THE KINNERET BOAT: THE DISCOVERY AND EXCAVATION

The Discovery

In 1985 and 1986 Israel was in the grip of a severe drought. Winter rain barely came. The drought caused the waters of the Sea of Galilee, or *Kinneret* as it is named in Hebrew, to recede exposing large stretches of lake bottom (Fig. 1). In January 1986 Moshe and Yuval Lufan, members of Kibbutz Ginosar and avid amateur archaeologists, decided to "look for an ancient boat" on the mud flats. They searched an area south of the kibbutz where the spinning tires of a tractor brought up coins and other artifacts (Fig. 2).

On closer inspection the brothers found iron nails, and then, the edge of a wooden plank buried in the mud. Was the boat ancient? The brothers contacted Mendel Nun of Kibbutz Ein Gev, a man who has dedicated his life to study of the Kinneret and is considered its leading expert. Nun quickly relayed the information of the discovery to the Israel Department of Antiquities and Museums.

As the Department's Inspector of Underwater Antiquities, news of the discovery of "a wreck — possibly ancient" reached my desk. The next day, Mendel Nun and the Lufan brothers, my colleague Kurt Raveh and I drove to the site. Opening a small section of the uppermost plank, we immediately found remains of "mortise-and-tenon" joinery. The wreck was indeed ancient.

Following standard procedure we carried out a short two day probe excavation (Figs. 3-4). A cooking pot and an oil lamp dating to the Early Roman Period were found, conceivably narrowing the wreck's dating (Figs. 5-6).

The probe was completed on Friday, February 7th. The discovery was to be kept secret until the rising waters of the Kinneret covered the site, protecting it from possible vandalism. We reburied the boat, taking additional steps to hide its location.

By Sunday, news of the discovery had leaked to the press, who immediately termed it the "Jesus Boat". The name fired public imagination even though it lacked any archaeological basis beyond the estimated date of the craft.

Rumors have abounded for years concerning a ship full of gold coins to pay the Turkish army that sank in the Kinneret during World War I. These rumors became associated with our wreck; treasure hunters began searching for the boat and its nonexistent "treasure".

Late that Tuesday night the Lufan brothers spotted searchers with flashlights near the boat. They contacted me; we carried out a nerve-wracking night vigil. No additional intruders were seen but it was now clear that the boat was in serious danger.

The history of archaeology throughout the world is studded with lamentable episodes of invaluable sites destroyed when looters preempted archaeologists. To prevent this happening to the boat, the Department's Director, Mr. Avraham Eitan, ordered its immediate excavation.

An excavation takes time to plan and organize; a staff must be found, materials and equip-

ment have to be acquired. This normally takes months; the excavation was to begin on February 16th — three days hence. An excavation team was quickly assembled[1].

A most important member of the staff, however, was a ship reconstructionist to make sense of the wooden hull as it was uncovered. Professor J. Richard "Dick" Steffy, of the Institute of Nautical Archaeology, Texas A & M University was contacted. He agreed to study the boat; he could come during the dates February 20th-25th. This meant the hull had to be visible during his stay.

Funding Steffy's trip at such short notice was problematic. As the American Ambassador to Israel at that time, Mr. Thomas E. Pickering, has a deep interest in archaeology, I contacted the embassy. Within 14 hours (!) of receiving the request Howard Lane of the United States information Service had arranged the flight.

Meanwhile, back at the lake...

Receiving waters from recent rains, the Kinneret had started to advance toward the boat. When we first viewed the site, the lake had been thirty meters away — on the eve of the excavation it had advanced to within ten meters of the boat. The forecast was for more rain: the site would soon be inundated. Various proposals were studied — including lowering the level of the lake by pumping water into reservoirs. When the excavation began on the late afternoon of Sunday February 16th this problem remained unresolved.

The Excavation

The objectives of the excavation were to expose the boat and its surrounding area, to study the boat in situ and to remove it for conservation to the nearby Yigal Allon Museum at Kibbutz Ginosar. If possible the boat was to be removed intact; but at the outset this seemed unlikely.

As night fell we decided to work around the clock in a race against the rising waters. Gas fishing lamps lent a eerie atmosphere as the outline of the boat began to emerge (Fig. 7).

To check the state of hull preservation we cut a section at misdhip. The hull was indeed intact and well preserved.

