the separation of external and internal trade' (p. 25). For her, although she does not put it this way, to show that Naukratis was a 'port of trade' is to show that Finley's picture in *The Ancient Economy* was correct. I am doubtful.

From the economic point of view the essential features of the 'port of trade' (by contrast to such non-Polanyian concepts as the 'gateway community') are that it lies on the boundary between two different economic systems and is a device of administered trade, in which long-distance trade and local exchange are kept separate, so that the market place operates only for local goods, and access to the goods from the hinterland is controlled by a political power and not by market forces. But to accept that at Naukratis Egyptian grain, linen, etc. were acquired in conditions where price was determined by political considerations rather than by supply and demand says nothing at all about the conditions that applied elsewhere in the Mediterranean (at p. 42 M. seems to see that she needs to have 'ports of trade' everywhere, but sensibly retreats from claiming that).

The weakness of this book as a contribution to the study of the ancient economy lies in its failure to identify what might be at issue. M. admits (p. 41) to 'failing to find one satisfying definition of trade' and proceeds instead to list the possible ways in which an object might be exchanged. But the dispute is not over whether or not objects were exchanged in a variety of ways and on a variety of conditions. It is over whether or not the terms and conditions of exchange at one place at which Greek goods were exchanged might affect the terms and conditions of exchange at other places at which Greek goods were exchanged, or, to put it more crudely, whether there were those whose primary concern was not obtaining particular goods but obtaining profit, who would 'play the markets' to achieve that goal. Even if the terms on which Greeks obtained goods at Naukratis were not affected by the terms on which they obtained the same goods elsewhere—and nothing in the Naukratis evidence actually demonstrates that the political conditions of sale in Egypt were impermeable to 'market forces'—that does not mean that the reverse was true.

Naukratis was an exceptional place and, as this book shows more clearly than ever before, has produced a unique archaeological assemblage. But to understand the implications of that assemblage we need not just a clear hypothetical model of the economy as a whole but an equally full knowledge of the archaeology of the east Greek cities and of the eastern Mediterranean more generally, tasks that await a future cohort of graduate students.

M. has not been well served by her translator or her copy editor. Mistranslated phrases such as 'the supposition . . . cannot be ascertained archaeologically' (p. 63) and 'either erroneously or consciously' (p. 193) obscure her prose, and the treatment of level 5 headings as if they were level 1 headings (printing, in both Chapter V itself and in the Contents, the headings of excursuses to the sub-sub-sub-sections of the chapter in the same style as the heading to the chapter itself!) makes nonsense of her structure.

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TRADE AND INDUSTRY

D. J. MATTINGLY, J. SALMON (edd.): *Economies Beyond Agriculture in the Classical World.* Pp. xii + 324, figs. London and New York: Routledge, 2000. Cased, £50. ISBN: 0-415-21253-7.

The debate on the economy of classical antiquity has in recent years been dominated

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by an extreme reaction against Finley's *The Ancient Economy*. That is a pity. Whatever its shortcomings, the book was an invitation to develop new, and ultimately more satisfying, ways of understanding the Greco-Roman world by recognizing the predominant position of agriculture. Here the latest product of the deservedly praised Leicesteir–Nottingham series of studies in ancient history has a very important contribution to make. While Finley was mainly interested in identifying the limits to the development of commerce and manufacturing in antiquity, archaeologists especially have been faced with the task of making sense of a material record providing abundant evidence of those activities around the Mediterranean. Such a difference of perspective has not been conducive to constructive debate. Now, however, rather than persevering in a sterile rejection of Finley's ideas, *Economies beyond Agriculture* attempts to engage constructively with a basic agrarian perception of the economy. Its aim is to find ways of accommodating and integrating our understanding of trade and urban manufacture within the narrow range set in the ancient world by the dominance of agricultural production, often subsistence oriented (p. 4). Hence the focus is on exploring historical and geographical variations within Greco-Roman civilization in qualitative and quantitative terms.

