distilled water they were touched for an instant with a piece of blotting paper, introduced into a dry weighing bottle, and their weight obtained direct.

The sponge was next dried in the water oven and again weighed. The specific gravity of the dried sponge being taken as two—and this a very close approximation—one-half of the weight of the dried sponge was deducted from the first weighing, and the remainder represents the weight of a volume of water equal to that of the total volume of the sponge.

To determine the quantity of contained silica, the sponge was next boiled in strong nitric acid till all traces of organic matter were destroyed, and the spicules remaining were separated by filtration; after well washing they were transferred to a platinum crucible, and the ashes of the ignited filter-paper added; to eliminate water in combination they were then ignited, at first over a Bunsen, and finally with a Herapath. The weight of the ignited spicules gave the weight of silica present in the sponge.

Having obtained the weight of silica present in a given sponge of known volume, we proceed as follows:—The specific gravity of flint varies from 2·5 to 2·6; taking the higher number, if we multiply by it the number representing the volume of the sponge, we shall obtain the weight of a flint of equal size, and can then directly compare the quantity of silica furnished by the sponge to that which would be required for the formation of a flint equal to it in size; an example will make this clear.

Sponge taken—*Anthastra pyriformis*, Sollas.

Weight of the sponge full of water, 1·9203 grammes.
Weight of the sponge when dried, 0·788 gramme.

$$1{\cdot}9203 - (0{\cdot}788 \div 2) = 1{\cdot}5263 \text{ grammes,}$$

which is the weight of a volume of water equal to that of the sponge. This multiplied by 2·6, the specific gravity of flint, gives 3·96838 grammes, the weight of a volume of flint equal to that of the sponge. The weight of the ignited spicules is 0·6658 gramme; and

$$0{\cdot}6658 \div 3{\cdot}96838 = 16{\cdot}77 \text{ per cent.}$$

From this it appears that the specimen of *Anthastra pyriformis* examined contained 16·77 per cent. of the quantity of silica required to convert it into solid flint. Expressed as a common fraction this is about $\frac{1}{6}$th, so that it would require six equal and similar sponges to furnish sufficient silica for the conversion of one of them into flint.

In making use of the material at my disposal, I selected such sponges as possess spicules resembling those found associated with the flints of the Chalk, and in the following table the quantity of silica they were found to contain is expressed, as in the example just given, as a percentage of that required for the complete conversion of the sponge into flint.