During the evening, members of the Kinneret Authority, the governmental body in charge of the lake, visited the site. They proposed to save it from inundation by building a massive earthwork and sandbad dike, and promised to return the next morning with equipment, materials and workers.

By six AM the lake, whipped up by a strong easterly, was virtually touching the boat (Fig. 8). The Kinneret Authority arrived just in time and began work on the dike. Although the lake continued to rise it ceased to be a problem from that time. We continued carefully removing the mud cover (Fig. 9).

The excavation had an amazing effect on all involved. Kibbutziniks from Ginosar finished their own work and then joined us in the mud for another eight or ten hours a day (Fig. 10). People worked until they dropped. Volunteers from the neighboring Moshav of Migdal and from all over the country began to show up and to help. Despite the tremendous pressures on all of us, we worked as a team for a common purpose.

As the wood was revealed white plastic string was used to differentiate the planking; each wooden member was tagged (Fig. 11). As mud was removed it was necessary to build a hanging scaffolding on which excavators worked while lying on their stomaches (Fig. 12). The metal

frame also supported a nylon tarpaulin which helped protect the wood from the harsh sun. By the time Steffy arrived, much of the boat's interior had been revealed.

While enlarging the pit around the boat, remains of two additional wrecks were found. These were examined recorded and reburied. To have done otherwise would have required more effort than we could afford and would have endangered the main objective.

The archaeological part of the excavation was completed by the eighth day of the dig (Fig. 13). The remaining days were devoted to the conservation and packaging of the boat for its removal to the Yigal Allon Museum in Kibbutz Ginosar, a distance of about 500 m.

The boat measures 8.2 meters by 2.3 meters; the wood looked sturdy, but was waterlogged and could not support its own weight. After consulting numerous experts, Orna Cohen, the excavation's conservationist, invented her own method for packaging the boat. She decided to strengthen the hull internally and externally with fiberglass frames and trusses and then cover the entire boat with a polyurethane "strait jacket".

Ginosar members, well versed in constructing and repairing the Kibbutz's fiberglass boats, went to work on the frames (Fig. 14). Once these were completed the entire interior of the hull was spray-filled with polyurethane. This took place at night under the light of the fishing lanterns. The chemical, sprayed on as a dark liquid, quickly foams and hardens; under the lamps it seemed to be a living substance engulfing the boat.

The following day we began to dig perpendicular tunnels beneath the boat; this revealed additional elements of the boat's construction. Fiberglass trusses were passed through these and secured around the hull's exterior. The tunnels were then filled with polyurethane foam which hardened into supportive external frames. Once braced, the remaining mud was excavated in sections and the process repeated until the entire boat was covered in a synthetic "cocoon" (Fig. 15).

On February 26th, eleven days after the excavation had begun, the pumps that had been used to keep the ground water form inundating the site were reversed and water was pumped into the excavation pit as a channel was dug to the lake through our precious dike (Fig. 16). The boat sailed the placid waters of the Kinneret for the first time in two millennia (Fig. 17). It was floated to the Allon Museum where it was placed on land by a huge crane (Fig. 18).

Within a record ten days, the museum built a reinforced concrete conservation pool. The boat was then lifted by crane and gently placed inside the pool (Fig. 19). Laboriously, the polyurethane was removed and the boat was submerged in water to prevent the wood from dehydrating until the conservation process begins.

The pool has been enclosed by a building which includes a glass encased viewers' gallery where the boat is now visited by thousands each month. PEG treatment of the boat has begun, thanks to a generous donation of 40 tons of PEG by Jacobson Agencies, Ltd., a subsidiary of DOW Chemicals (Fig. 20).

