

The flat-bottomed Roman boat from Druten, Netherlands

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Before they were hemmed in by dykes, the several arms of the Rhine delta in what is now the Netherlands, often changed their course. Much research has been done on when and where they did so, but as yet we do not even know when the first dykes were built. It was probably between 1000 and 1200 AD (Niermeyer, 1958). We are far from an ideal conclusion; a gapless three-dimensional map, in which time is to be the third dimension.

When in 1973 the remains of a Gallo-Roman barge were found near Druten (province of Gelderland), almost half a kilometer south of the dyke on the southern bank of the River Waal, it was probable, and since geologically established (Hulst & Lehmann, 1974: 8), that it lay in a silted-up meander, but how that meander ran is as yet unknown.

One of the many dicta of the late Sir Mortimer Wheeler runs: 'With the contractor's bulldozer in the offing, anything saved is better than everything lost'. Here the bulldozer was actually looming over the dig and before the actual digging began some 11 m of the ship had been removed indiscriminately.

There are many Roman representations of river boats that curve up fore and aft (e.g. Casson, 1965: pls I,1; II,1 and III,2; Ellmers, 1969: pl. 18, 1, 2). This may have been the case with the keeled boats that have been found in several places: Vechten (Muller, 1895: 160–1), near New Guy's House (Marsden, 1965) and Ostia (Testaguzza, 1970: 229–46), but their upper works are lost.

Not only the monumental *saveiro* (Lixa Filgueiros, 1977) but many lesser craft still used in Portugal show us that flat-bottomed boats can have a spectacular sheer, but we have no proof that this way of building was applied in the Roman empire.

By now we have found an imposing quantity of flat-bottomed boats from that empire. There was the 'haul' of Zwammerdam (De Weerd, 1976), the large wreck of Capel-Avezaath (Louwe-Kooymans, 1968), the one at Druten; in Switzerland those of Bevaix and Yverdon (Arnold, 1974; Weidmann & Kaenel, 1975) and in Belgium those of Pommeroeul (De Boe & Hubert, 1977).

They were all built on the split-dugout principle. This in itself does not mean much, because it may result in many kinds of craft. The half dugout may be the whole side, or a narrow, inconspicuous piece forming the chine or bilge. The principle has been applied at least as late as the 19th century in France (Beaudouin, 1970) where Beaudouin has found a traditional name for the halves of the split dugout: viz. *les iles*.

The 16 m that were left of the barge (Figs 1, 2) lay WNW–ESE. As it could not be determined whether the damaged, but partly preserved WNW end, was the prow or the stern, the terms fore, aft, port and starboard could not be used. The bottom tapered east to west from 2.80 m wide to 1.72 m. There were 50 floor-timbers (0.15–0.19 m wide, 0.05–0.06 m thick) in pairs, of which those on the west had their curved thin ends, fashioned from limbs, against the south *ile* and those on the east were likewise against the north *ile* (Figs 1, 2). Each floor-timber had three limber holes (Fig. 3.6). These timbers were attached to the 0.06–0.08 m thick bottom by long clenched-over iron nails, some hammered in from below and some from the top. Of the latter many were found, their heads making a zigzag pattern (Fig. 2). Unlike the other Roman split dugouts, which, except the one from Yverdon, had *iles*, L-shaped in section, the Druten one had curving *iles* (Fig. 3.2,



Figure 1. View of Druten barge after excavation.

3). The thin, sticking-up ends of the floor timbers were attached to them by three iron nails in a triangle, but they did not always fit the hollow.

The best preserved *ile* was on the north. At floor timber 4 it started curving south and upward, more abruptly on the inside than the outside (Fig. 3.1, Fig. 4), so that the *ile* thickened towards the end where it was cut across the grain. This is also a common feature of non-split dugouts, beginning with the Mesolithic example from Pesse (Van Zeist, 1957). As this was done to enable the prow or stern to bear the brunt of shocks, it is probable that there was no upper planking here that would have raked further because of the gradual raking of the bottom planks. In the Yverdon boat, where there was upper planking, the *ile* curved up and inward, but did not thicken.

There may have been a washstrake midships, for there was a brown streak in the sand, with a few rusty blobs of iron, probably nail-heads, running parallel with the east half of what was left of the north *ile* through the sand up to ± 0.30 m above it. But the *ile* was far from its full height there.

