

bone is triangular, rather wider than long. The acromial process is compressed, attenuated at the end, and bent outwards.

The chief difference between the mass of the cervical vertebræ and the specimen in the Sydney Museum, according to Mr. Krefft's photograph, is that the lower process of the axis in that figure appears to be rather longer and narrower at the end.

The mass of the cervical vertebræ in some respects resembles that of *Balaena mysticetus* of the Arctic seas, but differs in being much more united. It differs from *Caperea* and *Eubalaena* in having the lower lateral process of the second cervical vertebra well developed.

### MISCELLANEOUS.

*On the Reproduction and Development of the Telescope-fish of China.* By M. CARBONNIER.

THE telescope-carp (*Cyprinus macrophthalmus*, Bloch; in Chinese *Long-tsing-ya*) is a native of the fresh waters of China and Japan. Its conformation is remarkably anomalous. Its body is globular; its caudal and anal fins are doubled; its eyes project from two to five centimetres from its head; in fact the entire animal is the exact model of those fishes, hitherto regarded as chimerical, that we meet with in a great many Chinese paintings. This fish seems to me to be a monstrous goldfish, a monster designedly produced by means of processes of breeding (in which the Chinese are very clever), so powerful that the original anomaly has now become hereditary.

I have already, in goldfish, met with analogous partial monstrosities, especially the gemination of the caudal fin. M. G. Pouchet, in a note presented to the Academy on the 30th May 1870, notices a similar anomaly presented by two living specimens received by him from China; but hitherto, so far as I am aware, no one has had the opportunity of studying the variety of carp which I call telescope-fish.

By the kindness of a relation, I received twenty-four specimens, all presenting the same modifications of structure; only three of these died, the remainder have recovered sufficiently to allow me to try to reproduce them since the first year.

The globular form of the body of the animal renders its equilibrium extremely unstable, and it can swim only with difficulty; hence, whilst its congener the goldfish effects its spawning by rubbing itself against aquatic plants, flexible bodies of little resistance, the telescope-fish seeks a firmer point of support, opposing a direct resistance to the impulse of the fins. It is at the bottom of the water, on the ground, that it rubs its abdomen.

While the female acts thus in oviposition, the males, which are exceedingly ardent in fecundation, pursue her several together, push her with their heads, turn her over and roll her over and over, inflicting upon her an actual punishment.

Having deposited, in a basin containing 20 cubic metres of water, four fishes belonging to a first lot, about a month afterwards (on the 14th of September last) I saw the three males pursuing the



female, roll her like a ball upon the ground for a distance of several metres, and continue this conduct, without rest or relaxation, for two days, until the poor female, who had not been able to recover her equilibrium for a moment, had at last evacuated all her ova.

Being then obliged to suspend my observations, I returned a fortnight afterwards, and, carefully examining the surface and the edges of the basin, I had the satisfaction of discovering several little embryos, which swam with considerable difficulty, and which a more careful examination enabled me to recognize as the young fry of the telescope-fish.

They had the same double caudal fin, and the same sinuosity of the upper part of the back ; but the eyes were not yet very prominent.

Having brought them to Paris and observed them carefully, they furnished me with the following results. At its earliest age the telescope-fish has the elongated form of most of our young fishes ; the transparency of the body allows us to distinguish plainly the air-bladder, lodged in the upper part of the body, and the intestine, forming a right angle, of which the apex is opposite to the bladder. So long as the embryo lives at the expense of the umbilical vesicle, it swims easily and in a horizontal position ; but subsequently the absorption of exterior aliment has for its result an abnormal and irregular development, which, in nearly half the specimens, causes a deviation from the normal position, and the animal holds itself vertically, sometimes with the head upwards, but most frequently with it downwards. The faulty position of the air-bladder and the too slight development of the fins neutralize the influence of these directive agents ; the want of equilibrium persists, the young animal can no longer seek its nourishment, and it dies in two or three days. I have scarcely been able to make them live for ten or twelve days by mixing triturated animal matter with the water of my aquaria. I have, however, no doubt that the rearing of the young fry which remain will furnish me with some new facts.—*Comptes Rendus*, November 4, 1872, tome lxxv. p. 1127.

#### *Additional Observations on Codiophyllum.*

By Dr. J. E. GRAY, F.R.S. &c.

More than one botanist has asked me for a specimen of *Codiophyllum* (described in the 'Annals,' for August 1872), which they wanted to examine microscopically and to unravel the fibre. The very expression shows that I have not sufficiently explained the structure of this very curious plant ; but I believed that Mr. Ford's excellent figure would exhibit it better than I could explain it in words. The frond of this curious Alga is not formed of continuous fibres interlaced together, but of a number of oblong rings of a cylindrical tube, each gradually formed and all connected and anastomosed together, so as to form an expanded frond : each ring is separately formed ; and when complete it sends from a part of its surface a tube of the same form, size, and structure, which gradually lengthens, after a time curves back, and unites itself to the ring from which it sprung, thus forming another ring, and in time emitting a new ring from its surface in the same manner.

Mr. Ford has attempted to show this development in his figure.



Carbonnier, Pierre. 1873. "On the reproduction and development of the telescope-fish of China." *The Annals and magazine of natural history; zoology, botany, and geology* 11, 76–77. <https://doi.org/10.1080/00222937308696764>.

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