

**CATOSTYLUS OUWENSI (RHIZOSTOMEAE, CATOSTYLIDAE),
A NEW JELLYFISH FROM IRIAN (NEW GUINEA)
AND
OUWENSIA CATOSTYLI n. gen., n. sp., PARASITIC IN
C. OUWENSI**

by

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and

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Introduction

Through the courtesy of Dr. S. SOMADIKARTA, at that time acting director of the Museum Zoologicum Bogoriense we have been permitted to examine the collection of medusae housed in the museum. Among these were five specimens of *Catostylus* which appear to be new, all of which were heavily infested with a peculiar vermiform parasite which also seems to be undescribed. These specimens were collected near Irian by P. A. OUWENS in 1908, preserved in formalin and are still in a good state of preservation.

***Catostylus ouwensi*, n. sp.
(Figs. 1 - 3)**

Diagnosis: Bell 11-19 cm. in diameter, firm, convex, somewhat flatter than a hemisphere, the velar zone of lappets turned in under the dome; exumbrella smooth but wholly covered with low crowded convex tubercles 0,3 - 1,0 mm. across, giving it a minutely pebbled or embossed appearance upon close examination; velar lappets 6 in each octant, mostly cleft, larger than, and extending beyond, the rhopalar lappets; oral arms short, massive, slightly shorter than bell radius, the distal winged portion of about the same length as the proximal smooth part, without appendages or filaments; color translucent purplish pink.

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Description: Bell 11-15 cm. in diameter, convex, somewhat flatter than a hemisphere, the marginal zone of lappets thinner and less firm than the dome, and turned under horizontally; exumbrella smooth but entirely covered with crowded low tubercles about 0,3 - 1,0 mm. across, of somewhat irregular shape, giving it an embossed or pebbled appearance upon close examination, the tubercles becoming more minute near the margin, forming fine radial striae in the zone of the lappets; velar lappets 6 in each octant, at least 5 of them cleft and with a low cartilaginous keel in each half, projecting only enough to give the margin a scalloped appearance; rhopalar lappets smaller than velar lappets and not projecting as far; rhopalia 8, each with a small exumbrellar sense pit shaped like a broad egg, nearly circular with striate floor (Fig. 3b); canal system difficult to follow in intact specimens due to the thickness and opacity of the jelly and to the well developed subumbrellar musculature; rhopalar canals 8, extending to the margin; adradial canals 8, losing themselves in an anastomosing network which also connects with the rhopalar canals in some cases but not with the stomach directly; peripheral canal networks profuse and fine near the margin, extending into the velar lappets; subumbrellar circular musculature well developed, forming a broad band extending from near the edge of the subgenital porticus to the edge of the bell, partially interrupted at the rhopalar radiae; gonads (Fig. 3c) form a continuous cross-shaped figure along the lateral subumbrellar edge of the stomach, with an invagination at the end of each arm of the cross opposite the pillars; subgenital pits united into a continuous subgenital porticus; subgenital ostia about twice as wide as the intervening pillars, narrow dorso-ventrally, with a gelatinous papilla in each dorso-lateral corner and a broad firm raised triangular floor bearing a small central keel in the largest specimens; oral arms short, massive, not quite reaching the bell margin when laid back along the subumbrella; distal winged portion of oral arms of about same length as the proximal smooth part, without filaments or appendages; mouth frills on entire median edge of each arm from oral disk to end of arm, but only on the sides and edges of the winged portion (Fig. 2); mouth arm disk broad, almost half the bell diameter; color, in formalin, translucent rather pale purplish pink.

Locality: Near Irian, Ouwens coll., 1908.

Type specimens: Holotype (Fig. 1), No. Coel. 031 and four paratypes No. Coel. 031a are deposited in the Museum Zoologicum Bogoriense.