It was only apparent that the bottom planks curved upward, like in an *aak* (Kerchove, 1948: under *aak*), when the salvaged parts were set up as a three-dimensional jigsaw puzzle in the Ketelhaven museum (Fig. 4). The bottom consisted of three planks where it ended on the west and probably of five where it had been broken off. How and where the transition was made, is unknown. Pressure of time did not allow the diggers to see the bottom without the floor-timbers. Though the barge tapered towards the west there seemed to be no hori-

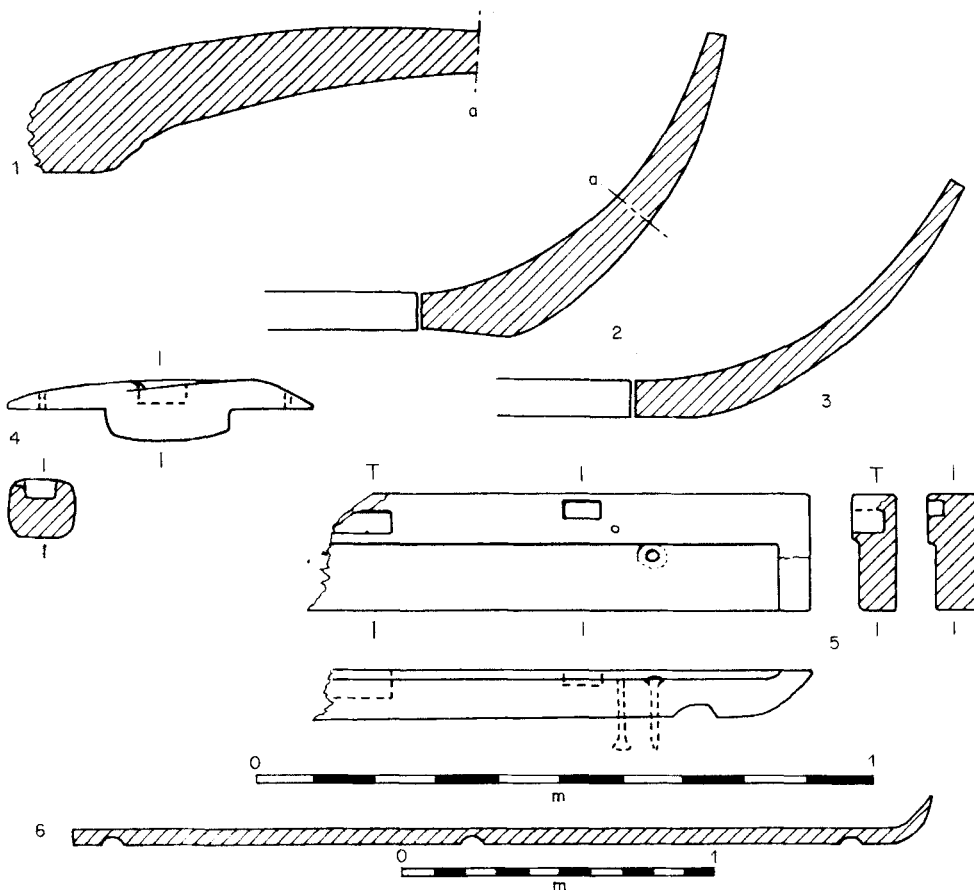


Figure 3. Details of timbers: 1, horizontal section of west end of north *ile*; 2, vertical section of north *ile* facing floor timber 4; 3, vertical section of north *ile* east of floor timber 8; 4, timber with square mortise; 5, floor timber 8 with 'step'; 6, floor timber 4 with limber holes.

