presence alone justifies the establishment of a new species; this mainly owing to its histological peculiarities. Apart from the foreign enclosures, its constituent parts are scantily developed transparent ground-mass, and in this latter large vesicular cells of round or more oval form, 0·02 mm. in diameter, not dissimilar to the renowned and still debatable "Schleimzellen" of Mollusca, as Dr. Flemming[1] has drawn them, and thoroughly identical with the vesicular cells of many Desmacidonidæ—undescribed indeed hitherto, but undoubtedly very well known to every spongiologist who has had to deal with the representatives of the family just mentioned. A portion of the cortex with such cells is shown in the annexed woodcut.

But the sponge also possesses some other characters which render it readily distinguishable from other Keratosa, its skeleton recalling that of a *Spongelia* rather than that of *Cacospongia*, and its external shape being perhaps also of some systematic value. The sponge has been found in the form of a thick-walled tube, with very narrow central cavity, ending in a small osculum. The outer surface is rough and provided with rounded tubercles corresponding to the prominent secondary fibres. There are in this sponge three kinds of skeletal fibres—(1) gastric vertically directed primary fibres, in most cases more or less loaded with foreign bodies, and on an average 0·2 mm. thick; (2) centrifugal secondary fibres, originating from the primary ones, and in their direction towards the outer surface forming with the last mentioned, if from above, a more or less acute angle, and with an average diameter of 0·1 mm.; and (3) still finer (0·06 mm.) tertiary fibres uniting the secondary and primary ones; to sum up, this is a kind of skeleton very common in Spongelidæ, but exceptionally rare in Spongidæ. The secondary and tertiary skeletal fibres proved to be free from any enclosures. Apart from the vesicular cells there are no other histologically or anatomically deviating peculiarities to be stated.

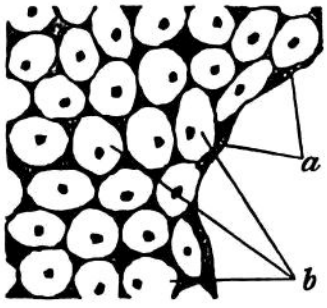

FIG. 2.—Cortex of *Cacospongia vesiculifera*. *a*, pavement epithelium of a subdermal cavity; *b*, vesicular cells.

Colour.—Outer surface dirty greyish, parenchyma pale yellowish-white, skeletal fibres straw-yellow.

Habitat.—Off Port Jackson, April 1874; depth 7 fathoms.

Cacospongia procumbens, n. sp. (Pl. VI. fig. 6).

This species—a *Sarcotragus* in the sense of Oscar Schmidt—possesses a very curious skeleton. In *Cacospongia vesiculifera* we have had to deal not only with primary and secondary, but also with tertiary skeletal fibres; here there are not even primary and secondary ones. The sponge has been found in the form of a crust, and its supporting

[1] Die Bindesubstanz der Mollusken, pl. i.