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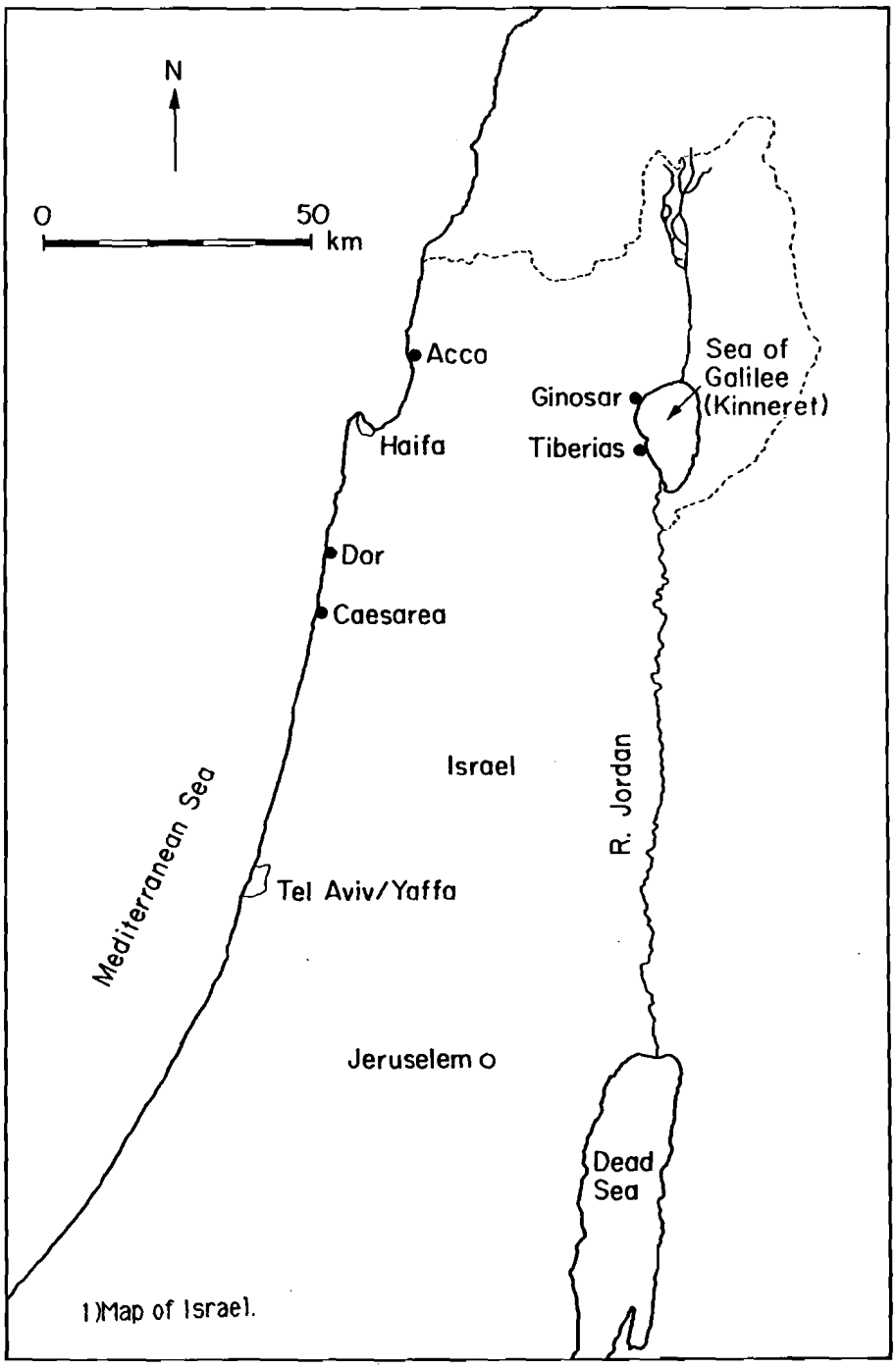
NOTES

1. The excavation staff included: Kurt Raveh, assistant excavtor; Orna Cohen, Conservationist; Danny Syon (Friedman), photographer; Edna Amos, Registrar; and Moshe and Yuval Lufan acted as liaisons with Kibbutz Ginosar.

ILLUSTRATIONS

All photos courtesy of Israel Antiquities Authority. Photos 3-4: S. Wachsmann: photos 7-20: D. Syon (Friedman).

