# STUDIES ON THE ACANTHOCEPHALAN FAUNA OF BURMA.

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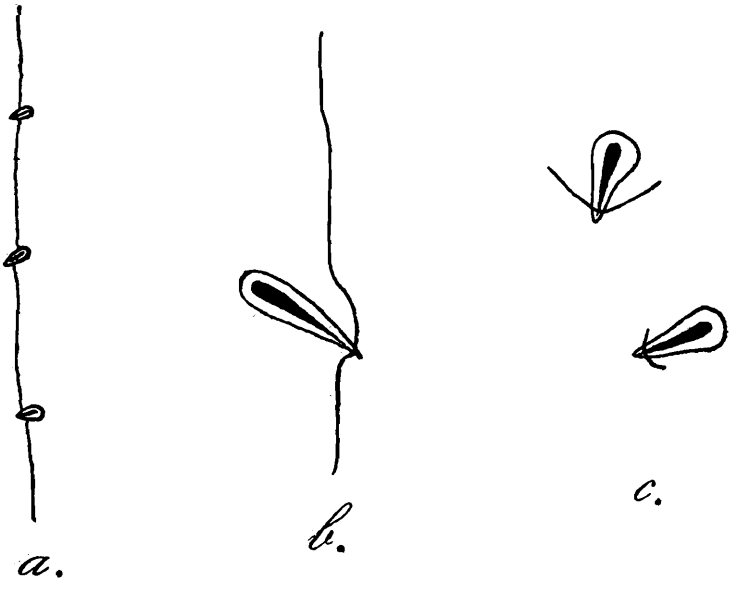
Acanthocephalan worms *Pallisentis nagpurensis* Bhalerao (1931) were collected from half-a-dozen food-fish (*Ophicephalus striatus* Bloch ?) which were brought to the present writer, while on a short visit to Gyobingauk, a town 120 miles from Rangoon, Lower Burma. When fresh they were white and not " pinkish brown " in colour (Datta & Poddar 1935, p. 234). Of the thirty specimens collected, all except a few were females in different stages of development. The females were more numerous than the males, which is contrary to the observations of Bhalerao (1931, p. 570) and Datta & Poddar (1935, p. 234) for Nagpur and Calcutta respectively.

*Female* : Largest specimen in the collection 19[1] × 0·144 at the posterior extremity, to 0·504 behind mantle spines. Anteriorly a region 0·396 in length, armed with 12—15 close set rows of cuticular spines, the spiny region extending to the posterior end of the proboscis sheath. Posteriorly body armed with 43—53 rows of spines, not as closely set as those of the anterior region. Mantle rows of spines 0·027—0·031 long, 0·031—0·035 apart, the distance between the spines in the same row




TEXT-FIG. 1.—Body and Mantle Spines of *Pallisentis nagpurensis* (Bhalerao, 1931).

*a*. Arrangement of Spines on the Body; *b*. Single body spine magnified; *c*. Mantle Spines magnified.

being 0·031—0·039. Body spines, 0·020—0·031 long (0·055—0·059 max.), in consecutive rows, equal distances apart, 0·090—0·125 and

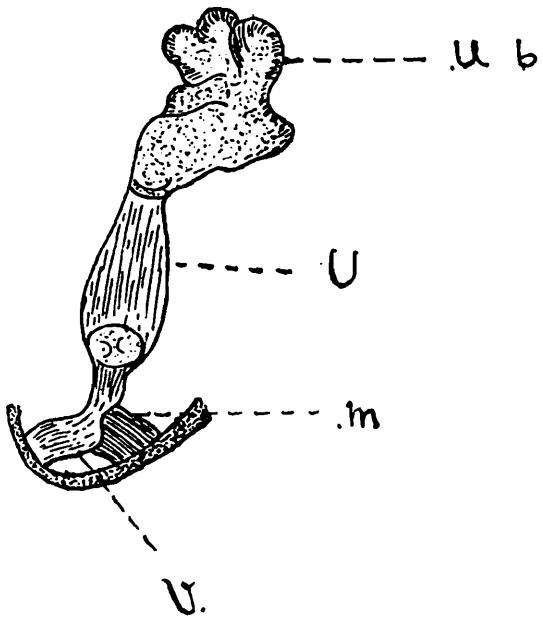
[1] All measurements in millimetres.

not extending to posterior end as in *P. ophiocephali.* In the posterior region of the body the spines thin out and in some of the posterior rows only the lateral spines of the row are clearly seen. Roughly $\frac{1}{4}$ to $\frac{1}{5}$ of the total length of the worm at the posterior end is devoid of spines. Mantle and body spines are set in cuticular prominences.

