



TEIRESIAS-TEIPEΣΙΑΣ

A Review and Continuing Bibliography of Boiotian Studies

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ARCHAEOLOGICA

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EDITORIAL

From the very beginning of *Teiresias*, it was the intention to publish reports on archaeological activities in, and concerning Boiotia and notes of Museum holdings and new acquisitions of Boiotian material. Indeed some reports and notes of these types have appeared (*Teiresias* 71.1.1; 71.1.5; 71.2.1; 73.1.1; 74.1.1; 74.1.2) but only irregularly. As part of the current reorganisation of this journal, the *Archaeologica* will henceforth appear as a separate and expanded section.

The new *Archaeologica* will contain a variety of items, according to availability: reports on excavations and other field projects in and around Boiotia, reports on other research projects concerning Boiotian material, accounts of Boiotian material in museums and even private collections, articles summarizing recent work in the domain of Boiotian archaeology, and announcements of and correspondence concerning related projects and facilities. The preceding list is not meant to be exhaustive and any other relevant material will be included as available, except for purely

EDITORIAL

Dès les tous débuts de *Teiresias*, c'était notre intention que de publier des rapports couvrant les activités archéologiques en, et concernant la Béotie, et de noter pour divers Musées les collections et nouvelles acquisitions de matériel béotien. Pour sûr, quelques rapports et notes à cet effet ont bien paru (*Teiresias* 71.1.1; 71.1.5; 71.2.1; 73.1.1; 74.1.1; 74.1.2) mais seulement de façon irrégulière. Dans le cadre de la réorganisation de cette publication, laquelle est présentement en cours, les *Archaeologica* se voient désormais attribuer une section distincte et augmentée.

Les nouveaux *Archaeologica* regrouperont une variété d'items, suivant les informations disponibles: rapports au sujet de fouilles ou autres projets sur le terrain en et aux environs de la Béotie, rapports traitant d'autres projets de recherche concernant du matériel béotien, comptes-rendus de matériel béotien dans des musées ou même dans des collections privées, articles résumant les récents travaux dans le domaine de l'archéologie béotienne, les annonces et la correspondance touchant des projets et services connexes. La liste ci-dessus



bibliographic references which will, of course, continue to be listed in the normal part of *Teiresias*. The *Archaeologica* will, accordingly, not be limited to activities of any one time period. Furthermore, contributions can, and, it is hoped, frequently will be of an original or semi-original nature. Publication of material in these pages does not preclude its later use in fuller treatments to appear elsewhere; meanwhile this section of *Teiresias* will provide quick and ready access to an international readership including many of those most immediately concerned with Boiotian archaeology.

All colleagues with announcements, articles and summaries relevant to Boiotian archaeology are accordingly warmly invited to send their typewritten texts (double-spaced, single sides, please) to the editor of the *Archaeologica* who reserves the right to standardise editorial appearance but who will not alter content in any way; in order to lighten editorial work contributors should use the usual *Teiresias* bibliographic abbreviations. Footnotes should be reduced to an absolute minimum, bibliographic references being given in text within parentheses. Line-drawings should be included as appropriate but no editorial work will be possible on these;

ne se veut pas complète et tout autre matériel pertinent viendra s'y ajouter suivant les disponibilités, exception faite des références strictement bibliographiques, qui, bien sûr, continueront d'être énumérées dans la section principal de *Teiresias*. Les *Archaeologica*, en conséquence, ne se limiteront pas aux seules activités d'une période en particulier, et ce quelle qu'elle soit. En outre, les contributions apportées, pourront être et - nous le souhaitons - seront fréquemment de nature originale ou semi-originale. La publication de matériel dans ces pages ne limite en aucune manière sa réutilisation sous forme plus développée lors de publications ultérieures; entretemps cette section de *Teiresias* permettra de communiquer rapidement et facilement avec des lecteurs de toutes les parties du monde, lecteurs dont plusieurs sont de ceux qui s'intéressent le plus à l'archéologie béotienne.