Remarks: This species differs from other species of *Catostylus* as follows:

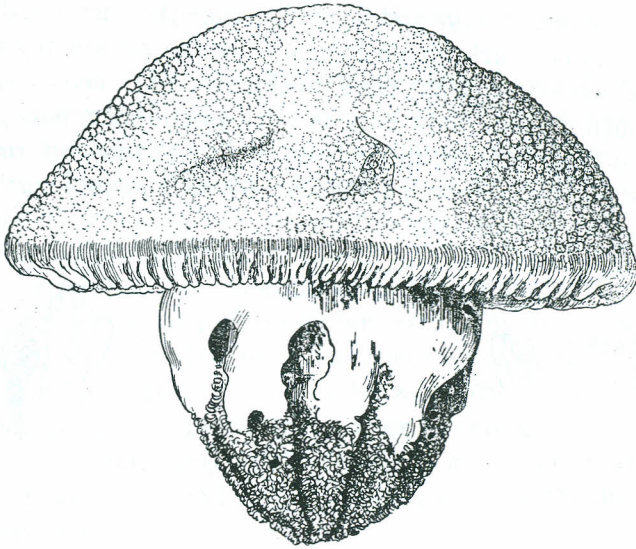


Fig. 1. *Catostylus ouwensi* n. sp. Holotype. ($\frac{3}{4} \times$)

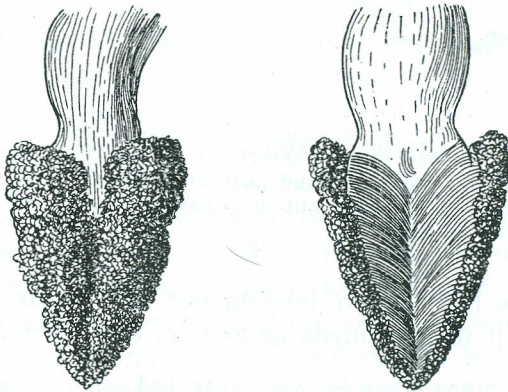


Fig. 2. *Catostylus ouwensi* n. sp. Oral arm form outer side. ($1\frac{1}{2} \times$)

In *C. cruciatus*, *C. perezii*, *C. mosaicus* and *C. townsendii* the mouth arms exceed the bell radius. In *C. ouwensi* they are slightly shorter.

In *C. purpureus*, *C. tagi* and *C. viridescens* the distal frilled portion of the mouth arms is clearly much longer than the proximal smooth part. In *C. ouwensi* these are of about the same length. In *C. tripterus* the distal part of the mouth arms is only half as long as the proximal portion and there are only 4 velar lappets in each octant. In *C. ouwensi* the proximal and distal divisions of the mouth arms are of nearly equal length and there are 6 velar lappets per octant.

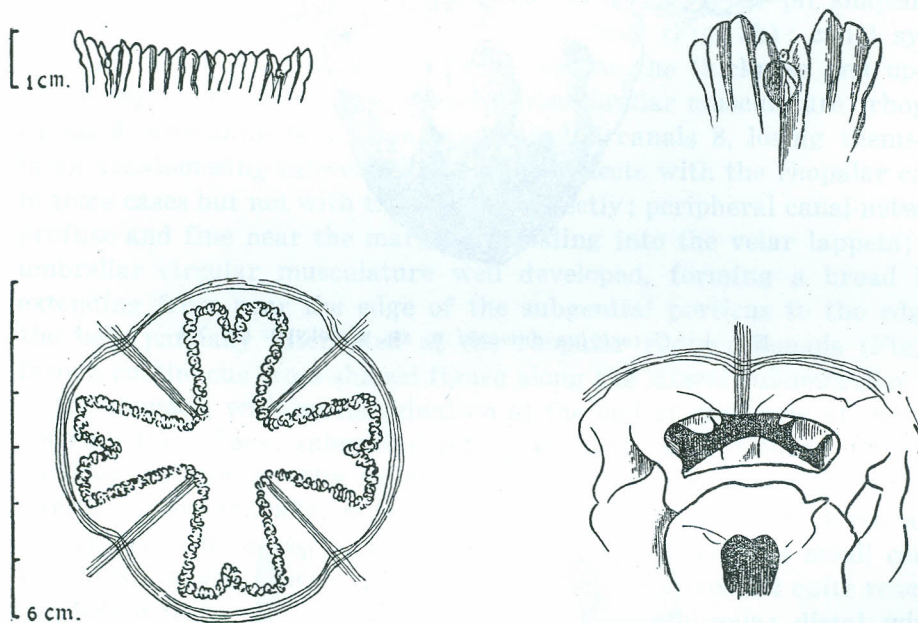


Fig. 3. *Catostylus ouwensi* n. sp.

