

Robert Étienne/Yasmine Makaroun/François Mayet, *Un grand complexe industriel à Tróia (Portugal)*. Éditions E. de Boccard, Paris 1994. 189 Seiten, 57 Abbildungen, 30 Tafeln.

M. Ponsich and M. Tarradell's ground-breaking book, *Garum et industries antiques de salaison dans la Méditerranée occidentale* (1965), augmented in a Spanish second edition by Ponsich in 1988, on salting factories in Spain and North Africa focused light on the archaeological evidence for fish processing, the pro-



ducts of which frequently find mention in ancient literature. Since that time studies on Spanish amphora shapes by L. M. BELTRÁN (*Las ánforas romanas en España* [1970]), on the interpretation of amphora inscriptions by F. ZEVI (*Arch. Class.* 18, 1966), and on amphora evidence for Spanish exports, especially that found in Ostia under the Terme del Nuotatore, by F. BERTI, A. CARANDINI, and C. PANELLA (*Stud. Miscellanei* 16, 1968/69; 21, 1972; 22, 1977), have brought into clearer focus the prominent role which commerce in salt-fish products played in the economy not only of the provinces concerned but also of the Roman empire generally. These works, however, have concentrated on sites primarily along the southern littoral (Baetica and Lusitania), only mentioning in passing, if at all, evidence from other areas of Roman Spain. This attention to the Strait of Gibraltar, to the near exclusion of other potential areas of importance, has tended to skew our picture of the Spanish salt-fish industry and so to limit our understanding of the role of Spain in Roman economic history.

In recent years this problem has begun to be addressed, particularly with respect to Tarraconensis and Lusitania north of the Algarve. Excavations at Punta del Arenal (G. MARTÍN/D. SERRES, *La factoría pesquera de Punta de l'Arenal y otros restos romanos de Jávea [Alicante]* [1970]) and A. M. ROSAS (*Nolla-Brufau. Papers in Iberian Archaeology* [1984]) on the Mediterranean coast and in the Plaza del Marques in Gijón (F. OCHOA, *Una industria de salazones de época Romana en la Plaza del Marques* [1994]) on the Atlantic coast of Tarraconensis are examples of the former. Lusitanian amphorae have received separate treatment (A. J. PARKER in: *Méthodes classiques et méthodes formelles dans l'étude des amphores* [1977]), while the Lusitanian saltfish industry formed the core of a recent book (J. C. EDMONDSON, *Two Industries in Roman Lusitania: Mining and Garum Production* [1987]). To these publications comes now the volume under consideration. The contribution of the authors on the salting installation at Tróia in some ways may be the most significant work since that of Ponsich and Tarradell appeared thirty years ago.

Étienne *et al.* focus on the excavated portions of a single industrial complex at Tróia, located south of Lisbon on the left bank of the Sado River, opposite Setúbal (ancient Caetobriga, the authors argue convincingly), and made up, in its most complete form, of a salting factory, private bath, amphora warehouse, and villa. Since much remains unexcavated, the results are only preliminary. Nevertheless, tentative conclusions drawn from their study are notable. Although the authors discuss in some detail the bath complex, extant only in its late imperial manifestation, I will limit my comments primarily to the salting installation which shows activity and modification over a period of four centuries.

Limited excavations, particularly soundings in various salting vats, in conjunction with datable amphorae (Dr 14 and Almagro 50, 51a-b, 51C) and terra sigillata (Italic and North African) discovered in and around the factory, permit the authors to construct a tentative chronology for the salting installation. They argue that Roman habitation of Tróia does not antedate the principate of Claudius and that commercial contact with Italy dates to the same period. Fish salting activity seems to have begun with initial Roman occupation, and in its first phase, ending ca. late 2nd century, the factory, really two conjoined factories designated I/II, had a salting capacity of over 606 cubic meters (at present its maximum size is unknown). Only the saltery at Lixus in Mauretania Tingitana, with 1013 cubic meters, was larger. Why a disruption in activity occurred throughout Tróia in the late 2nd century is unknown, but in the early 3rd century the factory resumed operation and underwent structural modification. At this point, Factory I was divided into three parts, and one vat of Factory I C was converted into the *apodyterium* of the bath constructed at this time. In Phase III, beginning in the 4th century, Factory I B was joined to Factory II to form a separate factory, while several salting vats (in I A and I B/II) were subdivided into smaller basins. The factory continued to function until the mid-5th century A. D. when it ceased production.