1) Map of Israel.
2) Map of the Kinneret (Sea of Galilee) showing the discovery site of the boat.
3) View of the site during the probe excavation. The boat had been eroded to the height of the mud.
4) View of one of the sections cut on the southern side of the boat during the probe excavation. White plastic wire indicates the junction between planks; plastic dots indicate mortise-and-tenon peg heads.
5) The cooking pot.
6) The oil lamp.
7) The first night of excavation on the boat (Sunday, 16 February 1986).
8) The boat as it appeared on the second morning of excavation (17 February 1986).
9) Until the arrival of conservationist Orna Cohen, on the second day of excavation, care was taken to leave a protective layer of mud covering the hull while earth was removed from inside it.
10) Frames begin to appear in the stern from under the mud cover removed by a volunteer from Kibbutz Ginosar.
11) Each wooden part was numbered and white plastic tubing was placed between the planks to facilitate recording the hull.
12) Wooden planks provided a useful, albeit uncomfortable, perch for workers. The planks allowed workers to excavate inside the boat wihtout standing on the fragile, waterlogged timbers.
13) The boat in an advanced stage of excavation.
14) Internal fiberglass/polyester resin frames are laid between the wooden frames to strengthen the hull for removal.
15) At the conclusion of the packaging process the boat had been entirely encased in a polyurethane cocoon. Wooden boards gave the construction additional structural support.
16) Water was pumped into the excavation pit, floating the boat. When the water in the pool was at lake level a steam shovel excavated a channel between the pit and the lake.
17) The boat was floated out into the lake, sailing the Sea of Galilee for the first time in two millennia.
18) The boat was brought opposite the Allon Museum and lifted on to land by a huge crane.
19) Within a record ten days a reinforced concrete conservation pool was built by the museum. The boat was then placed inside the pool.
20) The boat in its conservation pool, prior to the introduction of PEG.



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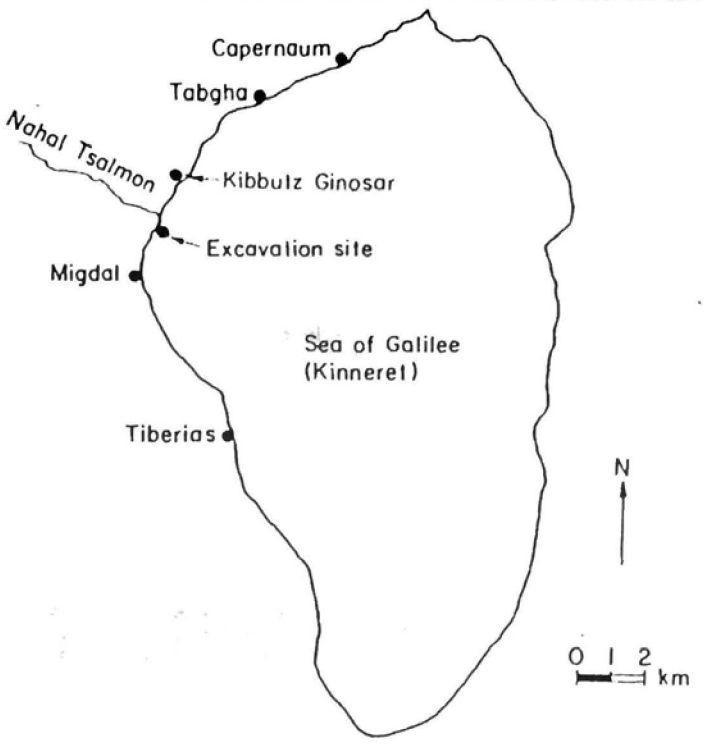

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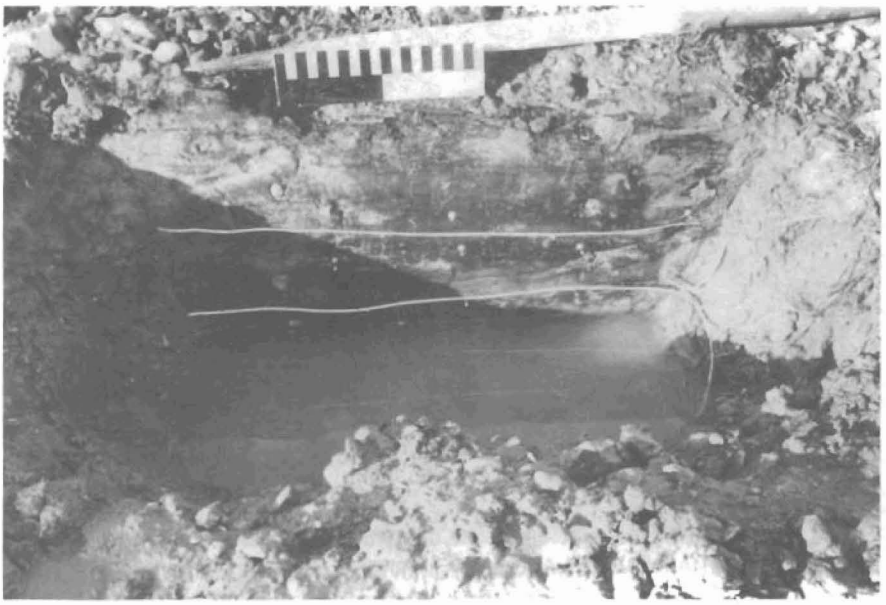

