The ring with the ropes and bags attached to it (this will be referred to as the 'Octopus') was then winched to the surface. The work boat was moved clear from the wreck site and the bags were dumped. It took about 45 minutes to tie, winch and dump 15 bags. Altogether 3 persons spent about 24 man-hours on the operation.

Before uncovering of the site started, about 20 modern bricks were positioned on each side of the after part of the wreck and on each side of the nest of anchors at the northern part of the site.

The aim was to study the movement of the bricks caused by the current and sea action. By the end of the excavation some bricks had moved up to ten metres.

Excavation then proceeded around the uncovered part of the stern timbers, in order to clear the area before the timbers were raised.

During that work a 1.37m and 18-27cm wide section of Batavia's stern-post was found (Fig. 3). The part of the stern-post recovered consists of the inner and outer skin (Fig. 4, Fig. 5). The outer skin has five Roman style water-line markings (Fig. 6). They are horizontally carved into the wood parallel to and 288mm* from each other. Half values are indicated by a single point. The outer skin is fastened to the inner skin with iron nails diagonally positioned 4cm from each other. Between the outer and inner skin is a layer of tar and cow hair. The edge of both the inner and outer plankingat the stern-post has been protected with copper sheeting, fastened with copper nails. Small parts of the copper sheeting were salvaged together with the stern-post.

During the clearing of the timbers an area 2.80m long x 1m wide, of iron concretion and cannon balls, was encountered. This had to be removed in order to free the transom knees and underlying timbers. This work was done by alternately using geo-picks and hammers or very small quantities of explosives.

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*288mm is close to the Amsterdam foot of 278-284mm (284mm van Ijk, 278mm Witsen). The draught marks on the warship Wasa, contemporary with the Batavia, resemble the ones on Batavia's stern-post (Fig. 7). There the markings are carved about 292mm from each other.

In order to loosen the very hard concretion, charges of 2 g "Metabel" explosives were used. The explosive, with cordtex-train and electric detonator, was placed under a rubber mat (Fig. 8 (a) (b)), over the required area. After detonation, lumps and fragments of the shattered concretion were easily chipped away with geo-picks and hammers, and the loosened cannon balls salvaged.

This process was repeated when necessary and altogether 7 charges were used at intervals during the excavation. Damage to cannon balls and artifacts was negligible. By comparison, about ten per cent of those cannon balls loosened solely with a geo-pick and hammer were impaired.

Further discussion concerning the use of small quantities of explosives in the Batavia excavation occurs in Green, 1975.

During the 1975 season 14g of explosives were used to loosen 400 intact cannon balls. In all 67 diving hours were devoted to free the timbers from cannon balls and iron concretion.

When the iron concretion was removed the timbers had to be cleared of sand, coral concretion and loose coral-lumps of various sizes. The coral concretion was loosened with a crowbar and when necessary chipped to manageable pieces with geo-picks and hammers. The various pieces of loose coral were then collected in bags which the divers emptied away from the wreck site. On calmer days, when conditions permitted, 10-15 bags of coral were attached to 'the octopus', which then was winched to the surface and dumped outside the wreck site.

After the timber area had been cleared of coral sand and coral rubble remained to be removed. For this purpose an "airlift" was used. When the timbers had been exposed fully the whole area was photographed.

For identification the timbers were tagged with identifying codes according to their structural type before being photographed. Each tag was marked with an alphabetical prefix followed by a number. The prefix designated the type of timber; the number being the serial number for each timber of that type.(1)

The timber was photographed at each stage of excavation; stereo photography being used to record the ship's structure.

For overall plans of the ship's stern a Nikonos camera with a 15mm water-corrected lens was used. At a distance of 4m, the whole timber area could be covered in one exposure (Fig. 9). Five different layers of timber were photographed in this way: the transom knees, the ceiling, the ribs, the inside strakes and the outer planking.

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(1) The alphabetical prefixes for the timbers were:-

A - Horizontal knees or top of ceiling planking
B - Ceiling planking
C - Ribs or frames
D - Inside strakes
E - Outside strakes
F - Outside skin
T - Transom timbers
Tp- Transom planking
Op- Outside transom planking
Tsk- Topskin on ceiling
Fp- Fashion piece
Sp- Stern-post

Overall views as well as close-up details were taken in stereo using two Nikonos cameras fitted with 28mm lenses. The cameras were mounted 60cm from each other on an aluminium bar. The cameras were fired simultaneously by hand.

Various methods of excavation and handling of material, above water as well as under water, were also photographed; as were all artifacts recovered.

At the end of the season, a photomosaic of the whole wreck site was produced (Fig. 10).

Altogether 2,880 black and white photographs and 800 colour slides were taken. Among these were 1,160 black and white prints, 576 colour slide underwater pictures, 161 black and white prints and 17 colour slide stereo-pairs. All photographic processing was carried out on Beacon Island.

The raising of the timbers was a continuation of the 1973 and 1974 excavation and some of the timber area has already been described in Green, 1975. However, the addition of new details of the ship's construction which appeared during the progress of excavation, permits a more complete account of the whole stern section, as follows:

One third of Batavia's stern section, half of the stern to the wing transom and about 13m of the port side, up to the lower gun deck, has been preserved.

The port side of the ship's hull from the inside to the outside basically consists of ceiling (B-layer), ribs (C-layer), inside strakes (D-layer) and outside strakes (E-layer). In places outside the E-layer there are remains of thin pine outer skin (F-layer).