The book has thirteen chapters divided into four parts, plus an introduction. Broadly speaking, the quantitative approach dominates the two middle sections, dealing with mining/quarrying and building activities, respectively. Much interesting material is presented here. Rihll's detailed analysis of silver production in the Laureion mines demonstrates the immense importance for Athenian society of not just the final product but also the extractive operations as such. For instance, the mines probably required a supply of 4 tonnes of food per day, and for each finished silver drachma 18 kg of wood had to be turned into charcoal. In the aggregate, the figures were very substantial, and silver extraction must have had repercussions in many sectors of the economy by spawning subsidiary activities.

The attempt to trace the significance of economic phenomena within broader social and economic contexts is a characteristic strength of many contributions. Analysing the Delphic temple of Apollo, John Davies argues that public building had far-reaching side-effects on the societal infrastructure through road building and the development of new administrative, organizational, and technological skills. On the other hand, we learn, perhaps surprisingly, that the Roman imperial quarrying of stone under extreme conditions in the eastern Egyptian desert depended much more on the availability of such larger organizational powers than on pure imperial spending capacity. Thus Colin Adams estimates the price of producing the twelve grey granite columns standing in the Pantheon portico and bringing them from the quarry at Mons Claudianus to the Nile at around HS 300,000 (p. 187). The sum is considerable, but not beyond the capacity of many Roman aristocrats. What they lacked, however, was the large administrative system of Egypt available to the emperor. As documented admirably by Adams (and Valerie Maxfield in an additional article), the quarry operations had to draw widely on this system in order to function, and it is to a large extent that which makes them a truly imperial project.

Taken as a whole, the essays demonstrate the value of speculative quantification in the absence of good statistics. Adams's costing, for example, is only a very rough estimate which leaves out some expenses difficult to price. But even a crude, imperfect figure allows us to sharpen our conception of the situation. Were we to double or triple the figure it would still not make much difference to our basic conclusion. Such figures should not mistakenly be condemned as failed or irresponsible attempts to generate exact numbers. They must be seen as useful heuristic devices that help us to choose

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between competing conceptions and to form clearer notions of the basic economic mechanisms of the ancient world.

With this we have reached the theme of model-building which dominates the first and last parts of the book. Central concerns are the notion of growth and the economic foundations of the ancient city. A pioneering project has applied field walking to the largely unexcavated Roman site of Leptiminus in Tunisia, to explore urban variations/deviations from Finley's 'ancient city', funded by aristocratic consumption of the agricultural surplus. Mattingly et al., on the basis of substantial 'industrial' debris in the suburban area, present the city as the centre of an extensive production of amphorae intended as containers for large quantities of olive oil, produced in the region and exported from the harbour of the city. Whether we should, in fact, accept the label 'producer-city', as suggested by the writers, I am not entirely sure. It tends to obscure the continuing importance for the financing of urban life of agricultural revenues, not least those drawn from the oil export itself. Leaving such quibbles aside, the analysis of Leptiminus significantly contributes to our understanding of the scope of variations in the economic basis of the ancient city. It shows us how the inclusion of Leptiminus in larger networks of surplus consumption gave it the function of an agro-exporter, making an independent contribution towards turning the agricultural surplus into a flexible resource.

More problematic is Andrew Wilson's suggestion that Roman Timgad in North Africa should be seen as a producer-city based on cloth production. From the old excavation records he has identified twenty-two fulling establishments, most of household size and only roughly dateable between 100 and 400 A.D. Even in the unlikely event that all were working simultaneously, we are still far from the prominent cloth-producing cities of the Middle Ages that originally gave rise to the notion. Florence, for example, probably had 30,000 cloth workers around 1300. Allowing about ten per unit in Timgad, we are still only looking at 220 workers in total. Wilson has, of course, rightly reminded us that productive activities may have made a subsidiary contribution to the city's economy. But it is also essential to keep the limits in mind, as John Drinkwater argues for the Gallo-Roman woollen industry in his chapter.