Proboscis short, globular, separated from first row of anterior body spines by a well developed neck. Proboscis sheath single-layered, cylindrical, 0·017—0·024 thick, 0·447—0·501×0·214—0·286. Proboscis retractors emerge posteriorly from the proboscis sheath and are attached to the sides of the body wall a little in front of the lemnisci.

Proboscis when fully extended 0·215—0·236×0·236—0·250 apically to 0·179—0·189 basally, armed with 4 circular rows of 10 hooks each. This number (10 hooks in each row) seems to be constant. All hooks of one type provided with well developed roots. Free portions of the hooks measure H1-0·079—0·083 ; H2-0·063—0·070 ; H3-0·047—0·059 ; H4-0·032—0·034.

Genital opening sub-terminal. Vagina 0·138—0·142 long. Eggs 0·075—0·079×0·039—0·047 ; embryos 0·047—0·059×0·024.

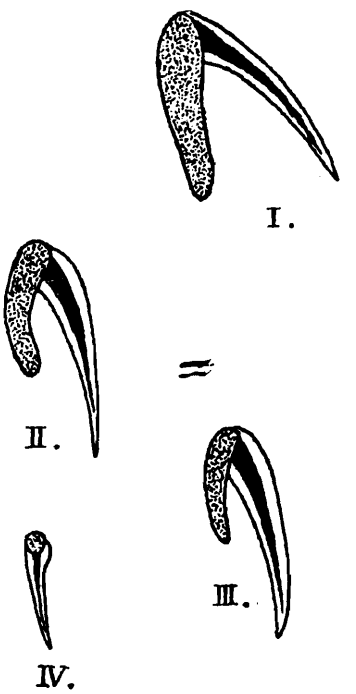



Text-fig. 2.—Female Genitalia of *Pallisentis nagpurensis* (Bhalerao, 1931).

*U. b.* Uterine Bell; *U.* Uterus; *M.* Muscles attaching vagina to body wall; *V.* Vagina.

*Male :* Largest 15 long. Body of immature young 1·98×0·108 ; neck 0·108×0·144 apically to 0·198 basally. Proboscis 0·197×0·197 apically to 0·143 basally. Number and size of proboscis hooks similar to those in the female ; H1-0·079 ; H2-0·063 ; H3-0·039—0·043 ; H4-0·032. Roots : H1-0·039 ; H2-0·035 ; H3-0·035 ; H4-0·032 long. Proboscis sheath 0·537×0·179. Armature of body similar to that of female but less developed. Body spines 0·035—0·039, ceasing anterior to anterior testis, in 24—25 rows of spines. Lemnisci cylindrical, a little coiled, 3·2 and 2·52 long by 0·076—0·095 broad, extending to posterior attachment of proboscis retractors. In immature male, of the two elliptical testes the posterior slightly overlaps the posterior end of

the anterior, but in the fully developed male the two testes are contiguous, the anterior 0·895×0·251, the posterior 0·896×0·268. Ductus ejaculatoris 0·322×0·286.




TEXT-FIG. 3.—Proboscis Hooks of *Pallisentis nagpurensis* (Bhalerao, 1931) (♂).
I, $H_1$ ; II, $H_2$ ; III, $H_3$ ; IV, $H_4$.

*Remarks.*—In *P. ophiocephali* the body spines extend to the posterior end of the body. In *P. nagpurensis* they seem to extend to the posterior end in the female (Bhalerao, 1931, p. 570). None of the present specimens, male or female, showed any trace of the body spines in the posterior region, which disagrees with Bhalerao's statement (1931, p. 570) " There is a tendency for the rings of spines in the post-testicular regions to disappear." In fact in the present specimens, there is a tendency for the spines of the body to disappear even in the pre-testicular region.

The vascular system consists of two longitudinal canals (ventral and dorsal ?) which, in the anterior part of the body, give off transverse commissures corresponding in number to the anterior body-spine rings. They are not so simple as indicated by Bhalerao (1931, p. 572). Well developed small longitudinal connections between adjacent transverse canals could be seen. This corroborates the statement of Baylis, " The transverse commissures are not so simply and regularly arranged but anastomose among themselves to form a network " (Baylis, 1933, p. 447, foot-note).