At the joint, between the stern and the side of the ship on the inside, there are massive transom lodging knees (A-layer). These cover the transom at the quarter stern and the ceiling at the side of the ship (Fig. 11). Sometimes small braces were found between the knees and the ceiling (Fig. 12). Underneath the knees, at the junction between the stern and the side, lies the fashion piece (Fp Fig. 13). Dove-tailed into the fashion piece below the transom knees, part of the transom wing and the transoms have been preserved (T-layer Fig. 14).

Three of the transoms are connected to the stern-post at its lower end, while at the upper part they have been worm-eaten and worn away to two-thirds of their original length. However, with the length of the transoms preserved, and with the information gained from the stern-post and the fashion piece, it would be feasible to reconstruct the stern to the level of the wing transom.

Underneath the transoms lies the transom planking (Tp-layer), which runs diagonally at an angle between the stern-post and the fashion piece (Fig. 15).

Beneath the transom planks, a layer of bent outer planking appears (Op-layer Fig. 16). These strakes lie underneath the transom planking (Tp-layer) at the quarter stern, and under the inside strakes (D-layer) at the port side of the ship (Fig. 17). The planking is bent at an angle of 130° over the stern and the side of the ship. At the outside of the outer transom planking there is in addition a thin layer of "skin".

Before being raised, the timbers were gently loosened by hand or with the help of a crowbar. The timbers were then placed in a sling of nylon rope encased in canvas. A steel cable from 'Henrietta's' winch was attached to the sling and the timbers were lifted on board the boat.

On land the timbers were kept wet in 33m^3 pits lined with heavy duty polythene sheet and filled with sea water, until they could be drawn and photographed. After 1:1 scale tracings on transparent polythene plastic sheeting had been made and the timbers photographed on each side, the timbers were stored in plastic sheeting in an aqueous fungicide solution.

From the photographs and the 1:1 scale tracings, where dowel and nail-holes and other characteristics were traced, 1:4 scale drawings of the timbers will be prepared. This will enable a 1:4 scale drawing and model of the whole wreck to be made. It will also serve to facilitate the reconstruction of the ship after preservation.

During the season it was found that the 1:1 scale tracings could be reduced photographically to 1:4 scale. The tracing was pinned to a 4 x 4cm grid and photographed. By printing these photographs a 1:4 scale "drawing" of the timbers was produced (Fig. 17).

The 1:1 scale tracings will provide an accurate scale drawing of the timbers, compensating for the scale errors in photographs, especially with the larger and curved timbers. By combining photographic documentation with drawings, the most accurate result is achieved.

A detailed report on the different recording techniques of the ship's timbers is to be published separately (Baker and Green, 1976).

During the 1975 season, 256 man-hours were spent on the clearing, documentation and raising of the timber. With help from the Marine Archaeological Association, which for two weeks supported the excavation with twelve volunteer divers, the timbers were raised and registered within half of the time originally estimated. After the timbers had been raised 10 man-hours were devoted to investigating the area below and behind where the timbers had lain in order to make sure that no further wooden constructions or artifacts remained in the coral.

The next part of the excavation was concentrated on the area between 1200 - 1208 to 2703 - 2709 around and between the nest of anchors and cannon 10, 11 and 12, (Fig. 18).

The characteristics of this part of the wreck site were a loose and solid coral concretion around the cannons and a 20-70cm layer of sand on top of hard coral concretion in deeper areas. Both the sand area and the coral concretion contained artifacts. A well preserved astrolabe and approximately 1,000 silver coins were chipped out from the concretion. Ceramic sherds, buttons, beads and lead fragments were also recovered from this area. During the work on the concretion an iron cannon was found in the junction of cannons 6 and 9. It lies east-west with the muzzle pointing eastwards. It is heavily concreted and deeply buried in the coral concretion.

At the east side of the wreck the apex stone of a building arch was found. This block fits the tentative reconstruction made of the building blocks found on the site in 1973 and 1974. Reconstruction drawings of the archway show that not all the blocks have been located. Missing building blocks might be found in this area at the eastern part of the site.

Further north, in the area of the bow half of the ship and more exposed to the breaking swell, there was a huge $30m^2$ concentration of different kinds of coral mixed up with various artifacts (Fig. 19). This concentration (referred to as the central coral-lump) mainly covered area 2703 - 2709 to area 3205 - 3208. It was of a complicated structure. Topmost there was a 10-25cm layer of light and loose coral concretion containing almost no artifacts except the ubiquitous bricks. Towards its centre the concretion was hard

and solid and a great variety of artifacts appeared. In this coral assemblage, between the artifacts were loose pieces of dead coral.

Within a $12m^2$ region at the southern end of the central coral-lump were hundreds of badly corroded cannon balls of different sizes, bricks, ceramic sherds, lead fragments and miscellaneous finds such as pieces of bone and the stem of a brass-trumpet. The finds appeared in an irregular pattern on and between the cannon balls.

Further north in area 2804 - 2808 to area 3205-3208, the dominating finds were silver coins, bricks and fragments of bones. There was also a lot of stone-ware, earthenware and majolica sherds, as well as fragments of nails, copper and brass. In the lump, at different irregular layers, severely bent and damaged sheets of lead were found. Iron fragments, possibly from iron kettles and ship-fittings, poor wooden fragments and also moulds of planks appeared in different places in various layers within the area. The wooden fragments too weak to be from the ship's structure might have originated from chests, panels or thin bulkhead plankings, separating different storage areas from each other.

Within the concretion four partly damaged scuppers have been located. More lead fragments from scuppers remain on the site but it is difficult to estimate the exact number as the lead is in very poor condition.

Among miscellaneous finds recovered from the northern part of the coral concretion are coral beads, lead-seals, buttons, pewter-tops and fragments from pharmaceutical bottles, as well as pieces of coal, an ivory knife handle and fragments of a small brass bowl.

