

ROMAN DANUBE VESSELS FROM OBERSTIMM, GERMANY

The Roman frontier fortress of Oberstimm, some 70 km north of Munich, has for many years been excavated and is now known to have formed a major supply base for the maintenance of a wide stretch of military control lines on the Upper Danube frontier of the Early and Middle Empire. - The fortress is sited near the east bank of a minor tributary of the Danube, the Brautlach River, that nowadays discharges into the Danube some 1.5 km north of the fortress. There is evidence, however, of the Danube having run farther south during the Roman period. - Last autumn, Prof. Schoenberger, retired director of the Romano-Germanic Commission of the German Archaeological Institute, had soundings undertaken to the east and west of the fortress in order to get some idea of its surroundings.

The one bridging the area between the west wall and the Brautlach River, a narrow cutting less than 2 m wide, happened to hit well-preserved remains of the hulls of two vessels that could be dated to 90 ± 10 A.D. and 102 ± 10 A.D. by tree-ring investigations performed by Prof. Becker of Hohenheim University. It should be kept in mind that only those narrow sections of both hulls are known up to now. The results of those limited investigations, however, seem to merit a preliminary and in part tentative report.

North of the Alps a considerable number of Roman boats have been found, most of them in the catchment of the Rhine River (Fig.1). Such finds on the Danube, though alleged in Hungarian literature, had not yet been assessed.

As you will be aware, almost all of those boats in the Rhine and Thames areas feature variants of "frame-first" construction. It is unusual enough that both Oberstimm boats are "shell-first" constructions instead. Their strakes are joined by mortises and tenons in a way not to be separated from finds in the Mediterranean. That "Mediterranean" flavour is enhanced by both shells consisting of pine whereas most of the Rhenish vessels have been constructed from oak. There is one notable exception though: the "shell-first" boat from Vechten in the Netherlands, also built of pine. I shall come back to it soon.

In the narrow area of the excavation the strakes seem to run parallel (Fig. 2). There might be indications that, in Boat 2, they start to bend inwards slightly, but the evidence is ambiguous. At any rate the sides will have been parallel for some part of both vessels' lengths. Both cross sections are alike, being formed by shallow continuous curves that turn inwards more markedly only near their upper ends. Beam is 3 m, height of the sides 0.55 m only from surface of keels to the level of the thwarts.

Let me give you a tentative idea of the hull of Boat 2 in a three-dimensional view (Fig. 3). Its backbone is a keel, made of oak, to which the garboard strakes have been mortised. Normal strakes number six at each side of the keel. In Boat 2 the uppermost one is followed by a wale, the upper surface of which features a square depression some 20 cms long and 2.5 cms deep (Fig 4,1). It hardly can have been anything but a thwart-rest, implying the boat had

been propelled by rowers. By necessity a gunwale strake has to be postulated. In Boat 1 the gunwale has been preserved, being of somewhat different shape without a separate wale; but the thwart-rest is there, too. The gunwale in Boat 2, thwarts and ceilings in both hulls have been dismantled in antiquity.

The cross-sections of both keels are rather unsymmetric (Fig. 2) not only in the angles of their lower sides but also those of the narrow faces meeting the garboard strakes. These faces run parallel to each other, i.e. there is an acute angle at one side and an obtuse one at the other. This conspicuous irregularity makes me think both keels have originally been meant to be wales; in such a position their cross-sections would make sense (Fig. 8,1). These timbers being used for keels might, in my opinion, imply they had been prefabricated and then used inappropriately due either to ignorance of yard personnel inexperienced in boat construction or some special situation in which keel timbers were so urgently wanted that anything more or less fitting the purpose was substituted.

Be that as it may, mass-production using prefabricated timbers appears likely. Mass - construction of warships had been known to the Romans, and Carthaginians, since the First Punic War. The Oberstimm evidence seems to indicate that this technique was not forgotten but also applied later when need arose.