Tous nos collègues disposant d'annonces, articles et résumés pertinents à l'archéologie béotienne sont donc chaleureusement invités à en faire parvenir les textes dactylographiés (double interligne, recto seulement, S.V.P.) à l'éditeur des *Archaeologica*, lequel se réserve le droit de standardiser la forme de l'édition finale mais n'en altérera, d'aucune manière, le contenu initial. De manière à alléger le travail d'édition, ceux qui présentent des textes devraient faire également usage des abréviations bibliographiques utilisées dans *Teiresias*; les notes en bas de page devraient être réduites

they should, therefore, be ready for publication at our page-size, which, after deduction for margins, is 15 cm x 22 cm, otherwise it will not be possible to publish them. Photographs should also be submitted as appropriate, but since in reproduction by offset some clarity is lost, prints submitted should already be of high contrast; their typewritten captions should be fastened to their backs. Communications of all sorts can be published in either English or French and should be submitted, in one of these two languages, to the editor of the *Archaeologica* at the following address:

au plus strict minimum, les références bibliographiques étant fournies entre parenthèses dans le corps même du texte. Les dessins au trait devraient être inclus tels que requis mais ils ne pourront faire l'objet d'aucun travail d'édition; ces dessins devraient donc être prêts pour publication dès leur soumission, se conformant à notre format usuel, lequel - marges en moins - est de 15 cm x 22 cm; si ces conditions n'étaient pas respectées, les dessins ne pourraient être publiés. Des photographies devraient aussi être soumises au besoin, mais comme lors de la reproduction par offset leur netteté se trouve diminuée, les impressions à utiliser devraient déjà présenter un fort contraste; leurs légendes dactylographiées devraient être fixées à l'endos. Les communiqués de toutes sortes peuvent être publiés aussi bien en anglais qu'en français et devraient être soumis, dans l'une ou l'autre de ces langues, à l'éditeur des *Archaeologica* à l'adresse suivante:

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CHEMICAL ANALYSES OF BOIOTIAN CERAMICS

John M. Fossey

In the second fascicule of *Teiresias* a summary was presented of the status of composition and provenance studies of ancient ceramics with relation to Boiotia [*Teiresias* 71.2.1. q.v. for earlier bibliography]. The last few years have seen considerable development of the application of physicochemical techniques to these problems and the time is now ripe for a review of progress in regard to Boiotian material. Up to c. 1970 the technique used for the investigations had been that of optical emission spectroscopy and the concentration on Aegean ceramics that of the Oxford Research Laboratory. The archaeological collaborator in the Oxford group was Dr. Hector Catling who in 1971-72 became Director of the British School at Athens; his term at the School has seen the welcome creation there of the Fitch Laboratory, the first purely archaeometric laboratory in Greece. The Fitch Laboratory, administered by Dr. Richard Jones, has continued work on ceramic composition studies using essentially the same technique. Some reactions and criticisms of the results previously achieved by the Oxford group caused a reconsideration of the most important part of that series of investigations, that which concerned the Linear B inscribed stirrup jars from Thebes. Unfortunately the many other analyses of material from a variety of sites, including six in Boiotia, announced in *Archaeometry* 1967, still remain unpublished over a decade later. It might help consideration of the published material if these extensive comparative data were available. May we here enter a very strong plea for their speedy publication.

Alongside of continued use of optical emission spectroscopy a number of other methods of physical analysis has been applied to ceramic studies. Two show potential value but have not yet been extensively used: Atomic Absorption Spectroscopy [cf. Hughes, Cowell and Craddock, *Archaeometry* 18 (1976), 19-37] and X-ray Photoelectron Spectroscopy [cf. Lambert and McLaughlin, *Archaeometry* 18 (1976), 169-180]. The latter has already in fact, been used to compare results from the Oxford programme, but not in so far as concerns Boiotia yet, merely confirming the cohesion of the large "Kretan" and "Peloponnesian" groups [Lambert, McLaughlin and Leonard, *Archaeometry* 20 (1978), 107-122]. More frequent application has been made of Neutron Activation Analysis which has already touched upon Boiotian wares; three programmes of investigation of Aegean ceramics by this technique have been and are being carried out at the Brookhaven National Laboratories [Harbottle, Sayre *et al.*], at the Lawrence, Berkley Laboratory [Asaro and Perlman], and at McGill University [Attas, Fossey and Yaffe]. These programmes should eventually give considerable data for the trace element composition of pottery from very many locations in Central Greece (including Boiotia) and the Peloponnese. It is, moreover, becoming easier to compare the results from different laboratories

[Yellin *et al.*, *Archaeometry* 20 (1978) 95-100]. One of the important results of the development of NA analysis has been the introduction of many rigorous statistical methods of treatment of the raw analytical data [cf. Bieber, Brooks, Harbottle and Sayre, *Archaeometry* 18 (1976), 59-74].