It was impossible to excavate the whole area before the end of the season. So far only two-thirds of the lump has been excavated and it is not feasible to fully interpret and analyse its contents. At this stage of the excavation it is questionable as to whether the mixture of finds recovered is due to the particular part of the ship being excavated, or to the action of currents, waves, etc., that over the course of centuries has assembled material here.

However, there is a possibility that this $30m^2$ (approximately) coral area contains information which could be used in determining the wreck's pattern of deterioration, in addition to providing an indication of how much the different kinds of wreck material have moved over the centuries.

Altogether 234 man-hours were spent on removing sand and coral from the northern part of the wreck; 140 of these diving hours were devoted to the excavation of the central coral-lump.

During the six months of excavation 4,128 artifacts and about 2,000 musket balls were recovered and catalogued. As in previous years, the position of the artifacts was recorded in relation to the main features on the wreck. Important finds were photographed in situ on the wreck.

On land the finds were registered, cleaned and photographed. Depending on the characteristics of the material the artifacts were stored dry, wet or in chemicals. The silver coins were treated in acid baths, electrolyzed and finally cleaned with glass fibre brushes.

Further details concerning the recording system and the temporary storage used for the artifacts are given in Green, 1975.

A description of the preservation work carried out on wreck material recovered from Dutch Indiamen in West Australia has been published by Pearson, 1975.

Conclusions:

The third season of the Batavia excavation ended two years' effort of uncovering and raising one-third of Batavia's stern section.

The experience gained during this work shows that it is possible to document and raise a large amount of heavy ship timbers satisfactorily despite the presence of strong surge, bad swell and rough seas.

With the amount of timbers preserved it might be feasible to reconstruct the major part of the stern and the after part of the ship, up to the level of the gun-deck.

Excavation in the exposed northern wreck area did not reveal any parts of the ship's structure. However, despite the heavy swell that often breaks at this part of the wreck, even fragile artifacts had been preserved within a protecting layer of sand and coral concretion.

This underlines the experience from the previous excavation seasons where valuable archaeological information has been gained, even from extremely exposed areas.

It is probable that at least another two seasons are necessary at the wreck site before the excavation of the Batavia can be considered complete. Current plans are that these should be of approximately 3 months' duration each, within the next 2 years.

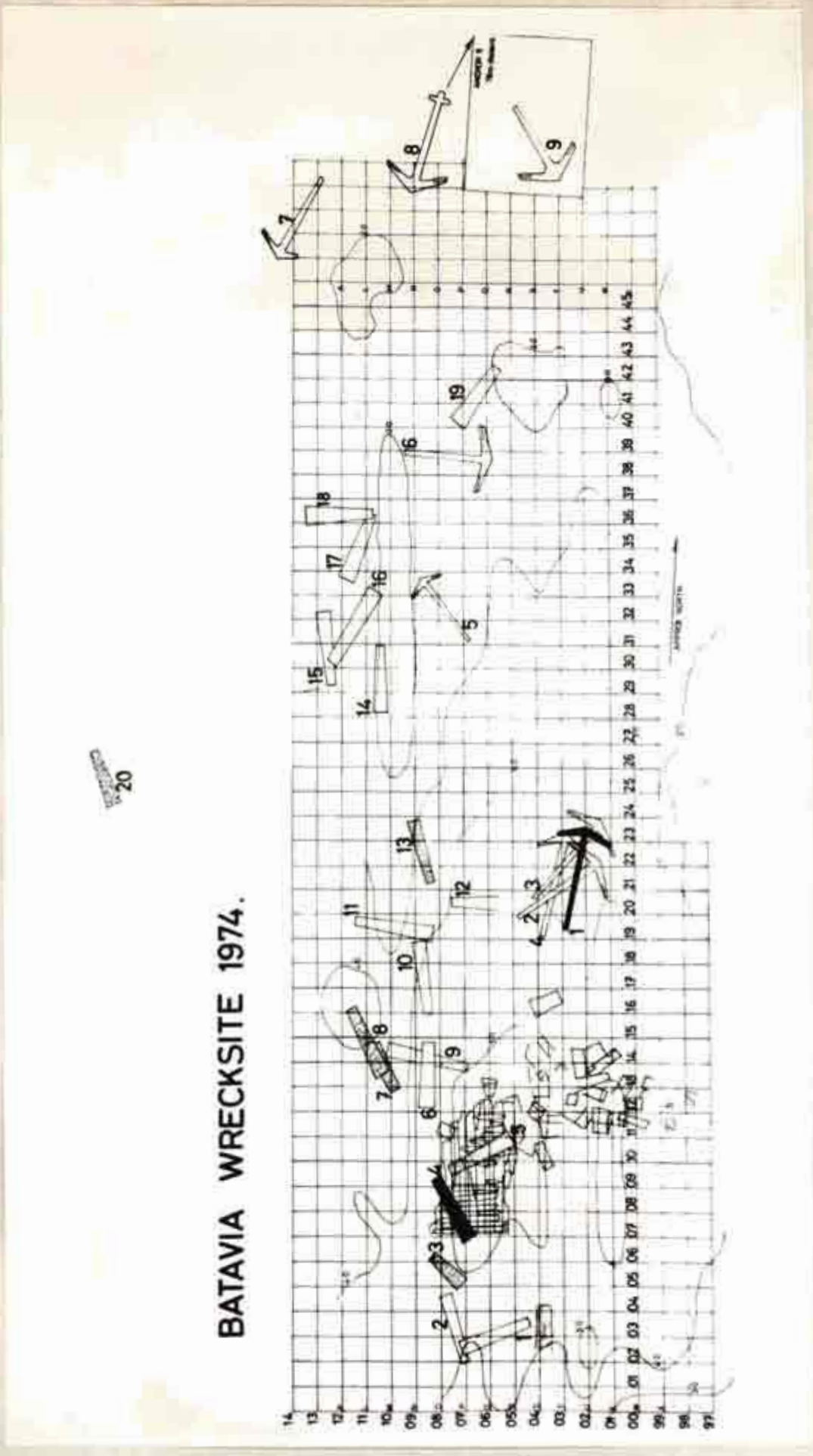

FIGURE 1. Plan of the Batavia wrecksite.

