



Fig. 2. Detail of W-2 element with rectangular recesses (Photo: N. Sheizaf)

One must keep in mind that the measurements were taken under rough conditions and only where available, but they were not the only means of documenting that was used during the excavation. Underwater photography, video filming and drawings (carried out by Chris, Kitty and Jimmy Brandon) were other significant means of documenting.

Although at first the wreck was thought to be parts of two or even three different vessels, as the excavation progressed it seemed more probable that all the parts belong to the same ship. By the end of the excavation a maximum depth of about one meter below sea level and a total working area of 4.1 m from north to south and 5 m from east to west was reached.

As for other features of the wreck, some traces of color were found on the inner and outer sides of the hull and samples were sent for analysis to the University of Pisa. Samples of wood were sent to a laboratory in Switzerland as well as to the Weizmann Institute for ^{14}C dating. The most significant finds that were excavated in the site, although detached from the main ship section, were three 'deadeyes', which led to the assumption that this was a 'modern' sailing ship, about 100 or 150 years old. Other dating analyses and further inquiry will prove this assumption either right or wrong.

The excavation was only the first step, and now is the time to take a closer and a more detailed look at the wreck, to try and answer the questions regarding the method in which the ship was built, for what purpose and by whom. Where was she heading and what happened to her? Kurt Raveh has suggested that the wreck is the remains of a vessel made of boats and wood by Napoleon's troops, who made a stop at Tantara on their way to Jaffa in May 1799. Some sort of a craft was built in a hurry in order to float the heavy artillery off the shore and sink it in deep water. Further investigation of the historical and archaeological finds is needed to determine if this is so.

Deborah Cvikel

THE *DOR DW2* WRECK - 2002 EXCAVATION SEASON

The excavation of *DW2* is a collaborative project of the University of Haifa, Leon Recanati Institute for Maritime Studies (Ya'acov Kahanov, Idit Yovel), the Israel Antiquities Authority, Marine Archaeology Branch (Ehud Galili and Jacob Sharvit), the Nautical Archaeology Society, Great Britain (Chris Brandon) and Aqua Dora 2000 Diving Center (Kurt Raveh). The 2002 excavation was the third season at the *DW2* site.

The site is 3 m deep and has been under study since 1998 when it was first excavated as a rescue excavation by RIMS together with the Israel Antiquities Authority and Aqua Dora. The 2002 excavation was limited and aimed at supplying missing details. The ship was located on the first day and the protective sandbags were quickly exposed. The sand was only partially removed, mainly to expose the edge of the ship and a few specific hull items. This time, the focus was on details concerning ship-building techniques, especially the joints and attachments between the keelson and the floor timbers, and the keelson and the mast step. Apparently, no joints were made between the keelson and the floor timbers, and the mast step was connected to the keelson by six metal nails, three at each side. These features were exposed for additional recording and measurements.

Since the dating of the ship is as yet inconclusive, a few samples were taken for ^{14}C and dendrochronological analyses (Fig. 1). The wood samples for ^{14}C were taken by Avner Hillman with the help of Yevgenia Mintz of the Radiocarbon Dating Laboratory of the Department of Environmental Sciences and Energy Research in the Weizmann Institute of



Fig. 1. Dor (Tantara) *DW2*. Cleaning the upper deck for dendrochronological sampling (Photo: N. Sheizaf)



Fig. 2. Dor (Tantura) DW2. Sampling one of the frames for ^{14}C analysis (Photo: N. Sheizaf)

Science (Fig. 2). The samples were taken from specific timbers, those with bark remaining, and from ropes. Additional samples for ^{14}C dating were sent to Georges Bonani of the Institute of Particle Physics, Zurich, Switzerland, and a few selected timbers, with as many tree rings as possible, were sampled and delivered to Nili Liphshitz for dendrochronology analysis. Organic materials, such as ropes, caulking, sealing and resins, were sampled and sent for analysis to the Department of Chemistry at the University of Pisa, Italy (headed by Maria Colombini and Erika Ribechini). This laboratory gained much experience in analyzing similar materials after its involvement in the excavations of the shipwrecks recently found and excavated in San Rossore, Pisa.

During the excavation, the drawing of the shipwreck was completed by Jamie Brandon and Katherine Brandon, supervised by Chris Brandon. More photographs were taken for recording and to fully back up the information.

After four days, we were able to sandbag and cover the ship. It is hoped that the recent excavation is the last one. The recording, drawing, photography, measuring and the laboratory analyses are now being completed.

Idit Yovel

TELL ABU HAWAM

Tell Abu Hawam, a site on the estuary of the Qishon River north of the Carmel ridge in modern Israel, has been a constant companion to archaeologists in the quest of international contacts and trade, especially between the Aegean and the Levant. The favorable position of the site as an anchorage in antiquity was matched by its central location in the modern industrial development of the area, starting during the British Mandate and continuing after the establishment of the State of Israel.

Since the mid-80's, the then Center for Maritime Studies has been involved with the excavation projects at the tell alongside Jacqueline Balensi from the CNRS. Besides a Spanish team headed by Dolores Herrera, Avner Raban conducted some geomorphological tests which became the basis for an M.A. thesis of Yitzhak Galanti, and Michal Artzy conducted an educational excavation for students of the University of Haifa.

The modern history of this important early harbor, presently in the Haifa municipality, has not been good. The estuary and its general position at the foot of the Carmel Ridge is tempting for an anchorage. The narrowness of the country and its proximity to important sources of revenue in the Middle East made the area even more attractive. Industrial development following the port development started in the 19th, and especially the early 20th centuries. With the British Mandate industrial development came 'salvage' archaeological projects in the area of Tell Abu Hawam, which culminated in that of William Hamilton, who also proceeded to publish the results of his, at times, hurried project. Even before the Hamilton project some damage to the site was done by contractors, although its extent is questionable. Off and on, smaller excavations of the site took place, for instance that of Anati in 1963. The 1985-6 excavations followed Balensi's tenacious belief that parts of the site remained intact, despite the fact that following Hamilton's extensive project the site was no longer recognized as such.

With new public works in the area, Michal Artzy was approached to conduct two separate excavation projects in the area of Tell Abu Hawam. The work was carried out in the second part of 2001 and 2002. Shalom Yanklevitz and Yossi Salmon were joined by Uzzi Ad and Amani Abu Hamid from the Israel Antiquities Authority.

The first, and main, project, was carried out on the northeastern outskirts of the tell, as it was known by Hamilton and Balensi. The squares were laid in the road leading to the modern Qishon harbor, an active area, teeming with trucks. This is an area that had never been previously exposed. Despite the difficult physical conditions of the layout of the