On top of their keels both vessels feature a component that, at first glance, might look like a keelson (Fig. 5,2): a massive oak plank standing on its narrow side. I would not call it a keelson, however, since, at least in Boat 2, this component has been formed by at least two parts that meet bluntly without any attempt at scarfing. This hardly will make sense for a keelson meant to strengthen the keel against bending. Moreover, those elements, here provisionally called "Central timbers", are joined to the keels by only a very few treenails, insufficient for achieving structural strength. The actual function of those timbers is to be deduced from square holes sunk into the upper surface of the Boat 2 specimen, the bigger one of which being in line with the thwart-rest in her wale (Fig. 2). This should mean the "Central timber" held in place short stanchions that supported the thwarts (Fig. 3).

You recognise the same feature in the Roman boat from Vechten, mentioned before. In Fig. 6 its components are to be found as numbers 2, 4, 10, and 12. In the bottom side of this "Central timber" (no. 4) there are square notches for the frames, or rather half-frames; similar notches recur in those timbers from Oberstimm. But at least in Boat 2, the ends of the half frames did not, or did not in any case maybe, reach those notches in reality (Fig. 7). This seems to imply that also this "Central timber" had not individually been adapted to its very positions, but rather prefabricated like the keels. The half-frames, made of oak and joined to the strakes by tree-nails, consist of two parts each that are scarfed together in not too careful a manner. This may not hold true for all of the frames, however.

Among the fragments of Boat 1, ripped apart by the mechanical excavator prior to the archaeologist's moving in, there are two very similar ones (Fig. 4,2-3; 5,1) that, consisting of oak, seem to form part of a frame, in spite of differing markedly from all other frames (Fig. 4,4-6). They are considerably more massive than the rest, measuring 9 cms in height. That height conforms to the one of a partly preserved notch in the "Central timber" of Boat 1, likely to indicate that those fragments form the ends of a single floor-timber that passed over the keel from side to side. There is another observation in favour of this. The bottom side of one fragment is slightly

concave. This is a very unusual shape indeed for the outer side of a frame. But in the cross-section of Boat 1 there is just such an irregularity at the seam between strakes 2 and 3 of the preserved side of the hull (Fig. 2,2;5,1). So it becomes possible to assess the exact position of that fragment, and reconstruct the floor-timber itself. - It should be noted the other notch in the "Central timber" is but 5 cms high, conforming to the proportions of normal half-frames. The massive floor-timber seems to be a singular exception.

The irregularity in the hull of Boat 1, her side buckling inwards, is highly unusual in itself. Since the floor-timber assures this feature being original we have to assume the hull of Boat 1 has been unsymmetric not only in the shape of its keel, but also in itself.

I simply feel unable to believe such grave blunders were possible at a shipyard working under normal conditions. In my opinion the evidence leaves the impression Boat 1 has been constructed, by inexperienced or poorly supervised shipwrights, under so pressing an urgency that even so faulty a boat had to be accepted. It evidently had been completed, though it seems to have been on duty but for a short period; its keel is in prime condition without any of the scars of running aground that characterise the keel of Boat 2 at Oberstimm, or all of the keels of the Mainz boats.

Is it mere chance that the felling year of the timbers for Boat 1, 90 ± 10 A.D., comes intriguingly close to Domitian's campaign against Marcomannians, Quades, and lazygians in present-day Austria and Hungary? At the same time as Boat 1, some wooden harbour installations were constructed at Oberstimm, implying some major operation of the Roman river navy.

Boat 2 has been built of timber felled in 102 ± 10 A.D. This year might be historically significant also since at that time Trajan, preparing for his Dacian Wars, moved two legions and several cavalry units from Upper Germany to present-day Rumania. Transportation by Danube vessels, likely to have been mass-produced, would certainly have facilitated those large-scale movements. It should be kept in mind, however, that there exists a few years' margin of error for the felling dates. Since these margins overlap the possibility cannot be dismissed for good that both vessels might have been built at the same time. It is hoped future excavations will supply timbers that will permit exact ascertaining the felling years.

To sum up, the evidence now known seems to indicate both Oberstimm boats are oared vessels mass-produced by a military shipyard for two major operations 12 years apart. An interpretation as "personnel carriers" would be in keeping both with the historical context of their construction, and the fact their thwarts were supported in the centre - a measure hardly necessary if they should have carried only one oarsman at each side.

