

nuclei, in these cavities. This was in the first tibial joint of the leg of *Colossendeis leptorhynchus*; however, I think there can be no doubt that these same cells will also be found in the other joints of the legs of this species. Each cell terminates in a long and slender appendage, which probably extends to within a small space of the opening of the canal. Most probably these are the glands which, according to Dohrn, are always present in these integumentary cavities. I have figured these glands in fig. 1 of Plate XVIII.; *i* is a part of the wall of the intestinal cæcum, which runs through the joint; *c, c* are parts of the septa of connective tissue, which seem to form here separate chambers in connection with the different cavities. These chambers contain numerous blood-corpuscles of an irregular spool form, and towards the pore-canal are furnished with two (*d*), in an other cavity three (*d'*) glandular cells, with very large nuclei. The specimen, the integument of which shows these glands, is a female.

Returning to these integumentary cavities, and their ordinary, viz., their respiratory, function, I have still to mention that I found them in many species with many blood-corpuscles in their interior, and that often also a nerve is seen which sends a very thin branch into them. These I observed more accurately in *Colossendeis proboscidea*, Sab. (See later, under peripheral part of the nervous system.)

The number of these cavities is different in the different species. I counted them in transverse sections of the fourth joint of the leg in some fourteen species, belonging to five genera, and compared them with the girth of the joint. This I did to ascertain if there was any relation between the number of these cavities and the depth at which the species lives. That such a relation does not exist, and that the greater or smaller number of these cavities is one of the properties of the natural groups (genera) of the Pycnogonids, is shown, I believe, by the following table:—

Name of the Species.	Circumference in millimeters of the fourth joint of the leg.	Number of integumental cavities in a transverse section.	Number per millimeter.	Depth in fathoms.
<i>Nymphon brevicaudatum</i> , Miers,	3·25	5	1·54	73
<i>Nymphon brachyrhynchus</i> , Hoek,	1·52	22	14·4	83
<i>Nymphon robustum</i> , Bell,	4·6	27	5·9	458
<i>Nymphon longicoxa</i> , Hoek,	2·35	12	5·1	1100
<i>Nymphon hamatum</i> , Hoek,	3·47	37	10·7	1488
<i>Ascorhynchus orthorhynchus</i> , Hoek,	3·4	90	26·5	130
<i>Ascorhynchus glaber</i> , Hoek,	3	56	18·6	1375
<i>Colossendeis proboscidea</i> , Sab. (sp.),	10·2	106	10	540
<i>Colossendeis leptorhynchus</i> , Hoek,	3·37	63	18·7	1126
<i>Colossendeis brevipes</i> , Hoek,	3·15	62	20	2650
<i>Pallene australiensis</i> , Hoek,	2·4	20	8·3	79
<i>Phoxichilidium insigne</i> , Hoek,	1·57	41	26	14
<i>Phoxichilidium patagonicum</i> , Hoek,	5·2	112	21·5	117
<i>Phoxichilidium pilosum</i> , Hoek,	4·17	45	10·8	1790