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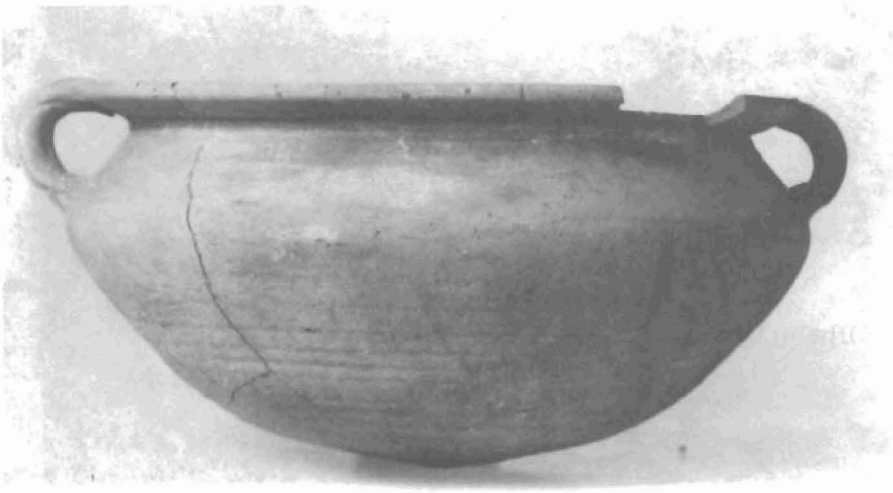

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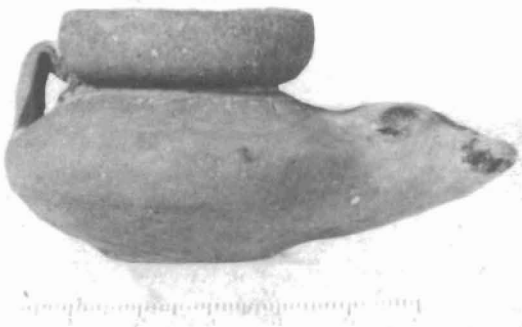

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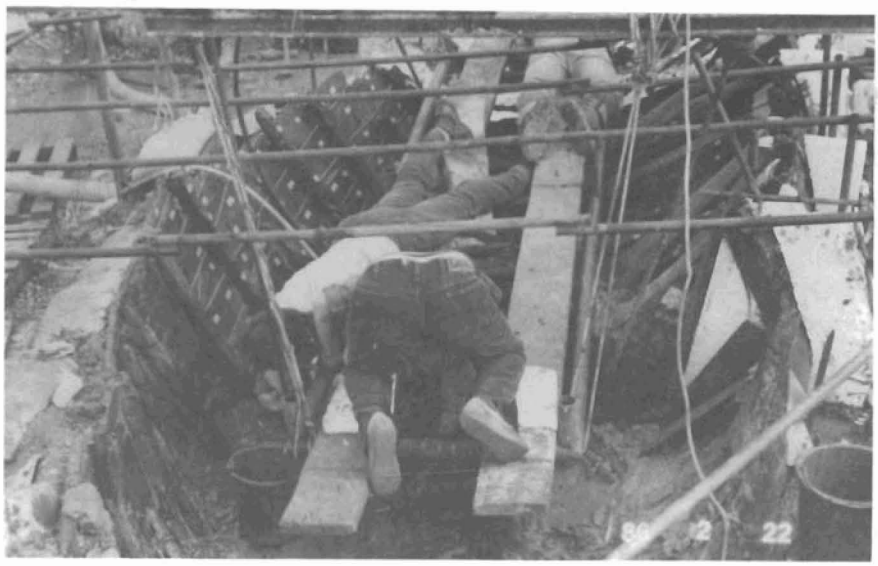

