135. Manganese Nodule.—Station 302.

Lat. 42° 43′ S., long. 82° 11′ W., 1450 fathoms (Brazier).

	Loss on ignition after drying at 230° Fahr.,	11·40
Portion soluble in Hydrochloric Acid = 82·80	Copper,	small trace
	Alumina,	0·55
	Ferric oxide,	89·75
	Calcium phosphate,	good trace
	Manganese oxide,	22·27
	Nickel,	mere trace
	Cobalt,	...
	Calcium sulphate,	1·27
	Calcium carbonate,	4·08
	Magnesium carbonate,	3·48
	Silica,	11·40
Portion insoluble in Hydrochloric Acid = 5·80	Alumina,	0·60
	Ferric oxide,	1·10
	Lime,	0·39
	Magnesia,	0·11
	Silica,	3·60
		100·00

Note.—Small mass, no definite shape, but appeared as if broken from some larger mass, similar to the specimen from Station 3.

136. Manganese Nodule.—Station 276.

Lat. 13° 28′ S., long. 149° 30′ W., 2350 fathoms (Renard).

I. 0·8271 grm. of substance dried at 100° C., gave 0·0787 grm. of water, 0·1600 grm. of silica, 0·0264 grm. of lime, 0·0526 grm. of alumina, 0·2208 grm. of peroxide of iron, 0·0148 grm. of magnesia, 0·2354 grm. of manganese sesquioxide (Mn_2O_3) = 0·2189 grm. of manganous oxide (MnO), 0·0119 grm. of nickel (Ni) = 0·0151 grm. of oxide of nickel.

II. 0·1425 grm. of substance dried at 100° C., treated with hydrochloric acid and the resulting gas conducted into a solution of iodide of potash liberated iodine; 12 c.c. of thiosulphate of potash (1 c.c. = 0·937 c.c. of the standard solution); 1 c.c. of the standard solution = $\frac{Cl}{10}$ or $\frac{O}{20}$, whence 1 c.c. = 3·55 grms. of chlorine or 0·8 grm. of oxygen—

$$1000 : 0{\cdot}8 = 12 \times 0{\cdot}9377 : x.$$
$$\therefore\ 1000 : 0{\cdot}8 = 11{\cdot}24 : x.$$

$\therefore x = 0{\cdot}008992$ grm. of oxygen capable of liberating chlorine from hydrochloric acid, *i.e.*, 6·31 per cent. of oxygen.

The atomic ratio of 0·384 O is required if Mn be present as MnO_2 and Ni as Ni_2O_3, but 0·394 O was the ratio observed—

	a	b	$\frac{a}{b}$
Manganous oxide,	26·46	MnO = 71	0·372
Nickel,	1·82	Ni = 74·8	0·024
Oxygen,	6·31	O = 16	0·394
		$0{\cdot}372 + \frac{0{\cdot}024}{2} = 0{\cdot}384$	