

probably is a mass of hornblendic gneiss or schist, and certainly not of true volcanic origin. I may mention that it does not at all resemble any of the fragments found in the deep-sea dredgings which I have as yet examined.

## APPENDIX D.

*Note on the Carbonic Acid contained in Sea-water.* By JOHN YOUNG BUCHANAN, M.A., Chemist to the 'Challenger' Expedition.

At a meeting<sup>1</sup> of the Chemical Society last summer, Dr. Himly mentioned that Dr. Jacobsen, of Kiel, had found that carbonic acid is only very imperfectly separated from sea-water by boiling *in vacuo*. This was confirmed by Dr. Jacobsen himself in a letter to *Nature* of August 8, 1872. Almost at the very same time the German North Sea Expedition arrived in Leith, when I had the privilege of hearing the confirmation of it from his own mouth, as well as his conjecture that it was probably owing to the presence of salts with water of hydration, such as sulphate of magnesia, that the carbonic acid was retained with such vigour.

Having assured myself by experiment that, as a matter of fact, carbonic acid *is* retained by sea-water with considerable energy, the last traces of it having scarcely disappeared before the contents of the retort were reduced to dryness, I set on foot a series of analytical experiments, so as to determine which of the salts it was, whose presence was the cause of the anomaly in question. The result of these experiments was shortly this: Distilled water, solution of chloride of sodium and solution of chloride of magnesium, each saturated with carbonic acid, behaved on distillation alike, giving off the whole of their carbonic acid in the first eighth of the distillate. Solutions, however, of sulphate of magnesia and of sulphate of lime behaved like

<sup>1</sup> Chemical Society Journal, 1872, p. 455.