FIGURE 2. Coral bags and railway irons protecting Batavia's stern timbers.

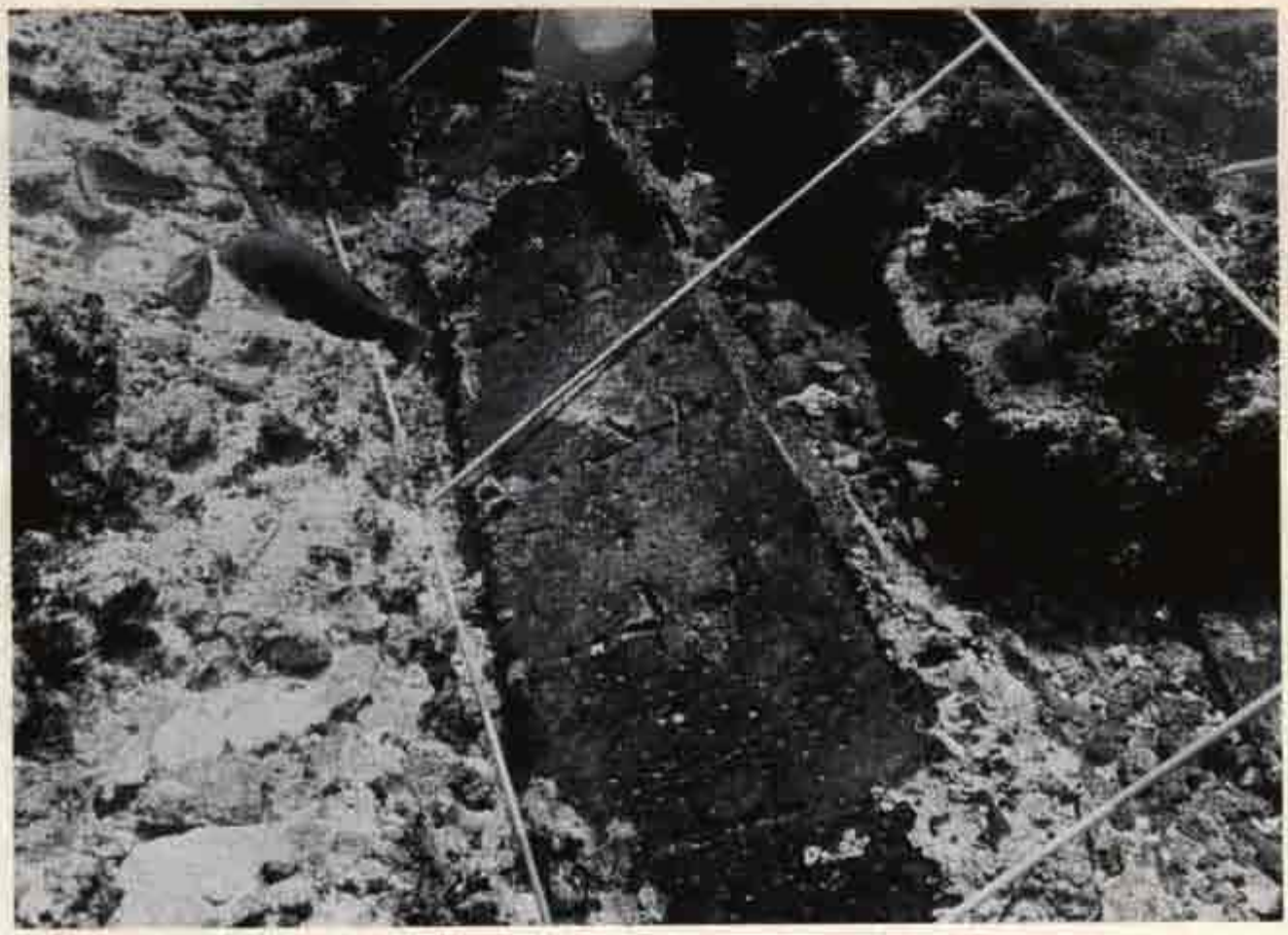

FIGURE 3. The recovered part of Batavia's sternpost.

FIGURE 4. The inner skin of the sternpost.

FIGURE 5. The outer skin of the sternpost.

FIGURE 6. Waterline markings on the Batavia.