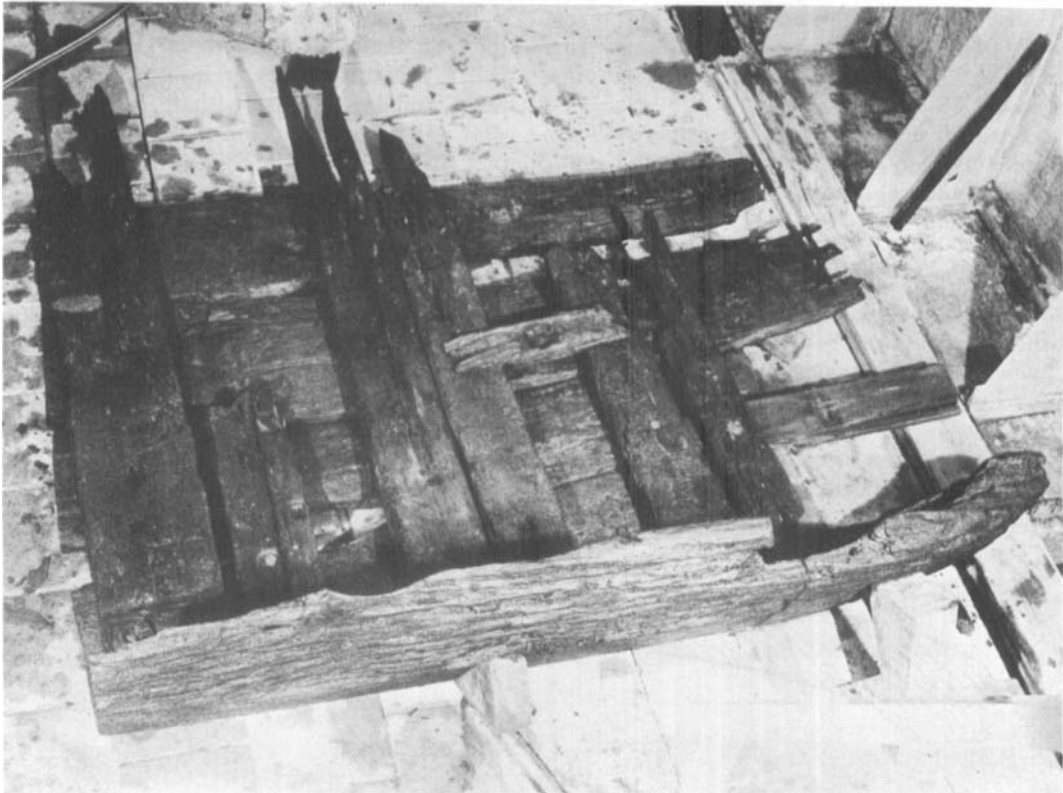


Figure 4. West end of barge from north (as set up in Ketelhaven Museum).

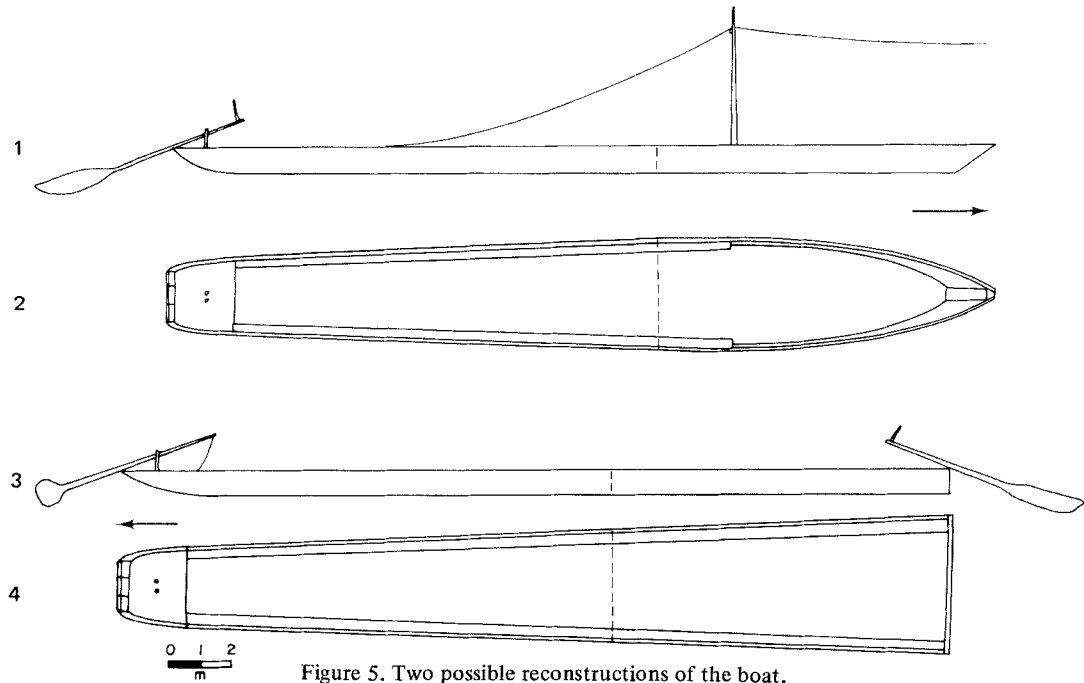


Figure 5. Two possible reconstructions of the boat.

