183. *Two Species of Hydra from Japan.*

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Incidental to investigation of the sexuality of *Hydra* I have been engaged in taxonomic studies of the Japanese fresh water polyps. So far as observed, specimens collected from Sapporo, Akkeshi and Tokyo are probably referable to the two species, *Hydra vulgaris attenuata* and *Hydra circumcincta*. Before going further I should like to express my most cordial thanks to Prof. T. Uchida for his kind guidance in the preparation of this paper.

1) *H. vulgaris attenuata* Pallas.

Body, generally about 10 mm in length, commonly provided with 6 or 7 tentacles, which, when well extended, are much longer than the length of the body. The number of tentacles is exceedingly variable in this species and individuals were often found with more than 10 tentacles. Though variable probably on account of kinds of food, the colour of the column is generally brown. The shape of nematocysts is shown in Fig. 1; penetrant, pyriform, having the greatest width in middle part; streptoline, slender somewhat cylindrical, its thread forming 4 oblique coils; volvent, oval-shaped, smaller than the streptoline, its thread represents only one loose longitudinal coil. In condition of hunger the stalk of the species is generally demarcated from the column as in *Pelmatohydra* of P. Schulze (1927). This being the case, it seems to me that the presence of the demarcation is not sufficiently important to warrant the setting up of a new genus. Generally gonochoristic; the polyp gives rise to buds

Fig. 1. Nematocysts of *H. vulgaris attenuata*: a streptoline; b volvent; c penetrant. $\times 1620$.

Fig. 2. *Hydra vulgaris attenuata*
Pall. $\times 6$.

of the same sex as itself. Ovary spherical, testis nipple-shaped and about 0.15 mm high. Budding occurs in the boundary region between column and stalk in a definite order. From cultivation continued more than one year, however, I happened to find that sex reversal often occurs in the course of an individual life or between mother and her buds. According to P. Schulze *H. vulgaris attenuata* is distinguished from the hermaphroditic variety, *H. vulgaris vulgaris* mainly by its gonochoristic character. Though the present *Hydra* is generally gonochoristic, in some strains sex reversal takes place very often. Moreover, in a few cases testes and ovaries simultaneously developed on an individual, showing temporary hermaphroditism. But as the species is usually gonochoristic, it should be identified, with a query, with *Hydra vulgaris attenuata*.

Many specimens were collected in Tokyo and Sapporo. During the period from April to November it is commonly found at the bottom of rather clear waters on the under side of dead leaves sheltered from the daylight. In Tokyo they seem to be not common in mid-summer, probably on account of the high water temperature (above 25°C).

2) *H. circumcincta* P. Schulze.

Body always less than 5 mm in length. Colour of the column generally paler than the former species. Though variable, the number of tentacles is usually 6. Tentacles shorter than the body length. Penetrants, very similar in form but smaller in size than those of *H. attenuata*; volvents, same as those of *H. attenuata*. Streptolines are as large as volvents and oval in shape, with

Fig. 3. Nematocysts of *H. circumcincta*: a volvent; b streptoline; c penetrant. $\times 1620$.

their thread coiling obliquely 3 and a half times. They are very much shorter than those of *H. vulgaris attenuata*. Sexuality hermaphrodite; male and female gonads develop simultaneously on the same individual, the male ones situated in a higher portion of the column than the female. Ovaries somewhat ellipsoid in shape, testes comparatively high, having a rather sharp nipple. Through the courtesy of Messrs. H. Ishizuka and S. Okuda several specimens were collected from comparatively muddy waters, in which *Utricularia* sp. was growing, in Tokotan near Akkeshi (Hokkaido). The polyps were found buried in mud, showing strong negative phototropism. The species has been known hitherto only from Europe.

Fig. 4. *Hydra circumcincta*.
×14. T testes, O ovaries.

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