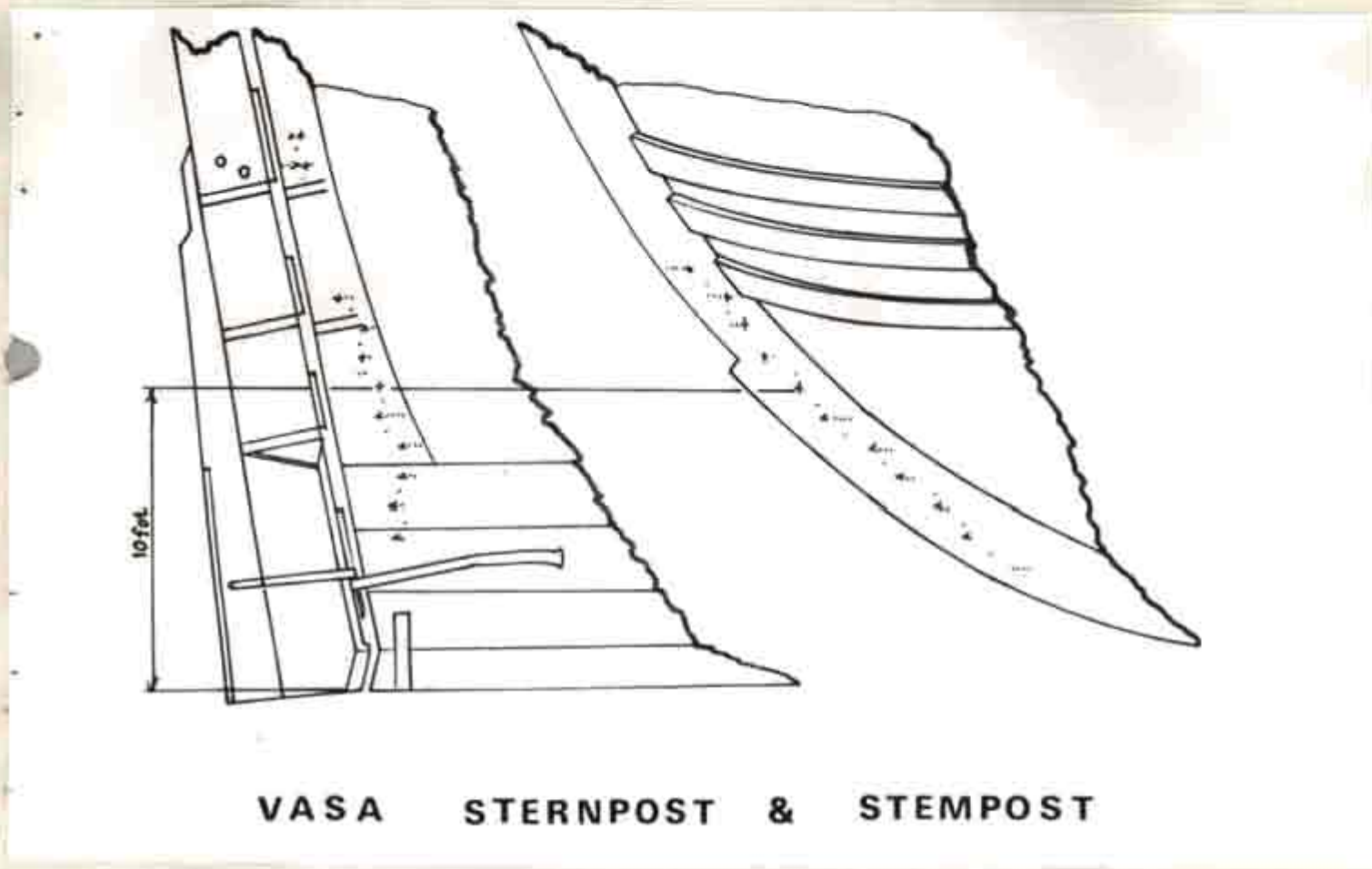

FIGURE 7. Waterline markings on the Wasa.

FIGURE 8(a). 2g Metabel explosive charge, with cordtex and detonator in place on the rubber mat prior to detonation.

FIGURE 8(b). ..... and after detonation.

FIGURE 9. The timber area at the stern section of the ship.

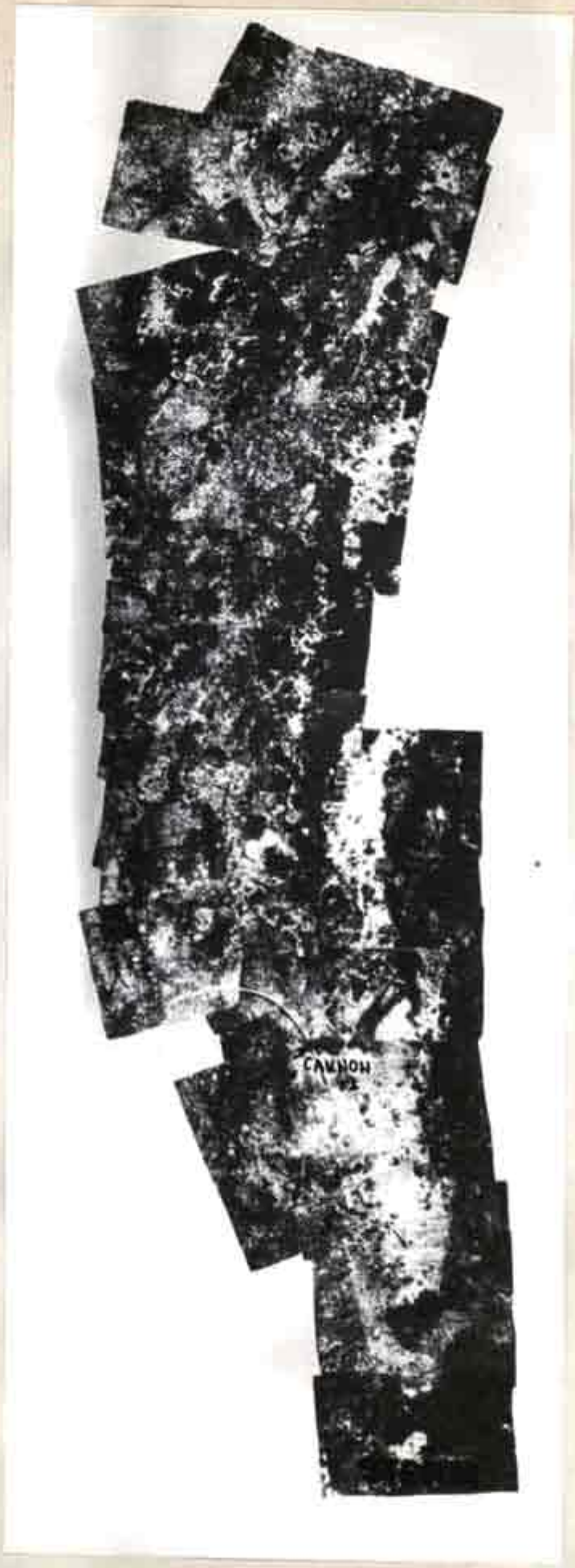

FIGURE 10. Photomosaic of the wrecksite.