It is hoped future excavations will shed more light on those two "shell-first" boats, the first Roman boats known from the Danube.

Olaf Höckmann
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ILLUSTRATIONS

- Fig. 1 Finds of Roman ships and boats north of the Alps. Not included: Guernsey (to the west). Triangle = 1 find. Square = 2 or more finds. Open sign = "Northwest-Roman" types (Zwammerdam and related; Mainz A + B). Black sign = Mediterranean shell-first construction.
- Fig. 2 Oberstimm. Elevations and cross-sections of both boats (H.-J. Köhler). Dark grey = oak. Light grey = pine. Hatched = elements ripped out of context by the mechanical excavator, rearranged in their original positions.
- Fig. 3 Boat 2 from Oberstimm (Germany): isometric reconstruction of hull section with terms used in the paper. Beam is c. 3 m. Black: oak. White: pine. Hatched: conjectural. Shadow (vertical light) indicates distance between strakes and ceilings.
- Fig. 4 Oberstimm. 1 Wale, Boat 1; in centre insertion for thwart. 2+3 Ends of massive frame, Boat 1 (cf. Fig. 5, 1). 4+5 Fragments of "floors". 6 End fragment of "floor" scarfed for meeting "futtock". 7 Ornamental knob. 8 Oversize treenail (from water-wheel? Cf. Fig. 8, 2). 1+8 = pine. Rest = oak. 1 = c. 1/8. 2-8 = c. 1/4.
- Fig. 5 Oberstimm. 1 Massive frame, Boat 1 (cf. Fig. 4,2-3). 2 "Central timber", Boat 2. 3 Gunwale, Boat 1. 1+2 = oak. 3 = pine. Hatched = parts removed for dendrochronological dating.
- Fig. 6 Vechten, gemeente Bunnik, The Netherlands. "Shell-first" boat of early 1st century A.D. 1 Perspective reconstruction (outlines after De Weerd, internal details added by author. Grey = hull section found in situ by Muller in 1894). 2 Cross-section (after De Weerd). 3+7 Mortise-and-tenon joinery. 4 "Central timber" with two iron nails (black) and square notches for thwart supports. 5 Frame. 6+8 Upper ceiling planks with notches for thwarts. 9 Thwart. 10 Thwart-support stanchion. 11 Keel with mortises and treenail holes (3-11 after Muller, 1895).
- Fig. 7 Oberstimm: Boat 2 (centre) and upper strakes of Boat 1 (upper right). It is evident that in Boat 2 the ribs do not touch the keel and "central timber" (below measuring rod). Horizontal planks (centre right) have been laid out for the excavation. Photograph: Köhler.
- Fig. 8 Oberstimm. 1 Cross-section through keel in supposed position as wale. 2 Position of oversize treenail (cf. Fig. 4, 8) as component of water-wheel; such a wheel has been suggested for supplying water to the camp.