Some of the recent discussion of the Oxford results has, in fact, focussed upon statistical considerations. One of the first studies to work on the statistical weaknesses of the Oxford programme was concerned particularly with the analyses of the Theban stirrup jars and thus was first published in abstract form in the pages of this journal [*Teiresias* 73.2.1]; the author of the study, J. McArthur, was to continue the work but meanwhile another statistical approach was taken by A.L. Wilson [*Archaeometry* 18 (1976) 51-58]. Taking the analytical results of the Oxford programme and assessing the correlation between observed values of the elements in each case and the range of values which should be expected at 80% confidence, it is shown that the observed values fall outside the 80% range much too often to permit confidence in the East Kretan origin posited by the original investigators for the Theban jars. Before dealing with the Oxford results as such Wilson had enumerated a number of general objections to the methods by which they were obtained. These objections may be summarised as insufficient comparative data, insufficient statistical techniques, and insufficient explanation of several of the deductive stages.

The East Kretan hypothesis had meanwhile found some opponents among Linear B scholars who found, in certain place-names given in the inscriptions of the Theban jars, stronger indication of a West Kretan origin. It is precisely at *Khaniá* in West Krete that fragments of similar stirrup jars with Linear B inscriptions have now been found. This led Catling and Jones to undertake fresh analyses of the original Theban samples as well as of a number of Khaniot samples, both from the new stirrup jars and from three reference groups of other Late Bronze Age pottery, and of a new reference group of Theban LH III B sherds. [*Archaeometry* 19 (1977) 137-146; to the bibliography of the critics which they give should now be added Raison. *Rev. Arch.* 1977: 1,79-80]. Two results of interest emerge. Predictably the Theban stirrup jars, which were previously assigned an East Kretan origin, are found to concur more readily with West Kretan sources as indicated by the *Khaniá* reference groups and the *Khaniá* stirrup jars. Secondly the Theban reference sherds are seen to split into *two* groups.

First the Theban stirrup jars. In all there are 25 of these vases, only 18 of which had originally been assigned to an East Kretan origin. It is only the latter 18 which have been re-analysed. Their seven companions have not been re-examined despite the changes in calibrations which have occurred in the last 15

years [Catling and Jones 1977, 138]. Nor have the other East Kretan samples of the earlier analyses (or other comparable East Kretan material) been analysed in the current series; one is thus left to wonder what has happened to the totality of the earlier groups F ("Zákrø") and O ("Palaiókastro"). Is *all* the East Kretan material now to be transferred to the West of the island, despite its find-spots? If not, what do the characteristic East Kretan clays appear to look like, and how do they compare with the new West Kretan ones? How do all these groups compare (with new calibrations, of course) to the original Kretan group B?

At the Kretan end this re-examination by Catling and Jones leaves many questions unanswered; several of these questions have now been squarely put by McArthur [*Archaeometry* 20 (1978) 177-181; Killen, apud Bintliff (ed.) *Mycenaean Geography* (1977), 40-47 builds upon the 'positive' results]. There is also a tantalizing reference, in an addendum, to analysis of an inscribed stirrup jar fragment from Tiryns which seems to fit within one of the *Khaniá* groups, but we are not told who performed the analyses and by what method, nor what the detailed results were. McArthur has also pointed to problems with two other Theban jars originally assigned to the large "Peloponnesian" group A; these have not been re-analysed, but the original data show that they too may now have greater similarities with one of the *Khaniá* groups.

Also at the Theban end there are question marks, not specified by McArthur but of most interest to *Teiresias* readers. We now have two Theban groups, as opposed to the one old group B*. As with the *Khaniá* reference sherds, the detailed results of the analyses of the twenty new Theban reference sherds are nowhere given, merely the average results for the two groups. *And* these groups are not compared to the old Theban group B* to which had belonged 3 of the remaining 7 Theban stirrup jars, and to which *yet* two others had been "close".

What then were the external contacts of Thebes in the late Bronze Age? For the answer to this sort of question is the main purpose of compositional studies in ancient ceramics. Were up to 80% of the Theban jars in fact imported from West Krete, the remainder being home-produced? Or were there, in fact, also Peloponnesian imports? How many sources of clay were used by Theban potters? One, two, or three? Were some of the "Theban" groups in fact derived from elsewhere, perhaps elsewhere in Boiotia?

