

Green Sands.—In addition to the deposits called Green Muds in the Tables of Chapter II., there are 7 samples which have been called Green Sands. These differ from the Green Muds chiefly in being more granular in appearance, owing to the relatively small quantity of amorphous matter present in them. They are found usually in shallower water than the muds, and in positions where the particles are occasionally at least set in motion by the action of waves and currents. All these samples are from depths less than 900 fathoms, the average depth being 449 fathoms. The average percentage of carbonate of lime in these Green Sands is 49·78 ;—21·00 per cent. of this derived from pelagic Foraminifera, 15 per cent. from bottom-living Foraminifera, and 13·78 per cent. from the remains of other calcareous organisms—being thus much higher than in the Green Muds.

The residue is greenish in colour, and makes up 50·22 per cent. of the whole deposit. The siliceous organisms average 8 per cent., due to the presence of glauconitic casts of calcareous organisms, while the mineral particles average 30 per cent., and the fine washings 12·22 per cent. The average size of the mineral particles is 0·2 mm., somewhat larger than in the Green Muds.

The following shows the average composition of the Challenger samples of Green Sand :—

| | | | | |
|--------------------|---|---------------------------------------|--------|--|
| Carbonate of lime, | { | Pelagic Foraminifera, | 21·00 | |
| | | Bottom-living Foraminifera, | 15·00 | |
| | | Other organisms, | 13·78 | |
| | | | 49·78 | |
| Residue, | { | Siliceous organisms, | 8·00 | |
| | | Minerals, | 30·00 | |
| | | Fine washings, | 12·22 | |
| | | | 50·22 | |
| | | | 100·00 | |

The following analyses are of two of the best examples of a Green Sand and a Green Mud met with during the Expedition, the one being from Station 164B, in 410 fathoms, off the coast of Australia, the other from Station 141 in 98 fathoms, off the Cape of Good Hope :—

| | | | | PORTION SOLUBLE IN HCl. | | | | | | | | PORTION INSOLUBLE IN HCl. | | | | | |
|----------|-------------------|-----|-------------------|-------------------------|--------------------------------|--------------------------------|-------------------|-------------------|---|-------------------|--------|---------------------------|--------------------------------|--------------------------------|------|------|--------|
| Station. | Depth in Fathoms. | No. | Loss on Ignition. | SiO ₂ | Al ₂ O ₃ | Fe ₂ O ₃ | CaCO ₃ | CaSO ₄ | Ca ₃ P ₂ O ₄ | MgCO ₃ | Total. | SiO ₂ | Al ₂ O ₃ | Fe ₂ O ₃ | CaO | MgO | Total. |
| 141 | 98 | 66 | 9·10 | 8·35 | 2·30 | 4·70 | 49·46 | 1·07 | tr. | 2·02 | 67·90 | 21·35 | 0·95 | 0·35 | 0·22 | 0·13 | 23·00 |
| 164B | 410 | 67 | 3·30 | 9·28 | 2·50 | 12·30 | 46·36 | 0·58 | 0·70 | 0·57 | 72·29 | 21·99 | 1·58 | 0·42 | 0·30 | 0·12 | 24·41 |

No. 67 is of material from the dredge.

In the first place, there is to be noted the relatively high percentage of carbonate of