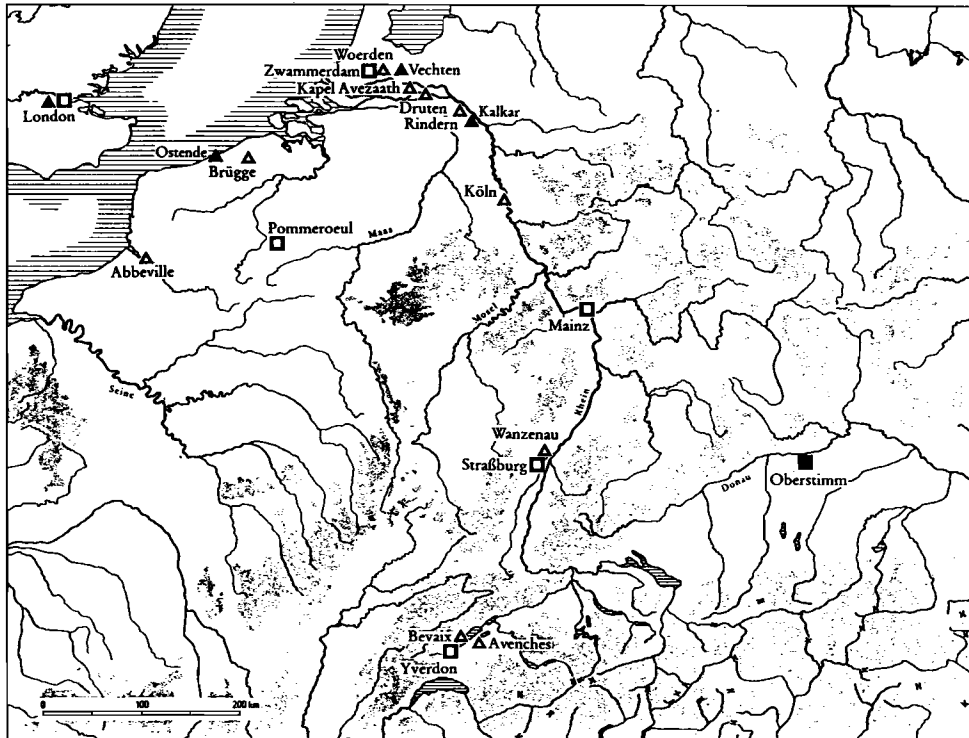


FIG. 1

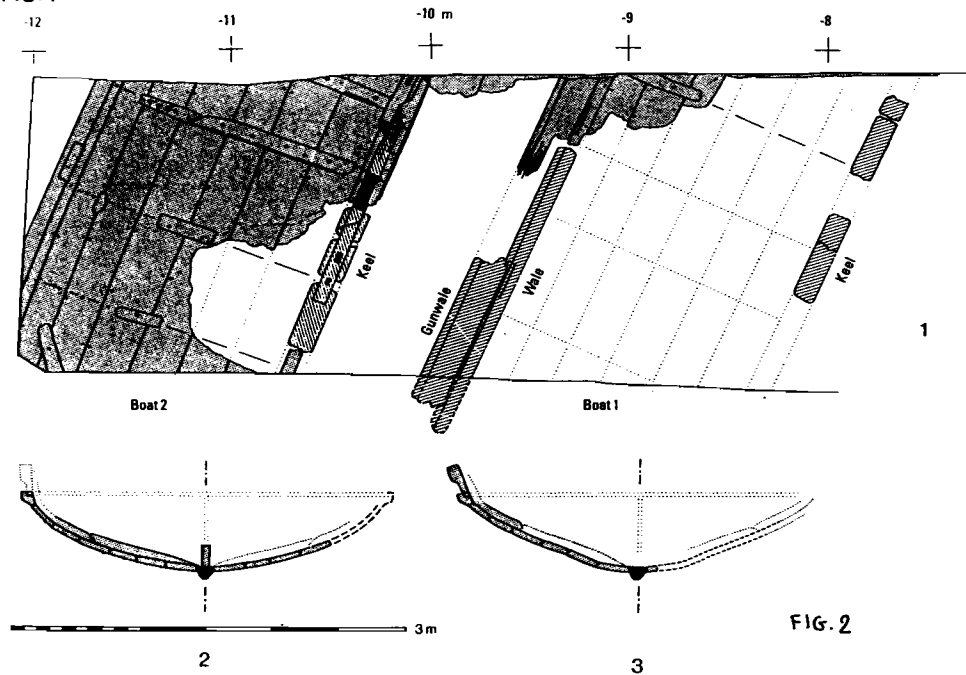


FIG. 2

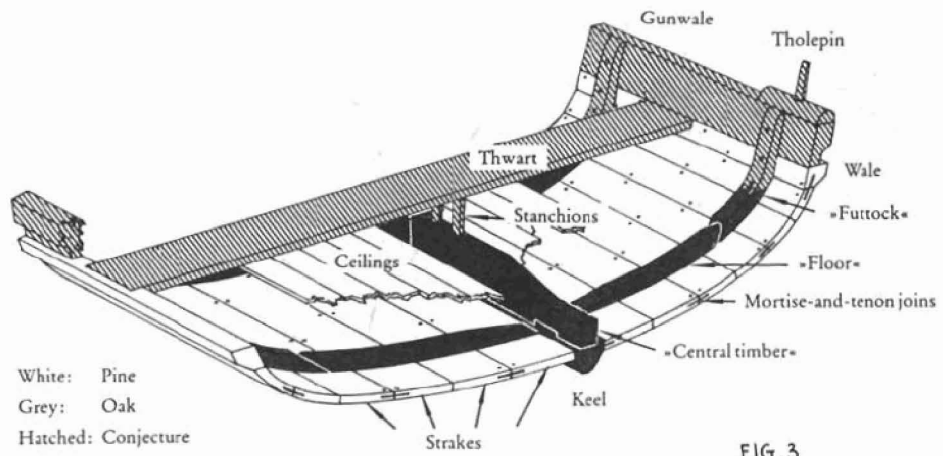
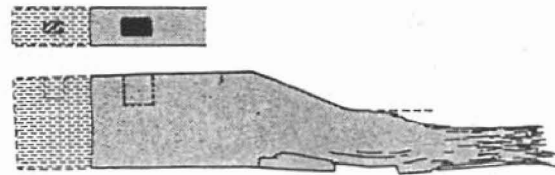


FIG. 3

