Habitat.—Station 177, August 18, 1874; lat. 16° 45′ S., long. 168° 7′ W.; off Api, New Hebrides; depth, 130 fathoms; bottom, volcanic mud. Dredged.

Remarks.—Carter has described some isolated spicules, found in a sandy deposit near Colon, Panama, that in form and ornamentation are almost precisely similar to the plagiotriæne (No. 1) of this sponge. They differ, however, in dimensions. In Carter's spicules the rhabdome measures 0·152 by 0·028 mm., thus being half as long again as the longest spicule in *Thrombus challengeri*, and more than twice as thick. As the spicules Carter described were not found in connection with the living sponge, we do not know what other forms might have been associated with them, and the only positive information we have as to existing differences is as regards the relative dimensions; but this appears to me sufficient to justify our assigning to *Thrombus challengeri* a separate specific name. The occurrence of such evidently closely allied species at such distant localities as Api and Panama is, however, a point of some interest.

Pores and Oscules.—Although I have sliced off the superficial layer of the sponge in several places, and made numerous transverse sections, I have not been able to discover any trace of either pores or oscules. The excurrent and incurrent canals, and their connection with the flagellated chambers, have however been clearly observed (Pl. VIII. figs. 36, 39). The middle layer of the sponge chiefly consists of a peculiar form of collenchyma, embedding granular cells (Pl. VIII. figs. 35–38). The granular cells are round or oval in outline, about 0·016 to 0·02 mm. in diameter, sharply defined, but without a differentiated cell-wall, finely and evenly granular throughout, and staining, but not very deeply, with hæmatoxylin. The nucleus and nucleolus are not easily found, but may occasionally be seen, the former as a spherical vesicle about 0·005 mm. in diameter, and the latter as a small deeply stained spherule within it. These cells lie in cavities of the collenchymatous matrix, which they completely fill, the line of demarcation between the cell and the matrix being a sharply defined one. The matrix of the collenchyma presents itself as a homogeneous transparent substance, which stains with hæmatoxylin; scattered through it are deeply stained round or oval bodies, about 0·003 mm. in diameter, which are the nuclei of the collencytes; associated with them is a small quantity of protoplasm, which is produced into the usual branching processes, or extended only in two directions, rendering the collencyte fusiform. The dark nuclei, like little black commas, and the round, more lightly stained, granular cells, immersed in the structureless collenchymatous matrix, contribute to produce a very striking and characteristic appearance.

The relative abundance of granular cells and collenchyma varies greatly; in some parts the cells are closely collected together, the collenchyma being reduced to the thinnest partitions between them; in others the granular cells are fewer, and are separated by intervening collenchyma more than their own diameter in width. The granular cells