

OCCASIONAL PAPERS OF THE MUSEUM OF
ZOOLOGY

UNIVERSITY OF MICHIGAN

ANN ARBOR, MICHIGAN

PUBLISHED BY THE UNIVERSITY

A NEW SPECIES OF CAMPTOCERAS

BY BRYANT WALKER

Camptoceras hirasei, new species

Pl. I, figs. 1-8

Shell sinistral, very slender, aciculate, horn-colored; whorls $3\frac{1}{2}$, flattened laterally, strongly carinated above and below, separated by a broad, deep, concave channel, apical whorl bluntly pointed, bullet-shaped, reticulated by exceedingly fine lines of growth and spiral striæ, on the succeeding whorls the longitudinal striæ increase in size to a maximum on the body-whorl, while the spiral lines become more or less obsolete and are scarcely, if at all, visible on the body-whorl; aperture solute, elongate oval, narrow, somewhat wider below, angled above and below; lip continuous, the peritreme being slightly thickened and a little reflected on the lower, inner margin.

Length 7.25; diam. 2; aperture, length 3.5, diam. 1.5 mm.

Type Locality: Near Osaka, Prov. Kawachi, Japan.

Types: No. 38965 Coll. Walker. Cotypes in the collections Y. Hirase; Acad. of Nat. Sci. Philadelphia; U. S. Nat. Museum and Museum of Zool., Univ. of Mich.

Compared with *C. terebra* Bens., the only one of the Indian species which it at all resembles, and of which I have three specimens before me, *C. hirasei* is longer, narrower, the aperture less oblique to the axis, the longitudinal striation is more developed and the spiral lines less conspicuous.

This most interesting discovery of Mr. Hirase was made several years ago and the specific description has been delayed by the desire to obtain alcoholic material so that the systematic position of the genus might, if possible, be determined.

Camptoceras has hitherto been known by three species, all from India, and its unexpected occurrence in Japan widely extends its range.

The systematic position of the genus has been the subject of very diverse opinions. Benson, who discovered the typical species, gave a brief description of the external appearance of the animal and compared it with and distinguished it from *Lymnæa*. Nevill, according to Gude, was of the opinion "that it would prove to be a sinistral form closely allied to *Succinea*." Chenu placed it near *Physa* and Fischer did likewise, remarking (*Man. Con.*, p. 511) that, if the eyes, as stated by Benson, were placed at the base of the tentacles, it could not possibly be a terrestrial species. Gude, on the other hand (*Fauna Brit. India, Moll. II*, 1914, p. 460), followed Nevill and retained it in the family *Succineidæ*.

Camptoceras hirasei occurs abundantly in Osaka and has been bred in Mr. Hirase's aquarium, so that Benson's original opinion as to its fluviatile character has been demonstrated. Figure 3, drawn from the living animal by Mr. Hirase's artist, shows the characteristic features of an aquatic species.

The alcoholic material, when received from Mr. Hirase, was sent to Mr. W. F. Clapp of the Museum of Comparative Zoology, Cambridge, Mass., for examination. Unfortunately it was not sufficient in quantity to enable a complete and detailed study of the soft anatomy. But the results obtained go far towards determining the probable systematic position of the genus. I am indebted to Mr. Clapp for the mounting of the radula figured and the drawings of the soft parts, except Fig. 3. The figure of the radula was drawn by Mr. J. H. Blake of West Somerville, Mass., and those of the shell by Miss Mina L. Winslow of the Museum of Zoology of the University of Michigan.

The radula (fig. 6) has a bicuspid central tooth, six bicuspid laterals, followed by five teeth, intermediate in character, in that the outer cusp gradually diminishes in size and one or more small additional cusps appear, and which gradually merge into the five marginals having a large inner cusp and, progressively, more numerous and small outer cusps; the bases of all of the teeth are quadrate, being nearly square in the central tooth and widening towards the margin.

The jaw (fig. 7) is composed of a long, slightly arcuate central plate with two lateral accessory plates.

The external appearance of the head of the animal is shown by fig. 4 from an adult specimen and fig. 5 from an immature one.