FIGURE 11. The transom lodging knees.

FIGURE 12. Braces underneath the knees.

FIGURE 13. The fashion piece.

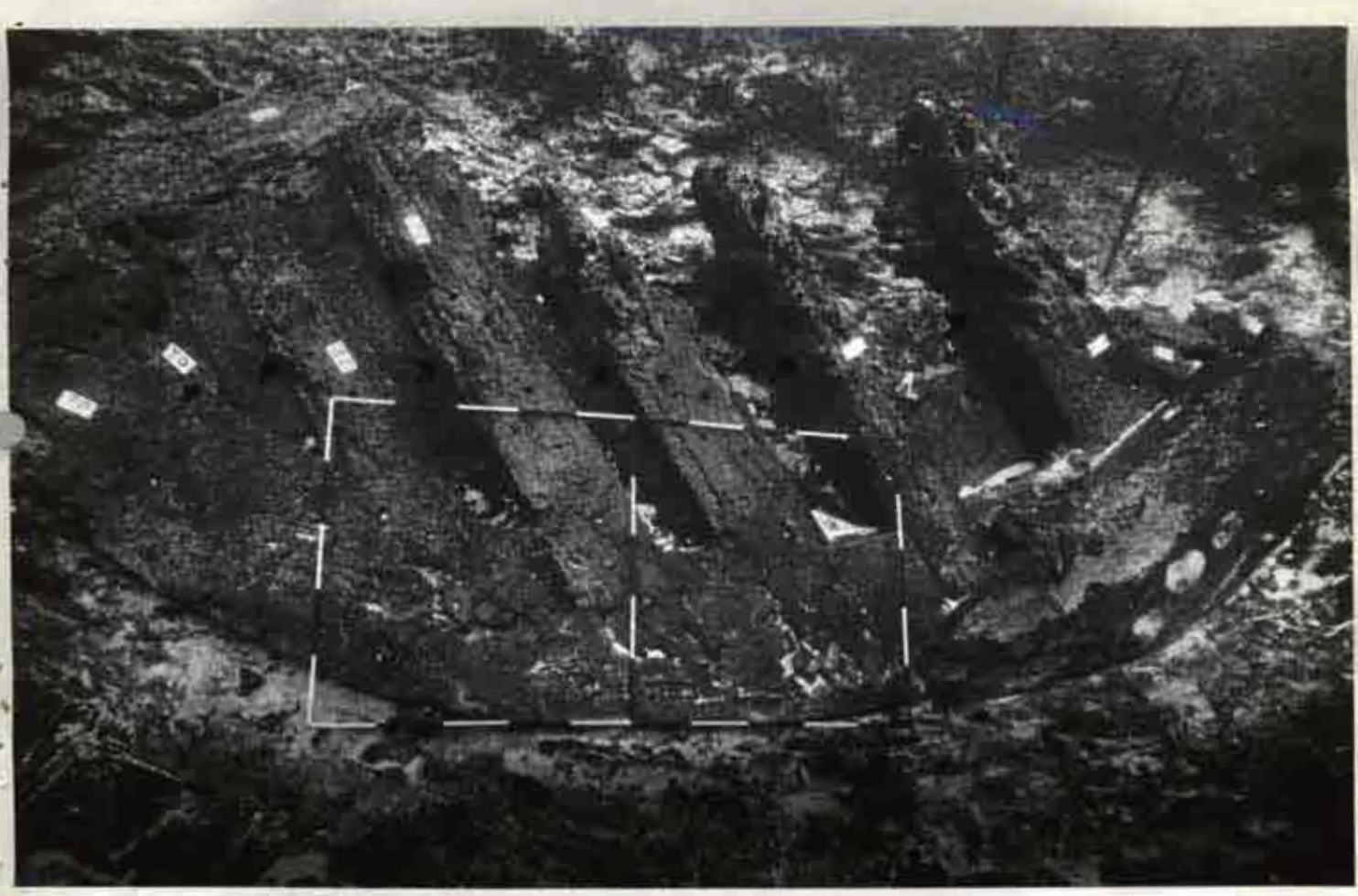

FIGURE 14. The transoms and the transom wing.