- a. Portion of bell margin showing 2 rhopalia and intervening lappets.
- b. Rhopolium, sense pit and adjacent lappets.
- c. Diagram of arrangement of gonads.
- d. Subgenital ostium.

C. ornatellum has 8 velar lappets per octant, and the mouth arms are only about half to two thirds as long as the bell radius.

All five specimens were heavily infested with a peculiar vermiform parasite occupying small channels in the jelly of the subumbrella, bell margin, and oral arms. These are described below.

***Ouwensia catostyli* n. gen., n. sp.**

A Parasite of *Catostylus ouwensi* MOEST. & MCCONN.

Genus *Ouwensia* n. gen.

Generic Diagnosis: Vermiform with well developed non cellular cuticle; anterior end with cruciform mouth ending blindly in a muscular buccal mass; body wall comprised of minute columnar epithelial cells beneath the cuticle; conspicuous enlarged stalked gland cells arising at intervals from all parts of the body wall, the enlarged portion free in the body space and filled with a homogenous basophilic material; the stalked gland cells especially numerous and well developed around the buccal mass; an axial bundle of fibers, probably muscular, extending from the buccal mass to the hind end of the body; the space between the body wall and the axial bundle of fibers, and the spaces between the fibers occupied by a very loose inconspicuous parenchyma; posterior end with a cap like portion separated from the main body of the trunk by a crescentic groove, widest ventrally, and bearing a small terminal pore; no peritoneum, no digestive tract, no appendages.

Type species: *Ouwensia catostyli* n. sp.

***Ouwensia catostyli* n. sp.**

(Figs. 4 - 7)

Specific diagnosis: Vermiform, about three millimeters long when mature; circular in cross section; body whitish with anterior end somewhat swollen and darker due to the accumulation of dark orange colored glands around the buccal mass; the larger glands around the buccal mass oval, up to 50 microns long by 24 microns broad, with long stalks up to 100 microns or more; the stalks sometimes swollen and filled with the same homogeneous material as the body of the gland; smaller but similar glands over the rest of the trunk, about 23 by 14 microns; each arm of the cruciform mouth approximately 85 - 90 microns long; cuticular teeth slender conical, about 3.4 microns high, set close together over the inside surfaces of the mouth (Fig. 7); eye, when present, single, spherical, about 35 microns in diameter, located in the dorsal quadrant of the buccal mass above a concentration of nervous tissue.

Description: Vermiform, about 3 millimeters long when mature; circular in cross section; anterior end somewhat swollen and darker than the rest of the body due to the accumulation of large oval reddish orange stalked glands about 50 by 24 microns in size around the buccal mass;

body and mouth lined with well developed cuticle beneath which is an epithelium of minute cells; numerous large stalked secretory cells project into the body space from all parts of the body wall; mouth cruciform, ending blindly in the muscular bulb which surrounds it and bearing many small conical cuticular teeth approximately 3.4 microns high, giving it, when closed and seen in sections, the appearance of a zipper; remainder of body of about uniform diameter, with many smaller stalked glands projecting into the body space from all sides; centrally an axial bundle of fibers (probably muscular) extending from the back of the buccal mass to the hind end of the body; a cap like posterior end is marked off from the trunk by a crescentic groove, widest ventrally, and bears a small terminal pore (Fig. 5c); body space filled with a very loose vacuolated parenchyma; small radial and irregularly branching fibers also present among and arising from the fibers of the axial bundle and interconnecting them; no peritoneum, digestive tract or appendages.

In one specimen a single spherical hollow pigmented eye, approximately 35 microns in diameter was present just above the nerve mass adjacent to the mouth in the dorsal quadrant of the buccal mass (Fig. 6, 7). Apparently this is not well developed in most specimens, as it could not be found in the other specimens examined.

