

XXI. NOTES ON THE OCCURRENCE OF  
*APUS* IN EASTERN ASIA.

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I.—ON THE OCCURRENCE OF *APUS*, LATREILLE,  
IN THE UNITED PROVINCES OF INDIA.

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Dr. Annandale informs me that the only species of *Apus* known to occur in India is *A. himalayanus*, described many years ago by Packard in his 'Monograph of Phyllopod Crustacea.' Vredenburg records the occurrence of a species of this or an allied genus in Baluchistan, but has not identified the species (*Journ. As. Soc. Bengal*, 1905, p. 33). The geographical distribution of the genus *Apus* appears to be imperfectly known. Geoffrey Smith (*Camb. Nat. Hist.*, Crustacea) only refers to species occurring in Europe, North Africa and Central Australia. As mentioned below, I feel confident that a species occurs in North China.

It becomes, therefore, a matter of some interest to place on record the fact that an *Apus* occurs in the plains of India. On March 20th, 1911, the late Major C. J. Robertson Milne, I.M.S., and I found this Phyllopod to be tolerably numerous near the village of Banel, in the Bulandshahr District of the United Provinces. The animals occurred in three or four very small muddy pools formed by leakage from a "distributory" of the Upper Ganges Canal. The pools were in fact scarcely more than puddles, the largest not being more than a couple of yards in diameter. Our discovery of *Apus* was quite a coincidence. About half an hour previously, I had mentioned to Major Milne that I had seen what I believed to have been a species of *Apus* or *Lepidurus* at Pekin, about ten years ago; and I remarked that I believed that neither genus occurred in India. When we arrived at the pools we saw some moderately large animals moving about in the mud: on capturing one, I recognized *Apus* at once. With the aid of some boys we secured about three dozen specimens.

The erratic distribution of *Apus* has been commented on by several authors, and was borne out by the present experience. We only found the animals in a few pools; many adjoining, and apparently similar ones containing none. Subsequently for several days I searched unsuccessfully for more specimens in other parts of the Bulandshahr District, both in the Ganges Canal and in many pools in its neighbourhood. Considering the conspicuous size of

the animals, their active movements, and the fact that they occur in shallow pools, one is led to believe that they cannot be very widely distributed in India: otherwise, they would have been found before. Most natives to whom I have shown them do not recognize them at all; but a few persons have told me that they have seen them before, but only during the "rains."

In colour the animals are chiefly a dull olive-green, with the shield mottled with dark spots. In life, the long filiform endites of the first thoracic limb and in some animals the abdominal segments, have a decidedly rufous tinge. The average length of 31 specimens, measured from the anterior end of the cephalic shield to the posterior end of the abdomen (not including the furcal styles) is 33 mm., that of the styles being 35 mm. The maximum measurements are respectively 40 mm. and 41 mm. A very large specimen measures 80 mm. from the anterior end of the shield to the extremities of the furcal styles. The average length of the shield in the mid-line (eleven specimens) is 24 mm., and its breadth (not flattened out) is 18 mm. Dr. Keilhack ("Süßwasser fauna Deutschlands") gives 10—30 mm. and 9—28 mm. for these latter measurements in German examples of *Triops*<sup>1</sup> (*Apus*) *cancriformis*.

I have dissected five specimens, all of which were females: this is in harmony with the fact that in *Apus* and allied genera males are of rare, possibly seasonal, occurrence. The limbs and appendages of my specimens agree very closely with the admirable description of those of *A. cancriformis* given by Professor Bourne (*Comp. Anat. of Animals*, vol. ii); and in most other respects of their external structure the animals appear to be quite similar.

It is impossible to say without comparison of specimens (which are not available for me) whether this Indian *Apus* is a new species or not. For the determination of this point I am sending specimens to the Indian Museum.

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<sup>1</sup> The substitution of the name *Triops* for the universally known *Apus*, though it may be justified in the strict letter of the law, is much to be deprecated as being liable to lead to great confusion.—S. K.