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CHARLES W. MEAD

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BY

CHARLES W. MEAD.

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INTRODUCTION.

The principal object of this paper is to put on record the results of one hundred and sixty analyses of prehistoric copper and bronze objects from Peru and Bolivia. These analyses were made for the American Museum of Natural History by Mr. W. A. Wissler. Also six specimens analyzed for the Museum by Doctors Morris Loeb and S. R. Morey, and five specimens analyzed by Professor S. P. Sharples for the Peabody Museum, Harvard University, for which I am indebted to the kindness of Professor F. W. Putnam.

The figures show most of the forms of objects from which samples of metal have been taken for these analyses.

In the following tables the amount of copper and tin is given. It was not considered important to determine the exact amount of the other metals, but their presence or absence is noted. For convenience, chemical symbols have been used.[1]

Mr. Wissler reports on his analyses, as follows: —

The table consists of analyses made at the American Museum of Natural History of prehistoric bronze and copper specimens from South America, to determine whether the addition of tin was intentionally and scientifically made.

Owing to the small amount of drillings taken for the analyses, in some cases only .07 gram, the results should be taken as a close approximation of the true composition.

Tin was determined as stannic oxide, by the method of Busse. In all cases where the total precipitate weighed less than 15 mg. it was weighed as such. If there was more than this amount the precipitate was fused with caustic potash and the tin determined electrolytically. Copper was determined by iodometry, excepting that in all cases where the total amount was less than .15 gm. it was determined electrolytically.

Qualitative tests were made by the Johnson-Marsh test for arsenic and antimony, dimethyl glyoxime for nickel, and the ordinary routine methods for the other metals. Tin was detected by the presence of the oxide after solution in nitric acid, and was found to appear plainly and certainly when present to the amount of .00001 gram. The table records all tests made, whether with positive or negative results.

In some cases, as for example in catalogue numbers 9195 and 9188, the specimens were so corroded that the initial weight of the sample was discarded, a complete analysis made, and the total weight of the metals found taken as the true weight.

Numbers 3114 and 5166 are distinctly estimates, probably correct within one percent of the true analysis. In numbers 2486, 760, 4599, 7791, 9193, 9205, 9194, 9198, 2821a, 2644, 9199, 2792b, 2800, 2639, 9191, 9190, 2791a, 2804, 2821b, 9208, 857, 858, 860, 6584, 9187, 4265, 2791b, 2821c, 1819, 1955, 5192d, 9189, 1961, 2094, 1965,

[1] Cu, copper; Sn, tin; Pb, lead; Ag, silver; As, arsenic; Sb, antimony; Ni, nickel; Zn, zinc; S, sulphur; Au, gold; Fe, iron.