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THE VALUE OF ANALYSES OF ARCHAEOLOGICAL OBJECTS

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Many chemical analyses of objects of archaeological interest that have been reported in the literature are quite without value to the modern scholar. This situation has been recognized by the users of data: Earle R. Caley had discussed the problem in his books *Analysis of Ancient Metals* and *Orichalcum and Related Ancient Alloys*; R. J. Gettens considers it in a review of Archaeological Chemistry published in *Science* (1964).

The failings of the useless reports reside largely not only in inadequate description of the objects analysed, together with lack of attention to the details of sampling, but also in lack of confidence in the accuracy of the analytical results reported.

A double attack on the inadequacies of analytical reports is now being made by the Working Group on Metals of the Committee for Conservation (formerly the Museum Laboratories Committee) of ICOM.

First, a statement has been approved listing the various pieces of information essential to a report. This is being presented for the attention of analysts and of museum scholars in the hope that they will take pains to provide and to insist on publishing this minimum amount of detail. The full statement is given below.

Second, a program of comparative analyses is being instituted by the Technical Laboratory of the Freer Gallery. Every laboratory which customarily analyses archaeological metals is urged to join this. You are asked to request 500 mg samples of two archaeological bronzes, one Chinese, the other from Luristan, to analyse these quantitatively by your usual methods, and report the results for comparison with those of other laboratories. You may remain anonymous if you wish.

INFORMATION REQUIRED IN A PUBLISHED REPORT OF ANALYSIS IN ORDER THAT THE REPORT SHALL POSSESS VALUE AS EVIDENCE FOR MUSEUM PURPOSES

1. Description of object, provenance or attribution, and location at time of report.
   [The analysis of an unidentified object is worthless. It must be made possible to find the object analysed, uniquely identified by its accession number or by its photograph, at some subsequent date.]
2. Location, on the surface of the object, of source of sample or site of non-destructive examination, described relative to some uniquely identifiable feature or, better, identified in a scaled photograph.
   [A sample may have been taken from a position that later studies of the type of object reveal to have been unrepresentative.]
3. Method of sampling, e.g. filing or scraping (state area abraded and weight removed), drilling (state diameter and material of drill), coring or trepanning (state diameters). Describe sample, for example: fine powder, long spiral drilling.

[This information may have a bearing on the trace elements reported by the analyst and on the possibility that corrosion products were present.]

4. Estimated depth from which portion of sample actually used for analysis was withdrawn.
[From this the reader will understand how well the small sample may represent the composition of the whole.]
5. Nature of preparation of sample, if any, e.g. removal by means of a magnet of steel abraded from drill, discard of first drillings, or other.
[This part of the procedure may have considerable influence on the precision reported in section 8.]
6. Details of method of analysis, including size of sample used and number of replicates, sufficient to enable the work to be repeated by another investigator.
7. Number of separate analyses made.
8. Result with estimated precision and accuracy, stated as standard deviation of the method, with a note on how this was estimated.

COMPARATIVE ANALYSES

Request documents (information on samples, reporting forms, and list of collaborators, already numbering 22) from Mr. W. T. Chase, Freer Gallery of Art, Technical Laboratory, 12th Street and Jefferson Drive, Washington, D.C. 20560, U.S.A.

REFERENCE

Gettens, R. J., 1964, *Science* **156,** 3775, 5 May, p. 634.