Before any of the many outstanding questions can be answered - and in their totality they are much more important for Late Bronze Age studies than just the additional glimpse of West Kretan importance, welcome as that may be - many requirements must be satisfied. Some of the desiderata are as follows:

1. All of the original samples analysed should be re-analysed on the same calibrations.
2. The full details of all analytical data obtained on all samples by comparable methods must be published, including the many samples referred to in *Archaeometry* 1967.
3. All the sherds and vases sampled (not merely the Theban jars) should be fully catalogued from an archaeological point of view to allow stylistic comparison and chronological reassessment if necessary, for the Late Bronze Age is a long period of time.
4. The entire analytical data must then be subject to rigorous statistical tests using all available elements and not merely adding an element when it is obviously useful, as was done with germanium to separate groups B and B*. Such multivariate approaches as are now available are the only reasonable way to identify coherent groups within all the available material.

No doubt readers could supply more desiderata, but it is hoped that methodological improvements along these lines can allow us to realise the full value of this important work in Greek prehistory. The foregoing is said not in a spirit of negative criticism but in the firm belief that composition and provenance studies of this kind have a very great deal to contribute, and in the desire to see them advance in the most positive way possible. We have now come far beyond the stage of limited, initial exploratory projects, for nobody can now logically doubt the potential value of composition and provenance studies; we need a full synthesis of results obtained to-date, in a manner to satisfy both archaeometric and archaeological requirements. Such a synthesis can serve as the yard-stick of forthcoming projects and into it the results of such future programmes can be incorporated.

Finally let it be said that optical emission spectroscopy is obviously one valid means of approach, but with the development of other techniques, it might be worth (if possible) submitting the material to other analytical methods as a further check on the results achieved so far, especially when other and more elements might be so determined. For example it was impossible to distinguish more than one globally "Peloponnesian" group in the original spectroscopic analyses; analyses by Neutron Activation have already permitted the recognition of a number of smaller regional subdivisions within Southern Greece [apart from other references already given cf. Farnsworth, Perlman and Asaro, *AJA* 81:4 (1977) 455-468]. Again what is most needed is ever greater quantities of comparative data. It is worth noting that these NA analyses have already included the four Boiotian sherds from Eutresis; many more are planned for the near future.

VARIA

Quite recently students of Boiotian archaeology were saddened to learn of the death of Annie ("Nan") D. Ure. Together with her husband the late Professor Percy Neville Ure she had been responsible for a great deal of significant work in the study of Boiotian ceramics; their studies laid the foundations on which a number of scholars are currently able to base their work. It is, therefore, a great pleasure to include the following announcement concerning availability of her material in the future.

"Annie D. Ure"

"The Ure Museum of Greek Archaeology, Reading, has a quantity of photographs and manuscript notes, left by the late Dr. A.D. Ure, related to her research interests, especially in Boiotian and Euboean Pottery. Records of the Rhitsona excavations are also in the Museum.

"It is not possible to provide a detailed catalogue; however, the Curator wishes it to be made known that interested scholars are welcome to visit the Museum and examine the material. They should write to Miss J.F. Gardner, Dept. of Classics, The University, Reading, RG6 2AA, England".

Another recent loss keenly felt was that of Vincent R. d'A. Desborough M.A., B.Litt., F.B.A., F.S.A., who died in the summer of 1978. A leading scholar in Greek Dark Age studies, he had added considerably to our knowledge of developments in Boiotia from later Mycenaean times to the beginning of the Geometric era. In his three books, all of them definitive in their way, he often treated of Boiotia and the surrounding areas. His last task was his part in the publication of the results of the British excavations across the narrows of the *Euripos* at *Levkandí* in *Érvoia*; apparently his manuscript was completed before his death and will thus be his last direct contribution. It is not just for his scholarship that he will be sorely missed; even more will it be for the warmth and humanity that he brought to his quest and to his relationship with all his friends and colleagues.

THEBES MUSEUM

The Ephor of Boiotian Antiquities and Director of the Thebes Museum is currently Dr. Ólga Alexandrí, formerly of the Attike ephorate. Dr. Aikateríne Dhemakopóulou - Papandoníou continues as senior assistant in the ephorate of Thebes.
