XIII.—*On the Corrosion of Lead by Water.*

By G. BISCHOF.

SOME eight months ago a tube was passed, in my laboratory, which is supplied with water by the New River Company, into the slate cistern, so as to act as a syphon to supply some apparatus with water. The external surface of the tube inside the cistern was therefore alternately exposed to the action of air and water, according to the level of water in the cistern.

Recently I noticed a white efflorescence on the greater part of the tube inside the cistern. An adjoining cistern of sheet lead with a lead overflow pipe fixed into the bottom shows nowhere any such corrosion. On cutting the tube it became evident that it is a composition tube, that is to say, a lead tube containing some antimony. On analysis it was found to be composed of:—

Lead	98·3
Antimony	1·7
	<hr/>
	100·0

Although the external diameter of the tube is only $\frac{1}{2}$ inch, 0·29 gram of efflorescence was obtained per foot by gentle rubbing. This dried at 100° C. contained 1·02 per cent. of sulphuric acid, corresponding with 4·1 per cent. of sulphate of lead. The remainder, excepting 1·13 per cent. of a residue insoluble in nitric acid, is carbonate of lead.

The alternate exposure to air and water appears not essential to the corrosion, as I have observed a similar effect when the same tubing remained constantly under water. The interior of the tube has also been corroded, although of course no permanent efflorescence could be formed, owing to the rapid flow of the water.

The frequent practice of plumbers of using composition tubing in connection with water-supplies is, therefore, highly reprehensible, being fraught with considerable danger to the health of those using the water for drinking or cooking.