Two particular aspects of excavations at Tróia bear emphasis because of their potential contribution to our understanding of the Roman economy. First, complex I/II would constitute the largest salting factory thus far excavated in Spain. If one includes other factories on the peninsula of Tróia, and the number may approach 50, the fish salting capacity of the peninsula would far exceed that of any area known to date, producing, the authors estimate, perhaps as much as 12,500 cubic meters annually, enough to fill two million Dr 14 amphorae. This is clearly more than local consumption could possibly accommodate and so strongly implies an active long-distance export trade. The authors cite this as clear evidence for market capitalism, while denying any industrial monopoly, private or presumably state-owned. They postulate a situation similar to that suggested for Gades, where *negotiatores* exported products for numerous private producers who sold at a centralized market. Although the authors do not explicitly suggest the existence of a com-



mercial monopoly, it seems to be implied. This is not at all certain, however, even for Gades, and confirmation awaits further study. To be sure, however, the apparent vigor of fish processing in the area during the third and fourth centuries may necessitate further reevaluation of the assumed pervasiveness of the third century "crisis" in Spain.

Second, the subdivision of large basins into several smaller ones during Phase III, the authors tentatively propose, might suggest an increased use of smaller fish, mackerel and sardines for example, and so a corresponding enlargement in the proportion of fish sauce to salt fish produced. They connect this suggestion to the recognized, but thus far unexplained, phenomenon whereby over time vessels used to export Spanish salt-fish products underwent an evolution in shape. In Phase I, wide-mouth Lusitanian Dr 14 (= Beltrán IVb) amphorae, predominate, but beginning in Phase II, ca. early 3rd century, and subsequently the narrower mouth types, Almagro 50, 51c, and 51a-b, prevail. Indeed, evidence from Italy and elsewhere indicate that it was at this same time that Dr 14 amphorae disappear from salt-fish trade to be replaced by the Almagro types. This is an intriguing hypothesis, but its application to other salt-fish vessel types (Dr 7-13) from Baetica and elsewhere remains doubtful. And besides, the authors admit that only the proportion of fish sauce to salt-fish changed; salt-fish continued to be manufactured as before. The assumption, however, that large fish, such as tunny, would presumably require larger vessels does not necessarily follow. Fish were usually cut up into various shapes and sizes and could be so cut as to fit the mouth of most any large-capacity vessel.

The book itself is attractive, if not sturdily constructed. One could have hoped for a more complete bibliography and fuller indexes, but the volume is lavishly illustrated with 57 figures and 30 plates, 4 in color (6, if one counts the book's covers), all of uniformly high quality. One source of irritation, however, comes from a few instances when the reader confronts unhelpful suggestions to follow detailed descriptions. For example, on p. 33, when discussing Basin 15, the reader is referred to Figs. 56 and 57. These figures, however, lack basin numbers, thereby forcing the reader to search elsewhere, this time to Fig. 51, to locate Basin 15. Again, discussing the same basin, the reader is referred to Fig. 10 to see Wall B, only to discover that it is not designated there. One must consult Fig. 30 to see which is Wall B. In other words, the reader must have several plans spread out before him at once to follow the descriptions. The authors have also occasionally obscured some points important to understanding the function of this salting factory and how it relates to others in the Western Mediterranean. One learns, for example, only in the discussion of comparative material that just the small vats at Tróia have the "cuvette" in the bottom for cleaning, and then only in Phase III. These are rather minor problems in what is an important book characterized by clear descriptions, reasoned conjectures, and helpful illustrations.

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