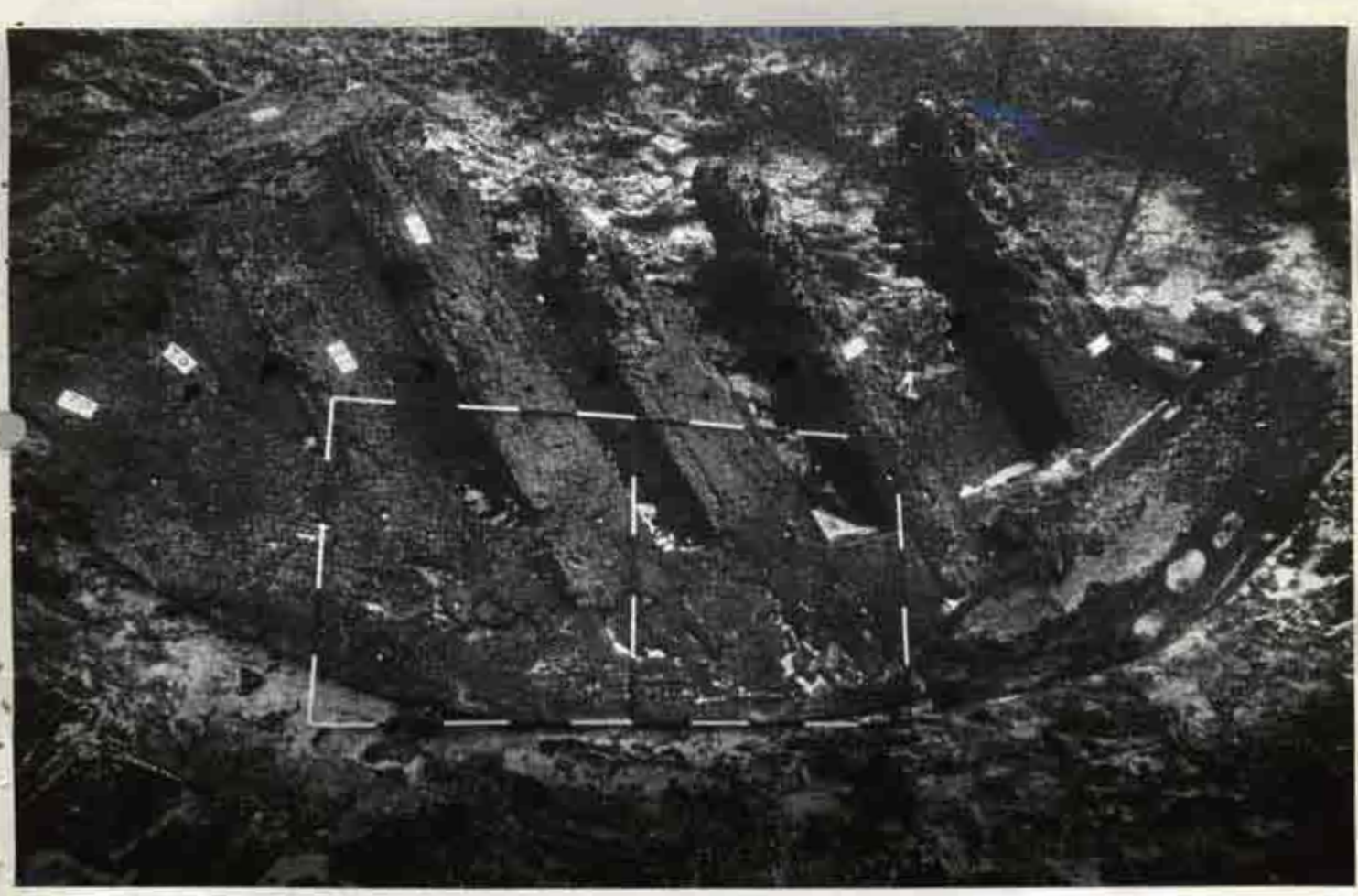

FIGURE 14. The transoms and the transom wing.