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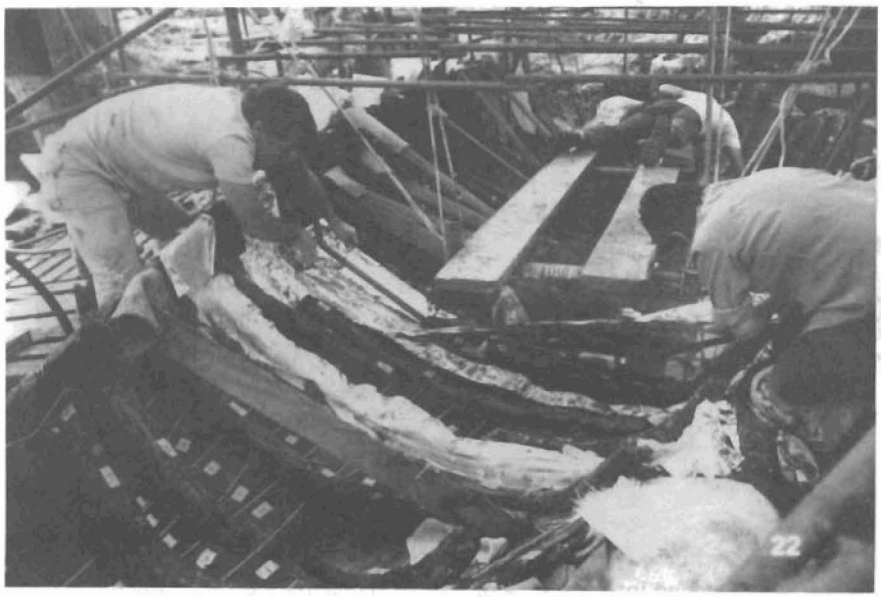

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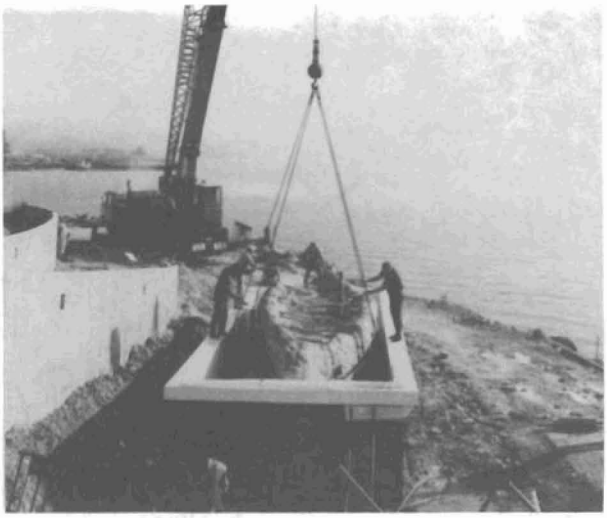

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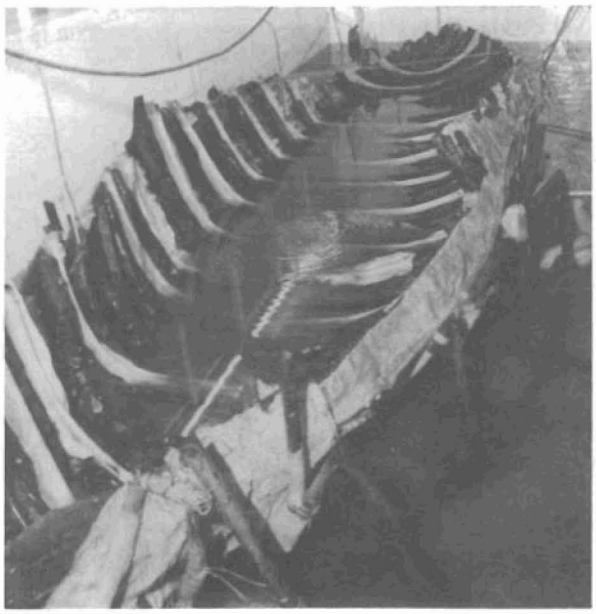

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