

Leucophrys patula, which is exclusively carnivorous, divides once in twenty-four hours at 43° – 45° , twice at 46° – 52° , three times at 54° – 57° , four times at 59° – 64° , and five times at 66° – 68° ; *Colpidium colpoda* twice at 54° – 57° , three times at 59° – 68° ; *Coleps hirtus* once at 61° – 64° ; *Loxophyllum fasciola* twice at 59° – 63° ; *Spathidium hyalinum* once at 61° – 63° , and twice at 63° – 66° ; an undetermined *Vorticella* once at 57° – 61° .

Glaucoma scintillans, *Stylonychia pustulata*, *Colpidium colpoda*, and *Paramœcium bursaria*, kept in complete darkness for a month, multiplied exactly like those exposed to light.—*Comptes Rendus*, April 4, 1887, p. 1006.

On the Relations of the Groups of Arthropoda.

By Prof. CARL CLAUS.

In our number for March 1887, when printing Prof. Lankester's "Last Words on Professor Claus," we stated that the discussion on the matters in dispute must cease. We have since received from Prof. Claus a copy of an article on the subject in question published by him in the 'Arbeiten aus dem Zoologischen Institut der Universität Wien' (Band vii. Heft 2), in which he gives an exposition of his own views, with a request that a translation of this part should appear in the 'Annals,' for comparison with the conclusions formulated by Prof. Lankester in the article above cited. The "essential points" upon which Prof. Claus insists are stated by him as follows:—

"1. The opinion, according to which the Scorpions, and consequently the Arachnoidea, are to be derived phylogenetically from the Gigantostroaca, was independently supported by me, following Huxley, as much as eleven years ago.

"2. The distinction of the three Arthropod series—1. Crustacea, s. str.; 2. Gigantostroaca, Arachnoidea; 3. Myriopoda-Insecta—is implicitly contained in the passages cited of my Text-book (1880).

"3. My views as to the relation of *Limulus* to the Arachnoidea are quite different from the conception which is supported by Ray Lankester in 1881 in his *Limulus*-article.

"4. The reference of the Mites to retrograde Arachnoidea, which is supported by the discovery of the rudimentary heart, is self-evident as a necessary consequence of the position laid down under § 1, and certainly does not date from Ray Lankester's expositions, but had been supported many years ago upon other grounds.

"5. The hypothesis of the 'adaptational shifting of the oral aperture,' invented by that author from the analogy of the shifting of the mouth in *Amphioxus*, and by which the interpretation of the præoral limbs of the Arthropoda, and consequently both pairs of antennæ in the Crustacea, is proved, is a perfectly untenable hypothesis.

"6. This hypothesis has nothing in common with the opinion, founded upon the conditions of innervation, that the second pair of antennæ of the Crustacea represents the foremost truncal members, while the first pair of antennæ, like the antennæ of Insects and Myriopoda, belongs to the præstomial part of the head."



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