zontal curving of the sides. This may remind us of later German Rhine-barges called *Oberlaender* (Ellmers, 1969: pl. 17, 3) which had a trapezium-shaped bottom with the narrow end forward, such as the small one dug up at Krefeld (Ellmers, 1976: 47). One may reasonably suppose, that just as with the *aaks*, very much like those of Zwammerdam, which are still being built of steel, the Romans knew prototypes of *Oberlaenders* (Fig. 5.3, 4). Yet there is one thing against the easy assumption that the Druten barge was a *proto-Oberlaender*. Among the wood carted away the discoverer of the wreck, P. van Dinteren, found and described a piece of wood, 1.70 m long and 0.40 m thick, with a trapezoid section, that looked very much like a rabbetless stempost! So it is possible that the Druten barge had one pointed end and that the sides changed shape (Fig. 5.1, 2), as they did later in the Falsterbohus barge (Ellmers, 1976: 51).

The Druten barge showed some remarkable features, that for want of a better-preserved

sister-ship, cannot be satisfactorily explained. An indented block of wood lay across floor-timbers 4 and 5 (Fig. 3.4) with a square mortise in the middle. As it lay eccentric, it may have had a fellow south of it. Mortises were likewise cut in floor-timber 7, which was adzed in such a way as to leave a ridge 0.02–0.03 m higher than the other floor-timbers along its front edge and against the north *ile* where it was broken. On the south it had rotted, but one may assume that the ridge was symmetrical, especially as floor-timber 8 had a 'step' on the north prolonging the ridge of 7, against its grown futtock (Fig. 3.5, Fig. 6).

On top of floor-timber 14 a batten lay athwartships, with on both sides the remains of two narrow planks lying lengthwise. Their east ends seemed to be in position, though they had rotted away beyond floor-timber 13 (Fig. 7). Similar lengths of plank were found on the bottom between floor-timbers 10 and 11 (Fig. 2). It is tempting to see in them the remains of



Figure 6. Floor-timber 8.



Figure 7. Batten over floor-timber 14.

limber planks, kept in place by the ridge and steps on 7 and 8. As the batten, by all appearances, lies on top, it is possible that they were fixed, as a partial ceiling. Another disturbing factor is an iron hook (Fig. 8.4) attached to the middle of floor-timber 7. The hypothetical reconstruction drawing of the west end of the ship suggests a solution (Fig. 9.2). A likely function for the group of mortises might have been to hold stanchions to support a deck, that logically would have ended where the hook was and the limber-or ceiling planks began. The indented block with mortise, and its hypothetical fellow may have been the bases for two posts, or bitts sticking up through the deck, between which an auxiliary steering-oar at the prow may have hung, as in the *Oberlaender* in a 16th century woodcut by Antonius Woensam (Ellmers, 1969: pl. 17, 3). Tacitus wrote that Germanic river boats had a steering-oar at each end (Annals. II.6). The woodcut also shows a

pendant at the loom-end of this steering-oar. If there had been such a construction here, the pendant might have run to the hook, though it is an unusual way of belaying.

Across this part of the ship lay the remains of a construction, made of thin planks (Figs 1, 2). Planks less than 0.01 m thick lay edge to edge. Of each, one edge tapered upward and the other down, so that they formed a smooth surface on both sides. They were held together by a thin strip of wood nailed across them at right angles. A thicker piece of wood lay across them, but seemed unconnected. As these planks were too thin to walk on, they may have been part of a roof or a hatch cover. The former idea has become less hypothetical since at Pommeroeul the remains of a cabin, made of equally thin planks laid clinker-fashion, were found. The place might be right too, though again the hook is in the way (De Boe & Hubert, 1977: 30, 31).