Mr. Clapp writes in reference to his figures:—

“ I did succeed, however, in finding what I suppose to be the jaw and enclose a camera lucida sketch (fig. 5) of its position in the animal. In the figure, which is made from above, “a” is the mantle covering the entire animal, thin, delicate and transparent, excepting at the outer circumference,

where it is considerably thickened. Through this can be seen ("b") the tentacles and very clearly ("c") the jet-black eyes at the inner base of the tentacles. The pigmented oval spot midway between the base and tip of the tentacles seen in every specimen of *Camptoceras* sent to me by you (fig. 4) is entirely lacking in this lot (received directly from Mr. Hirase), leading me to believe it is a character not acquired until the animal is nearly or quite mature.* "d" is the head, divided in two large, overhanging lobes, "e" is the foot. At "f" is a very puzzling character, which I at first thought, from its position, to be a part of the nervous system. It appears to be a band of membranous tissue, stained with black, deeply imbedded in the animal. "g" is the jaw, an extremely minute, fragile, chitinous band, of which I have attempted to make an enlarged sketch (fig. 7). Its position is far posterior to where one would expect it to be. I have managed to dissect and mount the tube containing this jaw and radula in position and enclose a camera lucida sketch of the result in an endeavor to show the relative position of the two (fig. 8). The plate (fig. 7, g) is dorsal and much stronger with a noticeably curved cutting edge. The two accessory plates (fig. 7, g') are ventral and, while nearly as large, are lighter colored and transparent. The containing wall (fig. 8, j) is distorted and ruptured by the slight pressure of the cover glass at the posterior end and in the region of the radula "I." "h" is the bent over, anterior end of the radula. Fig. 7 is an enlarged sketch of the jaw. I don't know whether the accessory plates are really attached to the dorsal plate or not.

* In a previous letter referring to fig. 4, he says:—"They (the eyes) are at the inner base of the tentacles. The black pigmented spot on the tentacles occurred in all four of the specimens I dissected. It is a fact that the eyes and tentacles and large, oval, pigmented spots on the tentacles are exactly the same in *Ancylus* as in *Camptoceras*."

"In the drawing of *Camptoceras* I sent to you before (fig. 4) to show the position of the eye, the bulge behind the left tentacle is *not* the eye, but a mystery to me. It has no connection with the eye, but has some connection with the reproductive organs."

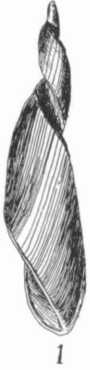
It is evident from these figures that *Camptoceras* does not belong to the *Physidæ*. The essential characters of the radula with its bicuspid central and the jaw with its accessory plates show quite conclusively that it belongs to the *Planorbidæ* and should probably be placed near to *Isidora*. The lack of pectinate or serriform marginals which are present in that genus according to Jickeli (*Fauna N.-O.-Afrika*, 1874, pp. 194 *et seq.*), Cooke (*P. Z. S.*, 1889, 136); von Martens (*S. und B. Moll. Ind. Arch.*, 1897, p. 8), and Sarasin (*Sussw. Moll. Celebes*, 1898, p. 19), separate it radically from that group. Standing alone, the radula is not unlike that of some of the *Ancylidæ*, but the shape of the shell and the character of the jaw prevents any association with any of the groups in that family having a somewhat similar radula. The fact that *Lanx*, usually included in the *Ancylidæ*, has a similar jaw should be mentioned, but that genus has the serrate marginals characteristic of the *Lymnæidæ* and quite probably should be entirely removed from the *Ancylidæ*.

PLATE I

- Figure 1. Dorsal view of the shell.
- Figure 2. Anterior view of the shell.
- Figure 3. Animal from beneath.
- Figure 4. Head of adult animal.
- Figure 5. Head of immature animal.
- Figure 6. Radula.
- Figure 7. Jaw.
- Figure 8. Buccal mass.



6



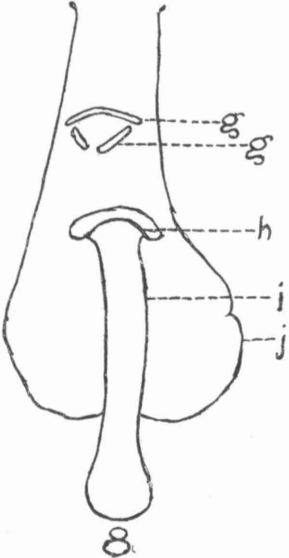
1



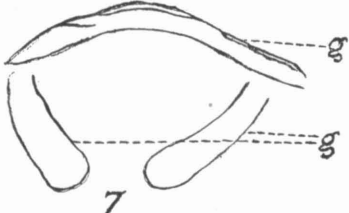
3



2



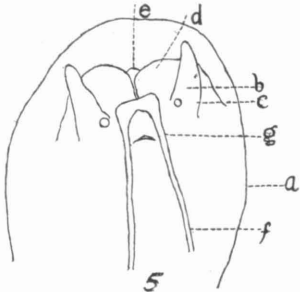
8



7



4



5