Limits are also the subject of Paul Millett's theoretical contribution which discusses concepts of economic growth and their usefulness in a Greco-Roman context. From a modern perspective the essential feature is per capita growth. That is not easily identified in antiquity, as Millett observes. The exception may be the Roman Empire in the first two centuries A.D. Following Hopkins's famous taxes and trade model, and adding Karl Persson's theories on pre-industrial growth, he suggests that the imperial economy may have seen a number of gradually more efficient technologies evolve that allowed for some growth. The scenario certainly is consonant with the larger scale of economic activities during Roman times that is documented by archaeology. But some forces pulled in the opposite direction, most importantly population growth. The concomitant increase in cultivation of more marginal land will inevitably have reduced the gains considerably. The *Annales* historians and Boserup remind us that per capita growth is a problematic yardstick of economic performance in a world dominated by agriculture: per capita income rose in Europe after the Black Death while economic activity plummeted. On the other hand, most agricultural expansion came at the price of lowered productivity. Such a process of falling marginal returns, nonetheless, still produced a considerable growth in total aggregate production before it reached its limits. It is precisely for such aggregate growth that archaeology offers fairly unambiguous evidence through a greater accumulation of material finds under the Empire. Perhaps it is for this we should be looking rather than for rising per capita production.

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Anyhow, these are the sorts of discussions we should be having in the coming years. This collection of papers is an important and valuable attempt to set them off in the right direction, containing more interesting material and analysis than I can cover here. I recommend it warmly.

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THE SEA IN HISTORY

B. CUNLIFFE: *Facing the Ocean. The Atlantic and its Peoples 8000 BC–AD 1500*. Pp. viii + 600, ills, pls. Oxford: Oxford University Press, 2001. Cased, £25. ISBN: 0-19-824019-1.

There is a revival of interest in the sea as the focus for the study of the *longue durée* of classical and medieval history and/or archaeology. In 2000, we saw the publication of *The Corrupting Sea* by Horden and Purcell (reviewed in *CR* 51 [2001], 99–102), which effectively presented the Mediterranean from the second millennium to the later Middle Ages. *Facing the Ocean* by Barry Cunliffe deals with the Atlantic from an earlier period through to 1500 a.d. Its approach in some ways is similar to that of Horden and Purcell: both have as their starting point Braudel's *Mediterranean World* and place a stress on the interconnection of regions and places. But, on opening the book, we find major differences: illustrations lavishly produced in colour and C.'s clear style that is aimed to include all potential readers whatever their background.

The book ranges from South-West Morocco northwards via Portugal, Northern Spain, Brittany, and Cornwall to Ireland and Wales, and then on up to Scotland, finally stopping at the Shetland Islands. Much of the first two chapters are spent discussing the unity of this arc of land on the edge of the Ocean. Through the use of maps, C. breaks down our perceptual geography, based often on the modern nation states of Europe and North Africa, to create a fluid cultural zone with two core regions: a southern one based on the entrance to the Mediterranean and a northern one associated with the entrances into the Irish Sea and the English Channel. Tides, navigation, and archaeological evidence all combine to show that there is an interconnectivity of the Atlantic, which will surprise those who see a uniqueness of such a phenomenon in the Mediterranean. Once this region is set out, C. defines its interconnection with the Mediterranean via rivers and new structures, most notably roads, built by Rome to overcome the geographies of distance and isolation of the Atlantic seaboard from other routes. The argument here is convincing and points to an alternative manner in which to approach the geography and cultures of North-West Europe during the Roman period.

When we turn to the central chapters dealing with the classical period, we find a compelling explanation of difference across the Western Provinces of the Roman Empire. This is done in terms of routes and modes of contacts between the 'barbarian' cultures and Rome. There is one route to Britain focused on the Rhine, notably connected to the Po by a road built by the emperor Claudius, and another route that led to Britain from the Loire to Cornwall, the Bristol Channel, and Ireland. The latter, distanced from Rome or the Rhine armies, points to a different mode of contact and interaction between the West and Rome, and in consequence a distinctiveness to its material cultures when compared with South-East England, whose contact with Rome focused on the Rhine.

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