APPENDIX V.

CHEMICAL ANALYSES.[1]

ANALYSES OF A SERIES OF SPECIMENS OF BONES AND TEETH FROM DEEP-SEA DEPOSITS AND OF FOSSIL AND RECENT BONES.

By Professor W. Dittmar, F.R.S.

Specimens of nine bones of marine animals, which had been dredged up in the course of the Challenger Expedition, and along with these also three recent bones and one fossil bone, were placed in my hands to examine chemically, with the view of assisting in tracing the probable history of the deep-sea specimens.

I have analysed these specimens, some of them completely, the rest partially. Suffice it here to state, that in every case the reported quantities of the constituents were determined directly, so as not to lose the valuable check afforded by a comparison of the sum total of the constituents, with the weight of substance analysed.

In regard to the preparation of the specimens for analysis, I have to state that the deep-sea specimens (or such portions of them as were intended for investigation) were in each case powdered, washed with distilled water, until the last washings were free from chlorides (*i.e.*, sea water), then dried at 100° C., and lastly exposed to the air of the laboratory so that they should not be abnormally hygroscopic.

In this condition they were bottled as material for analysis. The recent bones were simply powdered and analysed in the air-dry condition.

What is reported as "moisture" is water volatile at 110° C., while "combined water" means total water eliminated by ignition, less "moisture." In most cases only a part of the substance was used for the analysis.

To avoid repetition, I may state that "Substance" always means homogeneous powdered substance prepared as above stated. "P." stands for per cent. by weight. "E." for "equivalent," that is, for that quantity of acid or base which in the normal salts is equivalent to "H_2O," the numerical value of "H_2O" being taken as 9, *i.e.*, $H = 0{\cdot}5$; $O = 8$, &c.

[1] The analyses given in this Appendix have been selected from a large number which will be published in the Report on Deep-Sea Deposits, where their bearing on questions of General Oceanography will be discussed in detail. John Murray.