Host: *Catostylus ouwensi* MOEST. & MCCONN.

Locality: West Irian

Types: Holotype and five paratype whole mounts in Museum Zoologicum Bogoriense. One paratype series of sections also in Museum Zoologicum Bogoriense. Other paratype material in the collections of the Faculty of Science, University of Indonesia.

(The holotype and paratype series of *Catostylus ouwensi* also housed in the museum still contain many additional specimens which may be regarded as paratypes).

Discussion: Although structurally relatively simple, this parasite does not fit well the morphological pattern of any group with which we are familiar. Several zoologists, both here and abroad, have been consulted but none have come forth with a definite answer as to the identity or affinities of this parasite.

The worms are found in small channels which they make in the jelly of their host just beneath the subumbrellar musculature, along the bell margins and in the subgenital porticus and upper parts of the oral arms. They range in size from about 0.2 mm long in immature specimens to over 3.0 mm in mature ones. Mature worms are commonly found with

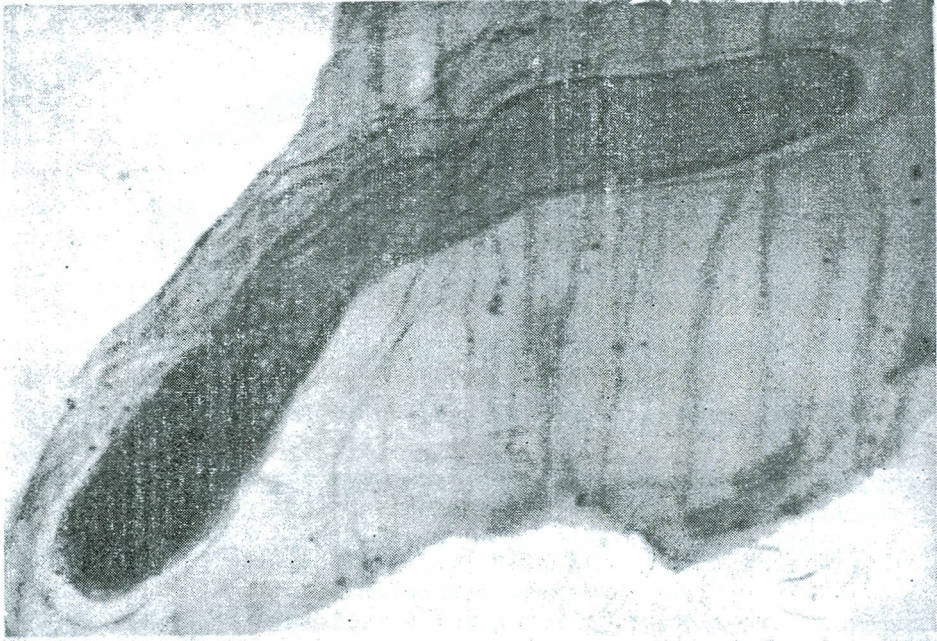


Fig. 4. *Ouwensia catostyli* n. gen., n. sp. Photograph of holotype in the jelly of its host. (42 ×)

