found in marine deposits, but these do not in any case make up a large percentage of the whole deposit, and being composed of foreign particles need not be specially referred to here. The glauconitic casts of Foraminifera and other calcareous organisms frequently form a considerable part of Green Sands and Muds; these, together with other casts, will be referred to in detail further on.

The greater abundance of siliceous organisms in the surface and subsurface waters of some regions of the ocean than in others leads us to enquire if there may not also be a variation in the quantity of available silica in the waters of different regions. In the analyses of samples of sea-water, silica has always been found whenever specially looked for, and a relatively large number of attempts have been made at a quantitative

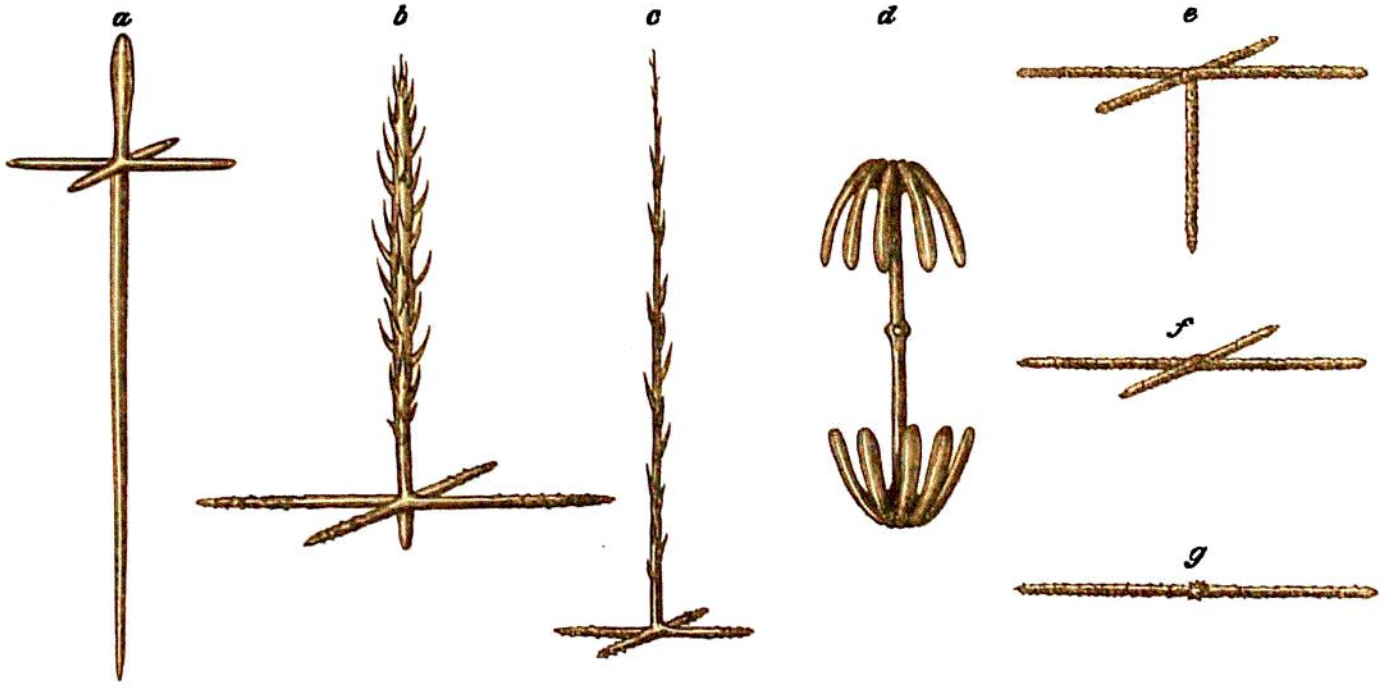

FIG. 33.—Characteristic forms of the dermal spicules of Hexactinellida. *a*, spicule of *Walteria flemmingii*, Schulze; *b*, of *Sympagella nux*, Schmidt; *c*, *d*, of *Hyalonema sieboldi*, Gray; *e*, *f*, *g*, of *Rossella antarctica*, Carter.

determination. When these analyses are examined they can be arranged into a maximum set of determinations, showing 1 part of silica in 9000 to 82,000 parts of sea-water, and a minimum set, showing 1 part of silica in 120,000 to 1,460,000 of sea-water. Murray and Irvine have pointed out that in all probability the maximum results were obtained from unfiltered waters, and the minimum from filtered waters, for sea-water, when carefully filtered, gives an average proportion of 1 part of silica in 250,000 parts of sea-water, and this amount of soluble silica appears to be almost constant in purely oceanic waters, coast waters, and in many river waters. The amount of soluble silica in sea-water is thus so small that it seems almost impossible to admit that this is the exclusive source from which the numerous siliceous organisms in oceanic waters obtain the material to form their shells. The quantity of water that would require to be in contact with, or pass