Between floor-timbers 44 and 45 a short

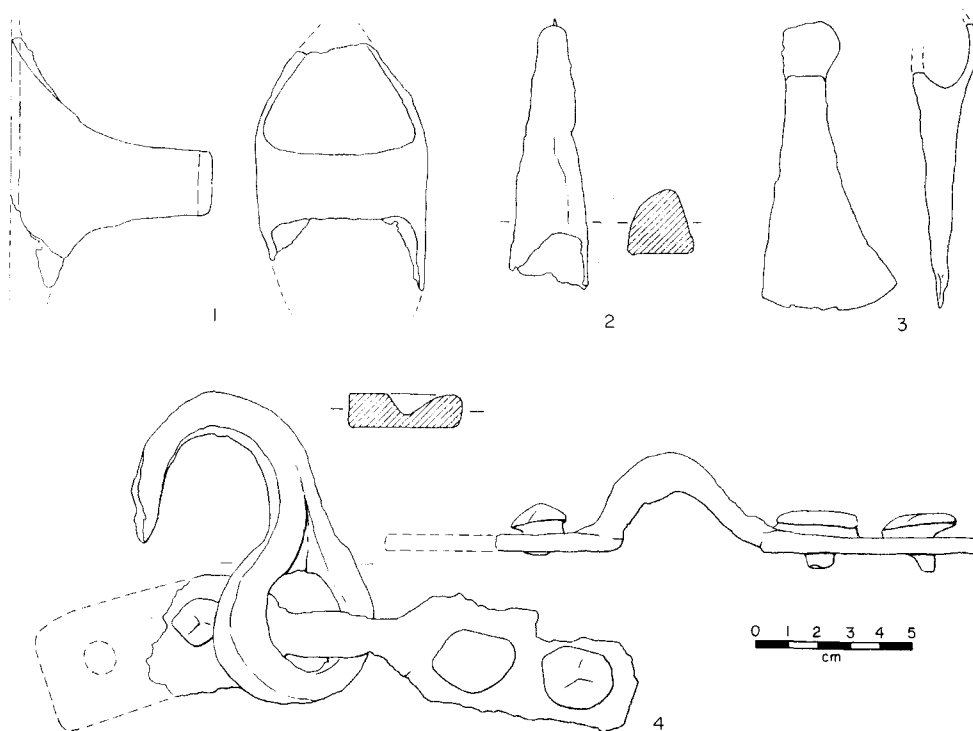


Figure 8. Metal objects: 1, sleeve for a pole; 2, prong for a barge pole; 3, an axe head; 4, hook attached to floor-timber 7.

plank lay athwartships, probably nailed down. Between 48 and 49 lay two such planks, filling the whole interstice.

The drawings in Fig. 9 are presented with the utmost reserve. In 9.1 nothing is shown of which the remains were not found. The bottom planks are not prolonged beyond the probable height of the *iles*. It may be remarked that the Blussus ship (Ellmers, 1969: pl. 17, 2) from Mainz showed a small rounded extension over the prow, which may mean that this too has an *aak* construction, where the bottom planks stuck out beyond the sides, and had a rounded end.

This was the case with the Hollandse *roei-boot*; the Holland (in the narrow and real sense) rowboat; a small punt-like craft much in evidence in Dutch harbours at least until 1930 (Greenhill, 1976: fig. 127). By then the structure was slightly camouflaged by the length of car-tyre, that invariably was laid over either end as a bow-fender. For all we know the west end of the Druten ship may have had this shape.

The drawings on Fig. 5 give two possible general impressions of the ship when in working order. To the right of the vertical line everything has gone. The steering-ears, bitts and towing-post are of course hypothetical.

Within the barge lay a few fragments of iron tools (Fig. 8); of an axe, a prong that probably belonged to a barge-pole and an unusually shaped sleeve that may have fitted another.

Our evidence for calling our barge Roman was: a large bottomless amphora, Callender form 11:1 (Callender, 1965: 19) with a stamp hitherto indecipherable, the bottom of another amphora (Hulst & Lehmann, 1974: pl. IV), a Samian base and wall sherd of a Dr. 37 bowl that could be attributed to the workshops of Julius II/Julianus I at Rheinzabern (Hulst & Lehmann, 1974: fig. 8.2). The latter Samian sherd can be dated to the late 2nd or early 3rd century AD (Ricken & Fischer, 1963: E 23/KB 100). The same period was indicated by a rim sherd of colour-coated (Castor) ware that could either be Niederbieber 31 or 33 (Oelmann,

1914); as well as by a much flattened coin, on which only the letters VS were readable, but which according to the numismatists attached to the Royal Coin Collection at The Hague was probably a sestersius, of that period.

Everywhere on the bottom lay slivers of slate, probably the remains of the barge's last cargo.