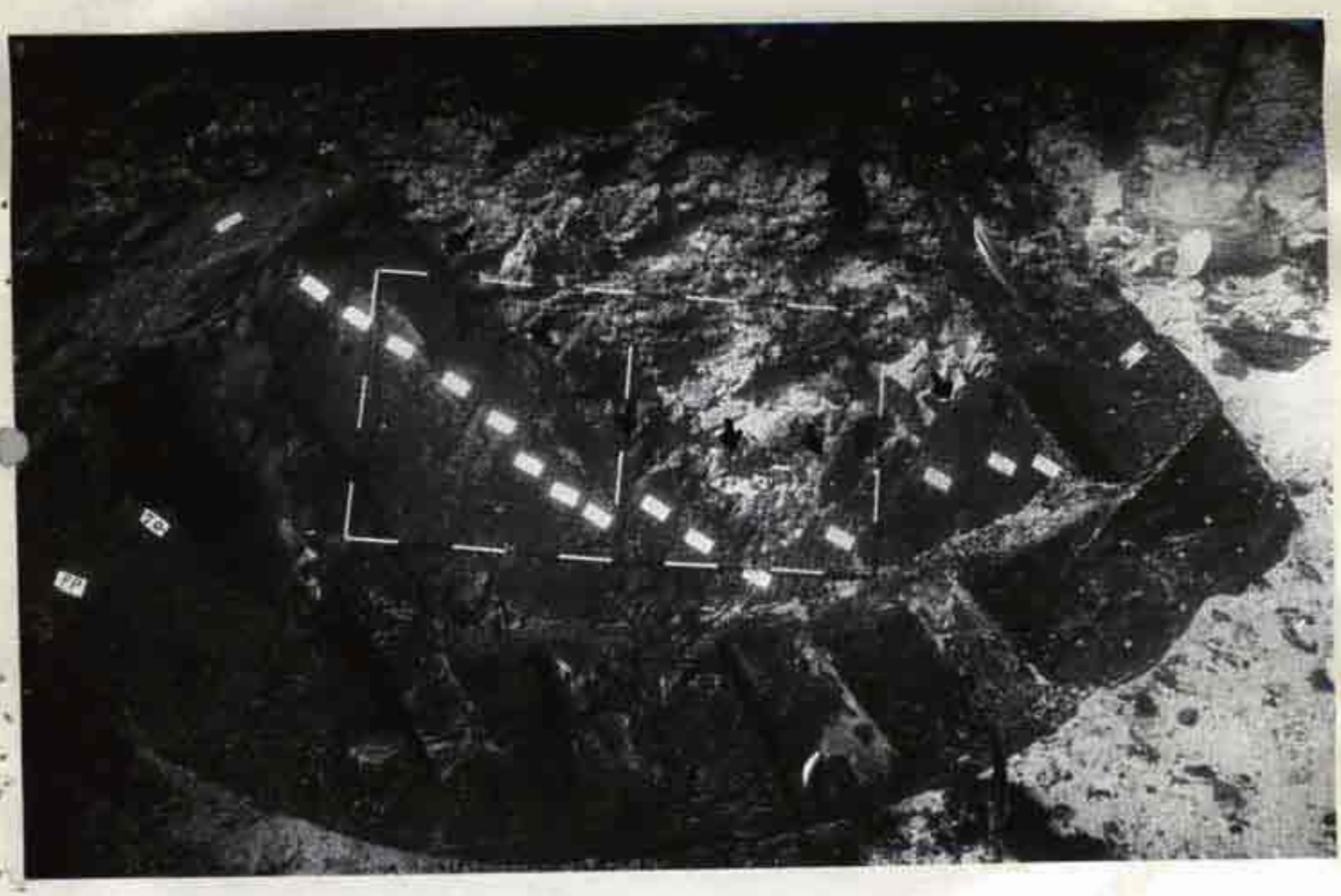

FIGURE 15. The transom planking.

FIGURE 16. Bent outer layer of planking running underneath the transom planking and the inside strakes.

FIGURE 17. Detail of the bent outer planking.

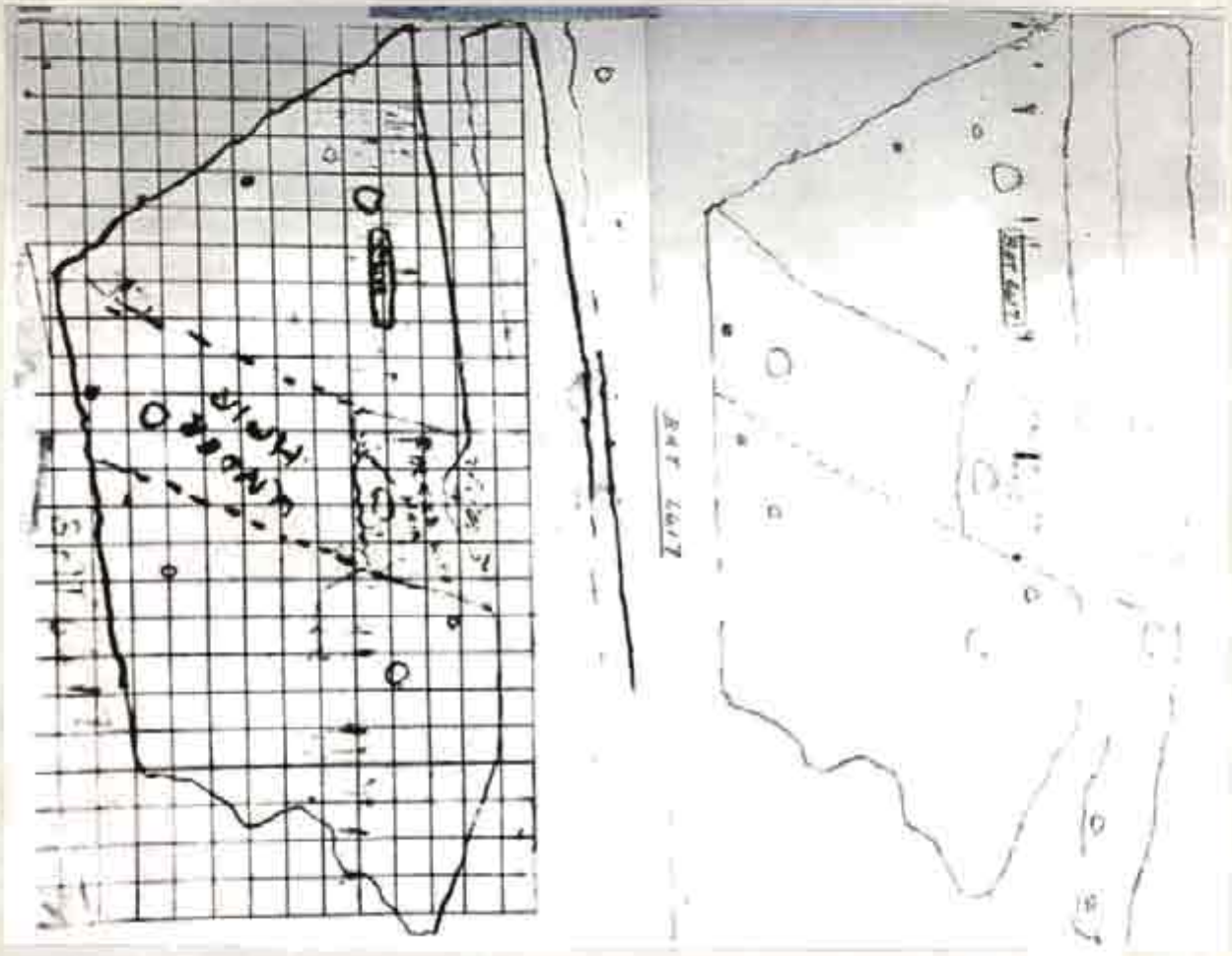

FIGURE 18. A photographically reduced 1:1 scale drawing compared with a 1:4 scale drawing done by hand.

FIGURE 19. The central coral lump.

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