Genus 2. *Trachycaulus*, n. gen.

Only one species is referred to this genus.

Trachycaulus gurlittii, n. sp. (Pl. XXVI. figs. 4–9).

In the middle of the southern part of the Pacific (Station 289, lat. 39° 41′ S., long. 131° 23′ W.) there was trawled from a depth of 2550 fathoms and a red clay ground, the round stalk—12 cm. in length and 2 to 3 mm. in diameter—which is figured in Pl. XXVI. fig. 4. At the lower thinner end this stalk is slightly bent; it is otherwise straight, and is at the upper end broken across transversely. The surface of this hollow and tolerably firm stalk is covered with hairs. Although nothing remains of the sponge body belonging to the stalk, I cannot doubt from the structure of the fairly well-preserved dermal skeleton that we have to deal with a form closely related to the genus *Caulophacus*. Nevertheless the presence of a very peculiar rosette, and the absence of a form characteristic of the two known species of *Caulophacus*, even in the stalk, namely, of the frequent dispersalia, pronged discohexacts and discohexasters, prevent one from referring this specimen to that genus.

Greatly prolonged rod-like smooth diacts with rounded rough extremities form a firm lattice or ladder-like framework for the parenchyma, being bound together in parallel longitudinal rows by means of numerous transverse synapticula. Slender regular hexacts with smooth pointed rays occur in very various positions in the parenchyma, partly as integral parts of the lattice-work, partly only in external connection with it, or else quite freely on its surface.

Especially remarkable, however, on account of their size (=0·4 mm. in diameter) and singular form are the rosettes with short principal rays, upon each of which four long sickle-like terminal rays are placed. These forms occur scattered in the subdermal spaces between the hexacts which have just been mentioned (Pl. XXVI. figs. 7, 8). They recall the sickle rosettes of Oscar Schmidt. The inner portion of each terminal ray is very thin; outwardly the ray becomes gradually thicker, and bears on its extremity a more or less sharply hooked curve finally terminating in a backward bent point. Great variations occur in the form and size of this hook-shaped terminal portion which is sometimes quite irregularly bent, or else divided into two or three diverging points. Occasionally the four hooks which bend towards one another may fuse together.

There is a striking agreement between these forms and the "sickle rosettes" found by Oscar Schmidt in his *Hertwigia falcifera*, and figured by him in his Spongien des Meerbusens von Mexico, Taf. vi. fig. 8.

The dermal skeleton is composed of greatly prolonged hexact autodermal pinuli, in which the four transverse rays and the almost equally long proximal ray are simple,