## Genus **Pallisentis** Van Cleave, 1928.

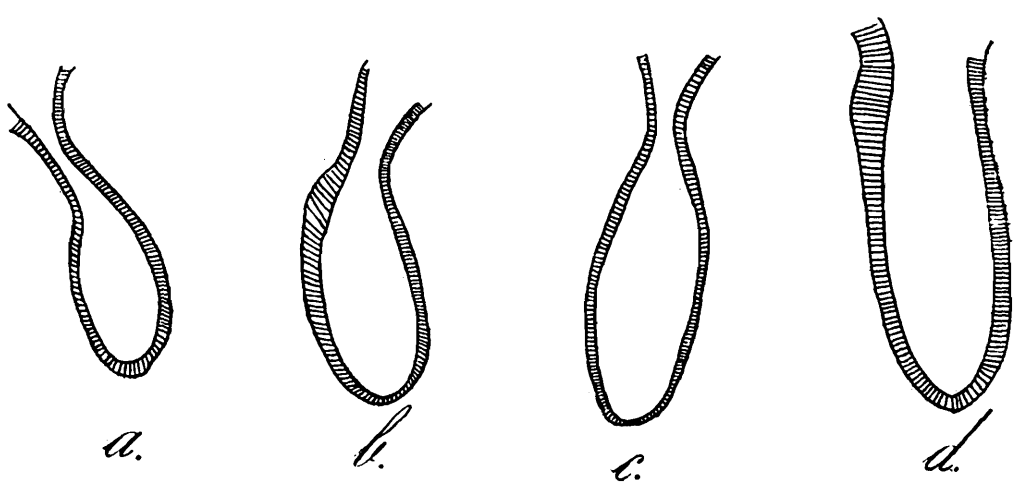
During his study of the specimens just described the writer was struck by resemblance between the genera *Pallisentis* and *Neosentis*. Van Cleave (1928, p. 4) himself says that they are, ' rather closely related '; and his diagnoses do not clearly separate them. Baylis (1933,

p. 448) is of the opinion that the differences separating them are only of specific importance.

The ' significant points of difference ' in the generic diagnoses given by Van Cleave are : (1) the differences with regard to the spines, (2) the form of the proboscis and of its hooks and (3) the nature of the receptacle of the proboscis.

The difference in the anterior armature of the body varies considerably in the different species of *Pallisentis*. There are 9 rings in *P. umbellatus* (Van Cleave, 1928, p. 2), 11 according to Thapar (1930, p. 77) in *P. ophiocephali*, 13 in *P. gaboes* (Baylis, 1933, p. 446), 12—14 in *P. nagpurensis* (Bhalerao, 1931, p. 570) and 12—15 in the present specimens. Starting with *Neosentis celatus* the circles of body spines are in an ascending order. This clearly indicates that, in the arrangement of the spines in the anterior part of the body, no sharp distinction exists between the various species. The spines in the mantle of *P. umbellatus* measure 0·012, in *N. celatus* 0·016 ; the difference between the two being 0·006, a difference of insufficient importance for a generic distinction. Again in the two species *P. umbellatus* and *N. celatus*, the difference in the body spines in the posterior part of the body is not great, being only 0·006. This, in the author's view, is also not of generic importance. The size and arrangement (20—40 circles in *P. umbellatus*, and 10 in *N. celatus*) of the body spines, the writer considers as only of specific value ; species of the genus *Pallisentis* show great variation in this respect. The size and arrangement of the body spines have, therefore, no generic value.

The second point of difference between the two genera is the form of the proboscis. In his generic diagnoses Van Cleave (1928, pp. 1, 4) states that in *Pallisentis* the proboscis is " short, cylindrical to globular " while in *Neosentis* it is " short, globular " " Cylindrical to globular " and " globular " are expressions which overlap and therefore automatically exclude this character from any generic diagnosis.




TEXT-FIG. 4.—Shapes of Proboscis Receptacles of *Pallisentis nagpurensis* (Bhalerao, 1931). *a, b & c.* Probosces partially retracted ; *d.* Proboscis fully retracted.

The nature of the proboscis receptacle, in the author's opinion, depends to a great extent on the state of retraction or protrusion of the proboscis. In specimens where the proboscides were completely retracted or protruded the receptacles were of the normal cylindrical

shape, but where only partially retracted or protruded were of a shape approaching that figured for *N. celatus* (Van Cleave, 1928, p. 5). Datta & Poddar (1935, p. 235) say that " In some specimens left in water in a tray the protrusion of the proboscis was clearly observed: the protrusion is the result of a sudden springing movement while the withdrawal is much slower and gradual " This the author himself observed four years ago when collecting Acanthocephala from Rangoon food fishes. The gradual process of withdrawal might result in the fixation of the proboscis in a partially retracted condition. Van Cleave's figure is probably that of a specimen with partially retracted proboscis and the difference mentioned by him a matter of individual variation, probably dependant upon the nature of the fixation.

In the light of the above considerations the writer is of opinion that the genus *Neosentis* Van Cleave, 1928, is a synonym of *Pallisentis* Van Cleave, 1928.

In conclusion I desire to express my indebtedness to Dr. F. J. Meggitt of the University of Rangoon for his help and guidance.

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