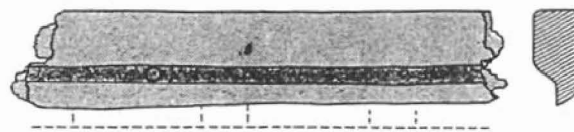


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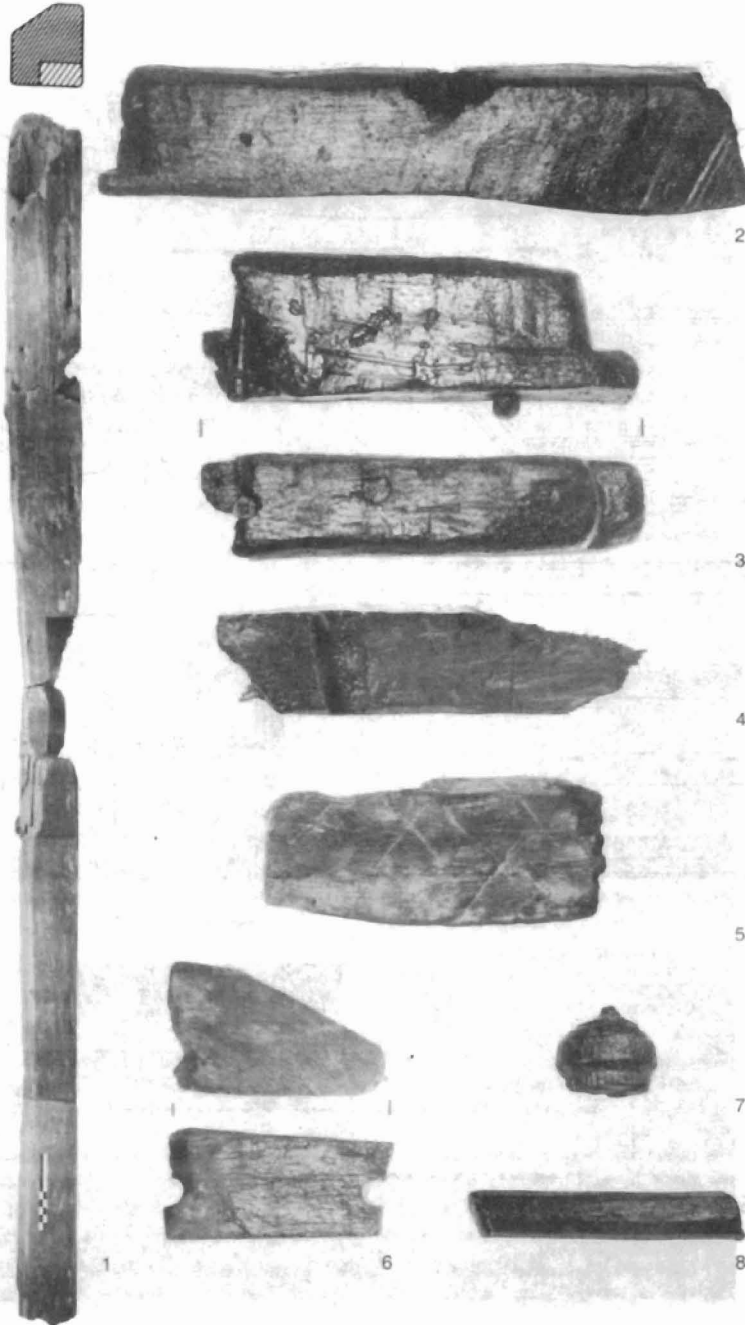
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FIG. 5

