Amphius huxleyi, n. sp. (Pl. XLII. figs. 5–11).

Sponge (Pl. XLII. fig. 5) massive, lobate, attached; lobes axially excavated by a large deep cylindrical cloaca; oscules situated on the summits of the lobes, each the scarcely constricted opening of the cloaca (Pl. XLII. fig. 8); oscular margin membranous. Pores small, in sieves, which overlie the incurrent canals (Pl. XLII. figs. 9–11). Surface smooth, formed of a thin, now wrinkled, skin, supported by tangentially lying, scattered oxeas. Texture soft.

Spicules.—I. Megasclere. 1. *Oxea* (Pl. XLII. fig. 6), slender, cylindrical, points blunt or tornote; 0·588 by 0·007 mm.

II. Microsclere. 2. *Amphiaster* (Pl. XLII. fig. 7), axis minute, cylindrical, actines slender, cylindrical, terminally tylote; arranged in a whorl at each end of the axis, and with a single one continuing the direction of the axis; total length 0·016 mm., of the axis 0·004 mm.

Colour.—Nut-brown externally, yellowish-grey within.

Habitat.—Off Api, New Hebrides; depth, 60 to 70 fathoms.

Remarks.—There is a single entire specimen of this sponge; it measures 68 mm. in height, 112 mm. in length, and 57 mm. in breadth. The largest oscule measures 9 mm. and 10 mm. along two rectangular axes, the smallest is about 4 mm. in diameter; the largest cloaca is 31 mm. in depth, the smallest 5 mm. The excurrent canals radiate from the cloacas, running more or less parallel to the curved upper surface of the lobes in which they lie. The ectosome is thin, not more than 0·1 mm. thick; it consists of what might be called fibrous sarcenchyma, *i.e.*, a granular deeply staining matrix, containing fusiform cells about 0·04 mm. in length. Notwithstanding the markedly brown colour of the skin, I could detect no special pigment-cells. The ectosome passes insensibly into the choanosome, the mesoderm of which is sarcenchymatous. The flagellated chambers are diplodal with short prosodi, they measure 0·0237 mm. in diameter. The water-canals are provided with velar diaphragms.

The oxeas are partly scattered singly through the sponge, partly loosely aggregated into narrow fibres, but never bound together by spongin. The fibrous spicular tracts appear to run more or less parallel to the chief water-canals. The tangential spicules of the ectosome partly consist of the most superficially situated of the singly scattered oxeas, and are partly provided by the spicular fibres which curve from the radial to the tangential position as they approach the surface.