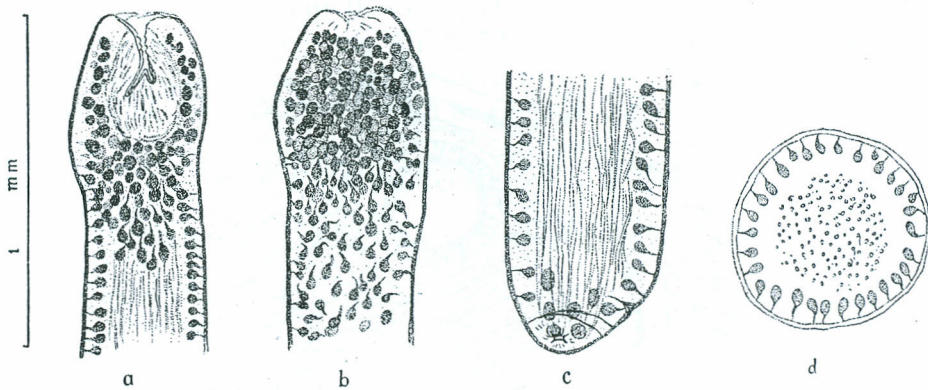


Fig. 5. *Ouwensia catostyli* n. gen., n. sp.
a. Optical section of anterior end of whole mount through buccal mass.
b. Optical section of anterior end of whole mount just above buccal mass.
c. Posterior end.
d. Transverse section through trunk (diagrammatic).

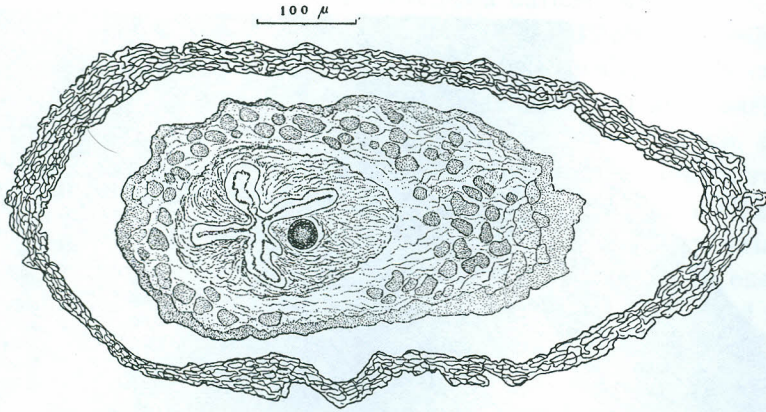


Fig. 6.. *Ouwensia catostyli* n. gen., n. sp. Transverse section through buccal mass showing the cruciform mouth, eye, nerve mass and gland cells. The animal still lies in a channel within jelly of the host which is shown surrounding the section. The plane of section is somewhat inclined in such a way that the ventral part of the section is further forward than the dorsal part.

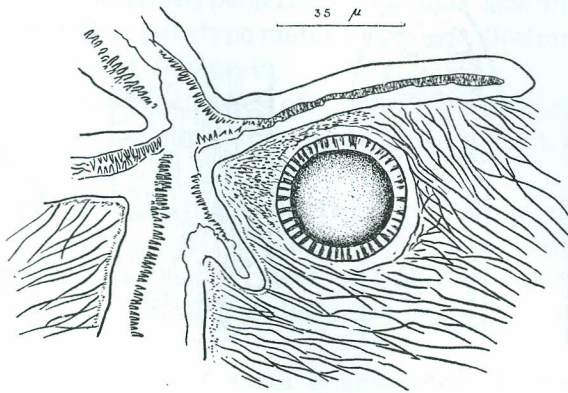


Fig. 7. *Ouwensia catostyli* n. gen., n. sp. Portion of foregoing section further enlarged to show details of cuticular teeth and eye.

the anterior end projecting slightly through a small pore in the jelly through which the channel in which the worm lies opens to the outside.

The stalked glands arising from all parts of the body wall and projecting into the body space are one of the most striking features of these animals at all stages of growth. These glands are larger, more numerous and more deeply colored at the anterior end where they are densely clustered around the buccal mass, appearing at first sight to be a cluster of eggs. They are homogeneous in content, strongly basophilic in staining properties.

The fact that all five specimens of *Catostylus ouwensi* in the collection were heavily infested with this parasite, and that we have not encountered them in any other medusae during two years of work in Java would seem to indicate that this may be a characteristic parasite of that species of jellyfish only.

As they are presently known only from long preserved museum specimens in one small series of jellyfish and nothing is known of other possible stages of the life cycle, we prefer for the present merely to make known this curious parasite in the hope that someone will have an opportunity to make a further study which may clarify the questions as to its life cycle and affinities.

Acknowledgements

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References to the literature on medusae prior to 1961 are to be found in KRAMP (1961) cited above. The various papers of STIASNY are especially useful in working with Rhizostomeae.