FIG. 4



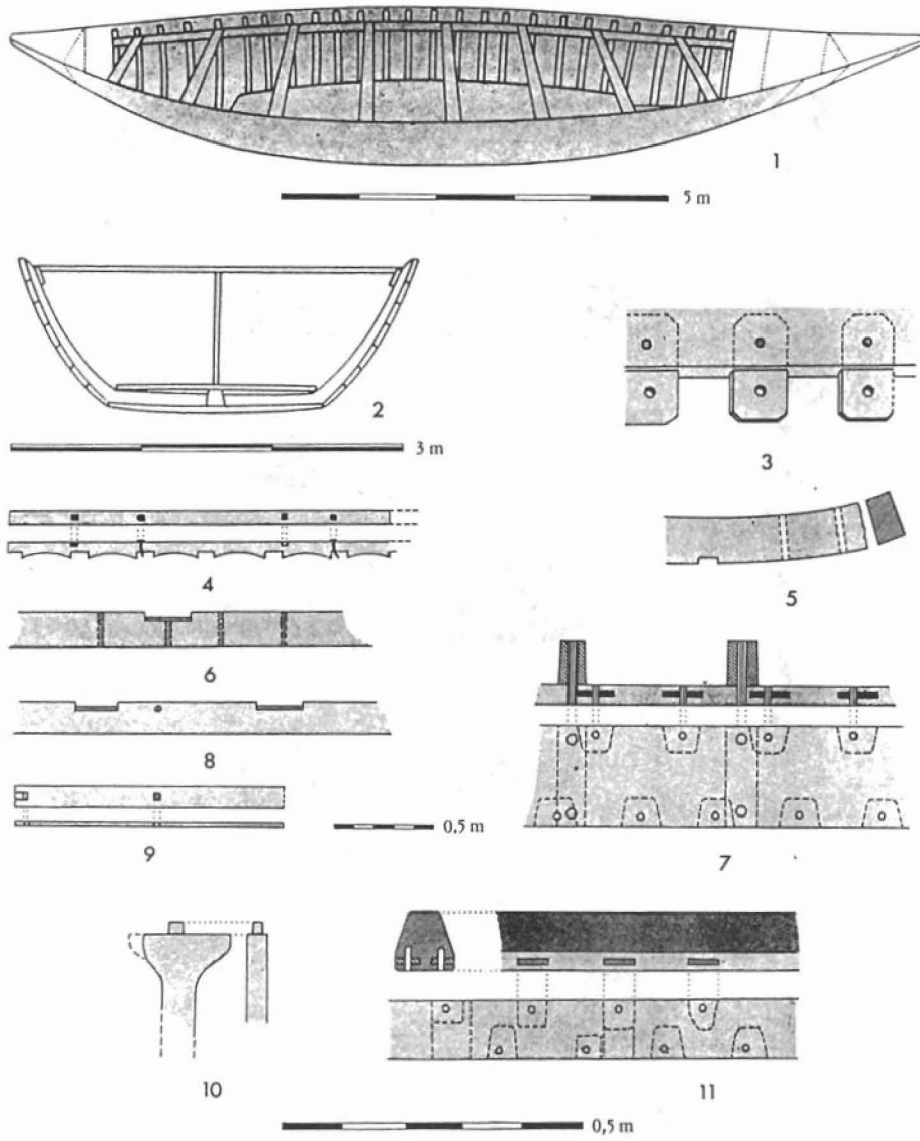


FIG. 6

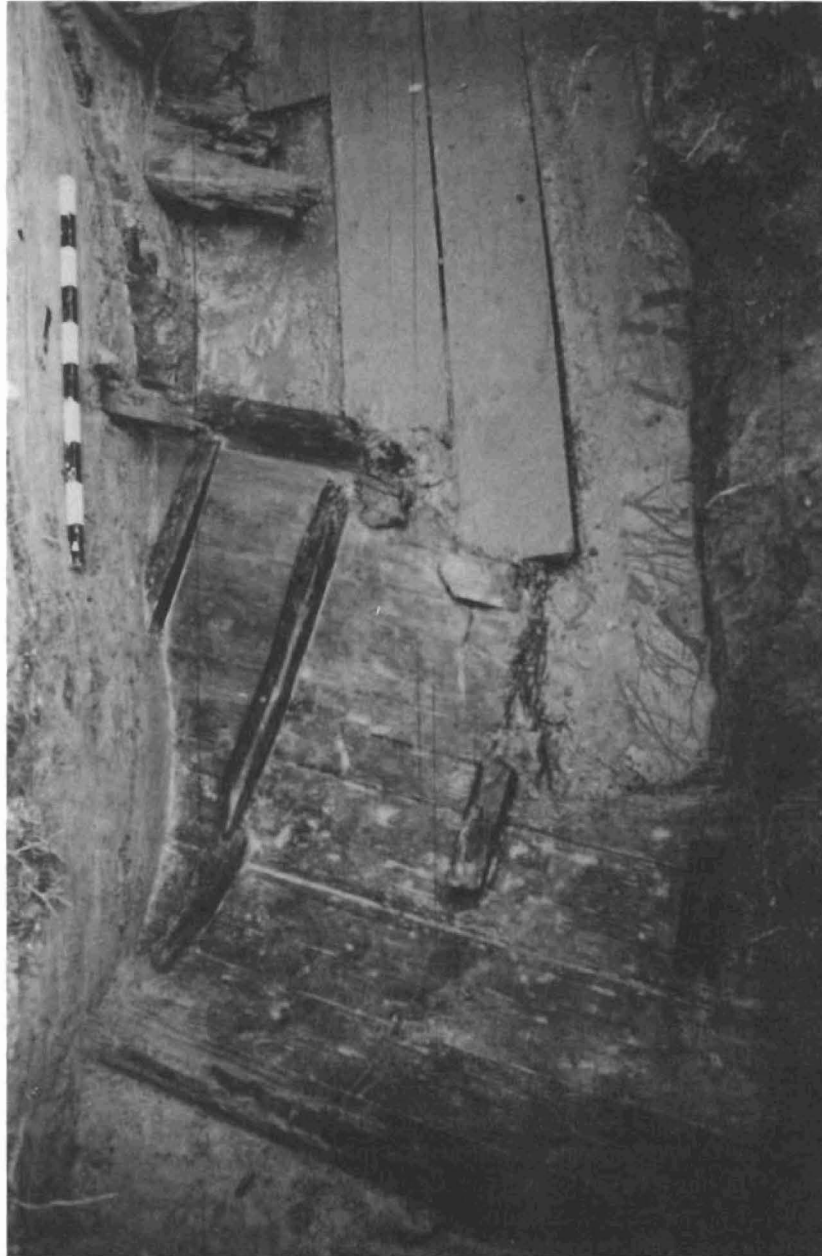
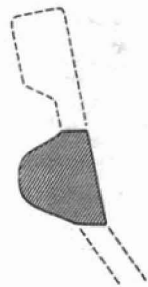
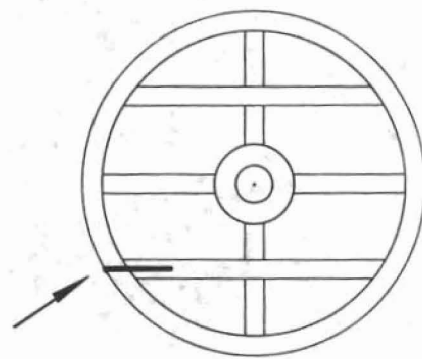


FIG. 7



1



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FIG. 8