

material which, as will be presently pointed out, forms the principal mass of most of these little nodules. When examined on a fresh fracture, the greater part is seen to be formed of a brownish yellow, slightly shining, compact matter, in which are embedded black-brown granules of glauconite, that stand out on the broken surface, together with other mineral grains and remains of microscopic organisms. These concretions are hard and tenacious, the fundamental mass, in spite of its earthy aspect, being compact, and having a hardness that does not exceed 5. The fracture is plane or irregular and slightly granular. The matter forming the matrix presents the pyrognostic reactions of phosphate of lime; it is fusible with difficulty on the edges of the splinters; moistened with sulphuric acid it colours the blow-pipe flame with green; it is soluble in hydrochloric acid. It may be added that the concretions from the shallower depths were larger, contained much more glauconite, and presented a green-coloured external appearance, while those from 1900 fathoms were of a light brown colour.

*Chemical Composition.*—The determination arrived at from the above-mentioned characters as to the phosphatic nature of the substance making up these nodules is confirmed by the following analyses:—

## STATION 142, 150 FATHOMS, No. 72.

		Ratio of Equivalents.	
P <sub>2</sub> O <sub>5</sub> , . . .	19.96	0.422	} 0.713
CO <sub>2</sub> , . . .	12.05	0.274	
SO <sub>3</sub> , . . .	1.37	0.017	
SiO <sub>2</sub> , . . .	1.36		
CaO, . . .	39.41	0.704	} 0.721
MgO, . . .	0.67	0.017	
Fe <sub>2</sub> O <sub>3</sub> , . . .	2.54		
Al <sub>2</sub> O <sub>3</sub> , . . .	1.19		
Loss, <sup>1</sup> . . .	...		
Insoluble residue,	17.34		
	<hr/>		
	95.89		

## STATION 143, 1900 FATHOMS, No. 73.

		Ratio of Equivalents.	
P <sub>2</sub> O <sub>5</sub> , . . .	23.54	0.498	} 0.757
CO <sub>2</sub> , . . .	10.64	0.242	
SO <sub>3</sub> , . . .	1.39	0.017	
SiO <sub>2</sub> , . . .	2.56		
CaO, . . .	40.95	0.731	} 0.752
MgO, . . .	0.83	0.021	
Fe <sub>2</sub> O <sub>3</sub> , . . .	2.79		
Al <sub>2</sub> O <sub>3</sub> , . . .	1.43		
Loss, . . .	3.65		
Insoluble residue,	11.93		
	<hr/>		
	99.71		

*Analysis of Insoluble Residue, No. 72.*

SiO <sub>2</sub> , . . .	77.43
Al <sub>2</sub> O <sub>3</sub> , . . .	12.40
Fe <sub>2</sub> O <sub>3</sub> , . . .	7.91
CaO, . . .	1.07
MgO, . . .	1.02
	<hr/>
	99.83

*Analysis of Insoluble Residue, No. 73.*

SiO <sub>2</sub> , . . .	76.58
Al <sub>2</sub> O <sub>3</sub> , . . .	13.85
Fe <sub>2</sub> O <sub>3</sub> , . . .	7.93
CaO, . . .	1.27
MgO, . . .	1.18
	<hr/>
	100.81

<sup>1</sup> An accident in the operation prevented the determination of the Loss.