Samples of the matter in the seams were taken in the places indicated on Fig. 2 and

analysed by Mrs W. Groenman-Van Waateringe at the Institute for Pre- and Protohistory in Amsterdam, but only pollen of vegetation that might be expected in the surrounding landscape, was found. There was no trace of caulking or luting (Hulst & Lehmann, 1974: Appendix). Analysis of wood samples in the IPP and the Botanic Laboratory of the Agricultural University at Wageningen showed that all the live wood was *Quercus robur* L., an oak that grows all over

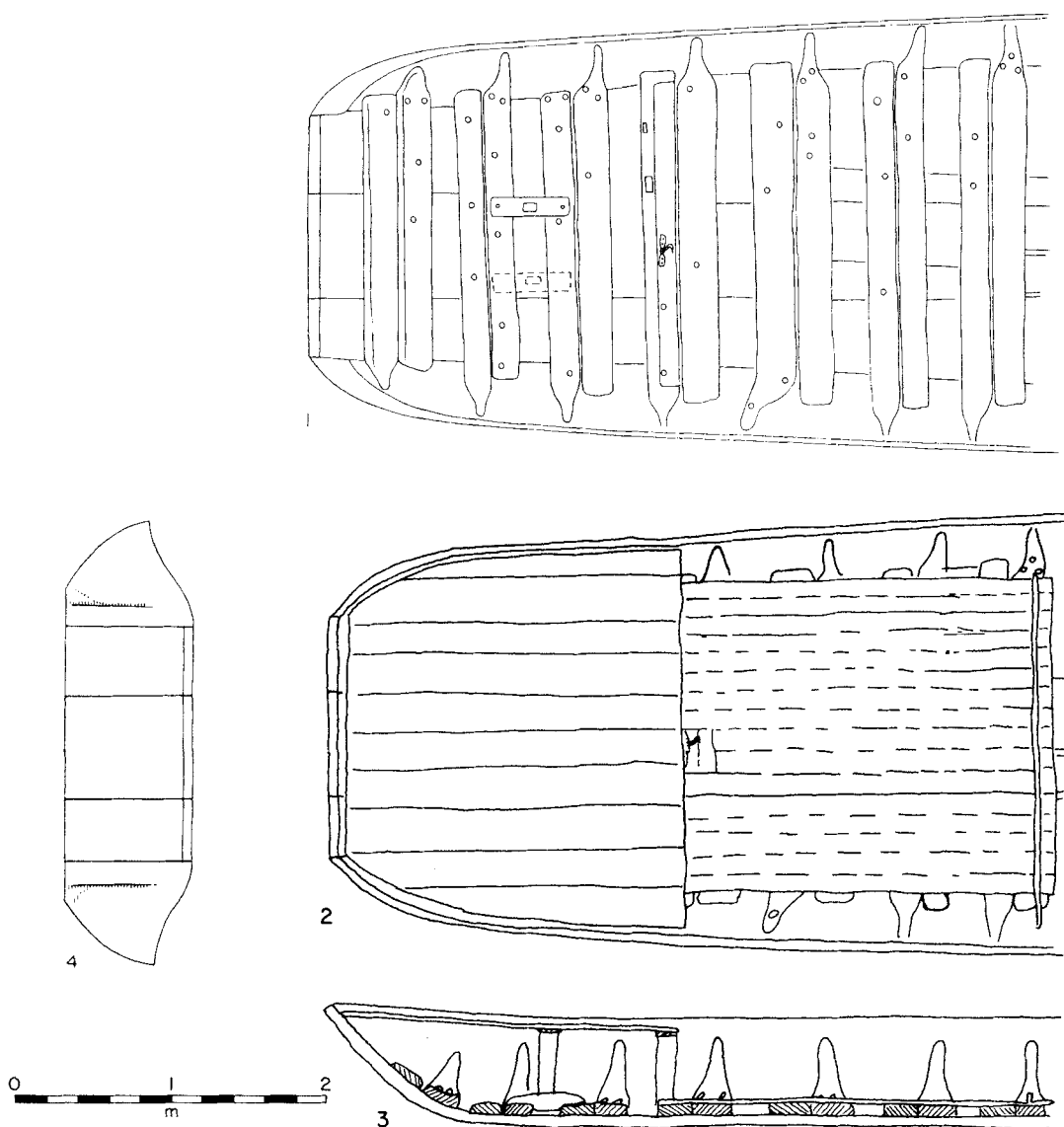


Figure 9. Hypothetical reconstruction of the west end of the boat.

Europe. Parts of the loose, thin planking were Alder (*Alnus glutinosa* Vill.) which is also found all over Europe, but other parts and the possible limber-planks might be *Quercus petraea* Lieblein, which is south and central European. So the barge may have been built anywhere on the Rhine or one of its tributaries, but may have been refitted somewhere in the upper reaches. We are still far from knowing what were local craft in the Roman empire.

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